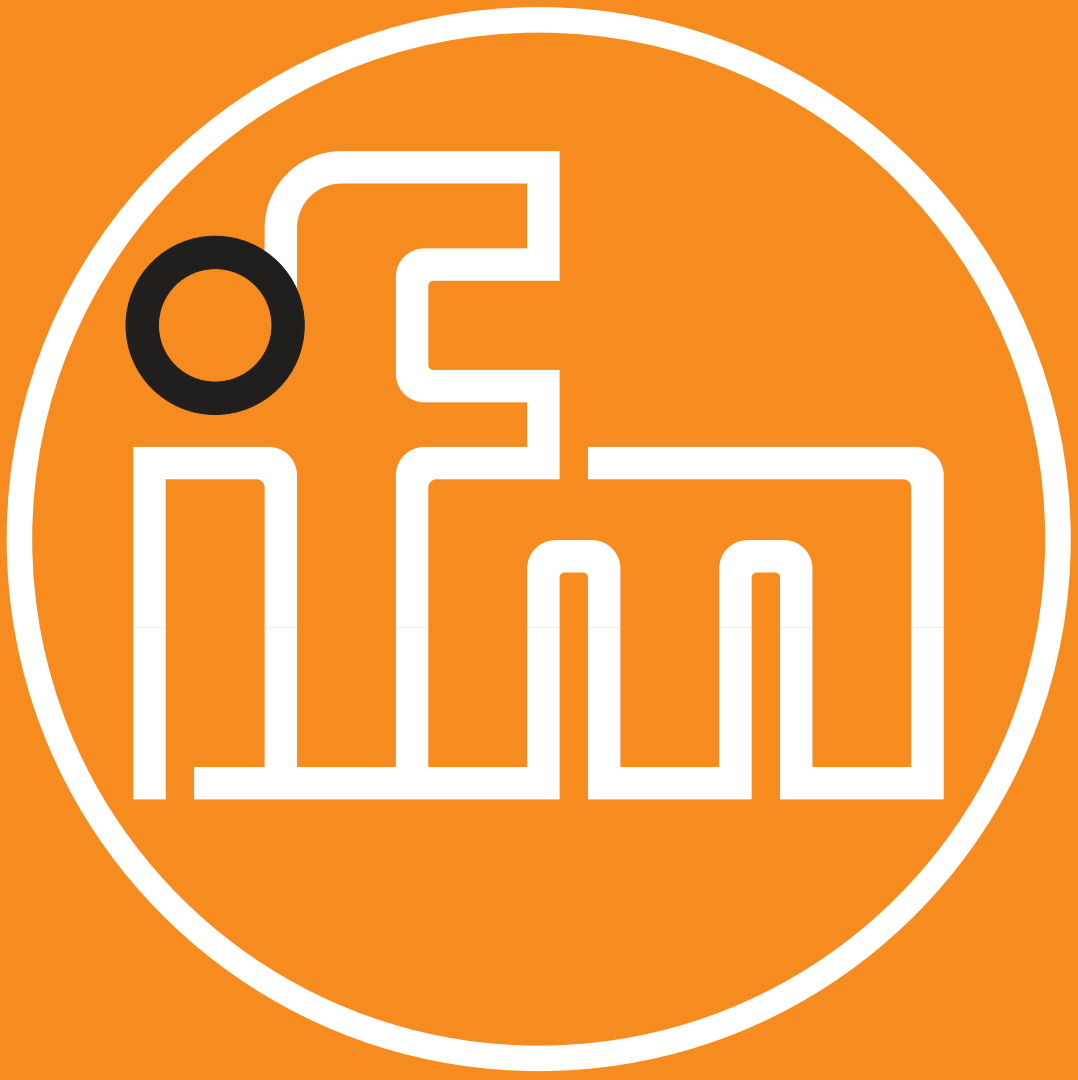


2014 / 2015

Position sensors

Motion control

Vision sensors

Safety technology

Process sensors

Industrial networks

ID systems

Machine condition

Power supplies

Wiring technology

## ifm's Sensors and Controls Catalog is a bridge to our website that offers more than 8,000 products

*Search by part number or by text*

*Login for the fastest way to buy sensors and controls*

*Check product availability and pricing*

*Rotating display of the latest ifm news*

*Subscribe to newsletters*

*Product line menu – an easy way to find the ifm product for your application*

*Product selector offers a quick way to find products by specifications*

*Career opportunities*

*New product press releases*

**www.ifm.com/us**

***About ifm…***

*ifm is one of the world's largest manufacturers of industrial sensors and controls products, producing over 9 million sensors annually.*

*More than 5,000 ifm employees serve over 115,000 purchasing customers worldwide.*

*ifm has more than 70 subsidiaries located in all major countries.*

*Annual global sales exceed $850 million USD.*

*Our dedication to innovation, quality and customer support has made us a global market leader.*

## The ifm Commitment

**ifm people.** The ifm team of employees is committed to helping you succeed in your business. We directly service and work with over 20,000 customers in North America.

**ifm products.** For over 40 years, ifm has developed, manufactured, and marketed sensors to industries that include assembly and robotics, automotive, material handling, packaging, metal forming, plastics, and food and beverage. We offer a complete family of position sensors, fluid sensors, diagnostic systems, networking products, and wiring solutions.

**Quality.** There can be no compromise in the quality and reliability of sensors that are applied in your production facility. The ifm new product development process incorporates specific testing for sensors and controls to withstand environments with shock and vibration, electrical noise and temperature fluctuations.

**Investment in R&D.** Developing new products that increase uptime and productivity is a core belief of our company. We apply practical innovation to simplify technology and develop products that can have a positive impact on your production process.

**Application know-how.** We have over 40 years of experience in working with industrial automation applications. Our knowledgeable team of technical support engineers will work with you to recommend the right solution, the first time.

**ifm business philosophy.** ifm provides a knowledgeable and courteous service center team to assist with order placement and technical support. We offer an efficient distribution center for accurate and on-time delivery of products. ifm publishes list prices in literature and on our website, and we always stand behind the quality and performance of our products.

**Global presence with local focus.** With more than 5,000 dedicated ifm employees in over 70 countries, you can count on local support all over the world.

**ifm –** *close to you!*

# *Our people and our products are committed to helping you succeed in your business*

## ifm North American Operation

### *ifm Global Presence*

*Whether you ship your machines internationally or have manufacturing plants all over the world, ifm has local support in over 70 countries.*

*You can count on ifm anywhere in the world.*

## Rich History… Promising Future

ifm electronic, the parent company of ifm efector, was founded in 1969.

For over 40 years, ifm has manufactured and marketed electronic sensors and controls for industrial automation applications.

ifm employs over 5,000 dedicated individuals who provide outstanding product support and technical service.

More than 115,000 customers purchase ifm products worldwide.

## Reliable Products… Innovative Design

ifm is currently one of the world's largest manufacturers of industrial sensors and controls, producing more than 13 million products which includes 9 million sensors annually.

ifm offers a broad product range that includes sensors and controls for industrial automation applications.

ifm's core competency for industrial product design is to develop products with robust housings, easy user interfaces and flexible output stages.

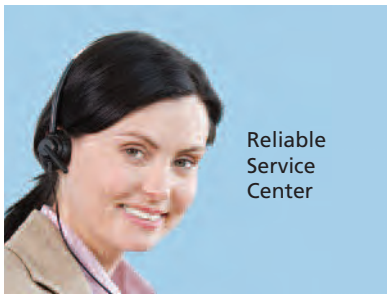
ifm makes large investments in R&D and employs over 600 development engineers. Our R&D team has more than 600 registered ifm patents worldwide.

ifm has received multiple awards for innovation and breakthrough technologies.

An ISO 9001:2008 compliant company.

Our dedication to innovation, quality and customer support has made ifm a global leader in sensors and controls.

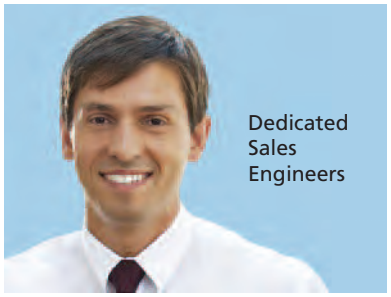
# *Reliable service from a dedicated team*




***Service Center***

*You can count on our Service Center team to be a reliable partner. That means easy order placement and knowledgeable technical support.*

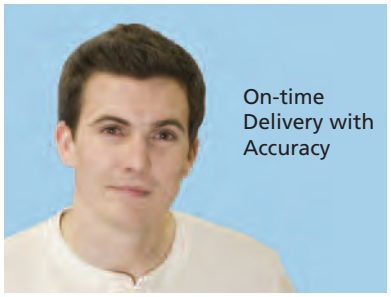
*Our Service Center team includes application engineers who can assist with technical questions and application solutions. ifm customer service representatives can assist with order placement, product quotes, and delivery information. Staffed from 7:30 am to 6:30 pm EST to ensure time-zone coverage.*




***On-Site Sales Support***

*You can count on our experienced team of ifm sales engineers to understand your applications and challenges. The ifm Direct Sales Team provides on-site application assistance and technical support throughout North America.*

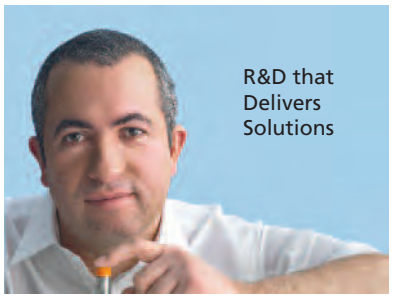
*Our sales engineers work with corporations to coordinate global projects and to develop sensor standards that result in reducing inventory costs and simplifying maintenance.*




***Logistics***

*On time delivery and accuracy of your order is our goal in the ifm Distribution Center. There can be no compromises when it comes to uptime in your facility.*

*The ifm Distribution Center is located in Downingtown, PA, just outside Philadelphia. More than 15,000 orders are shipped per month with an accuracy rate of 99%.*




***Research and Development***

*The ifm product development engineers design and test sensors in conditions that far exceed actual application environments. There can be no compromises when it comes to uptime in your facility.*

*Our team designs products that reduce machine downtime, increase productivity and simplify installation.*

## Our Mission:

We contribute to our customers' success by providing innovative solutions through continuous development of our people, products and processes.

## The ifm Advantage

ifm has built a business model that focuses on working directly with our customers.

*There are no compromises when it comes to our customers' success.*

***Markets include:***

*Assembly and robotics*
*Automotive*
*Food and beverage processing*
*Machine tool*
*Material handling*
*Mobile equipment*
*Packaging*
*Metal forming*
*Plastics*

**ifm –** *close to you!*

# ifm's Sensors and Controls catalog represents our most popular products for industrial automation

## Position sensors

**Inductive sensors**
*Pages: 10 - 47*

*Non-contact inductive sensors detect metallic targets.*

**Capacitive sensors**
*Pages: 48 - 53*

*Capacitive sensors detect non-metallic targets, e.g. plastic, glass and wood.*

**Cylinder sensors**
*Pages: 54 - 59*

*Low-profile T-slot and C-slot cylinder sensors detect cylinder position.*

**Photoelectrics and lasers**
*Pages: 60 - 91*

*Visible red and laser provide long-range detection.*

**Distance, color and contrast**
*Pages: 92 - 97*

*Photoelectric solutions for long ranges, color and contrast applications*

**Fiber optics**
*Pages: 98 - 103*

*Fiber optic sensors, controllers and amplifiers for areas with limited space.*

## Motion control

**Speed monitors**
*Pages: 106 - 107*

*Self-contained speed monitors detect rotational speed conditions.*

**Rotational and standstill monitor**
*Pages: 108 - 109*

*The speed monitors calculate rotational speed by evaluating pulses.*

## Vision sensors

**efector dualis Contour sensors**
*Pages: 116 - 117*

*Detects and compares defined shapes to provide 100% inspection testing.*

**efector dualis Pixel Counter**
*Pages: 118 - 119*

*Analyzes the area of an object and identifies an object by counting pixels.*

**Multi-Code readers**
*Pages: 120 - 121*

*Identifies, qualifies and verifies 2D data matrix codes and 1D barcodes.*

**Illumination**
*Pages: 122 - 123*

*illuminates the object and provides the correct amount of image brightness at various ranges.*

**3D Image Sensor**
*Pages: 124 - 125*

*3D Image Sensor evaluates shape, size and volume to identify objects in three dimensions.*

## Safety products

**Inductive safety sensors**
*Pages: 128 - 129*

*Non-contact, fail-safe inductive sensors detect metal targets.*

**Light curtains**
*Pages: 130 - 137*

*Light curtains offer a hands-free solution to protect personnel.*

**Safety relays**
*Pages: 138 - 139*

*Multi-function safety relays connect safety devices.*

**Safety speed monitoring**
*Pages: 140 - 141*

*For safety-related maximum speed monitoring used in carousels or centrifuges.*

## Process sensors

**Pressure sensors**
*Pages: 144 - 159*

*Sensors and transmitters monitor system pressure in hydraulic and pneumatics.*

**Flow sensors**
*Pages: 160 - 169*

*Flow sensors, magmeters, and ultrasonic flow meters detect the flow rate of liquids and gases.*

**Level sensors**
*Pages: 170 - 185*

*Point and continuous level sensors detect level of liquids, powders, granular solids and plastics.*

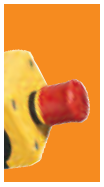
**Temperature sensors**
*Pages: 186 - 201*

*Modular temperature monitoring products provide feedback in temperature control applications.*

## Industrial networks

**AS-i networking**
*Pages: 204 - 217*

*Networks sensors and actuators with plug-and-play functionality.*



**Safety networking**
*Pages: 218 - 229*

*Safety at Work connects safety components directly to the AS-i network.*

## ID Systems

**RFID**
*Pages: 232 - 235*

*A high frequency or UHF platform. The antennas are able to read/write multiple tags up to 10 meters.*

## Machine condition

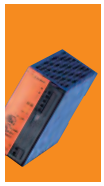
**Vibration sensors**
*Pages: 238 - 241*

*Continuously monitor machine's vibration level to prevent equipment failure.*

**efector Metris**
*Pages: 242 - 243*

*In-line flow meter monitors compressed air systems and specialty gases.*

## Power supplies



**Power supplies**
*Pages: 246 - 247*

*Power supplies provide the voltage for sensors, actuators, and other electronic loads.*

## Wiring technology

**M8 Pico cordsets**
*Pages: 250 - 251*

*Quick disconnect M8 Pico cordsets and field wirable connectors for electrical wiring.*

**M8 Pico wiring block systems**
*Pages: 252 - 255*

*Quick disconnect wiring blocks offer plug-and-play functionality.*

**M12 Micro cordsets**
*Pages: 256 - 257*

*4-pin Micro DC cordsets and field wirable connectors.*

**M12 Micro wiring block systems**
*Pages: 258 - 259*

*4-port and 8-port M12 Micro DC wiring blocks and patchcords.*

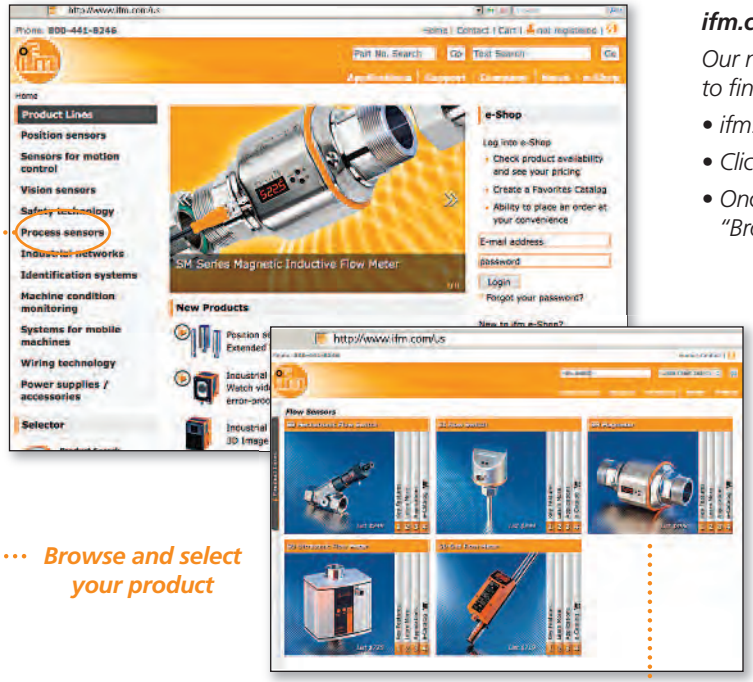
**1/2" Micro AC cordsets**
*Pages: 260 - 261*

*3-pin Micro AC cordsets and field wirable connectors.*

***For our complete list of sensors and controls products, visit our website***

***www.ifm.com/us***

# ifm's website – www.ifm.com/us – Represents our entire line of products




Browse and select your product

### ifm.com/us – the easy way to find ifm products

*Our newly redesigned website allows you to compare products to find the best solution to your application.*

- *ifm.com/us offers thousands of sensors and controls products.*
- *Click on a product category in the Product Lines menu.*
- *Once you've found your product category, click on "Browse products."*

### Browse product line

*Browse a complete product line on one page. Each product offers the following information:*

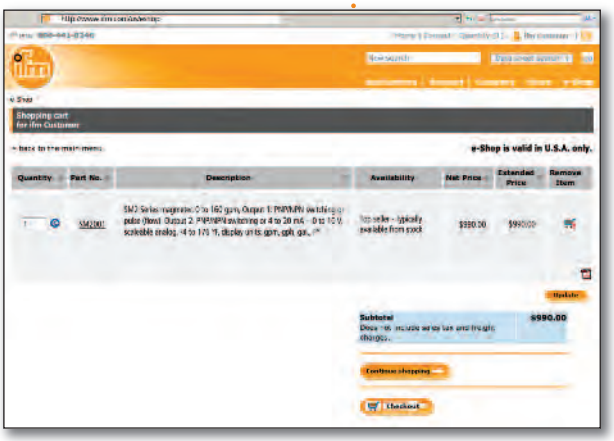
1. *Select product – locate the best fit for your application and the site will take you to its product page.*
2. *Key features – includes outputs, mounting options and other unique features.*
3. *Learn more – One-minute videos, brochures, useful charts and applications.*
4. *Applications – full-color drawing examples showing sensor in application and its benefits.*

Choose your type…

### Product page

- *Product selection*
- *Full-color photo with dimensions*
- *Technical specifications*
- *Recommended accessories and cordsets*
- *Includes list price information*
- *Add-to-cart for easy shopping*

Add to your cart




### e-Shop – available 24 hours a day online

*Check product availability and see your pricing, create a favorites catalog and place an order at any time through e-Shop – ifm's online store.*

- ***NEW*** *Check the price and availability of an ifm product at any time. Simply register an account in e-Shop. Click on "Check price and availability." Enter your part number and e-Shop will display your specific pricing and the availability date. It's that easy!*
- *The favorites option is a great resource to build a personalized ifm product catalog and to quickly find the product that's continually ordered.*
- *The History feature enables you to track the status of an order and offers the ability to copy / paste a previous order. It's the fastest way for you to place a re-order.*

# *It's easy to find a product on www.ifm.com/us*

***Technical documentation***

*ifm's comprehensive data sheets offer all the specifications needed to make a decision on the right sensor for your application.*

## Data sheet

- *Technical specs*
- *Electrical data and connection*
- *Product characteristics*
- *Dimension drawing*
- *Wiring diagrams*
- *Approvals*
- *Purchasing information including stock availability and US list prices*

## Accessories

- *Cordsets and cable assemblies*
- *Mounting brackets and systems*
- *Power supplies*

## Operating instructions

- *Installation instructions*
- *Software manuals*

## CAD

- *2D and 3D CAD drawings in standard formats*

## More information

- *Certificates of approval*
- *Software downloads*
- *Summary specifications for project and estimate bids*

Have a technical question…
require customer assistance?

Email a technical question to our engineers or send a message to our customer service reps at info.us@ifm.com

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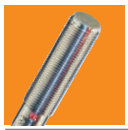


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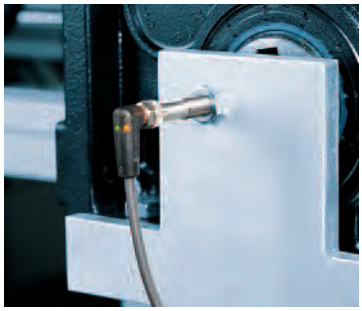
# Top five product features!

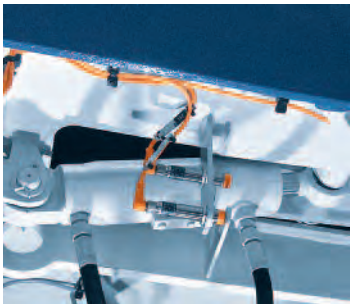
- *Small housing, long range! Compact design is ideal for applications with limited mounting space*
- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Four LEDs provides 360-degree visibility for status indication*
- *Innovative mounting solutions reduce installation and replacement time*
- *Available in quick disconnect and prewired options – visit www.ifm.com/us for more sensor options*

## Longer sensing ranges in compact rugged housings



Today's industrial automation machines are extremely compact and highly automated. The smaller footprint allows for reduced space on the plant floor, but also minimizes the mounting space for sensors used for position control.

ifm's solution for position control is a line of miniature sensors with long sensing ranges. The versatile housings fit a variety of applications that have space limitations.



Features include:

- Up to 2.5 times longer sensing ranges than most conventional switches of the same size.
- Housing lengths start at 30 mm.
- Integrated 360° visible LED for visual indication of operating status.
- A variety of mounting accessories are available to suit most applications.

**IT5044 Actual size**
Ø6.5 mm x 50 mm

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

| | Dimensions (mm) | Sensing Range | Output Function | Supply Voltage V | Switching Frequency (Hz) DC | Max Load Current (mA) DC | Sensor Termination | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| A | Ø4 / L = 45 | 0.8 mm flush | PNP, N.O. | 10...36 | 2000 | 100 | M8 Pico | **IZ5035** | **$102.00** |
| | Ø4 / L = 41 | 1.5 mm nonflush | PNP, N.O. | 10...30 | 1800 | 100 | M8 Pico | **IZ5046** | **$102.00** |
| B | Ø4 / L = 30 | 0.8 mm flush | PNP, N.O. | 10...36 | 2000 | 100 | Prewired | **IZ5026** | **$104.00** |
| | Ø4 / L = 27 | 1.5 mm nonflush | PNP, N.O. | 10...36 | 1800 | 100 | Prewired | **IZ5047** | **$104.00** |
| C | Ø6.5 / L = 30 | 2 mm flush | PNP, N.O. | 10...30 | 800 | 100 | M8 Pico | **IT5040** | **$92.00** |
| D | Ø6.5 / L = 50 | 4 mm nonflush | PNP, N.O. | 10...30 | 300 | 100 | M8 Pico | **IT5044** | **$92.00** |
| E | M5 / L = 45 | 0.8 mm flush | PNP, N.O. | 10...36 | 2000 | 100 | M8 Pico | **IY5036** | **$104.00** |
| | M5 / L = 41 | 1.5 mm nonflush | PNP, N.O. | 10...30 | 1800 | 100 | M8 Pico | **IY5048** | **$104.00** |
| F | M5 / L = 30 | 0.8 mm flush | PNP, N.O. | 10...36 | 2000 | 100 | Prewired | **IY5029** | **$100.00** |
| | M5 / L = 27 | 1.5 mm nonflush | PNP, N.O. | 10...36 | 1800 | 100 | Prewired | **IY5049** | **$100.00** |
| G | M8 / L = 62 | 2 mm flush | PNP, N.O. | 10...36 | 1000 | 250 | M12 Micro | **IE5312** | **$45.00** |
| | M8 / L = 62 | 4 mm nonflush | PNP, N.O. | 10...36 | 300 | 200 | M12 Micro | **IE5288** | **$45.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting clamp for 4 mm sensor | **E10204** | **$6.00** |
| | Mounting clamp for 6.5 mm sensor | **E10014** | **$6.00** |
| | Snap clamp for 8 mm sensor | **E11521** | **$8.00** |
| | L-bracket for 8 mm sensor | **U20304** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

## Technical Specs

Protection: IP65: Part Nos. IY5029, IY5036, IZ5026, IZ5035, IZ5047
IP67: Part Nos. IT5040, IT5044, IY5048, IY5049, IZ5046, IE5312, IE5288

Operating Temp: -13...158 °F (-25...70 °C): Part No. IY5029, IY5036, IY5048, IY5049, IZ5026, IZ5035, IE5312, IE5288
-13...176 °F (-25...80 °C): Part No. IZ5046, IZ5047
32...140 °F (0...60 °C): Part No. IT5044
-4...158 °F (-20...70 °C): Part No. IT5040

Leakage Current: Negligible

Housing materials: Stainless steel; active face; POM: Part Nos. IY5029, IY5036, IY5048, IY5049, IZ5026, IZ5035, IZ5046, IZ5047
CO-PC: IE5288
LCP: Part Nos. IT5040, IT5044, IE5312


Process Sensors: *Pressure* *Flow* *Level* *Temperature*
Industrial Networks: *AS-i network* *Safety systems*
ID Systems: *RF identification systems*
Machine Condition: *Diagnostic systems*
Power Supplies: *Power supplies*
Wiring Technology: *Cordset solutions*

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# Top five product features!

- *Metal face flush mountable, stainless steel housing and sensor face withstand physical damage in industrial automation applications*
- *Sensor design dramatically extends life-in-application by a factor of 15 compared to plastic face sensors*
- *Extended sensing ranges increase distance between the sensor and target which increases uptime*
- *Permanent laser-etched part numbers will not wear off over time*
- *360° ring LED for status indication*

## Metal face technology design dramatically improves life-in-application and increases production uptime

*Metal face technology can dramatically extend life-in-application for the sensor.*

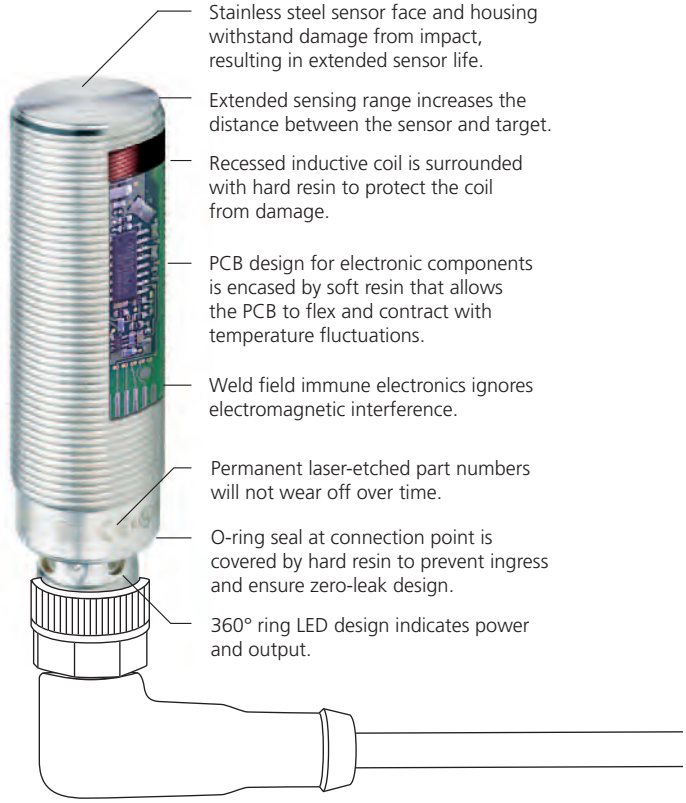
In industrial automation applications, plastic sensors can fail from liquid ingress, damage from target impact, and overall wear from high shock and vibration.

ifm's non-contact, zero-leak, all-metal sensors are so robust that they may outlast the life of your machines! Our highly durable, stainless steel sensors are completely sealed against ingress and carry protection ratings of IP67, IP68 and IP69K.

ifm metal face sensors offer reliable performance and durability in tough industrial applications. Stainless steel construction extends the sensor's life-in-application by a factor of 15 compared to teflon or plastic face sensors. ifm metal face sensors increase plant uptime, and its price point is the best value in the market.

The stainless steel sensors are subjected to a variety of tests that insure reliable performance in application.

- Stainless steel sensor face and housing withstand damage from machining process and moisture ingress.
- Sensor design extends life-in-application by a factor of 15.
- Extended sensing range increases the distance between the sensor and the target.




Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **M12 Micro DC quick disconnect** | | | | | | | |
| M8 / L = 60 | 2 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IEC200** | **$65.00** |
| M12 / L = 60 | 3 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IFC258** | **$63.00** |
| M18 / L = 70 | 5 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IGC248** | **$65.00** |
| M30 / L = 70 | 10 mm flush | PNP, N.O. | 10…36 | 50 | 100 | **IIC224** | **$70.00** |
| M8 / L = 60 | 2 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IEC203** | **$65.00** |
| M12 / L = 60 | 3 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IFC266** | **$63.00** |
| M18 / L = 70 | 5 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IGC252** | **$65.00** |
| M30 / L = 70 | 10 mm flush | NPN, N.O. | 10…36 | 50 | 100 | **IIC226** | **$70.00** |
| **M8 Pico DC quick disconnect** | | | | | | | |
| M8 / L = 50 | 2 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IEC201** | **$65.00** |
| M8 / L = 50 | 2 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IEC202** | **$65.00** |

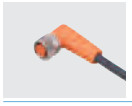
## Optional Accessories

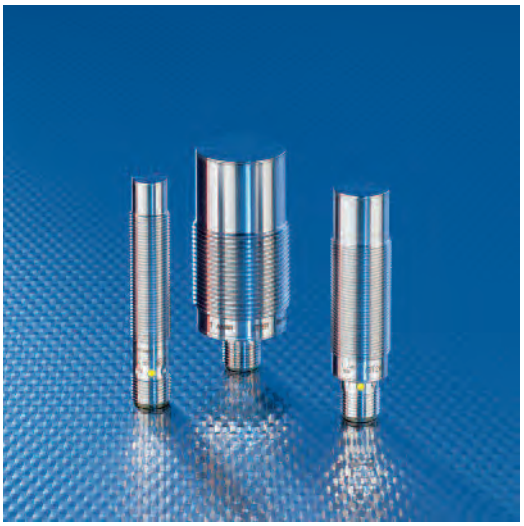
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 8 mm sensor | **E11521** | **$8.00** |
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 8 mm sensor | **U20304** | **$6.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP67 / IP68 |
| Operating temperature: | -13…158 °F (-25…70 °C) |
| Leakage current: | <0.1 mA |
| Housing material: | Housing: high-grade stainless steel;<br>Active face: high-grade stainless steel;<br>Lock nuts: high-grade stainless steel;<br>Connector housing: TPU<br>Connector coupling nut: nickel plated brass |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC143** | **$23.00** |
|  | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC146** | **$23.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |



# Top five product features!

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- *Sensor design dramatically extends life-in-application by a factor of 15 compared to plastic face sensors*
- *Extended sensing ranges increase distance between the sensor and target which increases uptime*
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The stainless steel sensors are subjected to a variety of tests that insure reliable performance in application.

- Stainless steel sensor face and housing withstand damage from machining process and moisture ingress.
- Sensor design extends life-in-application by a factor of 15.
- Extended sensing range increases the distance between the sensor and the target.

***Challenges with side sensing***

*Side sensing challenges can cause traditional sensors to indicate false outputs by detecting metal near the sensor face. ifm's metal face sensors are not affected by materials surrounding the sensor and offer consistent, reliable detection.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **M12 Micro DC quick disconnect** | | | | | | | |
| M12 / L = 70 | 6 mm nonflush | PNP, N.O. | 10…36 | 500 | 100 | **IFT245** | **$70.00** |
| M12 / L = 70 | 6 mm nonflush | NPN, N.O. | 10…36 | 500 | 100 | **IFT246** | **$70.00** |
| M18 / L = 70 | 12 mm nonflush | PNP, N.O. | 10…36 | 500 | 100 | **IGT249** | **$72.00** |
| M18 / L = 70 | 12 mm nonflush | NPN, N.O. | 10…36 | 500 | 100 | **IGT250** | **$72.00** |
| M30 / L = 70 | 25 mm nonflush | PNP, N.O. | 10…36 | 250 | 100 | **IIT231** | **$76.00** |
| M30 / L = 70 | 25 mm nonflush | NPN, N.O. | 10…36 | 250 | 100 | **IIT232** | **$76.00** |

## Optional Accessories

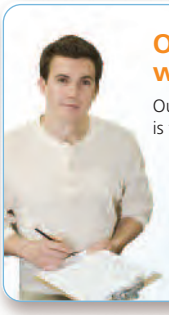
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP67 / IP68 / IP69K |
| Operating temperature: | 32…212 °F (0…100 °C) |
| Leakage current: | < 0.1 mA |
| Housing material: | Housing: high-grade stainless steel;<br>Active face: high-grade stainless steel;<br>Lock nuts: high-grade stainless steel;<br>Connector housing: TPU<br>Connector coupling nut: nickel plated brass |

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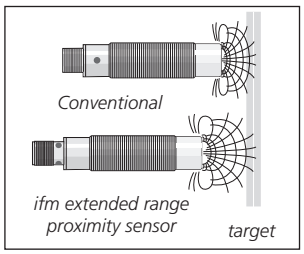
# Top five product features!

- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Ideal for non-contact detection of metal targets in position sensing applications*
- *Wider temperature range of -40...185 °F for greater application flexibility*
- *Robust industry standard housings are rated IP68 / IP69K and reliably perform in environments with oils and coolants*
- *Four bright LEDs provide 360-degree visibility for status indication and make troubleshooting in applications easy*

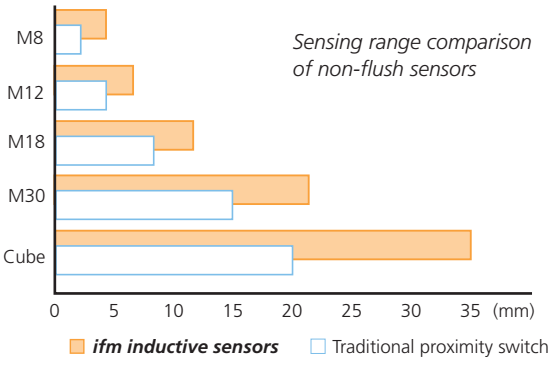
## "Short body" sensor with extended range reduces failures from mechanical damage



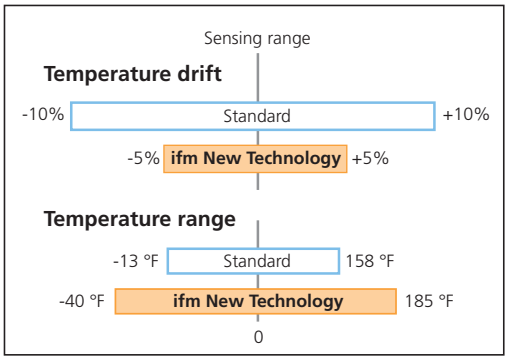

***NEW!*** ifm's new line of "short body" inductive sensors offer an ideal combination of features, performance and value. A newly patented design provides less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5%.

The sensors resist shock, vibration and electrical noise. They are rated IP68/IP69K against water ingress and resist oils and coolants used in harsh applications.

ifm's new technology sensors incorporate extended sensing ranges that enable the sensor to be mounted farther away from a target. This prevents mechanical damage to the sensor from physical impact.




*Sensing range comparison of non-flush sensors*




*Many variables affect sensing range such as temperature. ifm's newly patented design provides a sensor with less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5% and enables more reliable detection of metal targets.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 45 | 4 mm, flush | DC PNP, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS244** | **$46.00** |
| M12 / L = 45 | 7 mm, nonflush | DC PNP, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS245** | **$46.00** |
| M12 / L = 45 | 4 mm, flush | DC NPN, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS246** | **$46.00** |
| M12 / L = 45 | 7 mm, nonflush | DC NPN, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS247** | **$46.00** |
| M18 / L = 45 | 8 mm, flush | DC PNP, N.O. | 10…30 | 400 | 100 | M12 Micro | **IGS236** | **$48.00** |
| M18 / L = 45 | 12 mm, nonflush | DC PNP, N.O. | 10…30 | 300 | 100 | M12 Micro | **IGS237** | **$48.00** |
| M18 / L = 45 | 8 mm, flush | DC NPN, N.O. | 10…30 | 400 | 100 | M12 Micro | **IGS238** | **$48.00** |
| M18 / L = 45 | 12 mm, nonflush | DC NPN, N.O. | 10…30 | 300 | 100 | M12 Micro | **IGS239** | **$48.00** |
| M30 / L = 50 | 15 mm, flush | DC PNP, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS230** | **$58.00** |
| M30 / L = 50 | 22 mm, nonflush | DC PNP, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS231** | **$58.00** |
| M30 / L = 50 | 15 mm, flush | DC NPN, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS232** | **$58.00** |
| M30 / L = 50 | 22 mm, nonflush | DC NPN, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS233** | **$58.00** |

Note: PNP N.C. and NPN N.C. versions also available, call 800-441-8246.

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP65, IP67, IP68, IP69K |
| Temperature: | -40…185 °F (-40…85 °C) |
| Leakage current: | < 0.5 mA |
| Housing materials: | Brass plated with white bronze, PBT, PEI |

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# Top five product features!

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- *Ideal for non-contact detection of metal targets in position sensing applications*
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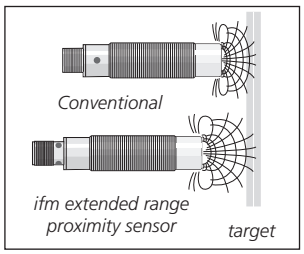
- *Four bright LEDs provide 360-degree visibility for status indication and make troubleshooting in applications easy*

## "Long body" sensor with extended range reduces failures from mechanical damage

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The sensors resist shock, vibration and electrical noise. They are rated IP68/IP69K against water ingress and resist oils and coolants used in harsh applications.

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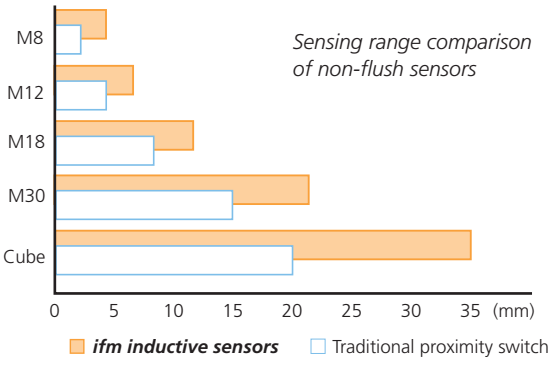
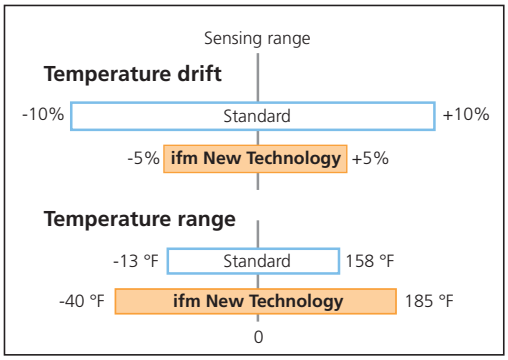



*Sensing range comparison of non-flush sensors*

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Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

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|---|---|---|---|---|---|---|---|---|
| M12 / L = 60 | 4 mm, flush | DC PNP, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS240** | **$46.00** |
| M12 / L = 60 | 7 mm, nonflush | DC PNP, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS241** | **$46.00** |
| M12 / L = 60 | 4 mm, flush | DC NPN, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS242** | **$46.00** |
| M12 / L = 60 | 7 mm, nonflush | DC NPN, N.O. | 10…30 | 700 | 100 | M12 Micro | **IFS243** | **$46.00** |
| M18 / L = 60 | 8 mm, flush | DC PNP, N.O. | 10…30 | 400 | 100 | M12 Micro | **IGS232** | **$48.00** |
| M18 / L = 60 | 12 mm, nonflush | DC PNP, N.O. | 10…30 | 300 | 100 | M12 Micro | **IGS233** | **$48.00** |
| M18 / L = 60 | 8 mm, flush | DC NPN, N.O. | 10…30 | 400 | 100 | M12 Micro | **IGS234** | **$48.00** |
| M18 / L = 60 | 12 mm, nonflush | DC NPN, N.O. | 10…30 | 300 | 100 | M12 Micro | **IGS235** | **$48.00** |
| M30 / L = 60 | 15 mm, flush | DC PNP, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS226** | **$58.00** |
| M30 / L = 60 | 22 mm, nonflush | DC PNP, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS227** | **$58.00** |
| M30 / L = 60 | 15 mm, flush | DC NPN, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS228** | **$58.00** |
| M30 / L = 60 | 22 mm, nonflush | DC NPN, N.O. | 10…30 | 100 | 100 | M12 Micro | **IIS229** | **$58.00** |

Note: PNP N.C. and NPN N.C. versions also available, call 800-441-8246

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

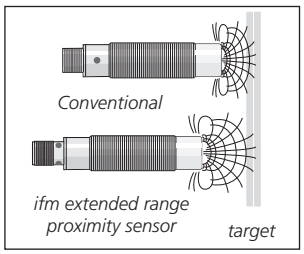
## Technical Specs

| | |
|---|---|
| Protection: | IP65, IP67, IP68, IP69K |
| Temperature: | -40…185 °F (-40…85 °C) |
| Leakage current: | < 0.5 mA |
| Housing materials: | Brass plated with white bronze, PBT, PEI |

# Top five product features!

- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Ideal for non-contact detection of metal targets in position sensing applications*
- *Wider temperature range of -40...185 °F for greater application flexibility*
- *Robust industry standard housings are rated IP68 / IP69K and reliably perform in environments with oils and coolants*
- *Bright LED provides 360-degree visibility for status indication and make troubleshooting in applications easy*

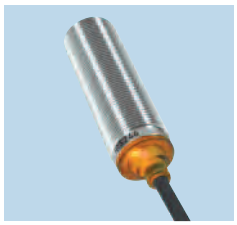
## "Short body" sensor with extended range reduces failures from mechanical damage



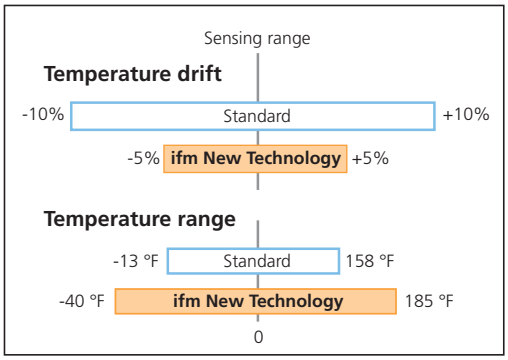

***NEW!*** ifm's new line of "short body" inductive sensors offer an ideal combination of features, performance and value. A newly patented design provides less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5%.

The sensors resist shock, vibration and electrical noise. They are rated IP68/IP69K against water ingress and resist oils and coolants used in harsh applications.

ifm's new technology sensors incorporate extended sensing ranges that enable the sensor to be mounted farther away from a target. This prevents mechanical damage to the sensor from physical impact.



*New bright LED offers excellent visibility of the LED from all directions.*




*Many variables affect sensing range such as temperature. ifm's newly patented design provides a sensor with less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5% and enables more reliable detection of metal targets.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 40 | 4 mm, flush | DC PNP, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS256** | **$48.00** |
| M12 / L = 40 | 7 mm, nonflush | DC PNP, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS257** | **$48.00** |
| M12 / L = 40 | 4 mm, flush | DC NPN, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS258** | **$48.00** |
| M12 / L = 40 | 7 mm, nonflush | DC NPN, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS259** | **$48.00** |
| M18 / L = 40 | 8 mm, flush | DC PNP, N.O. | 10…30 | 400 | 100 | 2 m cable, PUR | **IGS248** | **$50.00** |
| M18 / L = 40 | 12 mm, nonflush | DC PNP, N.O. | 10…30 | 300 | 100 | 2 m cable, PUR | **IGS249** | **$50.00** |
| M18 / L = 40 | 8 mm, flush | DC NPN, N.O. | 10…30 | 400 | 100 | 2 m cable, PUR | **IGS250** | **$50.00** |
| M18 / L = 40 | 12 mm, nonflush | DC NPN, N.O. | 10…30 | 300 | 100 | 2 m cable, PUR | **IGS251** | **$50.00** |
| M30 / L = 45 | 15 mm, flush | DC PNP, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS242** | **$60.00** |
| M30 / L = 45 | 22 mm, nonflush | DC PNP, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS243** | **$60.00** |
| M30 / L = 45 | 15 mm, flush | DC NPN, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS244** | **$60.00** |
| M30 / L = 45 | 22 mm, nonflush | DC NPN, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS245** | **$60.00** |

Note: PNP N.C. and NPN N.C. versions also available, call 800-441-8246

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP65, IP67, IP68, IP69K |
| Temperature: | -40…185 °F (-40…85 °C) |
| Leakage current: | < 0.5 mA |
| Housing materials: | Brass plated with white bronze, PBT, PEI |

**Simple and comprehensive website**

Data sheets, application examples, software downloads, virtual product demos… just one click away.

**Place orders, tech support**
800-441-8246

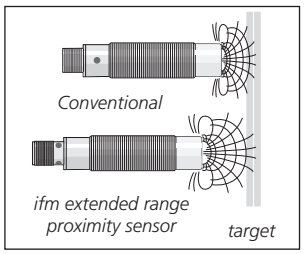
**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

# Top five product features!

- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Ideal for non-contact detection of metal targets in position sensing applications*
- *Wider temperature range of -40...185 °F for greater application flexibility*
- *Robust industry standard housings are rated IP68 / IP69K and reliably perform in environments with oils and coolants*
- *Bright LED provides 360-degree visibility for status indication and make troubleshooting in applications easy*

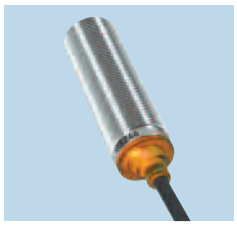
## "Long body" sensor with extended range reduces failures from mechanical damage



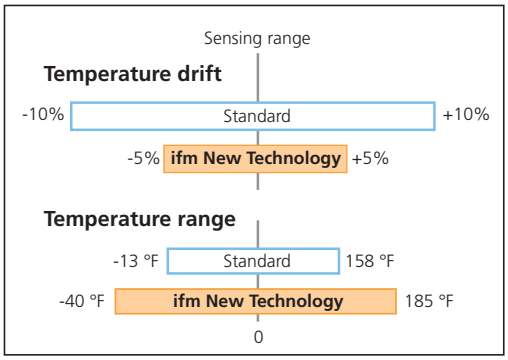

***NEW!*** ifm's new line of "long body" inductive sensors offer an ideal combination of features, performance and value. A newly patented design provides less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5%.

The sensors resist shock, vibration and electrical noise. They are rated IP68/IP69K against water ingress and resist oils and coolants used in harsh applications.

ifm's new technology sensors incorporate extended sensing ranges that enable the sensor to be mounted farther away from a target. This prevents mechanical damage to the sensor from physical impact.



*New bright LED offers excellent visibility of the LED from all directions.*




*Many variables affect sensing range such as temperature. ifm's newly patented design provides a sensor with less temperature drift over a wider temperature range. This improves sensing range tolerance to ± 5% and enables more reliable detection of metal targets.*

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 60 | 4 mm, flush | DC PNP, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS252** | **$48.00** |
| M12 / L = 60 | 7 mm, nonflush | DC PNP, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS253** | **$48.00** |
| M12 / L = 60 | 4 mm, flush | DC NPN, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS254** | **$48.00** |
| M12 / L = 60 | 7 mm, nonflush | DC NPN, N.O. | 10…30 | 700 | 100 | 2 m cable, PUR | **IFS255** | **$48.00** |
| M18 / L = 60 | 8 mm, flush | DC PNP, N.O. | 10…30 | 400 | 100 | 2 m cable, PUR | **IGS244** | **$50.00** |
| M18 / L = 60 | 12 mm, nonflush | DC PNP, N.O. | 10…30 | 300 | 100 | 2 m cable, PUR | **IGS245** | **$50.00** |
| M18 / L = 60 | 8 mm, flush | DC NPN, N.O. | 10…30 | 400 | 100 | 2 m cable, PUR | **IGS246** | **$50.00** |
| M18 / L = 60 | 12 mm, nonflush | DC NPN, N.O. | 10…30 | 300 | 100 | 2 m cable, PUR | **IGS247** | **$50.00** |
| M30 / L = 60 | 15 mm, flush | DC PNP, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS238** | **$60.00** |
| M30 / L = 60 | 22 mm, nonflush | DC PNP, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS239** | **$60.00** |
| M30 / L = 60 | 15 mm, flush | DC NPN, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS240** | **$60.00** |
| M30 / L = 60 | 22 mm, nonflush | DC NPN, N.O. | 10…30 | 100 | 100 | 2 m cable, PUR | **IIS241** | **$60.00** |

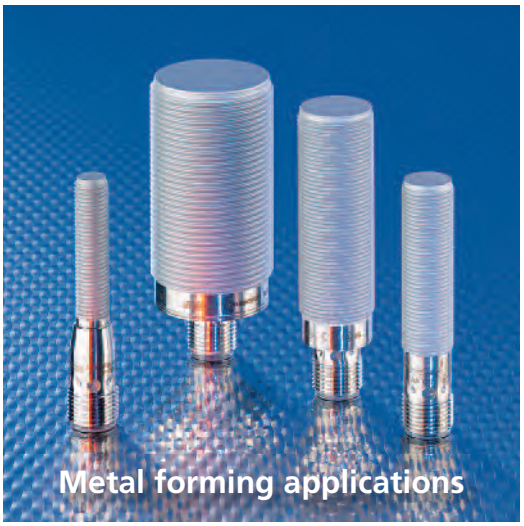
Note: PNP N.C. and NPN N.C. versions also available, call 800-441-8246

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP65, IP67, IP68, IP69K |
| Temperature: | -40…185 °F (-40…85 °C) |
| Leakage current: | < 0.5 mA |
| Housing materials: | Brass plated with white bronze, PBT, PEI |




# Top five product features!

- *Stainless steel sensor face and housing withstand damage from physical impact in the part loading process in manufacturing cells*
- *High temperature, weld slag resistant coating prevents weld slag from adhering to sensor*
- *Sensor design dramatically extends life-in-application by a factor of 15 compared to Teflon™ and plastic face sensors*
- *Extended sensing ranges increase distance between the sensor and target which increases uptime*
- *Permanent laser-etched part numbers will not wear off over time*

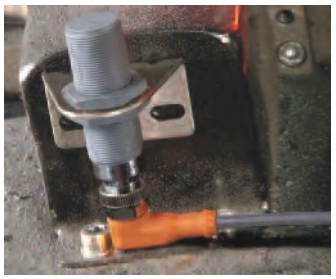
## High performance at a good value

ifm's metal face sensors are designed and tested to provide reliable position detection in the toughest welding and metal stamping applications. The stainless steel sensor face and housing withstand damage from physical impact in the part loading process in manufacturing cells. A high temperature weld slag resistant coating prevents weld slag from adhering to the sensor, eliminating abrasive cleaning techniques.

### The right combination of price and performance

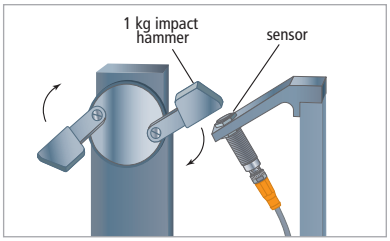
Priced lower than competing metal-faced sensors, ifm's sensors are an exceptional benchmark for value. High performance, longer life-in-application and a low price point. The ifm metal face sensors can now be used as a plant standard – not just a solution for harsh applications.

***Challenge***
*Plastic and teflon sensors life expectancies are reduced from weld-slag build-up and physical impact from the part-loading process in manufacturing cells.*

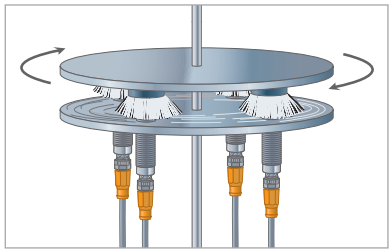


***Solution***
*The ifm metal forming sensor's stainless steel construction and high temperature weld-slag resistant coating withstands damage from impact and weld slag build-up.*

### Designed and tested to increase life-in-application




***ifm Impact Test***
*Sensors are hit twice every second by a 1 kg hammer. This represents the force of a large part being loaded in a cell. ifm's sensors can withstand 500,000 impacts compared to plastic face sensors that failed after 32,000 impacts.*



***ifm Abrasion Test***
*Sensors are scoured with wire wheel brushes for 1 million passes to simulate abrasive cleaning processes.*

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Sensor Termination | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M8 / L = 60 | 2 mm flush | PNP, N.O. | 10…36 | 100 | 100 | M12 Micro DC | **IER200** | **$68.00** |
| M8 / L = 60 | 2 mm flush | NPN, N.O. | 10...36 | 100 | 100 | M12 Micro DC | **IER201** | **$68.00** |
| M12 / L = 60 | 4 mm flush | PNP, N.O. | 10...36 | 2 | 100 | M12 Micro DC | **IFR200** | **$64.00** |
| M12 / L = 60 | 4 mm flush | NPN, N.O. | 10...36 | 2 | 100 | M12 Micro DC | **IFR202** | **$64.00** |
| M18 / L = 70 | 6 mm flush | PNP, N.O. | 10…36 | 2 | 100 | M12 Micro DC | **IGR200** | **$66.00** |
| M18 / L = 70 | 6 mm flush | NPN, N.O. | 10...36 | 2 | 100 | M12 Micro DC | **IGR202** | **$66.00** |
| M30 / L = 70 | 12 mm flush | PNP, N.O. | 10...36 | 2 | 100 | M12 Micro DC | **IIR200** | **$69.00** |
| M30 / L = 70 | 12 mm flush | NPN, N.O. | 10...36 | 2 | 100 | M12 Micro DC | **IIR202** | **$69.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | L-bracket for 8 mm sensor | **U20304** | **$6.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVW001** | **$17.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVW002** | **$21.00** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVW003** | **$26.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVW004** | **$17.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVW005** | **$21.00** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVW006** | **$26.00** |

ifm cordsets are designed and tested for metal forming applications. Cable material is rated for high temperatures and coupling nuts feature a weld-slag resistant coating.

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

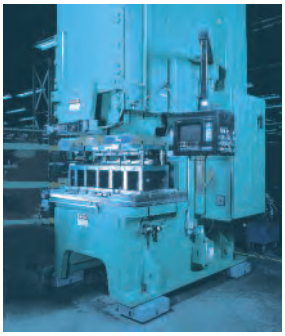
## Technical Specs

Protection: IP67
Operating temperature: 32...185 °F (0...85 °C)
Leakage current: < 0.1 mA
Housing material: Housing: high-grade stainless steel, weld-slag resistant coating
Active face: high-grade stainless steel, weld-slag resistant coating
Connector: PA
Lock nuts: high-grade stainless steel, weld-slag resistant coating

# Top five product features!

- *Stainless steel sensor face and housing withstand damage from physical impact in the part loading process in manufacturing cells*
- *High temperature, weld slag resistant coating prevents weld slag from adhering to sensor*
- *2-wire DC sensor with PNP or NPN programmable output*
- *Flexible wiring options directly replace 3-wire PNP and 3-wire NPN sensors*

## Withstands damage from physical impact in manufacturing cells

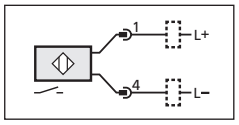


ifm's metal face sensors are designed and tested to provide reliable position detection in the toughest welding and metal stamping applications. The stainless steel sensor face and housing withstand damage from physical impact in the part loading process in manufacturing cells. A high temperature weld slag resistant coating prevents weld slag from adhering to the sensor, eliminating abrasive cleaning techniques.

### Directly replaces 3-wire sensors

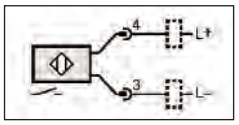
ifm has designed sensors to provide flexible wiring solutions for our customers. These 2-wire sensors can directly replace 3-wire sensors

A



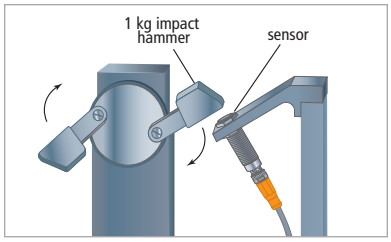

*2-wire to directly replace 3-wire PNP*

B



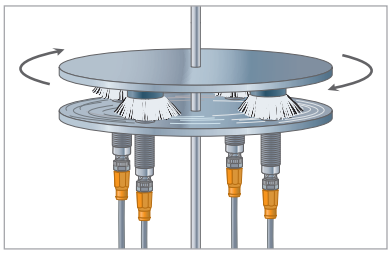

*2-wire to directly replace 3-wire NPN*

### Designed and tested to increase life-in-application




***ifm Impact Test***

*Sensors are hit twice every second by a 1 kg hammer. This represents the force of a large part being loaded in a cell. ifm's sensors can withstand 500,000 impacts compared to plastic face sensors that failed after 32,000 impacts.*



***ifm Abrasion Test***

*Sensors are scoured with wire wheel brushes for 1 million passes to simulate abrasive cleaning processes.*

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **(A) Uses Pins 1 and 4 • Can directly replace 3-wire PNP sensors** | | | | | | | | |
| M8 / L = 45 | 2 mm flush | PNP/NPN, N.O. | 10…36 | 150 | 100 | M12 0.3 m pigtail | **IER203** | **$65.00** |
| M12 / L = 40 | 4 mm flush | PNP/NPN, N.O. | 10…36 | 75 | 100 | M12 0.3 m pigtail | **IFR203** | **$65.00** |
| M18 / L = 40 | 6 mm flush | PNP/NPN, N.O. | 10…36 | 50 | 100 | M12 0.3 m pigtail | **IGR203** | **$70.00** |
| M30 / L = 40 | 12 mm flush | PNP/NPN, N.O. | 10…36 | 25 | 100 | M12 0.3 m pigtail | **IIR203** | **$81.00** |
| **(B) Uses Pins 3 and 4 • Can directly replace 3-wire NPN sensors** | | | | | | | | |
| M8 / L = 45 | 2 mm flush | PNP/NPN, N.O. | 10…36 | 150 | 100 | M12 0.3 m pigtail | **IER206** | **$65.00** |
| M12 / L = 40 | 4 mm flush | PNP/NPN, N.O. | 10…36 | 75 | 100 | M12 0.3 m pigtail | **IFR206** | **$65.00** |
| M18 / L = 40 | 6 mm flush | PNP/NPN, N.O. | 10…36 | 50 | 100 | M12 0.3 m pigtail | **IGR206** | **$70.00** |
| M30 / L = 40 | 12 mm flush | PNP/NPN, N.O. | 10…36 | 25 | 100 | M12 0.3 m pigtail | **IIR206** | **$81.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | L-bracket for 8 mm sensor | **U20304** | **$6.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

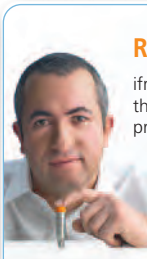
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVW001** | **$17.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVW002** | **$21.00** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVW003** | **$26.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVW004** | **$17.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVW005** | **$21.00** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVW006** | **$26.00** |

ifm cordsets are designed and tested for metal forming applications. Cable material is rated for high temperatures and coupling nuts feature a weld-slag resistant coating.

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Protection: IP67
Operating temperature: 32...185 °F (0...85 °C)
Leakage current: < 0.1 mA
Housing material: Housing: high-grade stainless steel, weld-slag resistant coating
Active face: high-grade stainless steel, weld-slag resistant coating
Connector: PA
Lock nuts: high-grade stainless steel, weld-slag resistant coating

**R&D that delivers solutions**

ifm R&D engineers design products that reduce machine downtime, increase productivity and simplify installation.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

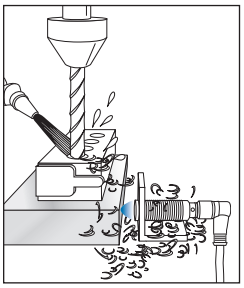
# Top five product features!

- *Stainless steel housing and sensor face withstand physical damage from machining process and moisture ingress*
- *Permanent laser-etched part numbers will not wear off over time*
- *Sensor design dramatically extends life-in-application by a factor of 15 compared to plastic face sensors*
- *Extended sensing ranges increase distance between the sensor and target which increases uptime*
- *Models available with ferrous-only sensing technology which ignores aluminum chips that can cause false triggers*

## Stainless steel sensors for oils and coolants

ifm's metal face sensors are designed and tested to provide reliable position detection in the extreme conditions found in oils and coolants applications. The stainless steel sensors are subjected to a variety of tests that insure reliable performance in application, including high performance IP68 coolant test.

- Stainless steel sensor face and housing withstand damage from machining process and moisture ingress.
- Sensor design extends life-in-application by a factor of 15.
- Extended sensing range increases the distance between the sensor and the target.



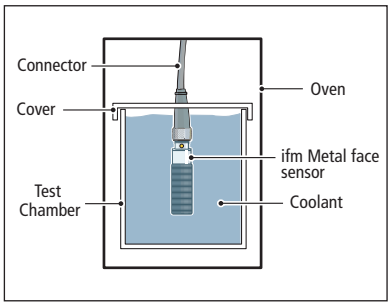
*Ferrous-only technology ignores aluminum chips and eliminates false signals.*

### Sensors with ferrous-only sensing technology

ifm's ferrous-only technology can be used inside machining centers where there is a high density of aluminum chips. The ferrous-only sensor will detect the steel target on fixtures and clamps used to position the product. During the machining operation, the sensor will ignore the aluminum chips that can cause false triggers.

The sensor's multi-coil design provides greater stability and the longest sensing ranges in the market today. The one-piece housing features a durable, stainless steel sensing face that prevents aluminum chips from adhering to and embedding in the face of the sensor.

### Testing that insures reliable performance




***High performance IP68 coolant test***
*Sensors are completely submerged in industrial oils and coolants at a temperature of 176° F. The sensor successfully passes the test and maintains its sensing characteristics.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **M12 Micro DC quick disconnect** | | | | | | | |
| M8 / L = 60 | 2 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IEC200** | **$65.00** |
| M12 / L = 60 | 3 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IFC258** | **$63.00** |
| M18 / L = 70 | 5 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IGC248** | **$65.00** |
| M30 / L = 70 | 10 mm flush | PNP, N.O. | 10…36 | 50 | 100 | **IIC224** | **$70.00** |
| M8 / L = 60 | 2 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IEC203** | **$65.00** |
| M12 / L = 60 | 3 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IFC266** | **$63.00** |
| M18 / L = 70 | 5 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IGC252** | **$65.00** |
| M30 / L = 70 | 10 mm flush | NPN, N.O. | 10…36 | 50 | 100 | **IIC226** | **$70.00** |
| **Ferrous only sensors • M12 Micro DC quick disconnect** | | | | | | | |
| M12 / L = 60 | 2.5 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IFC263** | **$68.00** |
| M12 / L = 60 | 2.5 mm flush | PNP, N.C. | 10…36 | 100 | 100 | **IFC264** | **$68.00** |
| M18 / L = 70 | 4.5 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IGC249** | **$70.00** |
| M18 / L = 70 | 4.5 mm flush | PNP, N.C. | 10…36 | 100 | 100 | **IGC250** | **$70.00** |
| **M8 Pico DC quick disconnect** | | | | | | | |
| M8 / L = 50 | 2 mm flush | PNP, N.O. | 10…36 | 100 | 100 | **IEC201** | **$65.00** |
| M8 / L = 50 | 2 mm flush | NPN, N.O. | 10…36 | 100 | 100 | **IEC202** | **$65.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 8 mm sensor | **E11521** | **$8.00** |
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | L-bracket for 8 mm sensor | **U20304** | **$6.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Technical Specs

| | |
|---|---|
| Protection: | IP67 / IP68 |
| Operating temperature: | -13…158 °F (-25…70 °C) |
| Leakage current: | <0.1 mA |
| Housing material: | Housing: high-grade stainless steel;<br>Active face: high-grade stainless steel;<br>Lock nuts: high-grade stainless steel;<br>Connector housing: TPU<br>Connector coupling nut: nickel plated brass |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC143** | **$23.00** |
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC146** | **$23.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |


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# Top five product features!

- *Extended sensing ranges increase distance between the sensor and target which increases uptime*
- *Models with robust 316 stainless steel housings withstand aggressive oils and coolants*
- *Models with chip-resistant ceramic sensing faces*
- *K=1 sensing technology provides same sensing range for all models*
- *Industry standard M12 Micro DC connectors*

## Robust sensors for oils and coolants

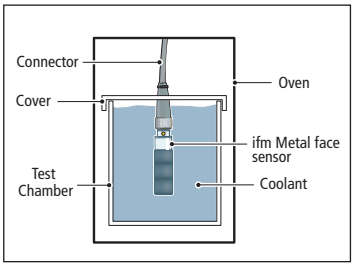
The oils and coolants used in metalworking applications can penetrate into the housing of a sensor resulting in component failure and sensing range fluctuations. Through research and experience, a number of oils and coolants were identified that were used by industry leaders.

ifm's sensors were completely submerged in these oils and coolants at a temperature of 176 °F. The sensor's zero-leak design was verified by measuring the sensing range after prolonged exposure in the chamber. The sensors passed this test with no change in sensing range characteristics.

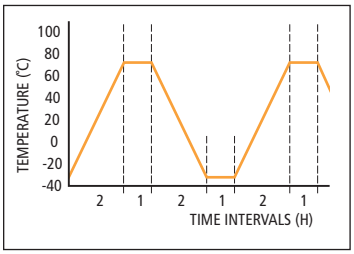
### K factor 1 sensing technology

Standard technology proximity sensors have correction factors for sensing ranges depending on the target material. For example, the range for an aluminum target compared to a mild steel target is reduced by 60%. The K=1 technology sensors have a correction factor of one for all metals. Therefore, these sensors have an equal range for aluminum and steel targets.

### Tested for oils and coolants




***High temperature IP68 coolant test***
*Sensors are submerged in industrial oils and coolants at 176 °F. The sensors successfully pass the test and maintain sensing characteristics.*




***1000-hour cycle test***
*Sensors are cycled between -30 °C and 70°C to apply stress on the electronic and mechanical components and to check overall design integrity.*

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Plastic face** | | | | | | | | |
| M12 / L = 45 | 4 mm flush | PNP, N.O. | 10…36 | 700 | 100 | M12 Micro DC | **IFC204** | **$94.00** |
| M12 / L = 60 | 4 mm flush | PNP, N.O. | 10…36 | 700 | 200 | M12 Micro DC | **IF5775** | **$94.00** |
| M12 / L = 50 | 7 mm nonflush | PNP, N.O. | 10…36 | 700 | 100 | M12 Micro DC | **IFC205** | **$94.00** |
| M12 / L = 60 | 7 mm nonflush | PNP, N.O. | 10…36 | 700 | 200 | M12 Micro DC | **IF5811** | **$94.00** |
| M18 / L = 46 | 8 mm flush | PNP, N.O. | 10…36 | 400 | 100 | M12 Micro DC | **IGC204** | **$95.00** |
| M18 / L = 72 | 8 mm flush | PNP, N.O. | 10…36 | 500 | 250 | M12 Micro DC | **IG5788** | **$95.00** |
| M18 / L = 51 | 12 mm nonflush | PNP, N.O. | 10…36 | 300 | 100 | M12 Micro DC | **IGC205** | **$95.00** |
| M18 / L = 70 | 12 mm nonflush | PNP/NPN, N.O. | 10…36 | 300 | 100 | M12 Micro DC | **IGC213** | **$95.00** |
| M18 / L = 72 | 12 mm nonflush | PNP, N.O. | 10…36 | 300 | 250 | M12 Micro DC | **IG5841** | **$95.00** |
| M30 / L = 50 | 15 mm flush | PNP, N.O. | 10…36 | 100 | 100 | M12 Micro DC | **IIC200** | **$98.00** |
| M30 / L = 50 | 22 mm nonflush | PNP, N.O. | 10…36 | 100 | 100 | M12 Micro DC | **IIC201** | **$98.00** |
| **Ceramic face** | | | | | | | | |
| M12 / L = 45 | 4 mm flush | PNP, N.O. | 10…36 | 700 | 100 | M12 Micro DC | **IFC206** | **$98.00** |
| M12 / L = 70 | 4 mm flush | PNP/NPN, N.O. | 10…36 | 500 | 100 | M12 Micro DC | **IFC210** | **$103.00** |
| M18 / L = 46 | 8 mm flush | PNP, N.O. | 10…36 | 400 | 100 | M12 Micro DC | **IGC206** | **$100.00** |
| M18 / L = 70 | 8 mm flush | PNP/NPN, N.O. | 10…36 | 400 | 100 | M12 Micro DC | **IGC210** | **$105.00** |
| **K factor 1 technology** | | | | | | | | |
| M12 / L = 65 | 3 mm flush | PNP, N.O. | 10…36 | > 2000 | 100 | M12 Micro DC | **IFC259** | **$100.00** |
| M12 / L = 65 | 8 mm nonflush | PNP, N.O. | 10…36 | > 2000 | 100 | M12 Micro DC | **IFC246** | **$100.00** |
| M18 / L = 65 | 5 mm flush | PNP, N.O. | 10…36 | > 2000 | 100 | M12 Micro DC | **IGC232** | **$100.00** |
| M18 / L = 65 | 12 mm nonflush | PNP, N.O. | 10…36 | > 2000 | 100 | M12 Micro DC | **IGC233** | **$100.00** |
| M30 / L = 65 | 10 mm flush | PNP, N.O. | 10…36 | 1000 | 100 | M12 Micro DC | **IIC218** | **$104.00** |
| M30 / L = 65 | 22 mm nonflush | PNP, N.O. | 10…36 | 1000 | 100 | M12 Micro DC | **IIC219** | **$104.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | Quick-mount sleeve for 12 mm sensor | **E11114** | **$13.00** |
| | Quick-mount sleeve for 18 mm sensor | **E11115** | **$14.00** |
| | Quick-mount sleeve for 30 mm sensor | **E10808** | **$17.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

Protection: IP68
Operating temperature: -13…158 °F (-25…70 °C)
Housing material: Special coated brass; 316 stainless steel: Part Nos. IGC232, IGC233, IIC218, IIC219; brass: Part No. IFC259
Active face; LCP: PBT: Part No. IIC219; ceramic: Part Nos. IFC206, IFC210, IGC206, IGC210
Leakage current: < 0.2, < 0.5 mA: Part Nos. IFC210, IGC210; < 0.9 mA: Part No. IGC213


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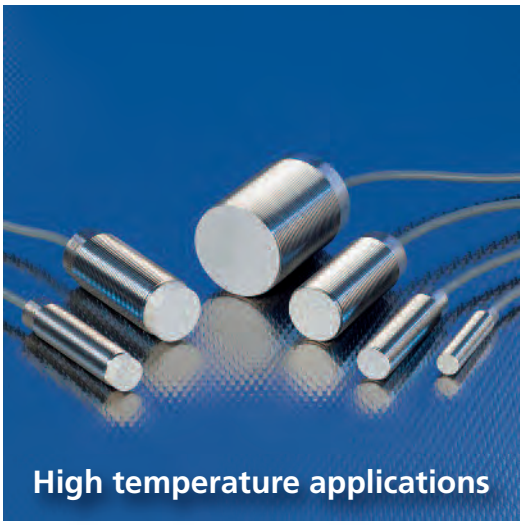



# Top five product features!

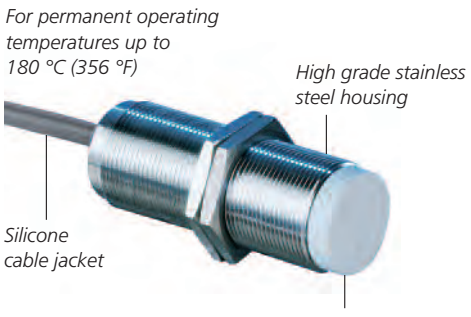
- *High temperature inductive sensors withstand extreme heat*
- *Designed and tested for high temperature applications typically found in the steel and glass industries*
- *For permanent operating temperatures up to 180°C (356°F)*
- *High grade stainless steel housing, Liquid Crystal Polymer (LCP) sensing face and silicone cable jacket*
- *No external amplifier needed*

## High temperature inductive sensors can take the heat

*High temperature inductive sensors can monitor the continuous casting line to the cooling bed in a steel forming application.*

***NEW!*** ifm has expanded its line of inductive sensors for high temperature applications. Now the product line includes 12 mm, 18 mm and additional 30 mm diameter housings to fit most high-temperature applications. The rugged, stainless steel housings can be mounted in permanent operating temperatures up to 180°C (356°F).

These sensors are especially suitable for applications in the steel, glass and furnace industries. The sensors' housings are manufactured with high grade stainless steel, a liquid crystal polymer (LCP) sensing face and a silicone cable jacket.




**Application example: Industrial furnaces**

The high temperature sensor can monitor the open / close position of furnace doors.

**Ideal for high temperature applications**

Steel mills
- Position monitoring on cooling beds
- Open/close monitoring of furnace doors
- Position monitoring on rolling mills

Glass manufacturers
- Open/close monitoring of furnace doors
- Position monitoring on glass conveyors

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 56 | 3 mm flush | PNP, N.O. | 10…35 | 500 | 120 | 5 m silicone cable | **IF6074** | **$210.00** |
| M18 / L = 70 | 5 mm flush | PNP, N.O. | 10…35 | 400 | 150 | 5 m silicone cable | **IG6614** | **$260.00** |
| M18 / L = 77 | 8 mm nonflush | PNP, N.O. | 10…35 | 400 | 150 | 5 m silicone cable | **IG6119** | **$260.00** |
| M30 / L = 70 | 10 mm flush | PNP, N.O. | 10…35 | 200 | 150 | 5 m silicone cable | **II5961** | **$305.00** |
| M30 / L = 79 | 15 mm nonflush | PNP, N.O. | 10…35 | 200 | 150 | 5 m silicone cable | **II5930** | **$305.00** |
| M50 / L = 70 | 20 mm flush | PNP, N.O. | 10…35 | 100 | 150 | 5 m silicone cable | **I95045** | **$360.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Quick-mount sleeve for 12 mm sensor | **E10806** | **$15.00** |
| | Quick-mount sleeve for 18 mm sensor | **E10807** | **$15.00** |
| | Quick-mount sleeve for 30 mm sensor | **E10808** | **$17.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Protection: IP65
Housing material: Stainless steel; active face: LCP
Cable material: Silicone
Temperature: 32…356 °F (0…180 °C)
Leakage current: < 0.5 mA

**Reliable service center**

The ifm service center team provides tech support, product quotes, delivery information and order placement.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

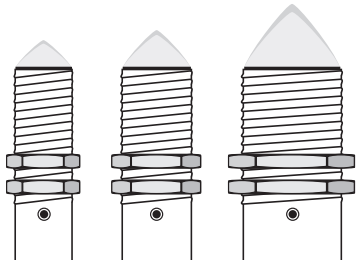
# Top five product features!

- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Models available in universal voltage with a range of 20...250 V AC/DC*
- *Industry standard M12, M18 and M30 diameter housings to fit a variety of industrial automation applications*
- *Available in quick disconnect and prewired options – visit www.ifm.com/us for more sensor options*
- *Robust metal housings are designed and tested to withstand industrial automation applications*

## Flexible mounting and quick installation

**Sensor** + **Cordset** + **Bracket**

A three-piece solution provides flexible mounting and quick installation. ifm has developed accessories and connectors to simplify the installation process for inductive proximity sensors. The overall installation time of a proximity sensor can be further reduced by utilizing ifm efector's quick disconnect cordset for "plug and play" wiring.



*IF 12 mm Diameter* | *IG 18 mm Diameter* | *II 30 mm Diameter*

### Sensing range is determined by the physical size of the sensor

The strength of the radiated sensing field is a function of the size of the core in the sensor. Larger sensors have larger cores, and therefore, longer sensing ranges.

### Select from 3 brackets for installation flexibility

*ifm's snap clamp allows quick replacement of a switch with no tools or mounting nuts. The clamp features a "positive stop" that provides exact placement every time.*

*Metal quick mount sleeve features a "positive stop" for accurate placement every time.*

*L-Bracket secures tubular sensors and mounts quickly.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V AC/DC) | Switching Frequency (Hz) AC/DC | Max Load Current (mA) AC/DC | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 62 | 4 mm flush | N.O. | 20...140 | 25 / 200 | 200 | 1/2" Micro AC | **IF0311** | **$106.00** |
| M12 / L = 62 | 7 mm nonflush | N.O. | 20...140 | 25 / 90 | 200 | 1/2" Micro AC | **IF0312** | **$106.00** |
| M18 / L = 72 | 8 mm flush | N.O. | 20...250 | 25 / 60 | 250 / 100 | 1/2" Micro AC | **IG0344** | **$112.00** |
| M18 / L = 72 | 12 mm nonflush | N.O. | 20...250 | 25 / 90 | 250 / 100 | 1/2" Micro AC | **IG0345** | **$112.00** |
| M30 / L = 72 | 15 mm flush | N.O. | 20...250 | 25 / 40 | 350 / 100 | 1/2" Micro AC | **II0340** | **$117.00** |
| M30 / L = 72 | 22 mm nonflush | N.O. | 20...250 | 25 / 70 | 350 / 100 | 1/2" Micro AC | **II0341** | **$117.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | Quick-mount sleeve for 12 mm sensor | **E11114** | **$13.00** |
| | Quick-mount sleeve for 18 mm sensor | **E11115** | **$14.00** |
| | Quick-mount sleeve for 30 mm sensor | **E10808** | **$17.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

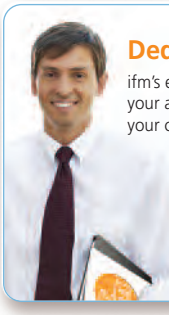
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" Micro AC (3-pin) 2 m, PVC | **E18212** | **$15.00** |
| | 1/2" Micro AC (3-pin) 5 m, PVC | **E18213** | **$19.00** |
| | 1/2" Micro AC (3-pin) 2 m, PVC | **E18214** | **$15.00** |
| | 1/2" Micro AC (3-pin) 5 m, PVC | **E18215** | **$19.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Protection: IP67
Operating Temperature: -13...158 °F (-25...70 °C)
Leakage Current: < 0.8 mA: Part Nos. IF0311, IF0312
< 1 mA @ 250 VAC: Part Nos. IG0344, IG0345, II0340, II0341
Housing materials: Special coated brass; active face; PBT: Part Nos. IF0311, IF0312, II0340, II0341
Special coated brass; active face; PA, PBT: Part Nos. IG0344, IG0345

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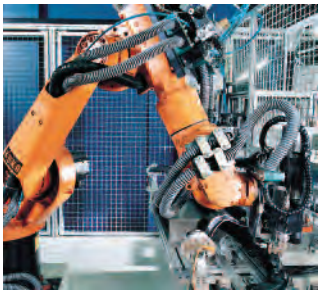
# Top five product features!

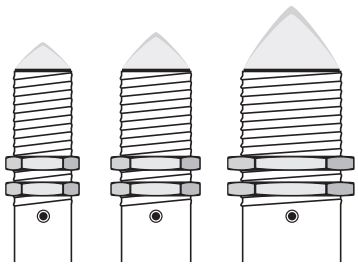
- *Extended sensing ranges reduce failure from mechanical damage and increase uptime*
- *Models available in universal voltage with a range of 20...250 V AC/DC*
- *Industry standard M12, M18 and M30 diameter housings to fit a variety of industrial automation applications*
- *2 meter high-flex PVC cable*
- *Available in quick disconnect and prewired options – visit www.ifm.com/us for more sensor options*

## Robust housings designed and tested for industrial automation



ifm's prewired tubular sensors provide reliable position detection throughout the industrial automation process. The robust, metal housings are ideal for tough applications found in robotics, packaging, assembly automation and material handling.

Extended sensing ranges allow the sensors to be placed farther away from a target which reduces the chance of damage from physical impact. The sensor's high-flex PVC cable can withstand repetitive movement.



*IF*
*12 mm*
*Diameter*

*IG*
*18 mm*
*Diameter*

*II*
*30 mm*
*Diameter*

### Sensing range is determined by the physical size of the sensor

The strength of the radiated sensing field is a function of the size of the core in the sensor. Larger sensors have larger cores, and therefore, longer sensing ranges.

### Select from 3 brackets for installation flexibility

*ifm's snap clamp allows quick replacement of a switch with no tools or mounting nuts. The clamp features a "positive stop" that provides exact placement every time.*

*Metal quick mount sleeve features a "positive stop" for accurate placement every time.*

*L-bracket secures tubular sensors and mounts quickly.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

Search Bar

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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (VAC / VDC) | Switching Frequency (Hz) AC/DC | Max Load Current (mA) AC/DC | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 71 | 2 mm flush | N.O. | 20...250 | 25 | 250 | Prewired 2 m cable | **IF0303** | **$98.00** |
| M12 / L = 71 | 4 mm nonflush | N.O. | 20...250 | 25 | 250 | Prewired 2 m cable | **IF0302** | **$98.00** |
| M18 / L = 80 | 5 mm flush | N.O. | 20...250 | 25 / 50 | 350 / 100 | Prewired 2 m cable | **IG0305** | **$99.00** |
| M18 / L = 80 | 8 mm nonflush | N.O. | 20...250 | 25 / 50 | 350 / 100 | Prewired 2 m cable | **IG0307** | **$99.00** |
| M30 / L = 81 | 10 mm flush | N.O. | 20...250 | 25 / 50 | 350 / 100 | Prewired 2 m cable | **II0272** | **$102.00** |
| M30 / L = 81 | 15 mm nonflush | N.O. | 20...250 | 25 / 25 | 350 / 100 | Prewired 2 m cable | **II0274** | **$102.00** |

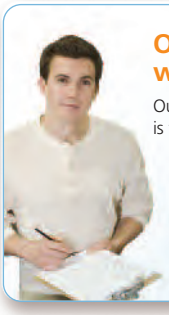
## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | Quick-mount sleeve for 12 mm sensor | **E11114** | **$13.00** |
| | Quick-mount sleeve for 18 mm sensor | **E11115** | **$14.00** |
| | Quick-mount sleeve for 30 mm sensor | **E10808** | **$17.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Protection: IP67
Operating Temperature: -13...176 °F (-25...80 °C)
Leakage Current: < 2 mA: Part Nos. IF0302, IF0303
< 2.5 mA: Part Nos. IG0305, IG0307, II0272, II0274
Housing materials: Special coated brass; active face; PC: Part Nos. IF0302, IF0303, IG0305, IG0307
Special coated brass: Part Nos. II0272, II0274
Special coated brass; active face; PBT: Part Nos. II0272, II0274

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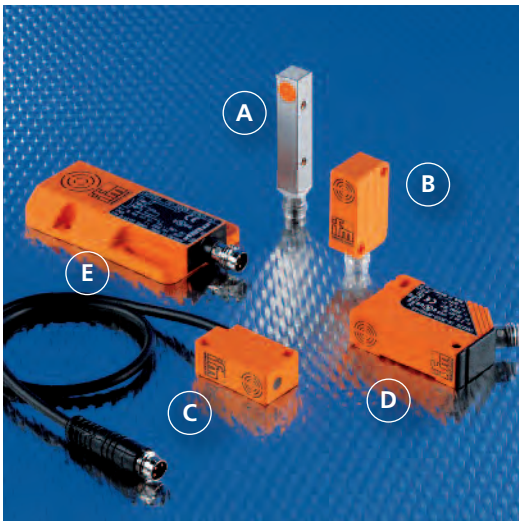


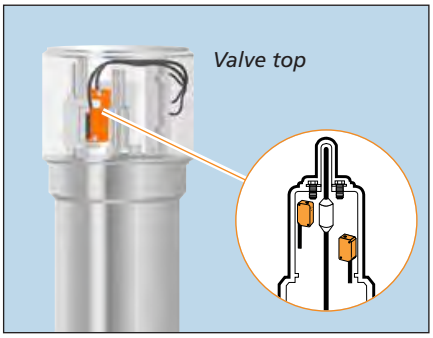

# Top five product features!

- *Small package, large sensing range! Compact design is ideal for applications with limited mounting space*
- *Sensors retrofit V3 mechanical switches which increases uptime and reduces installation time*
- *Wiring flexibility – sensors available with quick disconnect or prewired 300 mm cable with M8 Pico connector*
- *Robust industry standard housings designed and tested to withstand industrial automation environments*
- *Plastic and metal housings to suit application needs*

## Compact sensors with powerful performance

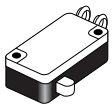
ifm efector's small rectangular proximity sensors are ideal for sensing the "open" and "closed" positions of a rising stem valve. The housing design of the IS Series family is a direct replacement for V3 style mechanical devices. The sensors are based on standard inductive technology and are mounted in the valve top for non-contact sensing of the stem.

ifm proximity sensors are designed as a sensor "system" with surface-mounted components on flexible polyamide film. All elements are carefully matched to expand and contract together, minimizing the effects of thermal shock. Sensors with an IP67 rating are constructed to withstand washdown conditions.

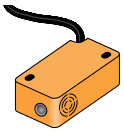



*Compact rectangular sensors can be mounted in the valve top for non-contact sensing of the stem.*

### Retrofits V3 style mechanical switches



*V3 style mechanical device*



*ifm Series IS non-contact sensor*

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

| | Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| A | 52 x 8 x 8 | 2 mm flush | PNP, N.O. | 10...36 | 2000 | 250 | M8 Pico | **IL5004** | **$92.00** |
| B | 28 x 10 x 16 | 2 mm flush | PNP, N.O. | 10...36 | 800 | 200 | M8 Pico | **IS5035** | **$100.00** |
| C | 28 x 10 x 16 | 2 mm flush | PNP, N.O. | 10...36 | 800 | 200 | Prewired 2 m cable | **IS5001** | **$80.00** |
| | 28 x 10 x 16 | 2 mm flush | NPN, N.O. | 10...36 | 800 | 200 | Prewired 2 m cable | **IS5003** | **$80.00** |
| | 28 x 10 x 16 | 2 mm flush | PNP/NPN, N.O. / N.C. | 10...36 | 2000 | 200 | Prewired 2 m cable | **IS5026** | **$83.00** |
| | 28 x 10 x 16 | 2 mm flush | PNP, N.O. | 10...36 | 800 | 200 | Pigtail 0.3 m cable w/ M8 Pico | **IS5068** | **$103.00** |
| D | 40 x 12 x 26 | 2 mm flush | PNP, N.O. | 10...36 | 1400 | 250 | M8 Pico | **IN5230** | **$106.00** |
| | 40 x 12 x 26 | 4 mm nonflush | PNP, N.O. | 10...36 | 1300 | 250 | M8 Pico | **IN5212** | **$106.00** |
| | 40 x 12 x 26 | 2 mm flush | PNP, N.O. | 10...36 | 1400 | 250 | Prewired 2 m cable | **IN5121** | **$87.00** |
| | 40 x 12 x 26 | 2 mm flush | NPN, N.O. | 10...36 | 1400 | 250 | Prewired 2 m cable | **IN5125** | **$87.00** |
| | 40 x 12 x 26 | 4 mm nonflush | PNP, N.O. | 10...36 | 1300 | 250 | Prewired 2 m cable | **IN5129** | **$87.00** |
| | 40 x 12 x 26 | 4 mm nonflush | NPN, N.O. | 10...36 | 1300 | 250 | Prewired 2 m cable | **IN5133** | **$87.00** |
| E | 60 x 36 x 10 | 8 mm nonflush | PNP, N.O. | 10...36 | 300 | 250 | M8 Pico | **IW5064** | **$101.00** |
| | 60 x 36 x 10 | 8 mm nonflush | NPN, N.O. | 10...36 | 120 | 250 | Prewired 2 m cable | **IW5008** | **$91.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC143** | **$23.00** |
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |
| | M8 Pico DC (3-pin) 10 m, PUR | **EVC146** | **$23.00** |

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## Technical Specs

| | |
|---|---|
| Protection: | IP65: Part Nos. IL5004, IN5212, IW5064<br>IP67: Part Nos. IN5121, IN5125, IN5129, IN5230, IN5133, IS5001, IS5003, IS5026, IS5035, IW5008 |
| Operating Temperature: | -13...158 °F (-25...70 °C): Part Nos. IL5004, IS5001<br>-13...176 °F (-25...80 °C): Part Nos. IN5121, IN5125, IN5129, IN5133, IN5212, IS5003, IS5026, IS5035, IW5008, IS5068<br>-4...176 °F (-20...80 °C): Part Nos. IN5230, IW5064 |
| Leakage Current: | Negligible |
| Housing materials: | Special coated brass; active face; LCP: Part No. IL5004<br>PBT: Part Nos. IS5026, IN5121, IN5125, IN5129, IN5133, IN5212, IN5230, IS5001, IS5003, IS5035, IS5068, IW5008 and IW5064 |

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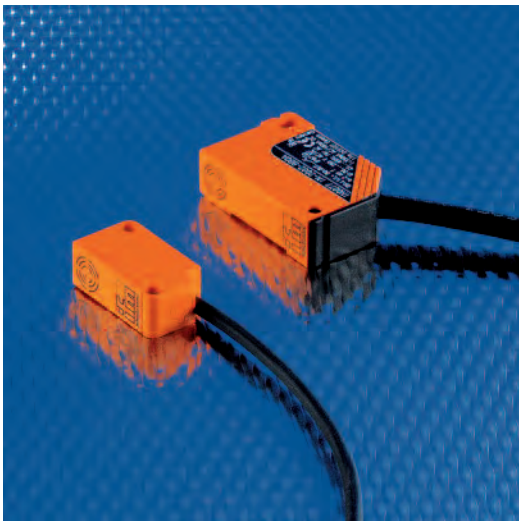


# Top five product features!

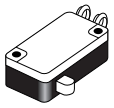
- Robust industry standard miniature housing for applications with limited mounting space
- Sensors retrofit V3 style mechanical switches which increases uptime and reduces installation time
- Corrosion resistant plastic housing designed and tested to withstand industrial automation environments
- Wide dual voltage range of 20…250 AC/DC
- 2 m cable with PVC jacket options

## Compact sensors with powerful performance

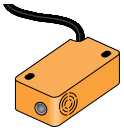
ifm efector's small rectangular proximity sensors are ideal for sensing the "open" and "closed" positions of a rising stem valve. The housing design of the Series IS family is a direct replacement for V3 style mechanical devices. The sensors are based on standard inductive technology and are mounted in the valve top for non-contact sensing of the stem.

ifm proximity sensors are designed as a sensor "system" with surface-mounted components on flexible polyamide film. All elements are carefully matched to expand and contract together, minimizing the effects of thermal shock. Sensors with an IP67 rating are constructed to withstand washdown conditions.

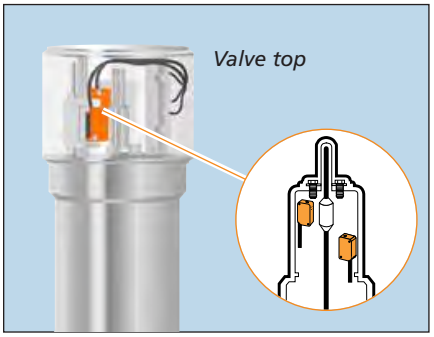
### Retrofits V3 style mechanical switches



*V3 style mechanical device*



*ifm Series IS non-contact sensor*




*Compact rectangular sensors can be mounted in the valve top for non-contact sensing of the stem.*

# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V) AC/DC | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| 28 x 10 x 16 | 2 mm flush | N.O. | 20...140 AC / 10...140 DC | 25 | 200 | Prewired 0.3 m cable | **IS3501** | **$88.00** |
| 28 x 10 x 16 | 2 mm flush | N.C. | 20...140 AC / 10...140 DC | 25 | 200 | Prewired 0.3 m cable | **IS0008** | **$88.00** |
| 40 x 12 x 26 | 2 mm flush | N.O. | 20...250 | 25 / 50 | 350 / 250 | Prewired 2 m cable | **IN0097** | **$95.00** |
| 40 x 12 x 26 | 4 mm nonflush | N.O. | 20...250 | 25 / 50 | 350 / 250 | Prewired 2 m cable | **IN0098** | **$95.00** |

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## Technical Specs

Protection: IP67
Operating Temperature: -4...176 °F (-20...80 °C): Part Nos. IS3501, IS0008
-13...176 °F (-25...80 °C): Part Nos. IN0097, IN0098
Leakage Current [mA]: < 0.8: Part Nos. IS3501, IS0008
< 2.0 (AC 250 V) / < 1.3 (AC 110 V) / < 0.8 (DC 24 V): Part Nos. IN0097, IN0098
Housing material: PBT


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Wiring Technology: Cordset solutions 250 - 261

# Top five product features!

- *ID and IM Series feature extended sensing ranges that reduce failure from mechanical damage and increase uptime*
- *IM Series "cube" sensing face can rotate in one of five different directions for application versatility*
- *IM "cube" easily retrofits limit switches using only half the space*
- *IM "cube" with two corner-mounted bright LEDs indicate power and switching status*
- *ID unit with terminal chamber offers convenient wiring of various lengths*

## Rugged housing for industrial applications

IM rectangular inductive proximity sensors feature extended sensing ranges for rugged industrial automation applications. The sensor can be placed farther away from the target which provides protection against mechanical damage in applications such as conveying.

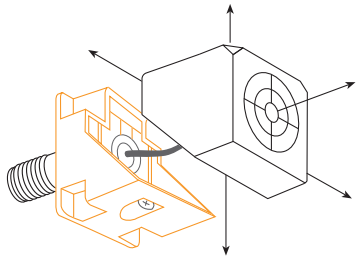
Ideal for packaging lines and conveying applications, the IM "Cube" sensor offers two corner-mounted LEDs to indicate power and output.

### Compact size, long sensing range

The compact sensor "cube" measures 40 x 40 x 66 mm and features a sensing face that rotates in one of five different directions. An integrated mounting bracket offers simple installation and the sensor can be rotated in one of five directions for application versatility.

The ID unit is ideal for floor conveyor applications. The ID also has a "mechanical quick disconnect" feature; it snaps onto a mounting bracket, or DIN rail, so any damaged sensor can be replaced in seconds.

### Flexible mounting options



*The IMC "Cube" sensor can rotate in one of five different directions for application versatility.*

***PNP to NPN converter cordset***

*This cordset converts PNP outputs to NPN outputs.*

*Part no.: EVC01E (5 meters)*
*List price (1-pc): $19.00*

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Sensor Termination | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| 40 x 40 x 66 | 20 mm flush | PNP, N.O. | 10...36 | 100 | 200 | M12 Micro DC | **IM5115** | **$50.00** |
| 40 x 40 x 66 | 35 mm nonflush | PNP, N.O. | 10...36 | 80 | 200 | M12 Micro DC | **IM5116** | **$50.00** |
| 92 x 80 x 40 | 50 mm flush* | PNP, N.O. | 10...36 | 70 | 250 | M12 Micro DC | **ID5055** | **$170.00** |
| 105 x 80 x 40 | 60 mm nonflush | PNP, N.O. | 10...36 | 100 | 250 | M12 Micro DC | **ID5046** | **$221.00** |

*When mounted nonflush, operating distance of Part No. ID 5055 is 35 mm

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Limit switch adapter bracket | **U20200** | **$21.00** |
| | Protective Bracket for ID | **E10730** | **$12.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

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## Technical Specs

Protection: IP67
Operating Temperature: -13...158 °F (-25...70 °C)
-13…176 °F (-25…80 °C): Part No. ID5046
Leakage Current: Negligible
Housing material: PA (polyamide)

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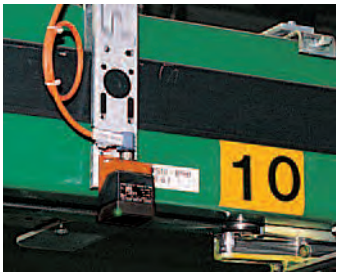
# Top five product features!

- *ID and IM Series feature extended sensing ranges that reduce failure from mechanical damage and increase uptime*
- *IM Series "cube" sensing face can rotate in one of five different directions for application versatility*
- *IM "cube" easily retrofits limit switches using only half the space*
- *IM "cube" with two corner-mounted bright LEDs indicate power and switching status*
- *ID unit with terminal chamber offers convenient wiring of various lengths*

## Robust rectangular sensors easily retrofit limit switches

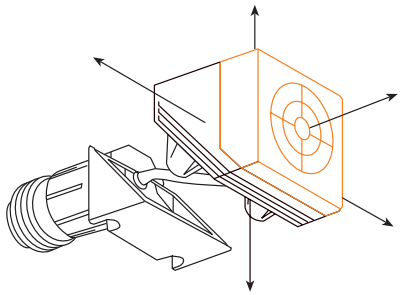



Smaller and more robust that traditional limit switches, ifm's IM Series rectangular inductive proximity sensors feature extended sensing ranges for industrial automation applications. Both ID and IM Series sensors offer extended sensing ranges that allow them to be placed farther away from the target which provides protection against mechanical damage. Ideal for packaging lines and conveying applications, the sensors offer bright LEDs to indicate power and output.

*Traditional limit switches are large with moving parts*

*IM Cube is compact with no moving parts.*

### Application flexibility



*The IM "Cube" sensor can rotate in one of five different directions for application versatility.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V) AC/DC | Switching Frequency (Hz) AC/DC | Max Load Current (mA) AC/DC | Sensor Termination | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| 40 x 40 x 66 | 20 mm flush | N.O. | 20...140 | 25 / 100 | 450 | 1/2" Micro AC | **IM0055** | **$100.00** |
| 40 x 40 x 66 | 35 mm nonflush | N.O. | 20...140 | 25 / 100 | 350 | 1/2" Micro AC | **IM0041** | **$100.00** |
| 40 x 40 x 120 | 15 mm flush | Programmable N.O. / N.C. | 20...250 | 20 / 55 | 350 (…50°C), 250 (…80°C) / 100 | 1/2" NPT Terminal Chamber | **IM0020** | **$107.00** |
| 40 x 40 x 120 | 20 mm nonflush | Programmable N.O. / N.C. | 20...250 | 20 / 55 | 350 (…50°C), 250 (…80°C) / 100 | 1/2" NPT Terminal Chamber | **IM0013** | **$107.00** |
| 40 x 80 x 112 | 50 mm flush* | N.O. | 20...140 AC/ 10…140 DC | 25 | 450 | 1/2" Micro AC | **ID0039** | **$176.00** |
| 40 x 80 x 92 | 50 mm flush* | N.O. | 20...140 AC/ 10…140 DC | 25 | 450 | 7/8" Mini AC | **ID0038** | **$176.00** |
| 40 x 80 x 105 | 60 mm nonflush | Programmable N.O. / N.C. | 20...250 | 4 | 350 (…50°C), 250 (…80°C)/100 | 1/2" NPT Terminal Chamber | **ID0036** | **$203.00** |

*When mounted nonflush, operating distance of Part Nos. ID 0039 and ID 0038 is 35 mm

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Limit switch adapter bracket | **U20200** | **$21.00** |
| | Protective Bracket for ID | **E10730** | **$12.00** |

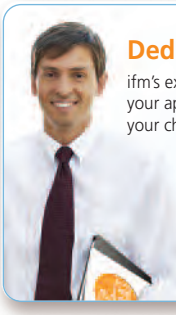
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" Micro AC (3-pin) 2 m, PVC | **E18212** | **$15.00** |
| | 1/2" Micro AC (3-pin) 5 m, PVC | **E18213** | **$19.00** |
| | 1/2" Micro AC (3-pin) 2 m, PVC | **E18214** | **$15.00** |
| | 1/2" Micro AC (3-pin) 5 m, PVC | **E18215** | **$19.00** |
| | 7/8" Mini AC (3-pin) 4 m, PVC | **W80610** | **$25.00** |
| | 7/8" Mini AC (3-pin) 4 m, PVC | **W80632** | **$25.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Protection: IP67
Operating Temperature: -13...158 °F (-25...70 °C)
Leakage Current: < 1.7 mA
Housing material: PPE
Active face: PPE
End cap: diecast zinc
Connector housing: special coated brass
Bracket; diecast zinc; PPE: Part No. IM0055
Connector housing: brass
Bracket; diecast zinc: Part No. IM0041

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# Top five product features!

- *Ring and tube inductive sensors detect metal objects inside tubing*
- *Static and dynamic versions with extremely quick response times*
- *High resolution – even steel balls with 0.6 mm diameters can be detected*
- *Pulse stretching and sensitivity adjustable via potentiometer*
- *Normally open and normally closed options available in varying diameters and connection options*

## ifm's ring and tube inductive sensors are ideal for feeder process applications

ifm's ring and tube inductive sensors detect small metal objects that pass through tubing. These sensors are ideal for assembly automation applications that include feeder processes and parts counting. Two output versions are available: static and dynamic.

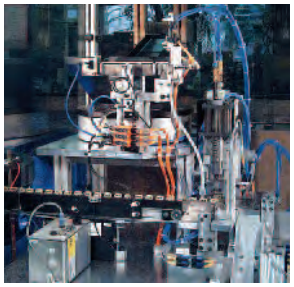
### Static and dynamic operating principal

**Static sensors** operate like an inductive proximity sensor and generate an output signal when there is metal in the detection zone. These sensors can be used for a variety of feed applications that include detecting falling screws or monitoring for jams. Static-style sensors are also used in wire-brake detection applications.

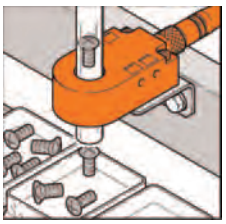
**Dynamic sensors** are used when very small parts with low mass or fast-moving parts need to be detected. When the sensor detects a part, it generates an output, which is adjustable from 0.1 to 150 ms. The resolution is also adjustable for the application needs and will remain stable, even in the case of metal contamination in the tube.

***Ring and tube sensors with high resolution***

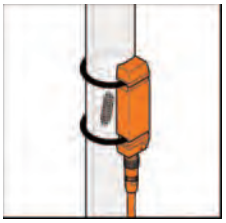
*Ideal for assembly automation applications that include feeder processes and parts counting.*



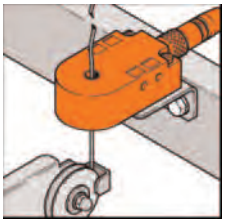
### Application solutions



*Ring sensor detects parts in hoses*



*Tube sensor detects parts in feed hose*



*Wire break detection*


Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
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# Product + accessory selector

| Ring Diameter (mm) | Sensing Range (mm) | Output Function | Operating Principle | Resolution Steel Ball (Ø mm) | Electrical Connection | Pulse Stretching (ms) | Response Time/ Fall Time (ms) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| **Ring sensors** | | | | | | | | | |
| 10.1 | – | PNP, N.O. / N.C. | Static | 1.5 | M12 Micro | 10…150 | 0.5 / 10 | **I7R201** | **$188.00** |
| 10.1 | – | NPN, N.O. / N.C. | Static | 1.5 | M12 Micro | 10…150 | 0.5 / 10 | **I7R202** | **$188.00** |
| 15.1 | – | PNP, N.O. / N.C. | Static | 2 | M12 Micro | 10…150 | 0.5 / 10 | **I7R205** | **$188.00** |
| 15.1 | – | NPN, N.O. / N.C. | Static | 2 | M12 Micro | 10…150 | 0.5 / 10 | **I7R206** | **$188.00** |
| 20.1 | – | PNP, N.O. / N.C. | Static | 2.5 | M12 Micro | 10…150 | 0.5 / 10 | **I7R209** | **$188.00** |
| 20.1 | – | NPN, N.O. / N.C. | Static | 2.5 | M12 Micro | 10…150 | 0.5 / 10 | **I7R210** | **$188.00** |
| 25.1 | – | PNP, N.O. / N.C. | Static | 3 | M12 Micro | 10…150 | 0.5 / 10 | **I7R213** | **$188.00** |
| 25.1 | – | NPN, N.O. / N.C. | Static | 3 | M12 Micro | 10…150 | 0.5 / 10 | **I7R214** | **$188.00** |
| 51 | – | PNP, N.O. / N.C. | Static | 6 | M12 Micro | 10…150 | 0.5 / 10 | **I7R217** | **$262.00** |
| 10.1 | – | PNP, N.O. / N.C. | Dynamic | 0.6 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R203** | **$198.00** |
| 10.1 | – | NPN, N.O. / N.C. | Dynamic | 0.6 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R204** | **$198.00** |
| 15.1 | – | PNP, N.O. / N.C. | Dynamic | 0.8 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R207** | **$198.00** |
| 15.1 | – | NPN, N.O. / N.C. | Dynamic | 0.8 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R208** | **$198.00** |
| 20.1 | – | PNP, N.O. / N.C. | Dynamic | 1 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R211** | **$198.00** |
| 20.1 | – | NPN, N.O. / N.C. | Dynamic | 1 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R212** | **$198.00** |
| 25.1 | – | PNP, N.O. / N.C. | Dynamic | 1.2 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R215** | **$188.00** |
| 25.1 | – | NPN, N.O. / N.C. | Dynamic | 1.2 | M12 Micro | 0.1…150 | 0.2 / 0.2 | **I7R216** | **$188.00** |
| **Tube sensors** | | | | | | | | | |
| – | 14 | PNP, N.O. | Static | 3 | M8 Pico | 100 | 0.5 / 100 | **I85000** | **$188.00** |
| – | 14 | NPN, N.O. | Static | 3 | M8 Pico | 100 | 0.5 / 100 | **I85001** | **$188.00** |
| – | 20 | PNP, N.O. | Dynamic | 1 | M8 Pico | 100 | 0.2 / 100 | **I85004** | **$188.00** |
| – | 20 | NPN, N.O. | Dynamic | 1 | M8 Pico | 100 | 0.2 / 100 | **I85005** | **$188.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 10…35 VDC |
| Current rating: | 200 mA |
| Current consumption: | Ring sensors: static < 11 mA; dynamic: < 20 mA<br>Tube sensors: static < 15 mA; dynamic: < 25 mA |
| Voltage drop: | < 2 V |
| Part speed: | < 35 ms |
| Housing material: | Ring sensors: PA (polyamide); ring: POM<br>Tube sensors: polycarbonate |
| Ambient temperature: | -13…158 °F (-25…70 °C) |
| Protection: | IP67 |


Process Sensors: *Pressure* *Flow* *Level* *Temperature*

Industrial Networks: *AS-i network* *Safety systems*

ID Systems: *RF identification systems*

Machine Condition: *Diagnostic systems*

Power Supplies: *Power supplies*

Wiring Technology: *Cordset solutions*

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# Top five product features!

- Ideal for sensing non-metallic objects such as plastic, glass, wood and paper
- Robust stainless steel housing withstands harsh industrial environments
- Potentiometer enables easy sensitivity setting
- High performance PEEK sensing face
- 4-port LED for 360° visibility

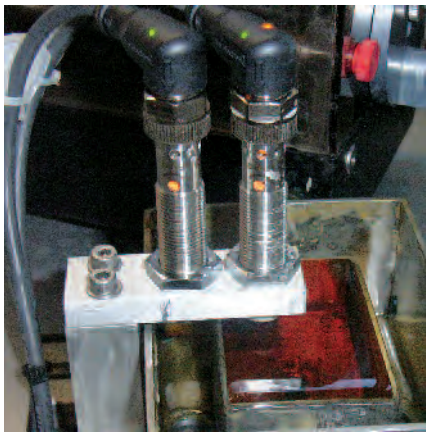
## Capacitive proximity sensors detect the position of non-metallic objects

Capacitive proximity sensors use non-contact sensing and solid state circuitry to ensure durability in the most aggressive environments.

In contrast to inductive sensors, which detect metallic objects, capacitive sensors can detect almost any material. They are used in the wood, paper, glass, plastic, food, and chemical industries.

### Potentiometer adjustment

The sensors feature a potentiometer that adjusts the sensitivity of the sensor. This feature allows the sensor to be precisely tuned for a specific application.



### Improved noise immunity

*Switching power supplies, variable frequency motor drives, and high-powered communication devices are found in most industrial plants. These devices can generate high noise levels contributing to erratic sensor operation.*

*As a result, ifm's patented "charge balance" circuit design offers reliable noise immunity and enables ifm capacitive sensors to perform effectively in high noise level environments.*

***PNP to NPN converter cordset***

*This cordset converts PNP outputs to NPN outputs.*

*Part no.: EVC01E (5 meters)*
*List price (1-pc): $19.00*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

| Dimensions (mm) | Sensing Range | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M12 / L = 60 | 4 mm flush | PNP, N.O. | 10...36 | 50 | 100 | M12 Micro | **KF5001** | **$129.00** |
| M12 / L = 61 | 8 mm nonflush | PNP, N.O. | 10...36 | 50 | 100 | M12 Micro | **KF5002** | **$129.00** |

## Optional Accessories

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
| | Quick-mount sleeve for 12 mm sensor with hex nut (M16 x 1) | **E11114** | **$13.00** |
| | Snap clamp for 12 mm sensor | **E11047** | **$8.00** |
| | L-bracket for 12 mm sensor | **U20301** | **$6.00** |

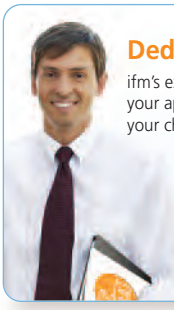
## Cordsets

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |
| | M12 Micro DC (4-pin) 10 m, PUR, LED | **EVC009** | **$19.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Operating voltage: | 10...36 VDC |
| Voltage drop: | 2.5 V |
| Supply current: | < 12 mA |
| Operating temperature: | -13...158 °F (-25...70 °C) |
| Housing material: | stainless steel, PEEK |
| Protection: | IP65 |
| Switchpoint drift of Sr: | ± 20 % |
| Correction factors: | water 1, glass 0.6, ceramics 0.5, PVC 0.4 |

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# Top five product features!

- *A reliable alternative to mechanical and optical touch sensors using dynamic and static sensing principles*
- *Sensor is actuated with a light touch of a single finger*
- *Housing is resistant to impact and wear, rated IP69K for water ingress*
- *Dynamic sensing principle ignores build-up on sensing face*
- *M22 x 1.5 threads allows direct mounting in many areas*

## Cylindrical capacitive touch sensitive sensors for machine start / stop with light finger touch

***NEW!*** The KT Series capacitive touch sensors are used for starting and stopping machinery, assembly lines and processes. When compared to mechanical pushbuttons, the KT Series sensors offer many advantages. Utilizing the capacitive principle, the KT Series sensors are electronic sensors with no moving parts to wear out. The completely sealed device is rated IP69K, prevents oil ingress and ignores build-up on the sensing face. KT Series sensors use roughly half the space of mechanical pushbuttons freeing up valuable space behind panels. Robust plastic and stainless steel housings are available.

### Dynamic and static capacitive sensing principles for reliable operation

ifm offers two types of devices for start / stop control. KT touch sensors utilizing the dynamic capacitive principle detect a hand or finger for actuation. The output signal is actuated for 300 mS. This principle allows the sensor to ignore build up on the sensing face and suppress interference such as water, layers of ice, or particles that can stick to the sensor face. Even if the operator is wearing a glove, the sensor will trigger. Static touch sensors detect hands and objects for as long as the sensing face is damped. Static touch sensors also work through glass.

### Versatile and simple mounting

The KT Series capacitive touch sensors have a M22 thread along the entire length of the housing. Simply screw the sensor into a M22 tapped hole until it bottoms out. There is no need to worry about the alignment of the sensing face as the symbol disc is snapped in place after mounting. KT Series capacitive touch sensors may also be mounted in thru holes 22.5 mm or larger by using the supplied lock nut.

*Mechanical machine start/stop buttons are susceptible to wear and tear. ifm's cylindrical touch sensitive sensors operate without wear because they react to light contact for actuation and therefore provide a long life-in-application.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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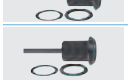
# Product + accessory selector

| | Operating Principle | Connection | Housing Material | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| | Dynamic | 0.3 m PUR cable | PA | **KT5101** | **$68.00** |
| | Dynamic | 0.3 m PUR with M12 pigtail | PA | **KT5102** | **$68.00** |
| | Dynamic | 0.3 m PUR cable | Stainless steel | **KT5301** | **$94.00** |
| | Static | 0.3 m PUR cable | Stainless steel | **KT5305** | **$94.00** |
| | Static | 0.3 m PUR cable | PA | **KT5105** | **$68.00** |
| | Static | 0.3 m PUR with M12 pigtail | PA | **KT5106** | **$68.00** |
|  | Dynamic | 0.3 m PUR cable with LED | PA | **KT5109*** | **$68.00** |

* With controllable green LED via pin 2.

## Required accessories

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
|  | Symbol disc lettering: START | **E12377** | **$8.00** |
| | Symbol disc lettering: STOP | **E12378** | **$8.00** |
| | Symbol disc symbol: on | **E12379** | **$8.00** |
| | Symbol disc symbol: off | **E12380** | **$8.00** |
| | Symbol disc transparent | **E12386** | **$6.50** |

## Cordsets

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Operating voltage: | 24 (12…30) V DC |
| Supply current: | 30 mA |
| Current rating: | 500 mA |
| Output: | PNP, N.O. |
| Operating temperature: | -104...185 °F (-40...85 °C) |
| Protection: | IP65, IP67, IP69K |

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# Top five product features!

- *A reliable alternative to mechanical and optical touch sensors using dynamic and static sensing principles*
- *Ergonomic design allows sensor to be actuated with a single finger or hand*
- *Robust polycarbonate housing is resistant to impact and wear, rated IP69K*
- *Dynamic sensing principle ignores build-up on sensing face*
- *Optical feedback provided by switching status LEDs*

## Capacitive touch sensitive sensors for machine start / stop with light hand touch

***NEW!*** Machine operators often require simple start / stop control of their plant machinery by simply pushing or pressing a large button. Traditional mechanical start / stop buttons are often used but these devices are susceptible to wear and tear. ifm now introduces the KT Series capacitive touch sensitive sensor that operates using non-contact sensing and solid state circuitry. With this design, the KT touch sensors will respond with simply a single finger or light touch of the hand, providing an ergonomic advantage.

### Designed to provide long-life in application

The KT's robust housing is made of scratch-resistant polycarbonate. The completely sealed device is rated IP69K, prevents oil ingress, and ignores build-up on the sensing face.

### Dynamic and static capacitive sensing principles for reliable operation

ifm offers two types of devices for start / stop control. KT touch sensors utilizing the dynamic capacitive principle detect a hand or finger for actuation. The output signal is actuated for 300 mS. This principle allows the sensor to ignore build up on the sensing face and suppress interference such as water, layers of ice, or particles that can stick to the sensor face. Even if the operator is wearing a glove, the sensor will trigger.

Static touch sensors detect hands and objects for as long as the sensing face is damped. This is particularly useful in two-hand control or anti-tie-down applications. Static touch sensors also work through glass.

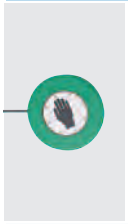
### Easy mounting

KT sensors are easily mounted directly to a wall or in other areas with an L-bracket specifically designed to fit the KT. Cover rings in a variety of colors are also available for function association.

*Mechanical machine start/stop buttons are susceptible to wear and tear. ifm's KT Series touch sensitive sensors operate without wear because they react to light contact for actuation and therefore provide a long life-in-application.*

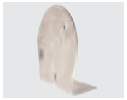
Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
Search Bar
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| | Operating Principle | Output Function | Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
|  | Dynamic | PNP, N.O. | 2 m PUR cable | **KT5001** | **$140.00** |
| | Dynamic | PNP, N.O. | 2 m PUR cable, green LEDs controlled via pin 2 | **KT5009** | **$140.00** |
| | Dynamic | PNP, N.O. | 0.3 m PUR cable with M8 pigtail | **KT5002** | **$150.00** |
| | Dynamic | NPN, N.O. | 0.3 m PUR cable with M8 pigtail | **KT5007** | **$150.00** |
| | Static | PNP, N.O. | 2 m PUR cable | **KT5005** | **$152.00** |
| | Static | PNP, N.O. | 0.3 m PUR cable with M8 pigtail | **KT5006** | **$160.00** |

A green cover ring is included. Optional rings can be purchased.

## Optional accessories

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
| | Cover ring, yellow | **E80372** | **$8.00** |
| | Cover ring, green | **E80373** | **$8.00** |
| | Cover ring, red | **E80374** | **$8.00** |
| | Cover ring, blue | **E80375** | **$8.00** |
| | Cover ring, orange | **E80376** | **$8.00** |
|  | L-bracket for KT with mounting screws | **UK0009** | **$26.00** |

## Cordsets

| Type | Description | Part No. | Unit Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (4-pin), 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin), 5 m, PUR | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin), 2 m, PUR | **EVC153** | **$15.00** |
| | M8 Pico DC (4-pin), 5 m, PUR | **EVC154** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Operating voltage: 24 (12…36) VDC
Supply current: 30 mA
Operating temperature: -104...185 °F (-40...85 °C)
Protection: IP67 / IP69K

**Simple and comprehensive website**

Data sheets, application examples, software downloads, virtual product demos… just one click away.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

# Top five product features!

- *Magnetic T-slot sensors offer significant advantages over Reed switch technology*
- *Mounts into any cylinder type – smooth, tie rod, dovetail and integrated profile – using ifm mounting accessories*
- *Quick installation! Sensors mount directly from the top of the cylinder – no need to remove end caps*
- *Excellent repeatability and fast response times enable increased uptime*
- *Unlimited number of switching cycles extends life-in-application*

## Compact housing, simple mounting

ifm offers miniature T-slot cylinder sensors that easily fit into slot-style cylinders to provide a low-profile mounting. The sensors sit flush against the cylinder slot which prevents physical damage in harsh industrial environments.

### Technology comparison

| | Reed | ifm Solid State | Solid State Advantages |
|---|---|---|---|
| Durability | Low (1-2 M cycles) | High (unlimited cycles) | ifm cylinder sensor has unlimited number of cycles. Typically, a reed switch is replaced many times during the life of a cylinder. |
| Repeatability | Low | High | Provides excellent repeatability. Mechanical wear in reed switches can cause the switch point to drift. |
| Response Time | Low | High | Fast response time. Reed switches with slower response times cannot maintain their accuracy in high speed applications. |
| Sensitivity | Low | High | Can operate reliably with weak magnetic fields. Reed switches require great magnetic strength for sensing. |
| Temperature Stability | High | High | Extremely stable operating characteristics over a wide temperature range. |
| Longevity | Low | High | Immunity from long-term effects of magnetic fields. Contacts on reed switches can become permanently magnetized over time. |

***NEW!***

**MK sensor for welding**

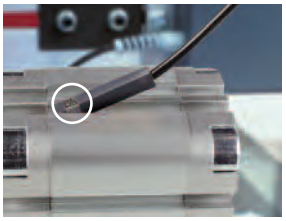
*PTFE tubing protects cable damage due to weld slag.*

***NEW!***

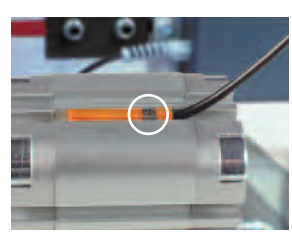
**MK dual sensors reduce wiring**

*Two cylinder sensors per port allows more points and less wiring.*

### Mounting comparison



***Conventional sensors:***
*Cable and mounting screw are placed at opposite ends of the housing. If the cable is pulled, the sensor can be dislodged.*



***ifm top-loading sensors:***
*Cable and mounting screw are at the same end. If the cable is pulled, the sensor stays put.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Search Bar

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | No. of Wires | Output Function | Supply Voltage | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
|  | 3 | PNP, N.O. | 10...30 VDC | 6000 | 100 | Prewired 2 m cable | **MK5140** | **$51.00** |
| | 3 | PNP, N.C. | 10...30 VDC | 6000 | 100 | Prewired 2 m cable | **MK5156** | **$51.00** |
| | 3 | NPN, N.O. | 10...30 VDC | 10000 | 100 | Prewired 2 m cable | **MK5114** | **$51.00** |
| | 2 | PNP/NPN, N.O. | 10...30 VDC | 4000 | 100 | Prewired 2 m cable | **MK5103** | **$51.00** |
| | 3 | PNP, N.O. | 10...30 VDC | 6000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5138** | **$51.00** |
| | 3 | PNP, N.C. | 10...30 VDC | 6000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5155** | **$51.00** |
| | 3 | NPN, N.O. | 10...30 VDC | 6000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5137** | **$51.00** |
| | 2 | PNP/NPN, N.O. | 10...30 VDC | 4000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5104** | **$51.00** |
| | 3 | PNP, N.O. | 10...30 VDC | 6000 | 100 | M8 Threaded 0.3 m pigtail | **MK5159** | **$51.00** |
| | 3 | NPN, N.O. | 10...30 VDC | 10000 | 100 | M8 Threaded 0.3 m pigtail | **MK5152** | **$51.00** |
| | 3 | PNP, N.O. | 10...30 VDC | 6000 | 100 | M12 Threaded 0.3 m pigtail | **MK5139** | **$51.00** |
| | 3 | NPN, N.O. | 10...30 VDC | 6000 | 100 | M12 Threaded 0.3 m pigtail | **MK5186** | **$53.00** |
| Dual sensor | 4 | PNP, N.O. | 10...30 VDC | 6000 | 100 | M8 Threaded 0.3 m pigtail | **MK5208** | **$98.00** |
| | 4 | PNP, N.O. | 10...30 VDC | 6000 | 100 | M12 Threaded 0.3 m pigtail | **MK5209** | **$98.00** |
| Protective tubing for welding | 3 | PNP, N.O. | 10...30 VDC | 10000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5192** | **$58.00** |
| | 3 | PNP, N.O. | 10...30 VDC | 10000 | 100 | M12 Threaded 0.3 m pigtail | **MK5196** | **$58.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |

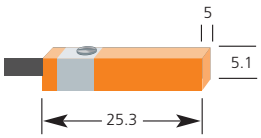
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |

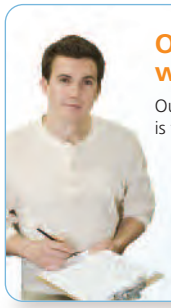
*See page 56 and 57 for mounting accessories.*

## Technical Specs

| | |
|---|---|
| Voltage drop: | 2.5 V; except Part Nos. MK5103: 4.5 V; MK5104: 3.5 V |
| Min. load current: | N/A; except Part Nos. MK5103 and MK5104: 5 mA |
| Leakage current: | negligible; except Part Nos. MK5103, MK5104: < 0.8 mA |
| Operating temperature: | -13...185 °F (-25...85 °C) |
| Protection rating: | IP67 |
| Cable jacket material: | PUR |
| Magnetic sensitivity: | 2.0 mT; except Part Nos. MK5103, MK5104, MK5114, MK5152, MK5192, MK5196: 2.8 mT |
| Travel speed: | max > 10 m/s |
| Repeatability: | < 0.2 mm |



Compact flush sensor (mm)



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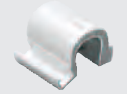
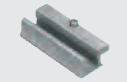
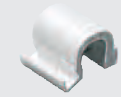
| Cylinder Type | Accessory Type | | Accessory Description | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| Smooth Cylinder | Protective Bracket | | Outside Ø 11…19 mm<br>Bore size 7/16 to 9/16" (10-16 mm) | **E11975** | **$9.00** |
| | | | Outside Ø 18…29 mm<br>Bore size 7/8 to 1-1/16" (20-25 mm) | **E11976** | **$9.00** |
| | | | Outside Ø 28…39 mm<br>Bore size 1-1/4" (32 mm) | **E11977** | **$10.00** |
| | | | Outside Ø 38…49 mm<br>Bore size 1-1/2" (40 mm) | **E11978** | **$10.00** |
| | | | Outside Ø 48…59 mm<br>Bore size 1-3/4" to 2" (50 mm) | **E11979** | **$10.00** |
| | | | Outside Ø 58…69 mm<br>Bore size 2-1/2" (63 mm) | **E11980** | **$10.00** |
| | | | Outside Ø 78…89 mm<br>Bore size 3" (80 mm) | **E11981** | **$11.00** |
| | | | Outside Ø 98…109 mm<br>Bore size 4" (100 mm) | **E11982** | **$11.00** |
| | Mounting Adapter | | Bore size 5/16 to 1/2" (8, 10, 12 mm) | **E11816** | **$8.00** |
| | | | Bore size 9/16 to 7/8" (16 & 20 mm) | **E11817** | **$8.00** |
| | | | Bore size 1-1/16 to 1-1/4" (25 & 32 mm) | **E11818** | **$8.00** |
| | | | Bore size 1-1/2" (40 mm) | **E11819** | **$9.00** |
| | | | Bore size 1-3/4 to 2" (50 mm) | **E11820** | **$9.00** |
| | | | Bore size 2-1/2" (63 mm) | **E11821** | **$9.00** |
| | | | Bore size 3" (80 mm) | **E11822** | **$9.00** |
| | | | Bore size 4" (100 mm) | **E11823** | **$9.00** |
| Tie-Rod Cylinder | Protective Bracket |  | Diameter tie-rod 3...5 mm | **E11913** | **$10.00** |
| | | | Diameter tie-rod 5...7 mm | **E11912** | **$10.00** |
| | | | Diameter tie-rod 5...11 mm | **E11797** | **$9.00** |
| | | | Diameter tie-rod 9...15 mm | **E11799** | **$10.00** |
| Dovetail Cylinder | Trapezoidal Slot |  | Trapezoidal slot for 12 mm and 1/2" slots | **E11796** | **$9.00** |

| Cylinder Type | Accessory Type | | Accessory Description | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| Integrated Profile Cylinders | Integrated Profile Bracket |  | Integrated profile thickness diameter 9...15 mm | **E11799** | **$10.00** |
| | | | Integrated profile thickness diameter 14...20 mm | **E11801** | **$12.00** |
| | | | Protective adapter for T-slot cylinder sensors | **E12259** | **$8.00** |
| Standard Cylinders | | Standard T-slot cylinders and C-slot cylinders typically do not require adapters. | If you have a nonstandard cylinder, please contact Technical Support. Call 800-441-8246. | – | – |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

**How do I determine the right accessory for my cylinder type?**

- For smooth body cylinders, measure the outside diameter of the cylinder with a micrometer. Select a fixing strap and adapter.
- For tie-rod and integrated profile cylinders, measure the rod on the cylinder. Select an adapter.

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# Top five product features!

- Magnetic C-slot sensors offer reliable sensing with no moving parts
- Fits all standard cylinders with 4 mm diameter C-slots
- Quick installation! Sensors easily slide into the top of the cylinder – no need to remove end caps
- Excellent repeatability and fast response times enable increased uptime
- Unlimited number of switching cycles extends life-in-application
- Dual cylinder sensor versions simplify wiring – 2 sensor elements

## Compact housing, simple mounting

ifm offers miniature C-slot cylinder sensors that are available in flush mount and non-flush mount models. Flush mount sensors are designed for standard C-slot cylinders. Non-flush mount sensors easily fit into small grippers and short stroke cylinders.

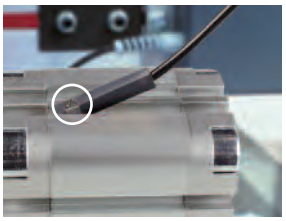
### Technology comparison

| | Reed | ifm Solid State | Solid State Advantages |
|---|---|---|---|
| Durability | Low (1-2 M cycles) | High (unlimited cycles) | ifm cylinder sensor has unlimited number of cycles. Typically, a reed switch is replaced many times during the life of a cylinder. |
| Repeatability | Low | High | Provides excellent repeatability. Mechanical wear in reed switches can cause the switch point to drift. |
| Response Time | Low | High | Fast response time. Reed switches with slower response times cannot maintain their accuracy in high speed applications. |
| Sensitivity | Low | High | Can operate reliably with weak magnetic fields. Reed switches require great magnetic strength for sensing. |
| Temperature Stability | High | High | Extremely stable operating characteristics over a wide temperature range. |
| Longevity | Low | High | Immunity from long-term effects of magnetic fields. Contacts on reed switches can become permanently magnetized over time. |

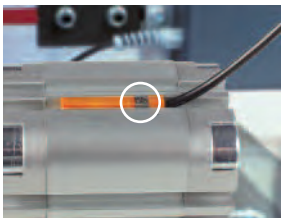
### *NEW!* MK dual sensors reduce wiring

*Two cylinder sensors per port allow more points and less wiring.*

### Mounting comparison



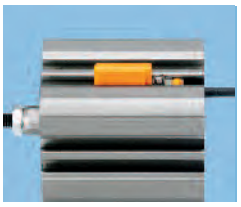
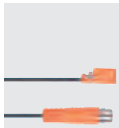
***Conventional sensors:***
*Cable and mounting screw are placed at opposite ends of the housing. If the cable is pulled, the sensor can be dislodged.*



***ifm top-loading sensors:***
*Cable and mounting screw are at the same end. If the cable is pulled, the sensor stays put.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
Search Bar
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| | Type | Output Function | Supply Voltage (V DC) | Switching Frequency (Hz) | Max Load Current (mA) | Electrical Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| Flush mount sensors for standard C-slot cylinders | | PNP, N.O. | 10...30 | 5000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5326** | **$54.00** |
| | | NPN, N.O. | 10...30 | 10,000 | 100 | M8 Snap Fit 0.3 m pigtail | **MK5308** | **$54.00** |
| | | PNP, N.O. | 10...30 | 5000 | 100 | M8 Threaded 0.3 m pigtail | **MK5328** | **$54.00** |
| | | PNP, N.O. | 10...30 | 10,000 | 100 | M12 Threaded 0.3 m pigtail | **MK5314** | **$54.00** |
| |  | PNP, N.O. | 10...30 | 5000 | 100 | Prewired 2 m cable | **MK5325** | **$54.00** |
| | | NPN, N.O. | 10...30 | 10,000 | 100 | Prewired 2 m cable | **MK5309** | **$54.00** |
| | Dual sensor | PNP, N.O. | 10...30 | 5000 | 100 | M8 Threaded 0.3 m pigtail | **MK5350** | **$98.00** |
| | | PNP, N.O. | 10...30 | 5000 | 100 | M12 Threaded 0.3 m pigtail | **MK5351** | **$98.00** |
| Nonflush mount sensors for small grippers and short stroke cylinders  |  | PNP, N.O. | 10...30 | 5000 | 100 | M8 Snap-fit 0.3 m pigtail | **MK5330** | **$54.00** |
| | | NPN, N.O. | 10...30 | 10,000 | 100 | M8 Snap Fit 0.3 m pigtail | **MK5307** | **$54.00** |
| | | PNP, N.O. | 10...30 | 5000 | 100 | M8 Threaded 0.3 m pigtail | **MK5331** | **$54.00** |
| | | PNP, N.O. | 10...30 | 10,000 | 100 | M12 Threaded 0.3 m pigtail | **MK5304** | **$54.00** |
| | | PNP, N.O. | 10...30 | 5000 | 100 | Prewired 2 m cable | **MK5329** | **$54.00** |
| | | NPN, N.O. | 10...30 | 10,000 | 100 | Prewired 2 m cable | **MK5306** | **$54.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |

## Cordsets

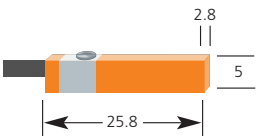
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

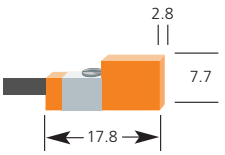
## Technical Specs

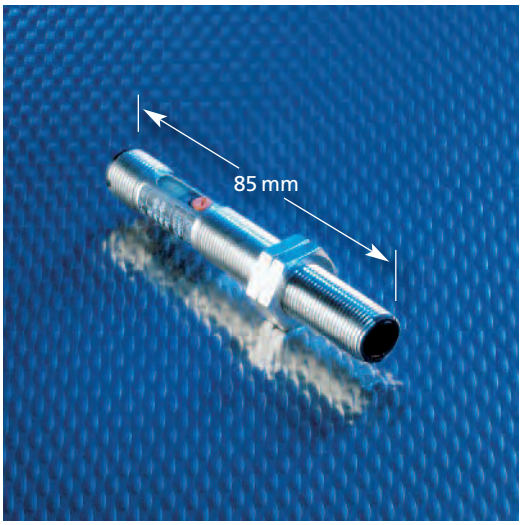
| | |
|---|---|
| Number of wires: | 3-wire |
| Voltage drop: | 2.5V |
| Min. load current: | N/A |
| Leakage current: | negligible |
| Operating temperature: | -13...185 °F (-25...85 °C) |
| Protection rating: | IP67 |
| Cable jacket material: | PUR |
| Magnetic sensitivity: | 2.0 mT; except Part Nos. MK5304, MK5306, MK5307, MK5308, MK5309, MK5314: 2.8 mT |
| Travel speed: | max > 10 m/s |
| Repeatability: | < 0.2 mm |
| Housing material: | PA (polyamide); stainless steel |

Flush mount sensors (mm)




Nonflush mount sensors (mm)



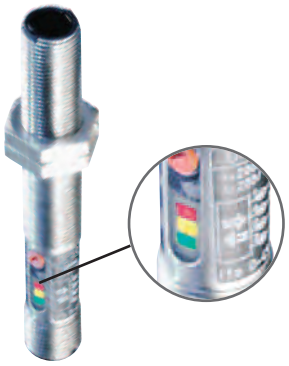



# Top five product features!

- *Industry standard 12 mm diameter housing provides simple mounting*
- *LEDs indicate power, output and marginal signal for easy installation and maintenance*
- *Durable metal housing resists mechanical damage*
- *Adjustable sensitivity enables greater accuracy for reliable target detection*
- *Alarm output alerts user when signal is marginal due to sensor misalignment or cleaning*

## Simplified alignment and maintenance

OF photoelectric sensors include signal strength monitoring capabilities with LED indications that simplify installation, identify fault conditions, and provide output status. The sensor provides predictive maintenance to increase uptime throughout the production process. In applications where dust, dirt or moisture accumulates on the lenses, the OF sensor continuously monitors the strength of the received signal.

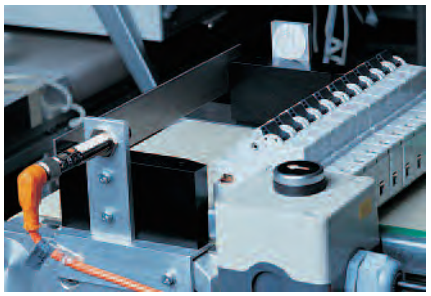


**Ease of installation**
For quick setup and alignment, the OF sensor will indicate a green LED when mounting is optimal and when power is on.

**Ease of predictive maintenance**
Quickly identify fault conditions that can cause downtime in your production process. The strength of the returned signal can be seriously degraded in applications where dust, dirt or moisture accumulates. Under marginal operating conditions, a red LED provides a visual warning.

**Ease of setup**
The OF photoelectric has a yellow LED that indicates the status of the sensor output. If an overload or short circuit fault occurs at the sensor output, the yellow LED will flash at a 3 Hz frequency.

### Compact and reliable

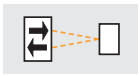
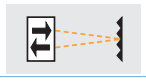
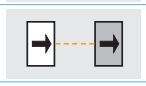
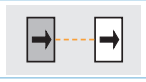


*Designed for industrial automation applications, the robust OF photoelectric sensor features a metal housing with bright LEDs for simple alignment and fault indication.*

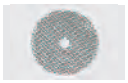
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse |  | 1...400 mm | LO/DO PNP | 185 mm | 35 mA | 400 Hz | Infrared 880 nm | **OF5027** | **$112.00** |
| | | 1...400 mm | LO/DO NPN | 185 mm | 35 mA | 400 Hz | Infrared 880 nm | **OF5060** | **$112.00** |
| Polarized retro-reflective |  | 200...800 mm | LO/DO PNP | 70 mm | 35 mA | 400 Hz | Red light 660 nm | **OF5025** | **$107.00** |
| | | 200...800 mm | LO/DO NPN | 70 mm | 35 mA | 400 Hz | Red light 660 nm | **OF5062** | **$107.00** |
| Thru-beam receiver |  | 0...4 m | LO/DO PNP | – | 30 mA | 400 Hz | – | **OF5022** | **$82.00** |
| Thru-beam transmitter |  | 0...4 m | – | 700 mm | 25 mA | – | Infrared 880 nm | **OF5021** | **$71.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Short swivel bracket for OF | **E20860** | **$11.00** |
| | Tall swivel bracket for OF | **E20856** | **$12.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

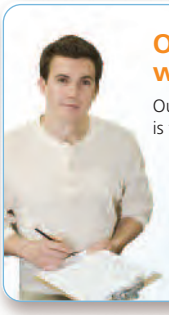
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...36 VDC |
| No. of wires: | 3-wire; Part No. OF5021: 2-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | Optalloy-plated brass |
| Lens material: | PMMA |
| Operating temperature: | -13...140 °F (-25...60 °C) |
| Protection: | IP65 |

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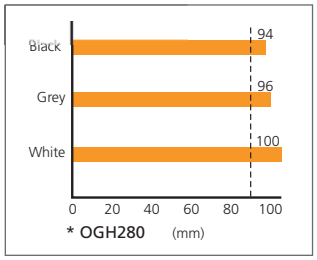
# Top five product features!

- *Robust photoelectric resists mechanical damage*
- *Metal M18 mounting threads will not strip – eliminating a common problem with plastic threads*
- *Long sensing range in a small package offers more application flexibility*
- *Powerful visible red light source with large spot diameter enables easy alignment and quick setup*
- *Industry standard M12 connector withstands high torquing and provides easy maintenance*

## Durable metal housings with long sensing ranges

ifm's OG Series photoelectrics are stronger and more durable than traditional plastic housings. The sensor's durable metal M18 mounting threads will not strip – a common problem with plastic threads. Its standard M12 connector withstands high torquing and provides quick wiring.

*OG sensors are more durable than plastic housings that can wear or break over time.*

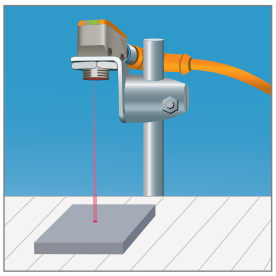



***Reliable performance regardless of target color***

** The 100 mm sensing range background suppression model is rated for ±10% of nominal sensing range for all target colors.*

### High performance background suppression

*The OG background suppression sensor uses diode array technology that enables the sensor to differentiate between the target and the background regardless of background color.*

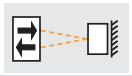
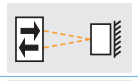
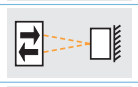
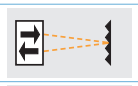
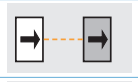
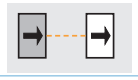



Position Sensors | Motion Control | Vision Sensors | Safety Technology

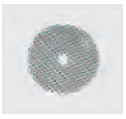
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

Search Bar

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 100 mm | LO PNP | 7 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH280** | **$82.00** |
| | | 100 mm | LO NPN | 7 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH282** | **$82.00** |
| Diffuse background suppression |  | 200 mm | LO PNP | 13 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH281** | **$82.00** |
| | | 200 mm | LO NPN | 13 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH283** | **$82.00** |
| Diffuse background suppression with pushbutton adjustment |  | 15...200 mm | LO/DO PNP | 13 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH580** | **$86.00** |
| | | 15...200 mm | LO/DO NPN | 13 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH581** | **$86.00** |
| Polarized retro-reflective |  | 0.1...4 m | DO PNP | 160 mm | 20 mA | 1000 Hz | Red light 624 nm | **OGP280** | **$75.00** |
| | | 0.1...4 m | DO NPN | 160 mm | 20 mA | 1000 Hz | Red light 624 nm | **OGP282** | **$75.00** |
| Thru-beam receiver |  | 0...20 m | DO PNP | – | 20 mA | 1000 Hz | – | **OGE280** | **$72.00** |
| | | 0...20 m | DO NPN | – | 20 mA | 1000 Hz | – | **OGE282** | **$72.00** |
| Thru-beam transmitter |  | 0...20 m | – | 800 mm | 20 mA | – | Red light 624 nm | **OGS280** | **$64.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Extended rail bracket for OG sensor | **UE0002** | **$13.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Extended rail bracket w/ 50 mm reflector | **UE0004** | **$23.00** |
| | Extended rail bracket w/ 80 mm reflector | **UE0005** | **$27.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...30 VDC |
| No. of wires: | 3-wire; Part No. OGS280: 2-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | Metal alloy, PA, LCP, EPDM |
| Lens material: | PMMA |
| Operating temperature: | -13...140 °F (-25...60 °C) |
| Protection: | IP67 |

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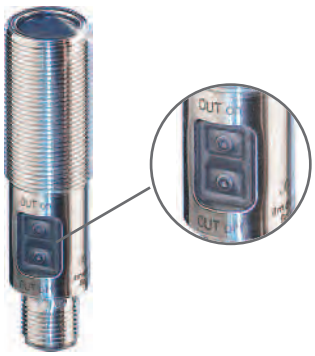
# Top five product features!

- *316 stainless steel housing designed and tested to withstand industrial automation applications*
- *Industry standard 18 mm diameter photoelectric suits a variety of applications*
- *Extremely long sensing ranges for application flexibility*
- *Innovative two-pushbutton 'Teach Mode' offers simple adjustment for quick setup*
- *Flexible mounting bracket system simplifies installation*

## Innovative teach mode

ifm's OG M18 tubular sensors are designed to provide reliable position detection in factory automation applications. The sensor's innovative two-pushbutton 'Teach Mode' operation establishes light-on / dark-on programming with a press of a button. This functionality eliminates traditional teach programming that can be complicated and difficult to apply.



The innovative teach method eliminates complex programming. The sensor features one button each for teaching a precise on and off state for the sensor signal. For example:

**OUT-off**
Mount and align the sensor in the application.
The sensor's visible red light simplifies adjustment.
Press the OUT-off *(output off)* button for two seconds.

**OUT-on**
Position the object to be detected.
Press the OUT-on *(output on)* button.
The sensor is now ready for operation.

For precise sensing applications, the background suppression models provide high accuracy. The sensor's microprocessor provides automatic calibration and can differentiate between the target and the background which is ideal for conveying applications.

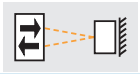
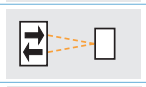
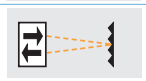
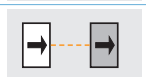
### Bracket system offers accurate alignment

*Innovative mounting brackets offer quick installation and setup. The bracket rotates 360° in each of two axes to achieve the most accurate alignment.*

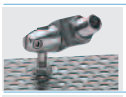
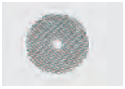

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 15...300 mm | LO/DO PNP | 25 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH500** | **$108.00** |
| | | 15...300 mm | LO/DO NPN | 25 mm | 25 mA | 1000 Hz | Red light 624 nm | **OGH502** | **$108.00** |
| Diffuse |  | 2...800 mm | LO/DO PNP | 66 mm | 25 mA | 2000 Hz | Red light 624 nm | **OGT500** | **$104.00** |
| Polarized retro-reflective |  | 0.03...5 m | LO/DO PNP | 200 mm | 20 mA | 2000 Hz | Red light 624 nm | **OGP500** | **$104.00** |
| | | 0.03...5 m | LO/DO NPN | 200 mm | 20 mA | 2000 Hz | Red light 624 nm | **OGP503** | **$104.00** |
| Thru-beam receiver |  | 0...25 m | LO/DO PNP | – | 11 mA | 1000 Hz | – | **OGE500** | **$92.00** |
| | | 0...25 m | LO/DO NPN | – | 11 mA | 1000 Hz | – | **OGE503** | **$92.00** |
| Thru-beam transmitter | | 0...25 m | – | 1000 mm | 20 mA | – | Red light 624 nm | **OGS500** | **$74.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
|  | Short swivel bracket for OG, die cast zinc | **E20718** | **$12.00** |
| | Tall swivel bracket for OG, die cast zinc | **E20719** | **$11.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...36 VDC |
| No. of wires: | 3-wire; Part No. OGS500: 2-wire |
| Maximum load current: | 200 mA (60°C) / 150 mA (80°C) |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | 316 stainless steel, PA, LCP, EPDM, TPU |
| Lens material: | PMMA |
| Operating temperature: | -13...176°F (-25...80°C) |
| Protection: | IP67 |

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www.ifm.com/us

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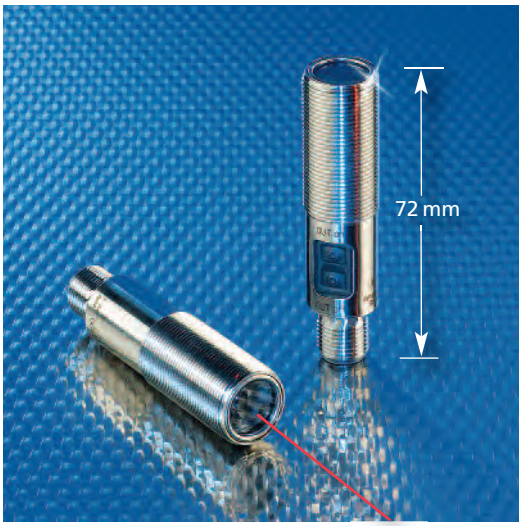



# Top five product features!

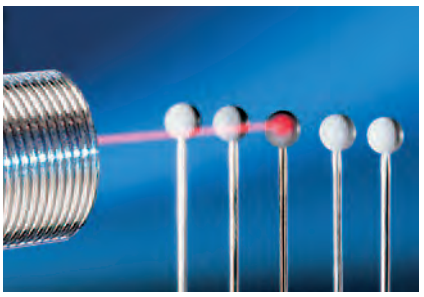
- *Class 1 laser light source detects small objects and provides visual indication of beam alignment*
- *316 stainless steel housing designed and tested to withstand industrial automation applications*
- *Extremely long sensing ranges for application flexibility*
- *Innovative two-pushbutton 'Teach Mode' offers simple adjustment for quick setup*
- *Flexible mounting bracket system simplifies installation*

## Class 1 laser sensors detect small parts at long distances

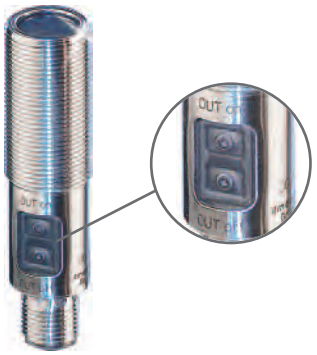
Laser sensors are used where detection of small objects or precise positioning is required. Laser light consists of light waves of a single wavelength, high in energy and power density because the waves are in phase with each other. This results in a tightly focused, almost parallel light beam that can detect very small objects at long ranges.

An important feature of the laser is that the light beam is visible, and during set-up of the sensor, the laser power is increased. This provides a bright light spot clearly visible even in the daylight which aids alignment. ifm efector also offers fine adjustment mounting brackets that allow the laser sensors to be precisely aligned for optimum performance.

The OG Series laser sensors are listed as FDA Class I Laser Products and comply with the international standard IEC60825 and European standard EN60825 which describe the operation of laser sensors.



### Innovative teach mode




*The innovative teach mode eliminates complex programming. The sensor features one button each for teaching a precise on and off state for the sensor signal.*

***PNP to NPN converter cordset***

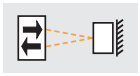
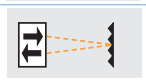
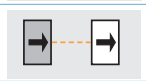
*This cordset converts PNP outputs to NPN outputs.*

*Part no.: EVC01E (5 meters)*
*List price (1-pc): $19.00*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 20...200 mm | LO/DO PNP | 1.2 mm | 15 mA | 1000 Hz | Class 1 laser | **OGH700** | **$244.00** |
| Polarized retro-reflective |  | 0.2...15 m | LO/DO PNP | 40 mm | 15 mA | 2000 Hz | Class 1 laser | **OGP700** | **$241.00** |
| | | 0.2...2 m | LO/DO PNP | 5 mm | 15 mA | 2000 Hz | Class 1 laser | **OGP701** | **$241.00** |
| Thru-beam receiver | | 0...60 m | LO/DO PNP | – | 11 mA | 1000 Hz | Class 1 laser | **OGE700** | **$131.00** |
| | | 0...2 m | LO/DO PNP | – | 11 mA | 1000 Hz | Class 1 laser | **OGE701** | **$131.00** |
| Thru-beam transmitter |  | 0...60 m | – | 150 mm | 13 mA | – | Class 1 laser | **OGS700** | **$189.00** |
| | | 0...2 m | – | 5 mm | 13 mA | – | Class 1 laser | **OGS701** | **$189.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Fine adjust swivel bracket for OG laser | **E20987** | **$45.00** |
| | Rail mount package, fine adjust swivel bracket for OG laser | **E20868** | **$54.00** |
| | 10 x 50 mm reflector | **E20988** | **$16.00** |
| | 50 x 50 mm reflector | **E20722** | **$15.00** |
| | 10 mm reflector | **E20990** | **$12.00** |
| | 19 mm reflector | **E20993** | **$12.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...36 VDC |
| Light source: | Red light 655 nm |
| No. of wires: | 3-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | 316 stainless steel |
| Lens material: | PMMA |
| Operating temperature: | 14...140 °F (-10...60 °C) |
| Protection: | IP67 |

CLASS 1
LASER
PRODUCT
IEC60825-1:2007
21CFR PART1040

Class 1 Laser

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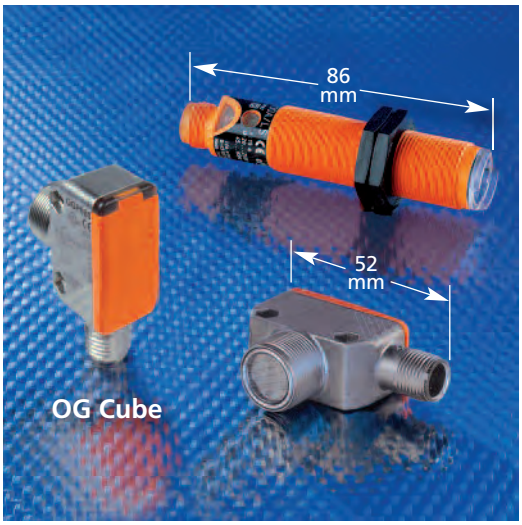


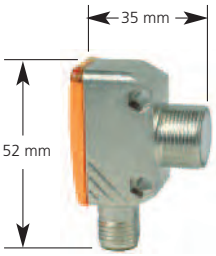

# Top five product features!

- *Compact M18 diameter photoelectrics withstand harsh environments*
- *Simple two-wire AC design does not require grounding wire allowing quick installation*
- *Compact and tubular versions offer application flexibility*
- *Long sensing ranges reduce failure from mechanical damage and increase uptime*
- *Integrated microprocessor-based electronics offer high performance in the toughest applications*

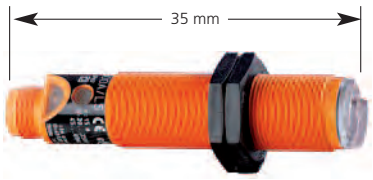
## Compact solutions for industrial environments

ifm's M18 diameter sensors are designed to provide reliable position detection in harsh industrial applications.

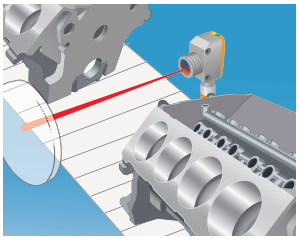
The product family offers long sensing ranges that increase the distance between the sensor and the target, preventing failures from physical damage. Integrated microprocessor-based electronics offer high performance in the toughest applications. Two models are available: the compact OG Cube and OG tubular.




- The OG Cube sensor occupies less space and is ideal for applications with limited mounting space
- Metal M18 mounting threads will not strip
- Robust metal housing resists mechanical damage
- Reliable performance regardless of target color




- Industry standard 18 mm diameter tubular housing
- Automatic pushbutton provides easy setup adjustment and simplifies installation
- One-piece molded unit is completely sealed against environment
- Electronic lock prevents unauthorized adjustments



*The compact OG Cube retro-reflective models contain a polarizing filter that eliminates false triggers from shiny targets.*

*The OG tubular's 2-wire design simplifies wiring. No ground wire is required.*

Search Bar
Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Min. Load Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression | | 100 mm | LO | 11 mm | 5 mA | 30 Hz | Red Light 633 nm | **OGH080** | **$93.00** |
| | | 100 mm | DO | 11 mm | 5 mA | 30 Hz | Red Light 633 nm | **OGH081** | **$93.00** |
| Diffuse | | 1...600 mm | LO | 169 mm | 5 mA | 25 Hz | Infrared 880 nm | **OG0035** | **$96.00** |
| | | 1...600 mm | DO | 169 mm | 5 mA | 25 Hz | Infrared 880 nm | **OG0041** | **$96.00** |
| Polarized retro-reflective | | 0.1...4 m | DO | 160 mm | 5 mA | 30 Hz | Red Light 633 nm | **OGP080** | **$86.00** |
| | | 0.1...4 m | LO | 160 mm | 5 mA | 30 Hz | Red Light 633 nm | **OGP081** | **$86.00** |
| | | 0.1...3 m | LO | 262 mm | 5 mA | 25 Hz | Red Light 660 nm | **OG0044** | **$96.00** |
| | | 0.1...3 m | DO | 262 mm | 5 mA | 25 Hz | Red Light 660 nm | **OG0033** | **$96.00** |
| Thru-beam receiver | | 0...20 m | DO | 160 mm | 5 mA | 30 Hz | – | **OGE080** | **$83.00** |
| | | 0...20 m | LO | 160 mm | 5 mA | 30 Hz | – | **OGE081** | **$83.00** |
| Thru-beam transmitter | | 0...20 m | – | 800 mm | 5 mA | – | Red Light 633 nm | **OGS080** | **$74.00** |
| Thru-beam receiver | | 0...15 m | LO | – | 5 mA | 25 Hz | – | **OG0031** | **$83.00** |
| | | 0...15 m | DO | – | 5 mA | 25 Hz | – | **OG0039** | **$83.00** |
| Thru-beam transmitter | | 0...15 m | – | 2000 mm | 5 mA | – | Infrared 880 nm | **OG0030** | **$66.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Extended rail bracket for OG Cube | **UE0002** | **$13.00** |
| | Short swivel bracket for OG tubular, die cast zinc | **E20718** | **$12.00** |
| | Tall swivel bracket for OG tubular, die-cast zinc | **E20719** | **$11.00** |
| | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Extended rail bracket w/ 50 mm reflector | **UE0004** | **$23.00** |
| | Extended rail bracket w/ 80 mm reflector | **UE0005** | **$27.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

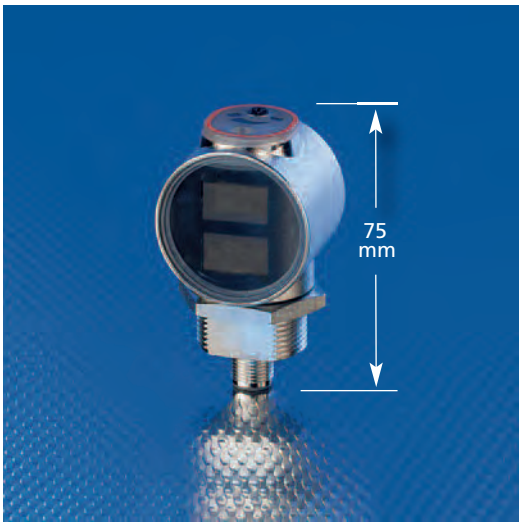
Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" Micro AC, (3-pin), 5 m, PVC | **E18212** | **$15.00** |
| | 1/2" Micro AC, (3-pin), 10 m, PVC | **E18213** | **$19.00** |
| | 1/2" Micro AC, (3-pin), 5 m, PVC | **E18214** | **$15.00** |
| | 1/2" Micro AC, (3-pin), 10 m, PVC | **E18215** | **$19.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | 20...250 V AC (47... 63 Hz) |
| No. of wires: | 2-wire |
| Maximum load current: | OG Cube: 200 mA (40°C) / 150 mA (60 °C)<br>OG tubular: 180 mA (40°C) / 90 mA (80 °C) |
| Voltage drop: | < 8 V |
| Leakage current: | 1.7 mA |
| Connector: | 1/2" Micro AC |
| Housing material: | OG Cube: Metal alloy, PA, LCP, EPDM<br>OG tubular: PBT |
| Lens material: | PMMA |
| Operating temperature: | OG Cube: -13...140 °F (-25…60 °C)<br>OG tubular: -13...176 °F (-25…80 °C) |
| Protection: | IP67 |




# Top five product features!

- The easiest photoelectric you'll ever set
- Directly replaces standard 30 mm mount rectangular photoelectrics
- Mechanically robust, all-metal housing eliminates the need for protective bracket, reducing install cost
- High accuracy background suppression technology eliminates the need for adjustments as target colors change
- Simple bench setup – no power needed

## Robust photoelectric sensor - M30 mounting and quick setup

***NEW!*** ifm introduces the new OI Series photoelectric sensors for position sensing applications in harsh environments.

The OI sensor features a durable all-metal housing. The OI's housing is so mechanically robust that a protective bracket is not necessary which reduces total install costs.

The product family offers long sensing ranges that increase the distance between the sensor and the target, preventing failures from physical damage.

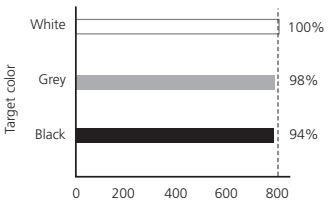
The OI sensor can easily replace standard plastic photoelectric sensors via the 30 mm mounting thread or optional mounting accessories.

Background suppression models are available with an innovative multi-turn potentiometer that indicates the actual switchpoint distance. The powerful visible red light source with large spot diameter enables easy alignment and quick setup.

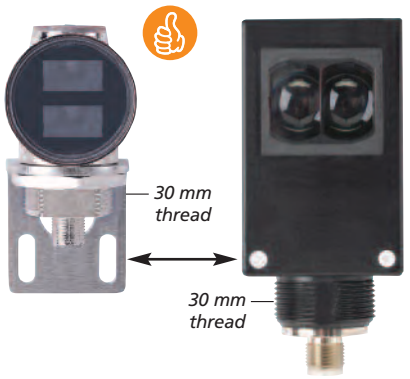
With best-in-class optical performance independent of target color, ifm's OI photoelectric sensor is the new benchmark for your position sensing applications.

***Reliable performance regardless of target color***

*The OI background suppression model has a sensing range of up to 800 mm.*




### Direct replacement




The OI replaces standard 30 mm mount rectangular photoelectrics with threads. The optional L-bracket makes it easy to align the optical axis for a direct retrofit.

### Switchpoint is easy to set with multi-turn "smart" potentiometer

| Display | Switchpoint |
|---|---|
| 1 | 100 mm |
| 2 | 200 mm |
| 3 | 300 mm |
| 4 | 400 mm |
| 5 | 500 mm |
| 6 | 600 mm |
| 7 | 700 mm |
| 8 | 800 mm |

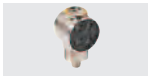
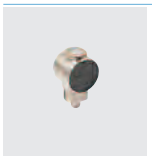
Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

Search Bar

1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| | Function | | Range | Output | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
|  | Diffuse background suppression with multi-turn potentiometer | | 50...800 mm | Light on, PNP | **OIH580** | **$96.00** |
| | | | 50...800 mm | Light on, NPN | **OIH582** | **$96.00** |
| | Diffuse background suppression | | 600 mm | Light on, PNP | **OIH280** | **$92.00** |
| | | | 600 mm | Light on, NPN | **OIH282** | **$92.00** |
|  | Polarized retro-reflective | | 0.1…15 m* | Dark on, PNP | **OIP280** | **$86.00** |
| | | | 0.1…15 m* | Light on, PNP | **OIP281** | **$86.00** |
| | | | 0.1…15 m* | Dark on, NPN | **OIP282** | **$86.00** |
| | | | 0.1…15 m* | Light on, NPN | **OIP283** | **$86.00** |

* When used with 80 mm diameter reflector

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting bracket for 30 mm OI sensor | **UE0023** | **$5.00** |
| | Reflector – 50 mm diameter | **E20956** | **$9.00** |
| | Reflector – 80 mm diameter | **E20005** | **$8.00** |

### Application Markets

Material handling
Automotive body and assembly
Automotive powertrain
Packaging
Steel
Wood processing
Pulp and paper

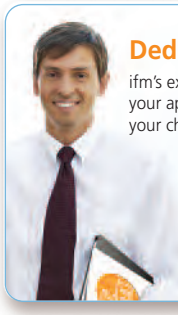
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical specs

| | |
|---|---|
| Supply voltage | 10…30 VDC |
| Light source | Red light 625 nm |
| Max load current | 200 mA |
| Voltage drop | <2.5 V |
| Switching frequency | OIH: 300 Hz; OIP: 1000 Hz |
| Protection rating | IP67 |
| Operating temperature | -13…140 °F (-25…60 °C) |
| LEDs | Power: green; Output: yellow |
| Housing material | Zinc diecast, nickel-plated |
| Lens material | PMMA |
| Electrical connection | M12 |



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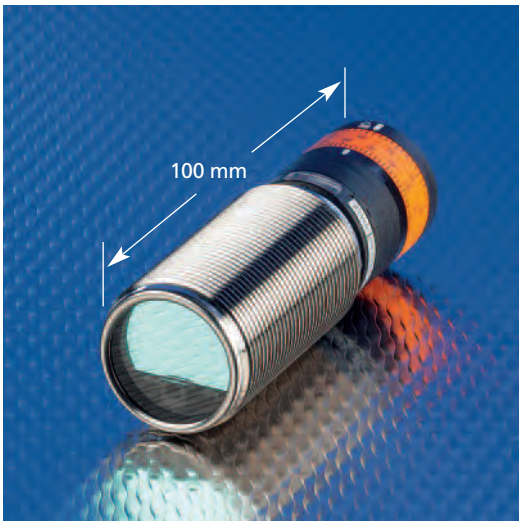



# Top five product features!

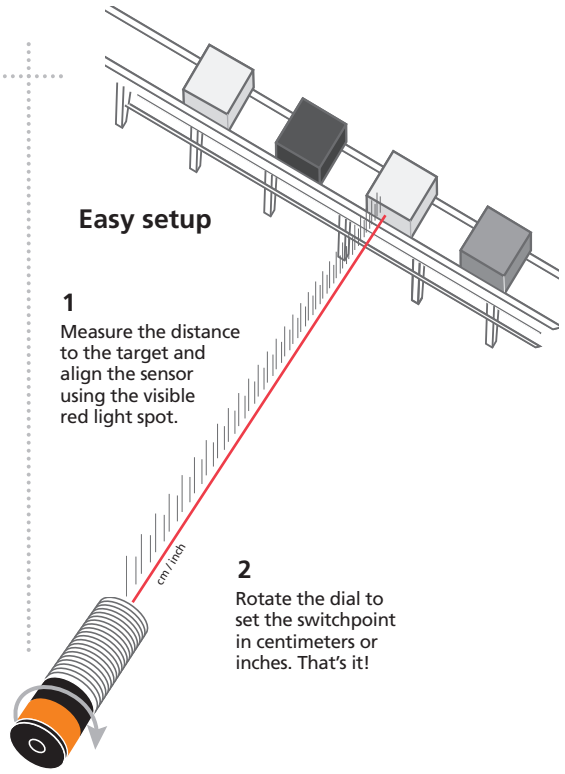
- *PMD "time-of-flight" technology enables long sensing ranges up to 2 meters (6.5 ft) and eliminates need for sensors with reflectors*
- *Superior optical performance independent of target color*
- *Simple switch point setting by rotatable setting ring that does not require power for setup*
- *Reliable background suppression with no false triggers from highly reflective objects such as stainless steel*
- *M30 diameter, Class 2 laser*

## OID with easy-turn setup applies "Time-of-Flight" measurement via PMD Technology

***NEW!*** The OID Series photoelectric sensors integrate "Time of Flight" sensing principle with PMD technology to provide reliable sensing in industrial automation applications. The advantages of PMD technology include extremely long sensing ranges, reliable background suppression, visible red light spot for setup and high excess gain. The OID's sensing range can reach up to 2 meters.

The switch point can be set easily by turning the rotatable setting ring. A visible red light spot helps to align the sensor. The OID200 will display in inches and centimeters and the OID201 will display in centimeters. The switch point also can be set before installation without the need for power.

The OID Series sensors offer reliable optical performance independent of target color. Whether shiny, matte, dark or light objects, the OID provides superior background suppression.




**Application markets**

Conveying
Material handling
Steel
Paper
Automotive
Wood

*The OID allows you to select the setpoint in inches and centimeters by turning the rotatable setting ring. No power is required for simple bench setup.*

***Time of flight principle***
*This principle measures a distance based on the time it takes light to travel to an object and back to the receiver.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 8 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 105 - 109 | 111 - 125 | 127 - 141 |

Search Bar

# Product + accessory selector

| Type | Range | Output | Spot Ø at Max. Range | Supply Current | Switching Frequency | Light Source | Unit of Measurement | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| | 0.03…2 m | Complementary LO / DO, PNP | < 5 mm | < 75 mA | 11 Hz | Class 2 laser Red light 650 nm | cm and inch | **OID200** | **$140.00** |
| | 0.03…2 m | Complementary LO / DO, PNP | < 5 mm | < 75 mA | 11 Hz | Class 2 laser Red light 650 nm | cm | **OID201** | **$140.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Short swivel bracket, diecast zinc | **E20873** | **$13.00** |
| | Short swivel bracket, 316 SS | **E20874** | **$18.00** |

## Cordsets

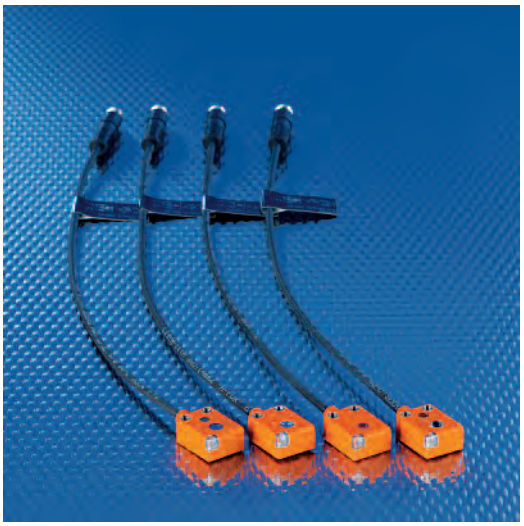
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Dimensions: | M30 x 90 mm |
| Operating voltage: | 10…30 VDC |
| Switching status indication: | yellow LED |
| Operation: | green LED |
| Switchpoint setting: | radial ring |
| Output function: | OUT1: LO<br>OUT2: DO |
| Current rating: | 2 x 100 mA |
| Protection: | IP65, IP67 |
| Operating temperature: | -13…140 °F (-25…60 °C) |
| Housing material: | stainless steel, PTB, PC, FPM |
| Font panel material: | PMMA |

Class 2
Laser



# Top five product features!

- Visible red light for an easy alignment and setup
- Ideal for position detection in part feeding and material handling applications
- Small light spot and narrow light cone for detecting small objects
- Thru-beam, retro-reflective and diffuse reflection sensors with fixed sensing ranges for quick setup
- Diffuse reflective sensors with precise background suppression

## Powerful photoelectric in a miniature housing

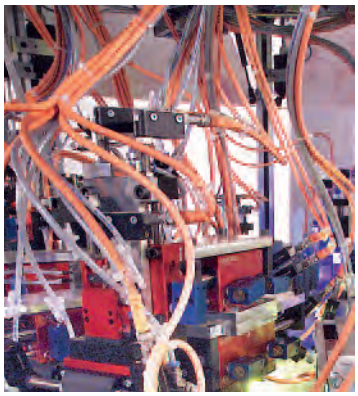
The O7 Series of photoelectric sensors are specifically designed for small part detection or when there is minimal mounting space for sensors. Typical applications are part feeding and material handling technologies. The sensor's small light spot and the narrow light cone enable the detection of small objects over long distances.

**Fixed sensing ranges enable quick setup**

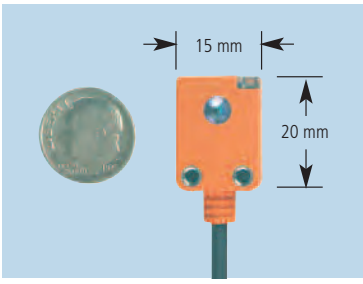
Fixed sensing ranges make the sensors plug-and-play and ready for operation immediately after installation. Visible red light allows fast and simple alignment.

Diffuse sensors with background suppression are available with 30, 50 or 100 mm ranges. Other models include polarized retro-reflective with 1 meter ranges and thru-beam pairs with 1.5 meter ranges.

*Ideal for position detection in part feeding and material handling applications*



**Miniature sensor mounts in tight areas**



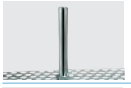
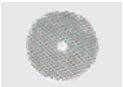

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression | 1...30 mm | LO PNP | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H200** | **$101.00** |
| | 1...30 mm | DO PNP | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H201** | **$101.00** |
| Diffuse background suppression | 1...30 mm | LO NPN | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H206** | **$101.00** |
| | 1...30 mm | DO NPN | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H207** | **$101.00** |
| Diffuse background suppression | 0...50 mm | LO PNP | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H202** | **$101.00** |
| | 0...50 mm | DO PNP | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H203** | **$101.00** |
| Diffuse background suppression | 0...50 mm | LO NPN | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H208** | **$101.00** |
| | 0...50 mm | DO NPN | 2.5 mm | 20 mA | 750 Hz | red light 633 nm | **O7H209** | **$101.00** |
| Diffuse background suppression | 0...100 mm | LO PNP | 7 mm | 20 mA | 750 Hz | red light 633 nm | **O7H204** | **$101.00** |
| | 0...100 mm | DO PNP | 7 mm | 20 mA | 750 Hz | red light 633 nm | **O7H205** | **$101.00** |
| Diffuse background suppression | 0...100 mm | LO NPN | 7 mm | 20 mA | 750 Hz | red light 633 nm | **O7H210** | **$101.00** |
| | 0...100 mm | DO NPN | 7 mm | 20 mA | 750 Hz | red light 633 nm | **O7H211** | **$101.00** |
| Polarized retro-reflective | 0.03...1 m | DO PNP | 55 mm | 20 mA | 1000 Hz | red light 633 nm | **O7P200** | **$97.00** |
| | 0.03...1 m | LO PNP | 55 mm | 20 mA | 1000 Hz | red light 633 nm | **O7P201** | **$97.00** |
| Polarized retro-reflective | 0.03...1 m | DO NPN | 55 mm | 20 mA | 1000 Hz | red light 633 nm | **O7P202** | **$97.00** |
| | 0.03...1 m | LO NPN | 55 mm | 20 mA | 1000 Hz | red light 633 nm | **O7P203** | **$97.00** |
| Thru-beam receiver | 0...1.5 m | DO PNP | – | 10 mA | 1000 Hz | red light 633 nm | **O7E200** | **$84.00** |
| | 0...1.5 m | LO PNP | – | 10 mA | 1000 Hz | red light 633 nm | **O7E201** | **$84.00** |
| Thru-beam receiver | 0...1.5 m | DO NPN | – | 10 mA | 1000 Hz | red light 633 nm | **O7E202** | **$84.00** |
| | 0...1.5 m | LO NPN | – | 10 mA | 1000 Hz | red light 633 nm | **O7E203** | **$84.00** |
| Thru-beam transmitter | 0...1.5 m | – | 90 mm | 20 mm | – | red light 633 nm | **O7S200** | **$67.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting set for clamp mounting, stainless steel (requires mounting rod below) | **E21237** | **$20.00** |
|  | Mounting rod, 120 mm M8 thread, Ø 10mm, stainless steel | **E21081** | **$13.00** |
| | Mounting set with ball joint, galvanized, stainless steel | **E21240** | **$12.00** |
|  | 25 mm reflector | **E20953** | **$8.00** |
| | 50 mm reflector | **E20956** | **$9.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico (3-pin) 2 m, PUR cable | **EVC141** | **$14.00** |
| | M8 Pico (3-pin) 5 m, PUR cable | **EVC142** | **$17.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 10...30 V DC |
| No. of wires: | 3-wire (O7S200: 2-wire) |
| Maximum load current: | 100 mA |
| Voltage drop: | < 2.5 V |
| Leakage current: | negligible |
| Connector: | 0.2 m pigtail with M8 connector |
| Housing materials: | PA |
| Lens material: | PMMA |
| Operating temp: | -13…140 °F (-25...60 °C) |
| Protection: | IP65 |

# Top five product features!

- Suitable for use in factory automation applications
- Best-in-class optical features
- Precise background suppression sensing independent of target color
- Rectangular plastic housing is industry standard size
- Dual potentiometer design for adjustment and light-on / dark-on selection

## Miniature photoelectrics for industrial automation

***NEW!*** ifm introduces a new line of miniature photoelectrics that are designed for a variety of applications in industrial automation applications.

The O6 Series Photoelectric Sensors feature a simple adjustment potentiometer and a visible red light source that allows the sensor to be set up in the application quickly and easily. The potentiometers are double-sealed and, like the lens, are embedded flush to allow for residue-free cleaning. The transparent black cover ensures that the sensor's two LEDs are highly visible even in bright lighting conditions. The coated lens is made of resistant, shatterproof PPSU PMMA plastic.

The O6 sensor line is available in diffuse, diffuse with background suppression, polarized retro-reflective and through-beam pairs.

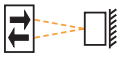
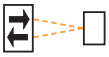
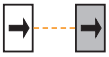
*Easy alignment – Powerful visible red light source with precise spot enables easy alignment and quick setup.*

*The "high performance" O6 Series photoelectric is designed and tested to withstand tough industrial automation applications.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| DC | Type | Range [mm] | Light Spot Diameter [mm] | Output | Prewired 2 m cable Part No. | 0.3 m PUR cable M12 connector Part No. | 3-pin M8 connector Part No. | 4-pin M8 connector Part No. | List price (USD) |
|---|---|---|---|---|---|---|---|---|---|
|  | Diffuse background suppression | 2...200 | 8 | 3-wire DC PNP | **O6H200** | **O6H201** | **O6H202** | **O6H203** | **$82.00** |
| | | 2...200 | 8 | 3-wire DC NPN | **O6H204** | **O6H205** | **O6H206** | **O6H207** | **$82.00** |
|  | Diffuse reflection | 5...500 | 15 | 3-wire DC PNP | **O6T200** | **O6T201** | **O6T202** | **O6T203** | **$75.00** |
| | | 5...500 | 15 | 3-wire DC NPN | **O6T204** | **O6T205** | **O6T206** | **O6T207** | **$75.00** |
| | Polarized retro-reflective | 50...5000* | 150 | 3-wire DC PNP | **O6P200** | **O6P201** | **O6P202** | **O6P203** | **$75.00** |
| | | 50...5000* | 150 | 3-wire DC NPN | **O6P204** | **O6P205** | **O6P206** | **O6P207** | **$75.00** |
| | Through-beam transmitter | 0...10000 | 300 | 2-wire DC | **O6S200** | **O6S201** | **O6S202** | **O6S203** | **$40.00** |
|  | Through-beam receiver | 0...10000 | – | 3-wire DC PNP | **O6E200** | **O6E201** | **O6E202** | **O6E203** | **$48.00** |
| | | 0...10000 | – | 3-wire DC NPN | **O6E204** | **O6E205** | **O6E206** | **O6E207** | **$48.00** |

* referred to reflector Ø 80 mm

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting set for clamp mounting, stainless steel (requires mounting rod) | **E21272** | **$20.00** |
| | Swivel bracket mounting rod, stainless steel | **E21081** | **$13.00** |
| | Bracket for free-standing mounting, stainless steel | **E21271** | **$8.00** |
| | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Technical Specs

| | |
|---|---|
| Type of light: | Red light 633 nm |
| Operating voltage: | 10...30 VDC |
| Current consumption: | 20 mA |
| Switching frequency: | 1000 Hz |
| Switching status indication: | Yellow LED |
| Operation: | Green LED |
| Current rating: | 100 mA |
| Voltage drop: | < 2.5 V |
| Protection rating: | IP65, IP67 |
| Ambient temperature: | 14…140 °F (-25…60 °C) |
| Housing material: | ABS |
| Lens material: | PPSU PMMA |

For M8 and M12 Micro DC connectors, see pgs. 250-259.

# Top five product features!

- Suitable for use in both factory automation and harsh applications
- Best-in-class optical features
- Precise background suppression sensing independent of target color
- Robust 316 stainless steel rectangular housing is industry standard size
- Dual potentiometer design for adjustment and light-on / dark-on selection

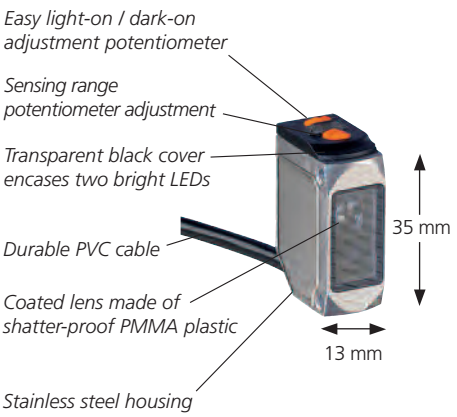
## Robust photoelectrics for harsh environments

***NEW!*** ifm introduces a new line of robust photoelectrics with stainless steel housings that are designed for a variety of industrial automation applications as well as sanitary environments. The O6 Series Photoelectric Sensors provide reliable position sensing in harsh environments.

The sensors feature a simple adjustment potentiometer and a visible red light source that sets up the sensor in an application quickly and easily. The potentiometers are double-sealed and, like the lens, are embedded flush to allow for residue-free cleaning. The transparent black cover ensures that the sensor's two LEDs are highly visible even in bright lighting conditions. The coated lens is made of resistant, shatterproof PPSU PMMA plastic.

The O6 sensor line is available in diffuse, diffuse with background suppression, polarized retro-reflective and through-beam pairs.

*The sensor can automatically adapt to the changing environmental conditions in a plant such as water and steam.*

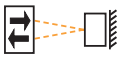
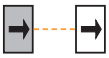
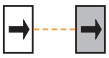


*Small but mighty – The robust O6 photoelectric sensors are designed to perform in the harshest environments.*

Search Bar

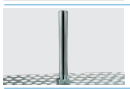
| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| DC | Type | Range [mm] | Light Spot Diameter [mm] | Output | Prewired 2 m cable Part No. | 0.3 m PUR cable M12 connector Part No. | 3-pin M8 connector Part No. | 4-pin M8 connector Part No. | List price (USD) |
|---|---|---|---|---|---|---|---|---|---|
|  | Diffuse background suppression | 2...200 | 8 | 3-wire DC PNP | **O6H300** | **O6H301** | **O6H302** | **O6H303** | **$110.00** |
| | | 2...200 | 8 | 3-wire DC NPN | **O6H304** | **O6H305** | **O6H306** | **O6H307** | **$110.00** |
| | Diffuse reflection | 5...500 | 15 | 3-wire DC PNP | **O6T300** | **O6T301** | **O6T302** | **O6T303** | **$95.00** |
| | | 5...500 | 15 | 3-wire DC NPN | **O6T304** | **O6T305** | **O6T306** | **O6T307** | **$95.00** |
| | Polarized retro-reflective | 50...5000* | 150 | 3-wire DC PNP | **O6P300** | **O6P301** | **O6P302** | **O6P303** | **$99.00** |
| | | 50...5000* | 150 | 3-wire DC NPN | **O6P304** | **O6P305** | **O6P306** | **O6P307** | **$99.00** |
|  | Through-beam transmitter | 0...10000 | 300 | 2-wire DC | **O6S300** | **O6S301** | **O6S302** | **O6S303** | **$75.00** |
|  | Through-beam receiver | 0...10000 | – | 3-wire DC PNP | **O6E300** | **O6E301** | **O6E302** | **O6E303** | **$80.00** |
| | | 0...10000 | – | 3-wire DC NPN | **O6E304** | **O6E305** | **O6E306** | **O6E307** | **$80.00** |

* referred to reflector Ø 80 mm

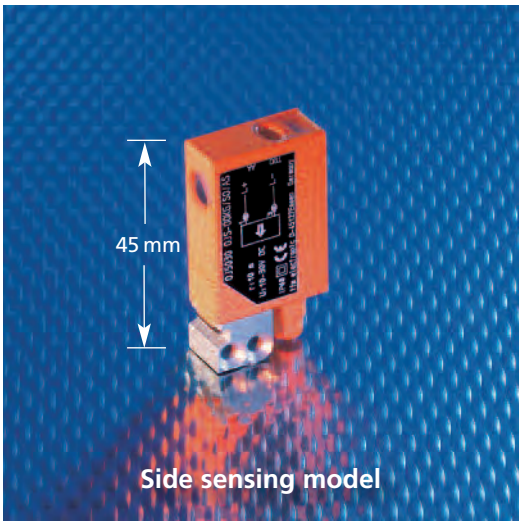
## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting set for clamp mounting, stainless steel (requires mounting rod) | **E21272** | **$20.00** |
|  | Swivel bracket mounting rod, stainless steel | **E21081** | **$13.00** |
| | Bracket for free-standing mounting, stainless steel | **E21271** | **$8.00** |
| | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Technical Specs

| | |
|---|---|
| Type of light: | Red light 633 nm |
| Operating voltage: | 10...30 VDC |
| Current consumption: | 20 mA |
| Switching frequency: | 1000 Hz |
| Switching status indication: | Yellow LED |
| Operation: | Green LED |
| Current rating: | 100 mA |
| Voltage drop: | < 2.5 V |
| Protection rating: | IP65, IP67, IP68, IP69K |
| Ambient temperature: | 14…176 °F (-25…80 °C) |
| Housing material: | High-grade stainless steel (1.4404 / 316L) |
| Lens material: | PPSU PMMA |

For M8 and M12 Micro DC connectors, see pgs. 250-259.




# Top five product features!

- *Small package, long range! Compact design is ideal for applications with limited mounting space*
- *Advanced microprocessor provides powerful signal processing and enables automatic adjustments to maximize safety margin*
- *Ideal for sensing small components and features 500 µs response time for high-speed applications*
- *Sensor continuously monitors the strength of received signals and provides a visual LED alert under marginal operating conditions*
- *Programmable light-on / dark-on for application flexibility*

## Compact size and automatic setup

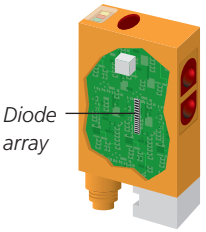
OJ photoelectric sensors use visible LEDs as the light source and measure only 24 x 45 x 11 mm. With switching speeds up to 2000 Hz, the sensors are fast enough to be used in most high-speed applications. A wide variety of mounting brackets allow the OJ to be adapted to most mounting configurations.

An advanced microprocessor provides powerful signal processing and analysis capabilities. This enables the OJ to learn the characteristics of both the target and the background in a specific application.

During initial installation, the automatic calibration will determine the light conditions of both the target-present and target-not-present conditions. The sensitivity of the OJ will then be automatically adjusted so there is a maximum safety margin under each condition.

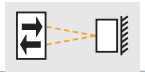
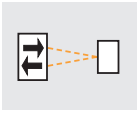
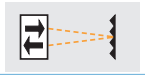
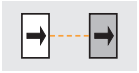
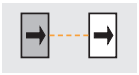
### Diode array sensing technology

*The OJ incorporates diode array technology that enables the sensor to differentiate between the target and the background.*

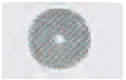



*The sensing element contains 63 diode receivers that are placed on an integrated circuit. The array is extremely small allowing it to fit inside the OJ's miniature housing.*

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 15...400 mm | LO/DO PNP | 48 mm | 25 mA | 1000 Hz | Red light 660 nm | **OJ5048** | **$91.00** |
| | | 15...400 mm | LO/DO NPN | 48 mm | 25 mA | 1000 Hz | Red light 660 nm | **OJ5049** | **$91.00** |
| Diffuse |  | 1...600 mm | LO/DO PNP | 60 mm | 22 mA | 2000 Hz | Red light 660 nm | **OJ5022** | **$91.00** |
| | | 1...600 mm | LO/DO NPN | 60 mm | 22 mA | 2000 Hz | Red light 660 nm | **OJ5023** | **$91.00** |
| | | 1...1000 mm | LO/DO PNP | 150 mm | 32 mA | 2000 Hz | Infrared 880 nm | **OJ5071** | **$91.00** |
| Polarized retro-reflective |  | 0...2 m | LO/DO PNP | 64 mm | 22 mA | 2000 Hz | Red light 660 nm | **OJ5026** | **$91.00** |
| | | 0...2 m | LO/DO NPN | 64 mm | 22 mA | 2000 Hz | Red light 660 nm | **OJ5027** | **$91.00** |
| Thru-beam receiver |  | 0...10 m | LO/DO PNP | – | 12 mA | 1200 Hz | – | **OJ5031** | **$70.00** |
| | | 0...10 m | LO/DO NPN | – | 12 mA | 1200 Hz | – | **OJ5032** | **$70.00** |
| Thru-beam transmitter |  | 0...10 m | – | 1000 mm | 19 mA | – | Red light 660 nm | **OJ5030** | **$53.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Ball and socket bracket | **E20974** | **$13.00** |
| | Swivel bracket for side sensing OJ | **E20968** | **$16.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC153** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC154** | **$18.00** |

OJ sensors are available in two lens configurations, side sensing and front sensing. Visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...30 VDC |
| No. of wires: | 3-wire; Part No. OJ5030: 2-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M8 |
| Housing material: | ABS, die-cast zinc, SEPS |
| Lens material: | Glass; Part Nos. OJ5048 and OJ5049: PMMA |
| Operating temperature: | -13…140 °F (-25…60 °C) |
| Protection: | IP67 |

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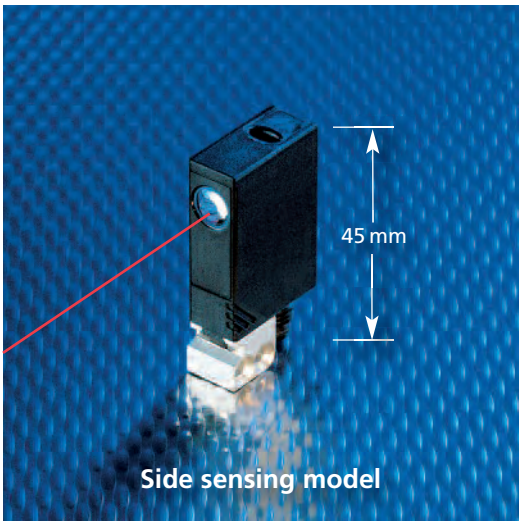



# Top five product features!

- *Bright red Class 1 laser light source provides visual indication of beam alignment*
- *Small package, long range! Compact design is ideal for applications with limited mounting space*
- *Advanced microprocessor provides powerful signal processing and enables automatic adjustments to maximize safety margin in an application*
- *Sensor continuously monitors the strength of the received signal and provides a visual LED alert under marginal operating conditions*
- *Programmable light-on / dark-on for application flexibility*

## Differentiates target from background at less than 0.5 mm

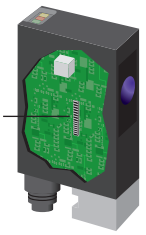
High resolution background suppression laser sensors are ideal for precise sensing applications. The sensor can differentiate between the target and the background at less than 0.5 mm. This type of accuracy is critical for assembly automation applications such as part present and inspection. The OJ's collimated laser beam provides the same beam width up to a distance of 200 mm.

An advanced microprocessor provides powerful signal processing and analysis capabilities. This enables the OJ to learn the characteristics of both the target and the background in a specific application.

During initial installation, the automatic calibration will determine the light conditions of both the target-present and target-not-present conditions. The sensitivity of the OJ will then be automatically adjusted so there is a maximum safety margin under each condition.

For application versatility, OJ sensors are available in two lens configurations, side sensing and front sensing.

### Diode array sensing technology




*The OJ incorporates diode array technology that enables the sensor to differentiate between the target and the background.*

*The sensing element contains 63 diode receivers that are placed on an integrated circuit. The array is extremely small allowing it to fit inside the OJ's miniature housing.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | Range | Output | Switching Frequency | Spot Ø at Max. Range | Supply Current | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression | 7…150 mm | LO/DO, PNP | 1000 Hz | 0.8 mm | 13 mA | Class 1 Laser | **OJ5058** | **$227.00** |
| Diffuse background suppression | 15…200 mm | LO/DO, PNP | 1000 Hz | 1 x 2 mm | 13 mA | Class 1 Laser | **OJ5054** | **$227.00** |
| | 15…200 mm | LO/DO, NPN | 1000 Hz | 1 x 2 mm | 13 mA | Class 1 Laser | **OJ5055** | **$227.00** |
| Polarized retro-reflective | 0…8 m | LO/DO, PNP | 2000 Hz | 12 mm | 15 mA | Class 1 Laser | **OJ5036** | **$202.00** |
| Thru-beam receiver | 0…1 m | LO/DO, PNP | 1200 Hz | – | 12 mA | Class 1 Laser | **OJ5042** | **$96.00** |
| Thru-beam transmitter | 0…1 m | – | – | 4 mm | 12 mA | Class 1 Laser | **OJ5041** | **$152.00** |
| Thru-beam receiver | 0…15 m | LO/DO, PNP | 1200 Hz | – | 12 mA | Class 1 Laser | **OJ5039** | **$96.00** |
| Thru-beam transmitter | 0…15 m | – | – | 24 mm | 12 mA | Class 1 Laser | **OJ5038** | **$152.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Fine adjust bracket for OJ sensor | **E20976** | **$26.00** |
| | Ball and socket bracket for OJ | **E20974** | **$13.00** |
| | 10 x 50 mm reflector | **E20988** | **$16.00** |
| | 50 x 50 mm reflector | **E20722** | **$15.00** |
| | 10 mm reflector | **E20990** | **$12.00** |
| | 19 mm reflector | **E20993** | **$12.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC153** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC154** | **$18.00** |

OJ sensors are available in two lens configurations, side sensing and front sensing. Visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Lens material: | Glass; except Part Nos. OJ5054, OJ5055, OJ5058: PMMA |
| Light source: | Red light, 650 nm |
| Housing material: | ABS, Fixture: die cast zinc<br>LED window: SEPS<br>Push button: SEPS |
| Supply voltage: | 10...30 VDC |
| Max Load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | negligible |
| Operating temperature: | 14...140 °F (-10...60 °C) |
| Protection: | IP67 |

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Class 1 Laser


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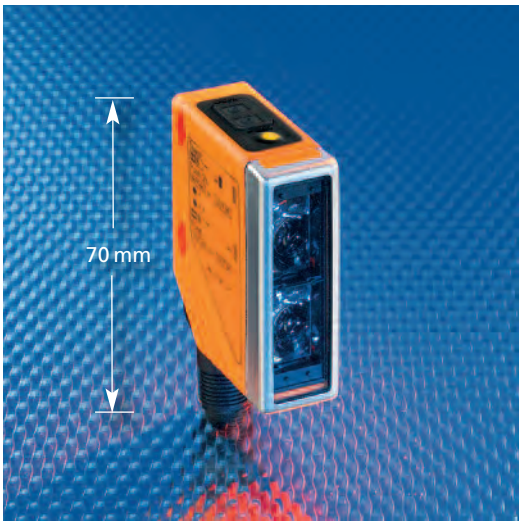
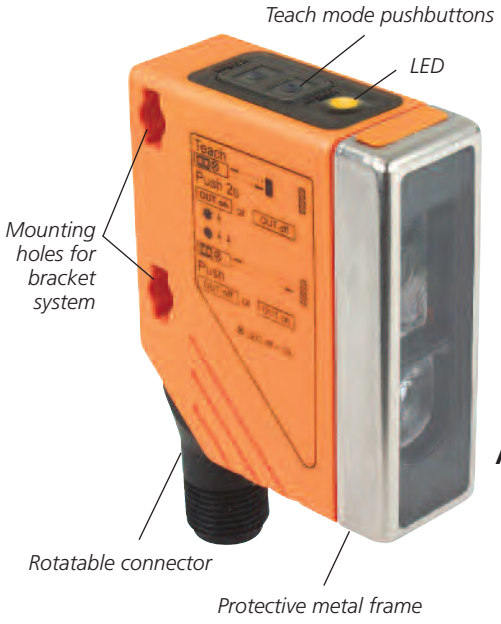



# Top five product features!

- *Visible red light technology provides precise alignment and simplifies adjustment*
- *Extremely long sensing ranges – up to 1.8 meters for background suppression models; 10 meters for polarized models*
- *Innovative two-pushbutton 'Teach mode' simplifies setup*
- *Protective metal frame withstands mechanical damage in industrial automation applications*
- *Durable rotating connector rotates 270° and easy-to-use bracket system reduces inventory for cordsets*

## Rugged design and versatile mounting

ifm's O5 photoelectric sensors offer extremely long sensing ranges in a small housing. The sensors offer a simple two pushbutton 'Teach Mode' that provides high accuracy and extreme resolution for precise applications.




Installation is easy. The sensor's connector rotates 270° for alignment in multiple directions. A variety of brackets are available for versatile mounting.

The O5 sensor can be mounted above its target – up to 1.8 meters for background suppression models.

With its combination of sensing range, compact housing and simple setup, the O5 sensor family is a price / performance benchmark.

**Actual size**

### Innovative 'Teach Mode' operation

***Step 1: OUT-off***

*Mount and align the sensor in the application. The sensor's visible red light simplifies adjustment. Press the OUT-off (output off) button for two seconds.*

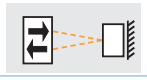
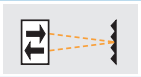
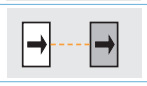
***Step 2: OUT-on***

*Position the object to be detected. Press the OUT-on (output on) button. The sensor is now ready for operation.*

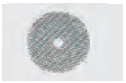
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 50...1800 mm | LO/DO PNP | 90 mm | 25 mA | 1000 Hz | Red light 624 nm | **O5H500** | **$109.00** |
| | | 50...1800 mm | LO/DO NPN | 90 mm | 25 mA | 1000 Hz | Red light 624 nm | **O5H504** | **$109.00** |
| Polarized retro-reflective |  | 0.075...10 m | LO/DO PNP | 250 mm | 20 mA | 2000 Hz | Red light 624 nm | **O5P500** | **$99.00** |
| | | 0.075...10 m | LO/DO NPN | 250 mm | 20 mA | 2000 Hz | Red light 624 nm | **O5P502** | **$99.00** |
| Thru-beam receiver |  | 0...25 m | LO/DO PNP | – | 11 mA | 1000 Hz | – | **O5E500** | **$93.00** |
| | | 0...25 m | LO/DO NPN | – | 11 mA | 1000 Hz | – | **O5E502** | **$93.00** |
| Thru-beam transmitter | | 0...25 m | – | 625 mm | 20 mA | – | Red light 624 nm | **O5S500** | **$86.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Short swivel bracket for rod with clamp | **E21083** | **$11.00** |
| | Freestanding mounting bracket | **E21087** | **$14.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...36 VDC |
| No. of wires: | 3-wire; Part No. O5S500: 2-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | PA, stainless steel, TPU |
| Lens material: | PMMA |
| Operating temperature: | -13…140 °F (-25…60 °C) |
| Protection: | IP67 |

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# Top five product features!

- *PMD "time-of-flight" technology enables long sensing ranges up to 2 meters (6.5 ft) and eliminates need for sensors with reflectors*
- *Superior optical performance independent of target color*
- *Plus/minus (+/-) buttons toggle to set the switchpoints*
- *Reliable background suppression with no false triggers from highly reflective objects such as stainless steel*
- *Class 2 laser can be mounted to any surface and rotated in any position for application versatility*

## O5D with simple setup applies "Time-of-Flight" measurement via PMD Technology

***NEW!*** The O5D Series photoelectric sensors integrate "Time of Flight" sensing principle with PMD technology to provide reliable sensing in industrial automation applications. The advantages of PMD technology include extremely long sensing ranges, reliable background suppression, visible red light spot for setup and high excess gain. The O5D's sensing range can reach up to 2 meters.

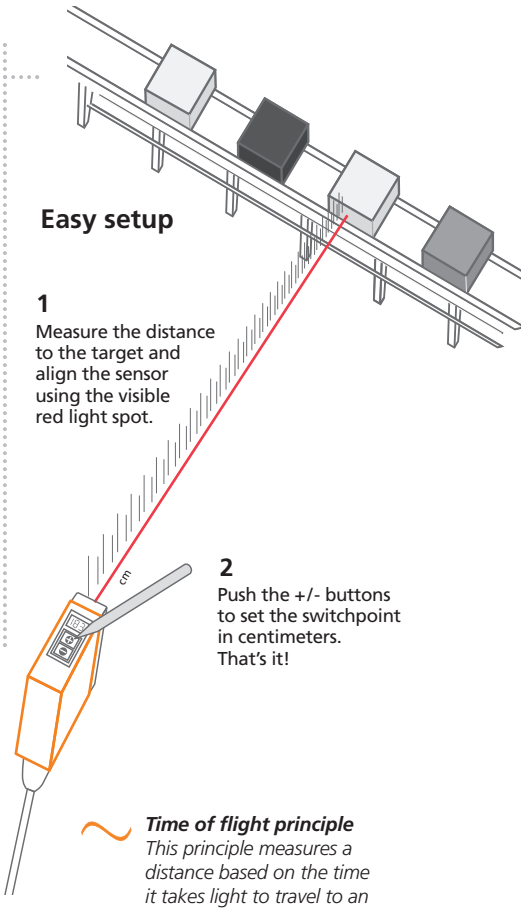
The switch point can be set easily by using the sensor's display with plus / minus (+/-) buttons that set the switchpoint. A visible red light spot helps to align the sensor and a numeric display shows the distance set. A model is available to display in inches.

The O5D Series sensors offer reliable optical performance independent of target color. Whether shiny, matte, dark or light objects, the O5D provides superior background suppression.

**Application markets**

Conveying
Material handling
Steel
Paper
Automotive
Wood

*Typical photoelectric sensors have challenges with false reflections from shiny targets such as stretch wrap on a pallet. The PMD "time-of-flight" technology from ifm performs reliably in these applications.*




***Time of flight principle***
*This principle measures a distance based on the time it takes light to travel to an object and back to the receiver.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 8 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 105 - 109 | 111 - 125 | 127 - 141 |

Search Bar

# Product + accessory selector

| Type | Range | Output | Spot Ø at Max. Range | Supply Current | Switching Frequency | Light Source | Unit of Measurement | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| | .03…2 m | Complementary LO / DO, PNP | < 5 mm | < 75 mA | 11 Hz | Class 2 laser Red light 650 nm | cm | **O5D100** | **$145.00** |
| | .03…2 m | Complementary LO / DO, PNP | < 5 mm | < 75 mA | 11 Hz | Class 2 laser Red light 650 nm | inch | **O5D101** | **$145.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Short swivel bracket for rod with clamp | **E21083** | **$11.00** |
| | Freestanding mounting bracket | **E21087** | **$14.00** |

## Cordsets

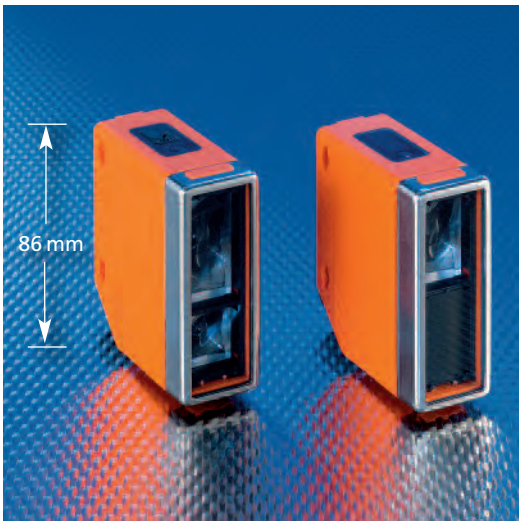
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Dimensions: | 47 x 56 x 18 mm |
| Operating voltage: | 10…30 VDC |
| Switching status indication: | yellow LED |
| Operation: | green LED |
| Switchpoint setting: | pushbutton |
| Output function: | OUT1: LO<br>OUT2: DO |
| Current rating: | 2 x 100 mA |
| Protection: | IP65, IP67 |
| Operating temperature: | -13…140 °F (-25…60 °C) |
| Housing material: | stainless steel, PA, TPU |
| Font panel material: | PMMA |

Class 2 Laser




# Top five product features!

- *Photoelectric with long sensing ranges that reach up to 80 meters*
- *Visible red light technology provides precise alignment and simplifies adjustment*
- *Innovative two-pushbutton 'teach mode' simplifies setup procedure*
- *Built-in stainless steel frame protects housing in harsh environments*
- *Durable rotating connector rotates 270° and easy-to-use bracket system reduces inventory for mounting accessories*

## O4 Photoelectrics with 80 meter sensing ranges

Compact O4 Series photoelectric sensors offer extremely long sensing ranges that are ideal for applications including transporting, conveying, inspection and error-proofing. The sensor's extended sensing range enables the sensor to be placed farther away from an application reducing its chance of physical damage. A built-in, stainless steel frame provides additional protection for the sensor.

Flexible mounting with visible red light for alignment

- Visible red light technology simplifies set-up and provides quick mounting.
- The durable connector rotates 270° for alignment in multiple directions. A variety of easy-to-use brackets are available for versatile mounting options.

### Innovative 'Teach Mode' operation

***Step 1: OUT-off***

*Mount and align the sensor in the application. The sensor's visible red light simplifies adjustment. Press the OUT-off (output off) button for two seconds.*

***Step 2: OUT-on***

*Position the object to be detected. Press the OUT-on (output on) button. The sensor is now ready for operation.*

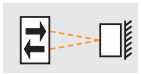
***PNP to NPN converter cordset***

*This cordset converts PNP outputs to NPN outputs.*

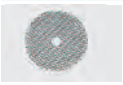
*Part no.: EVC01E (5 meters)*
*List price (1-pc): $19.00*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
Search Bar
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max. range | Supply Current | Switching Frequency | light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Diffuse background suppression |  | 100…2600 mm | LO/DO PNP | 135 mm | 25 mA | 1000 Hz | Red light 624 nm | **O4H500** | **$114.00** |
| Polarized retro-reflective | | 0.3…22 m | LO/DO PNP | 660 mm | 20 mA | 2000 Hz | Red light 624 nm | **O4P500** | **$104.00** |
| Thru-beam receiver | | 0…80 m | LO/DO PNP | – | 12 mA | 1000 Hz | – | **O4E500** | **$91.00** |
| Thru-beam transmitter | | 0…80 m | – | 2400 mm | 20 mA | – | Red light 624 nm | **O4S500** | **$82.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Swivel bracket | **E21118** | **$21.00** |
| | Protective bracket | **E21119** | **$36.00** |
|  | 50 mm reflector | **E20956** | **$9.00** |
| | 80 mm reflector | **E20005** | **$8.00** |
| | Swivel bracket with 50 mm reflector | **E20997** | **$16.00** |
| | Swivel bracket with 80 mm reflector | **E20995** | **$23.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage | 10…36 VDC |
| No. of wires | 3-wire; Part No. O4S500: 2-wire |
| Maximum load current | 200 mA |
| Voltage drop | <2.5 V |
| Leakage current | Negligible |
| Connector | M12 |
| Housing material | PA, stainless steel, TPE |
| Lens material | PMMA |
| Operating temperature | -13…140 °F (-25…60 °C) |
| Protection | IP67 |

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ifm R&D engineers design products that reduce machine downtime, increase productivity and simplify installation.

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# Top five product features!

- Fork and angle sensors with one-piece housing design saves set-up time
- Accurate alignment – no need to align transmitter and receiver
- Robust, metal housing with thru-holes for easy mounting without brackets
- Laser sensors are ideal for detecting very small parts
- Light-on / dark-on mode selectable via rotary switch for application flexibility

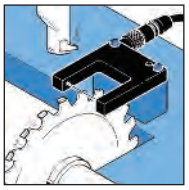
## Optical fork and angle sensors offer easy setup and accurate alignment in robust metal housing

ifm's optical fork and angle sensors offer a flexible solution for a broad range of packaging and material handling applications. Unlike traditional thru-beam photoelectric sensor pairs, ifm's fork and angle sensors offer a one-piece, fixed-distance transmitter and receiver design. This design eliminates the time consuming alignment of a transmitter and a receiver.

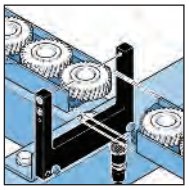
The sensor's robust metal housing resists distortion that typically occurs with conventional plastic fork sensors. A visible red light beam across the whole width assists in setup. Easy adjustable sensitivity setting is established via a potentiometer. Integrated thru-holes provide simple mounting without brackets.

Fork housings are available with slot widths ranging from 10 mm up to 120 mm. Angle sensors are available in 60 mm and 100 mm widths.

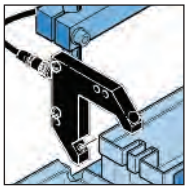
### Application solutions



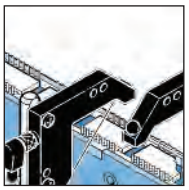
Gear tooth detection



Part detection on tracks

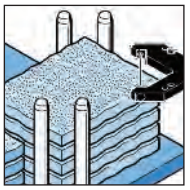


Part detection on conveyors



Detection of legs on integrated circuits

Transparent film and web edge control



Monitoring of batch height

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Fork Sensors | Fork Width (w) | Fork Depth (d) | Output | Smallest Detectable Object Ø | Light Source | Switching Frequency | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Visible red and infrared** | | | | | | | | |
| | 10 mm | 17 mm | LO / DO, PNP / NPN | 0.3 mm | Infrared light 880 nm | 10000 Hz | **OPU200** | **$141.00** |
| | 20 mm | 25 mm | LO / DO, PNP | 0.4 mm | Red light 660 nm | 4000 Hz | **OPU201** | **$152.00** |
| | 30 mm | 35 mm | LO / DO, PNP | 0.5 mm | Red light 660 nm | 4000 Hz | **OPU202** | **$174.00** |
| | 50 mm | 55 mm | LO / DO, PNP | 0.5 mm | Red light 660 nm | 4000 Hz | **OPU203** | **$185.00** |
| | 80 mm | 55 mm | LO / DO, PNP | 0.5 mm | Red light 660 nm | 4000 Hz | **OPU204** | **$203.00** |
| | 120 mm | 60 mm | LO / DO, PNP | 0.8 mm | Red light 660 nm | 2000 Hz | **OPU205** | **$208.00** |
| **Class 2 Laser** | | | | | | | | |
| | 30 mm | 30 mm | LO / DO, PNP | 0.05 mm | Class 2 laser, Red light 670 nm | 3000 Hz | **OPU700** | **$269.00** |
| | 50 mm | 50 mm | LO / DO, PNP | 0.05 mm | Class 2 laser, Red light 670 nm | 3000 Hz | **OPU701** | **$280.00** |
| | 80 mm | 50 mm | LO / DO, PNP | 0.05 mm | Class 2 laser, Red light 670 nm | 3000 Hz | **OPU702** | **$302.00** |

| Angle Sensors | Side Length (x, y) | Sensor Width (z) | Output | Smallest Detectable Object Ø | Light Source | Switching Frequency | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Visible red** | | | | | | | | |
| | 50 mm | 60 mm | LO / DO, PNP | 0.5 mm | Red light | 4000 Hz | **OPL200** | **$197.00** |
| | 80 mm | 100 mm | LO / DO, PNP | 0.7 mm | Red light | 4000 Hz | **OPL201** | **$209.00** |

NPN versions of fork and angle sensors available, call 800-441-8246 or visit www.ifm.com/us

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico (3-pin) 2 m, PUR cable | **EVC141** | **$14.00** |
| | M8 Pico (3-pin) 5 m, PUR cable | **EVC142** | **$17.00** |
| | M8 Pico (3-pin) 2 m, PUR cable | **EVC144** | **$14.00** |
| | M8 Pico (3-pin) 5 m, PUR cable | **EVC145** | **$17.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 10...35 VDC<br>Laser: 10…30 VDC |
| Short-circuit protection, pulsed: | yes |
| Reverse polarity / overload protection: | yes / yes |
| Operating temperature: | -13…140 °F (-25…60 °C)<br>Laser: 41…113 °F (5…45 °C) |
| Current rating: | 200 mA |
| Protection: | IP67 |
| Housing material: | Diecast zinc |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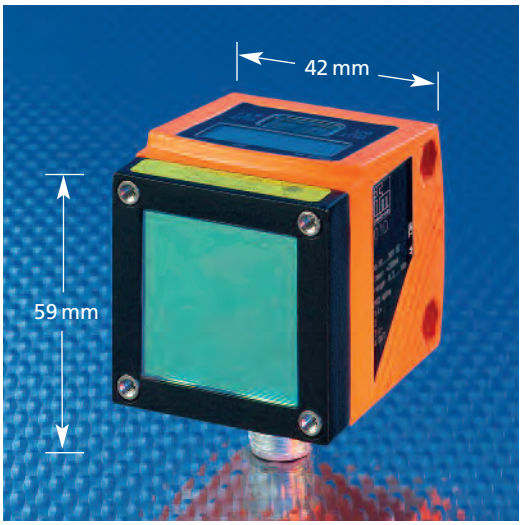



# *Top five product features!*

- *Right balance of performance, size and price for distance measurement applications*
- *Photoelectric is ideal for long-range background suppression applications*
- *Large 4-digit alphanumeric display indicates measured distance*
- *Multiple setpoints: single switching, dual switching or switching and analog output*
- *Ignores ambient light up to 100 klx*

## Reliable solution for long-range object detection

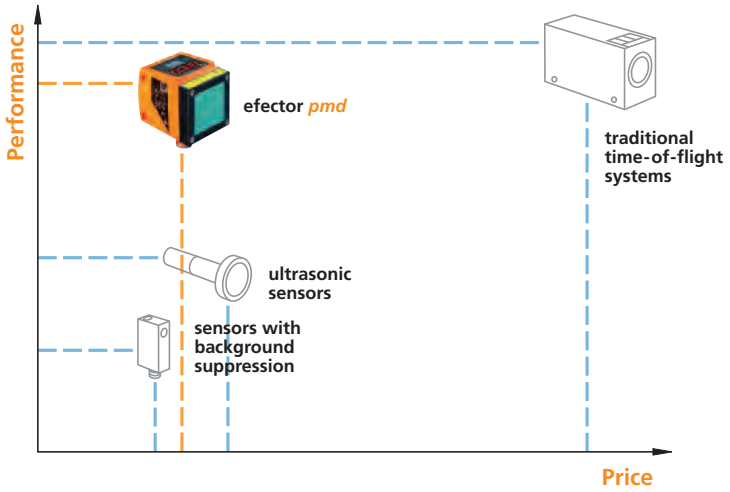
The harsh effects of manufacturing conditions such as weld slag and chemicals often prevent optical sensors from being used in error-proofing applications. The *efector pmd laser sensor* with background suppression can be placed farther away from the application – and the elements – to accurately locate a small part.

### efector pmd advantage

Background suppression and ultrasonic sensors are lower-cost alternatives for distance measurement but have shorter ranges. Traditional time-of-flight systems offer an improved level of performance but are much higher in cost. The efector pmd sensor combines the advantages of these systems: a 10 meter range at an affordable price.

### New feature

The ifm PMD sensor can now ignore ambient light up to 100 klx. This makes it a perfect sensor for both indoor and outdoor applications.




### 4-digit numeric display

*The sensor's 4-digit alphanumeric display precisely indicates the measured distance. Models available with simple teach function or parameter setup via pushbutton.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Function | Range | Output | Spot Ø at Max Range | Supply Current | Sampling Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| Distance measurement sensor | 0.2…10 m | 4-20 mA / 0-10 VDC and PNP or dual PNP | 6 mm | 150 mA | 1…50 Hz | Class 2 laser Red light 650 nm | **O1D100** | **$394.00** |
| Distance measurement sensor | 0.2…10 m | 4-20 mA / 0-10 VDC and NPN or dual NPN | 6 mm | 150 mA | 1…50 Hz | Class 2 laser Red light 650 nm | **O1D103** | **$394.00** |
| Distance measurement sensor | 0.3…6 m | 4-20 mA / 0-10 VDC and PNP or dual PNP | 6 mm | 150 mA | 1…50 Hz | **Class 1 laser** Red light 650 nm | **O1D155** | **$394.00** |
| Distance measurement sensor | 1…75 m (requires reflector) | 4-20 mA / 0-10 VDC PNP | 150 mm | 150 mA | 1…33 Hz | Class 2 laser Red light 650 nm | **O1D106** | **$421.00** |
| Distance measurement sensor | 0.2…10 m | LO/DO PNP | 6 mm | 150 mA | 5 Hz | Class 2 laser Red light 650 nm | **O1D101** | **$368.00** |
| Distance measurement sensor | 0.2…10 m | LO/DO NPN | 6 mm | 150 mA | 5 Hz | Class 2 laser Red light 650 nm | **O1D104** | **$368.00** |
| Level measurement sensor | 0.2…10 m | 4-20 mA / 0-10 VDC PNP | 6 mm | 150 mA | 1…33 Hz | Class 2 laser Red light 650 nm | **O1D300** | **$394.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Rail mount swivel bracket for O1D | **E21079** | **$53.00** |
| | Plastic cover for O1D | **E21133** | **$29.00** |
| | 95 x 95 mm reflector (for O1D106) | **E20454** | **$23.00** |
| | 226 x 262 mm reflector (for O1D106) | **E21159** | **$194.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | O1D100, O1D103, O1D106, O1D155 and O1D300: 18...30 V DC; O1D101 and O1D104: 10…30 VDC |
| No. of wires: | 4-wire: O1D100, O1D103, O1D106, O1D155 and O1D300<br>3-wire: O1D101, O1D104 |
| Maximum load current: | O1D100, O1D103, O1D106, O1D155 and O1D300: 2 x 200 mA;<br>O1D101 and O1D104: 1 x 200 mA |
| Connector: | M12 |
| Housing material: | Die-cast zinc, PC |
| Lens material: | Glass |
| Operating temperature: | -14…140 °F (-10…60 °C) |
| Protection: | IP67 |

Class 1 laser

Class 2 Laser

### Reliable service center

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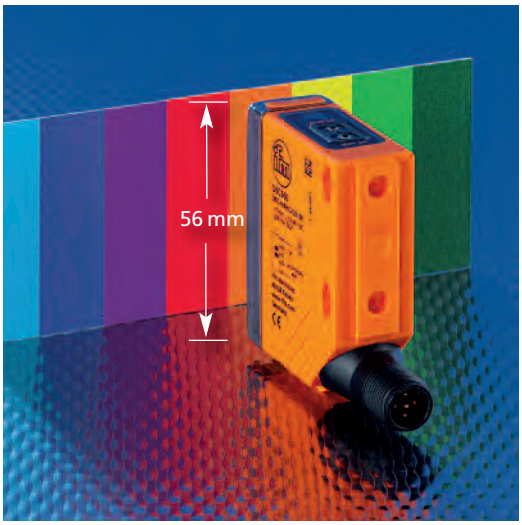



# Top five product features!

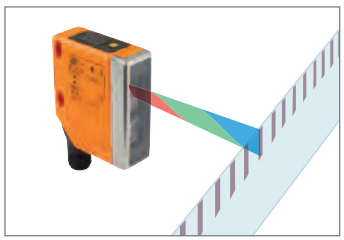
- *Contrast and color sensors for error-proofing and object detection*
- *Sensor uses reliable RGB (red, green, blue) technology to determine ideal color to differentiate target background*
- *High color contrast sensitivity and resolution*
- *18 to 22 mm sensing range for contrast, 15 to 18 mm for color*
- *Auto-detect for PNP/NPN configuration and "Teach Mode" setup to establish application parameters*

## O5 contrast and color photoelectric sensors

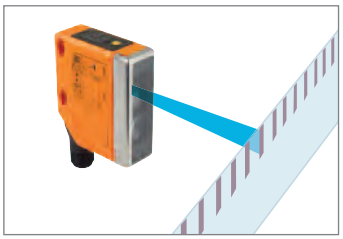
ifm's high performance O5 Series Contrast and Color sensors offer a variety of sensing solutions for the packaging, assembly, material handling and printing industries.

The O5 sensors feature a RGB visible light transmission LED that processes through red, green and blue to identify the best contrast color between the target and the background.

### Contrast sensor application solutions

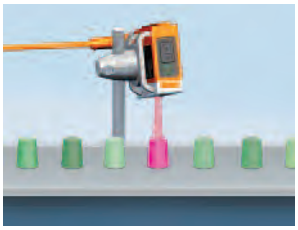


*The Contrast Sensor's visible light processes through red, green and blue to identify the best color for contrast.*

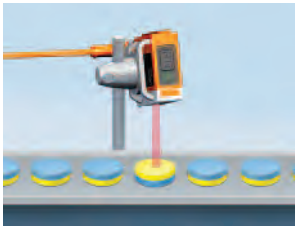


*In this example, the sensor selects blue for the highest contrast color. The sensor's high switching frequency can handle the application's short mark-to-space ratio.*

### Color sensor application solutions



***Color verification:*** *Using the O5's adjustable tolerance, the O5 can accept variations of the same color and reject different colors.*



***Orientation:*** *The O5 detects proper orientation in fast-moving applications.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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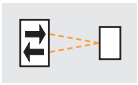
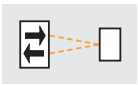
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| Function | | Range | Output | Spot Ø at max range | Supply Current | Switching Frequency | Light Source | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| Contrast sensor: diffuse |  | 18...22 mm | LO/DO PNP/NPN | 1.5 x 5 mm | < 50 mA | 10000 Hz | RGB | **O5K500** | **$197.00** |
| Color sensor |  | 15…19 mm | LO/DO PNP/NPN | 2.5 x 6 mm | < 50 mA | 2000 Hz | RGB | **O5C500** | **$364.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Short swivel bracket for rod with clamp | **E21083** | **$11.00** |
| | Freestanding mounting bracket | **E21087** | **$14.00** |

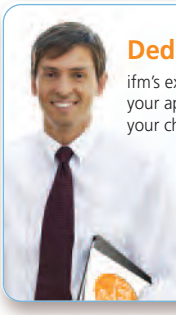
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR, LED | **EVC007** | **$12.75** |
| | M12 Micro DC (4-pin) 5 m, PUR, LED | **EVC008** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Type of light: | Red light 625 nm<br>Green light 525 nm<br>Blue light 465 nm |
| Supply voltage: | 10...36 V DC |
| No. of wires: | 3-wire |
| Maximum load current: | 200 mA |
| Voltage drop: | <2.5 V |
| Leakage current: | Negligible |
| Connector: | M12 |
| Housing material: | PA, stainless steel, TPU/PC |
| Lens material: | PMMA |
| Operating temperature: | -13…140 °F (-25…60 °C) |
| Protection: | IP67 |

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# Top five product features!

- Detects glass, film, PET bottles and transparent objects
- Simple automatic sensitivity adjustment for reliable detection of clear objects
- Programmable LO / DO for application flexibility
- Thru-hole mounting for an easy, fixed mounting solution
- Multiple bracket options for mounting flexibility

## Reliable clear object detection

*OJ sensor uses a reflector to detect plastic bottles on a conveyor.*

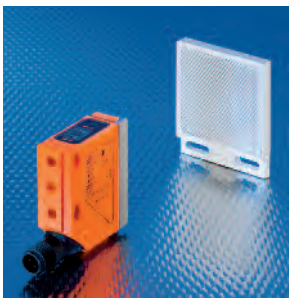
One of the most difficult photoelectric applications is the detection of clear objects such as film, glass, or PET plastic bottles and transparent packaging. Standard sensors typically have too much excess gain and "burn" through the clear material. ifm efector offers two options for clear object detection applications: the OJ Series sensors and the O5 Series sensor.

**OJ Series sensors – compact housings, long sensing ranges**

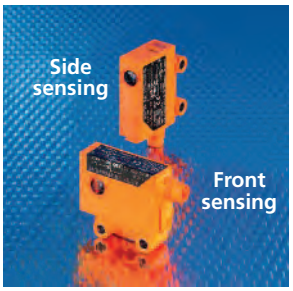
ifm's OJ Series retroreflective sensor offers a low switching hysteresis specifically for the detection of transparent objects. The sensors incorporate an innovative technology that allows the sensitivity to be automatically set using an easy-to-use teach function. The teach function eliminates the need to have the product present during initial set up. The technology also reduces the effect of "dead spots" or areas on plastic bottles that cannot be detected when teaching the sensor to read a clear bottle as the target.

**O5 Series sensors - sensing range up to 3 meters**

ifm's compact O5 Series polarized retro-reflective sensor offers extremely long sensing ranges – up to 3 meters when used with ifm's prismatic square reflector (Part No. E20454). The high-precision sensor is designed for inspection and error-proofing applications and offers high switching frequency of 2000 Hz for fast moving processes. The unit features a two-pushbutton Teach operation that quickly establishes light-on/dark-on programming. The sensor's micro-processor provides automatic calibration, load detection (PNP or NPN), and switch point adjustment with soiling indication.



*O5 Series sensing range reaches up to 3 meters using a prismatic reflector.*

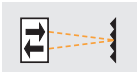



*OJ sensors feature front sensing and side sensing models.*

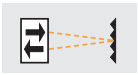
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

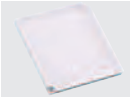
# Product + accessory selector

| Function | | Connector | Output | Switching Frequency [Hz] | Supply Current [mA] | Spot Ø at max. range [mm] | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **O5 3-wire DC · Clear object detection · adjustable range...1.5 m* (with E20722 reflector) · red light 624 nm** | | | | | | | | |
| Polarized retro-reflective |  | M12 | LO/DO PNP/NPN | 1500 | <50 | 40 mm @ 1.5 m<br>80 mm @ 3 m | **O5G500** | **$138.00** |

*Adjustable range 3 m with E20454 reflector.

| Function | | Connector | Output | Switching Frequency [Hz] | Supply Current [mA] | Lens position | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **OJ 4-wire DC · Clear object detection · range...1.5 m (with E20722 reflector) · red light 660 nm** | | | | | | | | |
| Polarized retro-reflective |  | M8 | LO/DO PNP | 2000 | < 22 | front | **OJ5185** | **$130.00** |
| | | M8 | LO/DO PNP | 2000 | < 22 | side | **OJ5186** | **$130.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | O5 Sensor swivel bracket for rod<br>Complete set includes clamp | **E21083** | **$11.00** |
| | O5 Sensor protective bracket for rod<br>Complete set includes clamp | **E21084** | **$16.00** |
| | O5 Sensor freestanding mounting bracket | **E21087** | **$14.00** |
| | OJ Sensor stainless steel clip | **E20965** | **$22.00** |
| | OJ sensor swivel bracket for front sensing OJ, die-cast zinc | **E20966** | **$15.00** |
| | OJ sensor swivel bracket for side sensing OJ, die-cast zinc | **E20968** | **$16.00** |
| | 50 x 50 mm reflector | **E20722** | **$15.00** |
|  | 95 x 95 mm reflector | **E20454** | **$23.00** |

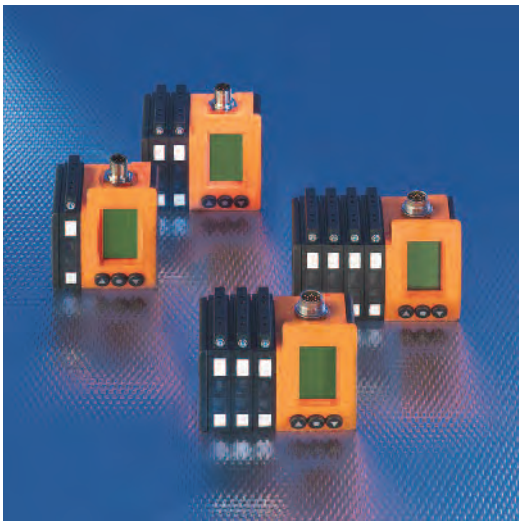
## Cordsets for O5 Sensors

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

## Cordsets for OJ Sensors

| | | | |
|---|---|---|---|
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC154** | **$18.00** |
| | M8 Pico DC (4-pin) 10 m, PUR | **EVC155** | **$24.00** |

OJ sensors are available in two lens configurations, side sensing and front sensing. Visit www.ifm.com/us



# Top five product features!

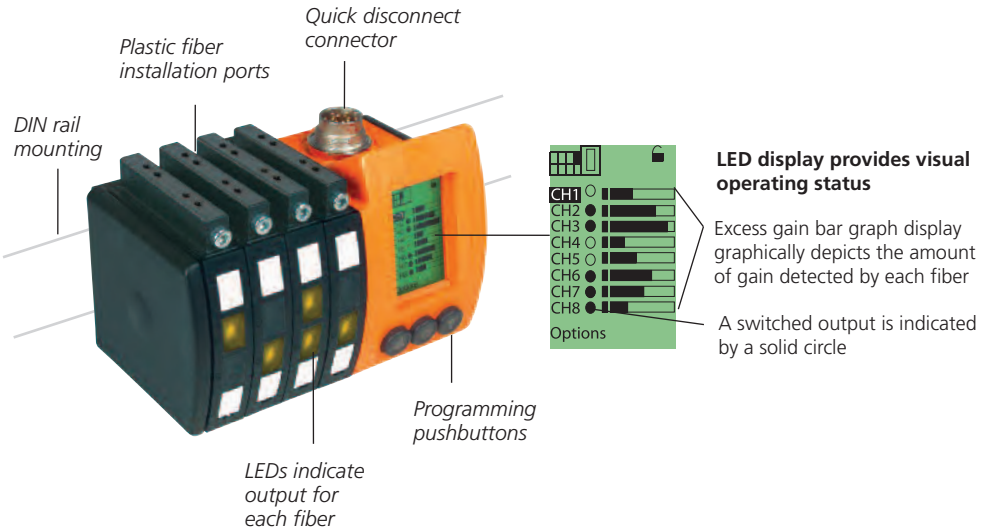
- Multi-channel fiber optic controller with central operating display is designed for applications with multiple sensing points
- Features LCD operator interface that can be used to program multiple fibers and perform AND / OR logic functions
- Available in 2-fiber, 4-fiber, 6-fiber and 8-fiber models
- Individual fibers can be programmed for up to two switchpoints each
- Controller eliminates excessive wiring by using a single cable that replaces individual wiring for each amplifier

## Fiber optic controllers and amplifiers

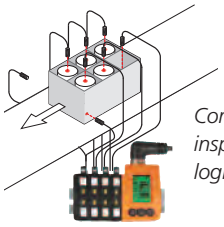
Fiber optics can be used in applications with limited mounting space or as an alternative to a standard photoelectric sensor. Because the electronics are contained in a separate housing that can be remotely located, only the miniature fiber must be mounted near the target.

**Multi-Channel Fiber Optic Controller reduces wiring**

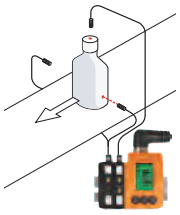
ifm's multi-channel fiber optic controller is designed for applications that require multiple fiber-optic sensing points. The controller eliminates excessive wiring by using a single cable that replaces individual wiring for each amplifier. Depending on the model, up to eight fibers can be connected to one fiber optic controller.



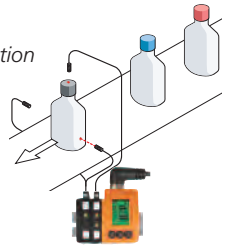

### Controller multi-point application solutions



Compartment inspection using logic AND function



Cap inspection using second switchpoint



Contrast detection using second switchpoint

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
Search Bar
1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

# Product + accessory selector

| Function | Connector | Number of Channels | Output | Supply Current | Switching Frequency | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **Amplifier for plastic fibers – See page 102 for fibers** | | | | | | | |
| | M12 | 2 | LO/DO PNP | 50 mA | 2700 Hz | **OO5000** | **$308.00** |
| | M12 | 2 | LO/DO NPN | 50 mA | 2700 Hz | **OO5008** | **$308.00** |
| | M12 | 4 | LO/DO PNP | 50 mA | 1500 Hz | **OO5001** | **$451.00** |
| | M16 | 6 | LO/DO PNP | 50 mA | 1000 Hz | **OO5002** | **$595.00** |
| | M16 | 6 | LO/DO NPN | 50 mA | 1000 Hz | **OO5010** | **$595.00** |
| | M16 | 8 | LO/DO PNP | 50 mA | 800 Hz | **OO5003** | **$733.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (8-pin)<br>2 m black, right angle | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin)<br>5 m black, right angle | **E11232** | **$34.00** |
| | M16 Micro DC (14-pin)<br>2 m black, right angle | **E11645** | **$56.00** |
| | M16 Micro DC (14-pin)<br>5 m black, right angle | **E11697** | **$76.00** |

For additional controllers and fiber optics, visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Housing Material: | ABS |
| Light source: | Red light 630 nm |
| Supply Voltage: | 12...36 VDC |
| Maximum Load Current: | 200 mA |
| Voltage Drop: | <2 V |
| Leakage Current: | negligible |
| Operating Temp: | -4...140 °F (-20...60 °C) |
| Protection: | IP65 |

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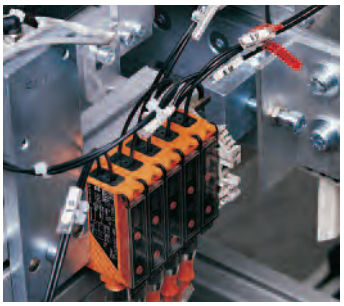
# Top five product features!

- *Fiber optic amplifiers for plastic or glass fibers*
- *Single-fiber amplifiers incorporate transmitter and receiver in one housing*
- *Automatic pushbutton setup adjustment for quick application setup*
- *Auto detect circuit for PNP or NPN output*
- *Provides multiple bright LEDs for signal strength indication*

## Fiber optic amplifiers



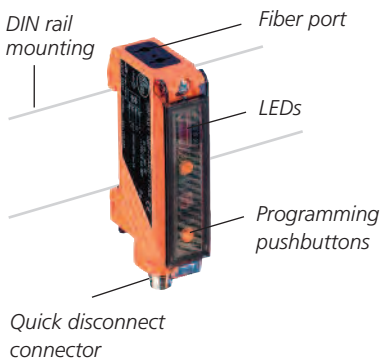
*OBF amplifiers can be mounted in areas with limited mounting space*

Fiber optics can be used in applications with limited mounting space or as an alternative to standard photoelectric sensors. Because the electronics are contained in a separate housing that can be remotely located, only the miniature fiber must be mounted near the target.

**OBF amplifiers**

The OBF amplifiers incorporate a transmitter and receiver in one housing. A single fiber optic cable is connected to the amplifier and directs light to and from the transmitter and receiver. Fiber optic cables are available in two versions: thru-beam and diffuse reflection.

**Powerful amplifier in a compact housing**

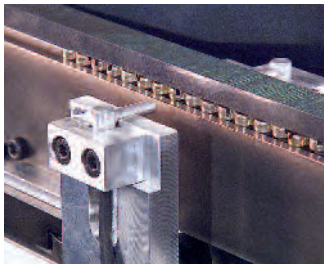



**Typical applications:**

*Confined spaces:* The fiber optic head can be positioned at the sensing location, while the amplifier can be mounted remotely where sufficient space is available. Fiber cables are typically 2-6 feet long to accommodate the distance.

*Detection of minute objects:* Depending on the sensing head and range, objects as small as 0.5mm can be detected. When the placement of the target is precise, it is possible to detect fine structures such as thread pitches.

*High temperatures:* Stainless steel glass fiber optic cables can withstand temperatures up to 600°F



Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# *Product + accessory selector*

| Function | Connector | Number of Fibers | Output | Supply Current | Switching Frequency | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **Amplifier for plastic fibers – See page 102 for fibers** | | | | | | | |
| | M12 | 1 | PNP/NPN, LO/DO | < 50 mA | 3000 Hz | **OBF500** | **$143.00** |
| | M8 3-pin* | 1 | PNP/NPN, LO/DO | < 50 mA | 3000 Hz | **OBF503** | **$143.00** |
| | M8 4-pin | 1 | PNP/NPN, LO/DO | < 50 mA | 3000 Hz | **OBF501** | **$143.00** |
| | Prewired | 1 | PNP/NPN, LO/DO | < 50 mA | 3000 Hz | **OBF502** | **$143.00** |
| **Amplifier for glass fibers – See page 103 for fibers** | | | | | | | |
| | M12 | 1 | PNP/NPN, LO/DO | < 50 mA | 1000 Hz | **OBF504** | **$143.00** |
| | M8 3-pin* | 1 | PNP/NPN, LO/DO | < 50 mA | 1000 Hz | **OBF507** | **$143.00** |
| | M8 4-pin | 1 | PNP/NPN, LO/DO | < 50 mA | 1000 Hz | **OBF505** | **$143.00** |

* Does not have marginal signal output

* Does not have marginal signal output

## Cordsets (4-pin) and Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | Fiber optic cutter for plastic fibers | **E20600** | **$11.00** |

For additional amplifiers and fiber optics, visit www.ifm.com/us

## Cordsets (3-pin and 4-pin)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC141** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC142** | **$17.00** |
| | M8 Pico DC (3-pin) 2 m, PUR | **EVC144** | **$14.00** |
| | M8 Pico DC (3-pin) 5 m, PUR | **EVC145** | **$17.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin) 2 m, PUR | **EVC153** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR | **EVC154** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Housing Material: | PPE |
| Light source: | red light 630 nm |
| Supply Voltage: | 10...30 VDC |
| Maximum Load Current: | 100 mA |
| Voltage Drop: | <2.5 V |
| Leakage Current: | negligible |
| Operating Temp: | -13...140 °F (-25...60 °C) |
| Protection: | IP65 |

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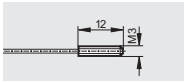
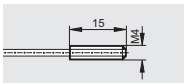
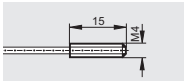
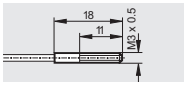
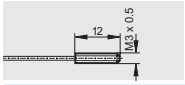
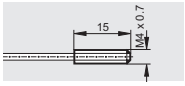
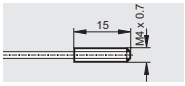
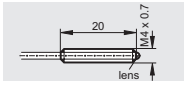
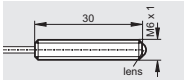
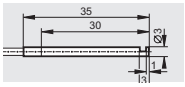
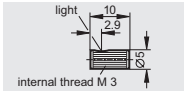
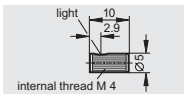
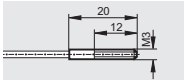
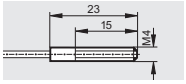
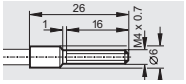
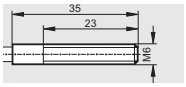
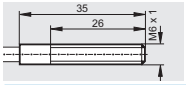
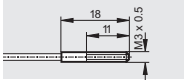
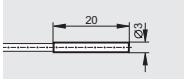
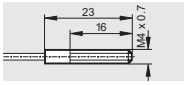
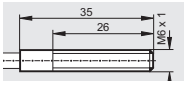
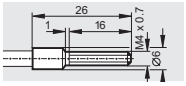
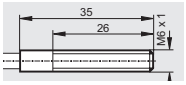
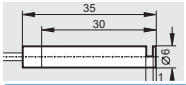
## Thru-beam plastic fibers for OO and OBF amplifiers

| Type | Range OO / OBF [mm] | Effective beam/ Min bend radius | Part No. | List Price (1-pr.) |
|---|---|---|---|---|
| **Thru-beam type · M3 sensing head · High flex** | | | | |
|  | 120 / 56 | 0.5 mm / 3 mm | **E21103** | **$70.00** |
| **Thru-beam type · M4 sensing head · High flex** | | | | |
|  | 750 / 350 | 1 mm / 3 mm | **E21102** | **$88.00** |
|  | 120 / 56 | 0.5 mm / 3 mm | **E21104** | **$70.00** |
| **Thru-beam type · M3 sensing head** | | | | |
|  | 800 / 350 | 1 mm / 30 mm | **E20603** | **$44.00** |
|  | 160 / 130 | 0.5 mm / 10 mm | **E20609** | **$44.00** |
| **Thru-beam type · M4 sensing head** | | | | |
|  | 800 / 210 | 1 mm / 9 mm | **E20615** | **$50.00** |
|  | 800 / 450 | 1 mm / 30 mm | **E20606** | **$50.00** |
| **Thru-beam type · integrated lens** | | | | |
|  | 1600 / 900 | 2 mm / 30 mm | **E20753** | **$82.00** |
|  | 3800 / 2000 | 6 mm / 30 mm | **E20752** | **$82.00** |
| **Thru-beam type · right angle lens** | | | | |
|  | 400 / 230 | side-sensing / 25 mm | **E20714** | **$131.00** |
| **Accessories · for thru-beam fibers only** | | | | |
|  | Right angle lens adapter for M3 fibers, increases range by 15-20% | | **E20754** | **$53.00** |
|  | Right angle lens adapter for M4 fibers, increases range by 15-20% | | **E20755** | **$45.00** |

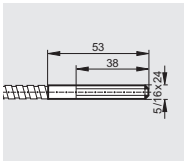
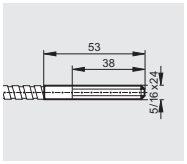
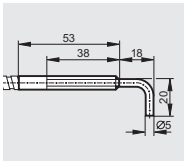
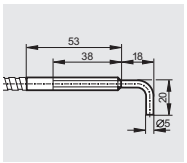
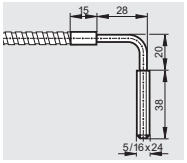
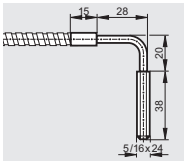
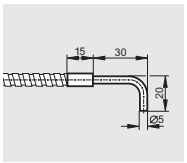
## Diffuse plastic fibers for OO and OBF amplifiers

| Type | Range OO / OBF [mm] | Min bend radius | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| **Diffuse reflective type · high flex** | | | | |
|  | 30 / 10 | 3 mm | **E21107** | **$70.00** |
|  | 30 / 10 | 3 mm | **E21106** | **$76.00** |
|  | 300 / 70 | 9 mm | **E20645** | **$50.00** |
|  | 180 / 104 | 3 mm | **E21105** | **$88.00** |
|  | 300 / 70 | 9 mm | **E20648** | **$45.00** |
| **Diffuse reflective type · standard fiber** | | | | |
|  | 60 / 25 | 10 mm | **E20712** | **$46.00** |
|  | 60 / 25 | 10 mm | **E20711** | **$51.00** |
|  | 60 / 25 | 10 mm | **E20639** | **$43.00** |
|  | 300 / 100 | 10 mm | **E20633** | **$50.00** |
| **Diffuse reflective type · high accuracy fiber** | | | | |
|  | 300 / 90 | 30 mm | **E20651** | **$50.00** |
|  | 300 / 90 | 30 mm | **E20654** | **$45.00** |
| **Diffuse reflective type · right angle lens** | | | | |
|  | 150 / 60 | 25 mm | **E20715** | **$138.00** |

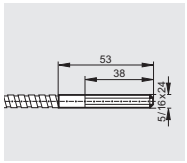
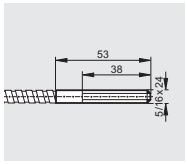
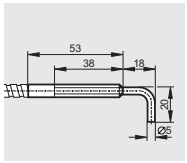
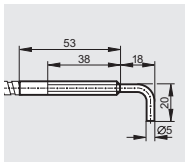
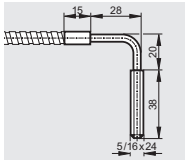
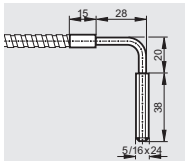
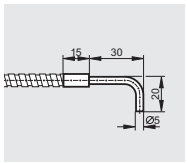
## Technical Specs

| | |
|---|---|
| Sensing head: | Aluminum; except Part Nos. E20711, E20714, E20715: stainless steel |
| Fiber sheathing: | Polyethylene |
| Fiber length: | 2 meters |

### Thru-beam glass fibers for OBF amplifiers

| Type | Range OBF [mm] | Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| **Thru-beam type · sold individually, two required for an application** | | | | |
|  | 1000 | 3′ | **E20823** | **$66.00** |
|  | 500 | 6′ | **E21026** | **$110.00** |
|  | 1000 | 3′ | **E20827** | **$110.00** |
|  | 500 | 6′ | **E21027** | **$160.00** |
|  | 1000 | 3′ | **E20825** | **$91.00** |
|  | 500 | 6′ | **E21028** | **$139.00** |
|  | 1000 | 3′ | **E20828** | **$79.00** |

### Diffuse glass fibers for OBF amplifiers

| Type | Range OBF [mm] | Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| **Diffuse reflective type** | | | | |
|  | 150 | 3′ | **E20822** | **$88.00** |
|  | 75 | 6′ | **E21031** | **$135.00** |
|  | 150 | 3′ | **E20826** | **$138.00** |
|  | 75 | 6′ | **E21032** | **$189.00** |
|  | 150 | 3′ | **E20824** | **$113.00** |
|  | 75 | 6′ | **E21033** | **$165.00** |
|  | 150 | 3′ | **E20829** | **$103.00** |

## Technical Specs

| | |
|---|---|
| Sensing head end sheathing: | Stainless steel |
| Fiber bundle diameter: | 0.125″ |
| Minimum bend radius: | 19 mm |
| Temperature: | -71…599 °F (-58…315 °C) |

# Table of Contents – Motion Control

## Speed monitors

*Tubular M18 and M30; DC* . . . . . *106 - 107*

*Rotational and standstill monitor* . . . . . *108 - 109*

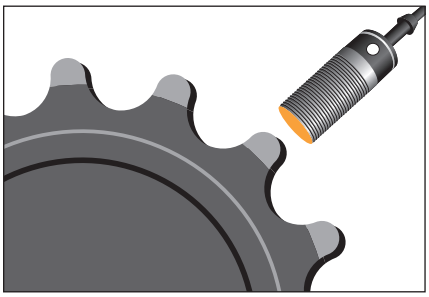
# Top five product features!

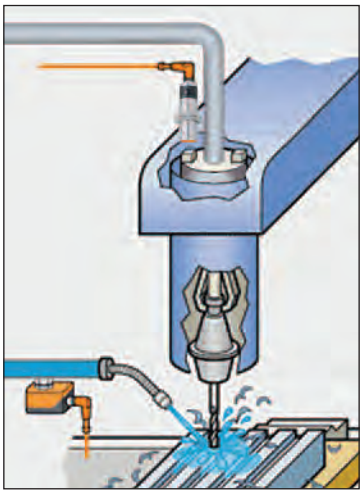
- 18 and 30 mm diameter speed monitors detect under-speed and over-speed conditions
- For rotational speed applications
- 18 mm quick disconnect offers 3-LED status display
- 30 mm units feature easy-to-adjust sensor setpoint
- Time delay eliminates nuisance trips

## Evaluation system for self-contained speed applications

The compact speed monitor is an evaluation system for monitoring rotational speed, particularly over- or under-speed conditions. The sensor and evaluation electronics are integrated into a compact 18 and 30 mm diameter metal housing. The 3-wire version includes a "target-present" LED to simplify set up. The unit senses the speed of the rotating target and provides a digital output when the speed exceeds a customer-programmed set point.

Positioned to sense a bolt head, cam, or other target on a rotating shaft, the DI series speed monitor generates an internal pulse each time the target passes. Counting the pulse train determines if the shaft speed is above or below the set point.





*Speed monitors can be used to detect under-speed conditions on spindle applications.*


Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Dimensions (mm) | Range (mm) | Mounting | Output | Setting Range (Imp/min) | Supply Voltage ( V) | Sensor Termination | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| M18 / L = 68 | 12 | Nonflush | PNP, N.O. / N.C. | 3...6000 | 10...36 DC | M12 Micro DC | **DI6001** | **$149.00** |
| M30 / L = 81 | 10 | Flush | N.O. | 5...300 | 20...250 AC/DC | Prewired 2 m cable | **DI0001** | **$177.00** |
| M30 / L = 81 | 10 | Flush | N.O. | 50...3000 | 20...250 AC/DC | Prewired 2 m cable | **DI0002** | **$177.00** |
| M30 / L = 81 | 10 | Flush | PNP, N.O. | 3...300 | 10...36 DC | Prewired 2 m cable | **DI5001** | **$177.00** |
| M30 / L = 81 | 10 | Flush | PNP, N.O. | 30...3000 | 10...36 DC | Prewired 2 m cable | **DI5003** | **$177.00** |
| M30 / L = 82 | 10 | Flush | PNP, N.O. | 3...300 | 10...36 DC | M12 Micro DC | **DI5009** | **$180.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Snap clamp for 18 mm sensor | **E11048** | **$8.00** |
| | Snap clamp for 30 mm sensor | **E11049** | **$8.00** |
| | Quick-mount sleeve for 18 mm sensor | **E11115** | **$14.00** |
| | Quick-mount for 30 mm sensor | **E10808** | **$17.00** |
| | L-bracket for 18 mm sensor | **U20302** | **$6.00** |
| | L-bracket for 30 mm sensor | **U20303** | **$6.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

Can't find the right speed monitor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Leakage current: <1.5 mA (DI0001, DI0002)
Housing material: Brass; PBT (Pocan); 316 stainless steel, PBT (DI6001)
Operating temperature: -13...176 °F (-25...80 °C)
Protection: IP67


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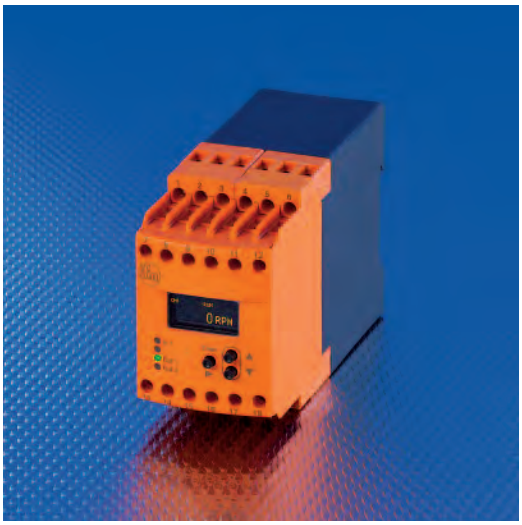


# Top five product features!

- *Monitoring of two limit values with separate output relays*
- *High input frequency of up to 60,000 pulses / minute*
- *Configurable functions, speed-proportional analog output*
- *Clearly readable, luminous OLED display*
- *Extended operating temperature range down to -40 °F*

## Versatile rotational speed monitoring and standstill detection

***NEW!*** The speed monitors calculate the rotational speed by evaluating pulses. The transistor and relay outputs switch when adjustable limit values are exceeded or not reached. This allows, for example, reliable overspeed and standstill detection.

The DD2503 monitors the rotational speed of one channel with two separately adjustable limit values. A separate output is assigned to each limit value. The DD2505 monitors two separate input channels, each having one switchpoint.

### Overspeed monitoring

Centrifuges, carousels or wind turbines are monitored for exceeded maximum rotational speed. The speed monitor gives a switch-off signal as soon as the speed is too high. This makes sure that the resulting centrifugal forces will not destroy the system.

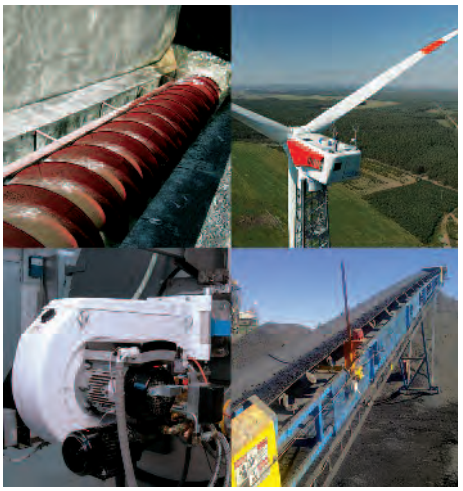
### Standstill monitoring

Standstill monitoring is used to detect torn conveyor belts, to monitor the V-belts of ventilators or to detect blocked screw conveyors. The speed monitor signals a dysfunction in case of unexpected standstills of the non-driven side of the machine.

### Configurable output functions

The relay outputs are switched on or off in case the limit values are exceeded or not reached. They may also remain switched until they are manually reset. Optionally, the reset can take place automatically after an adjustable period of time.

The transistor outputs that can be used alternatively are switched to the relays simultaneously. These can, for example, be connected directly to a PLC in order to transmit status messages.



*Speed monitors switch when critical rotational speeds are exceeded or not reached.*


Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

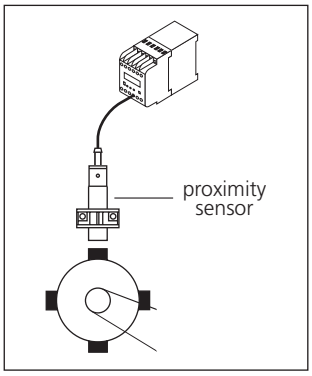
| Operating Voltage [V] | Inputs | Input Function | Setting Range [pulse / min.] | Setting Range [Hz] | Analog Outputs | Relay Outputs | Transistor Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| 100...240 AC/DC; 24 DC | 1 | PNP / NPN / NAMUR* | 1...60,000 | 0.1...1,000 | 1 | 2 | 2 | **DD2503** | **$334.00** |
| 100...240 AC/DC; 24 DC | 2 | PNP / NPN / NAMUR* | 1...60,000 | 0.1...1,000 | – | 2 | 2 | **DD2505** | **$377.00** |

*Note: NAMUR input is not intended for intrinsically safe applications in hazardous locations.

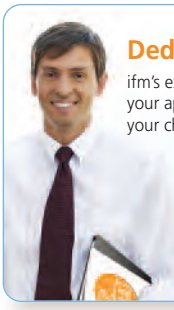
Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Relay outputs: | 2 changeover contacts<br>6 A (250 V AC) |
| Transistor outputs: | 2 x PNP; externally supplied<br>24 V DC / max. 15 mA;<br>short-circuit protection |
| Ambient temperature: | -40…140 °F (-40…60 °C) |
| Housing protection rating: | IP 50 |
| Terminal protection rating: | IP 20 |
| Function display: | OLED display;<br>128 x 64 pixels luminous |
| Input signal indication: | yellow LED |
| Switching status indication : | green LED |




*Inductive and capacitive proximity sensors or photoelectric sensors are ideal devices for an input signal to the speed evaluation system.*



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## Vision sensors

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*3D Image Sensor evaluates shape, size and volume* . . . . . 124 - 125

# efector dualis Contour Sensor provides 100% inspection testing

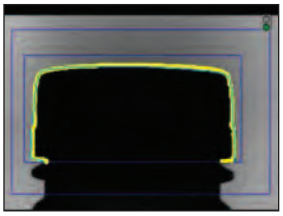
ifm efector's inspection sensor, efector dualis, monitors a variety of error-proofing applications to provide 100% inspection testing throughout the assembly automation process.

Objects in fast-moving processes are reliably detected and evaluated – regardless of orientation – with the sensor's miniature CMOS-based image processor. High-performance software enables the sensor to find objects with extreme accuracy and speed. The sensor detects and compares defined shapes and provides up to five configurable outputs.

- 100% inspection testing throughout the assembly automation process
- All-in-one design includes an image sensor, evaluation electronics and integrated infrared LED lighting
- Powerful intelligence and 640 x 480 resolution are driven by a smart algorithm
- Compact, industrial-compatible housing measures only 42 x 80 x 53 mm
- An LED display indicates operating status
- Prices start under $1000.00

## efector dualis Inspection Sensor application examples

### Confirm bottle cap is sealed correctly



*Correct placement*

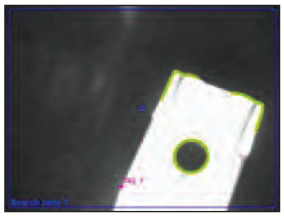
*Incorrect placement*

**Description**: *Using the contour of a bottle cap, the correct placement of a bottle cap is verified.*

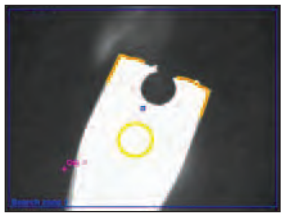
**Industry**: *Food*

*When the cap is incorrectly sealed, the contour of the cap changes which results in a failed inspection. The Contour Sensor reliably detects the change in the cap's contour.*

### Verify the correct position of a punch-out on a steel rod



*Correct part*



*Incorrect part*

**Description**: *Verifying the correct punch-out position is imperative to the process. If left undetected, an improper crimp or punch-out position on a steel rod would lead to scrap metal.*

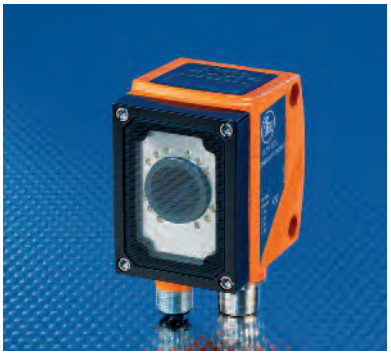
**Industry**: *Stamping*

*The Contour Sensor detects the outer edges of the rod and uses it as a reference point for the circular punch-out providing reliable results.*

**Application solutions:**

*Right part / wrong part*
*Correct orientation*
*Missing component*
*Object character verification*
*Counting*
*Sorting*
*Logic functions*
*Pass / fail*

# efector dualis Pixel Counter monitors error-proofing applications



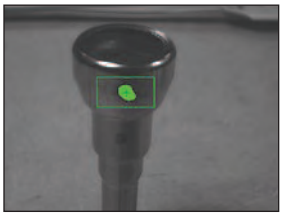
ifm's O2V Series efector dualis Pixel Counter sensor solves a variety of inspection and error-proofing applications throughout the manufacturing process. The compact CMOS vision sensor provides reliable performance in production control.

The Pixel Counter analyzes the area of an object by counting the pixels and can identify objects that vary in shape, size or shade. ifm's Pixel Counter features a robust die cast metal housing that is able to withstand the abuse typically found in industrial environments.

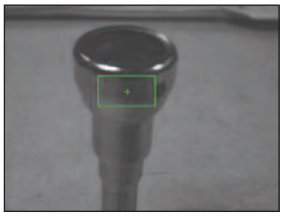
- Integrated lighting, evaluation electronics, and image sensor
- On-board lighting element provides correct amount of image brightness
- Powerful algorithm and fast image capture
- Pushbutton setup and 4-digit numeric display
- Easily accessible focus tool quickly defines images
- Easy-to-follow Setup Wizard guides user for quick setup
- Supports Allen-Bradley's Ethernet IP and standard Ethernet TCP products

## efector dualis Inspection Sensor application examples

### Detect registration marks used to identify parts



*Mark present*



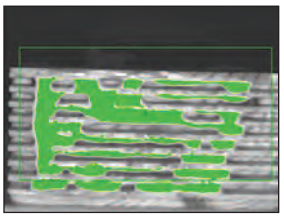
*Mark missing*

**Description**: *A registration mark is used to identify parts that have been through a completed process. Without the mark, the parts go into quarantine, where every unit must be manually sorted. ifm's Pixel Counter is able to identify that the mark is present regardless of the shape or size of the part, eliminating the quarantine process.*

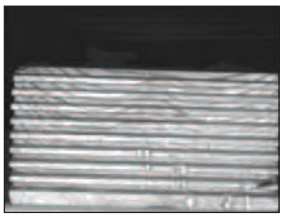
**Industry**: *Assembly automation*

*Regardless of shape or size, the Pixel Counter is able to identify that the mark is present.*

### Verify the correct amount of glue for bonding on a joint



*Glue present*



*Glue missing*

**Description**: *In wood assembly, the right amount of glue must be applied to a joint. Too much glue causes bleeding out of the joint and too little causes improper bonding.*

**Industry**: *Wood*

*The Pixel Counter is able to count the amount of white pixels (produced by the glue) to determine the amount of glue on the joint.*

### Application solutions:

*Part verification*
*Orientation*
*Sortation*
*Part / no part*
*Pattern matching*
*Shape detection*
*Object counting and contrast*
*Inner/outer radius*
*Measurement*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Wiring Technology: Cordset solutions 250 - 261

# Multi-Code Reader identifies data matrix and 1D codes

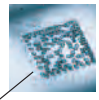
Data matrix codes are critical for tracking parts and insuring reliable quality in the manufacturing process. ifm has designed a high-performance, easy-to-use Multi-Code Reader in a compact metal housing for rugged industrial automation applications.

ifm's Multi-Code Reader is designed to read 2D data matrix codes and 1D bar codes in high-speed industrial automation applications. The versatile Multi-Code Reader can identify, verify and qualify most marking methods.

- Easy-to-use reader in a compact, metal housing
- Reads 2D Data Matrix Codes including ECC200, PDF-417 and QR
- Reads 26 different styles of printed 1D barcodes
- Fast code reading and data transfer
- Integrated lighting eliminates need for external lighting
- Identifies most marking methods including dot-peened, laser-etched and printed DMC codes and barcodes
- Priced 50% lower than current technologies

## Multi-Code Reader application example

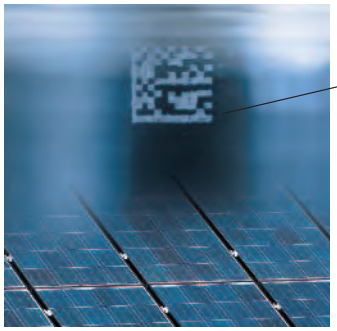
### Dot-peened codes on highly reflective metal parts



**Challenge:** *Dot-peened codes on highly reflective metal parts can be difficult to read due to reflections and code placement.*

**Solution:** *The camera's internal filters can adjust lighting to increase contrast, and its "Smart Algorithm" reads a code in any orientation at angles up to 45°.*

### Laser-etched code on glass and solar panels



**Challenge:** *Laser-etched code on PVT panels and glass can be difficult to read due to low contrast.*

**Solution:** *ifm's Multi-Code Reader features integrated lighting, a CMOS image sensor and digital signal processor to identify and read low-contrast codes.*

**Application solutions:**

*Laser etched code on glass*
*Printed code on plastic parts*
*Dot-peened code on metal parts*
*Laser etched code on solar panels*


Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
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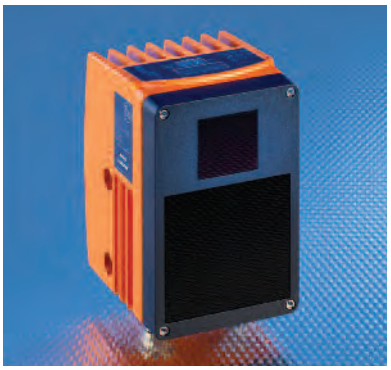
# 3D Image Sensor evaluates shape, size and volume



ifm's 3D Image Sensor evaluates size, shape and volume in a variety of industrial automation applications. The compact sensor uses time-of-flight distance measurement and photonic mixer device technology to identify an object in the sensor's field of view. An integrated 64 x 48 pixel array – in which each pixel represents a time of flight measurement – defines the field of view for the sensor.

The 3D sensor technology provides critical information in applications such as palletizing and de-palletizing, material handling, bulk level of materials and intelligent routing/sorting.

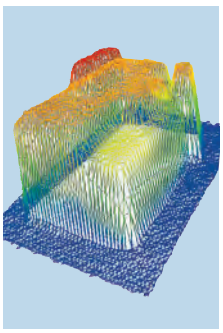
- The first industrial sensor that can evaluate shape, size and volume
- Uses time-of-flight distance measurement and photonic mixer device technology to identify objects in three dimensions
- Complete sensor element and electronics are built on a 0.25 mm square silicon chip that reduces the size of the sensor and its cost
- Immune to ambient lighting and can be mounted both indoors and outdoors
- Application parameters are quickly established with the sensor's pushbutton setup

## 3D Image Sensor application examples

### Palletizing and de-palletizing

**Challenge:**
**Incomplete layer**

*In palletizing and de-palletizing applications, a robotic arm removes bulk material from a conveyor and stacks the material on a pallet. If a stray box is left on a skid and is undetected, the robotic arm could crush the product.*



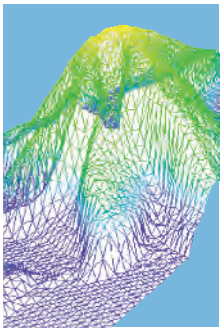
**ifm Solution:**
**View layer in 3D**

*The 3D sensor is mounted to the top of the palletizer. The sensor evaluates the entire layer of a pallet and sends an alarm output based on loading errors. Using the 3D data, pallets can be removed without the risk of damage to other pallets.*

### Bulk material – level

**Challenge:**
**Level detection to prevent run dry conditions**

*Currently, multiple sensors are mounted over a bin to detect the level of bulk material. Materials, such as grain or pellets, can shift within the bin creating hills and valleys, leading to incorrect level detection. An empty or "run dry" condition can cause machine downtime, place stress on equipment, and risk damage to components.*



**ifm Solution:**
**Level of materials in 3D**

*The efector PMD 3D sensor is mounted above a hopper or bin. The sensor's pixel array of 3072 data points spreads across the grain to detect the entire area. The high and low points are identified and can be used for direct output or averaged to provide a more accurate level of available space in the hopper.*

**Application solutions:**

*Palletizing and de-palletizing*

*Courier and parcel logistics*

*Automated storage retrieval systems*

*Warehousing and distribution*

*Automated guided vehicles*

*Bulk material level*

*Grains and raw materials in feeders*

*Food products on vibratory conveyors*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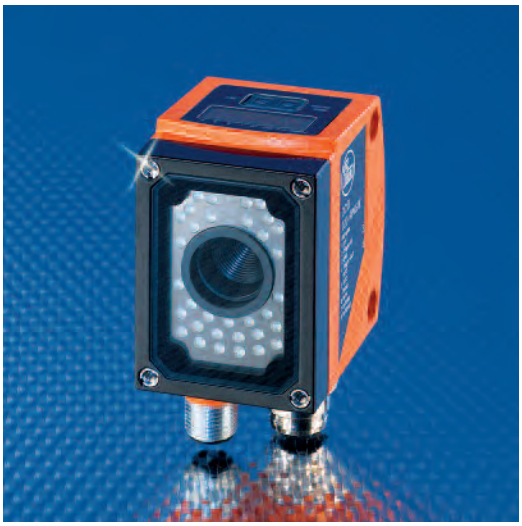


# Top five product features!

- Robust design and compact metal housings provide long life and reliability in industrial environments
- CMOS image sensor and Digital Signal Processor with no moving parts provide high performance and durability
- Easy-to-use Setup Wizard guides you step-by-step for simple installation
- Flexible connections with Ethernet interface
- Self-contained unit (internal lighting)

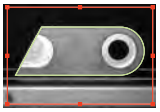
## The inspection sensor for error-proofing applications

efector dualis provides reliable performance in production control. Fast processes or moving objects can be detected and precisely evaluated with the sensor's fast image capture and evaluation.

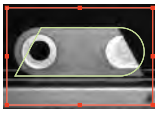
The sensor is an ideal solution for inspection and error-proofing applications such as right part / wrong part, correct orientation, missing component and object character verification.

### Additional application examples

correct orientation



incorrect orientation

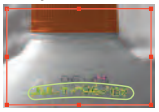


#### Feeding technology

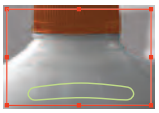
Feeder bowls are commonly used to constantly supply an assembly line with small parts. These parts, however, must be in the proper orientation to allow correct assembly.

efector dualis can identify incorrect orientation of parts in a feeder bowl before they are applied.

test passed



test failed



#### Object character verification

Even the smallest error, such as a missing date on a milk bottle, can cause large problems in a production line. The efector dualis is ideal for object character verification in a moving production line.

In this example, efector dualis detects a series of preset characters that indicate expiration date. In the following picture, efector dualis detects the missing characters and sends an alarm.

### Built-in intelligence

*Independent evaluation: efector dualis includes an image sensor, evaluation electronics and lighting integrated in one robust, industrial compatible housing.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

| Dimensions | Output | Lighting | Max. Field of View Size | Detection Rate | Max. Motion Speed | Operating Voltage | Supply Current | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| 80 x 42 x 59 | PNP | infrared 850 nm | 400 x 300 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D224** | **$918.00** |
| 80 x 42 x 53.5 | PNP | infrared 850 nm | 640 x 480 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D220** | **$918.00** |
| 80 x 42 x 53.5 | PNP | infrared 850 nm | 1280 x 960 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D222** | **$918.00** |
| 80 x 42 x 59 | NPN | infrared 850 nm | 400 x 300 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D225** | **$918.00** |
| 80 x 42 x 53.5 | NPN | infrared 850 nm | 640 x 480 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D227** | **$918.00** |
| 80 x 42 x 53.5 | NPN | infrared 850 nm | 1280 x 960 mm | 20 Hz | 1 m/s | 24 VDC ± 10 % | < 300 mA | **O2D229** | **$918.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting Set, 100 mm rod | **U60042** | **$45.00** |
| | Mounting Set, 100 mm rod with rail mount cube | **U60043** | **$51.00** |
| | Protective plastic cover | **E21166** | **$96.00** |
| | Plastic lens for diffusing light | **E21165** | **$109.00** |
| | Protective glass cover | **E21168** | **$96.00** |
| | Ethernet cable, 2 m, M12 D-coded / RJ45, cross-link | **E11898** | **$45.00** |
| | Ethernet cable, 5 m, M12 D-coded / RJ45, cross-link | **E18422** | **$54.00** |
| | Ethernet cable, 10 m, M12 D-coded / RJ45, cross-link | **E18423** | **$69.00** |

See page 123 for illumination.

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (8-pin) 2 m, PUR | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11232** | **$34.00** |
| | M12 Micro DC (8-pin) 2 m, PUR | **E11950** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11807** | **$34.00** |

## Technical Specs

| | |
|---|---|
| Maximum load current: | 100 mA (per switching output) |
| Supply current: | < 300 mA |
| Detection rate: | 20 Hz |
| Maximum motion speed: | 1 m/s |
| Lighting: | infrared 850 nm |
| Operating voltage: | 24 VDC ± 10 % |
| Operating temperature: | 14…140 °F (-10…60 °C) |
| Protection rating: | IP67 |
| Material: | Housing: die-cast zinc<br>Front pane: glass<br>LED window: polycarbonate |
| Trigger mode: | External 24 V, PNP, NPN, continuous, TCP/IP |
| Parameter setting / process interface: | Ethernet 10 Base-T, Ethernet TCP, Ethernet IP |

# Top five product features!

- *Ideal for inspection and error-proofing applications with irregularly shaped objects*
- *Reliable inspection testing throughout the production process*
- *CMOS image element and powerful digital signal processor*
- *Robust housing for use in industrial environments*
- *Easy application Setup Wizard offers step-by-step instruction with advanced functionality*

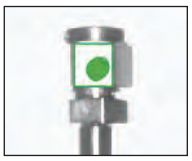
## efector dualis Pixel Counter

ifm's O2V Series efector dualis Pixel Counter sensor solves a variety of inspection and error-proofing applications throughout the manufacturing process. The compact CMOS vision sensor provides reliable performance in production control. The Pixel Counter analyzes the area of an object by counting the pixels and can identify objects that vary in shape, size or shade.

The O2V Series Pixel Counter includes an image sensor, evaluation electronics and integrated lighting in a die-cast metal housing that withstands harsh industrial environments. Objects are reliably detected and precisely evaluated with the sensor's fast image capture and powerful algorithms. The sensor's push-button setup and 4-digit numeric display indicates the sensor's output.

An on-board lighting element illuminates the object and provides the correct amount of image brightness at various ranges. An easily accessible focus tool quickly defines images. The sensor features an easy-to-follow Setup Wizard that guides the user for quick setup and supports Allen-Bradley's Ethernet IP and standard Ethernet TCP products.

### Additional application examples

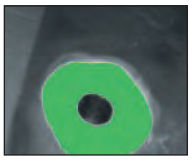


**Mark present**

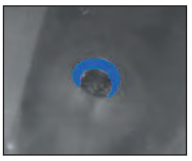
**Mark missing**

A mark is used to identify parts that have been through the manufacturing process. Without the mark, the parts go into quarantine, where every unit must be manually sorted.

ifm's Pixel Counter is able to identify that the mark is present regardless of the shape or size of the part, eliminating the quarantine process.



**Correct molding**



**Incorrect molding**

A piece of metal is inserted in a rubber mold, and it is imperative that the area is covered smoothly. In this case, while in the molding process, an inconsistent shape formed around the insert.

The molding process can leave an inconsistent shape around the insert. The Pixel Counter inspects for a low level of bright pixels, detecting an incorrect molding.

# Product + accessory selector

## DC • efector dualis Pixel Counter

| Type | Type of Light LED | Maximum Field of View Size [mm] | Detection Rate [Hz] | Motion Speed (Maximum) [m/s] | Process Interface | Transistor Outputs (up to 5) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **8-pin · M12 connector** | | | | | | | | |
| | White | 400 x 300 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V104** | **$918.00** |
| | White | 400 x 300 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V105** | **$918.00** |
| | Infrared | 400 x 300 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V124** | **$918.00** |
| | Infrared | 400 x 300 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V125** | **$918.00** |
| | White | 640 x 480 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V100** | **$918.00** |
| | White | 640 x 480 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V101** | **$918.00** |
| | Infrared | 640 x 480 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V120** | **$918.00** |
| | Infrared | 640 x 480 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V121** | **$918.00** |
| | White | 1320 x 945 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V102** | **$918.00** |
| | White | 1320 x 945 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V103** | **$918.00** |
| | Infrared | 1320 x 945 | 20 | 1 | Ethernet TCP / Ethernet IP | PNP | **O2V122** | **$918.00** |
| | Infrared | 1320 x 945 | 20 | 1 | Ethernet TCP / Ethernet IP | NPN | **O2V123** | **$918.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting Set, 100 mm rod | **U60042** | **$45.00** |
| | Mounting Set, 100 mm rod with rail mount cube | **U60043** | **$51.00** |
| | Protective plastic cover | **E21166** | **$96.00** |
| | Plastic lens for diffusing light | **E21165** | **$109.00** |
| | Protective glass cover | **E21168** | **$96.00** |
| | Ethernet cable, 2 m, M12 D-coded / RJ45, cross-link | **E11898** | **$45.00** |
| | Ethernet cable, 5 m, M12 D-coded / RJ45, cross-link | **E18422** | **$54.00** |
| | Ethernet cable, 10 m, M12 D-coded / RJ45, cross-link | **E18423** | **$69.00** |

See page 123 for illumination.

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (8-pin) 2 m, PUR | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11232** | **$34.00** |
| | M12 Micro DC (8-pin) 2 m, PUR | **E11950** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11807** | **$34.00** |

## Technical Specs

| | |
|---|---|
| Maximum load current: | 100 mA (per switching output) |
| Supply current: | < 300 mA |
| Detection rate: | 20 Hz |
| Maximum motion speed: | 1 m/s |
| Lighting: | infrared 850 nm |
| Operating voltage: | 24 VDC ± 10 % |
| Operating temperature: | 14…140 °F (-10…60 °C) |
| Protection rating: | IP67 |
| Material: | Housing: die-cast zinc<br>Front pane: glass<br>LED window: polycarbonate |
| Trigger mode: | External 24 V, PNP, NPN, continuous, TCP/IP |
| Parameter setting / process interface: | Ethernet 10 Base-T, Ethernet TCP, Ethernet IP |

# Top five product features!

- *Robust design and compact metal housing provide long life and reliability in industrial environments*
- *CMOS image sensor and digital signal processor with no moving parts for durability*
- *Reliably reads dot-peened, laser-etched and printed data matrix codes as well as printed bar codes*
- *Configurable four-quadrant lighting improves readability, reduces glare and the need for external lighting*
- *Easy application Setup Wizard guides you step-by-step with advanced functionality for demanding applications*

## Reliable identification of data matrix and 1D codes

The ifm Multi-Code Reader is designed to read 2D data matrix codes and 1D bar codes in high speed industrial automation applications.

The versatile Multi-Code Reader can identify, verify and qualify most marking methods including dot-peened, laser-etched and printed data matrix codes as well as printed barcodes.

The Multi-Code Reader features a maximum speed of 7 meters/second. The unit reads three types of 2D codes: ECC200, PDF-417 and QR as well as 26 styles of printed barcodes.

### A better alternative from ifm

| Features | ifm |
|---|---|
| Robust housing | ✓ |
| Reads both 2D and 1D codes | ✓ |
| CMOS image sensor | ✓ |
| Reads all marking methods | ✓ |
| Orientation independent | ✓ |
| Configurable quadrant lighting | ✓ |
| 7 meters/second line speed | ✓ |
| Easy Setup Wizard | ✓ |
| Switching output for I/O | ✓ |
| Ethernet TCP/IP | ✓ |
| Price – 50% lower than current technologies | **$918** |

### Additional application examples

**Laser-etched code on glass and solar panels**

**Challenge:** *Laser-etched code on PVT panels and glass can be difficult to read due to low contrast.*

**Solution:** *ifm's Multi-Code Reader features integrated lighting, a CMOS image sensor and digital signal processor to identify and read low-contrast codes.*

**Printed code on plastic parts**

**Challenge:** *Printed code on plastic parts can wear or disintegrate over time.*

**Solution:** *The Multi-Code camera reliably detects printed codes that become damaged or soiled – even if up to 28% of the information is damaged.*


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

| Dimensions | Lighting | Max. Field of View Size | Readings | Max. Motion Speed | Process Interface | Operating Voltage | Supply Current | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| **CMOS image sensor, black and white, VGA resolution 640 x 480** | | | | | | | | | |
| 80 x 42 x 53.5 | Visible red | 68 x 48 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I100** | **$918.00** |
| 80 x 42 x 53.5 | Visible red | 132 x 94 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I102** | **$918.00** |
| 80 x 42 x 59 | Visible red | 400 x 300 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I104** | **$918.00** |
| 80 x 42 x 53.5 | Infrared | 68 x 48 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I101** | **$918.00** |
| 80 x 42 x 53.5 | Infrared | 132 x 94 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I103** | **$918.00** |
| 80 x 42 x 59 | Infrared | 400 x 300 mm | 20 Hz | 7 m/s | Ethernet TCP/IP, EtherNet/IP, RS-232 | 24 VDC ± 10 % | 300 mA | **O2I105** | **$918.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting Set, 100 mm rod | **U60042** | **$45.00** |
| | Mounting Set, 100 mm rod with rail mount cube | **U60043** | **$51.00** |
| | Plastic lens for diffusing light | **E21165** | **$109.00** |
| | Plastic protective lens for food and beverage applications | **E21166** | **$96.00** |
| | Glass protective lens | **E21168** | **$96.00** |

See page 123 for illumination.

## Cordsets

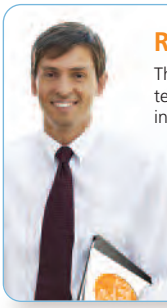
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (8-pin) 2 m, PUR | **E11950** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11807** | **$34.00** |
| | M12 Micro DC (8-pin) 2 m, PUR | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11232** | **$34.00** |
| | Ethernet cable, 2 m, M12 D-coded / RJ45, cross-link | **E11898** | **$45.00** |
| | Ethernet cable, 5 m, M12 D-coded / RJ45, cross-link | **E18422** | **$54.00** |
| | Ethernet cable, 10 m, M12 D-coded / RJ45, cross-link | **E18423** | **$69.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Maximum load current: | 100 mA (per switching output) |
| Supply current: | < 300 mA |
| Detection rate: | ≤ 20 Hz |
| Maximum motion speed: | ≤ 7 m/s |
| Lighting: | infrared 850 nm; visible red 625 nm |
| Operating voltage: | 24 VDC ± 10 % |
| Operating temperature: | 14…122 °F (-10…50 °C) |
| Protection rating: | IP67 |
| Material: | Housing: die-cast zinc<br>Front pane: glass<br>LED window: polycarbonate |
| Trigger mode: | External 24 V, PNP, NPN, continuous, TCP/IP |
| Parameter setting / process interface: | Ethernet 10 Base-T, Ethernet TCP, Ethernet IP |

Class 2 laser



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# Top five product features!

- *Uniform and shadow-free illumination of the object*
- *Permanent or pulsed light operation with optional high intensity light*
- *White light, red light and infrared versions*
- *Compact design and robust housing*
- *Diffuser accessory available for "cloudy day" illumination to balance light source*

***NEW!*** ifm's vision sensors include an on-board lighting element that illuminates the object and provides the correct amount of image brightness at various ranges.

Some applications, however, may require additional lighting. For example, detecting specific surface characteristics, such as a dot-peened code, scratches or nicks may require high intensity light. In contour sensing, sometimes there is not enough contrast between the object and the background. Additional backlighting may help emphasize the target against the background.

ifm's high-quality LED illumination units provide uniform lighting to solve a large variety of applications. Models are available with white, red and infrared light in spot light, back light, ring light, bar illumination and dark field illumination units.

An assortment of mounting kits are provided and make installation quick and easy.

## Technical Specs

| | |
|---|---|
| Light source: | LED |
| Operating voltage: | 24 V DC |
| Ambient temperature: | -10...55 °C |
| Housing material: | aluminum |
| Lens material: | glass |
| Trigger: | 5...24 V, PNP |
| Protected against reverse polarity: | yes |
| Short-circuit proof: | yes |
| Mounting: | M4 screws |
| Eye safety: | IEC 62471 |

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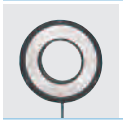
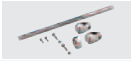
Safety Technology
Safety products 128 - 141

# Product + accessory selector

| Type | Dimensions [mm] | Type of Light | Active lighting source size [Ø mm] | Current consumption [mA] | Angle of aperture | Protection | Connector | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| **Spot light** | | | | | | | | | |
| | 31 x 42 x 54 | red | | 180 / 90* | | IP 65 | M12 | **O2D909** | **$328.00** |
| **Back light** | | | | | | | | | |
| | 33.4 x 66.5 x 9.2 | infrared | | 50 / 25* | | IP 65 | 0.15 m Pigtail 4-pin M12 | **O2D906** | **$318.00** |
| | 81 x 103 x 9.8 | infrared | | 200 / 100* | | IP 65 | 0.15 m Pigtail 4-pin M12 | **O2D907** | **$351.00** |
| | 133 x 156 x 9.8 | infrared | | 450 / 250* | | IP 65 | 0.15 m Pigtail 4-pin M12 | **O2D908** | **$389.00** |
| **Ring light** | | | | | | | | | |
|  | Ø 122 × 20.5 | red | Ø 106 / Ø 66 | 800 / 1300* | 60° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D915** | **$725.00** |
| | Ø 122 × 20.5 | infrared | Ø 106 / Ø 66 | 800 / 1400* | 50° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D917** | **$725.00** |
| | Ø 122 × 20.5 | white | Ø 106 / Ø 66 | 800 / 1200* | 120° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D919** | **$725.00** |
| **Bar illumination** | | | | | | | | | |
|  | 116 x 18 × 13 | red | 10 x 75 | 225 / 375* | 60° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D921** | **$400.00** |
| | 200 x 18 x 13 | red | 10 x 150 | 460 / 700* | 60° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D924** | **$500.00** |
| | 116 x 18 x 13 | infrared | 10 x 75 | 185 / 325* | 50° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D922** | **$400.00** |
| | 200 x 18 x 13 | infrared | 10 x 150 | 415 / 640* | 50° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D925** | **$500.00** |
| | 116 x 18 x 13 | white | 10 x 75 | 165 / 275* | 120° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D923** | **$400.00** |
| | 200 x 18 x 13 | white | 10 x 150 | 265 / 475* | 120° | IP 65 | 0.3 m Pigtail 4-pin M12 | **O2D926** | **$500.00** |
| **Dark field illumination** | | | | | | | | | |
| | 155 x 130 x 9.8 | red | Ø 90 | 400 | – | IP 54 | 0.3 m Pigtail 4-pin M12 | **O2D920** | **$550.00** |

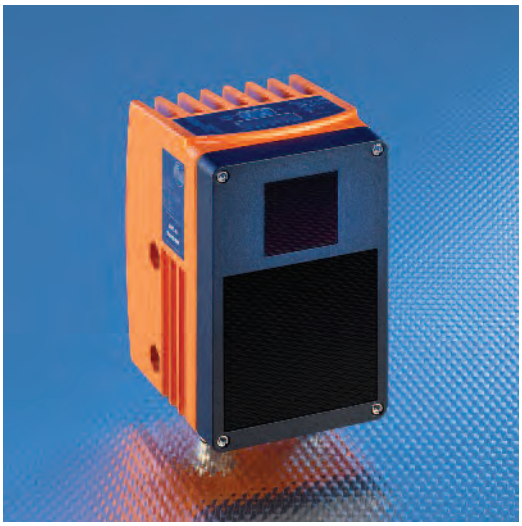
* current consumption at high light intensity

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Diffuser for ring light | **E2D202** | **$190.00** |
| | Mounting kit for ring light | **E2D201** | **$30.00** |
|  | Mounting kit for bar illumination unit | **E2D114** | **$45.00** |
| | Mounting kit for dark field illumination | **E2D115** | **$35.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |



# Top five product features!

- First industrial 3D sensor that evaluates an object's shape, size and volume
- Compact sensor uses reliable time-of-flight distance measurement
- Integrated 64 x 48 pixel array projects 3072 points of reference
- Sensor withstands harsh indoor and outdoor environments
- Provides switching and analog outputs for application versatility

## Photonic Mixer Device (PMD) Technology

The 3D Image Sensor is designed to evaluate size, shape and volume in industrial automation applications.

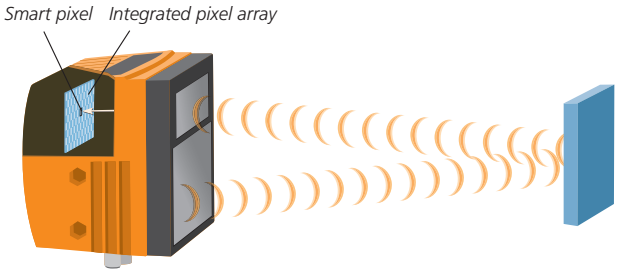
### Time-of-flight principle

This principle measures a distance based on the time it takes light to travel to an object and back to the receiver.

### Smart pixel

Each pixel has two gates that are controlled by an oscillator. Here, the electrons are converted into photons. The light information is sent from the PMD chip as the representative distance for that pixel, carrying the desired 3D information.

### The PMD pixel array

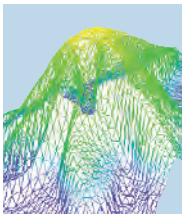



The integrated 64 x 48 smart pixel array projects 3072 points of reference onto an object, capturing the entire object in three dimensions.

### Additional application examples

**Challenge: Inaccurate bulk material level**

*In typical level applications, multiple sensors are mounted over a bin to detect the level of bulk material. Materials, such as grain or pellets, can shift within the bin creating hills and valleys, leading to incorrect level detection.*



**ifm Solution: View level in 3D**

*The 3D image sensor is mounted above a vessel. The sensor's pixel array spreads across the grain to detect the entire area. The high and low points are identified and can be used for direct output or averaged to provide a more accurate level of available space.*

**Challenge: Correct sizing of packages**

*Determining the gross dimension and volume of a package is crucial to proper traffic flow. Multiple 2D scanners are typically used to create a 3D image, which adds cost and complexity.*

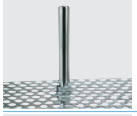
**ifm Solution: View package in 3D**

*The 3D Image Sensor uses a standard algorithm to determine the gross volume of a package. The sensor's pixel array sends 3072 time-of-flight measurement points to detect the package size, shape and volume.*

# Product + accessory selector

| Dimensions | Operating Voltage | Supply Current | Parameter Setting | Programming Interface | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 137 x 75 x 95 | 24 VDC ± 10 % | 2500 mA | via 2 pushbuttons and 10-segment display or via PC / notebook with operating software | Ethernet; 10Base-T / 100Base-TX | **O3D200** | **$1,487.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting set for rod mounting Ø 14 mm | **E3D103** | **$32.00** |
|  | Mounting rod, 100 mm, Ø 14 mm, M12 thread, stainless steel | **E20939** | **$10.00** |
| | Switched-mode power supply 24 V DC / 2.5 A | **DN4011** | **$150.00** |
| | Switched-mode power supply 24 V DC / 5 A | **DN4012** | **$199.00** |

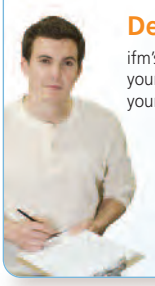
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (8-pin) 2 m, PUR | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11232** | **$34.00** |
| | M12 Micro DC (8-pin) 2 m, PUR | **E11950** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR | **E11807** | **$34.00** |
| | Ethernet cable, 2 m, M12 D-coded / RJ45, cross-link | **E11898** | **$45.00** |
| | Ethernet cable, 5 m, M12 D-coded / RJ45, cross-link | **E18422** | **$54.00** |
| | Ethernet cable, 10 m, M12 D-coded / RJ45, cross-link | **E18423** | **$69.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Sampling rate / sw. frequency: | Max. 20 Hz adjustable |
| Unambiguous ranges: | 6.5 m (single frequency mode) |
| Current consumption: | Maximum 2500 |
| Short-circuit protection, pulsed: | Yes |
| Overload protection: | Yes |
| Operating temperature: | 14…122 °F (-10…50 °C) |
| Protection: | IP67, III |
| Materials: | Housing: aluminum; lens window: polycarbonate; LED window: PMMA |
| Connections: | External trigger; max. 2 switching inputs / outputs; analog output (configurable) |
| Parameter setting options: | Via PC / notebook or 10-segment display and two pushbuttons |
| Parameter setting interface: | Ethernet 10Base-T / 100Base-TX |

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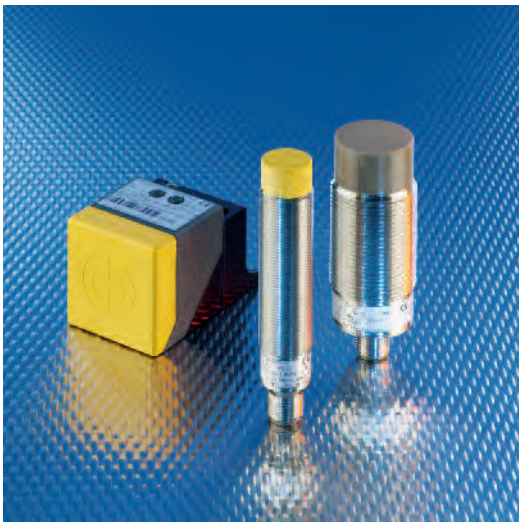
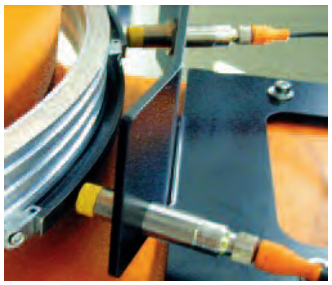


# Top five product features!

- *Fail-safe inductive sensors do not require a special key or coded magnet for a target, reducing installation time and alignment issues*
- *High tolerance to misalignment and nuisance tripping*
- *Multi-function safety relay compatible with industry-standard safety devices*
- *Self-monitoring circuit verifies that the sensor is functioning correctly*
- *Rated up to SIL 2 or SIL 3 according to IEC 61508*

## Non-contact, fail-safe inductive sensors for safety applications



ifm's non-contact fail-safe sensors incorporate inductive technology that detects standard metal target material such as stainless or mild steel. Coded magnets or mechanical keys are not required as targets, greatly reducing installation time and avoiding misalignment issues and nuisance tripping. The sensors continuously monitor the sensing window for target position and dwell time.

ifm's non-contact fail-safe sensors may be used with any standard safety relay, safety PLC and bus system.

### Fail-Safe Sensors for Series Connection (Gx5 Series)

Up to 10 non-contact, fail-safe sensors can be connected in a series with the ifm clocked input versions. Ideal for monitoring multiple stations, such as robotics cells, the fail-safe sensors will provide an output if the one point along chain is stopped. Using ifm's quick disconnect T-piece connectors, wiring is greatly reduced and simplified.

**Single connection**

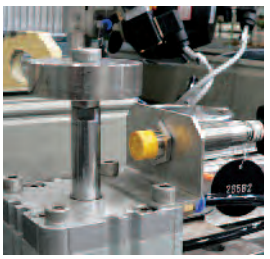
*Safety relay* *Safety sensor*

**Series connection (up to 10 sensors)**

*Safety relay* *Safety sensors*

### ifm's fail-safe sensors are a better alternative

*Challenge: 2-piece interlocking mechanical switch is prone to misalignment and time-consuming setup.*



*ifm solution: Setup is fast. ifm inductive non-contact fail-safe sensors do not require coded magnets or keys.*

ifm's safety relays are ideal for connecting electronic and mechanical fail-safe sensors / switches and for use as two-hand control.


Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
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Search Bar

# Product + accessory selector

| Housing | Dimensions | Enable Zone [mm] | Approval | Response Time on Removal | Response Time on Approach | Protection Rating | Housing Material | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| **Non-contact, fail-safe inductive sensors for safety applications • 2 x PNP output (OSSD)** | | | | | | | | | |
| | M12 x 70 mm | 0.5…4 nf | SIL 2, PL d | ≤ 1 ms | ≤ 1 ms | IP67 | 316 S.S., PBT | **GF711S** | **$176.00** |
| | M18 x 71 mm | 1…5 f | SIL 2, PL d | ≤ 1 ms | ≤ 1 ms | IP67 | Plated brass, PBT | **GG712S** | **$181.00** |
| | M18 x 71 mm | 1…8 nf | SIL 2, PL d | ≤ 1 ms | ≤ 1 ms | IP67 | 316 S.S., PBT | **GG711S** | **$181.00** |
| | M30 x 70 mm | 1...10 f | SIL 2, PL d | ≤ 10 ms | ≤ 1 ms | IP67 | Plated brass / PBT | **GI712S** | **$192.00** |
| | M30 x 70 mm | 1...15 nf | SIL 2, PL d | ≤ 10 ms | ≤ 1 ms | IP67 | 316 S.S., PBT | **GI711S** | **$188.00** |
| | M30 x 80 mm | 6…12 nf | SIL 3, PL e | < 50 ms | < 200 ms | IP69K | 316 S.S., PBT | **GI701S** | **$188.00** |
| | 40 x 40 x 66mm | 10…15 nf | SIL 3, PL e | < 50 ms | < 200 ms | IP67 | PPE, diecast zinc | **GM701S** | **$236.00** |
| | 40 x 40 x 66mm | 4…20 nf | SIL 3, PL e | < 50 ms | < 200 ms | IP67 | PPE, diecast zinc | **GM705S** | **$236.00** |
| **Fail-Safe sensors for series connection* – for connection to ifm safety relays or Safety at Work** | | | | | | | | | |
| | M18 x 91 mm | 1…4 f | SIL 3, PL e | < 20 ms | < 200 ms | IP69K | Plated brass, PBT | **GG507S** | **$236.00** |
| | M18 x 91 mm | 3…6 nf | SIL 3, PL e | < 20 ms | < 200 ms | IP69K | 316 S.S., PBT | **GG505S** | **$236.00** |
| | M30 x 80 mm | 6...12 nf | SIL 3, PL e | < 20 ms | < 200 ms | IP69K | 316 S.S. / PEEK | **GI505S** | **$236.00** |
| | 40 x 40 x 66mm | 10…15 nf | SIL 3, PL e | < 20 ms | < 200 ms | IP67 | PPE, diecast zinc | **GM504S** | **$229.00** |
| | 40 x 40 x 66mm | 10…20 nf | SIL 3, PL e | < 20 ms | < 200 ms | IP67 | PPE, diecast zinc | **GM505S** | **$236.00** |

* Requires safety splitter E11569 for series connection.

## Accessories

| Type | Safety Outputs | Non-safe Outputs | Part No. | List Price |
|---|---|---|---|---|
| | 2 x relay (N.O.) | 1 x PNP | **G1501S** | **$177.00** |
| | 2 x PNP | 1 x PNP | **G1503S** | **$161.00** |
| | 3 x relay (N.O.)<br>2 x relay (N.O.)<br>with time delay | 1 x relay (N.O.)<br>1 x relay (N.C.)<br>1 x PNP with time delay | **G1502S** | **$285.00** |
| | AS-i ClassicLine module for Gx5 Series | | **AC016S** | **$382.00** |
| | AS-i ClassicLine module for Gx7 Series | | **AC007S** | **$313.00** |
| | Safety splitter<br>(see cable section for M12 patchcord) | | **E11569** | **$26.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

Want to learn more about safety approvals, visit www.ifm.com/us

## Technical Specs

Operating voltage: 19.2…30 VDC
Number of wires: 4-wire
Connector: M12
Operating temperature: -13…158 °F (-25…70 °C)

# Top five product features!

- *Light curtains designed for finger protection – 14 mm resolution*
- *Compact 28 x 30 mm housing profile for less intrusive mounting*
- *Up to 6 meter sensing range with no software required*
- *Light curtains offer protected heights of 160 mm to 1510 mm in intervals of 150 mm*
- ***You don't have to compromise the safety level of your machine because of cost...** competitive list prices set a new benchmark for value!*

## Safety light curtains help to protect plant personnel

Type 4
SIL 3
PLe

ifm's Type 4 safety light curtains provide an optical solution for protecting plant personnel in unsafe work areas. ifm Type 4 light curtains provide continuous protection, tighter effective aperture range, redundant circuitry and the highest maximum achievable safety level requirements.

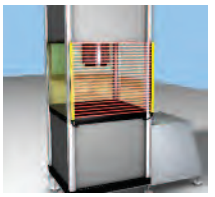
- Compact 28 x 30 mm housing profile
- Up to 12 meter sensing range
- Curtain heights from 160 to 1510 mm
- Integrated T-slot mounting, hardware included
- Light grids available in 2-, 3- and 4-beam versions
- Highly visible LEDs for setup and status indication
- Industry standard M12 connector

**Why choose ifm for your safety products?**

- ifm has taken the complexity out of selecting light curtains by offering only Type 4 light curtains.
- Not only does ifm provide the maximum achievable safety for a light curtain, ifm also offers the optimal resolution models for finger, hand and body protection applications.
- ifm's pricing enables Type 4 light curtains to be used in all applications.
- Fewer variations that cover a broad range of applications allows for standardizing on a smaller number of light curtain models.
- ifm has stock available for immediate delivery.

ifm safety light curtains provide a multi-beam barrier of infrared light in front of a hazardous area. If any of the beams are blocked by a **finger** in the sensing field, the light curtain sends a signal to the machine to place it in a safe state.

***Woodworking Power Saws***
*Operators are denied access to power saws any time the saws are in motion. Finger protection safety light curtains allow operators to work in close proximity to power saws without risk of injury.*



***Machine tool Hydraulic presses***
*Presses require large amounts of force and pose a serious safety hazard. ifm safety light curtains will halt the press if an operator gets near the dangerous area.*

***Assembly automation SMT (Surface Mount Technology) machine***
*LIght curtains help protect an operator from the hazards associated with material positioning such as mechanical power presses.*

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

### Type 4 light curtains for finger protection

| Type | Resolution (mm) | Protected Area Height (mm) | Protected Area Width (m) | Part No. | List Price |
|---|---|---|---|---|---|
| | 14 | 160 | 6 | **OY001S** | **$903.00** |
| | 14 | 310 | 6 | **OY002S** | **$1,128.00** |
| | 14 | 460 | 6 | **OY003S** | **$1,352.00** |
| | 14 | 610 | 6 | **OY004S** | **$1,579.00** |
| | 14 | 760 | 6 | **OY005S** | **$1,807.00** |
| | 14 | 910 | 6 | **OY006S** | **$2,034.00** |
| | 14 | 1060 | 6 | **OY007S** | **$2,265.00** |
| | 14 | 1210 | 6 | **OY008S** | **$2,499.00** |
| | 14 | 1360 | 6 | **OY009S** | **$2,723.00** |
| | 14 | 1510 | 6 | **OY010S** | **$3,118.00** |

### Accessories (optional)

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Rotatable brackets ± 7°, set of 4 (for light curtains ≤ 1060 mm) | **EY3004** | **$39.00** |
| | Rotatable brackets ± 7°, set of 6 (for light curtains ≥ 1210 mm) | **EY3005** | **$53.00** |
| | Rotatable bracket ± 90°, set of 4 | **EY3011** | **$80.00** |
| | Vibration damper for mounting, set of 4 pieces. | **EY3001** | **$40.00** |
| | Vibration damper for mounting, set of 6 pieces. | **EY3002** | **$61.00** |
| | Laser alignment tool | **EY3099** | **$250.00** |

The following pages include additional safety light curtain options.

### M12 Micro DC cordsets for transmitters

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | 5 m, 5-pin, PUR | **EVC071** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC072** | **$24.00** |
| | 5 m, 5-pin, PUR | **EVC074** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC075** | **$24.00** |

### M12 Micro DC cordsets for receivers

| | | | |
|---|---|---|---|
| | 5 m, 8-pin, PUR | **E12166** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12167** | **$63.00** |
| | 5 m, 8-pin, PUR | **E12168** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12169** | **$63.00** |

### Safety relays

| Type | Safety Outputs | Non-safe Outputs | Part No. | List Price |
|---|---|---|---|---|
| | 2 x relay (N.O.) | 1 x PNP | **G1501S** | **$177.00** |
| | 2 x PNP | 1 x PNP | **G1503S** | **$161.00** |
| | 3 x relay (N.O.)<br>2 x relay (N.O.)<br>with time delay | 1 x relay (N.O.)<br>1 x relay (N.C.)<br>1 x PNP with time delay | **G1502S** | **$285.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 19.2…28.8 VDC |
| Current rating: | 2 x 400 mA |
| Current consumption: | Transmitter 42 mA, Receiver 83 mA |
| Safety outputs (OSSDs): | 2 x PNP |
| Operating temperature: | 14…131 °F (-10…55 °C) |
| Protection: | IP67 |
| Dimensions (W x D): | 28 x 30 mm |
| Connection: | M12, Transmitter: 5-pin, Receiver: 8-pin |
| Max. cable length: | 100 m |
| Safety category: | Type 4 (IEC 61496-1) SIL 3 (IEC 61508)<br>SILcl 3 (IEC 62061) PL d / PL e (EN ISO 13849-1) |


**Simple and comprehensive website**

Data sheets, application examples, software downloads, virtual product demos… just one click away.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

# Top five product features!

- *Light curtains designed for hand protection – 30 mm resolution*
- *Highest level of safety protection without increasing cost – Type 4 curtains at a Type 2 price*
- *Up to 12 meter sensing range with no software required*
- *Light curtains offer protected heights of 160 mm to 1510 mm in intervals of 150 mm*
- ***You don't have to compromise the safety level of your machine because of cost...** competitive list prices set a new benchmark for value!*

## Safety light curtains help to protect plant personnel

Type 4
SIL 3
PLe

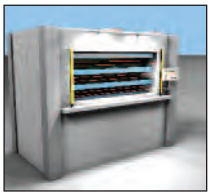
ifm's Type 4 safety light curtains provide an optical solution for protecting plant personnel in unsafe work areas. ifm Type 4 light curtains provide continuous protection, tighter effective aperture range, redundant circuitry and the highest maximum achievable safety level requirements.

- Compact 28 x 30 mm housing profile
- Up to 12 meter sensing range
- Curtain heights from 160 to 1510 mm
- Integrated T-slot mounting, hardware included
- Light grids available in 2-, 3- and 4-beam versions
- Highly visible LEDs for setup and status indication
- Industry standard M12 connector

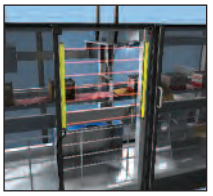
**Why choose ifm for your safety products?**

- ifm has taken the complexity out of selecting light curtains by offering only Type 4 light curtains.
- Not only does ifm provide the maximum achievable safety for a light curtain, ifm also offers the optimal resolution models for finger, hand and body protection applications.
- ifm's pricing enables Type 4 light curtains to be used in all applications.
- Fewer variations that cover a broad range of applications allows for standardizing on a smaller number of light curtain models.
- ifm has stock available for immediate delivery.

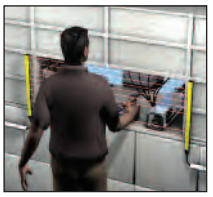
ifm safety light curtains provide a multi-beam barrier of infrared light in front of a hazardous area. If any of the beams are blocked by a **hand** in the sensing field, the light curtain sends a signal to the machine to place it in a safe state.



***Vertical automated storage systems***
*If the operator reaches into the carousel prematurely or accidentally, ifm light curtains will stop the carousel from rotating to prevent injury.*



***Carton erecting***
*Carton machines can jam during the erecting process. Once the operator breaks the protective area of the safety light curtain, the machine stops to allow the operator to clear the jam.*



***Semi automated assembly station***
*Line workers reach into a press to remove the assembly. The press is stopped when an operator reaches inside the machine and breaks the protective field of the light curtain. When the operator has removed the assembly, the machine cycle is automatically restarted, and the light curtains resume operation.*

Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products
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# Product + accessory selector

### Type 4 light curtains for hand protection

| Type | Resolution (mm) | Protected Area Height (mm) | Protected Area Width (m) | Part No. | List Price |
|---|---|---|---|---|---|
| | 30 | 160 | 12 | **OY041S** | **$746.00** |
| | 30 | 310 | 12 | **OY042S** | **$898.00** |
| | 30 | 460 | 12 | **OY043S** | **$1,027.00** |
| | 30 | 610 | 12 | **OY044S** | **$1,176.00** |
| | 30 | 760 | 12 | **OY045S** | **$1,318.00** |
| | 30 | 910 | 12 | **OY046S** | **$1,460.00** |
| | 30 | 1060 | 12 | **OY047S** | **$1,607.00** |
| | 30 | 1210 | 12 | **OY048S** | **$1,749.00** |
| | 30 | 1360 | 12 | **OY049S** | **$1,888.00** |
| | 30 | 1510 | 12 | **OY050S** | **$2,155.00** |

### Accessories (optional)

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Rotatable brackets ± 7°, set of 4 (for light curtains ≤ 1060 mm) | **EY3004** | **$39.00** |
| | Rotatable brackets ± 7°, set of 6 (for light curtains ≥ 1210 mm) | **EY3005** | **$53.00** |
| | Rotatable bracket ± 90°, set of 4 | **EY3011** | **$80.00** |
| | Vibration damper for mounting, set of 4 pieces. | **EY3001** | **$40.00** |
| | Vibration damper for mounting, set of 6 pieces. | **EY3002** | **$61.00** |
| | Laser alignment tool | **EY3099** | **$250.00** |

The following pages include additional safety light curtain options.

## Technical Specs

| | |
|---|---|
| Operating voltage: | 19.2…28.8 VDC |
| Current rating: | 2 x 400 mA |
| Current consumption: | Transmitter 42 mA, Receiver 83 mA |
| Safety outputs (OSSDs): | 2 x PNP |
| Operating temperature: | 14…131 °F (-10…55 °C) |
| Protection: | IP67 |
| Dimensions (W x D): | 28 x 30 mm |
| Connection: | M12, Transmitter: 5-pin, Receiver: 8-pin |
| Max. cable length: | 100 m |
| Safety category: | Type 4 (IEC 61496-1) SIL 3 (IEC 61508)<br>SILcl 3 (IEC 62061) PL d / PL e (EN ISO 13849-1) |

### M12 Micro DC cordset for transmitter

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | 5 m, 5-pin, PUR | **EVC071** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC072** | **$24.00** |
| | 5 m, 5-pin, PUR | **EVC074** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC075** | **$24.00** |

### M12 Micro DC cordset for receiver

| | | | |
|---|---|---|---|
| | 5 m, 8-pin, PUR | **E12166** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12167** | **$63.00** |
| | 5 m, 8-pin, PUR | **E12168** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12169** | **$63.00** |

### Safety relays

| Type | Safety Outputs | Non-safe Outputs | Part No. | List Price |
|---|---|---|---|---|
| | 2 x relay (N.O.) | 1 x PNP | **G1501S** | **$177.00** |
| | 2 x PNP | 1 x PNP | **G1503S** | **$161.00** |
| | 3 x relay (N.O.)<br>2 x relay (N.O.)<br>with time delay | 1 x relay (N.O.)<br>1 x relay (N.C.)<br>1 x PNP with time delay | **G1502S** | **$285.00** |

### Floor stands for light curtains

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | For safety light curtains ≤ 760 mm. Requires base unit EY2005. | **EY2001** | **$287.00** |
| | For safety light curtains ≤ 1060 mm. Requires base unit EY2005. | **EY2002** | **$316.00** |
| | For safety light curtains ≤ 1360 mm. Requires base unit EY2005. | **EY2003** | **$377.00** |
| | For safety light curtains ≤ 1510 mm. Requires base unit EY2005. | **EY2004** | **$663.00** |
| | Required spring base unit for floor mounting | **EY2005** | **$196.00** |

# Top five product features!

- *Light curtains designed for body protection – 300, 400 and 500 mm resolution*
- *Highest level of safety protection without increasing cost – Type 4 curtains at a Type 2 price*
- *Up to 12 meter sensing range with no software required*
- *Light curtains offer protected heights of 160 mm to 1510 mm in intervals of 150 mm*
- ***You don't have to compromise the safety level of your machine because of cost...** competitive list prices set a new benchmark for value!*

## Safety light curtains help to protect plant personnel

Type 4
SIL 3
PLe

ifm's Type 4 safety light curtains provide an optical solution for protecting plant personnel in unsafe work areas. ifm Type 4 light curtains provide continuous protection, tighter effective aperture range, redundant circuitry and the highest maximum achievable safety level requirements.

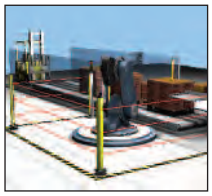
- Compact 28 x 30 mm housing profile
- Up to 12 meter sensing range
- Curtain heights from 160 to 1510 mm
- Integrated T-slot mounting, hardware included
- Light grids available in 2-, 3- and 4-beam versions
- Highly visible LEDs for setup and status indication
- Industry standard M12 connector

**Why choose ifm for your safety products?**

- ifm has taken the complexity out of selecting light curtains by offering only Type 4 light curtains.
- Not only does ifm provide the maximum achievable safety for a light curtain, ifm also offers the optimal resolution models for finger, hand and body protection applications.
- ifm's pricing enables Type 4 light curtains to be used in all applications.
- Fewer variations that cover a broad range of applications allows for standardizing on a smaller number of light curtain models.
- ifm has stock available for immediate delivery.

ifm safety light curtains for **body** protection prevent access to a machine by using light curtains and optional mirrors to define a hazardous area.

***Palletizer***
*A palletizer erects a pallet of kegs and places it on a conveyor. Muting sensors are tripped and the pallet is allowed to bypass the light curtain and leave the area. If an operator attempts to enter the palletizing area from the opposite direction, the light curtain will detect his presence and cut power to the machine.*



***Perimeter guarding of palletizing area***
*Corner mirrors allow a single pair of safety light curtains to be used in perimeter guarding applications. Up to three corner mirrors may be used to "bend" the light into shapes that protect multiple sides of the dangerous area. ifm light curtains enable a safe and economical way to replace expensive hard guarding.*

Search Bar
Position Sensors
Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products
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# Product + accessory selector

## Type 4 light curtains for body protection

| Type | Resolution (mm) | No. of Beams | Protected Area Height (mm) | Protected Area Width (m) | Part No. | List Price |
|---|---|---|---|---|---|---|
| | 500 | 2 | 500 | 12 | **OY114S** | **$679.00** |
| | 400 | 3 | 800 | 12 | **OY115S** | **$786.00** |
| | 300 | 4 | 900 | 12 | **OY116S** | **$917.00** |

## Accessories (optional)

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Rotatable brackets ± 7°, set of 4 (for light curtains ≤ 1060 mm) | **EY3004** | **$39.00** |
| | Rotatable brackets ± 7°, set of 6 (for light curtains ≥ 1210 mm) | **EY3005** | **$53.00** |
| | Rotatable bracket ± 90°, set of 4 | **EY3011** | **$80.00** |
| | Vibration damper for mounting, set of 4 pieces. | **EY3001** | **$40.00** |
| | Vibration damper for mounting, set of 6 pieces. | **EY3002** | **$61.00** |
| | Laser alignment tool | **EY3099** | **$250.00** |

| Type | Length (mm) | Resolution (mm) | Beams | Part No. | List Price |
|---|---|---|---|---|---|
| **Corner mirrors** | | | | | |
| | 715 | 610 | 2 | **EY1004** | **$384.00** |
| | 1060 | 910 | 3 | **EY1006** | **$477.00** |
| | 1230 | 1060 | 4 | **EY1007** | **$526.00** |
| **Floor stands with integrated corner mirrors** | | | | | |
| | For light curtains with 2 beams Requires base unit EY2005. | | | **EY1011** | **$471.00** |
| | For safety light curtains with 3 and 4 beams Requires base unit EY2005. | | | **EY1013** | **$574.00** |
| **Floor stands for light curtains** | | | | | |
| | For safety light curtains ≤ 760 mm. Requires base unit EY2005. | | | **EY2001** | **$287.00** |
| | For safety light curtains ≤ 1060 mm. Requires base unit EY2005. | | | **EY2002** | **$316.00** |
| | Required spring base unit for floor mounting | | | **EY2005** | **$196.00** |

## M12 Micro DC cordset for transmitter

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | 5 m, 5-pin, PUR | **EVC071** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC072** | **$24.00** |
| | 5 m, 5-pin, PUR | **EVC074** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC075** | **$24.00** |

## M12 Micro DC cordset for receiver

| | | | |
|---|---|---|---|
| | 5 m, 8-pin, PUR | **E12166** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12167** | **$63.00** |
| | 5 m, 8-pin, PUR | **E12168** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12169** | **$63.00** |

## Safety relays

| Type | Safety Outputs | Non-safe Outputs | Part No. | List Price |
|---|---|---|---|---|
| | 2 x relay (N.O.) | 1 x PNP | **G1501S** | **$177.00** |
| | 2 x PNP | 1 x PNP | **G1503S** | **$161.00** |
| | 3 x relay (N.O.) 2 x relay (N.O.) with time delay | 1 x relay (N.O.) 1 x relay (N.C.) 1 x PNP with time delay | **G1502S** | **$285.00** |
| | For muting applications only 2 x relay (N.O.) | 1 x PNP | **G2001S** | **$504.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 19.2…28.8 VDC |
| Current rating: | 2 x 400 mA |
| Current consumption: | Transmitter 42 mA, Receiver 83 mA |
| Safety outputs (OSSDs): | 2 x PNP |
| Operating temperature: | 14…131 °F (-10…55 °C) |
| Protection: | IP67 |
| Dimensions (W x D): | 28 x 30 mm |
| Connection: | M12, Transmitter: 5-pin, Receiver: 8-pin |
| Max. cable length: | 100 m |
| Safety category: | Type 4 (IEC 61496-1) SIL 3 (IEC 61508) SILcl 3 (IEC 62061) PL d / PL e (EN ISO 13849-1) |

# Top five product features!

- *Light curtains designed for blanking applications – 14 and 20 mm resolution*
- *Highest level of safety protection without increasing cost – Type 4 curtains at a Type 2 price*
- *Up to 12 meter sensing range with no software required*
- *Light curtains offer protected heights of 610 mm to 1210 mm*
- ***You don't have to compromise the safety level of your machine because of cost…** competitive list prices set a new benchmark for value!*

## Safety light curtains help to protect plant personnel

Type 4
SIL 3
PLe

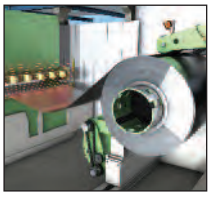
ifm's Type 4 safety light curtains provide an optical solution for protecting plant personnel in unsafe work areas. ifm Type 4 light curtains provide continuous protection, tighter effective aperture range, redundant circuitry and the highest maximum achievable safety level requirements.

- Compact 28 x 30 mm housing profile
- Up to 12 meter sensing range
- Curtain heights from 160 to 1510 mm
- Integrated T-slot mounting, hardware included
- Light grids available in 2-, 3- and 4-beam versions
- Highly visible LEDs for setup and status indication
- Industry standard M12 connector

**Why choose ifm for your safety products?**

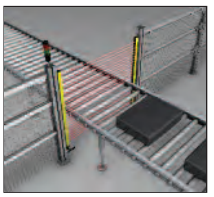
- ifm has taken the complexity out of selecting light curtains by offering only Type 4 light curtains.
- Not only does ifm provide the maximum achievable safety for a light curtain, ifm also offers the optimal resolution models for finger, hand and body protection applications.
- ifm's pricing enables Type 4 light curtains to be used in all applications.
- Fewer variations that cover a broad range of applications allows for standardizing on a smaller number of light curtain models.
- ifm has stock available for immediate delivery.

**Blanking** allows one, two or three consecutive beams to be broken without interrupting the safety circuit. These types of light curtains are generally used for material feed or exit applications.



***Metal roll feed (floating blanking)***

*A metal sheet roll is fed into the cutting station. Because of the movement and various feed angles, the metal sheet can break different beams within the protected area of the light curtain. A floating blanking light curtain allows for one, two or three beams to be broken anywhere within the protected area of the light curtain.*



***Conveying transport (permanent blanking)***

*A light curtain is required for a conveyor section so that operators cannot access the top or bottom of the conveyor. In order to do this, the light curtain must allow the roller to reside within the protected area without interrupting the safety circuit. By applying the ifm permanent blanking feature, the light curtain can solve this application.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

### Type 4 light curtains for blanking

| Type | Resolution (mm) | Protected Area Height (mm) | Protected Area Width (m) | Part No. | List Price |
|---|---|---|---|---|---|
| | 14 | 610 | 5 | **OY804S** | **$1,737.00** |
| | 14 | 760 | 5 | **OY805S** | **$1,987.00** |
| | 14 | 910 | 5 | **OY806S** | **$2,238.00** |
| | 14 | 1060 | 5 | **OY807S** | **$2,492.00** |
| | 14 | 1210 | 5 | **OY808S** | **$2,749.00** |
| | 20 | 610 | 18 | **OY815S** | **$1,573.00** |
| | 20 | 760 | 18 | **OY816S** | **$1,797.00** |
| | 20 | 910 | 18 | **OY817S** | **$2,021.00** |
| | 20 | 1060 | 18 | **OY818S** | **$2,249.00** |
| | 20 | 1210 | 18 | **OY819S** | **$2,477.00** |

### Safety relays

| Type | Safety Outputs | Non-safe Outputs | Part No. | List Price |
|---|---|---|---|---|
| | 2 x relay (N.O.) | 1 x PNP | **G1501S** | **$177.00** |
| | 2 x PNP | 1 x PNP | **G1503S** | **$161.00** |
| | 3 x relay (N.O.)<br>2 x relay (N.O.)<br>with time delay | 1 x relay (N.O.)<br>1 x relay (N.C.)<br>1 x PNP with time delay | **G1502S** | **$285.00** |

Can't find the right Light Curtain for your application, call 800-441-8246 or visit www.ifm.com/us

### M12 Micro DC cordset for transmitter

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | 5 m, 5-pin, PUR | **EVC071** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC072** | **$24.00** |
| | 5 m, 5-pin, PUR | **EVC074** | **$19.00** |
| | 10 m, 5-pin, PUR | **EVC075** | **$24.00** |

### M12 Micro DC cordset for receiver

| | | | |
|---|---|---|---|
| | 5 m, 8-pin, PUR | **E12166** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12167** | **$63.00** |
| | 5 m, 8-pin, PUR | **E12168** | **$50.00** |
| | 10 m, 8-pin, PUR | **E12169** | **$63.00** |

### Accessories (optional)

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Rotatable brackets ± 7°, set of 4 | **EY3100** | **$55.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 19.2…28.8 VDC |
| Current rating: | 2 x 400 mA |
| Current consumption: | Transmitter 42 mA, Receiver 83 mA |
| Safety outputs (OSSDs): | 2 x PNP |
| Operating temperature: | 14…131 °F (-10…55 °C) |
| Protection: | IP67 |
| Dimensions (W x D): | 28 x 30 mm |
| Connection: | M12, Transmitter: 5-pin, Receiver: 8-pin |
| Max. cable length: | 100 m |
| Safety category: | Type 4 (IEC 61496-1) SIL 3 (IEC 61508)<br>SILcl 3 (IEC 62061) PL d / PL e (EN ISO 13849-1) |

***Reduce your inventory and the complexity of selecting a light curtain***

*ifm's consolidated product offering can be applied in most applications.*

*ifm makes it easy to select a light curtain in three steps. Determine your application (e.g., finger, hand, body, or blanking), determine the protected area height and the protected area width. It's that simple!*

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# Top five product features!

- *Multi-function safety relays are compatible with a variety of devices including switches, light curtains, e-stops and two-hand controls*
- *Connects e-stop buttons with cross-fault and optional simultaneous monitoring*
- *Two safety output versions available: relay or solid-state*
- *Solid-state auxiliary non-safety output provides feedback to PLC*
- *Meets requirements of Category 4 PL e and SIL 3 (IEC 61508)*

## Multi-function safety relays reduce stock levels

ifm's multi-functional safety relays are compatible with industry standard safety devices. The versatile safety relays connect single or dual channel emergency stops, mechanical safety switches, transistor-based safety devices, light curtains, two-hand controls and ifm's non-contact safety sensors. All of these devices can be monitored with one relay. The benefit is a large reduction in stock levels that eliminates the need for different types of safety relays for various applications. Dual channel safety devices can be configured to monitor simultaneous logic and cross fault detection across the inputs.

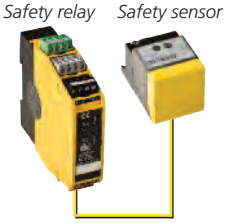
### Safety Relays for Series Connection

Up to 10 non-contact, fail-safe sensors can be connected in a series with the ifm clocked input versions. Ideal for monitoring multiple stations, such as robotics cells, the fail-safe sensors will provide an output if the one point along chain is stopped. Using ifm's quick disconnect T-piece connectors, wiring is greatly reduced and simplified.

**ifm's multi-functional safety relay is compatible with industry standard devices**

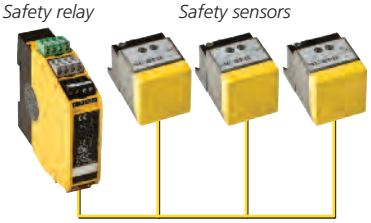
**Single connection**

*Safety relay* *Safety sensor*



**Series connection (up to 10 sensors)**

*Safety relay* *Safety sensors*



Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Type | Dimensions | Supply Voltage | Safety Outputs | Non-Safe Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Safety relays** | | | | | | |
| | 100 x 25 x 105 mm | 19.2…30 V DC | 2 x N.O. contacts | 1 N.O. transistor output (PNP) | **G1501S** | **$177.00** |
| | 100 x 25 x 105 mm | 19.2…30 V DC | 2 x N.O. transistor outputs (PNP) | 1 N.O. transistor output (PNP) | **G1503S** | **$161.00** |
| | 114 x 25 x 105 mm | 19.2…30 V DC | 2 x N.O. contacts with delay<br>3 x N.O. contacts | 1 N.O. contact<br>1 N.C. contact<br>1 N.O. transistor (PNP) | **G1502S** | **$285.00** |

Can't find the right product for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Protection rating: | IP20 |
| Operating temperature: | -13…131 °F (-25…55 °C) |
| Housing material: | PA |
| Contact rating: | G1501S, G1502S: 6A, 250 V AC / 24 V DC |
| Maximum load current: | G1503S: 100 mA per safe output |
| Approvals: | 2008 Category 4 PL e, SIL 3 (IEC 61508), Type IIIc (EN 574) |

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# Top five product features!

- *Safe standstill / underspeed and overspeed models are available*
- *Safe speed monitors use 2 standard sensors as pick-ups*
- *2 safety outputs (contacts)*
- *Meets requirements of Category 4 PL e and SIL 3*
- *Low profile safety speed monitors use minimal cabinet space*

## Speed monitors for safety applications

ifm offers speed monitors developed for safety applications. Models are available for standstill and overspeed applications. Both styles of speed monitors are suitable for rotational or linear movement and evaluate pulses received from standard PNP sensors.

The DA101S speed monitor is ideal for both standstill and underspeed safety applications. A common application for this monitor is to ensure access doors stay locked until tooling has stopped moving. When the target speed is below the switchpoint, the two OSSD outputs will open.

The DD110S and DD111S speed monitors have been developed for safety-related overspeed monitoring as used in carousels and centrifuges. The DD111S is specifically designed for the low rotational speed of wind turbines. Both units are easily configured via rotary switches. When the switchpoint is exceeded, the 2 OSSD outputs will open.

*Speed monitor switch when critical rotational speeds are exceeded or nor reached.*


Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Type | Dimensions | Adjustable Frequency Range | Safety Outputs | Non-Safe Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Safety speed monitors – standstill / underspeed** | | | | | | |
| | 114 x 25 x 105 mm | – | 2 x N.O. contacts | 1 fault output (PNP) | **DA101S** | **$359.00** |
| **Safety speed monitors – overspeed** | | | | | | |
| | 114 x 25 x 105 mm | 0.5…990 Hz | 2 x N.O. contacts | 1 fault output (PNP)<br>1 diagnostic output (PNP) | **DD110S** | **$420.00** |
| | 114 x 25 x 105 mm | 0.1…99.9 Hz | 2 x N.O. contacts | 1 fault output (PNP)<br>1 diagnostic output (PNP) | **DD111S** | **$420.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us/vision

## Technical Specs

| | DA101S | DD110S and DD111S |
|---|---|---|
| Operating voltage: | 19.2…30 V DC | 19.2…28.2 V DC |
| Current consumption: | ≤ 200 mA | ≤ 125 mA |
| Input frequency: | ≤ 3500 Hz | ≤ 2000 Hz |
| Power-on delay time: | ≤ 6 s | ≤ 3 s |
| Contact rating: | 6 A | 6 A |
| Operating temp: | -13…131 °F (-25…55 °C) | -40…131 °F (-40…55 °C) |
| Protection: | IP20 | IP20 |
| Approvals: | EN ISO 13849-1: Category 4 PL e<br>IEC 61508: SIL 3 | EN ISO 13849-1: Category 4 PL e<br>IEC 61508: SIL 3 |

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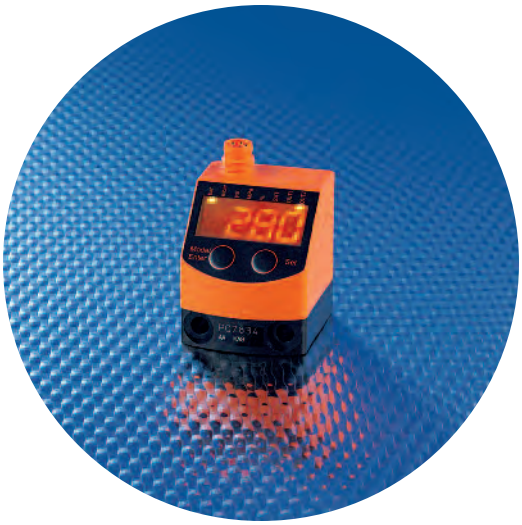
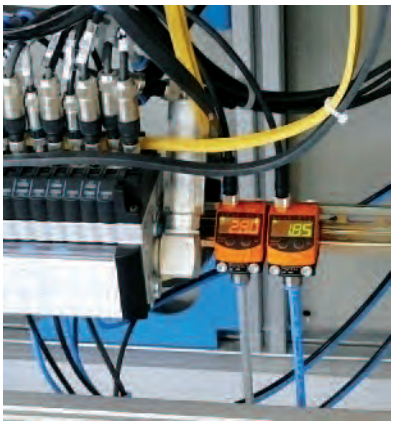


# Top five product features!

- Compact pressure switch for pneumatic applications
- 2-color, 4-digit alpha-numeric display for visual indication of operating status
- Simple pushbutton setup
- Easy installation using integrated mounting holes and accessories
- Flexible outputs available: dual PNP, dual NPN, analog / PNP

## Compact pressure switch for applications in robotics and material handling



ifm's PQ Series pressure switches are designed for pneumatic applications in robotics and material handling. The switches precisely measure the full range of vacuum and pressure typical in these applications.

The PQ Series pressure switch family has been expanded to include versions with analog outputs, (i.e. part numbers PQ3809 and PQ3834).

The technology is based on a piezoresistive measuring element. The silicon measuring cell is unaffected by liquids (e.g. condensed water) and deposits that might occur in the system. The silicon measuring cell guarantees a high overload resistance as well as an accuracy of ± 0.5%.

Application parameters are established using two pushbuttons. The two-color, four-digit display provides system pressure which can be seen from long distances.

### Various mounting options

- Can be fixed to flat surfaces and profiles using the two M4 drill holes on the front.
- Can be fixed to a DIN rail using the robust DIN rail clip.
- Can be fixed to a pipe or air-duct plate.

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

| Output | Measuring Range | Set Point Range | Reset Point Range | Fixed Analog Start Point | Fixed Analog End Point | Display Units Available | Port Size | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| 2 x PNP, N.O./N.C. | -14.5…14.5 psi | -14.2...14.6 psi | -14.4...14.4 psi | – | – | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ7809** | **$156.00** |
| 2 x PNP, N.O./N.C. | -14.5…145 psi | -13...145 psi | -14...144 psi | – | – | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ7834** | **$156.00** |
| 2 x NPN, N.O./N.C. | -14.5…14.5 psi | -14.2...14.6 psi | -14.4...14.4 psi | – | – | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ0809** | **$156.00** |
| 2 x NPN, N.O./N.C. | -14.5…145 psi | -13...145 psi | -14...144 psi | – | – | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ0834** | **$156.00** |
| 4…20 mA and 1 x PNP, N.O./N.C. | -14.6…14.6 psi | -14.2...14.6 psi | -14.4...14.4 psi | -14.6 psi | 14.6 psi | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ3809** | **$169.00** |
| 4…20 mA and 1 x PNP, N.O./N.C. | -15…145 psi | -13...145 psi | -14...144 psi | -15 psi | 145 psi | bar, psi, kPa, inHg | G1/8 BSPP male | **PQ3834** | **$169.00** |

## Required Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/8" NPT female adapter | **U60102** | **$9.00** |
| | 6 mm Ø tube adapter | **E30076** | **$10.00** |
| | 8 mm Ø tube adapter | **E30077** | **$10.00** |
| | DIN rail mounting bracket | **E37340** | **$9.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M8 Pico DC (4-pin) 2 m, PUR cable | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR cable | **EVC151** | **$18.00** |
| | M8 Pico DC (4-pin) 2 m, PUR cable | **EVC153** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR cable | **EVC154** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Operating voltage: | 18…32 VDC |
| Maximum load current: | 100 mA |
| Current consumption; | <50 mA |
| Switch point accuracy: | < ± 0.5 % of full range |
| Repeatability: | < ± 0.1 % of full range |
| Medium temperature: | 32…140 °F (0…60 °C) |
| Wetted parts: | Brass, FPM (Viton™), silicon (coated), PBT (Pocan) |
| Protection rating: | IP65 |

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# Top five product features!

- Simple setup with mechanical adjustment dials that rotate to quickly establish setpoint and resetpoint
- 316 stainless steel process connection and strain gauge technology provide higher reliability than mechanical pressure switches
- Accuracy is consistent across the range reducing the number of ranges required.
- The switch's high accuracy and long-term stability insure the setpoint does not drift
- LEDs provide switching status and power indication

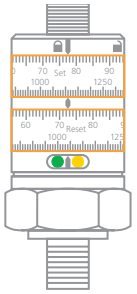
## Mechanical adjustment dials provide simple setup

PK pressure switches feature mechanical adjustment dials that rotate to quickly establish the setpoint and resetpoint. The switch is adjustable without system pressure and supply voltage.

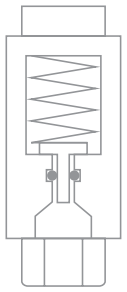
The PK pressure switch is an ideal alternative to mechanical piston pressure switches. The PK switch features a gas-tight measuring cell that reliably detects gas and liquid pressure. The switch withstands aggressive media and detects pressure ranges up to 5800 psi (400 bar).

The PK's compact design is ideal for space saving mounting. Quick electrical connection is made using an industry standard Micro DC connector.

### Simple mounting is plug-and-play



**Electronic PK pressure switch**
No moving parts reduces wear and prevents leaks.

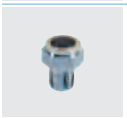


**Mechanical piston pressure switch**
Piston movement can wear the sealing ring resulting in pressure leaks.

# Product + accessory selector

| Output | Measuring Range [psi] | Setpoint Range [psi] | Resetpoint Range [psi] | Overload Pressure [psi] | Port Size | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| 2 x PNP, N.O. and N.C. | 0...145 | 7.5...145 | 5.0...142 | 362 | 1/4" NPT male | **PK6224** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...1450 | 75...1450 | 50...1420 | 2900 | 1/4" NPT male | **PK6222** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...5800 | 290...5800 | 175...5685 | 8700 | 1/4" NPT male | **PK6220** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...145 | 7.5...145 | 5.0...142 | 362 | G1/4 BSPP male | **PK6524** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...363 | 18...363 | 11.0...355 | 870 | G1/4 BSPP male | **PK6523** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...1450 | 75...1450 | 50...1450 | 2900 | G1/4 BSPP male | **PK6522** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...3625 | 181...3625 | 109...3553 | 5800 | G1/4 BSPP male | **PK6521** | **$151.00** |
| 2 x PNP, N.O. and N.C. | 0...5800 | 2900...5800 | 175...5685 | 8700 | G1/4 BSPP male | **PK6520** | **$151.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
|  | Protective cover | **E30094** | **$9.00** |
|  | G1/4 BSPP female to 1/4" NPT male, 316 stainless steel | **U25003** | **$20.00** |
| | G1/4 BSPP female to 7/16" SAE male, 316 stainless steel | **US0017** | **$37.00** |

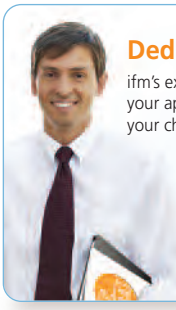
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 9.6...32 VDC |
| Maximum load current: | 2 x 250 mA |
| Current consumption: | <25 mA |
| Voltage drop: | <2 V |
| Medium temperature range: | -13...176 °F (-25...80 °C) |
| Accuracy of switch point: | < ± 2.5% of full range |
| Repeatability: | < ± 0.5% of full range |
| Wetted parts: | 316 stainless steel |
| Protection rating: | IP67 |

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# Top five product features!

- *Solid state sensors are more reliable than mechanical switches*
- *Integrated built-in display eliminates the need for a reference gauge; values may be set in green or red providing at-a-glance status indication*
- *Simple pushbutton setup allows the switch to be adjusted in minutes using new scroll and enter buttons*
- *2 large bright LEDs for output indication can be seen easily from all angles*
- *Stainless steel construction designed to last in harsh environments*

## New generation pressure switches

***NEW!*** ifm has provided reliable pressure monitoring for pneumatic and hydraulic applications for more than 20 years.

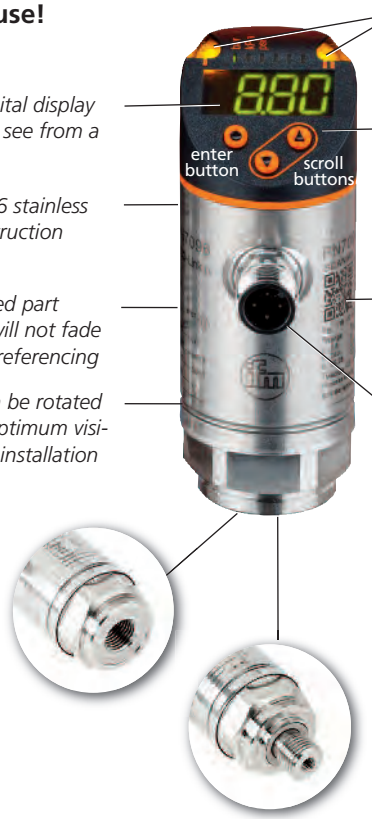
ifm now introduces the next generation pressure sensor, the PN7 Series, with enhanced features that provide more flexibility in adapting the product to fit your pressure application.

ifm pressure switches are a solid state alternative to mechanical pressure switches. Because there are no moving parts to jam or break, ifm pressure switches eliminate the maintenance headaches of mechanical switches.

The PN7 family now incorporates the best combination of over pressure, burst pressure and long term stability for each measuring range. The technology allows for use in high pressure gas applications as well as liquid applications. Encased in a stainless steel housing, these switches can withstand extreme shock and vibration and provide high accuracy and reliability for most pressure applications.

Through innovative design technology and features that make the switch easy to implement, ifm once again, sets a new benchmark for price/performance with the new generation PN7 family of products.

### Compact, reliable and easy to use!




*Large bright LEDs can be seen from all angles indicate output status*

*2-color digital display is easier to see from a distance*

*Simple pushbutton setup allows the sensor to be parameterized in less than 5 minutes with new scroll and enter buttons*

*Robust 316 stainless steel construction*

*Laser etched part numbers will not fade for future referencing*

*QR code for quick access to technical data and installation instructions*

*Sensor can be rotated 345° for optimum visibility after installation*

*Atmospheric reference is achieved via the electrical connection for high IP67 rating*

*Available with 5 different process connections, including 1/4" NPT male and female for direct installation. No extra fittings are required.*


| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology |
|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

Search Bar

# Product + accessory selector

| Measuring Range (psi) | Over Pressure / Burst Pressure (psi) | Part No. 1/4" NPT Female Port Size | Part No. 1/4" NPT Male Port Size | Part No. G1/4 BSPP Female Port Size | Part No. G1/4 BSPP Male Port Size | Part No. SAE 7/16-20 Female Port Size | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **Vacuum switches · 2 x PNP / NPN · N.O. / N.C.** | | | | | | | |
| -14.5…14.5 | 290 / 725 | **PN7299** | **PN7699** | **PN7099** | **PN7599** | – | **$339.00** |
| -14.5…145 | 1087 / 2175 | **PN7294** | **PN7694** | **PN7094** | **PN7594** | – | **$339.00** |
| **Pressure switches · 2 x PNP / NPN · N.O. / N.C.** | | | | | | | |
| 0…14.5 | 145 / 450 | **PN7297** | **PN7697** | **PN7097** | **PN7597** | – | **$339.00** |
| 0…36.2 | 290 / 725 | **PN7296** | **PN7696** | **PN7096** | **PN7596** | – | **$339.00** |
| -14.5…145 | 1087 / 2175 | **PN7294** | **PN7694** | **PN7094** | **PN7594** | – | **$339.00** |
| 0…362 | 2175 / 5075 | **PN7293** | **PN7693** | **PN7093** | **PN7593** | – | **$339.00** |
| 0…1450 | 4350 / 9400 | **PN7292** | **PN7692** | **PN7092** | **PN7592** | **PN7392** | **$339.00** |
| 0…3620 | 7250 / 15,950 | **PN7271** | **PN7671** | **PN7071** | **PN7571** | – | **$339.00** |
| 0…5800 | 11,580 / 24,650 | **PN7270** | **PN7670** | **PN7070** | **PN7570** | **PN7370** | **$339.00** |
| 0…8700 | 11,600 / 36,300 | – | – | **PN7160** | **PN7560** | – | **$339.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | G 1/4 BSPP male to 1/4" NPT male adapter | **U20172** | **$18.00** |
| | G 1/4 BSPP male to 7/16" SAE male adapter | **U20171** | **$27.00** |
| | Universal angle bracket | **E30421** | **$7.00** |
| | Conduit adapter | **E30062** | **$78.00** |

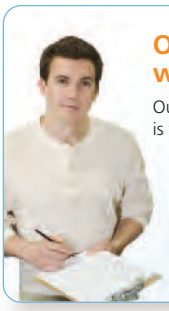
## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 18...30 VDC |
| Maximum load current: | 150 mA per output |
| Medium temperature range: | -13...176 °F (-25...80 °C) |
| Accuracy of switch point: | < ± 0.5% of full range |
| Wetted parts: | 316 stainless steel, ceramic, Viton™<br>PN7x71, PN7x70, PN7160, PN7560:<br>630 stainless steel (1.4542) |
| Protection rating: | IP67 |



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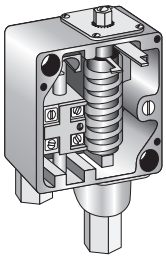
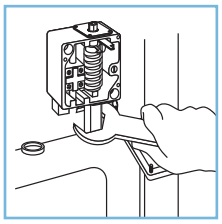
# Top five product features!

- Simple pushbutton setup allows the switch to be adjusted and mounted in less than 5 minutes
- Ceramic pressure sensor element is more reliable than mechanical switches
- Solid state relay output to switch loads up to 2.5 A
- Integrated built-in display eliminates the need for a reference gauge
- Stainless steel construction designed to last in harsh environments

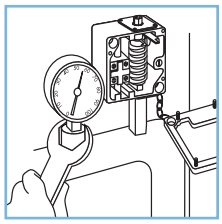
## Customer benefits!

### Mechanical pressure switches are not reliable and are time-consuming to install

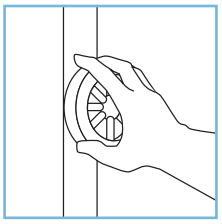




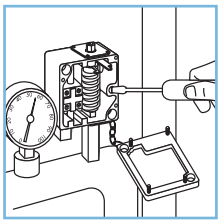
1. Mount the switch and connect conduit.



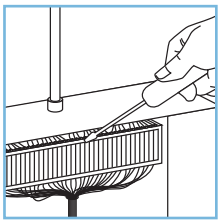
2. Install reference gauge.



3. Apply system pressure.

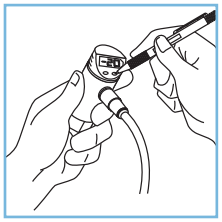


4. Adjust setpoint and differential.

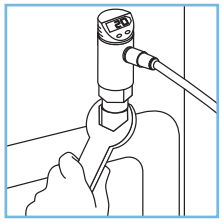


5. Make electrical connections.

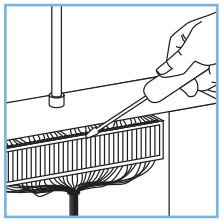
### ifm pressure switches have no moving parts and can be installed in less than five minutes



1. Program the switch.



2. Install the switch.



3. Make electrical connections.

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Measuring Range | Display in Steps of | Overload Pressure | Display Units Available | Port Size | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Vacuum switches · Solid state relay · N.O. / N.C.** | | | | | | |
| -30...30 inHg | 1 inHg | 290 psi | bar, inHg, kPA | 1/4" NPT female | **PN4229** | **$375.00** |
| **Pressure switches · Solid state relay · N.O. / N.C.** | | | | | | |
| 0…14.5 psi | 0.1 psi | 150 psi | mbar, kPa, psi | 1/4" NPT female | **PN4227** | **$375.00** |
| 0…36.3 psi | 0.1 psi | 290 psi | bar, kPa, psi | 1/4" NPT female | **PN4226** | **$375.00** |
| 0…145 psi | 1 psi | 725 psi | bar, kPa, psi | 1/4" NPT female | **PN4224** | **$375.00** |
| 0…363 psi | 1 psi | 1450 psi | bar, MPa, psi | 1/4" NPT female | **PN4223** | **$375.00** |
| 0…1450 psi | 10 psi | 4350 psi | bar, MPa, psi | 1/4" NPT female | **PN4222** | **$375.00** |
| 0…3630 psi | 10 psi | 5800 psi | bar, MPa, psi | 1/4" NPT female | **PN4221** | **$375.00** |
| 0…5800 psi | 10 psi | 8700 psi | bar, MPa, psi | 1/4" NPT female | **PN4220** | **$375.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Transparent protective cover | **E30006** | **$8.00** |
| | 1/4" NPT male to 1/4" NPT male adapter | **U30039** | **$10.00** |
| | Mounting clamp | **E10077** | **$9.00** |
| | Conduit adapter | **E30062** | **$78.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" Micro AC (5-pin), 4 m, PUR | **E18026** | **$32.00** |
| | 1/2" Micro AC (5-pin), 4 m, PUR | **E18027** | **$32.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 90…250 VAC |
| Maximum load current: | 2.5 A @ 68°F / 0.25 A @ 158 °F |
| Current consumption: | <10 mA |
| Voltage drop: | <2 V |
| Medium temperature range: | -13...176 °F (-25...80 °C) |
| Accuracy of switch point: | < ± 1% of full range |
| Repeatability: | < ± 0.1% of full range |
| Wetted parts: | 303 stainless steel, ceramic, Viton™ |
| Protection rating: | IP67 (363 psi / 25 bar ranges and lower: IP65) |

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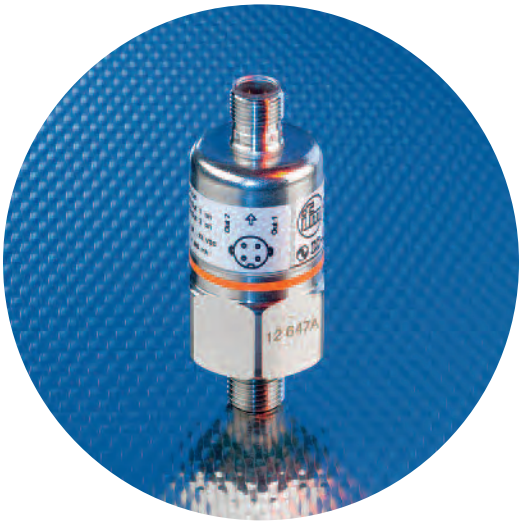


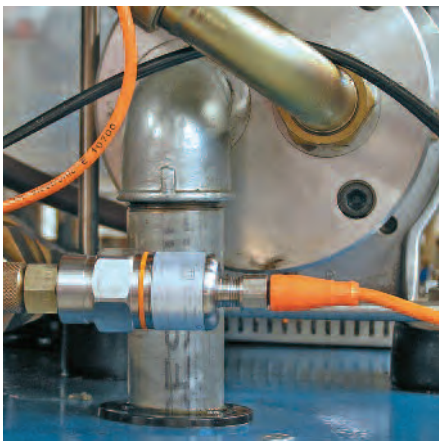
# Top five product features!

- Ceramic sensing element provides high burst / over pressure protection and exceptional reliability
- Robust stainless steel housing
- Repeatability 0.15% of full range
- Ideally suited for hydraulic applications and applications subjected to pressure spikes
- No compromise in performance at a great price

## Compact size fits easily in applications with limited mounting space

The compact PX pressure transmitter provides an analog output for reliable pressure indication. Pressure transmitter output options include 4...20 mA and 0...10 V.

PX pressure transmitters are an ideal alternative to mechanical piston pressure transmitters. The transmitters feature a ceramic measuring cell that reliably detects line pressure and withstands aggressive media.

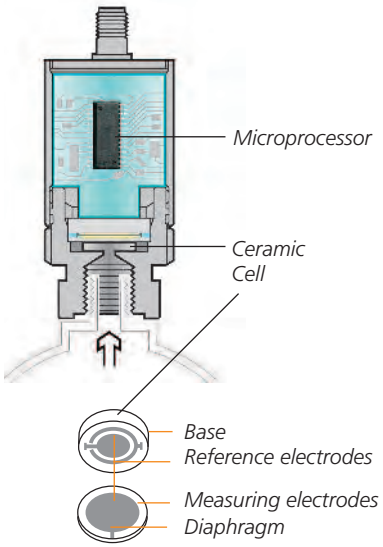


### Capacitive sensing technology using ceramic measuring cells

The most important element of the capacitive sensing technology is the ceramic pressure measuring cell made of aluminum oxide ($Al_2O_3$).

After assembly, the ceramic cell element resembles a plate capacitor with a reference electrode and measuring electrode placed 10 µm apart. The capacitance is inversely proportional to the distance between the electrodes. If the distance changes by a small value because of an increase in pressure applied to the cell, the capacitance changes proportionately. This signal is then processed by a microprocessor.

### Accurate and reliable




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output | Fixed Analog Range | Overpressure Limit | Port Size | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| 4...20 mA | -14.5...0 psi | 145 psi | 1/4" NPT male | **PX3229** | **$199.00** |
| 4...20 mA | 0...100 $inH_2O$ | 4015 $inH_2O$ | 1/4" NPT male | **PX3228** | **$199.00** |
| 4...20 mA | 0...5 psi | 145 psi | 1/4" NPT male | **PX3238** | **$199.00** |
| 4...20 mA | 0...15 psi | 145 psi | 1/4" NPT male | **PX3227** | **$199.00** |
| 4...20 mA | 0...20 psi | 145 psi | 1/4" NPT male | **PX3237** | **$199.00** |
| 4...20 mA | 0...30 psi | 290 psi | 1/4" NPT male | **PX3226** | **$199.00** |
| 4...20 mA | 0...100 psi | 1087 psi | 1/4" NPT male | **PX3224** | **$199.00** |
| 4...20 mA | 0...150 psi | 1087 psi | 1/4" NPT male | **PX3244** | **$199.00** |
| 4...20 mA | 0...200 psi | 1087 psi | 1/4" NPT male | **PX3234** | **$199.00** |
| 4...20 mA | 0...250 psi | 2175 psi | 1/4" NPT male | **PX3233** | **$199.00** |
| 4...20 mA | 0...500 psi | 2175 psi | 1/4" NPT male | **PX3223** | **$199.00** |
| 4...20 mA | 0...1000 psi | 4350 psi | 1/4" NPT male | **PX3222** | **$199.00** |
| 4...20 mA | 0...3000 psi | 5800 psi | 1/4" NPT male | **PX3111** | **$199.00** |
| 4...20 mA | 0...5000 psi | 11,600 psi | 1/4" NPT male | **PX3220** | **$199.00** |
| 0...10 V | -14.5...0 psi | 145 psi | 1/4" NPT male | **PX9119** | **$199.00** |
| 0...10 V | 0...100 $inH_2O$ | 4015 $inH_2O$ | 1/4" NPT male | **PX9118** | **$199.00** |
| 0...10 V | 0...15 psi | 145 psi | 1/4" NPT male | **PX9117** | **$199.00** |
| 0...10 V | 0...30 psi | 290 psi | 1/4" NPT male | **PX9116** | **$199.00** |
| 0...10 V | 0...100 psi | 1087 psi | 1/4" NPT male | **PX9114** | **$199.00** |
| 0...10 V | 0...200 psi | 1087 psi | 1/4" NPT male | **PX9134** | **$199.00** |
| 0...10 V | 0...1000 psi | 4350 psi | 1/4" NPT male | **PX9112** | **$199.00** |
| 0...10 V | 0...3000 psi | 5800 psi | 1/4" NPT male | **PX9111** | **$199.00** |
| 0...10 V | 0...5000 psi | 11,600 psi | 1/4" NPT male | **PX9110** | **$199.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting clamp | **E10077** | **$9.00** |

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## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | PX3: 9.6...32 VDC; PX9: 16...32 VDC |
| Max. load for PX3: | [(supply voltage - 9.6) x 50] Ω; 720 Ω at 24 VDC |
| Min. load for PX9: | 2000 Ω |
| Medium temperature range: | -13...194 °F (-25...90 °C) |
| Accuracy: | < ± 0.75% of full range |
| Repeatability: | < ± 0.15% of full range |
| Wetted parts: | 303 stainless steel, ceramic, Viton™ |
| Protection rating: | IP68 / IP69K (363 psi / 25 bar ranges and lower: IP65) |


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# *Top five product features!*

- *Simple pushbutton setup allows the sensor to be configured in less than 5 minutes*
- *Ceramic pressure sensor element is more reliable than mechanical switches*
- *Each transmitter has multiple outputs including scaleable analog for flexibility*
- *Integrated 4-digit display eliminates the need for a reference gauge*
- *Stainless steel construction is designed to last in harsh environments*

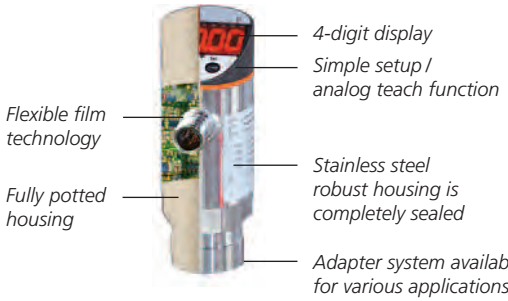
## PN Series: A switch / transmitter with numeric display

ifm offers the PN Series of pressure and vacuum transmitters for hydraulic and pneumatic applications. Simple pushbutton setup allows the sensor to be parameterized and mounted in less than 5 minutes.

The transmitter's numeric display provides an accurate readout of system pressure and switch setpoints. Vacuum transmitters provide an accurate readout of increases and decreases in vacuum systems. Stainless steel construction enables the sensor to last in harsh environments.

- Ceramic pressure sensor element is more reliable than mechanical switches.
- Integrated built-in display eliminates the need for a reference gauge.

*The PN pressure sensor monitors line pressure in a pipe and provides 4-digit numeric indication.*




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Measuring Range | Display in steps of | Scaleable Analog Start Point | Scaleable Analog End Point | Overload Protection | Display Units Available | Part No. 1/4" NPT Female Port Size | Part No. G1/4 BSPP Female Port Size | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Vacuum transmitters · 4-20 mA / 0-10 V and PNP / NPN or 2 x PNP / NPN · N.O. / N.C.** | | | | | | | | |
| -29.4…29.5 inHg | 0.1 inHg | -29.4…14.8 inHg | -14.6…29.5 inHg | 290 psi | mbar, psi, kPa, inHg, $inH_2O$ | **PN2209** | **PN2009** | **$465.00** |
| -14.5…145.0 psi | 0.2 psi | -14.6…49.4 psi | 25.4…145.0 psi | 1087 psi | bar, psi, kPa | **PN2224** | **PN2024** | **$465.00** |
| -14.5…362.5 psi | 0.5 psi | -14.5…145.0 psi | 76.0…362.5 psi | 1450 psi | bar, psi, MPa | **PN2223** | **PN2023** | **$465.00** |
| **Pressure transmitters · 4-20 mA / 0-10 V and PNP / NPN or 2 x PNP / NPN · N.O. / N.C.** | | | | | | | | |
| -5…100.4 $inH_2O$ | 0.2 $inH_2O$ | -5…40.2 $inH_2O$ | 20.2…100.4 $inH_2O$ | 4000 $inH_2O$ | mbar, $inH_2O$, kPa, mmWS | **PN2228** | **PN2028** | **$465.00** |
| -0.74…14.50 psi | 0.02 psi | -0.74…5.80 psi | 3.64…14.50 psi | 145 psi | mbar, psi, kPa, $inH_2O$ | **PN2227** | **PN2027** | **$465.00** |
| -1.45…36.25 psi | 0.05 psi | -1.80…14.50 psi | 7.25…36.25 psi | 290 psi | bar, psi, kPa | **PN2226** | **PN2026** | **$465.00** |
| -14.5…145.0 psi | 0.2 psi | -14.6…49.4 psi | 25.4…145.0 psi | 1087 psi | bar, psi, kPa | **PN2224** | **PN2024** | **$465.00** |
| -14.5…362.5 psi | 0.5 psi | -14.5…145.0 psi | 76.0…362.5 psi | 1450 psi | bar, psi, MPa | **PN2223** | **PN2023** | **$465.00** |
| 0…1450 psi | 2 psi | 0…580 psi | 364…1450 psi | 4350 psi | bar, psi, MPa | **PN2222** | **PN2022** | **$465.00** |
| 0…3625 psi | 5 psi | 0…1450 psi | 905…3625 psi | 5800 psi | bar, psi, MPa | **PN2221** | **PN2021** | **$465.00** |
| 0…5800 psi | 10 psi | 0…2320 psi | 1450…5800 psi | 8700 psi | bar, psi, MPa | **PN2220** | **PN2020** | **$465.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Transparent protective cover | **E30006** | **$8.00** |
| | G 1/4 BSPP male to 1/4" NPT male adapter | **U20172** | **$18.00** |
| | G 1/4 BSPP male to 7/16" SAE male adapter | **U20171** | **$27.00** |
| | 1/4" NPT male to 1/4" NPT male adapter | **U30039** | **$10.00** |
| | Mounting clamp | **E10077** | **$9.00** |
| | Conduit adapter | **E30062** | **$78.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 20...30 VDC |
| Maximum load current: | 2 x 250 mA |
| Medium temperature range: | -13...176 °F (-25...80 °C) |
| Accuracy of switch point: | < ± 0.5% of full range |
| Repeatability: | < ± 0.1% of full range |
| Wetted parts: | 303 stainless steel, ceramic, Viton™ |
| Analog scaling turndown: | 4:1 |
| Protection rating: | IP67 (363 psi / 25 bar ranges and lower: IP65) |

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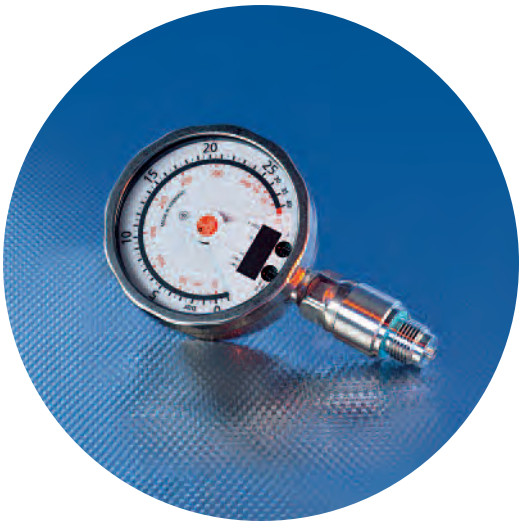
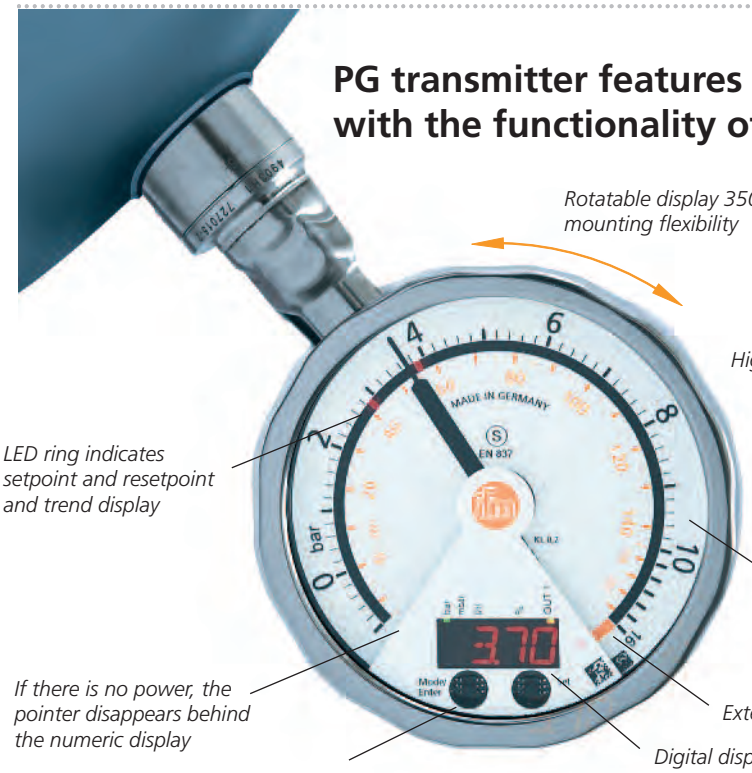


# *Top five product features!*

- *3-in-1 unit: Transmitter and switch with the advantages of a gauge display*
- *Gauge display indicates the current operating pressure relative to the overall range*
- *Pointer does not require damping liquid and is driven by an integrated stepper motor*
- *Transmitter can be configured in less than 5 minutes using two optical pushbuttons*
- *Display can be rotated 350 degrees for optimal visibility*

## PG transmitter features highly visible gauge with the functionality of a pressure sensor




### High-precision measurement

*ifm's PG Series pressure family offers a 3-in-1 solution for pressure applications. The PG is a transmitter, switch and gauge in a light-weight, stainless steel housing.*


| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 | |

Search Bar

# Product + accessory selector

| Measuring Range | Extended Display Range | Overload Pressure | Scaleable Analog Start Point | Scaleable Analog End Point | Setpoint Range | Port Size | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Vacuum transmitters · 4-20 mA and PNP / NPN · N.O. / N.C.** | | | | | | | | |
| -14.5…14.5 psi | 23.2 psi | 435 psi | -14.5...15.9 psi | -7.2...23.2 psi | -14.4…23.2 psi | G 1/2 BSPP male | **PG2409** | **$419.00** |
| -14.5…58 psi | 93 psi | 435 psi | -14.5...78.3 psi | 0...92.8 psi | -14.2...92.5 psi | G 1/2 BSPP male | **PG2455** | **$419.00** |
| -14.4…145 psi | 232 psi | 725 psi | -14.4...196 psi | 22...232 psi | -14...232 psi | G 1/2 BSPP male | **PG2454** | **$419.00** |
| -14.5…363 psi | 580 psi | 1450 psi | -14.5...490 psi | 76...580 psi | -13...580 psi | G 1/2 BSPP male | **PG2453** | **$419.00** |
| **Pressure transmitters · 4-20 mA and PNP / NPN · N.O. / N.C.** | | | | | | | | |
| -2…40 $inH_2O$ | 64 $inH_2O$ | 1606 $inH_2O$ | -2...54 $inH_2O$ | 8...64 $inH_2O$ | -1.8...64 $inH_2O$ | G 1/2 BSPP male | **PG2489** | **$419.00** |
| -5…100 $inH_2O$ | 160 $inH_2O$ | 4015 $inH_2O$ | -5...135 $inH_2O$ | 20...160 $inH_2O$ | -4.6...160 $inH_2O$ | G 1/2 BSPP male | **PG2458** | **$419.00** |
| -0.7…14.5 psi | 23 psi | 145 psi | -0.7...19.6 psi | 2.9...23 psi | -0.66...23 psi | G 1/2 BSPP male | **PG2457** | **$419.00** |
| -1.8…36 psi | 58 psi | 290 psi | -1.8...48.6 psi | 7.6...58 psi | -1.65...58 psi | G 1/2 BSPP male | **PG2456** | **$419.00** |
| -14.5…58 psi | 93 psi | 435 psi | -14.5...78.3 psi | 0...92.8 psi | -14.2...92.5 psi | G 1/2 BSPP male | **PG2455** | **$419.00** |
| -14.4…145 psi | 232 psi | 725 psi | -14.4...196 psi | 22...232 psi | -14...232 psi | G 1/2 BSPP male | **PG2454** | **$419.00** |
| -14.5…363 psi | 580 psi | 1450 psi | -14.5...490 psi | 76...580 psi | -13...580 psi | G 1/2 BSPP male | **PG2453** | **$419.00** |
| 0…1449 psi | 2322 psi | 4350 psi | 0...1959 psi | 363...2322 psi | 6...2322 psi | G 1/2 BSPP male | **PG2452** | **$419.00** |
| 0…3625 psi | 5800 psi | 8700 psi | 0...5075 psi | 725…5800 psi | 15...5800 psi | G 1/2 BSPP male | **PG2451** | **$419.00** |
| 0…5800 psi | 8700 psi | 11,600 psi | 0…7250 psi | 1450…8700 psi | 30…8700 psi | G 1/2 BSPP male | **PG2450** | **$419.00** |

## Required Accessories

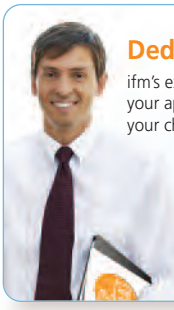
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | G 1/2 BSPP female to 1/2" NPT male adapter | **UP0021** | **$38.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 18...32 VDC |
| Maximum load current: | 250 mA |
| Switchpoint accuracy: | <± 0.6% |
| Switchpoint accuracy in extended display range: | <± 1.5% |
| Repeatability: | <± 0.1% |
| Medium temperature: | -13…176 °F (-25...80 °C) |
| Wetted parts: | 316L stainless steel, ceramic, FPM (Viton™) |
| Analog scaling turndown: | 4:1 |
| Protection Rating: | IP67 / IP69K |

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# *Top five product features!*

- *Pressure compensation via internally vented cable*
- *2-wire connection technology with 4...20 mA analog output*
- *Stainless steel housing rated IP68 for durability and long-term immersion*
- *Models available with measuring ranges of 100, 240 and 400 in$H_2O$*
- *Good overall accuracy and long-term stability*

## Submersible pressure transmitter for liquid level applications

ifm's PS3 Series submersible pressure transmitters indicate liquid level measurement in tanks, containers, sumps, wells and river water.

The two-wire, stainless steel transmitter is inserted directly into the medium and provides a 4…20 mA analog output signal. Its watertight, vented polyurethane cable withstands over 220 pounds of strain.

The transmitter measures liquid level through pressure sensing technology. The weight of the liquid creates pressure on the transmitter's measuring element. As the liquid level changes, the output changes. The transmitter's accuracy of 0.5% of full scale and repeatability of 0.1% contribute to the operational reliability of the transmitter.

Models are available with measuring ranges of 100 in$H_2O$, 240 in$H_2O$ and 400 in$H_2O$ with a variety of cable lengths.

The combination of analog output signal, two-wire technology and various mounting accessories allow easy integration into existing applications.

*Level measurement in a water treatment plant*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Fixed Output | Measuring Range | Overload Pressure | Connection | Operating Voltage | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 4…20 mA | 0…100 $inH_2O$ | 803 $inH_2O$ | PUR cable 5 m | 10…30 VDC | **PS3208** | **$549.00** |
| 4…20 mA | 0…240 $inH_2O$ | 1606 $inH_2O$ | PUR cable 10 m | 10…30 VDC | **PS3407** | **$599.00** |
| 4…20 mA | 0…240 $inH_2O$ | 1606 $inH_2O$ | PUR cable 15 m | 10…30 VDC | **PS3427** | **$619.00** |
| 4…20 mA | 0…240 $inH_2O$ | 1606 $inH_2O$ | PUR cable 30 m | 10…30 VDC | **PS3607** | **$659.00** |
| 4…20 mA | 0…400 $inH_2O$ | 2007 $inH_2O$ | PUR cable 15 m | 10…30 VDC | **PS3417** | **$619.00** |
| 4…20 mA | 0…400 $inH_2O$ | 2007 $inH_2O$ | PUR cable 30 m | 10…30 VDC | **PS3617** | **$659.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Junction box with ventilation | **E30401** | **$99.00** |
| | Filter element to protect vent tube in cable | **E30400** | **$11.00** |
| | Cable clamp | **E30399** | **$29.00** |
| | Additional weight to stabilize transmitter | **E30402** | **$63.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Maximum load: | [(supply voltage - 10) x 50] Ω; 700 Ω at 24 VDC |
| Medium temperature range: | 14...122 °F (-10...50 °C) |
| Accuracy: | <± 0.5% of full range |
| Repeatability: | <± 0.1% of full range |
| Wetted parts: | 316 stainless steel |
| Protection rating: | IP68 |

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# Top five product features!

- Immune to rapid temperature changes of media
- Fast response time 10 ms: great for cycling applications; minimum 10 million switching cycles
- Easy to set: turn dial to desired switchpoint up to 26 gpm
- Can be bench set outside of the process
- DC PNP switching output with LED indication

## ifm mechatronic flow switch

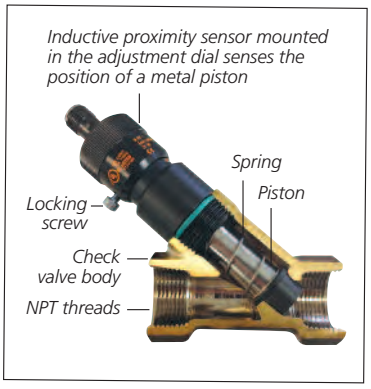
The ifm SBN Series mechatronic flow switch monitors liquid media and provides reliable flow control for various flow applications.

The mechatronic flow switch sensing principle ensures extremely fast response time and allows for a more precise switchpoint setting. The switchpoint can be easily set and locked with a setting screw.

The SBN mechatronic flow switch is ideal for applications with rapid temperature changes or where fast response time is required, such as:

- Spindle coolant flow monitoring for drilling
- Furnace cooling water flow detection
- Cycling coolant flow monitoring in machining applications

***SBN Principle of operation***
*The flow sensor utilizes a spring-supported piston that is lifted by the flowing medium. The piston position is detected via an inductive sensor and is output as a binary signal. The spring resets the piston to its initial position with decreasing flow. This allows the sensor to be mounted in any position (horizontally or vertically) and function as a check valve.*



*The mechatronic sensor reliably monitors the flow of water in cooling loops of an induction furnace.*

Search Bar
Position Sensors | Motion Control | Vision Sensors | Safety Technology
Company — 1 - 7
Inductive — 10 - 47
Capacitive — 48 - 53
Cylinder position — 54 - 59
Photoelectrics and lasers — 60 - 91
Distance, color and contrast — 92 - 97
Fiber optics — 98 - 103
Speed monitors — 106 - 109
2D / 3D inspection — 112 - 125
Safety products — 128 - 141

# Product + accessory selector

| Output | Setting Range [gpm] | Response Time [ms] | Accuracy [% of Full Range] | Process Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 1 x PNP, N.O. | 0.26…6.6 | 10 | ± 5 | 3/4" NPT female | **SBN333** | **$249.00** |
| 1 x PNP, N.O. | 1.32…26.4 | 10 | ± 5 | 1" NPT female | **SBN346** | **$264.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Supply voltage: 24 VDC
Maximum load current: 100 mA
Pressure rating: 363 psi
Medium temperature: 32…185 °F (0...85 °C)
Wetted parts: 304 stainless steel, nickel-plated brass, Pocan; O-ring: Viton™
Protection: IP67
Switching cycles: 10 million / min.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# Top five product features!

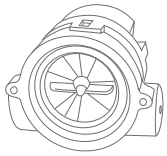
- *Thermal sensing principle with no moving parts is more reliable than mechanical switches*
- *Replaces mechanical switches for monitoring liquids and gases*
- *Wide measuring range to cover more applications*
- *LED bar graph display for flow and setpoint*
- *Easy pushbutton setup with flexible mounting*

## ifm's flow switches are an ideal alternative to mechanical flow switches

The SI flow switch features microprocessor-based pushbutton programming and highly visible LED status of flow and output conditions. They are ideally suited to flow / no flow applications in most industries.

ifm efector flow switches offer a variety of process connections to fit most applications. This flexibility allows the switch to be easily installed in many different applications that have various mounting requirements.

ifm efector flow switches are solid state alternatives to mechanical flow switches for sensing the flow rate of liquids and gases. Because there are no moving parts to jam or break, ifm efector flow switches eliminate the maintenance headaches of mechanical flow switches.

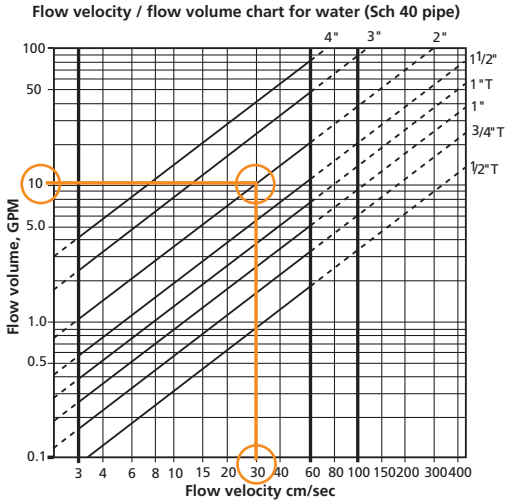


**Challenge**
*Mechanical flow switches that stick.*

**Solution**
*ifm flow switches have no moving parts that can stick or break.*

### How to convert flow rate to flow velocity

1. *Find the volumetric flow rate for the switchpoint on the y-axis. (Example: 10).*
2. *Follow the line horizontally until it intersects the diagonal line for the pipe diameter. (Example: 2").*
3. *From that intersection point, drop straight down to read the velocity on the x-axis to find the flow velocity. (Example: 30).*




***Ideal switchpoint setting ranges for the following flow models:***
***SI 5xxx*** *(see page 163): 3…100 cm/sec. for water*
***SF xxxx*** *(see page 165): 3…60 cm/sec. for water*

*If the velocity falls within the ideal switchpoint range (as indicated between the bold lines in the chart: 3...100 cm or 3...60 cm), the switch will be very repeatable. If it does not fall within that range, consider increasing the pipe size or reducing the switchpoint flow rate.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output | Process Connection | Ideal Switchpoint Setting Range for Water* | Supply Voltage | Current/ Power Consumption | Load Current/ Contact Rating | Response Time | Pressure Rating | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1 x PNP, N.O. / N.C. | See required accessories | 3...100 cm/sec | 19…36 VDC | < 60 mA | 250 mA | 1...10 sec | 4350 psi (300 bar) | **SI5010** | **$299.00** |
| 1 x NPN, N.O. / N.C. | See required accessories | 3...100 cm/sec | 19…36 VDC | < 60 mA | 250 mA | 1...10 sec | 4350 psi (300 bar) | **SI5011** | **$299.00** |
| 1 x AC relay, N.O./N.C. | See required accessories | 3...100 cm/sec | 90…240 VAC | < 3.5 V | 3A contact rating | 1...10 sec | 4350 psi (300 bar) | **SI5006** | **$365.00** |

* Refer to technical specs for ideal switchpoint setting range for other media.

## Required Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/4" NPT adapter, 316 stainless steel | **E40106** | **$21.00** |
| | 1/2" NPT adapter, 316 stainless steel | **E40107** | **$23.00** |
| | 3/4" NPT adapter, 304 stainless steel | **U40085** | **$45.00** |
| | 1" NPT adapter, 304 stainless steel and brass | **U40080** | **$72.00** |
| | G1/4 BSPP adapter, 316 stainless steel | **E40099** | **$21.00** |
| | G1/2 BSPP adapter, 316 stainless steel | **E40096** | **$26.00** |
| | Weldable adapter, carbon steel | **E40113** | **$19.00** |
| | Weldable adapter, 316 stainless steel | **E40124** | **$39.00** |

## Optional Accessories and Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" tee, brass | **U40029** | **$18.00** |
| | 1/2" tee, stainless steel | **U40030** | **$66.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | 1/2" Micro AC (5-pin) 4 m, PUR (for SI5006) | **E18026** | **$32.00** |
| | 1/2" Micro AC (5-pin) 4 m, PUR (for SI5006) | **E18027** | **$32.00** |

For additional cordsets, please call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Medium temperature range: | -13...176 °F (-25…80 °C) |
| Ideal switchpoint setting range for oils: | 9…300 cm/sec |
| Ideal switchpoint setting range for gases: | 200...800 cm/sec |
| Maximum temperature gradient of medium: | 300 °C / min |
| Repeatability: | 1…5 cm/sec (for water) |
| Hysteresis: | 2…5 cm/sec (for water) |
| Wetted parts: | 316 stainless steel, Viton™ |
| Protection rating: | IP67 |

**R&D that delivers solutions**

ifm R&D engineers design products that reduce machine downtime, increase productivity and simplify installation.

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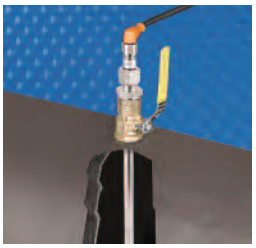
# Top five product features!

- 2-piece monitoring system for remote flow indication
- Sensor connects to variety of control monitors
- Ideal for applications where mounting space is limited
- Reduced inventory via modular mounting adapter system
- High temperature model available

## Direct or remote mount flow monitoring systems offer a modular solution for installation



*Remote flow probe connects to a cabinet control monitor.*

*Field-mount monitors can be direct mounted or remote mounted.*

ifm's flow monitoring system is a modular solution for direct or remote indication of fluids and gases. With no moving parts or paddles to stick or break, ifm's flow monitor provides reliable flow detection in a variety of equipment. This modular solution is ideal for environments with limited mounting space or locations that do not permit local installation of the control monitor.

### Cabinet mount control monitor

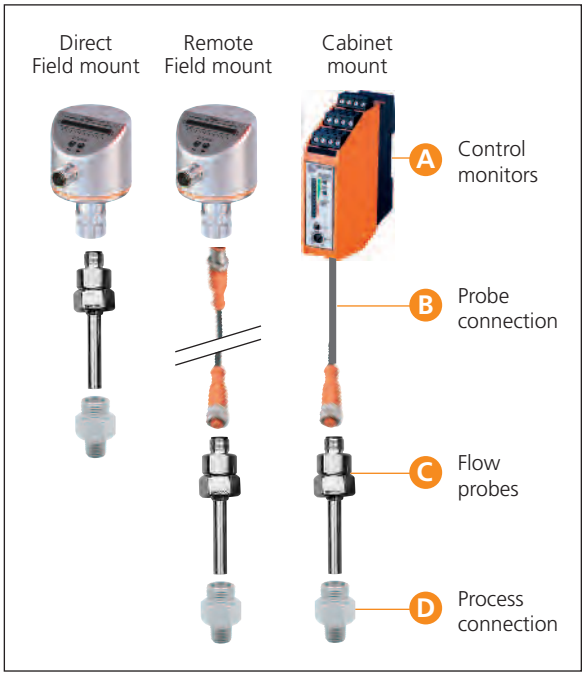
ifm's cabinet mount control monitor offers easy to access terminal connections and can be wired prior to installing inside the control cabinet. The connection to the flow probe is low voltage and does not require a conduit for protection. The control monitor's LED display provides a visual indication of flow and flow setpoint. Separate LEDs indicate temperature and wire break relay output.

### Field mount control monitor

ifm's field mount control monitor connects to multiple probes and can be used directly at the application or remote mounted. The monitor features pushbutton programming and a bar graph LED display for visual operating status.

### Component guide

Select a control monitor depending on your application. Next, determine an electrical connection, flow probe and process connection.




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

## A Control monitors

| Type | Description | Output | Power Connection | Operating Voltage | Flow / Temperature / Wire Break Monitoring | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| | Field mount control monitor | PNP, N.O. / N.C. | M12 Micro DC | 19...36 DC | yes / no / yes | **SR5900** | **$279.00** |
| | Field mount control monitor | AC, relay, N.O. / N.C. | 1/2" Micro AC | 90…240 AC | yes / no / yes | **SR5906** | **$315.00** |
| | Cabinet mount control monitor | 3 x SPDT relay | Combicon | 24 VDC | yes / yes / yes | **SR0150** | **$395.00** |
| | Cabinet mount control monitor | 3 x SPDT relay | Combicon | 90…240 AC | yes / yes / yes | **SN0150** | **$395.00** |

## C Flow probes

| Type | Process Connection | Probe Connection to SR590x Field Mount | Probe Connection to Sx0150 Cabinet Mount | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| | Requires E40106, E40107, U40085, or U40080 | Connect directly for field mount or use EVC059 patchcord for remote mount | Use EVC074 cordset for remote mount | **SF5200** | **$230.00** |
|  | 6" insertion depth, requires E40174 | Connect directly for field mount or use EVC059 patchcord for remote mount | Use EVC074 cordset for remote mount | **SF6200** | **$265.00** |
| | 4" insertion depth, requires E40174 | Connect directly for field mount or use EVC059 patchcord for remote mount | Use EVC074 cordset for remote mount | **SF6201** | **$252.00** |
| | Requires E40106, E40107, U40085, or U40080 | Use E11506 connector for remote mount | Wire directly to combicon cable connector | **SF5300** | **$329.00** |

## D Process connection

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" NPT adapter (SF6200 or SF6201) | **E40174** | **$62.00** |
| | 1/4" NPT adapter (SF5200 or SF5300) | **E40106** | **$21.00** |
| | 1/2" NPT adapter (SF5200 or SF5300) | **E40107** | **$23.00** |
| | 3/4" NPT adapter, 304 stainless steel | **U40085** | **$45.00** |
| | 1" NPT adapter, 304 stainless steel and brass | **U40080** | **$72.00** |

## B Cordsets (for power / probe connections)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC cordset (4-pin) 5 m, PUR (for SR5900) | **EVC004** | **$9.95** |
| | 1/2" Micro AC cordset (5-pin), 4 m, PUR (for SR5906) | **E18027** | **$32.00** |
| | M12 Micro DC patchcord (5-pin), PUR (for SF 5200 or SF 6200) | **EVC059** | **$33.00** |
| | M12 Micro DC connector (5-pin), PA (for SF 5300) | **E11506** | **$17.00** |
| | M12 Micro DC cordset (5-pin) 5 m, PUR (for SF 5200 or SF 6200) | **EVC074** | **$19.00** |

## Technical Specs

| | |
|---|---|
| Ideal switchpoint setting range for water: | 3...60 cm/sec* |
| Ideal switchpoint setting range for oils: | 9...180 cm/sec |
| Ideal switchpoint setting range for gases: | 50...600 cm/sec |
| Medium temperature: | SF 5200 and SF 6200: -13...176 °F (-25…80 °C) SF 5300: 32...248 °F (0…120 °C) |
| Protection rating: | IP67 (SR0150, SN0150: IP20) |

* See flow velocity/flow volume chart for water (p. 162)

For additional cordsets, please call 800-441-8246 or visit www.ifm.com/us

# Top five product features!

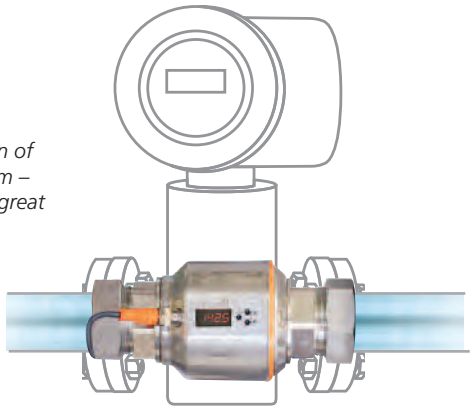
- *Magnetic inductive flow technology provides high-precision measurement of all conductive media up to 160 gpm*
- *Compact, in-line stainless steel housing fits up to 2” pipes*
- *4-digit numeric display indicates flow rate, total volume and temperature*
- *Configurable output: switching, pulse or analog (flow and temperature)*
- *No compromise in quality – high performance at a great price*

## The next generation of magmeters from ifm

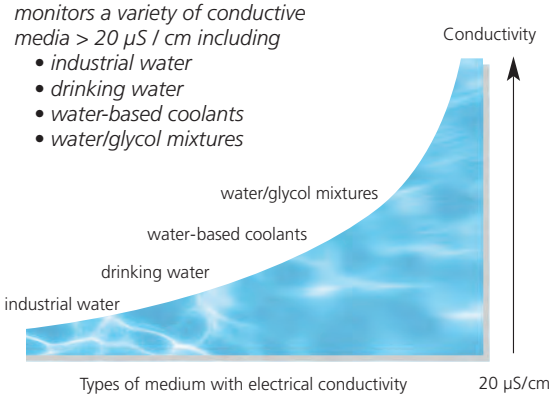
***NEW!*** ifm’s SM Series Magmeter is designed to reliably detect the flow rate of conductive media up to 160 gallons per minute. The stainless steel, mechanically-robust design mounts directly in-line providing a compact, low-profile installation for process control.

A 4-digit numeric display with pushbutton setup simultaneously indicates flow rate, fluid temperature and total volume. Simple to setup and easy to install, the SM is a reliable alternative to traditional flow meters and mechanical flow switches.

*The next generation of magmeters from ifm – smaller in size at a great price/performance*



*The volumetric flow meter monitors a variety of conductive media > 20 µS / cm including*
- *industrial water*
- *drinking water*
- *water-based coolants*
- *water/glycol mixtures*




**Typical applications**
- Flow and temperature monitoring through heat exchangers
- Guard welding equipment against loss of cooling water
- Batching applications
- Totalize flow of process water
- Pump run dry protection

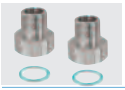
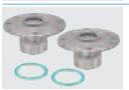
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| | Measuring Range (Flow) | Output 1 | Output 2 | Measuring Range (Temperature) | Display Units Available | Empty Pipe Detection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| | 0…6.6 gpm | PNP / NPN Switching pulse (flow) | PNP / NPN Switching / 4…20 mA / 0…10V Scaleable analog (flow or temperature) | -4...176 °F | gpm, gph, gal, °F | No | **SM6001** | **$498.00** |
| | 0…13.2 gpm | | | | | | **SM7001** | **$591.00** |
| | 0…26.4 gpm | | | | | | **SM8001** | **$699.00** |
| | 0…25 l/min | PNP / NPN Switching pulse (flow) | PNP / NPN Switching / 4…20 mA / 0…10V Scaleable analog (flow or temperature) | -20…80 °C | lpm, m³/h, L, °C | No | **SM6000** | **$498.00** |
| | 0…50 l/min | | | | | | **SM7000** | **$591.00** |
| | 0…100 l/min | | | | | | **SM8000** | **$699.00** |
| | 0…25 l/min | 4…20 mA Scaleable analog (temperature) | 4…20 mA Scaleable analog (flow) | -20…80 °C | lpm, m³/h, gpm, gph, °C, °F | No | **SM6004** | **$498.00** |
| | 0…50 l/min | | | | | | **SM7004** | **$591.00** |
| | 0…100 l/min | | | | | | **SM8004** | **$699.00** |
| | 0…80 gpm | PNP / NPN Switching / pulse / frequency (flow) | PNP / NPN Switching / 4…20 mA / 0…10V Scaleable analog (flow or temperature) | -4...176 °F | gpm, gph, gal, °F | Yes | **SM9001** | **$925.00** |
| | 0…160 gpm | | | | | | **SM2001** | **$990.00** |
| | 0…300 l/min | | | -20…80 °C | lpm, m³/h, L, °C | | **SM9000** | **$925.00** |
| | 0…600 l/min | | | | | | **SM2000** | **$990.00** |
| | 0...300 l/min | 4…20 mA Scaleable analog (temperature) | 4…20 mA Scaleable analog (flow) | -4...176 °F | lpm, m³/h, gpm, gph, °C, °F | Yes | **SM9004** | **$925.00** |
| | 0…600 l/min | | | | | | **SM2004** | **$990.00** |

## Required Accessories (2 adapters per package)

| Type | Description | Use With | Part No. | List Price (1-pkg.) |
|---|---|---|---|---|
| | 1/2" NPT adapter | SM6 | **E40200** | **$54.00** |
| | 1/2" NPT adapter | SM7 | **E40191** | **$54.00** |
| | 1/2" NPT adapter | SM8 | **E40192** | **$54.00** |
| | 3/4" NPT adapter | SM8 | **E40193** | **$54.00** |
| | 1" NPT female adapter | SM8 | **US0041** | **$54.00** |
|  | 1-1/2" NPT adapter | SM2 and SM9 | **E40229** | **$120.00** |
| | 2" NPT adapter | SM2 and SM9 | **E40228** | **$120.00** |
|  | 2" flanges | SM2 and SM9 | **US0045** | **$225.00** |

Adapter material: 316 stainless steel

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |

## Technical Specs

| | |
|---|---|
| Fluid conductivity | ≥ 20 µS / cm |
| Fluid viscosity | ≤ 70 cSt at 104 °F |
| Supply voltage | 19…30 VDC (20…30 VDC SMxxx4) |
| Accuracy (flow) | ± (2% measured value + 0.5% of full range) |
| Repeatability (flow) | ± 0.2% of full range |
| Response time (flow) | < 150 msec |
| Accuracy (temperature) | ± 4.5 °F (2.5 °C) |
| Response time (temperature) | T09 = 30 sec |
| Pressure rating | 232 psi (16 bar) |
| Wetted parts | 316L stainless steel, PEEK™, Viton™ |
| Protection rating | IP67 |

# Top five product features!

- Simultaneously monitors flow rate, fluid temperature and totals liquid volume
- Monitors water, glycol and oil up to 53 gpm
- Integrated display with pushbutton setup
- Ultrasonic sensing principle uses no moving parts
- Selectable outputs for switching, totalizer and pulse

## ifm's in-line flow meter provides accurate feedback for your critical flow applications

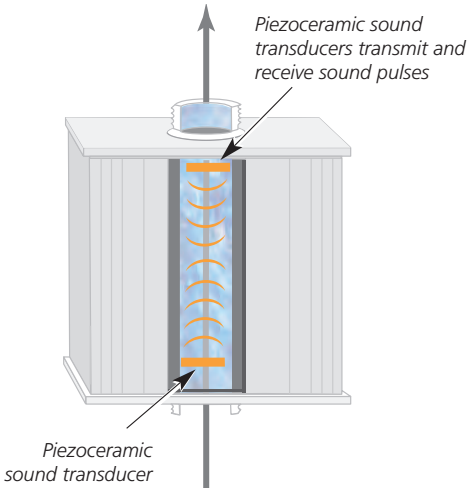
The SU Ultrasonic Flow meter is designed to simultaneously monitor flow rate, detect fluid temperature and provide a totalizer function for a variety of flow applications. With its compact design, the ultrasonic flow meter is intended for small diameter pipes – 1" or less.

The meter provides a four-digit numeric display of the liquid's flow rate (gal/min or l/min), total quantity accumulated (gallons or liters), and medium temperature (°F or °C). The setpoints are established through a simple pushbutton setup. The meter can be programmed to provide switching output (flow rate and/or temperature), pulse output (flow volume), or analog output (flow rate or temperature).

### Batching applications

The ultrasonic flow meter has the capability to count the number of gallons of fluid. In addition to the totalizer display, the meter provides a pulse output for each gallon (or liter).

### SU Ultrasonic Flow Meter – Principle of Operation




*Ultrasonic technology is based on the differential transit time principle. Sound pulses are alternately emitted and detected with and against the direction of flow using piezoceramic sound transducers. The flow rate is calculated from the difference of the transit time.*

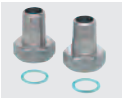
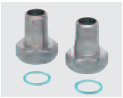
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Measuring Range (Flow) | Output 1 | Output 2 | Measuring Range (Temperature) | Display Units Available | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 0...13.2 gpm | PNP / NPN Switching pulse (flow) | PNP / NPN Switching / 4...20 mA / 0...10V Scaleable analog (flow or temperature) | 14...176 °F | gpm, gph, gal, °F | **SU7001** | **$725.00** |
| 0...26.4 gpm | | | | | **SU8001** | **$749.00** |
| 0...53 gpm | | | | | **SU9001** | **$1,320.00** |
| 0...50 lpm | PNP / NPN Switching pulse (flow) | PNP / NPN Switching / 4...20 mA / 0...10V Scaleable analog (flow or temperature) | -10...80 °C | lpm, m³/h, L, °C | **SU7000** | **$725.00** |
| 0...100 lpm | | | | | **SU8000** | **$749.00** |
| 0...200 lpm | | | | | **SU9000** | **$1,320.00** |
| 0...200 lpm | 4...20 mA Scaleable analog (temperature) | 4...20 mA Scaleable analog (flow) | 14...176 °F (-10...80 °C) | lpm, m³/h, gpm, gph, °C, °F | **SU9004** | **$1,320.00** |

## Required Accessories (2 adapters per package)

| Type | Description | Use With | Part No. | List Price (1-pkg.) |
|---|---|---|---|---|
| | 1/2" NPT adapter | SU7 | **E40191** | **$54.00** |
|  | 1/2" NPT adapter | SU8 | **E40192** | **$54.00** |
| | 3/4" NPT adapter | SU8 | **E40193** | **$54.00** |
| | 1" NPT female adapter | SU8 | **US0041** | **$54.00** |
|  | 1" NPT adapter | SU9 | **E40206** | **$204.00** |

Adapter material: 316 stainless steel

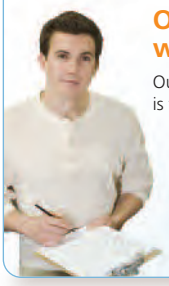
## Optional Accessories and Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | SU mounting bracket | **E40166** | **$26.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 19...30 VDC |
| Maximum load current: | 2 x 250 mA |
| Accuracy (flow): | SU7, SU8, SU9: ±3% of measured value + 0.2% of full range (water)<br>SU7 and SU8: ±5% of measured value + 0.5% of full range (oil and glycol)<br>SU9: ±8% of measured value + 0.5% of full range (oil and glycol) |
| Repeatability (flow): | SU7, SU8: 0.2% of full range<br>SU9: 0.5% of full range |
| Response time (flow): | < 0.25 sec |
| Load resistance for analog output: | 4...20 mA: max 500Ω / 0...10V: min. 2,000Ω |
| Pressure rating: | 232 psi (16 bar) |
| Wetted parts: | Stainless steel (316L); Viton™; PES (Ultrason 2010); Centellen 200 |
| Protection rating: | IP67 |

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# *Top five product features!*

- *Accurate point-level indication of liquids and solids with low dielectric constant (e.g. oils, plastic pellets)*
- *Two pushbutton teach allows for easy setup and eliminates difficult sensitivity adjustment*
- *Senses level through mounting well, sight glass, plastic tank or by direct contact with media*
- *Sensor offers superior immunity to electrical noise*
- *Broad range of mounting well accessories*

## Reliable point-level detection with pushbutton teach function

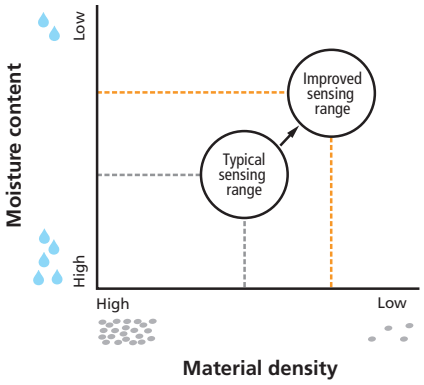
ifm point-level sensors provide accurate level detection of solid and liquid materials. A ring LED display provides output status indication that is visible from long distances.

### Pushbutton teach function

The KI and KG Series point-level sensors feature a two pushbutton teach function that calibrates the proper setpoint value and simplifies the setup process. The sensor is quickly and easily adjusted for a specific application. The integrated microprocessor automatically balances the sensitivity to provide the safest operating condition.

### Improved noise immunity

ifm's patented "charge balance" circuit design for level sensors offers reliable noise immunity and enables ifm level sensors to perform effectively in high noise level environments.




*Plastic materials are now being dried at higher temperatures producing very low moisture content. The resulting materials can cause sensing problems for traditional capacitive level sensors.*

*ifm's capacitive level sensors incorporate sensing electrodes and patented circuitry to detect low-moisture, low-density materials. Combined, these innovations enable the sensors to perform in today's plastic processing applications.*

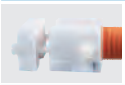
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output Function | Housing Diameter | Sensing Face Temperature | Sensor Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| **DC units** DC | | | | | |
| PNP / NPN - N.O. / N.C. | 30 mm | -13…230 °F (-25…110 °C) | M12 Micro DC | **KI5082** | **$126.00** |
| PNP - N.O. / N.C. | 30 mm | -13…230 °F (-25…110 °C) | M12 Micro DC | **KI5083** | **$126.00** |
| PNP / NPN - N.O. / N.C. | 18 mm | -13…230 °F (-25…110 °C) | M12 Micro DC | **KG5065** | **$159.00** |
| PNP - N.O. / N.C. | 18 mm | -13…230 °F (-25…110 °C) | M12 Micro DC | **KG5066** | **$159.00** |
| **AC units** AC | | | | | |
| N.O. / N.C. | 30 mm | -13…230 °F (-25…110 °C) | 1/2" Micro AC | **KI0054** | **$152.00** |
| N.O. / N.C. | 18 mm | -13…230 °F (-25…110 °C) | 1/2" Micro AC | **KG0016** | **$152.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 3/4" NPT Mounting adapter, PTFE (KG series 18 mm housing) | **U10000** | **$46.00** |
| | 1-1/4" NPT Mounting adapter, PTFE (KI series 30 mm housing) | **U10003** | **$48.00** |
|  | 1/2" OD… 3/4" OD Sight glass mounting set, Delrin (KI series 30 mm housing) | **U20213** | **$38.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | 1/2" Micro AC 2 m, PVC | **E18212** | **$15.00** |
| | 1/2" Micro AC 5 m, PVC | **E18213** | **$19.00** |
| | 1/2" Micro AC 2 m, PVC | **E18214** | **$15.00** |
| | 1/2" Micro AC 5 m, PVC | **E18215** | **$19.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | DC DC units | AC AC/DC units |
|---|---|---|
| Supply voltage: | 10…36 VDC | 20…250 VDC / 30…250 VAC |
| Maximum load current: | 200 mA | 150 mA @ 40 °C |
| Voltage drop: | <2.5 V | < 10 V |
| Current consumption: | <20 mA | N.A. |
| Housing material: | Plastic (PBT, PC and TPE) | Plastic (PBT, PC and TPE) |
| Protection rating: | IP65 / IP67 | IP65 / IP67 |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# *Top five product features!*

- *No moving parts for reliable point-level indication*
- *Easy setpoint adjustment with multi-turn potentiometer*
- *Senses level through mounting well, sight glass, plastic tank or by direct contact with media*
- *Bright LEDs for visual indication of output status*
- *Broad range of mounting well accessories*

## Reliable point-level detection

ifm point-level sensors provide accurate level detection of solid and liquid materials. An LED display provides power, output and marginal signal status indication. LEDs can alert a user if conditions have changed, buildup is occurring, or if more material needs to be delivered.

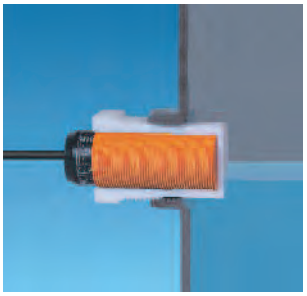
### Potentiometer adjustment

The sensors feature a potentiometer that adjusts the sensitivity of the sensor. This feature allows the sensor to be precisely tuned for a specific application. These sensors are available in prewired, quick disconnect, and terminal chamber models.

### Improved noise immunity

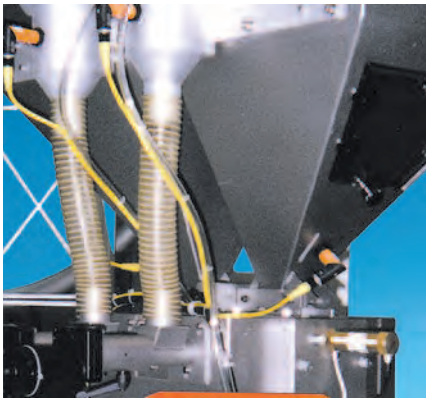
Switching power supplies, variable frequency motor drives, and high-powered communication devices are found in most industrial plants. These devices can generate high noise levels contributing to erratic sensor operation. As a result, ifm's patented "charge balance" circuit design for level sensors offers reliable noise immunity and enables ifm level sensors to perform effectively in high noise level environments.

*The KI and KG sensors detect granulars such as plastic regrind.*



*Using a mounting well, the sensor detects the level of liquid.*

### Simple setup



*Point level sensors can be mounted directly to the wall of a tank or with a mounting well.*


| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output Function | Housing Diameter | Sensing Face Temperature | Electrical Connection | Supply Voltage | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **DC units** DC | | | | | | |
| PNP, N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 10…36 VDC | **KI5207** | **$122.00** |
| NPN, N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 10…36 VDC | **KI5208** | **$122.00** |
| PNP, N.O. / N.C. | 30 mm | -13...176 °F (-25…80 °C) | 0.1 m pigtail with M12 micro DC | 10…36 VDC | **KI5209** | **$122.00** |
| NPN, N.O. / N.C. | 30 mm | -13...176 °F (-25…80 °C) | 0.1 m pigtail with M12 micro DC | 10…36 VDC | **KI5210** | **$122.00** |
| PNP, N.O. | 18 mm | -13...176 °F (-25…80 °C) | Prewired, 2 m cable | 10…36 VDC | **KG5043** | **$183.00** |
| PNP, N.C. | 18 mm | -13...176 °F (-25…80 °C) | Prewired, 2 m cable | 10…36 VDC | **KG5044** | **$183.00** |
| NPN, N.O. | 18 mm | -13...176 °F (-25…80 °C) | Prewired, 2 m cable | 10…36 VDC | **KG5045** | **$183.00** |
| NPN, N.C. | 18 mm | -13...176 °F (-25…80 °C) | Prewired, 2 m cable | 10…36 VDC | **KG5046** | **$183.00** |
| **AC units** AC | | | | | | |
| N.O. | 30 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 20…250 VAC | **KI0202** | **$146.00** |
| N.C. | 30 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 20…250 VAC | **KI0203** | **$146.00** |
| N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | Terminal chamber | 20…250 VAC | **KI0205** | **$157.00** |
| N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | 0.1 m pigtail with 1/2" Micro AC | 20…250 VAC | **KI0206** | **$146.00** |
| N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | 0.1 m pigtail with 1/2" Micro AC | 20…250 VAC | **KI0207** | **$146.00** |
| N.O. / N.C. | 30 mm | -13...158 °F (-25…70 °C) | 1/2" Micro AC | 20…250 VAC | **KI3513** | **$172.00** |
| N.O. | 18 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 20…250 VAC | **KG0009** | **$163.00** |
| N.C. | 18 mm | -13...158 °F (-25…70 °C) | Prewired, 2 m cable | 20…250 VAC | **KG0010** | **$163.00** |
| N.O. / N.C. | 18 mm | -13...158 °F (-25…70 °C) | Terminal chamber | 20…250 VAC | **KG0008** | **$166.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 3/4" NPT Mounting adapter, PTFE (KG series 18 mm housing) | **U10000** | **$46.00** |
| | 1-1/4" NPT Mounting adapter, PTFE (KI series 30 mm housing) | **U10003** | **$48.00** |
| | 1/2" OD… 3/4" OD Sight glass mounting set, Delrin (KI series 30 mm housing) | **U20213** | **$38.00** |

## Technical Specs

DC sensors DC
Maximum load current: 250 mA
Voltage drop: <2.5
Protection rating: IP65 (KI020x, KI520x), IP67 (KG00xx, KG504x)

AC sensors AC
Maximum load current: 250 mA @ 50 °C (KI020x), 350 mA @ 50°C (KG00xx)
Min. load current: 5 mA (KI020x), 4 mA (KG00xx)
Leakage current: <2.5 mA @ 250 VAC), <1.7 mA @ 110 VAC)
Voltage drop: <10 VAC (KI020x), <6 VDC (KG00xx)
Protection rating: IP65

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" Micro AC 2 m, PVC | **E18212** | **$15.00** |
| | 1/2" Micro AC 5 m, PVC | **E18213** | **$19.00** |
| | 1/2" Micro AC 2 m, PVC | **E18214** | **$15.00** |
| | 1/2" Micro AC 5 m, PVC | **E18215** | **$19.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

# Top five product features!

- *Detects bulk materials or liquids through non-metallic materials such as plastic and glass*
- *Sensor offers low-profile mounting – less than 15 mm high – provides same sensing range as traditional 30 mm tubular sensor*
- *Application parameters are quickly set up with the sensor's pushbuttons, eliminating difficult sensitivity adjustments*
- *Mounts on a flat surface, sight glass, plastic tube, or bypass pipe using brackets or cable ties*
- *Several models offer auto detection of PNP or NPN output loads*

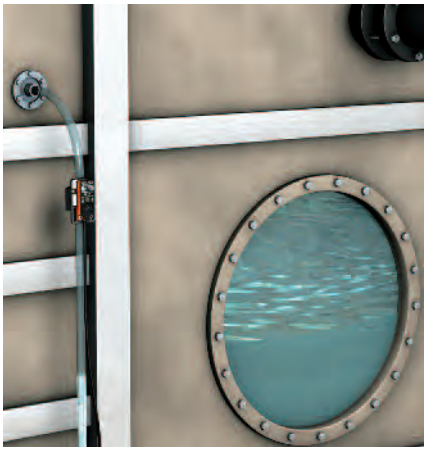
## KQ Series point-level sensor with simple pushbutton setup

The KQ capacitive point-level sensor offers low-profile mounting for level sensing applications. The sensor detects bulk materials or liquids through non-metallic materials such as plastic and glass. The compact sensor is only 10 mm high and has the same sensing range as a traditional 30mm tubular sensor.

Application parameters are quickly set up with the sensor's pushbuttons. The sensor's teach function eliminates difficult sensitivity adjustments. Several models offer automatic detection of the PNP or NPN output loads. ifm's patented "charge balance" circuit design provides reliable noise immunity and enables the sensor to reliably perform in high noise level environments.

The sensor mounts on a flat surface, sight glass, plastic tube, or bypass pipe using brackets or cable ties. The 3-wire DC sensors are available in three models: 2m cabled, pigtail with M8 connector, and pigtail with M12 connector.

### Detects bulk materials and liquids through non-metallic materials



*Detection of liquids on a bypass tube.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Outputs | Operating Voltage | Max. Load Current | Supply Current | Voltage Drop | Sensor Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| PNP / NPN, N.O. / N.C. | 10...36 VDC | 100 mA | 17 mA | 2.5 V | 2m PVC cable | **KQ6001** | **$96.00** |
| PNP, N.O. / N.C. | 10...36 VDC | 100 mA | 17 mA | 2.5 V | 2m PVC cable | **KQ6002** | **$96.00** |
| PNP / NPN, N.O. / N.C. | 10...36 VDC | 100 mA | 17 mA | 2.5 V | 40 mm PVC pigtail with M8 Pico DC | **KQ6003** | **$95.00** |
| PNP, N.O. / N.C. | 10...36 VDC | 100 mA | 17 mA | 2.5 V | 40 mm PVC pigtail with M8 Pico | **KQ6004** | **$95.00** |
| PNP, N.O. / N.C. | 10...36 VDC | 100 mA | 17 mA | 2.5 V | 100 mm PVC pigtail with M12 Micro DC | **KQ6005** | **$99.00** |

## Mounting Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Mounting straps (set of 5) | **E10880** | **$7.00** |
| | Mounting adapter for strap mounting | **E12153** | **$7.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M8 Pico DC (4-pin) 2 m, PUR cable | **EVC150** | **$15.00** |
| | M8 Pico DC (4-pin) 5 m, PUR cable | **EVC151** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Dimensions: | 48 x 20 x 14 mm |
| Ambient temperature: | -13…176 °F (-25…80 °C) |
| Housing materials: | Plastic (PBT, TPE-U and PC) |
| Protection rating: | IP65 / IP67 |

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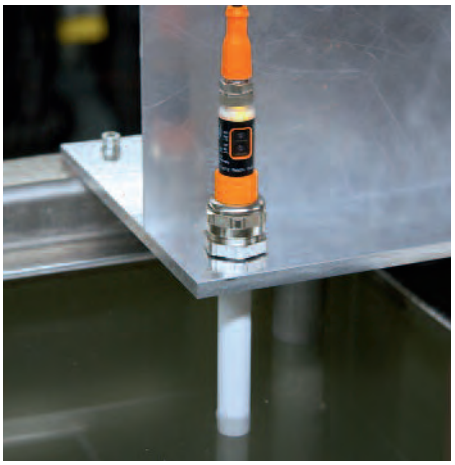
# *Top five product features!*

- *Protects against overflow in fluid sensing applications*
- *Capacitive sensing principle with no moving parts*
- *Polypropylene housing resistant to most chemicals*
- *Top-down mounting and simple setup with two pushbuttons*
- *Available in four lengths with adjustable insertion depths*

## New generation of overflow level sensors

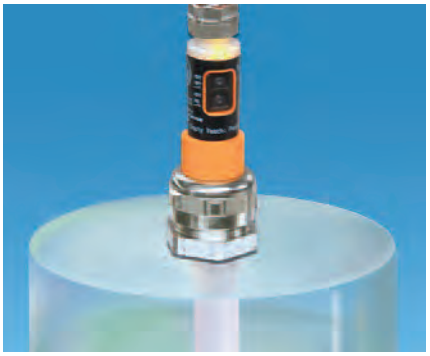


The LI Series level sensor offers reliable limit level detection in tanks, indicating high or low level of hydraulic oils and coolants. They may also be used to monitor the minimum level, leakage or overflow of tanks.

The sensor can be used as an independent overflow protection device or with other level sensors for added security against overflow.

The sensor's 16mm diameter probe is inserted directly into the fluid and is highly resistant to aggressive oils and lubricants. Setup and adjustment is easy using the sensor's "output on - output off" pushbutton teach function without removing the sensor from the process.

### Pushbutton setup



*The operating concept enables setting and adjustment of the output function via two pushbuttons. Deposits can be suppressed during operation without carrying out a new adjustment.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output | Probe Length | Active Sensing Area (from bottom of probe) | Process Connection | Medium Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| PNP, N.O. / N.C. | 132 mm | 31 mm | See Required Accessories | 32...149 °F (0…65 °C) | **LI5141** | **$158.00** |
| PNP, N.O. / N.C. | 273 mm | 31 mm | See Required Accessories | 32...149 °F (0…65 °C) | **LI5142** | **$164.00** |
| PNP, N.O. / N.C. | 481 mm | 31 mm | See Required Accessories | 32...149 °F (0…65 °C) | **LI5143** | **$169.00** |
| PNP, N.O. / N.C. | 737 mm | 31 mm | See Required Accessories | 32...149 °F (0…65 °C) | **LI5144** | **$176.00** |

## Required Accessories (choose one)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 3/4" NPT adapter | **E43012** | **$39.00** |
| | 1" NPT adapter | **E43013** | **$43.00** |
| | G3/4 BSPP adapter | **E43003** | **$39.00** |
| | G1 BSPP adapter | **E43004** | **$41.00** |
| | Flange adapter | **E43001** | **$37.00** |
| | Weldable adapter | **E43002** | **$39.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

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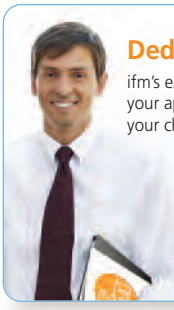
## Technical Specs

| | |
|---|---|
| Supply voltage: | 10...36 VDC |
| Maximum load current: | 200 mA |
| Pressure rating: | 7 psi |
| Wetted parts: | Polypropylene (PP) |
| Recommended media: | Aqueous coolant, oil, water, water-based media |
| Operating temperature range: | -13…176 °F (-25…80 °C) |
| Protection rating: | IP67 |

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# Top five product features!

- *Monitors the level of liquids, viscous media and powders in processing tanks and pipes*
- *Provides reliable level indication in storage tanks and protects pumps from run-dry conditions*
- *High frequency capacitance technology suppresses residues, foam and deposit build-up*
- *Smooth PEEK sensing tip resists media from sticking*
- *Robust 316 stainless steel body withstands the harshest of environments*

## Point level sensor reliably suppress residues, splashes and foam

***NEW!*** ifm's LMT Series point-level sensor is designed to monitor the level of viscous media and liquids in industrial automation environments.

The LMT provides reliable level indication of storage tanks and protects pumps from run dry protection. ifm's patented high frequency (MHz) capacitive spectrum profiling technology enables the sensor to differentiate between actual product in a tank or only residue.

The 316 stainless steel housing and PEEK sensing tip form a completely sealed unit that prevents liquid ingress and has a high protection rating of IP68/IP69K. A bright LED indicates output status. Units are available with various probe lengths and cover a wide range of applications.

The one-piece LMT is easy to mount and is factory preset for the most commonly used media.

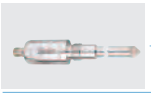
*The LMT sensor is ideal for pipe level applications and eliminates obstructions in the flow path that reduce throughput.*

*The LMT Series level sensor offers reliable level detection in tanks, indicating high or low levels of oils, water and powder-based media.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | Process Connection | Insertion Length (mm) | Factory Default Media Setting | Programmable | Medium Temp Water-Based | Medium Temp Oil-Based | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **2 x PNP / NPN · N.O. / N.C. Programmable** | | | | | | | | |
| | G 1/2 BSPP | 12 | Water-based | No | 32...185 °F | 32...212 °F | **LMT100** | **$212.00** |
| | G 1/2 BSPP | 12 | Oil/powder-based | No | 32...185 °F | 32...212 °F | **LMT110** | **$212.00** |
| | G 1/2 BSPP | 12 | Dissolved sugars | Yes | -40...185 °F | -40...212 °F | **LMT121** | **$212.00** |
|  | G 1/2 BSPP | 153 | Water-based | Yes | -4…185 °F | -4…212 °F | **LMT104** | **$245.00** |
| | G 1/2 BSPP | 253 | Water-based | Yes | -4…185 °F | -4…212 °F | **LMT105** | **$250.00** |
| | 1/2" NPT | 38 | Water-based coolants | Yes | -4…185 °F | -4…212 °F | **LMC502** | **$195.00** |

## Required Accessories for G 1/2 BSPP Sensors

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Welding adapter for tanks | **E43300** | **$38.00** |
| | Welding adapter for pipes | **E43301** | **$44.00** |
| | 3/4" NPT adapter | **E43313** | **$46.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | USB IO-Link master cable connects PC to master | **E30396** | **$140.00** |
| | LineRecorder Sensor App, Software for parameter setting | **ZGS210** | **$69.00** |
| | Sealing plug | **E43308** | **$43.00** |
| | Heat sink welding mandrel | **E43314** | **$34.00** |

## Technical Specs

| | |
|---|---|
| Operating Voltage: | 18...30 V DC |
| Current Rating: | 100 mA |
| Housing materials: | 316L stainless steel |
| Materials wetted parts: | PEEK |
| | PEEK, 316L stainless steel, Viton™: LMT104, LMT105 |
| Protection: | IP 68 / IP 69K |
| Ambient temp: | -40...185 °F |

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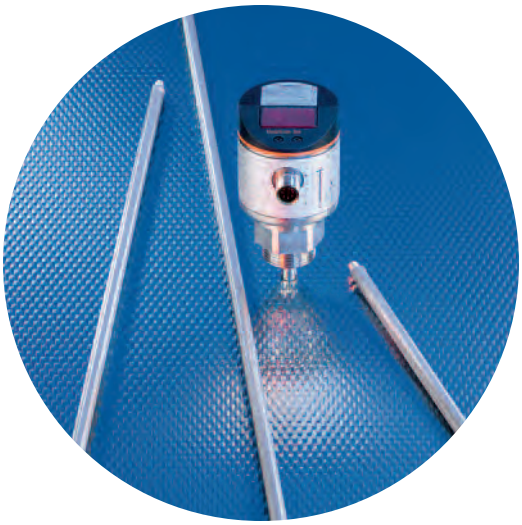


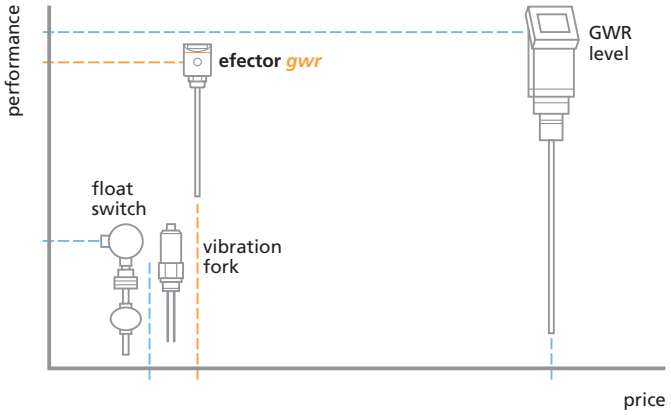
# *Top five product features!*

- *Ideal for level detection of water-based media in compact tanks*
- *No moving parts – replaces float switches*
- *Integrated display with pushbutton setup*
- *Built-in switching and analog output*
- *Simple mounting with cut-to-length measuring probe*

## High performance at a great value

The ***efector gwr*** provides all of the advantages of reliable level detection using innovative guided wave radar technology at a very low price. Alternative level solutions may offer a lower price but may not perform in challenging applications.

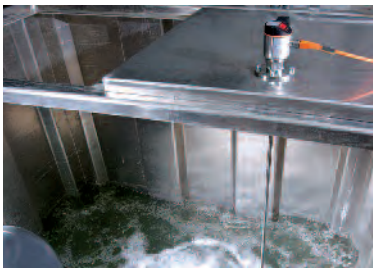
Mechanical float switches can stick in an application due to deposits. Vibration forks offer slightly better performance, but multiple units are required to detect the level of the medium. Traditional GWR level sensors offer an improved performance, but at a very high price point.




### Easy installation

*The **efector gwr** is directly mounted into the tank via a threaded process connection or metal bracket. Power and output are provided with an M12 connector. If needed, the probe can be cut to length by the user.*

### Longer probe lengths



*The LR Series offers long probe lengths for depths up to 63".*

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Search Bar

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

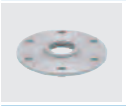
# Product + accessory selector

| Output | Process Connection | Probe Length | Media | Medium Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 2 x PNP, N.O. / N.C. | 3/4" NPT | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR7300** | **$413.00** |
| 4 x PNP, N.O. / N.C. | 3/4" NPT | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR8300** | **$485.00** |
| 4…20 mA / 0…10 V and PNP, N.O. / N.C. | 3/4" NPT | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR3300** | **$492.00** |
| 2 x PNP, N.O. / N.C. | G3/4 BSPP | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR7000** | **$413.00** |
| 4 x PNP, N.O. / N.C. | G3/4 BSPP | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR8000** | **$485.00** |
| 4…20 mA / 0…10 V and PNP, N.O. / N.C. | G3/4 BSPP | See required accessories | Water-based solutions | 32…176 °F (0…80 °C) | **LR3000** | **$492.00** |

## Required Accessories (choose one)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 240 mm Sensing probe, 316 SS | **E43203** | **$19.00** |
| | 450 mm Sensing probe, 316 SS | **E43204** | **$29.00** |
| | 700 mm Sensing probe, 316 SS | **E43205** | **$40.00** |
| | 1000 mm Sensing probe, 316 SS | **E43207** | **$63.00** |
| | 1200 mm Sensing probe, 316 SS | **E43208** | **$73.00** |
| | 1400 mm Sensing probe, 316 SS | **E43209** | **$88.00** |
| | 1600 mm Sensing probe, 316 SS | **E43210** | **$100.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
|  | Mounting flange, 3/4" NPT | **E43206** | **$46.00** |
| | Mounting flange, G3/4 BSPP | **E43201** | **$46.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | M12 Micro DC (8-pin) 2 m, PUR (for LR8) | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR (for LR8) | **E11232** | **$34.00** |
| | T-splitter (8-pin female M12 to two 4-pin male M12) | **E11627** | **$51.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 18...30 VDC |
| Maximum load current: | 200 mA per output |
| Pressure rating: | -14.5…58 psi (-1…4 bar) |
| Accuracy: | ±0.6" +0.5% of full range (±1.5 cm +0.5% of full range) |
| Repeatability: | ±0.2" (±0.5 cm) |
| Wetted parts: | 316 stainless steel, PTFE, NBR |
| Protection rating: | IP67 |

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# Top five product features!

- *Modular level sensor is ideal for level detection of oils or water-based media in compact tanks*
- *Stainless steel housing with no moving parts that can stick is an ideal alternative to float switches*
- *Integrated display with pushbutton setup*
- *Built-in switching and analog output*
- *Simple mounting with cut-to-length measuring probe*

## The LR Series level sensor reliably monitors oil-based media

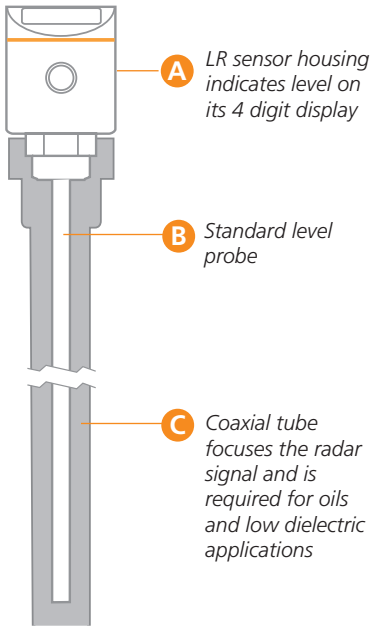
The efector gwr sensor's measuring principle is echo time of flight using guided wave radar technology to detect liquid level in applications such as parts cleaning, coolant monitoring, water treatment and hydraulic power units. This technology enables a strong signal strength and the ability to ignore build up.

The modular system consists of a compact, stainless steel sensor housing with numeric display and pushbutton setup and a cut-to-length stainless steel measuring probe that easily attaches to the sensor housing.

To monitor oil and low-dielectric fluids, a coaxial tube is required for this application. The coaxial tube is an open-ended stainless steel cover that slips over the probe and provides a direct 3/4" NPT (or G3/4 BSPP) process connection. The tube can be cut-to-length and should be the same length as the probe. During operation, the guided wave radar pulse travels down the probe and is contained within the coaxial tube. The tube forces the radar signal back to the sensor head indicating reliable level detection.

With no moving parts, the maintenance-free level sensor does not need routine cleanings and offers a long life-in-application. The units are Micro DC and versions are available with 2 or 4 switch points and a scaleable analog output with a single switchpoint for alarm level detection.

### Modular level system is easy to install




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

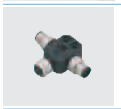
## A LR Level Sensor

| Output | Probe Length | Media | Medium Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| 2 x PNP, N.O. / N.C. | See required accessories | Oil and water-based solutions | 32…176 °F (0…80 °C) | **LR7000** | **$413.00** |
| 4 x PNP, N.O. / N.C. | See required accessories | Oil and water-based solutions | 32…176 °F (0…80 °C) | **LR8000** | **$485.00** |
| 4…20 mA / 0…10 V and PNP, N.O. / N.C. | See required accessories | Oil and water-based solutions | 32…176 °F (0…80 °C) | **LR3000** | **$492.00** |

## B Required Accessory - Probe (choose one)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 240 mm Probe, 316 SS | **E43203** | **$19.00** |
| | 450 mm Probe, 316 SS | **E43204** | **$29.00** |
| | 700 mm Probe, 316 SS | **E43205** | **$40.00** |
| | 1000 mm Probe, 316 SS | **E43207** | **$63.00** |
| | 1200 mm Probe, 316 SS | **E43208** | **$73.00** |
| | 1400 mm Probe, 316 SS | **E43209** | **$88.00** |
| | 1600 mm Probe, 316 SS | **E43210** | **$100.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | M12 Micro DC (8-pin) 2 m, PUR (for LR8) | **E11231** | **$28.00** |
| | M12 Micro DC (8-pin) 5 m, PUR (for LR8) | **E11232** | **$34.00** |
|  | T-splitter (8-pin female M12 to two 4-pin male M12) | **E11627** | **$51.00** |

## C Required Accessory - Coaxial Tube (choose one)

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 450 mm Coaxial tube, 3/4" NPT, 304 SS | **E43218** | **$86.00** |
| | 700 mm Coaxial tube, 3/4" NPT, 304 SS | **E43219** | **$97.00** |
| | 1000 mm Coaxial tube, 3/4" NPT, 304 SS | **E43220** | **$110.00** |
| | 1200 mm Coaxial tube, 3/4" NPT, 304 SS | **E43223** | **$133.00** |
| | 1400 mm Coaxial tube, 3/4" NPT, 304 SS | **E43224** | **$155.00** |
| | 1600 mm Coaxial tube, 3/4" NPT, 304 SS | **E43221** | **$176.00** |
| | 240 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43211** | **$74.00** |
| | 450 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43212** | **$86.00** |
| | 700 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43213** | **$97.00** |
| | 1000 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43214** | **$110.00** |
| | 1200 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43215** | **$133.00** |
| | 1400 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43216** | **$155.00** |
| | 1600 mm Coaxial tube, G3/4 BSPP, 304 SS | **E43217** | **$176.00** |

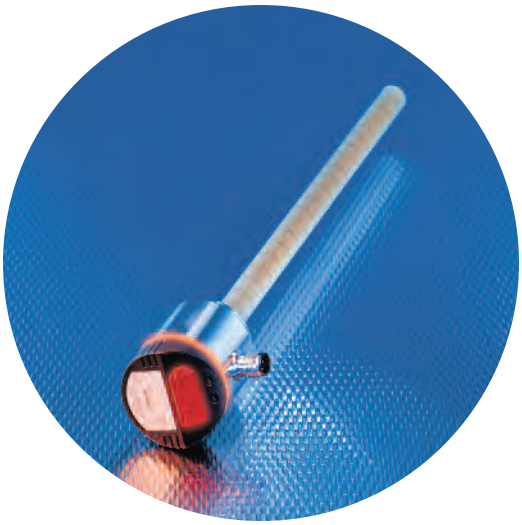
## Optional Accessory

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Replacement centering piece with fixing bracket and o-ring for coaxial tubes | **E43222** | **$15.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | 18...30 VDC |
| Maximum load current: | 200 mA per output |
| Pressure rating: | -14.5…58 psi (-1…4 bar) |
| Accuracy: | ±0.6" +0.5% of full range (±1.5 cm +0.5% of full range) |
| Repeatability: | ±0.2" (±0.5 cm) |
| Wetted parts: | 316 stainless steel, PTFE, NBR |
| Protection rating: | IP67 |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

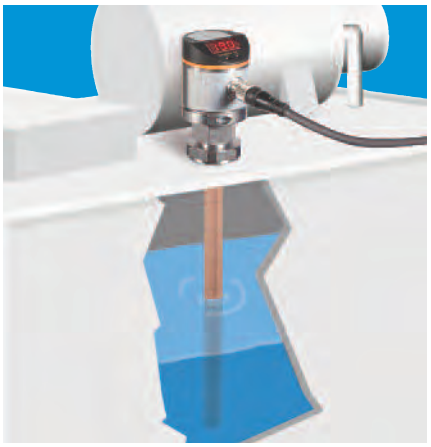


# Top five product features!

- Electronic level sensor replaces mechanical float switches that can stick
- Pushbutton setup allows the sensor's parameters to be easily adjusted without removing the sensor from the process
- Independent overflow protection
- Highly visible numeric display
- Models are available with integrated temperature monitoring

## Replaces mechanical float switches

Fluids that contain particles such as metal chips can cause floats on traditional mechanical level switches to stick. ifm efector's LK level sensor is an electronic "floatless" sensor that accurately detects fluid level without any moving parts. Using ifm's patented capacitive sensing technology, the sensor determines level by measuring the point of dielectric contrast that occurs at the level height.

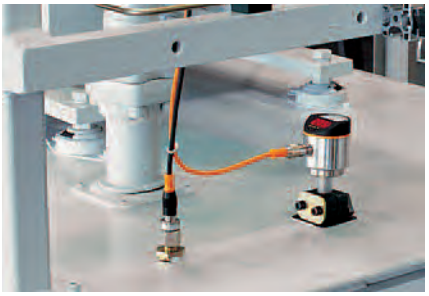


LK level sensors feature an enhanced software algorithm that scans 16 sensing fields along the length of a probe to determine the point at which the change in dielectric occurs. Upon startup, the sensing fields are evaluated every eight milliseconds to provide precise continuous level indication.

### Replaces up to four binary switches

ifm's LK level sensors are available with 2 or 4 switching outputs, as well as an analog and switching output model. Thus, one level sensor can replace up to four binary switches, reducing wiring, material, and mounting costs.

### Easy mounting



*ifm's electronic LK level sensors can be inserted into a tank opening as small as 20 mm in diameter.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output | Probe Length | Active Measuring Zone | Required Accessories | Suitable Media | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Continuous Level Monitoring** | | | | | | |
| 2x PNP, N.O. / N.C. | 264 mm | 196 mm | See below | Oil | **LK1022** | **$403.00** |
| 2x PNP, N.O. / N.C. | 472 mm | 391 mm | See below | Oil | **LK1023** | **$437.00** |
| 2x PNP, N.O. / N.C. | 729 mm | 584 mm | See below | Oil | **LK1024** | **$466.00** |
| 3x PNP, N.O. / N.C. & OP* | 264 mm | 196 mm | See below | Oil | **LK8122** | **$459.00** |
| 3x PNP, N.O. / N.C. & OP* | 472 mm | 391 mm | See below | Oil | **LK8123** | **$498.00** |
| 3x PNP, N.O. / N.C. & OP* | 729 mm | 584 mm | See below | Oil | **LK8124** | **$526.00** |
| 4…20 mA / 0…10 V & OP* | 264 mm | 196 mm | See below | Oil | **LK3122** | **$465.00** |
| 4…20 mA / 0…10 V & OP* | 472 mm | 391 mm | See below | Oil | **LK3123** | **$503.00** |
| 4…20 mA / 0…10 V & OP* | 729 mm | 584 mm | See below | Oil | **LK3124** | **$530.00** |
| **Dedicated overflow output protection* | | | | | | |
| **Continuous Level and Temperature Monitoring** | | | | | | |
| 2x PNP, N.O. / N.C. (level and temp) | 264 mm | 196 mm | See below | Oil | **LT8022** | **$490.00** |
| 2x PNP, N.O. / N.C. (level and temp) | 472 mm | 391 mm | See below | Oil | **LT8023** | **$527.00** |
| 2x PNP, N.O. / N.C. (level and temp) | 729 mm | 584 mm | See below | Oil | **LT8024** | **$553.00** |

## Required Accessories

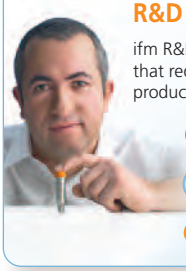
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 3/4" NPT adapter | **E43012** | **$39.00** |
| | 1" NPT adapter | **E43013** | **$43.00** |
| | G3/4 BSPP adapter | **E43003** | **$39.00** |
| | G1 BSPP adapter | **E43004** | **$41.00** |
| | Flange adapter | **E43001** | **$37.00** |
| | Weldable adapter | **E43002** | **$39.00** |

## Optional Accessories and Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | T-splitter (8-pin female M12 to two 4-pin male M12) | **E11627** | **$51.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | M12 Micro DC (8-pin) 5 m, PUR (for LK8 and LT8) | **E11232** | **$34.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | 18…30 VDC |
| Maximum load current: | 200 mA per channel |
| Pressure rating: | 7 psi |
| Media temperature: | 32…149 °F (0…65 °C) |
| Accuracy: | ±5% of full range |
| Repeatability: | ±2% of full range |
| Wetted parts: | PP |
| Housing material: | 304 S15, FKM; NBR; PBT; PC; PEI; PP; TPE/V |
| Protection rating: | IP67 |

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# Top five product features!

- Simple setup with rotating adjustment dials that quickly establish setpoint and resetpoint
- Space-saving design with no moving parts that can wear or break
- Bright LEDs indicate switching status and power
- Fast response times (less than 3 seconds)
- One TK switch replaces two mechanical switches

## Compact temperature sensor with 316 stainless steel probe

The compact TK Series temperature switch and its integrated 316 stainless steel RTD probe measure only 4" long and can be directly mounted into a pipe.

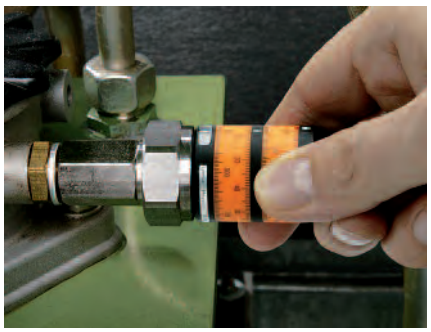
Two mechanical setup dials rotate to quickly establish the setpoint and resetpoint temperatures. The switch's high accuracy insures that the setpoint does not drift and calibration is not required. Two bright LEDs indicate switching and operating status.

With no moving parts to stick in the process or break, the ifm TK Series switch maintains high performance and long term stability. A locking device prevents unintentional setpoint changes.

***NEW!*** Part No. TK7480 has been added to the offering. It features a 255 mm probe length, two switching outputs and a G 1/2 BSPP connection.

ifm's TK temperature sensor is a new benchmark for price / performance value.

### Quick setup! Rotating setup dials establish parameters



*TK temperature switches feature mechanical adjustment dials that rotate to quickly establish the setpoint and resetpoint.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Output | RTD Length | Setpoint Range | Resetpoint Range | Process Connection | Response Time | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| PNP, N.O. and N.C. adjustable hysteresis | 35 mm | 3...284 °F (-16…140 °C) | -4...277 °F (-20...136 °C) | 1/4" NPT | < 3 sec. | **TK6330** | **$140.00** |
| PNP, 2X N.O. with fixed hysteresis (9 °F / 5 °C) | 35 mm | -4...284 °F (-20...140 °C) | – | 1/4" NPT | < 3 sec. | **TK7330** | **$140.00** |
| PNP, N.O. and N.C. adjustable hysteresis | 25 mm | 3...284 °F (-16…140 °C) | -4...277 °F (-20...136 °C) | G1/4 BSPP | < 3 sec. | **TK6130** | **$144.00** |
| PNP, 2X N.O. with fixed hysteresis (9 °F / 5 °C) | 25 mm | -4...284 °F (-20...140 °C) | – | G1/4 BSPP | < 3 sec. | **TK7130** | **$144.00** |
| PNP, N.O. and N.C. with fixed hysteresis (9 °F / 5 °C) | 255 mm | -4...284 °F (-20...140 °C) | – | G1/2 BSPP | < 3 sec. | **TK7480** | **$160.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
|  | Protective cover | **E30094** | **$9.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Measuring element: | Pt1000, class B |
| Supply voltage: | 9.6…32 VDC |
| Maximum load current: | 2x 500 mA |
| Accuracy of switch point: | ± 5.4 °F (± 3 °C) |
| Pressure rating: | 4350 psi (300 bar) |
| Ambient temperature: | -13…158 °F (-25…70 °C) |
| Wetted parts: | 316L stainless steel |
| Protection rating: | IP67 |

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# Top five product features!

- Integrated solution: RTD, display and switching/transmitter output
- One-piece solution is ideal for small pipe mounting
- Stainless steel wetted parts and simple pushbutton setup
- Compatible with wide range of chemicals
- Very fast response on temperature changes (less than 3 seconds)

## Enclosure free, local mounting

ifm's compact TN Series process temperature sensors provide highly accurate temperature indication of fluids. The sensors are self-contained units that feature an integrated control monitor and probe. The sensor's robust stainless steel probe is resistant to aggressive media, withstands shock and vibration and features a rotatable display for system temperature.

These models simplify installation in small pipes where local indication is needed. The monitor's integrated display allows a user to view temperature directly at the process. The robust, stainless steel housing withstands harsh conditions and is mounted without the need for an enclosure or control box. With its flexible design, the temperature monitoring system adapts to most applications.

### Pushbutton programming

Using the monitor's microprocessor-based pushbutton setup, users can toggle through a variety of menu items. Two output options are available: models with scaleable analog and switching outputs, and models with dual PNP / NPN outputs. The switching output has an independent setpoint and reset-point that can be programmed as normally open or normally closed.

### Versatile mounting

*A rotatable display allows the process temperature to be viewed from any angle.*


| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 | |

Search Bar

# Product + accessory selector

| Output | Switchpoint Setting Range | In Steps of | Scaleable Analog Start Point | Scaleable Analog End Point | Process Connection | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| 4-20 mA / 0-10 V and PNP / NPN N.O. / N.C. | -40…302 °F (-40…150 °C) | 0.1 °F (0.1 °C) | -40…293 °F (-40…145 °C) | -31…302 °F (-35…150 °C) | See Required Accessories | **TN2531** | **$294.00** |
| 2 X PNP / NPN N.O. / N.C. | -40…302 °F (-40…150 °C) | 0.1 °F (0.1 °C) | – | – | See Required Accessories | **TN7531** | **$265.00** |

## Required Accessories (choose 1)

| | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/4" NPT adapter | **E40106** | **$21.00** |
| | 1/2" NPT adapter | **E40107** | **$23.00** |
| | 3/4" NPT adapter | **U40085** | **$45.00** |
| | 1" NPT adapter, 304 stainless steel and brass | **U40080** | **$72.00** |
| | G1/4 BSPP adapter | **E40099** | **$21.00** |
| | G1/2 BSPP adapter | **E40096** | **$26.00** |
| | Weldable adapter, carbon steel | **E40113** | **$19.00** |
| | Weldable adapter, 316 stainless steel | **E40124** | **$39.00** |
| | 1/2" NPT thermowell, 27 mm (no other adapters required) | **UT0028** | **$45.00** |

## Cordsets and Optional Accessories

| | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | Transparent protective cover | **E30006** | **$8.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Measuring element: | Pt1000, Class B |
| Response time T05/T09: | 1/3 sec |
| Supply voltage: | 18…32 VDC |
| Maximum load current: | TN2531: 250 mA , TN7531: 2 x 250 mA |
| Accuracy of analog signal: | TN 2531: ± 0.54 °F (± 0.3 °C) |
| Accuracy of switch point: | ± 0.54 °F (± 0.3 °C) |
| Pressure rating: | 4350 psi (300 bar) |
| Ambient temperature: | -13…158 °F (-25…70 °C) |
| Wetted parts: | 316 stainless steel; FKM O-ring |
| Protection rating: | IP67 |

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# Top five product features!

- 2-wire loop power installation
- Fast response time: T05 / T09 = 1/3 sec
- LED indicates the operating status
- Installation lengths from 25...150 mm
- Popular pre-scaled ranges available or IO-Link programmable

## Compact one-piece design, fast response temperature transmitters

ifm's new line of transmitters offer an ideal combination of features, performance and value.

### Compact and versatile

The TA2 temperature sensor is a compact transmitter with a 4...20 mA current output and a prescaled 0…300 °F measuring range. Scaling over the -58…302 °F range is done simply via the integrated IO-Link interface.

The bright LED indicator located in the M12 connector gives visible indication of operational status.

### Ready to install

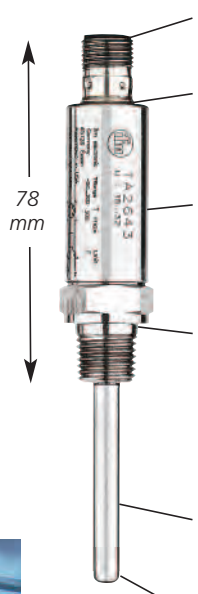
Pre-programmed and ready for use, the one-piece design with integrated electronics, 6 mm diameter probe and threaded process connectors makes ordering easy with a single part number.

### Fast and precise

The TA2 transmitters use a high accuracy Pt1000 class A RTD with a low mass tip design for fast response.

Integrated electronics and factory calibration ensure a reliable ready-to-use transmitter for monitoring temperature in industrial automation applications.

Fluid temperatures are critical measurements in process applications. The TA2 transmitter is ideal for monitoring their process fluids.

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Safety Technology
Safety products 128 - 141

# Product + accessory selector

| RTD Length (mm) | Pressure Rating (psi) | Process Connection | Factory Default Temperature Range (scaled 4…20 mA) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| 25 | 5800 | 1/4 NPT | 0...300 °F (-18…149 °C) | **TA2603** | **$160.00** |
| 50 | 5800 | 1/4 NPT | 0...300 °F (-18…149 °C) | **TA2613** | **$160.00** |
| 100 | 2320 | 1/4 NPT | 0...300 °F (-18…149 °C) | **TA2633** | **$165.00** |
| 150 | 2320 | 1/4 NPT | 0...300 °F (-18…149 °C) | **TA2643** | **$165.00** |
| 30 | 4350 | 1/2 NPT | 0...300 °F (-18…149 °C) | **TA2303** | **$170.00** |
| 50 | 4350 | 1/2 NPT | 0...300 °F (-18…149 °C) | **TA2313** | **$170.00** |
| 100 | 2320 | 1/2 NPT | 0...300 °F (-18…149 °C) | **TA2333** | **$175.00** |
| 150 | 2320 | 1/2 NPT | 0...300 °F (-18…149 °C) | **TA2343** | **$175.00** |
| 25 | 4350 | G 1/4 BSPP | -58...302 °F (-50…150 °C) | **TA2105** | **$160.00** |
| 50 | 4350 | G 1/4 BSPP | -58...302 °F (-50…150 °C) | **TA2115** | **$160.00** |
| 100 | 2320 | G 1/4 BSPP | -58...302 °F (-50…150 °C) | **TA2135** | **$165.00** |
| 150 | 2320 | G 1/4 BSPP | -58...302 °F (-50…150 °C) | **TA2145** | **$165.00** |
| 30 | 4350 | G 1/2 BSPP | -58...302 °F (-50…150 °C) | **TA2405** | **$170.00** |
| 50 | 4350 | G 1/2 BSPP | -58...302 °F (-50…150 °C) | **TA2415** | **$170.00** |
| 100 | 2320 | G 1/2 BSPP | -58...302 °F (-50…150 °C) | **TA2435** | **$175.00** |
| 150 | 2320 | G 1/2 BSPP | -58...302 °F (-50…150 °C) | **TA2445** | **$175.00** |

## Optional Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | USB IO-Link master cable connects PC to master | **E30396** | **$140.00** |
| | LineRecorder Sensor App, software for parameter setting | **ZGS210** | **$69.00** |

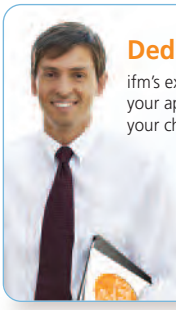
Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Cordsets

| | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Technical Specs

| | |
|---|---|
| Measuring element: | Pt1000, class A |
| Response time T05 / T09: | 1/3 sec. |
| Supply voltage: | 18...32 V DC |
| Maximum measuring range: | -58…302 °F (-50…150 °C) |
| Accuracy: | ± 0.54 + (± 0.1 % scaled range)<br>± 0.3 + (± 0.1 % scaled range) |
| Ambient temperature: | -13…176 °F (-25…80 °C) |
| Wetted parts: | 316L stainless steel; FKM O-ring |
| Protection rating: | IP 67 / IP 68 / IP 69K |



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# Top five product features!

- *Transmitter provides long-term, highly accurate temperature indication in a variety of industrial automation applications*
- *The 2-wire loop powered transmitter is fully programmable and comes pre-scaled in a variety of ranges*
- *One-piece housing features integrated electronics, process connector and Class "A" RTD probe that are laser-welded and factory calibrated*
- *Bright, 4-digit LED display indicates measured temperature directly at the instrument for easy verification of proper operation*
- *316 stainless steel housing is robust for harsh industrial applications*

## TD temperature transmitters are completely assembled, calibrated and ready to install

***NEW!*** The TD Series temperature transmitters monitor the temperature of liquids in industrial automation applications. The one-piece housing is made of durable 316 stainless steel to withstand tough environments. The 2-wire loop powered programmable transmitter is pre-scaled for the most common ranges. A bright, 4-digit LED display is protected with a high performance polymer display window that is resistant to chemicals and high temperatures.

Temperature measurement uses high accuracy Pt1000 class A RTDs (resistive thermal detector). Evaluation electronics are optimized for accuracy over the full working range and calibrated to within 0.5 °F.

The highly engineered tip design reduces thermal mass and precisely locates the RTD element with a constant position and force. The benefit of the tip design is very fast reaction speeds of 1 second to 50% and 3 seconds to 90% of the temperature change. There is no calibration or matching of the RTD with the transmitter module.

The TD comes fully assembled and factory calibrated for the highest degree of reliability. This saves both installation and commissioning time.

### Challenge

*Traditional sensors require costly calibration and matching of the transmitter with the RTD probe. The assemblies do not have displays for local indication. The connection head and well assemblies are prone to damage from moisture ingress.*

### Solution

*The Pt1000 sensor element, evaluation electronics and LED display are calibrated to operate as a system solution for your process monitoring.*

*The one-piece device eliminates wiring issues and moisture ingress.*

### One-piece solution mounts directly in process

*The TD temperature transmitter reliably monitors the fluid temperature in many industrial applications.*

*Process and compression fittings attach to the RTD probe to provide a secure connection in the process.*

*Optional thermowell mounting allows the sensor to be removed without stopping process.*

*A compression fitting and nylon ferrule are required for thermowell mounting.*


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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NEW

# Product + accessory selector

| Maximum Temperature Range | RTD Length [mm] | Optional Thermowell 1/2" NPT | Part No. Factory Default Temperature Range (scaled 4...20 mA) | | | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | | | -10...150 °C | 0...300 °F | 0...100 °C | |
| -58...302 °F (-50...150 °C) | 50 | – | **TD2211** | **TD2213** | **TD2217** | **$190.00** |
| -58...302 °F (-50...150 °C) | 100 | – | **TD2231** | **TD2233** | **TD2237** | **$195.00** |
| -58...302 °F (-50...150 °C) | 150 | E37210 | **TD2241** | **TD2243** | **TD2247** | **$200.00** |
| -58...302 °F (-50...150 °C) | 200 | E37220 | **TD2251** | **TD2253** | **TD2257** | **$205.00** |
| -58...302 °F (-50...150 °C) | 250 | – | **TD2261** | **TD2263** | **TD2267** | **$210.00** |
| -58...302 °F (-50...150 °C) | 300 | E37230 / E37430 | **TD2271** | **TD2273** | **TD2277** | **$215.00** |
| -58...302 °F (-50...150 °C) | 350 | E37250 / E37450 | **TD2291** | **TD2293** | **TD2297** | **$220.00** |

## Thermowell Mounting (Requires UT0042 compression fitting)

| Description | Part No. | List Price (1-pc.) |
|---|---|---|
| 1/2" NPT thermowell, 63.5 mm insertion length | **E37210** | **$23.00** |
| 1/2" NPT thermowell, 114 mm insertion length | **E37220** | **$35.00** |
| 1/2" NPT thermowell, 190 mm insertion length | **E37230** | **$50.00** |
| 1/2" NPT thermowell, 267 mm insertion length | **E37250** | **$65.00** |
| Weld-in thermowell, 190 mm insertion length | **E37430** | **$83.00** |
| Weld-in thermowell, 267 mm insertion length | **E37450** | **$116.00** |

| Description | Part No. | List Price (1-pc.) |
|---|---|---|
| 1/2" NPT compression fitting with nylon ferrules for removable installation in thermowell | **UT0042** | **$30.00** |

## Direct Mounting (Select one of the fittings below)

| | | |
|---|---|---|
| 1/4" NPT, 316 SS compression fitting | **E30049** | **$34.00** |
| 1/2" NPT, 316 SS compression fitting | **UT0038** | **$34.00** |

## Cordsets

| | | |
|---|---|---|
| M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |

| | | |
|---|---|---|
| M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

## Accessories

| | | |
|---|---|---|
| USB IO-Link master cable connects PC to sensor | **E30396** | **$140.00** |
| LineRecorder Sensor App Software for parameter setting | **ZGS210** | **$69.00** |

## Technical Specs

| | |
|---|---|
| Measuring element | Pt 1000, Class A |
| Response time T05 / T09 | 1/3 sec. |
| Supply voltage | 18...32 V DC |
| Accuracy of analog signal | ± 0.54 + (0.1 % of measuring span) °F<br>± 0.3 + (0.19 % of measuring span) °C |
| Pressure rating | -14.5...2321 psi |
| Ambient temperature | -13...176 °F (-25...80 °C) |
| Wetted parts | 316L stainless steel |
| Protection rating | IP67 / IP68 / IP69K |

# Top five product features!

- Compact size with "Lock in Place" M12 connectors
- Plug-and-play connection eliminates wiring errors
- Scaleable and offsetable Pt100 / Pt1000 evaluation with temperature ranges from -58… 572 °F (-50… 300 °C)
- Integrated LED confirms operating status
- Over-molding technology guarantees integrity in harsh environments

## Turns any RTD into a programmable 4…20 mA temperature transmitter

The innovative TP transmitter module with "plug and play" M12 connectors solves the common installation and environmental problems associated with conventional terminal chamber-head transmitters.

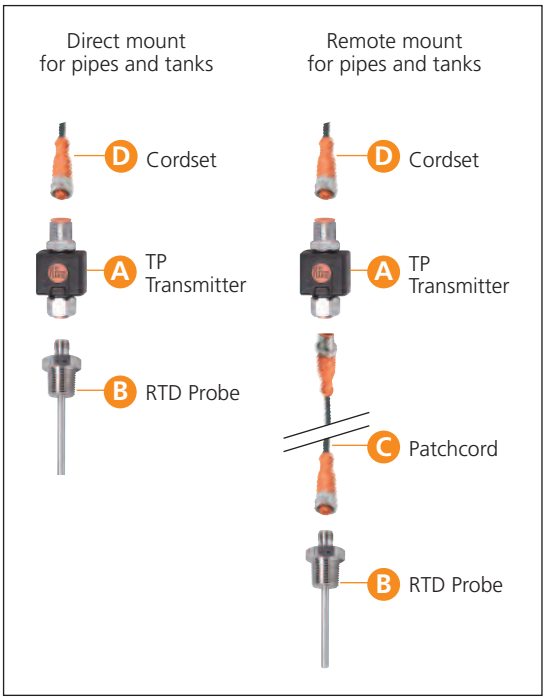
Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED gives local indication that the transmitter is powered and transmitting.

| Challenge | Solution |
|---|---|
| | |
| *Bulky traditional head transmitters are costly and are subject to moisture ingress.* | *ifm's compact TP transmitter is rated to withstand liquid ingress and provide reliable temperature indication* |

### Completely configurable

Compatible with any Pt100 or Pt1000 probe, the TP temperature module verifies the type of RTD and automatically makes the correct settings. Usable with 2, 3, or 4-wire RTDs, the TP can be scaled and offset using ifm's USB interface. With it's "overmolded" construction, the TP is suitable for harsh environments allowing for use in almost any application.

### Component guide




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

## A Transmitter Module

| Type | Output | Factory Default Range | Scaleable Analog Start Point | Scaleable Analog End Point | In steps of | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| | 4…20 mA | -58…302 °F (-50…150 °C) | -58…563 °F (-50…295 °C) | -49…572 °F (-45…300 °C) | 0.1 °F (0.1 °C) | TP3231 | $84.00 |
| | | -58…572 °F (-50…300 °C) | -58…563 °F (-50…295 °C) | -49…572 °F (-45…300 °C) | 0.1 °F (0.1 °C) | TP3232 | $84.00 |
| | | 0…300 °F (-18…149 °C) | -58…563 °F (-50…295 °C) | -49…572 °F (-45…300 °C) | 0.1 °F (0.1 °C) | TP3233 | $84.00 |
| | | 32…212 °F (0…100 °C) | -58…563 °F (-50…295 °C) | -49…572 °F (-45…300 °C) | 0.1 °F (0.1 °C) | TP3237 | $84.00 |
| | 0…10 V | 32…212 °F (0…100 °C) | -58…563 °F (-50…295 °C) | -49…572 °F (-45…300 °C) | 0.1 °F (0.1 °C) | TP9237 | $84.00 |

## B Pt 100 RTD Probes, 316L Stainless Steel*

| Process Connection | Insertion Depth | RTD Diameter | Temperature Range | Response Time | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 1/2" NPT | 50 mm | 6 mm | -40…302 °F (-40…150 °C) | 1/3 sec. | TM4311 | $92.00 |
| 1/2" NPT | 100 mm | 6 mm | -40…302 °F (-40…150 °C) | 1/3 sec. | TM4331 | $95.00 |
| 1/2" NPT | 150 mm | 6 mm | -40…302 °F (-40…150 °C) | 1/3 sec. | TM4341 | $97.00 |
| 1/2" NPT | 250 mm | 6 mm | -40…302 °F (-40…150 °C) | 1/3 sec. | TM4361 | $104.00 |

* For other RTD probes and accessories, please see pages 198 - 199.

## Accessories

| | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | USB IO-Link master cable connects PC to sensor | E30396 | $140.00 |
| | LineRecorder Sensor App Software for parameter setting | ZGS210 | $69.00 |

## Technical Specs

| | |
|---|---|
| Supply voltage: | 20…32 VDC |
| Ambient Temperature: | -13…158 °F (-25…70 °C) |
| Accuracy of analog output: | ±0.54 °F + (± 0.1%) of the scaled span<br>±0.3 °C + (± 0.1%) of the scaled span |
| Housing material: | TPU with Viton™ seal |
| Material coupling nut: | 316L stainless steel |
| Protection rating: | IP67 |

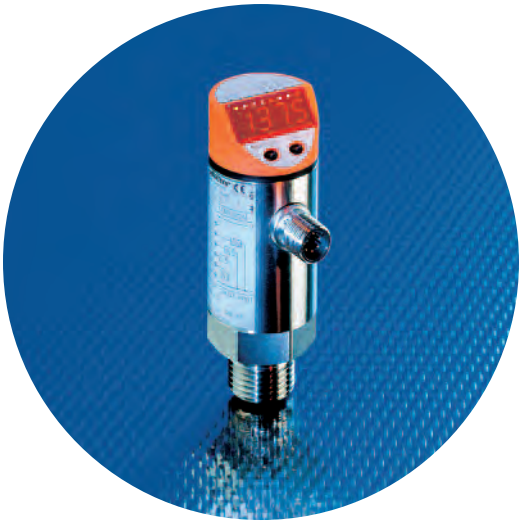
## D Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | EVC001 | $9.95 |
| | M12 Micro DC (4-pin) 5 m, PUR | EVC002 | $13.50 |
| | M12 Micro DC (4-pin) 10 m, PUR | EVC003 | $18.00 |
| | M12 Micro DC (4-pin) 2 m, PUR | EVC004 | $9.95 |
| | M12 Micro DC (4-pin) 5 m, PUR | EVC005 | $13.50 |
| | M12 Micro DC (4-pin) 10 m, PUR | EVC006 | $18.00 |

## C Patchcords for remote mount

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12, straight to straight, 2 m, PUR | EVC013 | $20.00 |
| | M12, straight to straight, 5 m, PUR | EVC014 | $21.00 |
| | M12, straight to straight, 10 m, PUR | EVC108 | $26.00 |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us



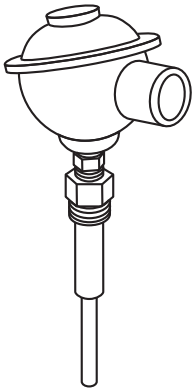
# Top five product features!

- *Integrated display with switching and transmitter outputs*
- *Easy direct mounting in tanks*
- *Display can be remotely mounted with simple 4-wire patchcord*
- *Enclosure-free housing eliminates problems with moisture ingress*
- *Directly interfaces with any 2, 3, and 4 wire RTDs*

## More compact and easier to install than head-and-well assemblies

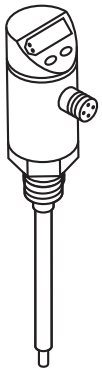
The TR Series process temperature monitors provide highly accurate temperature indication of fluids. The monitor's integrated display allows a user to view temperature directly at the process. The robust, stainless steel housing withstands harsh conditions. Programmable in either °F or °C, the highly-visible display can be viewed from a distance which is advantageous in low-lit areas.

**Challenge**



*Bulky head-and-well assemblies with open cavities are subject to liquid ingress and do not have localized displays.*

**Solution**

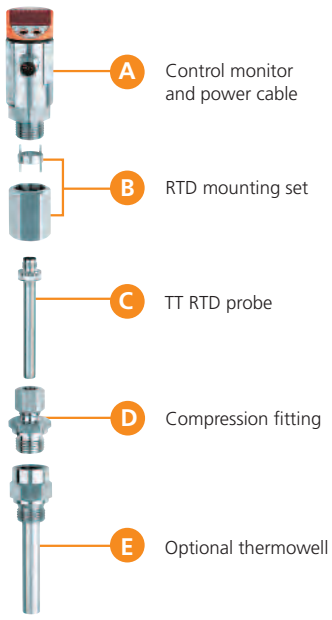


*ifm's zero-leak, compact temperature monitor connects to a variety of RTDs and features local numeric display.*

**Two monitors available:**

- Model TR2432 provides a scaleable analog and switching output.
- Model TR7432 features a dual switching output.
- Both monitors have a temperature range of -40 to 572 °F and interface with 2-, 3- and 4-wire RTDs (Pt 100 or Pt 1000). The compact monitors feature a 4-digit numeric LED display that indicates temperature in 0.1 °F resolution.

### Component Guide



# Product + accessory selector

## A Control Monitor

| Output | Switchpoint Setting Range | In steps of | Scaleable Analog Start Point | Scaleable Analog End Point | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| 4-20mA / 0-10V and PNP / NPN N.O. / N.C. | -40…572 °F (-40…300 °C) | 0.1 °F (0.1 °C) | -40.0…482 °F (-40.0…250 °C) | 50…572.0 °F (10…300.0 °C) | **TR2432** | **$270.00** |
| Dual PNP / NPN N.O. / N.C. | -40…572 °F (-40…300 °C) | 0.1 °F (0.1 °C) | – | – | **TR7432** | **$228.00** |

## C Pt 100 RTD Probes, 316L Stainless Steel*

| Usable RTD Length | Total RTD Length | RTD Diameter | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| 100 mm | 160 mm | 10 mm | -40…302 °F (-40…150 °C) | **TT1081** | **$75.00** |
| 200 mm | 260 mm | 10 mm | -40…302 °F (-40…150 °C) | **TT2081** | **$82.00** |
| 300 mm | 360 mm | 10 mm | -40…302 °F (-40…150 °C) | **TT3081** | **$88.00** |
| 500 mm | 560 mm | 10 mm | -40…302 °F (-40…150 °C) | **TT5081** | **$97.00** |

* For other RTD probes and accessories, please see pages 198 - 199.

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| B | RTD mounting set | **E30017** | **$34.00** |
| D | 1/2" NPT Compression fitting, 316 stainless steel | **E30024** | **$26.00** |
| E | 1/2" NPT Thermowell, 100 mm, 316 stainless steel | **UT0009** | **$32.00** |
| | 1/2" NPT Thermowell, 200 mm, 316 stainless steel | **UT0010** | **$38.00** |
| | 1/2" NPT Thermowell, 300 mm, 316 stainless steel | **UT0011** | **$45.00** |
| | 1/2" NPT Thermowell, 500 mm, 316 stainless steel | **UT0012** | **$52.00** |
| | Thermal grease for thermowells | **700692** | **$2.50** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

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## Technical Specs

| | |
|---|---|
| Supply voltage: | 18...32 VDC |
| Maximum load current: | TR2432: 250 mA, TR7432: 2 x 250 mA |
| Accuracy of switch point: | ±0.54 °F (±0.3 °C) |
| Accuracy of analog signal: | TR2432: ± 0.54 °F (±0.3 °C) |
| Ambient temperature: | -13…158 °F (-25…70 °C) |
| Protection rating: | IP67 |

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# Top five product features!

- *A variety of RTD probe lengths offer a wide range of insertion depths*
- *Various thermowells are available that allow the probe to be removed without shutting down the process*
- *316 stainless steel design detect rapid temperature changes and is compatible with a wide range of chemicals*
- *For a custom temperature monitoring system, RTDs can be used with or without ifm's TR control monitor or TP transmitter module*
- *Standard M12 connectors allow for a multitude of mounting options*

## ifm's modular temperature components allow flexibility in any application

Select an RTD probe and process fitting that will suit your application. Optional thermowells allow the RTD probe to be removed without stopping the process.

**A Select an RTD probe**

*ifm stainless steel temperature probes are available in 6 mm, 8.2 mm and 10 mm diameters.*

*Probes are available in varying lengths to suit a wide range of installation depths.*

**B Select a process / compression fitting**

*Process and compression fittings attach to the probe to provide a secure connection in the process.*

*Models are available in 1/4", 1/2", .3/4" and 1" NPT, G 1/4 and G 1/2 BSPP and weldable adapters.*

**C If needed, select a thermowell**

*Optional thermowell mounting allows the RTD probe to be removed without stopping process.*

*Thermowells are available in various diameter options and lengths.*

## Selection Guide for RTD Probes, Fittings and Thermowells

**A 6 mm diameter · Pt 100 · M12 connector Integrated 1/2" process connection**

| Type | Usable Length (after fitting) | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 50 mm | -40…302 °F (-40… 150 °C) | TM4311 | $92.00 |
| | 100 mm | -40…302 °F (-40… 150 °C) | TM4331 | $95.00 |
| | 150 mm | -40…302 °F (-40… 150 °C) | TM4341 | $97.00 |
| | 250 mm | -40…302 °F (-40… 150 °C) | TM4361 | $104.00 |

## Selection Guide for RTD Probes, Fittings and Thermowells

**A 8.2 mm diameter · Pt 100 · M12 quick disconnect for small pipes**

| Type | Usable Length (after fitting) | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 23 mm | -40…257 °F (-40… 125 °C) | TM9950 | $109.00 |

| B Process Fitting | | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/4" NPT adapter | E40106 | $21.00 |
| | 1/2" NPT adapter | E40107 | $23.00 |
| | 3/4" NPT adapter | U40085 | $45.00 |
| | 1" NPT adapter, 304 stainless steel and brass | U40080 | $72.00 |
| | G1/4 BSPP adapter | E40099 | $21.00 |
| | G1/2 BSPP adapter | E40096 | $26.00 |
| | Weldable adapter, carbon steel | E40113 | $19.00 |
| | Weldable adapter, 316 ss | E40124 | $39.00 |

| C Optional Thermowell, 1/2" NPT | | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 1/2" NPT thermowell, 27 mm (no other adapters required) | UT0028 | $45.00 |

## Selection Guide for RTD Probes, Fittings and Thermowells (continued)

### A 6 mm diameter · Pt 100 · M12 quick disconnect

| | Usable Length (after fitting) | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 12 mm | -40…302 °F (-40…150 °C) | **TT9291** | **$86.00** |
| | 62 mm | -40…302 °F (-40…150 °C) | **TT0291** | **$95.00** |
| | 100 mm | -40…302 °F (-40…150 °C) | **TT1291** | **$97.00** |
| | 200 mm | -40…302 °F (-40…150 °C) | **TT2291** | **$95.00** |
| | 300 mm | -40…302 °F (-40…150 °C) | **TT3291** | **$103.00** |

### B Compression Fitting

| | Part No. | List Price (1-pc.) |
|---|---|---|
| | **E30049** 1/4" NPT | **$34.00** |

### C Optional Thermowell, 1/2" NPT (requires E30049)*

| | Length | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | **N/A** | **N/A** | **N/A** |
| | **N/A** | **N/A** | **N/A** |
| | 100 mm | **UT0022** | **$34.00** |
| | 200 mm | **UT0023** | **$39.00** |
| | 300 mm | **UT0024** | **$45.00** |

### A 10 mm diameter · Pt 100 · M12 quick disconnect

| | Usable Length (after fitting) | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 100 mm | -40…302 °F (-40…150 °C) | **TT1081** | **$75.00** |
| | 200 mm | -40…302 °F (-40…150 °C) | **TT2081** | **$82.00** |
| | 300 mm | -40…302 °F (-40…150 °C) | **TT3081** | **$88.00** |
| | 500 mm | -40…302 °F (-40…150 °C) | **TT5081** | **$97.00** |

### B Compression Fitting

| | Part No. | List Price (1-pc.) |
|---|---|---|
| | **E30024** 1/2" NPT | **$26.00** |

### C Optional Thermowell, 1/2" NPT (requires E30024)*

| | Length | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 100 mm | **UT0009** | **$32.00** |
| | 200 mm | **UT0010** | **$38.00** |
| | 300 mm | **UT0011** | **$45.00** |
| | 500 mm | **UT0012** | **$52.00** |

### A 10 mm diameter Pt 100 · Prewired with M12 quick disconnect

| | Cable Length | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 2 m, PUR | -40…194 °F (-40…90 °C) | **TS2089** | **$55.00** |
| | 5 m, PUR | -40…194 °F (-40…90 °C) | **TS5089** | **$60.00** |
| | 2 m, PTFE | -58…482 °F (-50…250 °C) | **TS2056** | **$107.00** |

### B Compression Fitting

| | Part No. | List Price (1-pc.) |
|---|---|---|
| | **E30025** 1/2" NPT | **$26.00** |

### C Optional Thermowell, 1/2" NPT (requires E30025)*

| | Length | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | 100 mm | **UT0009** | **$32.00** |
| | 200 mm | **UT0010** | **$38.00** |
| | 300 mm | **UT0011** | **$45.00** |
| | 500 mm | **UT0012** | **$52.00** |

*Thermal grease for thermowells (order separately), Part No. 700692, List price: $2.50

### A Bolt-on · Pt 100 · Prewired with M12 quick disconnect

| | Cable Length | RTD Element | Temperature Range | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| | 2 m | Pt 100 | -13…194 °F (-25…90 °C) | **TS2229** | **$68.00** |

## Technical Specs

| | |
|---|---|
| Wetted parts: | 316 stainless steel |
| Response time T05/T09: | TTxxxx: 1/3 sec; TSx051: 6/25 sec; TS2056: 12/39 sec TM9950: 1/3 sec |
| Ambient temperature: | -13…176 °F (-25…80 °C) |
| Protection rating: | TTxxxx: IP68 / IP69K; TSxxxx: IP67; TM9950: IP68 / IP69K |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

# Top five product features!

- *Reliable part-presence detection of hot objects up to 2900 °F (1600 °C) using non-contact long-distance sensing technology*
- *30 mm threaded stainless steel housing designed for harsh environments*
- *Scratch-resistant, optically coated precision lens for minimum sensitivity to scattered light ensures reliability*
- *Easy setup via pushbutton and display on the sensor*
- *Analog / switching or dual switching outputs are available*

## Compact infrared temperature sensor for detecting objects with temperatures up to 2900 °F

***NEW!*** Many industries involve detection of objects that are too hot for the use of standard position sensors, such as in the manufacturing of asphalt, steel, glass, or ceramic products. ifm's TW Series non-contact infrared temperature switch is designed to detect objects ranging in temperature from 32 to 2900 °F (0 to 1600 °C).

The TW sensor solves these applications by detecting the infrared radiation emitted by the object and converting it into an output signal. The TW2 sensor provides an accurate temperature measurement based on the target emissivity.

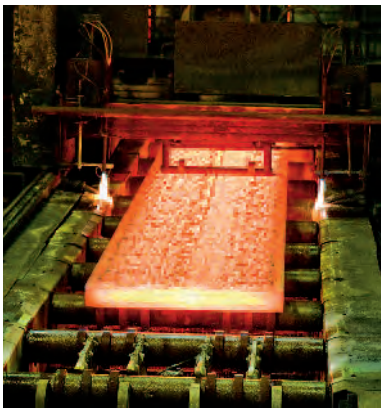
### High precision in a robust housing

ifm's TW temperature series features a compact robust housing. The integrated scratch-resistant precision quartz lens with anti-reflective coating provides minimum sensitivity to scattered light for reliability in extremely harsh environments.

The TW is available with an M12 Micro quick disconnect connector. For mounting restrictions with limited space, fiber optic units are available. A special lens attachment is required in this case.

### Easy setup

Outputs can easily be set using the pushbuttons and digital display of the sensor.



*The TW Series temperature sensor can be used to detect a hot steel slab by measuring the infrared radiation intensity emitted from the hot slab.*

*The TW2 transmitter displays actual temperature of the hot slab and provides a corresponding analog signal.*

*The TW7 switch displays a percentage of the infrared radiation intensity and provides a switchpoint set by the user.*

Search Bar

| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
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# Product + accessory selector

| Type | Output | Temperature Range | Accuracy (€=1) | Wave Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| Self-contained | Scaleable 4…20 mA and PNP N.O. / N.C. | 32…1831 °F (0…995.5 °C) | < ±1% of measured value | 8…14 µm | **TW2000** | **$1,060.00** |
| Self-contained | Scaleable 4…20 mA and PNP N.O. / N.C. | 482…2912 °F (250…1600 °C) | < ±0.5% of measured value | 1.0…1.7 µm | **TW2001** | **$1,325.00** |
| Self-contained | Scaleable 4…20 mA and PNP N.O. / N.C. | 932…4532 °F (500…2500°C) | < ±0.3% of measured value | 0.78…106 µm | **TW2002** | **$1,340.00** |
| Fiber Optic | Scaleable 4…20 mA and PNP N.O. / N.C. | 572…2912 °F (300…1600 °C) | < ±0.5% of measured value | 1.0…1.7 µm | **TW2011** | **$1,925.00** |
| Self-contained | 2 x PNP N.O. / N.C. | 122…932 °F (50…500 °C) | < ±1% of measured value | 8…14 µm | **TW7000** | **$778.00** |
| Self-contained | 2 x PNP N.O. / N.C. | 482…2282 °F (250…1250 °C) | < ±1% of measured value | 1.0…1.7 µm | **TW7001** | **$1,100.00** |
| Fiber Optic | 2 x PNP N.O. / N.C. | 662…2462 °F (350…1350 °C) | < ±1% of measured value | 1.0…1.7 µm | **TW7011** | **$1,050.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Air purge | **E35063** | **$119.00** |
| | Cooling jacket | **E35064** | **$270.00** |
| | Mounting bracket | **E35065** | **$55.00** |
| | Protective tube | **E35066** | **$82.00** |
| | Heat isolator | **E35067** | **$45.00** |

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## Required Accessories TW2011/TW7011

| | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Fiber optic cable, 2 m | **E35061** | **$265.00** |
| | Fiber optic cable, 5 m | **E35062** | **$320.00** |
| | Sensor head, lens attachment for IR temperature sensors | **E35060** | **$275.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (5 pin) 10 m, PUR, shielded | **EVC546** | **$45.00** |
| | M12 Micro DC (5 pin) 10 m, PUR, shielded | **EVC549** | **$45.00** |

## Technical Specs

| | |
|---|---|
| Supply voltage: | TW2: 18…32 V DC; TW7: 10…34 V DC |
| Current rating: | 150 mA per switching output |
| Ambient temperature: | TW: 32…140 °F (0…60 °C) |
| | E35060: -4…480 °F (-20…250 °C) |
| Protection rating: | IP65 |

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*The AS-i network connects hundreds of sensors on a single two-wire cable. AS-i I/O modules use quick plug-and-play functionality that simplifies installation.*

## AS-i is a simple solution for networking actuators and sensors

An AS-interface network offers a simple, cost-efficient alternative to conventional cabling at the lowest level of the automation. This network can operate directly in conjunction with an existing PLC or can be linked to a higher-level bus system for low-cost remote I/O. AS-interface is tailored to the needs of devices such as sensors and actuators where low connection cost per node is critical and simplicity is essential.

### Global support for AS-interface

ifm efector engineers are trained on AS-interface and can help design and implement a network on industrial equipment. On-site technical support is available and application assistance is immediate by calling our technical support hotline: 800-441-8246.

### Aggressive product development

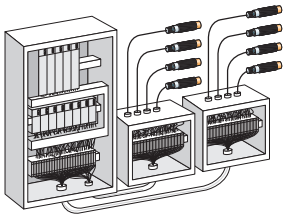
ifm is committed to investing in new product development for AS-interface. Our goal is to improve functionality, simplify installation and maintain competitive price points.

# Point-to-point wiring vs. AS-i networking

Industrial automation systems require a large amount of control devices. The number of binary actuators and sensors placed on a typical system has grown over the years.

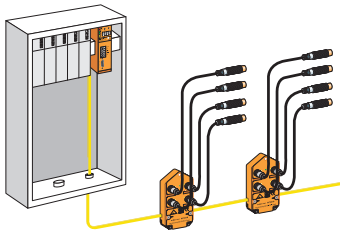
Current methods for wiring include point-to-point connection or bus systems. However, point-to-point wiring results in large wire bundles, and bus systems can be too complex for networking simple binary devices.

As a solution to these challenges, ifm offers the Actuator Sensor interface (AS-i), a simple network for actuators and sensors. AS-i is cost-effective, easy to install, and features modular components that offer design flexibility. AS-i is a complete networking solution for industrial control applications.



***Before***

*Point-to-point wiring is still the most common wiring method found in industry. One cable from each device results in large wire bundles running through the system. Due to the sheer volume of wires, installation time is considerable and troubleshooting is complex.*



***After***

*AS-i network connects multiple binary devices with only one 2-wire cable, completely eliminating wire bundles. Its simple, plug-and-play wiring supports all topologies and eliminates device profiles and expensive hardware.*

*Visit www.ifm.com/us to view all AS-i networking products.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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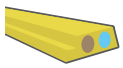
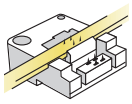
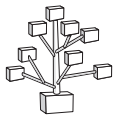


**A simple 2-wire flat cable**
The normal collection of wire bundles are replaced by a single, two-wire flat cable that carries both data and power.



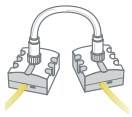
**Insulation displacement**
Insulation displacement technology enables fast connection to all devices. The cable is pierced to make the electric connection and features a mechanical profile to proper insure polarity.



**Flexible topology**
AS-i supports topologies including open tree, ring, star, and trunk and drop lines to allow maximum design freedom.

**Extremely fast system**
Data transfer is fast – less than 10 ms on a fully-loaded system of 248 inputs and 248 outputs.

**Cost effective**
Since actuators and sensors are among the least expensive devices on a network, their connecting hardware should be comparable in price. AS-i's price-per-point is one of the best in industry.



**Modular system**
AS-i's design flexibility makes it a true plug-and-play networking system. Modular machines can be easily connected with the aid of splitter modules to form a production line.

**Best fit**
Actuator and sensor manufacturers developed AS-i for the sole purpose of connecting actuators and sensors. Every component on the network is specially designed to fit these binary devices.

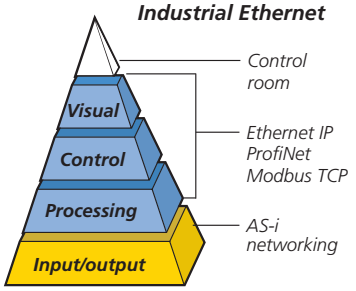
## Industrial Ethernet and AS-i networking offer the best of both worlds

Industrial Ethernet (IE) is commonly applied as the networking protocol for automation and plant control. IE is well known in industry, can carry large packets of data, and is ideal for HMIs, PLCs, drives, and barcode scanners.

For bit-level data such as sensors and actuators – which account for 90% of devices in automation – a lower level I/O network, such as AS-i, is better suited for these devices.

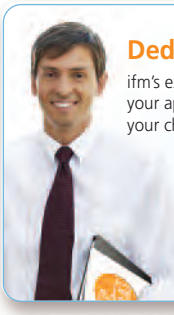
AS-i offers a better alternative to wiring bit-level devices and is an ideal complement to Industrial Ethernet at the I/O level. A single Ethernet IP address can transmit up to 992 I/O points. AS-i uses quick plug-and-play functionality that simplifies installation in the controls architecture.

***Today's networks with Industrial Ethernet***




**ifm is an AS-interface founding member**

ifm efector is one of 11 founding members of the AS-interface Association, established in 1990. AS-i is a non-profit independent organization that is currently supported by more than 100 vendors worldwide.



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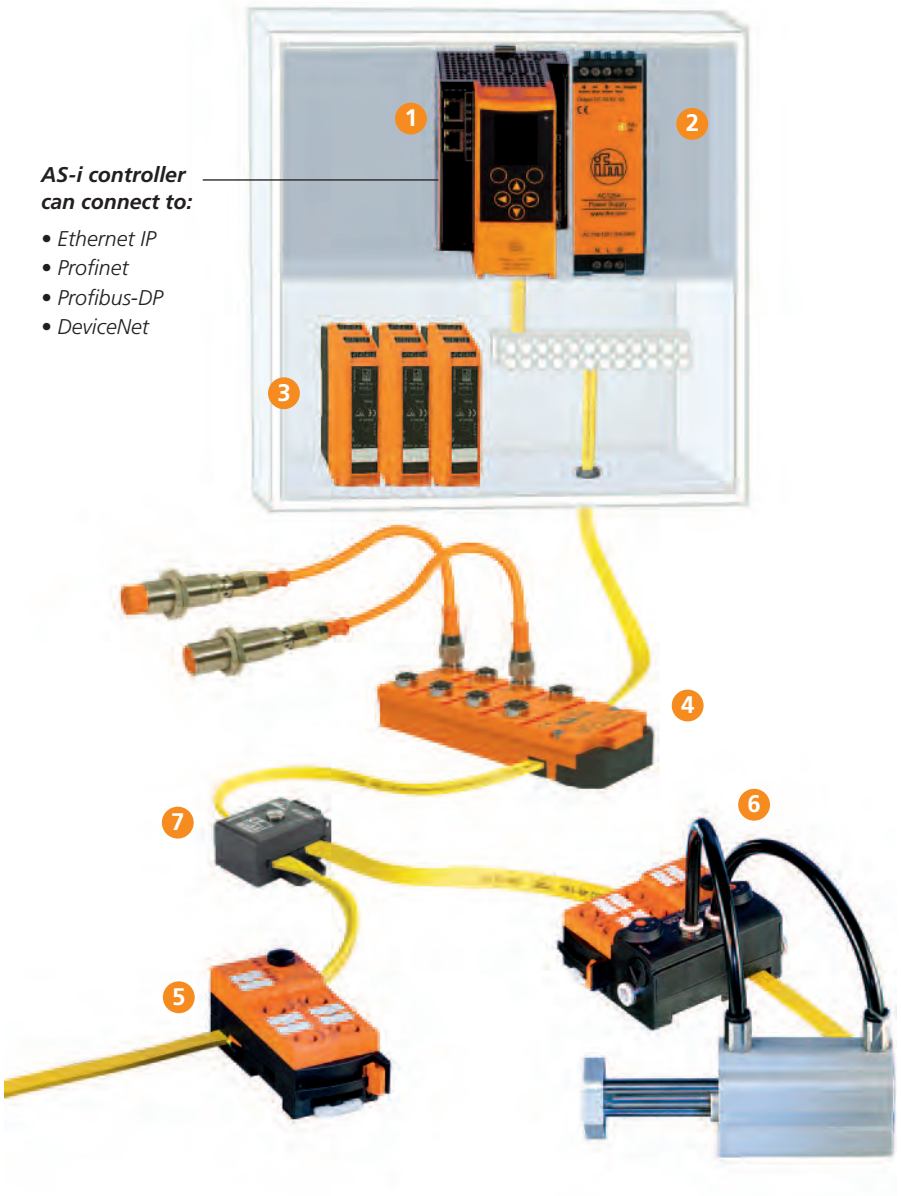
# AS-i system overview

All of the components needed to create a complete AS-i system are illustrated in this overview. Because of its flexibility, an AS-i system has unlimited design capabilities. Choose from a variety of masters, I/O modules, power supplies and accessories depending on your current controls platform and application environment.

1. **AS-i Master / Gateway**
   Controls the data transfer for the AS-i network.
2. **AS-i Power Supply**
   Couples power and signal together for transmission over the 2-wire flat cable.
3. **Cabinet Module**
   Designed to be an inexpensive solution for connecting control cabinet I/O to the AS-i network.
4. **Compact Field Module**
   Designed specifically for harsh environments.
5. **Quick Slide Field Modules**
   IP67 module features a mounting technology that does not require tools for installation.
6. **Quick Slide Pneumatic Output Modules**
   4 inputs and 1 or 2 solenoid outputs integrated into one housing.
7. **Splitter Module**
   Allows for maximum flexibility in both the design and commissioning phases of a project.

***AS-i controller can connect to:***

- *Ethernet IP*
- *Profinet*
- *Profibus-DP*
- *DeviceNet*




***Technical Specifications:***

- *62 nodes per master*
- *4I/4O maximum per node (248 inputs/248 outputs per master)*
- *100 m network length (up to 300 m with repeaters)*
- *Less than 10 ms scan time on a fully loaded system (62 nodes)*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Controllers and gateways

- *AS-i Controllers provide direct connection of AS-i to EtherNet/IP, Profibus and to DeviceNet*
- *AS-i Backplane Masters provide connection of AS-i to most PLCs*
- *Single or dual master options available for application versatility*
- *User friendly display for setup and diagnostics*

| Type | Number of AS-i Masters | Programming Data Interface | Fieldbus Interface | AS-i Version | Current Consumption From 24 V DC (mA) | Current Consumption From AS-i (mA) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **AS-i Ethernet / IP Controller-E • Full master functions • Color graphic display** | | | | | | | | |
| | 1 | – | Ethernet IP | 3.0 | < 500 | < 10 | **AC1421** | **$1,088.00** |
| | 2 | – | Ethernet IP | 3.0 | < 500 | < 10 | **AC1422** | **$1,307.00** |
| **AS-i Profinet Gateway • Full master functions • Color graphic display** | | | | | | | | |
| | 1 | Ethernet RJ 45 | Profinet | 3.0 | < 500 | < 10 | **AC1401** | **$1,088.00** |
| | 2 | Ethernet RJ 45 | Profinet | 3.0 | < 500 | < 10 | **AC1402** | **$1,307.00** |
| **AS-i Profibus Gateway • Full master functions • Color graphic display** | | | | | | | | |
| | 1 | Ethernet RJ 45 | Profibus-DP | 3.0 | < 500 | < 10 | **AC1411** | **$974.00** |
| | 2 | Ethernet RJ 45 | Profibus-DP | 3.0 | < 500 | < 10 | **AC1412** | **$1,128.00** |
| **SmartLink DP • AS-i gateway / Profibus DP • Full master functions • Graphic display** | | | | | | | | |
| | 1 | – | Profibus-DP | 3.0 | – | < 200 | **AC1375** | **$845.00** |
| | 2 | – | Profibus-DP | 3.0 | < 400 | < 10 | **AC1376** | **$1,051.00** |
| **AS-i DeviceNet controller E • AS-i controller with DeviceNet interface • Full master functions • Graphic display** | | | | | | | | |
| | 1 | – | DeviceNet | 3.0 | < 500 | < 10 | **AC1318** | **$1,393.00** |
| | 2 | – | DeviceNet | 3.0 | < 500 | < 10 | **AC1324** | **$1,574.00** |

| Type | Application | I/O and Configuration | Number of AS-i Masters | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| **AS-i Backplane Masters** | | | | | |
| | AS-i Master for SLC5 PLC Platform | 248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0 | 2 | **U71000** | **$1,104.00** |
| | AS-i master for Compactlogix and Micrologix 1500 PLC platforms | 248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0 | 1 | **U71003** | **$854.00** |
| | AS-i master for Controllogix PLC platforms | 248 inputs and 248 outputs. Configuration via Allen-Bradleys' RSLogix software package. AS-i version 3.0 | 2 | **U71005** | **$1,450.00** |

Process Sensors: *Pressure* *Flow* *Level* *Temperature*

Industrial Networks: *AS-i network* *Safety systems*

ID Systems: *RF identification systems*

Machine Condition: *Diagnostic systems*

Power Supplies: *Power supplies*

Wiring Technology: *Cordset solutions*

*144 - 159* *160 - 169* *170 - 185* *186 - 201* *204 - 217* *218 - 229* *232 - 235* *238 - 243* *246 - 247* *250 - 261*

NEW

# AS-i power supplies

- **New** High efficiency design generates less heat and eliminates external cooling
- Couples and de-couples power and signal for transmission over the network
- Compact housing with DIN rail occupies minimal cabinet space
- Selectable 115 / 230 VAC input voltage with short circuit and overload protection

| Type | Dimensions (mm) | Output Current AS-i (A) | Output Voltage AS-i (V) | Nominal Voltage (V) | Efficiency (%) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **Power supply** | | | | | | | |
| | 45 x 90 x 100 | 0.95 | 29.5…31.6 DC | 100…240 AC (± 10 %) | η = 86 | **AC1220** | **$171.00** |
| | 45 x 90 x 100 | 1.9 | 29.5…31.6 DC | 100…240 AC (± 10 %) | η = 88 | **AC1221** | **$218.00** |
| | 40 x 124 x 114.6 | 2.8 | 30.5 DC | 115 / 230 AC | η = 86.9 | **AC1256** | **$310.00** |
| | 40 x 124 x 114.6 | 4 | 30.5 DC | 115 / 230 AC | η = 88 | **AC1254** | **$425.00** |
| | 62 x 124 x 114.6 | 8 | 30.5 DC | 115 / 230 AC | η = 89.4 | **AC1258** | **$505.00** |
| | 40 x 124 x 114.6 | 4 | 30.5 DC | 24 DC | η = 90.5 | **AC1257** | **$390.00** |
| **Power supply • 3-phase** | | | | | | | |
| | 62 x 124 x 114.6 | 8 | 30.5 DC | 3 x 400 AC | η = 92 | **AC1253** | **$565.00** |

# Cabinet modules

- *DIN rail mountable modules designed for cabinet or junction box applications*
- *Removable combicon connectors included for easy connection of periphery devices*
- *Low profile models available for small enclosures*
- *Integrated socket for easy addressing*

| Type | Dimensions (mm) | No. of Inputs | No. / Type of Outputs | Max. Input Current per Module | Output Current per Channel / Total (A) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 25 x 114 x 105 | 4 | – | 200 | – | S-0.A.E | 2.1 | yes | **AC2250** | **$119.00** |
| | 25 x 114 x 105 | – | 4 PNP | – | 1 / 4 | S-8.0.E | 2.1 | no | **AC2252** | **$140.00** |
| | 25 x 114 x 105 | 4 | 4 PNP | 200 | 1 / 4 | S-7.0.E | 2.1 | no | **AC2251** | **$160.00** |
| | 25 x 114 x 105 | 4 | 4 PNP | 200 | 1 / 4 | S-7.A.7 | 3.0 | yes | **AC2261** | **$160.00** |
| | 25 x 114 x 105 | 4 | 3 PNP | 200 | 1 / 3 | S-7.A.E | 2.1 | yes | **AC2264** | **$160.00** |
| | 25 x 114 x 105 | 4 | 4 PNP | 200 | 1 / 4 | S-7.A.7 | 3.0 | yes | **AC2267** | **$161.00** |
| | 25 x 114 x 105 | 4 | 2 relay | 200 | 6 / 6 | S-7.A.E | 2.1 | yes | **AC2256** | **$166.00** |
| | 50 x 114 x 105 | 4 | 4 relay | 200 | 6 / 6 | S-7.0.E | 2.1 | no | **AC2258** | **$205.00** |

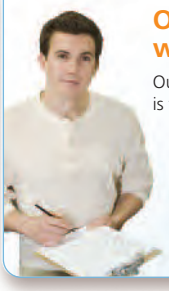
## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Addressing unit | **AC1154** | **$471.00** |
| | Cable for addressing unit | **E70213** | **$20.00** |

Can't find the right AS-i cabinet modules for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

Output voltage supply: AC2267: 24 VDC power supply for inputs and outputs
All other models: AS-i power supply for inputs only and 24 VDC power supply for outputs only



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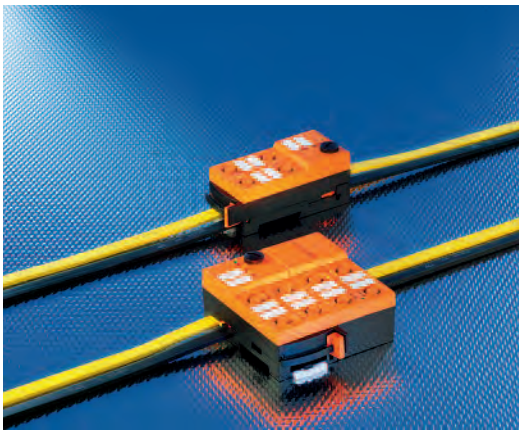


# I/O field modules for industrial automation

- *Field modules feature digital inputs and/or digital outputs*
- *Modules offer three directions of rotation for AS-i cable that provide flexible installation*
- *Simple mounting, no tools required*

| Type | Dimensions (mm) | No. of Inputs | No. / Type of Outputs | Max. Input Current per Module (mA) | Output Current per Channel / Total (A) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 45 x 103 x 45 | 4 | – | 200 | – | S.0.A.E | 2.1 | yes | **AC5215** | **$153.00** |
| | 45 x 103 x 45 | 4 | – | 1000 | – | S.0.A.E | 2.1 | yes | **AC5290** | **$153.00** |
| | 45 x 103 x 45 | – | 4 PNP | – | 1 / 2 | S.8.0.E | 2.1 | no | **AC5208** | **$171.00** |
| | 45 x 103 x 45 | 2 | 2 PNP | 100 | 1 / 2 | S.B.A.E | 2.1 | yes | **AC5214** | **$166.00** |
| | 45 x 103 x 45 | 2 | 2 PNP | 200 | 0.2 / 0.2 | S.B.A.E | 2.1 | yes | **AC5224** | **$166.00** |
| | 90 x 103 x 45 | 4 | 4 PNP | 200 | 1 / 2 | S.7.A.7 | 3.0 | yes | **AC5235** | **$240.00** |
| | 90 x 103 x 45 | 4 | 4 PNP | 1000 | 1 / 3 | S.7.A.7 | 3.0 | yes | **AC5293** | **$240.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Addressing unit | **AC1154** | **$471.00** |
| | Cable for addressing unit | **E70213** | **$20.00** |
| | Protective cap – 10 pack | **L35001** | **$8.00** |

## Patchcords

| Type | Design | | | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | Male | Female | M12 straight male to M12 straight female | 1 M | **EVC042** | **$19.00** |
| | | | | 2 M | **EVC043** | **$20.00** |
| | | | | 5 M | **EVC044** | **$21.00** |
| | Male | Female | M12 straight male to M12 90° female | 1 M | **EVC047** | **$19.00** |
| | | | | 2 M | **EVC048** | **$20.00** |
| | | | | 5 M | **EVC049** | **$21.00** |

## Technical Specs

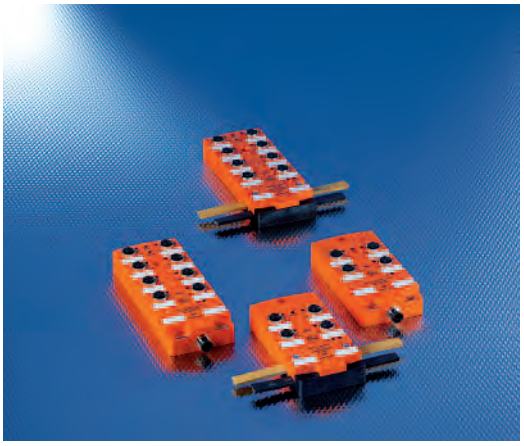
Output voltage supply: AC5290, AC5293: 24 VDC power supply required for inputs and outputs
AC5224: AS-i power supply for inputs and outputs
All other models: AS-i power supply for inputs only and 24 VDC power supply for outputs only

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 180–447 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

NEW



# Fully potted I/O field modules for outdoor and high vibration areas

- *Low profile housing*
- *Fully potted for outdoor and high vibration environments (IP67 rating)*
- *Up to 4 amps available for output devices*
- *ifm ecolink technology in each port enables secure lock-in-place connection*
- *Flat cable base included*

| Type | Dimensions (mm) | No. of Inputs | No. of Outputs | Max Input Current per Module (mA) | Output Current per Channel / Total (A) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **M12 Micro DC Connectors** | | | | | | | | | | |
| | 60 x 118 x 27 | 4 | – | 200 | – | S-0.A.E | 2.1 | yes | **AC2457** | **$194.00** |
| | 60 x 118 x 27 | 2 | 2 PNP | 200 | 2 / 4 | S-3.F.E | 2.1 | no | **AC2458** | **$231.00** |
| | 60 x 152 x 27 | 4 | 4 PNP | 200 | 2 / 4 | S-7.F.E | 2.1 | no | **AC2459** | **$312.00** |
| ***New*** **M8 Pico DC Connectors** | | | | | | | | | | |
| | 30 x 90.5 x 23.5 | 2 | 2 PNP | 180 | 180 mA / 180 mA | S-B.A.E | 2.1 | yes | **AC2482** | **$145.00** |
| | 30 x 90.5 x 23.5 | 4 | – | 180 | – | S-0.A.E | 2.1 | yes | **AC2484** | **$135.00** |
| | 30 x 134.5 x 23.5 | 8 | – | 180 | – | S-7.A.A. | 3.0 | yes | **AC2488** | **$170.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Addressing unit | **AC1154** | **$471.00** |
| | Addressing cable | **E70423** | **$40.00** |
| | Protective cap – 10 pack | **L35001** | **$8.00** |

## Patchcords

| Type | Design | | | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | Male | Female | M12 straight male to M12 straight female | 1 M | **EVC042** | **$19.00** |
| | | | | 2 M | **EVC043** | **$20.00** |
| | | | | 5 M | **EVC044** | **$21.00** |
| | Male  | Female  | M12 straight male to M12 90° female | 1 M | **EVC047** | **$19.00** |
| | | | | 2 M | **EVC048** | **$20.00** |
| | | | | 5 M | **EVC049** | **$21.00** |
| | Male | Female | M8 straight male to M8 straight female | 1 M | **EVC267** | **$22.00** |
| | | | | 2 M | **EVC268** | **$24.00** |
| | | | | 5 M | **EVC269** | **$27.00** |
| | Male | Female | M8 straight male to M8 90° female | 1 M | **EVC277** | **$22.00** |
| | | | | 2 M | **EVC278** | **$24.00** |
| | | | | 5 M | **EVC279** | **$27.00** |

**Process Sensors**

*Pressure* *144 - 159*

*Flow* *160 - 169*

*Level* *170 - 185*

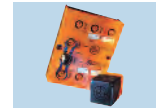
*Temperature* *186 - 201*

**Industrial Networks**

*AS-i network* *204 - 217*

*Safety systems* *218 - 229*

**ID Systems**

*RF identification systems*  *232 - 235*

**Machine Condition**

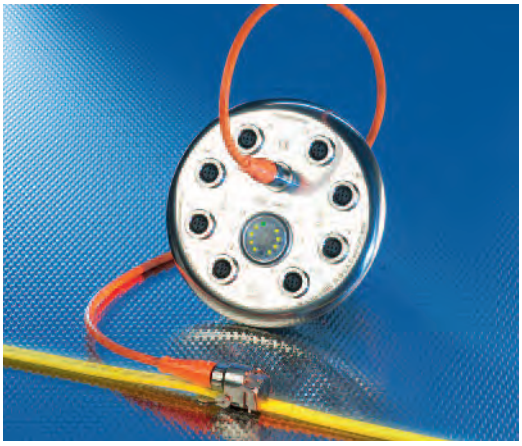
*Diagnostic systems* *238 - 243*

**Power Supplies**

*Power supplies* *246 - 247*

**Wiring Technology**

*Cordset solutions* *250 - 261*



# I/O modules for harsh environments

- *Stainless steel modules for use in harsh applications*
- *Resistant to standard cleaning agents (Ecolab tested)*
- *AS-i and 24 V supply via common M12 connector*
- *For direct use in wet areas (protection ratings IP 68 and IP 69 K)*
- *AS-i splitters – high-grade stainless steel flat cable insulation displacement connector suitable for field use*

| Type | Dimensions (mm) | No. of Inputs | No. of Outputs | Max Input Current per Module (mA) | Output Current per Channel / Total (A) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **I/O modules for harsh environments** | | | | | | | | | | |
| | Ø137.3 x 80 | 8 passive splitter | – | – | 4 / 4 | – | – | – | **AC2900** | **$194.00** |
| | Ø137.3 x 80 | 4 | 3 PNP | 200 | 0.7 / 2.1 | S-7.A.E. | 2.1 | yes | **AC2904** | **$368.00** |
| | Ø137.3 x 80 | 8 | – | 400 | – | S-0.A.E. | 2.1 | yes | **AC2910** | **$342.00** |

## Cables and patchcords

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (5-pin), 0.3 m, PVC | **EVT058** | **$28.00** |
| | M12 Micro DC (5-pin), 0.6 m, PVC | **EVT059** | **$28.00** |
| | M12 Micro DC (5-pin), 1 m, PVC | **EVT060** | **$29.00** |
| | M12 Micro DC (5-pin), 2 m, PVC | **EVT061** | **$30.00** |
| | M12 Micro DC (5-pin), 5 m, PVC | **EVT062** | **$34.00** |
| | M12 Micro DC (5-pin), 10 m, PVC | **EVT063** | **$38.00** |

## Accessories

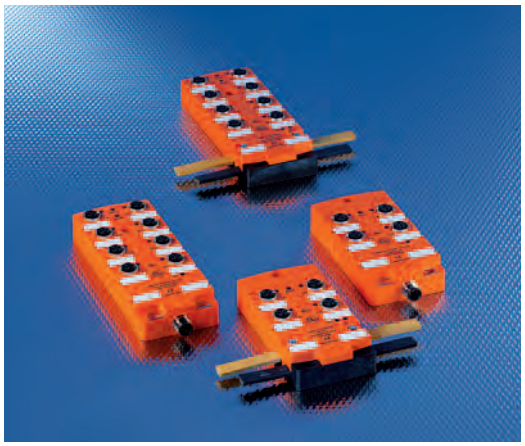
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Flat cable, AS-i and auxiliary, to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring | **E70354** | **$41.00** |
| | Flat cable to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring | **E70454** | **$30.00** |
| | Flat cable splitter, two channel, AS-i or auxiliary, 8 A current rating, 316 SS, EPDM O-ring | **E70377** | **$39.00** |

Search Bar

Company | Position Sensors: Inductive, Capacitive, Cylinder position, Photoelectrics and lasers, Distance, color and contrast, Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products

1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141

NEW

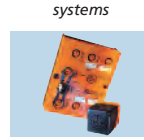


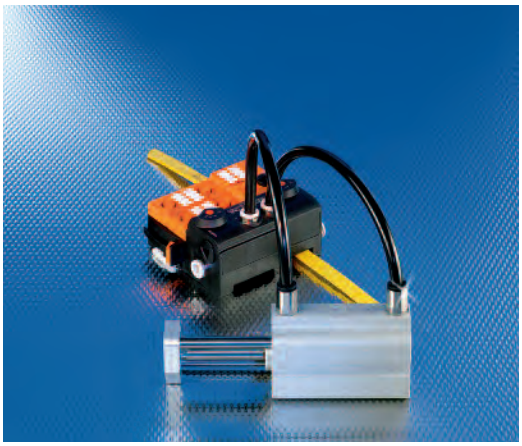
# Analog I/O field modules

- *Modules available for various industrial environments*
- *High resolution and transfer rates*
- *Up to 4 inputs or 4 outputs of 4…20 mA or 0…10 V per module*

| Type | Dimensions (mm) | No. of Inputs | No. of Outputs | Max Input Current per Module (mA) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|
| **Analog I/O modules for the cabinet** | | | | | | | | | |
| | 25 x 114 x 105 | 4 x 4…20 mA | – | 100 (500) | S-7.3.E | 2.1 | no | **AC2216** | **$571.00** |
| | 25 x 114 x 105 | 4 x 0…10 V | – | 100 (500) | S-7.3.E | 2.1 | no | **AC2217** | **$571.00** |
| | 25 x 114 x 105 | – | 4 x 0…20 mA | – | S-7.3.6 | 2.1 | no | **AC2218** | **$571.00** |
| | 25 x 114 x 105 | – | 4 x 0...10 V | – | S-7.3.6 | 2.1 | no | **AC2219** | **$571.00** |
| | 25 x 114 x 105 | 4 x Pt100 | – | 80 mA | S-7.3.E | 2.1 | no | **AC2220** | **$563.00** |
| **Analog I/O modules with quick slide housing** | | | | | | | | | |
| | 45 x 103 x 45 | 2 x 4…20 mA | – | 200 mA | S-7.3.D | 2.1 | no | **AC5222**[1] | **$291.00** |
| | 45 x 103 x 45 | 2 x 4…20 mA | – | 200 mA | S-7.3.D | 2.1 | no | **AC5223**[2] | **$291.00** |
| | 45 x 103 x 45 | 2 x digital<br>1 x 4…20 mA | 1 x 4…20 mA | 200 mA | S-7.5.5 | 3.0 | no | **AC5230** | **$323.00** |
| ***New*** **Analog I/O modules with compact housing** | | | | | | | | | |
| | 60 x 118 x 27 | 2 x 4…20 mA | – | 200 mA | S-7.3.D | 2.1 | no | **AC2402**[1] | **$295.00** |
| | 60 x 118 x 27 | 2 x 4…20 mA | | 200 mA | S-3.F.E | 2.1 | no | **AC2403**[2] | **$295.00** |
| **Analog I/O modules with standard housings** | | | | | | | | | |
| | 83 x 90 | 4 x 4…20 mA | – | 100 (500) | S-7.3.E | 2.1 | no | **AC2516** | **$585.00** |
| | 83 x 90 | 4 x 0...10 V | – | 100 (500) | S-7.3.E | 2.1 | no | **AC2517** | **$585.00** |
| | 83 x 90 | – | 4 x 0…20 mA | – | S-7.3.6 | 2.1 | no | **AC2518** | **$585.00** |
| | 83 x 90 | – | 4 x 0...10 V | – | S-7.3.6 | 2.1 | no | **AC2519** | **$585.00** |
| **Analog I/O modules for harsh environments** | | | | | | | | | |
| | Ø137.3 x 80 | 4 x 4…20 mA | – | 380 mA | S-7.3.E. | 2.1 | no | **AC2916**[1] | **$608.00** |
| | Ø137.3 x 80 | 4 x 4…20 mA | – | 380 mA | S-7.3.E. | 2.1 | no | **AC2923**[2] | **$608.00** |

1) for 2 and 3-wire sensors 2) for 2 and 4-wire sensors


| Process Sensors | | | | Industrial Networks | | ID Systems | Machine Condition | Power Supplies | Wiring Technology |
|---|---|---|---|---|---|---|---|---|---|
| *Pressure* | *Flow* | *Level* | *Temperature* | *AS-i network* | *Safety systems* | *RF identification systems* | *Diagnostic systems* | *Power supplies* | *Cordset solutions* |
| | | | | | |  | | | |
| *144 - 159* | *160 - 169* | *170 - 185* | *186 - 201* | *204 - 217* | *218 - 229* | *232 - 235* | *238 - 243* | *246 - 247* | *250 - 261* |



# Pneumatic airboxes

- *Pneumatic airboxes feature digital inputs combined with pneumatic outputs*
- *Airboxes offer three directions of rotation for AS-i cable that provide flexible installation*
- *Simple mounting, no tools required*

| Type | Dimensions (mm) | No. of Inputs | Output Supply Voltage | No. of Outputs | Max Input Current per Module (mA) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Digital inputs with two 3/2 way valves** | | | | | | | | | | |
| | 85 x 108 x 50 | 4 | 24 VDC | 2 single acting cylinders, monostable | 200 | S-7.A.E | 2.1 | yes | **AC5243** | **$313.00** |
| | 85 x 108 x 50 | 4 | AS-i | 2 single acting cylinders, monostable | 200 | S-7.A.E | 2.1 | yes | **AC5228** | **$313.00** |
| **Digital inputs with one 5/2 way valve** | | | | | | | | | | |
| | 85 x 108 x 50 | 4 | 24 VDC | 1 double acting cylinder, monostable | 200 | S-7.A.E | 2.1 | yes | **AC5249** | **$280.00** |
| | 85 x 108 x 50 | 4 | 24 VDC | 1 double acting cylinder, bistable | 200 | S-7.A.E | 2.1 | yes | **AC5253** | **$336.00** |
| | 85 x 108 x 50 | 4 | AS-i | 1 double acting cylinder, monostable | 200 | S-7.A.E | 2.1 | yes | **AC5246** | **$280.00** |
| | 85 x 108 x 50 | 4 | AS-i | 1 double acting cylinder, bistable | 200 | S-7.A.E | 2.1 | yes | **AC5251** | **$336.00** |
| **Digital inputs with one 5/3 way valve** | | | | | | | | | | |
| | 85 x 108 x 50 | 4 | AS-i | 1 double acting cylinder | 200 | S-7.A.E | 2.1 | yes | **AC5270** | **$356.00** |
| | 85 x 108 x 50 | 4 | 24 VDC | 1 double acting cylinder | 200 | S-7.A.E | 2.1 | yes | **AC5271** | **$356.00** |

## Accessories

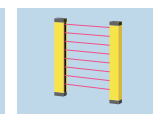
| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Addressing unit | **AC1154** | **$471.00** |
| | Cable for addressing unit | **E70213** | **$20.00** |
| | Protective cap – 10 pack | **L35001** | **$8.00** |
| | Silencer – 10 pack | **E75232** | **$52.00** |
| | Push-in T-fitting – 10 pack | **E75227** | **$57.00** |
| | Push-in L-fitting – 10 pack | **E75228** | **$50.00** |

## Patchcords

| Type | Design | | | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | Male | Female | M12 straight male to M12 straight female | 1 M | **EVC042** | **$19.00** |
| | | | | 2 M | **EVC043** | **$20.00** |
| | | | | 5 M | **EVC044** | **$21.00** |
| | Male | Female | M12 straight male to M12 90° female | 1 M | **EVC047** | **$19.00** |
| | | | | 2 M | **EVC048** | **$20.00** |
| | | | | 5 M | **EVC049** | **$21.00** |

Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products



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NEW

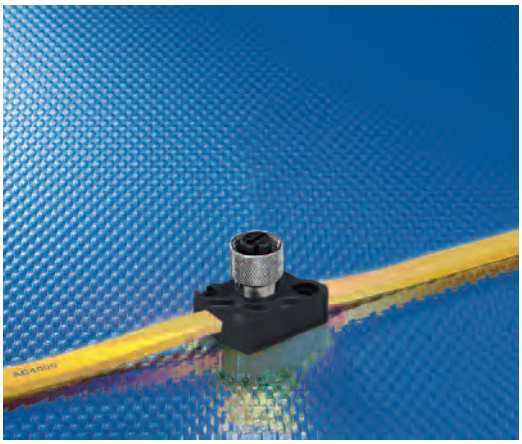
# PCB modules for pushbutton applications

- *PCB module for control cabinets*
- *Easy connection with cables or screw terminals*
- *Up to 4 inputs and 4 outputs for pushbuttons and LEDs*
- *Short circuit and overload protected*

| Type | Dimensions (mm) | No. of Inputs | No. of Outputs | Connection | Supply Voltage (V DC) | Max Input Current per Module (mA) | AS-i Profile | AS-i Version | Extended Addressing Mode | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 31 x 77 x 12 | 4 | 4 | Wire | 18…31.6 | 150 | S-7.A.7 | 3.0 | yes | **AC2750** | **$115.00** |
| | 31 x 77 x 12 | 4 | 4 | Screw terminals | 18…31.6 | 150 | S-7.A.7 | 3.0 | yes | **AC2752** | **$115.00** |
| | 66 x 41 | 3 | 3 | Screw terminals | 26.5…31.6 | 180 | S-7.A.E | 2.1 | yes | **AC2731** | **$166.00** |
| | 105 x 45 | 4 | 3 | Wire | 26.5…31.6 | 120 | S-0.A.E | 2.1 | yes | **AC2739** | **$164.00** |
| | 32 x 44 x 9 | 2 | 1 LED | Cable | 26.5…31.6 | 50 | S-B.A.E | 2.11 | yes | **AC2729** | **$129.00** |

## Technical Specs

| | |
|---|---|
| Output voltage (AS-i): | 18…31.6 V DC |
| Current consumption: | < 180 mA |
| Current rating per module: | 150 mA |
| Short circuit protection: | yes |
| Overload protection: | yes |
| Ambient temperature: | -25…55 °C |
| AS-i specification: | 2.11 + 3.0 |
| Extended addressing mode: | yes |
| Housing material: | potted PC |



# Cables

- *Flat cable provides 2-wire communication and power for AS-i network*
- *Flat cable easily connects I/O modules*

| Type | Description | Environments | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| **AS-i cable** | | | | |
| | AS-i flat cable, yellow, available in lengths of 100 m, EPDM | Industrial automation | **E74005** | **$210.00** |
| | AS-i flat cable, black available in lengths of 100 m, EPDM | Industrial automation | **E74015** | **$210.00** |
| | AS-i flat cable, yellow available in lengths of 100 m, TPE | Oils and coolants | **E74205** | **$400.00** |
| | AS-i flat cable, black available in lengths of 100 m, TPE | Oils and coolants | **E74215** | **$400.00** |
| | AS-i flat cable, grey available in lengths of 100 m, PVC | Wet and caustic | **U71002** | **$373.00** |
| | AS-i flat cable, black available in lengths of 100 m, TPE-PVC compound | Wet and caustic | **E74310** | **$550.00** |
| | AS-i flat cable, yellow available in lengths of 100 m, TPE-PVC compound | Wet and caustic | **E74300** | **$574.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Flat cable stripping tool | **E70062** | **$35.00** |
| | Cable clip for AS-i cable – 100 pack | **E70067** | **$89.00** |
| | Heat-shrink cap for sealing the flat cable ends – 10 pack | **E70113** | **$16.00** |

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Flat cable seal – 10 pack | **E70413** | **$35.00** |
| | Cable gland 1/2" NPT | **E10101** | **$7.00** |
| | Cable grommet PG11 for AS-i flat cables – 10 pack | **AC3003** | **$20.00** |

# Adapters and accessories

- *Splitter boxes split either AS-i or 24 VDC flat cable*
- *Insulation displacement connector distributes AS-i voltage and the external 24 V supply to an M12 socket*

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| **Flat cable splitters** | | | |
| | Flat cable splitter, two channel, 8A current rating | **E70381** | **$22.00** |
| | Flat cable splitter, two channel, AS-i or auxiliary, 8 A current rating, 316 SS, EPDM O-ring | **E70377** | **$39.00** |
| | Flat cable splitter, four channels, AS-i or auxiliary, 8 A current rating | **E70600** | **$44.00** |
| **Flat cable to M12 taps** | | | |
| | Insulation displacement connector | **E70487** | **$28.00** |
| | Flat cable to 4-pin female M12 Micro DC connector, 1 m length | **E70481** | **$28.00** |
| | Flat cable to 4-pin female M12 Micro DC connector | **AC5005** | **$15.00** |
| | Flat cable, AS-i and auxiliary, to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring | **E70354** | **$41.00** |
| | Flat cable to 4-pin female M12 Micro DC connector, 316 SS, EPDM O-ring | **E70454** | **$30.00** |
| | Distributes AS-i and external voltage via M12 connector | **E70588** | **$49.00** |
| | Flat cable to M12 connector | **E70271** | **$16.00** |
| | Transitions flat cable to round cable, 2 m length | **E70498** | **$18.00** |

## Seamless Integration of Safety Components

ifm efector's Safety at Work system connects safety-related components directly to the AS-i network to provide seamless integration into standard PLCs and higher level industrial networks.

Mechanical safety components such as door switches, emergency stop buttons and safety input modules are connected with the AS-i two-wire cable that carries power and signal to each safety device. The system simplifies wiring by eliminating wire bundles that form when connecting numerous input/output devices.

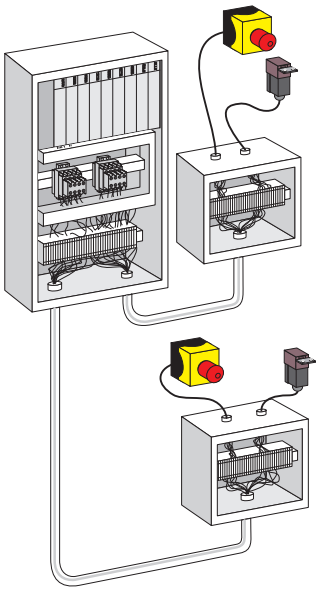
Plug-and-play wiring reduces installation time and eliminates junction boxes and additional input cards. The system provides fast and flexible expansion. Any modifications to the system, such as changing or adding e-stop buttons can be made quickly and easily. Safety zones can be configured and changed through a drag-and-drop configuration software.

The Safety at Work system provides status indication and diagnostic information for each safety device. The system offers increased diagnostic feedback for trouble-shooting and indicates where and when a fault occurs – without the need for additional wires for feedback.

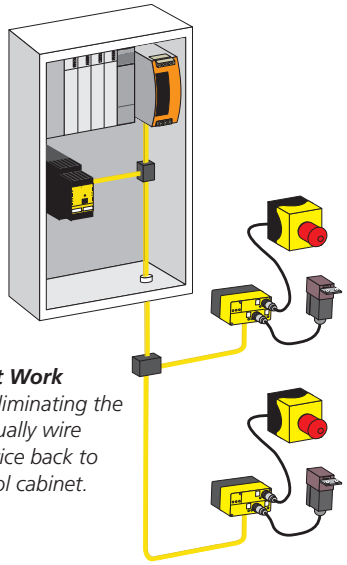
# Simplify Your Safety Wiring

For networking safety components, point-to-point wiring is still the most common wiring method on industrial machines. This type of wiring results in large wire bundles running through the system. Due to the sheer volume of wires, installation time is considerable and troubleshooting is complex.

ifm's Safety at Work system is a simple solution for integrating all of your safety components with one two-wire cable. Its plug-and-play wiring supports all topologies and can be connected to most standard PLCs and higher level networks.



*Conventional point-to-point wiring can be very time consuming and costly.*



***ifm's Safety at Work*** *saves time by eliminating the need to individually wire each safety device back to the main control cabinet.*

Visit www.ifm.com/us to view all Safety at Work networking products.


Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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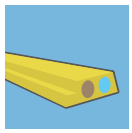


**Saves wiring time**
Safety at Work is plug-and-play. Connect an entire safety system with one cable that carries both data and power. This eliminates the need to individually wire each safety device back to the main control cabinet.

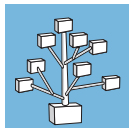
**Simplifies design and build time**
With less wires to handle, termination points are reduced. The system uses minimal cabinet space and machine drawings are less complex.

**Saves time in disassembly and rebuild**
Save installation and reduce rebuild-time by days. Equipment can be disassembled and rebuilt faster with Safety at Work's single-cable design.

**Provides diagnostic feedback**
The Safety at Work system provides increased diagnostic feedback for trouble-shooting. The system indicates where and when a fault occurs without any additional wiring.

**Simple zone control**
No more wiring changes! Safety zones can be configured easily and changed through a drag-and-drop configuration software.

**Universal connectivity**
The Safety at Work system can be used directly with most major PLCs including Allen Bradley and Siemens, as well as, DeviceNet, Profibus, and Ethernet bus systems. There are no requirements for special safety PLCs.



**Flexible topology**
The Safety at Work system can be configured in ring, star, and trunk and drop topologies. The system is also capable of handling multiple safety zones on one network.

Schmersal
Pilz
Sick
AB

**Implements standard safety devices**
The system is designed to use standard mechanical safety devices including door switches and e-stop buttons. There are no requirements to use system specific I/O devices.

**Approved technology**
Complies with the requirements:, Type 4 (IEC 61496-1), SIL 3 (IEC 61508), SILcl 3 (IEC 62061) and PL e (EN ISO 13849-1)

### *Internationally approved*

*An international consortium of automation suppliers designed Safety at Work to reduce the cost of connecting widely distributed safety I/O. The Safety at Work system is the first fully-approved industrial safety networking system. The system is rated by TUV for up to SIL 3 according to IEC 61508, IEC 62061, and PL e according to ISO 13849-1.*

*The Safety at Work system uses the internationally accepted AS-i protocol. With over 3 million nodes installed, AS-i has been a major success in automation since 1994.*

Process Sensors
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# Safety at Work system overview

Safety at Work utilizes the standard AS-i protocol. This provides the backbone for the system to transmit safety-related information. The basis is the transmission of dynamic code sequences (8x4-bit data sequence) which are stored in every safety module.

During installation and start-up, the safety monitor must learn these code sequences. While in operation the safety monitor constantly compares the target sequence with the current sequence of the safety module. If the safety module provides a wrong code sequence (e.g. 4x0 bit), the safety monitor switches to the safe state.

- ✓ *Saves wiring time*
- ✓ *Simplifies design and build time*
- ✓ *Provides diagnostic feedback without additional wires*
- ✓ *Saves time in disassembly and rebuild*
- ✓ *Simple expandability*
- ✓ *Approved technology to IEC61508 and EN ISO13849*
- ✓ *Simple zone control up to 8 safety zones*

## Controllers and Gateways

Various controller options are available to fit directly to a plc or connected to higher-level networks such as EtherNet IP, Profibus, etc. A stand-alone option is available that can act as a plc.

*See page 207.*

## Power Supplies

Safety-at-Work power supplies provide power for network modules and input devices. Also, 24 VDC power supplies are used to provide power to output devices over the Safety-at-Work network.

*See page 208.*

## Safety Relays

ifm safety relays, or monitors, evaluate the data exchange between the safety modules and the Safety-at-Work controls. If the data transmission is disrupted or a wire-break occurs, the safety relay will fail to safe.

*See page 223.*


| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
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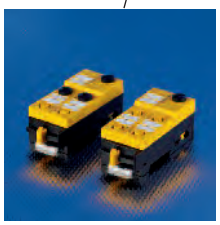
All of the components needed to create a complete Safety at Work system are illustrated in this overview.

Because of its flexibility, a Safety at Work system has unlimited design capabilities.

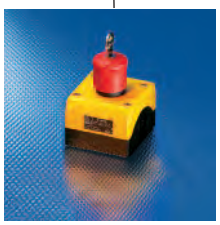
Choose from a variety of controllers, I/O modules, power supplies and accessories depending on your current controls platform and application environment.



### Safe input modules

I/O Modules are used to connect standard safety devices such as e-stops, door switches and light curtains to the Safety-at-Work System.

*See page 225.*



### E-stop

Fully functional ifm e-stop buttons are designed to directly interface with the Safety at Work system.

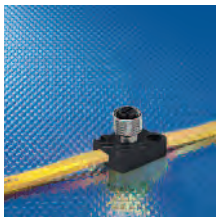
Available with LED indication or key release.

*See page 225.*

### Guard Locking Door Switches

AS-i door switches with guard locking have the function to keep moving-equipment safe as long as a dangerous state is present.

*See page 227.*



### Wiring Solutions

Various AS-i splitters and branching modules can be used to provide maximum flexibility when designing and commissioning a project.

*See page 216.*

### Accessories

A variety of accessories are available to help connect nodes and periphery devices to the Safety-at-Work system. In addition, products for extending the network, diagnosing faults and addressing modules are also available.

*See page 217.*

# Top five product features!

- *2 safe electronic outputs locally, 6 triggerable outputs in the field.*
- *4 safe inputs or 8 standard inputs/outputs locally.*
- *Configurable with an easy to use drag-and-drop software*
- *Saving of data on chip card for an easy exchange of units*
- *Certification to EN 62061/ SIL3, IEC 61508 / SIL3 and EN ISO13849-1/PLe.*

## Safety made simpler with ifm's basic safety monitor

***NEW!*** ifm's safety relay (monitor) evaluates the data exchange between safety modules and the AS-i controls. If the data transmission is disrupted or a wire break occurs, the safety monitor will fail to safe.

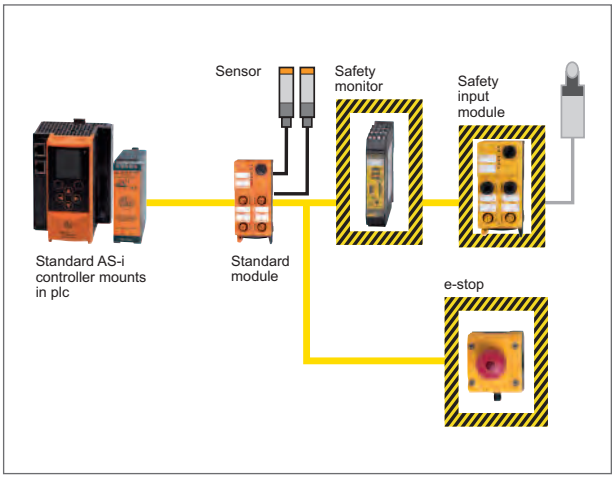
As a component of the AS-i Safety at Work system, the safety monitor monitors the code sequences that are to be transmitted. In the case of message deviations or timeouts, the AS-i safety monitor ensures the safe state of the system. The new AS-i safety monitor processes up to four safe inputs or eight standard inputs / outputs locally and up to 31 safety modules / intelligent e-stops. One AS-i safety monitor can replace many traditional safety relays.

The ASIMON configuration and diagnostic software provides clear and quick assignment of the safety-related components via a simple drag-and-drop interface.

Safety relay functions such as "e-stop", "stop categories 0 or 1", "two-hand operation", "enable switch" can be monitored via the software.

The safety monitor can be retrofitted on existing AS-i installations. Safe and non-safe I /O signals can be transmitted via the same system bus. All controllers, power supplies and bus components can still be used.

The Safety at Work system simplifies wiring by eliminating wire bundles that form when connecting numerous input / output devices. The system provides an ideal safety solution for industries such as conveying, special machines, material handling and the food industry.




*System overview with safety-related components*


Position Sensors | Motion Control | Vision Sensors | Safety Technology

| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products |
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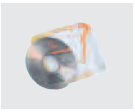
# Product + accessory selector

| Type | Dimensions | Description | Channels | Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | 99 x 22.5 x 114 | AS-i safety monitor | 2 | semi-conductor | **AC041S** | **$769.00** |

**Accessories**

| Type | Description | Part No. | List Price |
|---|---|---|---|
|  | Configuration software ASIMON V3 G2 for safety monitor | **E7050S** | **$162.00** |
| | USB interface cable for the connection of the safety monitor to PC | **E7051S** | **$43.00** |
| | Chip card to save the configuration data | **E7052S** | **$11.00** |
| | Safety relay expansion module, 2 independent channels, without delay, for AS-i safety monitor with semi-conductor outputs | **E7053S** | **$295.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Operating voltage: | 24 V DC |
| AS-i interface: | 1 |
| Stop category to EN 60204-1: | 0/1 |
| Semi-conductor outputs: | 2 |
| Current rating per output: | 0.7 A |
| Service button: | yes |
| AS-i profile: | S-7.5.5 |
| Ambient temperature: | 0…55 °C |
| Protection: | IP 20 |
| Connection: | Combicon screw terminals |

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Data sheets, application examples, software downloads, virtual product demos… just one click away.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

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Easy ordering via eShop

# Top five product features!

- *Easy connection of standard mechanical safety devices including door switches and E-stop buttons*
- *Non-safe relay outputs and LED output options available*
- *Rated up to category 4 according to EN954-1 and SiL 3 according to IEC61508*
- *2-wire flat cable carries power and signal to each safety device*
- *Up to 50% reduction of installation in the field*

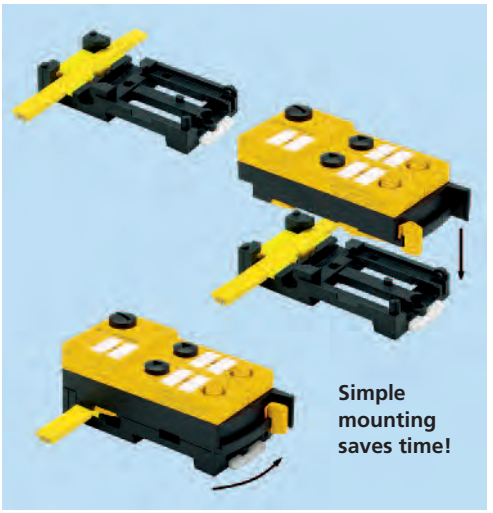
## A variety of safety I/O modules to fit your fail-safe requirements

***NEW!*** ifm offers a variety of input/output modules that receive safe and mechanical input signals. The AS-i safety controller communicates the input signals to intelligent safety devices, such as e-stops and door switches within the Safety at Work system.

Both field and cabinet modules are available. ifm safety field input modules do not require any tools. Connection is simple and is made via the AS-i system flat cable. Cabinet modules simply mount on din rail.

Safety pcb modules are available for pushbutton applications.

Modules are available with a standard output signal and can be used with your mechanical safety devices.




*ifm's quick slide safety modules (Part No. AC505S) offer simple mounting. The module can accept the AS-i flat cable in three different directions to provide flexible cable routing.*

Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | Dimensions (mm) | Inputs | Non-Safe Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| **Quick slide safety field input modules** | | | | | |
| | 103 x 45 x 45 | 2 safe mechanical inputs | 2 non-safe LED outputs | **AC505S** | **$225.00** |
| **Safety input modules** | | | | | |
| | 111 x 45 x 50 | 2 safe PNP inputs | – | **AC007S** | **$313.00** |
| **Cabinet mounted safety modules** | | | | | |
| | 108 x 25 x 105 | 2 safe mechanical inputs | 2 non-safe LED outputs<br>2 non-safe relay outputs | **AC009S** | **$286.00** |
| **Intelligent safety e-Stop modules** | | | | | |
| | 67 x 59 x 105 | 2 safe inputs | 1 non-safe LED output | **AC010S** | **$318.00** |
| | 67 x 59 x 105 | 2 safe inputs | – | **AC011S** | **$318.00** |
| **Safety PCB modules** | | | | | |
| | 44 x 31 x 9 | 2 safe mechanical inputs | 1 non-safe LED output | **E7015S** | **$160.00** |
| | 44 x 32 x 21 | 2 safe mechanical inputs | 1 non-safe LED output | **AC015S*** | **$155.00** |

*with contacter pins

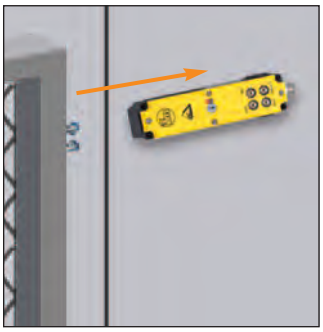
# Top five product features!

- Up to 31 safety door switches can be connected per network
- Solenoid lock is rated for 2500 N force
- Large LEDs for easy status and fault indication
- Rotatable actuating head for different mounting positions
- Suited for applications up to PLd according to EN ISO 13849-1 standard

## Safety at Work intelligent door switches with guard locking

**NEW!** ifm's intelligent safety door switches are safety switches with an integrated solenoid lock which allow the user to implement interlocking devices according to EN 1088.

An integrated locking mechanism keeps protective doors securely locked while equipment is operating within an enclosed guarded area.



*ifm safety door switches are typically mounted on the frame of the guard door. Generally the key is mounted on the moving door and the switch body is mounted to the framing so that when the door closes, the key is fully inserted into the switch.*

*The door switch is connected to an input module via the AS-i system cable. AS-i reduces wiring time and is the protocol for the Safety at Work system.*

*As AS-i safety input signals are received by the intelligent door switches, the solenoid monitoring contacts are detected. AS-i output signals trigger the guard locking solenoid and the green/red LEDs for feedback. Evaluation is made via an AS-i safety monitor.*


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Power to unlock, solenoid supply ext. 24 V DC | **AC901S** | **$359.00** |
| | Power to lock, solenoid supply ext. 24 V DC | **AC902S** | **$359.00** |
| | Power to unlock, solenoid supply by AS-i | **AC903S** | **$359.00** |
| | Power to lock, solenoid supply by AS-i | **AC904S** | **$359.00** |

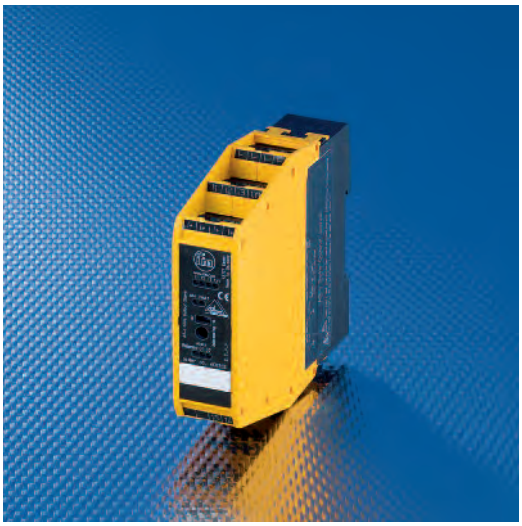
**Accessories**

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Safety slide bolt, metal | **E7901S** | **$226.00** |
| | Safety slide bolt, plastic | **E7902S** | **$144.00** |
| | Actuator, straight | **E7903S** | **$11.00** |
| | Actuator, angled | **E7904S** | **$11.00** |

| Type | Description | Part No. | List Price |
|---|---|---|---|
| | Hinged actuator, left/right | **E7905S** | **$13.00** |
| | Hinged actuator, top/bottom | **E7906S** | **$16.00** |
| | Distribution of the AS-i voltage / external 24V supply to M12 connector, 1M cable | **E70481** | **$28.00** |
| | Distribution of the AS-i voltage to M12 socket | **AC5005** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

| Technical Specs | AC901S / AC902S | AC903S / AC904S |
|---|---|---|
| Operating voltage: | 22.5…31.6 V DC | 22.5…31.6 V DC |
| Current consumption: | ≤ 45 | ≤ 400 |
| Auxiliary voltage guard locking solenoid: | 24 V DC | AS-i |
| Locking force: | ≤ 2500 N | |
| Life: | $10^6$ switching operations | |
| Safety related inputs: | 2 | |
| AS-i profile: | S-7.B.E. | |
| Ambient temperature: | -20…55 °C | |
| Protection: | IP 67 | |
| Connection: | Via connector M12 x 1 | |



# Top five product features!

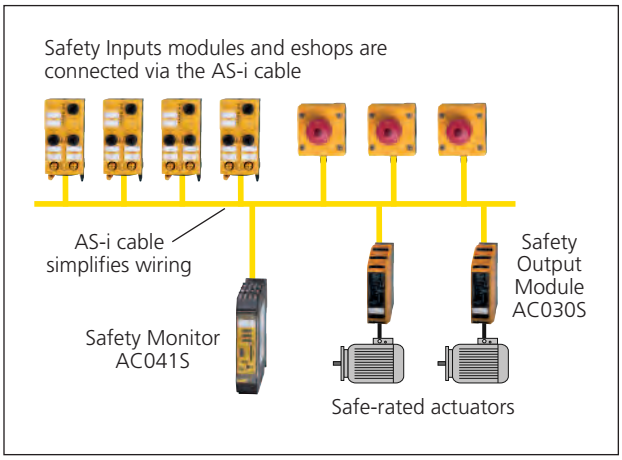
- *1 dependent safety relay output, double channel forced contacts*
- *4 standard inputs (e.g. for start, EDM, etc.)*
- *Control category 4 according to EN 954-1, IEC 61508 / SIL 3 and EN 13849 / PL e*
- *1 Local LED output (alarm) and 1 process output for optional start validation requests*
- *Create up to 6 independent safety zones*

***NEW!*** ifm's safe output module for the control cabinet AC030S incorporates data technology that can provide a safe output signal to motor starters or valve assemblies.

The output module is controlled by safety relay monitor, AC041S, which can be configured by using its diagnostic software ASIMON V3.0.

In conjunction with safety relay monitor, AC041S, up to 6 additional independent safety zones can be established. Each safety output module AC030S provides a decentralized safety output in the field for control of the safe-rated actuators.

The Safety at Work system simplifies wiring by eliminating wire bundles that form when connecting numerous input / output devices. The system provides an ideal safety solution for industries such as automotive assembly, conveying, special machines, material handling and the food industry.




*The new Safety at Work output module enables decentralized control of actuators. Each module is mounted in the control cabinet and is connected to an actuator via the AS-i cable. In the example above, the output module is controlled by the AC041S Safety Monitor, which can ensure a safe state of the actuators.*

# Product + accessory selector

| Type | Dimensions | Description | Non-Safe Digital Inputs | Safety Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Safety at Work output module** | | | | | | |
| | 108 x 25 x 105 mm | Safe SmartLine output module | 4 | 1 safety relay output | **AC030S** | **$509.00** |

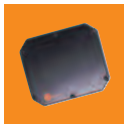
Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Operating voltage: | 26.5…31.6 V DC |
| Total current consumption: | ≤ 200 mA |
| Relay output positively driven: | 1 pcs. |
| Max. current load of the output 2 safety-related NO contacts: | 3 A |
| Non-safe inputs: | 4 |
| Slide switch R/P: | yes |
| AS-i profile: | S-7.A.E. |
| Operating temperature: | -25…55 °C |
| Protection: | IP 20 |
| Connection via Combicon screw terminals: | yes |

# Table of Contents – Identification Systems

*RFID high frequency – 13.56 MHz – Up to 65 mm range* . . . . . *232 - 233*



*RFID high frequency – 900 MHz – Up to 7 m range* . . . . . *234 - 235*

# Top five product features!

- *4-port RFID controller configurable for read/write antennas or digital inputs and outputs*
- *Configuration through built in web page which includes read/write capability*
- *Standard non-shielded M12 cables between antenna and controller*
- *13.56 MHz system uses standard ISO 15693 tags for global compatibility*
- *Integrated Ethernet switch can be used to daisy-chain devices*

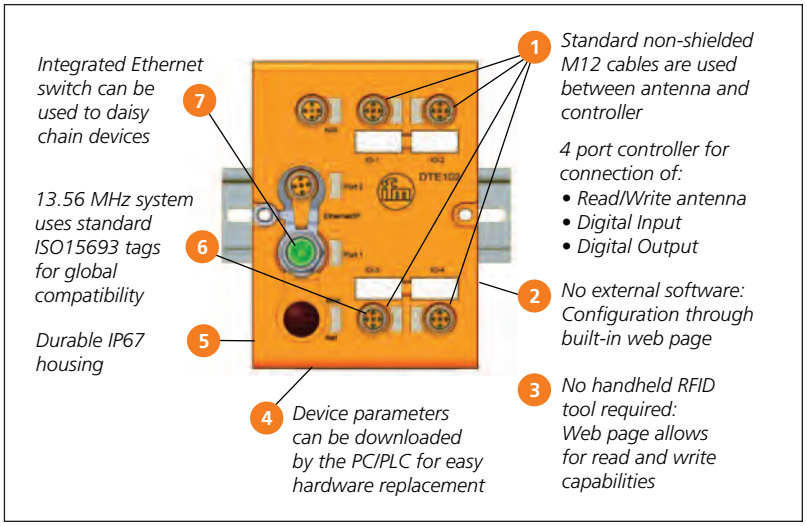
## RFID high frequency system for tracking high speed processes

***NEW!*** ifm's RFID DTE identification system is used to track, control and improve the quality of products throughout the automation process. ifm's DTE, RFID solution offers an easier and less expensive way to implement RFID. Widely used in conveying, mold / die management and pallet tracking, the DTE system is capable of reading and writing data at high speeds and can connect to all common plc's and industrial bus systems.

The robust DTE controller contains a built-in web-based tool for device setup, diagnosis and monitoring. Setting up the device can be done conveniently from the user's desk, without connection to a field bus system, for example, and thus allows the system to be tested prior to installation. No external software is necessary for configuring.

ifm's RFID antennas are tubular and rectangular shaped with M12 connection and can be used in applications where space is restricted. The read / write antennas are simply connected to the DTE controller with M12 patchcords. Because the devices use industry standard M12 connectors, no complicated wiring is necessary.

ID tags (transponders) are easy to mount to pallets or work-piece carriers. Information is quickly exchanged from the ID tag and the read / write antenna and transferred to the DTE controller providing an accurate real-time location, or any other parameters that have been set, of the pallet.

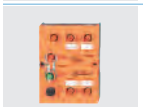



Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

## 1 Select controller

| | Type | Description | Interface | Design | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | | RFID controller | Profibus DP | for up to 4 read/write heads type ANT4xx / ANT5xx | **DTE100** | **$490.00** |
| | | RFID controller | PROFINET | for up to 4 read/write heads type ANT4xx / ANT5xx | **DTE101** | **$560.00** |
|  | | RFID controller | EtherNet/IP | for up to 4 read/write heads type ANT4xx / ANT5xx | **DTE102** | **$560.00** |
| | | RFID controller | EtherNet TCP/IP | for up to 4 read/write heads type ANT4xx / ANT5xx | **DTE104** | **$560.00** |

## 2 Select antenna(s)

| Type | Sensing Range | Dimensions (mm) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | < 12 mm* | M12 / L = 70 flush mountable | **ANT410** | **$210.00** |
| | < 21 mm* | M12 / L = 70 nonflush mountable | **ANT411** | **$210.00** |
| | < 30 mm* | M30 / L = 50 flush mountable | **ANT430** | **$270.00** |
| | < 50 mm* | M30 / L = 50 nonflush mountable | **ANT431** | **$270.00** |
| | < 65 mm* | 40 x 40 x 66 nonflush mountable | **ANT513** | **$210.00** |

**As tested with E80371*

## 3 Select ID Tags

| Type | Description | Temperature | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 16 Kbit Ø 30 x 2.8 mm | -25…85 °C | **E80370** | **$21.00** |
| | 896 bit Ø 30 x 2.5 mm | -25…85 °C | **E80371** | **$9.50** |
| | 1024 bit Ø 9.5 x 1 mm | -40…85 °C | **UR0002** | **$8.00** |

## 4 Select power cord

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | M12 Micro DC male cordset | 2 m | **EVC076** | **$17.00** |
| | | 5 m | **EVC077** | **$19.00** |

## 5 Select patchcord for antenna connection

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | M12 straight male to M12 straight female | 2 M | **EVC013** | **$20.00** |
| | | 5 M | **EVC014** | **$21.00** |

## 6 Select communication cable

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | M12 Ethernet cable D-coded / RJ45, cross-link | 2 M | **E11898** | **$45.00** |
| | M12 Ethernet cable | 2 M | **E21138** | **$84.00** |
| | | 5 M | **E21139** | **$92.00** |
| | | 10 M | **E21137** | **$110.00** |

# Top five product features!

- Ultra High Frequency (UHF) read/write unit with 4 external antenna connections
- Ethernet TCP and Ethernet IP interface for configuration and data transmission
- Supports multiple tags reading in the same field
- Up to 7 m range can be achieved using long range antenna ANT930
- Compliant with standard ISO 18000-6C and EPC global Class 1 Gen 2 tags

## Ultra high frequency system for tracking multiple items at long distances

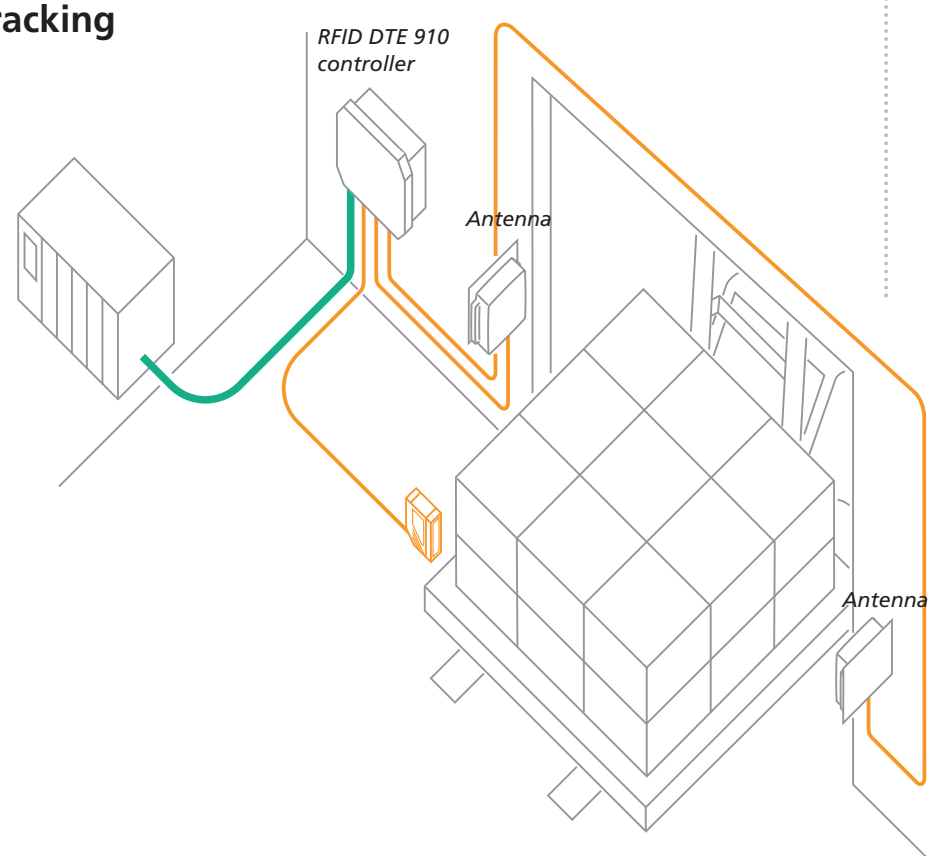
***NEW!*** ifm's RFID system with DTE 910 controller uses an ultra high frequency platform and can connect to 4 antennas. The antennas are able to read/write multiple tags at long distances up to 7 meters.

For example, 18 cartons are piled on a pallet, each carton with an ID tag (transponder). As the pallet is transported through the opening, the DTE 910 read/write module, which is mounted on the wall opening, is able to read bulk data from the multiple ID tags simultaneously and transmit the data to the plc.

The DTE 910 ultra high frequency reader includes an integrated Ethernet/IP interface.

Low, mid range and wide range antennas are available for most applications. Selection is dependent on the angle and distance that the tag data must be read by the antenna.

The ultra high frequency RFID system is used for conveying of pallets, packaging and goods.




Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | Design | Interface | Dimensions (mm) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| **1 Select controller** | | | | | |
| | Up to 4 read/write head types ANT9xx | Ethernet TCP/IP | 270 x 233 x 68 | **DTE900** | **$2,500.00** |
| | Up to 4 read/write head types ANT9xx | EtherNet/IP | 270 x 233 x 68 | **DTE910** | **$2,700.00** |

## 2 Select antenna(s)

| Type | Sensing Range | Dimensions (mm) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | Up to 10 cm* | 90 x 80 x 28 | **ANT910** | **$430.00** |
| | Up to 2 m* | 156 x 148 x 37 | **ANT920** | **$450.00** |
| | Up to 7 m* | 271 x 236 x 42 | **ANT930** | **$500.00** |

**Dependent on tag types and mounting conditions*

## 3 Select ID Tags

| Type | Description | Temperature | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 240 bit EPC; 512 bit user Ø50 x 3.3 mm | -40…90 °C | **ZB0490** | **$16.00** |

## Accessory

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Clamp for RFID UHF reader DTE900 and antenna ANT930 | **E80340** | **$130.00** |

## 4 Select cable connector for antenna

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | Coaxial cable RG58 | 3 M | **E80330** | **$35.00** |
| | | 6 M | **E80331** | **$75.00** |
| | | 10 M | **E80332** | **$90.00** |
| | | 15 M | **E80333** | **$120.00** |

## 5 Select 24 V Power cable

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | M12 Micro DC (4-pin) PUR | 5 M | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) PUR | 10 M | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) TPU | 20 M | **EVC083** | **$31.00** |

## 6 Select communication cable

| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | M12 Ethernet cable D-coded / RJ45, cross-link | 2 M | **E11898** | **$45.00** |
| | | 5 M | **E18422** | **$54.00** |
| | | 10 M | **E18423** | **$69.00** |
| | | 20 M | **E12205** | **$149.00** |

## Optional field connector for I/O connection

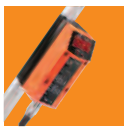
| Type | Design | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | 8-pin Micro DC field wirable connector – screw termination | 6…8 mm range | **E18343** | **$38.00** |

# Table of Contents – Machine condition

## Machine condition

*Vibration sensors – simple machine condition monitoring – switching and analog outputs* . . . . . 238- 239

*Simple machine condition monitoring system – continuously monitors condition of equipment and evaluates for any changes in operating parameters* . . . . . 240 - 241



*Thermal flow meters – compressed air and specialty gases – switching, analog and pulse outputs* . . . . . 242 - 243

# Top five product features!

- *Easy-to-use sensors make vibration monitoring simple for prevention of machine downtime*
- *Monitoring in accordance with recognized industrial standard for machine protection (ISO 10816)*
- *VKV sensors combine both switching function and transmitter in one small package*
- *VTV transmitter is IP69K and made of 316L stainless steel for use in harsh environments*
- *VNB transmitter includes display and provides trend history*

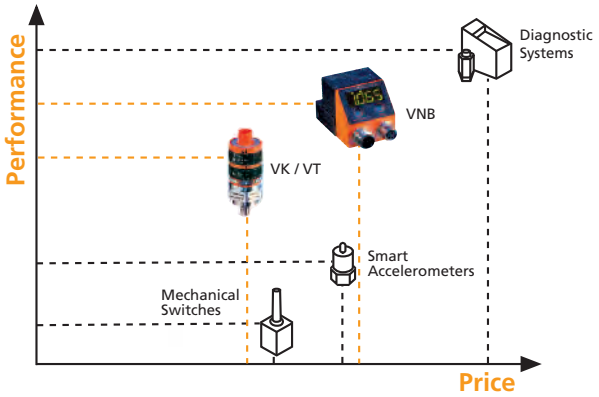
## ifm's compact vibration sensors detect changing conditions of machinery for early warning of machine damage

In most industrial plants, every piece of equipment has its own vibration level that can change when it experiences unusual operating conditions. These changes can indicate potential machine damage or failure.

ifm's vibration sensors are designed to permanently mount on a machine to continuously monitor the machine's vibration level. By detecting vibration level changes when they first occur, these sensors can prevent equipment from catastrophically failing, reduce secondary damage and eliminate expensive downtime.

The VK, VT and VNB sensors monitor vibration levels on:

- Motors
- Pumps
- Compressors
- Fans
- Centrifuges
- Vibratory feeders




*ifm's vibration sensors offer the advantages of high performance vibration monitoring devices for a fraction of the price.*

***VK vibration monitor***

*Transmitter with switching output*

*Setpoint via rotatable dials*

*Operating status LEDs*

***VT vibration monitor***

*Transmitter with time delay*

*Robust 316 stainless steel housing*

*Rated IP69K for harsh environments*

***NEW!***

***VNB vibration monitor with digital display***

*Display shows real-time vibration level and alarm status*

*Memory stores time-stamped trend history*

*Easy setup via two pushbuttons; no need for software or a PC*


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
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# Product + accessory selector

| | Output 1 | Output 2 | Measuring Range | Frequency Range | Measuring Principle | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| | PNP, N.C. | 4...20 mA fixed | 0…25 mm/s | 10…1000 Hz | Vibration velocity RMS | **VKV021** | **$230.00** |
| | PNP, N.C. | 4...20 mA fixed | 0…50 mm/s | 10…1000 Hz | Vibration velocity RMS | **VKV022** | **$230.00** |
| | n/a | 4...20 mA fixed | 0…25 mm/s | 10…1000 Hz | Vibration velocity RMS | **VTV122** | **$251.00** |
| | PNP, N.O. / N.C. or 4…20 mA scaleable | PNP, N.O. / N.C. | 0…500 mm/s | 2…1000 Hz | Vibration velocity peak or RMS (set via pushbuttons) | **VNB001** | **$465.00** |

## Optional Accessories for VK and VT Sensors

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
|  | VK protective cover, transparent plastic | **E30094** | **$9.00** |
| | Magnetic mounting base for temporary mounting, flat surface | **UW0004** | **$56.00** |
| | Magnetic mounting base for temporary mounting, curved surface | **F90043** | **$112.00** |
| | Glue-on base for permanent mounting | **F90042** | **$20.00** |
| | Adhesive for F90042 | **F90037** | **$45.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |
| | USB/M8 cable and history software for VNB | **E30136** | **$39.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | VKVxxx | VTV122 | VNB001 |
|---|---|---|---|
| Mounting threads: | M8 x 1.25 | M8 x 1.25 / UNF 1/4-28 | M8 x 1 |
| Supply voltage: | 18…32 VDC | 9.6…32 VDC | 9.6…30 VDC |
| Maximum load current: | 500 mA | – | 100 mA |
| Current consumption: | <50 mA | – | < 200 mA |
| Ambient temperature: | -13…176 °F (-25...80 °C) | -22…221 °F (-30…105 °C) | -22…140 °F (-30…60 °C) |
| Accuracy: | <± 4% of full range | ± 3 % of full range | 3% of measured value |
| Repeatability: | < 1 % of full range | < 0.5 % of full range | < 0.1 mm / sec |
| Shock resistance: | 400 g | 400 g | 100 g |
| Housing material: | Pocan; Makrolon; Viton; 316L stainless steel | 316L stainless steel | Die-cast zinc, nickel plated |
| Protection rating: | IP67 | IP69K | IP67 |

**Simple and comprehensive website**

Data sheets, application examples, software downloads, virtual product demos… just one click away.

**Place orders, tech support**
800-441-8246

**Visit our product catalog**
www.ifm.com/us

**Shop for products online**
Easy ordering via eShop

# Top five product features!

- Cost-effective real-time vibration monitoring system
- Direct Ethernet connectivity for remote monitoring of machine condition
- Digital and analog alarm outputs
- Time stamped internal memory for trend history
- Easy to use configuration and analysis software

**Real-time vibration monitoring**

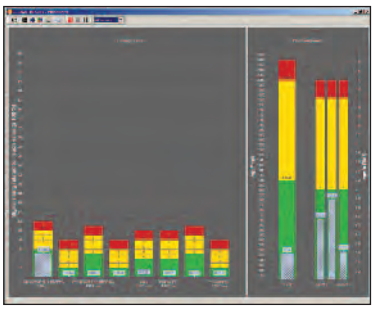
By continuously monitoring a machine's condition, unforeseen problems can be identified and addressed. Vibration analysis protects machine components, tools and workpieces during machining against costly consequential damage and avoids scrap.

ifm's multiplex vibration monitor provides specific vibration analysis on components inside a machine such as rolling element bearings, rotational unbalances, and gear drives.

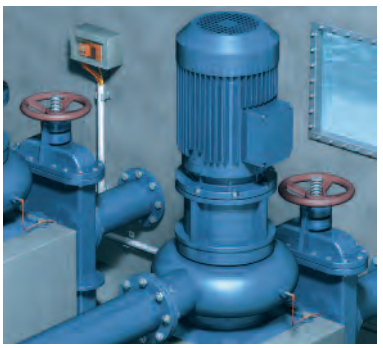
The system consists of a cabinet-mount diagnostic module, model VSE, and multiple compact accelerometers that are mounted permanently on the equipment.

The condition of the equipment is continually monitored and evaluated for any changes in the operating parameters. Time and frequency domain data is locally processed for triggering of the integrated programmable analog and digital outputs, or for transmission to SCADA systems via the integrated Ethernet communication port.

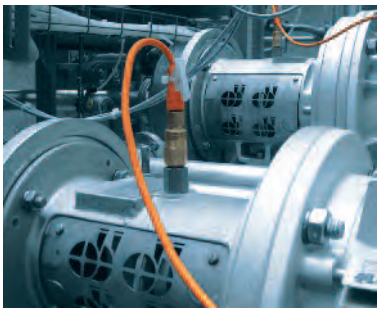
Programming of the monitor is straightforward with the user-friendly configuration software.



*Analysis tools included in the programming software give you the ability to remotely evaluate machine conditions. For example: the green / yellow / red damage level screen allows for a quick check on monitored components condition.*



*Pumps, blowers, ventilators, and cooling towers are monitored for unbalance, bearing damage, and general vibration levels using the VSE Multiplex system.*



*Accelerometers type VSA are connected to VSE units to monitor critical components of the process (pumps, motors, agitators).*


Search Bar

| Company | Position Sensors: Inductive | Position Sensors: Capacitive | Position Sensors: Cylinder position | Position Sensors: Photoelectrics and lasers | Position Sensors: Distance, color and contrast | Position Sensors: Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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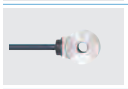
# Product + accessory selector

## efector Octavis Diagnostic Monitors

| Type | Accelerometer Channels | Frequency Range [hz] | Spectral Resolution [hz] | Diagnostic Method | Comm. Port | Switching Inputs/Outputs | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| | 4 channels configurable IEPE/MEMS | 0…10,000 Hz | Variable | FFT, envelope curve FFT, trend analysis | Ethernet | 2 inputs<br>2 outputs | **VSE002** | **$658.00** |
| | 4 channels configurable IEPE/MEMS | 0…10,000 Hz | Variable | FFT, envelope curve FFT, trend analysis | Ethernet | 2 inputs<br>2 outputs<br>8 configurable I/O | **VSE100** | **$848.00** |

## Accelerometers

| Type | Frequency Range [Hz] | Mounting Thread | Operating Temperature | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|
| | 0…6,000 | M8 | -22…257 °F (-30…125 °C) | **VSA001** | **$147.00** |
| | 0…10,000 | M16 | -22…185 °F (-30…85 °C) | **VSA002** | **$219.00** |
|  | 0…10,000 | M5 | -4…176 °F (-20…80 °C) | **VSA004** | **$219.00** |
| | 0…10,000 | M5 | -4…176 °F (-20…80 °C) | **VSA005** | **$233.00** |

## Accessories

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | Ethernet crossover cable for VSE / VSA | **EC2080** | **$19.00** |
| | Configuration analysis software | **VES003** | **Freeware*** |
| | efector octavis OPC server software for 25...1000 connections | **VOS001** | **$478.00** |

* Visit www.ifm.com/us for downloadable software

## Technical Specs Diagnostic Monitors

| | |
|---|---|
| Supply voltage: | 24 V DC |
| Ambient temperature: | 32…158 °F (0…70 °C) |
| Data interface: | Ethernet TCP/IP,<br>(10 / 100 MBits) |
| History function: | integrated |
| Counter function: | integrated |
| Protection rating: | IP20 |
| Inputs: | 4 vibration inputs<br>IEPE or VSA type<br>2 analog inputs for speed |
| Outputs: | 2x PNP switching for alarms or<br>1x PNP switching and scaleable analog |
| Additional I/O VSE100: | 8 configurable digital I/O |

## Technical Specs Accelerometers

| | |
|---|---|
| Housing material: | 316L stainless steel |
| Measuring range: | ±25 g |
| Resolution: | 1.0 mg |
| Protection rating: | IP67 |
| Protection rating: | IP67; VSA001: IP69K |

# Top five product features!

- *In-line flow meter monitors compressed air systems and specialty gases (Ar, $CO_2$, $N_2$)*
- *Monitors air and gas consumption to identify leakage areas and improve energy efficiencies*
- *Optimizes air and gas usage and improves system performance*
- *Totalizer function monitors overall compressed air and gas usage in a plant*
- *Units mounted on integrated pipes ensure easy installation*

## efector metris compressed air and specialty gas meter

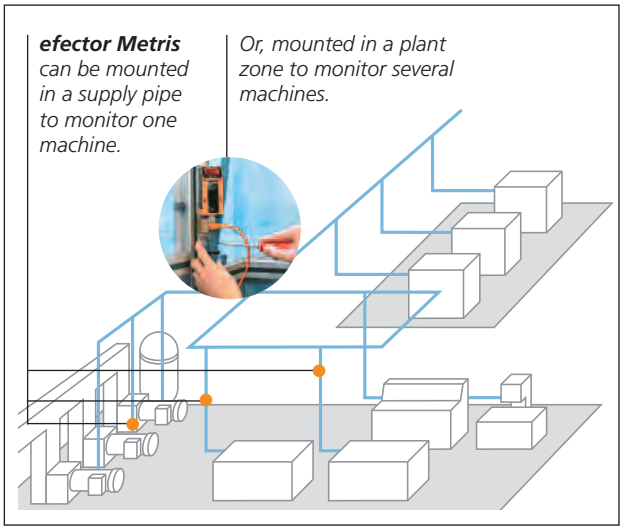
efector Metris monitors compressed air and specialty gases such as argon (Ar), carbon dioxide ($CO_2$), and nitrogen ($N_2$) to detect leakage areas and improve energy efficiencies. Compressed gases are considered one of the most expensive sources of energy consumption in a plant. By identifying leakage areas, efector Metris can optimize compressed gas usage, improve system performance, and reduce energy costs.

The compact sensor is fitted with an integrated pipe to ensure easy mounting and proper installation depth. The sensor's 4-digit numeric display provides air and gas consumption readings and features microprocessor-based pushbutton setup. Three display options are available: standard cubic feet per minute, standard cubic feet per hour, and total consumed standard cubic feet. The 24 VDC unit provides switching, analog and pulse output options.

### Operating principle

efector Metris incorporates two ceramic sensing elements that each contain a thermistor.

As one sensor element is heated, the second element is used as a reference. Power is then altered to the heater to ensure a constant temperature difference (CTD) between the two elements.



*With its integrated pipe length, efector Metris ensures easy installation and proper mounting configuration.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

| Output | Accuracy | Process Connection | Operating Range [scfm] | Operating Range [scfh] | Operating Range [scf] | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **efector Metris for compressed air** | | | | | | | |
| 2 x PNP or PNP and 4-20mA or PNP and pulse output | ± (3% measured value + 0.3% of full range) | 1/2" NPT | 0...44 | 0...2650 | 0…4,294,967 | **SD6001** | **$719.00** |
| | | 1" NPT | 0...132 | 0...7945 | 0…4,294,967 | **SD8001** | **$754.00** |
| | | 2" NPT | 0...412 | 0...24,720 | 0…4,294,967 | **SD2001** | **$999.00** |

| Output | Accuracy | Process Connection | Operating Range [Ar] | Operating Range [$CO_2$] | Operating Range [$N_2$] | Display Units Available | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **efector Metris for specialty gases (Ar, $CO_2$, $N_2$)** | | | | | | | | |
| 2 x PNP or PNP and 4-20mA or PNP and pulse output | ± (6% measured value + 0.6% of full range) | 1/2" NPT | 0…69.5 scfm | 0…42.2 scfm | 0…43 scfm | scfm, scfh, scf | **SD6101** | **$785.00** |

## Cordsets

| Type | Description | Part No. | List Price (1-pc.) |
|---|---|---|---|
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC001** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC002** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC003** | **$18.00** |
| | M12 Micro DC (4-pin) 2 m, PUR | **EVC004** | **$9.95** |
| | M12 Micro DC (4-pin) 5 m, PUR | **EVC005** | **$13.50** |
| | M12 Micro DC (4-pin) 10 m, PUR | **EVC006** | **$18.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Supply voltage: | 19...30 VDC |
| Maximum load current: | 2 x 250 mA |
| Maximum relative air humidity: | 90% |
| Pressure rating: | 230 psi (16 bar) |
| Medium temperature range: | 32…140 °F (0…60 °C) |
| Wetted parts: | 304 stainless steel, ceramics, passivated glass, PEEK, polyester, Viton, anodized aluminum |
| Protection: | IP65 |

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# Table of Contents – Power Supplies

## Power supplies

*Compact 24 VDC power supplies* . . . . . *246 - 247*

# Top five product features!

- *Wide input range, single phase 100…240 V AC ±10 %*
- *Robust metal housing or compact plastic housings occupy minimal control cabinet space*
- *Extra power due to "power boost" design*
- *Energy-saving efficiencies up to 94% generate less heat and eliminate the need for external cooling*
- *Short-circuit and overload protection*

## Low power loss ensures uptime

***NEW!*** ifm's power supplies are designed to provide the voltage supply for sensors, actuators, controllers, and other electronic loads. These new power supplies are compact and lightweight, generating less heat and occupying minimal space in control cabinets. Models operate from a wide input voltage range with short circuit and overload protection, including "no-hiccup" short circuit operation.

ifm's switched-mode power supplies have a typical regulated output voltage of 24 VDC. Between no-load and full-load, they ensure stable supply voltage and operational reliability in case of supply voltage fluctuations. Line voltage fluctuations up to +/- 15% as well as line interference can be compensated for and not passed on to the load. They have a high peak current capacity for inductive load switching and do not shut down or fold-back due to the high inrush currents required.

Each power supply undergoes a comprehensive test procedure including high frequency and high current load switching. To further insure reliability, all power supplies are fully burned in at elevated temperatures.

*With its "power boost" design, ifm's power supplies provide up to 50% extra power above the rated load for up to 5 seconds. This additional power allows for difficult loads to start, such as motors.*


Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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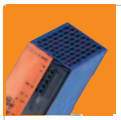
NEW



# Product + accessory selector

| Dimensions (mm) | Current (A) | Output Voltage (V) | Nominal Input Voltage (V) | Efficiency (%) | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| **Power supply • 1-phase (24 V DC)** | | | | | | |
| 45 x 90 x 100 | 1.25 | 24...28 DC | 100...230 AC | 84.0 | **DN1030** | **$130.00** |
| 45 x 90 x 100 | 2.5 | 24...28 DC | 100...230 AC | 88.0 | **DN1031** | **$140.00** |
| 40 x 130 x 127 | 3.3 | 24…28 DC | 115...230 AC | 89.8 | **DN4011** | **$150.00** |
| 40 x 130 x 127 | 5.0 | 24…28 DC | 115...230 AC | 90.2 | **DN4012** | **$199.00** |
| 62 x 130 x 127 | 10.0 | 24...28 DC | 115...230 AC | 91.6 | **DN4013** | **$259.00** |
| 65 x 130 x 137 | 20.0 | 24...28 DC | 115…230 AC | 94 | **DN4014** | **$300.00** |
| **Power supply • 3-phase (24 V DC)** | | | | | | |
| 62 x 130 x 127 | 10.0 | 24…28 DC | 3 x 380…480 AC | 92.8 | **DN4033** | **$299.00** |
| 65 x 130 x 137 | 20.0 | 24...28 DC | 3 x 380…480 AC | 94 | **DN4034** | **$399.00** |

## Technology Comparison

| Features | Low cost Brand A | Good performance Brand B | ifm's DN4012 | Why is this important? |
|---|---|---|---|---|
| **Power Supply Efficiency** | 86% | 90% | 90% | **Efficiency reduces cabinet space**: A more efficient power supply generates less heat in a cabinet. This allows a smaller enclosure to be designed, which reduces machine size and saves in build costs. ifm's new power supplies are designed to generate less heat and can be mounted in smaller cabinets. |
| **Inrush Current** | 24 A | 15 A | 3 A | **Limiting inrush current reduces cost**: ifm's microprocessor-controlled inrush current limiter ensures minimum inrush current. This allows the option to use smaller circuit breakers and thinner gauge wires, which reduces the overall cost of the system. |
| **Housing Size** | 63.5 x 142 x 116 mm | 40 x 130 x 125 mm | 40 x 124 x 127 mm | **Compact housing size reduces cabinet space**: Cabinet space is a valuable commodity. ifm's new slim-line power supplies occupy less space. Therefore, smaller enclosures may be designed resulting in considerable cost savings. |
| **Mean Time Before Failure** | 450,000 hrs. | 635,000 hrs. | 869,000 hrs. | **High MTBF increases reliability**: Mean Time Between Failure (MTBF) values indicate the quality and reliability of the unit. ifm power supply's high quality components ensure long life in application. |
| **AC Buffer Times** | None | None | 80 ms | **AC buffering increases reliability**: AC lines can be affected by EMC and other factors leading to an unstable AC input voltage and can cause a disruption on the 24 VDC side. Longer buffer times allow for brief disturbances on the AC input line without affecting the 24 VDC output power. ifm's power supplies are designed with AC buffering capability. |
| **Power Reserve** | None | 20% | 20% | **Additional power reserve increases reliability**: The ability to provide a continuous current beyond standard specifications allows difficult loads, such as motors, to start. ifm's power supplies provide 20% extra current to ensure uninterrupted operation. |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### M12 Micro wiring block systems

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*M12 Micro patchcords* . . . . . *258 - 259*

### 1/2" Micro cordsets

*3-pin 1/2" – 20 UNF Micro AC cordsets,*
*Field wirable connectors* . . . . . *260 - 261*

# Top five product features!

- *ifm's ecolink cordsets feature "Lock-in-Place" coupling nut that resists high levels of shock and vibration*
- *Cordsets offer high-flex PUR jacketed cable rated for over 5 million flex cycles*
- *A special insert design includes a mechanical end stop that prevents damage to viton o-ring from over-tightening*
- *Right angle black housings feature highly-visible status indication LEDs that can be seen from farther distances*

## ecolink M8 DC Pico cordsets

ifm's rugged ecolink cordsets are designed and tested to withstand the harsh conditions in industrial automation applications. The product line meets cULus approval, RoHS standards and is silicon and halogen free. The high-flex PUR jacketed cable is rated to over 5 million flex cycles. ecolink's connection technology meets the M8 standard EN 61076.

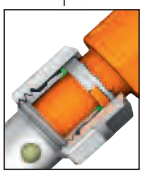
**Problem**
Traditional cordsets with transparent housings are hard to see.

**Solution**
ifm cordsets have high visibility LEDs with good contrast.

*"Lock-in-Place" coupling nut secures the cordset to a quick disconnect sensor and resists high levels of shock and vibration.*

*316 stainless steel sleeve with sawtooth contour maintains optimum sealing and prevents the cordset from detaching.*

*Special insert design acts as a mechanical end-stop preventing possible damage to Viton o-ring from over tightening.*



*High flex, halogen-free PUR-jacketed cable rated for over 5 million cycles.*


| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 | |

Search Bar

# Product + accessory selector

| Type | Face View | | Maximum Supply Voltage | Protection Rating / Temperature Rating Approval | Cable Length | Part No. | List price USD |
|---|---|---|---|---|---|---|---|
| **Pico M8 DC cordsets • 3-pin • PUR jacket** | | | | | | | |
| | Female<br>4<br>3 1 | Pin 1 brown<br>Pin 3 blue<br>Pin 4 black | 50 VAC / 60 VDC | IP67 / IP68 / IP69K<br>-25…90 °C | 2 m | **EVC141** | **$14.00** |
| | | | | | 5 m | **EVC142** | **$17.00** |
| | | | | | 10 m | **EVC143** | **$23.00** |
| | Female<br>4<br>3 1 | Pin 1 brown<br>Pin 3 blue<br>Pin 4 black | 50 VAC / 60 VDC | IP67 / IP68 / IP69K<br>-25…90 °C | 2 m | **EVC144** | **$14.00** |
| | | | | | 5 m | **EVC145** | **$17.00** |
| | | | | | 10 m | **EVC146** | **$23.00** |
| LED | Female<br>4<br>3 1 | Pin 1 brown<br>Pin 3 blue<br>Pin 4 black | 10…36 VDC | IP67 / IP68 / IP69K<br>-25…90 °C | 2 m, 2 LED | **EVC147** | **$18.00** |
| | | | | | 5 m, 2 LED | **EVC148** | **$21.00** |
| | | | | | 10 m, 2 LED | **EVC149** | **$26.00** |
| **Pico M8 DC cordsets • 4-pin • PUR jacket** | | | | | | | |
| | Female<br>4 2<br>3 1 | Pin 1 brown<br>Pin 2 white<br>Pin 3 blue<br>Pin 4 black | 50 VAC / 60 VDC | IP67 / IP68 / IP69K<br>-25…90 °C | 2 m | **EVC150** | **$15.00** |
| | | | | | 5 m | **EVC151** | **$18.00** |
| | | | | | 10 m | **EVC152** | **$24.00** |
| | Female<br>4 2<br>3 1 | Pin 1 brown<br>Pin 2 white<br>Pin 3 blue<br>Pin 4 black | 50 VAC / 60 VDC | IP67 / IP68 / IP69K<br>-25…90 °C | 2 m | **EVC153** | **$15.00** |
| | | | | | 5 m | **EVC154** | **$18.00** |
| | | | | | 10 m | **EVC155** | **$24.00** |
| **Field wirable connectors • 3-pin • IDC termination** | | | | | | | |
| | Male<br>4<br>1 3 | | – | IP68<br>-25…90 °C | 3.0…5.0 mm range | **E11550** | **$15.00** |
| | Female<br>4<br>3 1 | | – | IP68<br>-25…90 °C | 3.0…5.0 mm range | **E11552** | **$15.00** |
| **Field wirable connectors • 4-pin • IDC termination** | | | | | | | |
| | Male<br>2 4<br>1 3 | | – | IP68<br>-25…90 °C | 3.0…5.0 mm range | **E11551** | **$16.00** |
| | Female<br>4 2<br>3 1 | | – | IP68<br>-25…90 °C | 3.0…5.0 mm range | **E11553** | **$16.00** |

## Technical Specs

| | | | |
|---|---|---|---|
| Current rating: | 3 A | Contacts: | Gold-plated |
| Tightening torque coupling nut: | 0.3...0.5 Nm | Sealing ring: | Viton™ |
| Cable characteristics: | 5 million flex cycles | Cable: | PUR, halogen-free, 22 AWG |
| Housing / molded body: | TPU | Approvals | cULus |
| Coupling nut: | Nickel plated brass | | |

# Top five product features!

- *Redesigned 3-pin wiring block can be used as input and / or output device*
- *Reduces installation time and simplifies wiring*
- *Power and signal LED displays for quick and accurate troubleshooting*
- *Additional O-ring seal between M12 connector and housing*
- *Smaller housing for applications with limited mounting space*

## M8 wiring block systems offer quick installation and eliminate junction boxes and terminal strips

***NEW!*** Eliminate junction boxes and terminal strips and make your wiring plug-and-play. ifm's **ecolink** wiring block systems ensure quick connection in industrial automation applications. Available in 4-port and 8-port configurations.

ifm's newly redesigned wiring blocks offer a higher protection rating (IP68) due to an additional O-ring seal between the M12 connector and housing. The block is manufactured with a smaller, more robust housing for low-profile mounting in applications with tight mounting space. The blocks meet the requirements of Class II protection insulation.

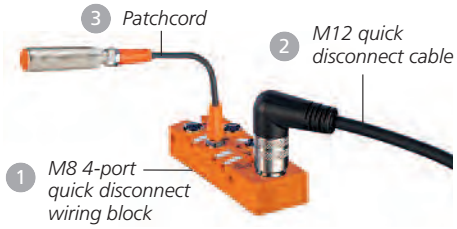
ifm's wiring block systems are vibration and shock resistant. Status indication LEDs indicate power and output at each port location. Dust caps and labels are provided with each port.

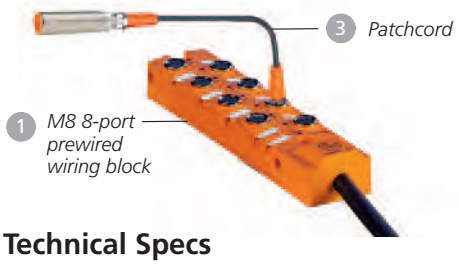
### ecolink M8 patchcords ensure reliable connection

In addition to ecolink cordsets, ifm manufactures patchcords with the same reliable features such as "lock-in-place" coupling nuts, mechanical end stops that protect O-rings and stainless steel sleeves that maintain optimum sealing.

Cable lengths range from 0.3 meters to 5 meters. Patchcord options include:
- straight / straight design
- straight / right angle design
- straight / right angle with status LED

**Wiring block systems:**
- **4-port quick disconnect**
- **4-port prewired**
- **8-port prewired**




### Technical Specs

| | |
|---|---|
| Operating voltage: | 10…30 VDC, PNP |
| Housing material: | PBT |
| Contacts: | Gold plated |
| Receptacle housing: | Nickel-plated brass |
| Temperature range: | -25…90 °C |
| LEDs: | Power, green; output, yellow |
| Cable: | PUR |
| Protection rating: | IP68 |


Position Sensors | Motion Control | Vision Sensors | Safety Technology

Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products

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# Product + accessory selector

| Type | Design | Contact Pins | Operating Temperature | Function Display Power / Switching Status | Cable Length | Part No. | List price USD |
|---|---|---|---|---|---|---|---|
| **M8 Pico wiring block • PNP • Quick disconnect** | | | | | | | |
| 1 | Female ports | 4-port block for 3-wire sensors | 3 | -25…80 °C | green / 4 x yellow | – | **EBC050** | **$55.00** |
| 2 | Female | M12 right angle connector | 8 | -25…80 °C | – | 5 m | **E11232** | **$34.00** |
| | | | | | | 10 m | **E12260** | **$69.00** |
| **M8 Pico wiring block • PNP • 3-Pin • prewired** | | | | | | | |
| 1 | Female ports | 8-port block for 3-wire sensors | 3 | -25…80 °C | green / 8 x yellow | 5 m | **EBC054** | **$100.00** |
| | | | | | | 10 m | **EBC055** | **$110.00** |
| 1 | Female ports | 4-port block for 3-wire sensors | 3 | -25…80 °C | green / 4 x yellow | 5 m | **EBC048** | **$70.00** |
| | | | | | | 10 m | **EBC049** | **$85.00** |
| | M8 dust caps - pack of 10 | | – | – | – | – | **E73005** | **$8.00** |

Contact ifm for NPN versions.

| Type | Face View | | Maximum Supply Voltage | Protection Rating / Temperature Rating Approval | Cable Length | Part No. | List price USD |
|---|---|---|---|---|---|---|---|
| 3 **Pico patchcords • 3-pin • PUR jacket** | | | | | | | |
| | Male | Female | M8 straight male to M8 straight female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC266** | **$21.00** |
| | | | | | | 1 m | **EVC267** | **$22.00** |
| | | | | | | 2 m | **EVC268** | **$24.00** |
| | | | | | | 5 m | **EVC269** | **$27.00** |
| | Male | Female | M8 straight male to M8 right angle female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC276** | **$21.00** |
| | | | | | | 1 m | **EVC277** | **$22.00** |
| | | | | | | 2 m | **EVC278** | **$24.00** |
| | | | | | | 5 m | **EVC279** | **$27.00** |
| 3 **Pico M8 / Micro M12 patchcords • 3-pin • PUR jacket** | | | | | | | |
| | Male | Female | M8 straight male to M12 straight female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC256** | **$18.00** |
| | | | | | | 1 m | **EVC257** | **$19.00** |
| | | | | | | 2 m | **EVC258** | **$21.00** |
| | | | | | | 5 m | **EVC259** | **$25.00** |
| | Male | Female | M8 straight male to M12 right angle female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC246** | **$18.00** |
| | | | | | | 1 m | **EVC247** | **$19.00** |
| | | | | | | 2 m | **EVC248** | **$21.00** |
| | | | | | | 5 m | **EVC249** | **$25.00** |

Other patchcord variations are available, contact ifm 800-441-8246.

# Top five product features!

- *New 4-pin wiring block with improved design can be used as input and / or output device*
- *Quick installation and simplified wiring*
- *Power and output LED indication for fast troubleshooting*
- *Increased IP68 protection rating due to additional O-ring seal between M12 connector and housing*
- *Smaller, more robust housing offers low-profile mounting*

## M8 wiring block systems offer quick installation and robust housings

***NEW!*** Eliminate junction boxes and terminal strips and make your wiring plug-and-play. ifm's **ecolink** wiring block systems ensure quick connection in industrial automation applications. Available in 4-port and 8-port configurations.

ifm's newly redesigned wiring blocks offer a higher protection rating (IP68) due to an additional O-ring seal between the M12 connector and housing. The block is manufactured with a smaller, more robust housing for low-profile mounting in applications with tight mounting space. The blocks meet the requirements of Class II protection insulation.

ifm's wiring block systems are vibration and shock resistant. Status indication LEDs indicate power and output at each port location. Dust caps and labels are provided with each port.

### ecolink M8 patchcords ensure reliable connection

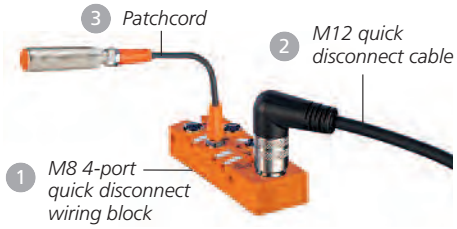
In addition to ecolink cordsets, ifm manufactures patchcords with the same reliable features such as "lock-in-place" coupling nuts, mechanical end stops that protect O-rings and stainless steel sleeves that maintain optimum sealing.

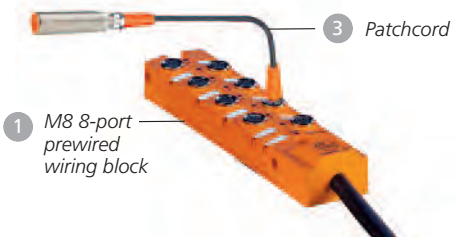
Cable lengths range from 0.3 meters to 5 meters. Patchcord options include:

- straight / straight design
- straight / right angle design
- straight / right angle with status LED

**Wiring block systems:**

- **4-port quick disconnect**
- **4-port prewired**
- **8-port prewired**




### Technical Specs

| | |
|---|---|
| Operating voltage: | 10…30 VDC, PNP |
| Housing material: | PBT |
| Contacts: | Gold plated |
| Receptacle housing: | Nickel-plated brass |
| Temperature range: | -25…90 °C |
| LEDs: | Power, green; output, yellow |
| Cable: | PUR |
| Protection rating: | IP68 |

Search Bar

| | Position Sensors | | | | | | Motion Control | Vision Sensors | Safety Technology | |
|---|---|---|---|---|---|---|---|---|---|---|
| Company | Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Speed monitors | 2D / 3D inspection | Safety products | |
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# Product + accessory selector

| Type | Design | Contact Pins | Operating Temperature | Function Display Power / Switching Status | Cable Length | Part No. | List price USD |
|---|---|---|---|---|---|---|---|
| **M8 Pico wiring block • PNP • Quick disconnect** | | | | | | | |
| 1 | Female ports<br>4 2 3 1 4-port block for 4-wire sensors | 4 | -25…80 °C | green / 4 x yellow | – | **EBC053** | **$90.00** |
| 2 | Female<br>A L M U N T C J O S P R E G M16 right angle connector | 14 | -25…90 °C | – | 5 m | **E11697** | **$76.00** |
| | | | | | 10 m | **E11227** | **$116.00** |
| **M8 Pico wiring block • PNP • 4-Pin • prewired** | | | | | | | |
| 1 | Female ports<br>4 2 3 1 4-port block for 4-wire sensors | 4 | -25…80 °C | green / 4 x yellow | 5 m | **EBC051** | **$80.00** |
| | | | | | 10 m | **EBC052** | **$105.00** |
| 1 | Female ports<br>4 2 3 1 8-port block for 4-wire sensors | 4 | -25…80 °C | green / 8 x yellow | 5 m | **EBC056** | **$130.00** |
| | | | | | 10 m | **EBC057** | **$150.00** |
| | M8 dust caps - pack of 10 | – | – | – | – | **E73005** | **$8.00** |

Contact ifm for NPN versions.

| Type | Face View | | Maximum Supply Voltage | Protection Rating / Temperature Rating Approval | Cable Length | Part No. | List price USD |
|---|---|---|---|---|---|---|---|
| 3 **Pico patchcords • 4-pin • PUR jacket** | | | | | | | |
| | Male<br>2 4 1 3 | Female<br>4 2 3 1 M8 straight male to M8 straight female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC311** | **$23.00** |
| | | | | | 1 m | **EVC312** | **$24.00** |
| | | | | | 2 m | **EVC313** | **$26.00** |
| | | | | | 5 m | **EVC314** | **$29.00** |
| | Male<br>2 4 1 3 | Female<br>4 2 3 1 M8 straight male to M8 right angle female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC301** | **$23.00** |
| | | | | | 1 m | **EVC302** | **$24.00** |
| | | | | | 2 m | **EVC303** | **$26.00** |
| | | | | | 5 m | **EVC304** | **$29.00** |
| | Male<br>2 4 1 3 | Female<br>1 2 5 4 3 M8 straight male to M12 straight female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC296** | **$18.00** |
| | | | | | 1 m | **EVC297** | **$19.00** |
| | | | | | 2 m | **EVC298** | **$21.00** |
| | | | | | 5 m | **EVC299** | **$25.00** |
| | Male<br>2 4 1 3 | Female<br>1 2 5 4 3 M8 straight male to M12 right angle female | 50 VAC / 60 VDC | IP67 / IP68 / IP69K -25…90 °C | 0.6 m | **EVC286** | **$18.00** |
| | | | | | 1 m | **EVC287** | **$19.00** |
| | | | | | 2 m | **EVC288** | **$21.00** |
| | | | | | 5 m | **EVC289** | **$25.00** |

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# Top five product features!

- ecolink cordsets feature "Lock-in-Place" coupling nuts that resist high levels of shock and vibration
- Available with high-flex PUR cable rated for over 5 million flex cycles or weld slag resistant cable rated for over 2 million cycles
- Special insert design acts as a mechanical end-stop preventing possible damage to Viton o-ring from over tightening
- Materials of construction tested to withstand harsh conditions and aggressive oils and coolants
- Cordsets feature a broad operating temperature of -25 to 90 °C with cULus approval

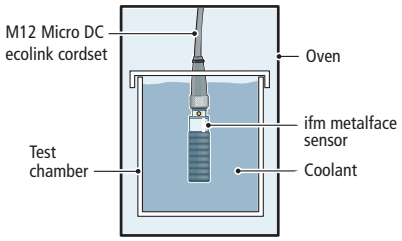
## ecolink M12 Micro DC cordsets

ifm's ecolink M12 cordsets are designed and tested to resist harsh conditions in industrial automation and oils and coolants. The product line meets cULus approval, RoHS standards and is silicon and halogen free. The high-flex PUR jacketed cable is rated to over 5 million flex cycles. ecolink's connection technology meets the M12 standard EN 61076.

### High temperature coolant test

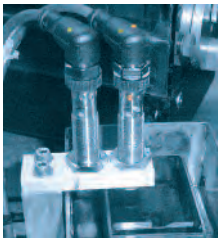
Sensors and cordsets are completely submerged in industrial oils and coolants for a prolonged period at a temperature of 176° F.

Following the test, the product's characteristics and zero-leak design are verified for reliable operation.




### A variety of rugged cordsets to fit most applications

*ifm ecolink cordsets are available in a variety of configurations and cable lengths for application versatility. The family includes right angle models with LEDs, standard straight cordsets, standard right angle cordsets and patchcords.*



*The 316 stainless steel sleeve with sawtooth contour maintains optimum sealing and prevents the cordset from detaching.*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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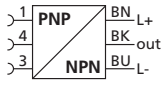
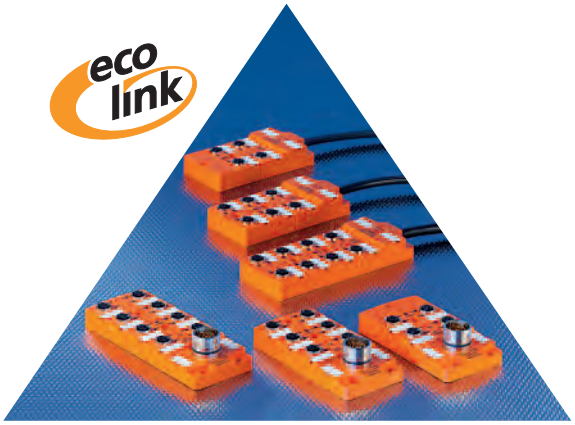
# Product + accessory selector

| Type | Face View | | Maximum Supply Voltage | Protection Rating / Temperature Rating Approval | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **Micro DC cordsets • 4 pin • PUR jacket** | | | | | | | |
| | Female | Pin 1 brown<br>Pin 2 white<br>Pin 3 blue<br>Pin 4 black<br>Pin 5 not used | 250 VAC / 300 VDC | IP67 / IP68 / IP69K<br>-25 °C…90 °C<br>cULus | 2 M | **EVC001** | **$9.95** |
| | | | | | 5 M | **EVC002** | **$13.50** |
| | | | | | 10 M | **EVC003** | **$18.00** |
| | | | | | 2 M | **EVC004** | **$9.95** |
| | | | | | 5 M | **EVC005** | **$13.50** |
| | | | | | 10 M | **EVC006** | **$18.00** |
| LED | Female | Pin 1 brown<br>Pin 2 white<br>Pin 3 blue<br>Pin 4 black<br>Pin 5 not used | 10…36 VDC | IP67 / IP68 / IP69K<br>-25 °C…90 °C<br>cULus | 2 M | **EVC007** | **$12.75** |
| | | | | | 5 M | **EVC008** | **$15.00** |
| | | | | | 10 M | **EVC009** | **$19.00** |
| **Micro DC cordsets • 4 pin • PUR jacket • weld slag resistant** | | | | | | | |
| | Female | Pin 1 brown<br>Pin 2 white<br>Pin 3 blue<br>Pin 4 black | 250 VAC / 300 VDC | IP67 / IP68 / IP69K<br>-25 °C…90 °C | 2 M | **EVW001** | **$17.00** |
| | | | | | 5 M | **EVW002** | **$21.00** |
| | | | | | 2 M | **EVW004** | **$17.00** |
| | | | | | 5 M | **EVW005** | **$21.00** |
| **Converter cable PNP to NPN** | | | | | | | |
| | Female | Pin 1: Brown<br>Pin 3: Blue<br>Pin 4: Black   | 24 VDC ±10% | IP67 / IP68 / IP69K<br>-25 °C…60 °C | 5 M | **EVC01E** | **$19.00** |
| **Field wirable connectors • 4 Pin • Screw terminals** | | | | | | | |
| | Female | M12 connector straight | 250 AC / DC | IP68<br>-25…100 °C | 4 - 6 mm cable OD | **E11508** | **$16.00** |
| | Male | M12 connector straight | 250 AC / DC | IP68<br>-25…100 °C | 4 - 6 mm cable OD | **E11504** | **$16.00** |
| **Field wirable connectors • 4 Pin • IDC termination** | | | | | | | |
| | Female | M12 connector straight | 250 AC / DC | IP68<br>-25…85 °C | 4 - 5 mm cable OD | **E18059** | **$17.00** |
| | Male | M12 connector straight | 250 AC / DC | IP68<br>-25…85 °C | 4 - 5 mm cable OD | **E18058** | **$17.00** |

Other cordset variations are available, contact ifm 800-441-8246.

## Technical Specs

| | |
|---|---|
| High flex PUR cable jacket: | Part Nos. EVC001 - EVC009 and EVC01E |
| Nickel plated brass coupling nut: | Part Nos. EVC001 - EVC009 and EVC01E |
| Weld slag resistant PUR jacket: | Part Nos. EVW001, EVW002, EVW004, EVW005 |
| Epoxy coated zinc coupling nut: | Part Nos. EVW001, EVW002, EVW004, EVW005 |
| Contacts: | Gold plated |
| Conductors: | 22 AWG |
| PNP LED: | Part Nos. EVC007, EVC008, EVC009 |
| O-ring material: | Viton™ |
| Current rating: | 4 A; 0.1 A: Part No. EVC01E |
| Tightening torque coupling nut: | 0.6…1.5 Nm |




# Top five product features!

- Designed to reduce installation time and simplify wiring
- Can be used as an input and / or output device
- Power and signal LED displays for quick and accurate troubleshooting
- Available with single or dual LED outputs
- Dust caps and identification labels available

## ecolink M12 wiring block systems with built-in LEDs for input and output devices

ifm's passive wiring block systems provide a rugged yet simple solution for wire consolidation in applications with a high-density of input or output connections. Wiring block systems can replace junction boxes, terminal strips and will help to prevent wiring mistakes.

When using wiring block systems, devices can be changed in seconds, greatly reducing maintenance costs.

ifm offers a wide selection of patchcords that connect to the wiring block systems.

### Robust wiring blocks withstand harsh environments

For application versatility, wiring blocks are available in cabled models as well as quick disconnect models that require an M23 quick disconnect cable for electrical connection.

### Quick connection with ecolink patchcords and blocks

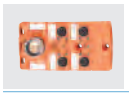
*Patchcords are available in cable lengths starting at 0.3 meters up to 5 meters.*

* For 6-port and non-LED versions, visit www.ifm.com/us. Labels and dust caps are available.

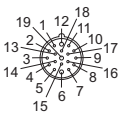
Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
|---|---|---|---|---|---|---|---|---|---|
| 1 - 7 | 10 - 47 | 48 - 53 | 54 - 59 | 60 - 91 | 92 - 97 | 98 - 103 | 106 - 109 | 112 - 125 | 128 - 141 |

# Product + accessory selector

| Type | Design | Contact Pins | Operating Voltage | Function Display Power/Switching Status | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|
| **1 M12 Micro DC wiring blocks • PNP • Single output LED • Prewired** | | | | | | | |
| | 4-port block with output on pin 4 | 5 | 10…30 VDC | green / 4 x yellow | 5 M | **EBC015** | **$121.00** |
| | 4-port block with output on pin 4 | 5 | 10…30 VDC | green / 4 x yellow | 10 M | **EBC027** | **$149.00** |
| | 8-port block with output on pin 4 | 5 | 10…30 VDC | green / 8 x yellow | 5 M | **EBC023** | **$176.00** |
| | 8-port block with output on pin 4 | 5 | 10…30 VDC | green / 8 x yellow | 10 M | **EBC035** | **$209.00** |
| **1 M12 Micro DC wiring blocks • PNP • Dual output LED • Prewired** | | | | | | | |
| | 4-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 8 x yellow | 5 M | **EBC016** | **$160.00** |
| | 4-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 8 x yellow | 10 M | **EBC028** | **$181.00** |
| | 8-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 16 x yellow | 5 M | **EBC024** | **$203.00** |
| | 8-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 16 x yellow | 10 M | **EBC036** | **$248.00** |
| **1 M12 Micro DC wiring blocks • PNP • Single output LED • M23 quick disconnect** | | | | | | | |
|  | 4-port block with output on pin 4 | 5 | 10…30 VDC | green / 4 x yellow | – | **EBC002** | **$91.00** |
| | 8-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 8 x yellow | – | **EBC010** | **$143.00** |
| **M12 Micro DC wiring blocks • PNP • Dual output LED • M23 quick disconnect** | | | | | | | |
| | 4-port block with output on pin 4 | 5 | 10…30 VDC | green / 8 x yellow | – | **EBC004** | **$133.00** |
| | 8-port block with output on pin 2 and 4 | 5 | 10…30 VDC | green / 16 x yellow | – | **EBC012** | **$155.00** |

## 2 M23 quick disconnect cable

| Type | Face View | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|
| | Female | 5 m | **E11736** | **$133.00** |
| | | 10 m | **E11737** | **$184.00** |
| | | 5 m | **E11739** | **$133.00** |
| | | 10 m | **E11740** | **$184.00** |
| | Female  | 5 m | **E11742** | **$188.00** |
| | | 10 m | **E11743** | **$253.00** |
| | | 5 m | **E11745** | **$188.00** |
| | | 10 m | **E11746** | **$253.00** |

## 3 Micro DC patchcords • 4 pin • PUR jacket

| Type | Design | | | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|
| | Male | Female | M12 straight male to M12 straight female | 0.6 M | **EVC011** | **$17.00** |
| | | | | 1 M | **EVC012** | **$18.00** |
| | | | | 2 M | **EVC013** | **$20.00** |
| | | | | 5 M | **EVC014** | **$21.00** |
| | Male | Female | M12 straight male to M12 90° female | 0.6 M | **EVC016** | **$17.00** |
| | | | | 1 M | **EVC017** | **$18.00** |
| | | | | 2 M | **EVC018** | **$20.00** |
| | | | | 5 M | **EVC019** | **$21.00** |

## Technical Specs

| | |
|---|---|
| Operating voltage: | 250 AC / 300 DC: Part Nos. EVC011 - EVC019 |
| Max. total current: | 12 A |
| Max. load current per port: | 4 A |
| Wiring blocks protection: | IP67 / IP68 |
| Patchcords protection: | IP67 / IP68 / IP69K |
| Operating temperature: | -25…80 °C (wiring blocks); -25…90 °C (patchcords) |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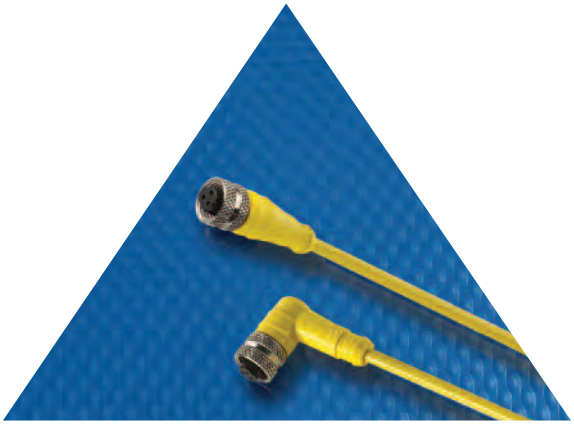

# Top five product features!

- Industry standard color coding
- Vibration resistant coupling nut
- Viton O-ring
- Low-resistance contact design with gold plated contacts
- Available with PVC or TPE cable

## Rugged Micro AC cordsets are designed for industrial automation and metal forming applications

### Why choose PVC or TPE cable material

PVC (polyvinylchloride) offers excellent performance in a wide range of temperatures. PVC cables resist flame, heat, moisture and abrasion. PVC is considered the most commonly used cable jacket material in industrial automation applications.

TPE (thermoplastic elastomer) resists a broad range of oils, chemicals, acids and solvents. TPE is a high flex material and is rated for over 5 million flex cycles. It can be used in continuous flex applications such as robotic arms and grippers.

### Reliable performance

*High flex TPE-jacketed cable rated for over 5 million flex cycles.*

BROAD Operating Temperature

*Broad operating temperature*
*PVC: -20 to 80 °C*
*TPE: -45 to 105 °C*

IP68

*Materials of construction tested to withstand harsh conditions and aggressive oils and coolants.*

*UL and CSA approved*

Search Bar

| Company | Position Sensors: Inductive | Capacitive | Cylinder position | Photoelectrics and lasers | Distance, color and contrast | Fiber optics | Motion Control: Speed monitors | Vision Sensors: 2D / 3D inspection | Safety Technology: Safety products |
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# Product + accessory selector

| Type | Face View | | Cable Jacket Material | Maximum Supply Voltage | Protection Rating / Temperature Rating Approval | Cable Length | Part No. | List Price (1-pc.) |
|---|---|---|---|---|---|---|---|---|
| **Micro AC cordsets • 3 Pin 1/2" – 20 UNF • PVC cable** | | | | | | | | |
| | Female<br>2 3<br>1 | Pin 1 green<br>Pin 2 red/black<br>Pin 3 red/white | PVC | 300 VAC / VDC | IP68 NEMA 6P<br>-20 °C…80 °C<br>UL / CSA | 2 M | **E18212** | **$15.00** |
| | | | | | | 5 M | **E18213** | **$19.00** |
| | | | | | | 2 M | **E18214** | **$15.00** |
| | | | | | | 5 M | **E18215** | **$19.00** |
| **Micro AC cordsets • 3 Pin 1/2" - 20 UNF • TPE cable** | | | | | | | | |
| | Female<br>2 3<br>1 | Pin 1 green<br>Pin 2 red/black<br>Pin 3 red/white | TPE | 300 VAC / VDC | IP68 NEMA 6P<br>-45 °C…105 °C<br>UL / CSA | 2 M | **E18200** | **$22.00** |
| | | | | | | 5 M | **E18201** | **$25.00** |
| | | | | | | 10 M | **E18202** | **$38.00** |
| | | | | | | 2 M | **E18203** | **$22.00** |
| | | | | | | 5 M | **E18204** | **$25.00** |
| | | | | | | 10 M | **E18205** | **$38.00** |
| **Micro AC wirable connectors, screw termination • 3-Pin 1/2" – 20 UNF** | | | | | | | | |
| | Female<br>2 3<br>1 | | – | 250 VAC | IP67 NEMA 6P (in fully locked position)<br>-25 °C…90 °C | 4 - 6 mm | **L34103** | **$15.00** |
| | | | | | | 4 - 6 mm | **E10789** | **$15.00** |
| | Male<br>3 2<br>1 | | – | 250 VAC | IP67 NEMA 6P (in fully locked position)<br>-25 °C…90 °C | 4 - 6 mm | **L34101** | **$15.00** |
| | | | | | | 4 - 6 mm | **E10788** | **$15.00** |

Can't find the right sensor for your application, call 800-441-8246 or visit www.ifm.com/us

## Technical Specs

| | |
|---|---|
| Coupling nut: | Nickel plated brass |
| Housing: | Nylon: Part Nos. L34101, L34103, E10788, E10789 |
| Contacts: | Gold plated |
| Conductors size: | 22 AWG<br>18 AWG maximum: Part Nos. L34101, L34103, E10788 and E10789 |
| O-ring material: | Viton™ |

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