Top product features!

- *4…20 mA fixed range output – for plug and play operation*

- *IP69K miniature housing – ¾" diameter by 2 ½" tall for easy mounting in tight spaces*

- *Stainless steel measuring cell using thin film technology – for better chemical compatibility, use with high pressure gases, and better burst pressure rating over ceramic technology*

- *¼" integrated process connection – for installation in common applications without additional fittings*

- *Laser etched label – remains readable even in the harshest environments*

Compact one-piece design, fast response time

NEW! The new compact PT pressure transmitter is ideal for monitoring pressure in hydraulics and pneumatics applications as well as inert gases where mounting space is limited.

These pressure sensors feature a thin film measuring cell which is welded directly to the process connection. No separate seal is required. This innovative design technology guarantees high accuracy in a compact housing.

Constructed of stainless steel, the robust PT pressure sensors are designed to withstand extreme shock and vibration in harsh environments. The one-piece, completely welded housing eliminates moisture ingress and is rated IP 67 / IP 69K.

The transmitter provides an analog output at an exceptionally fast response time of 1 millisecond and reliable repeatability of < 0.05 %.

With its robust housing, fast response time and low cost, the PT Series transmitters are a great value!

With its fast response time of 1 millisecond, the miniature PT pressure transmitter accurately monitors pressure on a high-speed pump.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	IO-Link	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
Search Bar									
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

Product + accessory selector

Fixed Analog Output	Measuring Range (psi)	Overload Pressure (psi)	Burst Pressure (psi)	Port Size	Part No.	List Price (1-pc.)
4…20 mA	0…100	250	2,900	1/4" NPT male	**PT2415**	**$133.00**
4…20 mA	0…200	580	6,525	1/4" NPT male	**PT2424**	**$133.00**
4…20 mA	0…300	940	8,700	1/4" NPT male	**PT2434**	**$133.00**
4…20 mA	0…500	1,450	11,600	1/4" NPT male	**PT2443**	**$133.00**
4…20 mA	0…1,000	2,500	13,050	1/4" NPT male	**PT2402**	**$133.00**
4…20 mA	0…3,000	7,250	14,500	1/4" NPT male	**PT2432**	**$133.00**
4…20 mA	0…5,000	14,500	24,650	1/4" NPT male	**PT2400**	**$133.00**

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	**EVC001**	**$11.00**
	M12 Micro DC (4-pin) 5 m, PUR	**EVC002**	**$15.00**
	M12 Micro DC (4-pin) 2 m, PUR	**EVC004**	**$11.00**
	M12 Micro DC (4-pin) 5 m, PUR	**EVC005**	**$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:	8.5…36 V DC
Max. load:	[(supply voltage -8.5) ÷ 21.5] Ω; 720 Ω at 24 V DC
Medium temperature range:	-40…194 °F (-40…90 °C)
Accuracy:	< ± 0.05 % of full range
Repeatability:	< ± 0.05 % of full range
Wetted parts:	630 stainless steel
Protection:	IP 67 / IP 69K

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الکتریکال – مکانیکال – ابزاردقیق

۰۲۱–۶۶۱۷۲۰۳۲

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Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top 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

Microprocessor

Ceramic Cell

Base
Reference electrodes

Measuring electrodes
Diaphragm
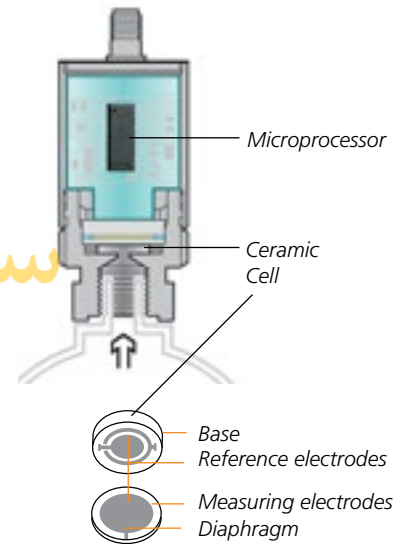
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Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	⬡ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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**	$205.00
4…20 mA	0…100 inH2O	4015 inH2O	1/4" NPT male	**PX3228**	$205.00
4…20 mA	0…5 psi	145 psi	1/4" NPT male	**PX3238**	$205.00
4…20 mA	0…15 psi	145 psi	1/4" NPT male	**PX3227**	$205.00
4…20 mA	0…20 psi	145 psi	1/4" NPT male	**PX3237**	$205.00
4…20 mA	0…30 psi	290 psi	1/4" NPT male	**PX3226**	$205.00
4…20 mA	0…100 psi	1087 psi	1/4" NPT male	**PX3224**	$205.00
4…20 mA	0…150 psi	1087 psi	1/4" NPT male	**PX3244**	$205.00
4…20 mA	0…200 psi	1087 psi	1/4" NPT male	**PX3234**	$205.00
4…20 mA	0…250 psi	2175 psi	1/4" NPT male	**PX3233**	$205.00
4…20 mA	0…500 psi	2175 psi	1/4" NPT male	**PX3223**	$205.00
4…20 mA	0…1000 psi	4350 psi	1/4" NPT male	**PX3222**	$205.00
4…20 mA	0…3000 psi	5800 psi	1/4" NPT male	**PX3111**	$205.00
4…20 mA	0…5000 psi	11,600 psi	1/4" NPT male	**PX3220**	$205.00
0...10 V	-14.5…0 psi	145 psi	1/4" NPT male	**PX9119**	$204.00
0...10 V	0…100 inH2O	4015 inH2O	1/4" NPT male	**PX9118**	$205.00
0...10 V	0…15 psi	145 psi	1/4" NPT male	**PX9117**	$204.00
0...10 V	0…30 psi	290 psi	1/4" NPT male	**PX9116**	$204.00
0...10 V	0…100 psi	1087 psi	1/4" NPT male	**PX9114**	$204.00
0...10 V	0…200 psi	1087 psi	1/4" NPT male	**PX9134**	$204.00
0...10 V	0…1000 psi	4350 psi	1/4" NPT male	**PX9112**	$204.00
0...10 V	0…3000 psi	5800 psi	1/4" NPT male	**PX9111**	$204.00
0...10 V	0…5000 psi	11,600 psi	1/4" NPT male	**PX9110**	$205.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Mounting clamp	**E10077**	**$9.00**

> 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**	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	**EVC002**	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	**EVC003**	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	**EVC004**	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	**EVC005**	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	**EVC006**	$19.00

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, FPM
Protection rating: IP68 / IP69K (363 psi / 25 bar ranges and lower: IP65)

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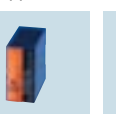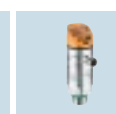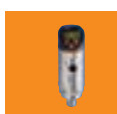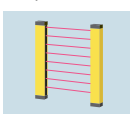| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Transmitter with multiple outputs including scaleable analog for flexibility*

- *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*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *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 transmitters

Compact, reliable and easy to use!

ifm has provided reliable pressure monitoring for pneumatic and hydraulic applications for more than 20 years.

ifm now introduces the next generation pressure transmitter, the PN2 Series, with enhanced features that provide more flexibility in adapting the product to fit your pressure application.

The PN2 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 transmitters 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 transmitter easy to implement, ifm once again, sets a new benchmark for price/performance with the PN2 family of products.

2-color digital display is easier to see from a distance

Robust 316 stainless steel construction

Laser etched part numbers will not fade for future referencing

Sensor can be rotated 345° for optimum visibility after installation

enter button | scroll buttons

Large bright LEDs can be seen from all angles indicate output status

Simple pushbutton setup allows the sensor to be parameterized in less than 5 minutes with new scroll and enter buttons

QR code for quick access to technical data and installation instructions

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.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	*IO-Link*	*Inductive*	*Capacitive*	*Cylinder/valve position*	*Photoelectrics/ lasers/fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D/3D inspection*
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

Search Bar

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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	List Price (1-pc.)
Vacuum transmitters · 4…20 mA / 0…10 V and PNP / NPN or 2 x PNP / NPN switching						
-14.5…14.5	290 / 725	PN2299 ⊘	PN2699 ⊘	PN2099 ⊘	PN2599 ⊘	$399.00
-14.5…145	1087 / 2175	PN2294 ⊘	PN2694 ⊘	PN2094 ⊘	PN2594 ⊘	$399.00
-14.5…362.5	2175 / 5075	PN2293 ⊘	PN2693 ⊘	PN2093 ⊘	PN2593 ⊘	$399.00
Pressure transmitters · 4…20 mA / 0…10 V and PNP / NPN or 2 x PNP / NPN switching						
-5…100.4 inH$_2$O	4000 / 12000 inH$_2$O	PN2298 ⊘	PN2698 ⊘	PN2098 ⊘	PN2598 ⊘	$399.00
0…14.5	145 / 450	PN2297 ⊘	PN2697 ⊘	PN2097 ⊘	PN2597 ⊘	$399.00
0…36.2	290 / 725	PN2296 ⊘	PN2696 ⊘	PN2096 ⊘	PN2596 ⊘	$399.00
-14.5…145	1087 / 2175	PN2294 ⊘	PN2694 ⊘	PN2094 ⊘	PN2594 ⊘	$399.00
-14.5…362.5	2175 / 5075	PN2293 ⊘	PN2693 ⊘	PN2093 ⊘	PN2593 ⊘	$399.00
0…1450	4350 / 9400	PN2292 ⊘	PN2692 ⊘	PN2092 ⊘	PN2592 ⊘	$399.00
0…3620	7250 / 15,950	PN2271 ⊘	PN2671 ⊘	PN2071 ⊘	PN2571 ⊘	$399.00
0…5800	11,580 / 24,650	PN2270 ⊘	PN2670 ⊘	PN2070 ⊘	PN2570 ⊘	$399.00
0…8700	11,600 / 36,300	–	–	PN2160 ⊘	PN2560 ⊘	$399.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	G 1/4 BSPP male to 1/4" NPT male adapter 6000 psi pressure rating	U20172	$18.00
	G 1/4 BSPP male to 7/16" SAE male adapter 6000 psi pressure rating	U20171	$27.00
	Universal angle bracket	E30421	$7.00
	Conduit adapter	E30424	$84.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

Technical Specs

Supply voltage: 18…30 VDC
Maximum load current: 250 mA
Medium temp. range: -13…176 °F (-25…80 °C)
Accuracy: < ± 0.5% of full range
Wetted parts: 316 stainless steel, ceramic, FKM PN2x71, PN2x70, PN2160, PN2560: 630 stainless steel (1.4542)
Protection rating: IP67

⊘ **For more information on IO-Link, see pages 6 - 21.**
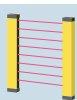
Top product features!

- 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

Rotatable display 350° for mounting flexibility

High protection rating (IP67 / IP69K)

Does not require damping liquid

LED ring indicates setpoint and resetpoint and trend display

Analog display with scaling in bar and psi

If there is no power, the pointer disappears behind the numeric display

Application parameters are setup via optical touch-screen pushbuttons

Digital display – bright LED display (no LCDs)

Extended display range

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.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	⬥ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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**	**$468.00**
-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**	**$468.00**
-14.4…145 psi	232 psi	725 psi	-14.4…196 psi	22…232 psi	-14…232 psi	G 1/2 BSPP male	**PG2454**	**$468.00**
-14.5…363 psi	580 psi	1450 psi	-14.5…490 psi	76…580 psi	-13…580 psi	G 1/2 BSPP male	**PG2453**	**$468.00**
Pressure transmitters · 4-20 mA and PNP / NPN · N.O. / N.C.								
-2…40 inH$_2$O	64 inH$_2$O	1606 inH$_2$O	-2…54 inH$_2$O	8…64 inH$_2$O	-1.8…64 inH$_2$O	G 1/2 BSPP male	**PG2489**	**$468.00**
-5…100 inH$_2$O	160 inH$_2$O	4015 inH$_2$O	-5…135 inH$_2$O	20…160 inH$_2$O	-4.6…160 inH$_2$O	G 1/2 BSPP male	**PG2458**	**$468.00**
-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**	**$468.00**
-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**	**$468.00**
-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**	**$468.00**
-14.4…145 psi	232 psi	725 psi	-14.4…196 psi	22…232 psi	-14…232 psi	G 1/2 BSPP male	**PG2454**	**$468.00**
-14.5…363 psi	580 psi	1450 psi	-14.5…490 psi	76…580 psi	-13…580 psi	G 1/2 BSPP male	**PG2453**	**$468.00**
0…1449 psi	2322 psi	4350 psi	0…1959 psi	363…2322 psi	6…2322 psi	G 1/2 BSPP male	**PG2452**	**$468.00**
0…3625 psi	5800 psi	8700 psi	0…5075 psi	725…5800 psi	15…5800 psi	G 1/2 BSPP male	**PG2451**	**$468.00**
0…5800 psi	8700 psi	11,600 psi	0…7250 psi	1450…8700 psi	30…8700 psi	G 1/2 BSPP male	**PG2450**	**$468.00**

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	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

Technical Specs

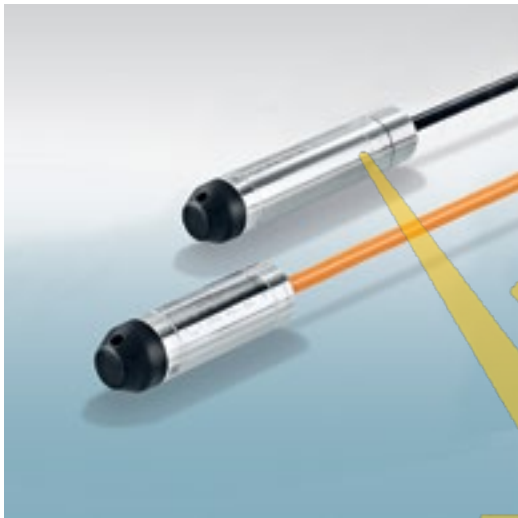|	
Operating voltage:	18...32 VDC
Maximum load current:	250 mA
Switchpoint accuracy:	<± 0.6%
Switchpoint accuracy in extended display range:	<± 1.5%
Repeatability:	<± 0.1%
Medium temperature:	-13…176 °F (-25...80 °C)
Wetted parts:	316L stainless steel, ceramic, FPM
Analog scaling turndown:	4:1
Protection Rating:	IP67 / IP69K

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Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top 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 inH$_2$O*

- *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 inH$_2$O, 240 inH$_2$O and 400 inH$_2$O 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

		IO-Link	Position Sensors						Motion Control	Vision Sensors
Company		⟳ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers/fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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Product + accessory selector

Fixed Output	Measuring Range	Overload Pressure	Connection	Operating Voltage	Part No.	List Price (1-pc.)
4…20 mA	0…100 inH$_2$O	803 inH$_2$O	PUR cable 5 m	10…30 VDC	**PS3208**	**$601.00**
4…20 mA	0…100 inH$_2$O	803 inH$_2$O	FEP cable 5 m	10…30 VDC	**PS4208**	**$709.00**
4…20 mA	0…100 inH$_2$O	803 inH$_2$O	FEP cable 10 m	10…30 VDC	**PS4408**	**$760.00**
4…20 mA	0…240 inH$_2$O	1204 inH$_2$O	FEP cable 5 m	10…30 VDC	**PS4407**	**$760.00**
4…20 mA	0…240 inH$_2$O	1606 inH$_2$O	PUR cable 10 m	10…30 VDC	**PS3407**	**$656.00**
4…20 mA	0…240 inH$_2$O	1606 inH$_2$O	PUR cable 15 m	10…30 VDC	**PS3427**	**$678.00**
4…20 mA	0…240 inH$_2$O	1205 inH$_2$O	FEP cable 20 m	10…30 VDC	**PS4506**	**$852.00**
4…20 mA	0…240 inH$_2$O	1606 inH$_2$O	PUR cable 30 m	10…30 VDC	**PS3607**	**$723.00**
4…20 mA	0…400 inH$_2$O	2007 inH$_2$O	FEP cable 15 m	10…30 VDC	**PS4417**	**$820.00**
4…20 mA	0…400 inH$_2$O	2007 inH$_2$O	PUR cable 15 m	10…30 VDC	**PS3417**	**$678.00**
4…20 mA	0…400 inH$_2$O	2007 inH$_2$O	PUR cable 30 m	10…30 VDC	**PS3617**	**$723.00**
4…20 mA	0…400 inH$_2$O	2009 inH$_2$O	FEP cable 30 m	10…30 VDC	**PS4607**	**$948.00**

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Junction box with ventilation	**E30401**	**$108.00**
	Filter element to protect vent tube in cable	**E30400**	**$11.00**
	Cable clamp	**E30399**	**$30.00**
	Additional weight to stabilize transmitter	**E30402**	**$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:	[(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 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

- Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

## 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.
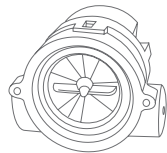
Challenge
Mechanical flow switches that stick.

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).

Flow velocity / flow volume chart for water (Sch 40 pipe)
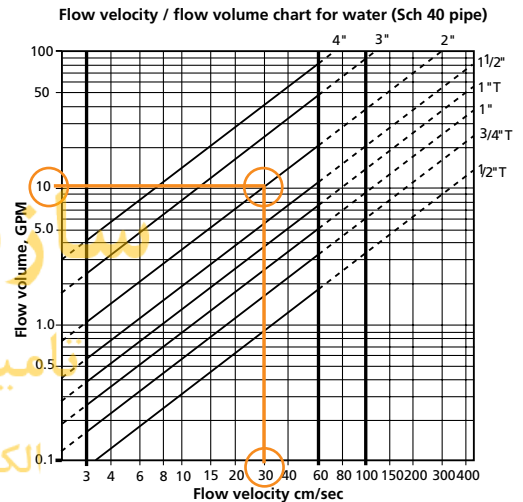
Ideal switchpoint setting ranges for the following flow models:
SI 5xxx (see page 165): 3…100 cm/sec. for water
SF xxxx (see page 167): 3…60 cm/sec. for water

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.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
Search Bar									
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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 ⊙	$321.00
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	$321.00
1 x AC relay, N.O. / N.C.	See required accessories	3...100 cm/sec	90…240 VAC	< 3.5 VA	3A contact rating	1...10 sec	4350 psi (300 bar)	SI5006	$399.00

* 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	$22.00
	1/2" NPT adapter, 316 stainless steel	E40107	$24.00
	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	$22.00
	G1/2 BSPP adapter, 316 stainless steel	E40096	$27.00
	Weldable adapter, carbon steel	E40113	$19.00
	Weldable adapter, 316 stainless steel	E40124	$41.00

Optional Accessories and Cordsets

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00
	1/2" tee, brass	U40029	$18.00
	1/2" tee, stainless steel	U40030	$66.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	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 more information on IO-Link, see pages 6 - 21.**

Technical Specs

Medium temperature range: -13...176 °F (-25…80 °C)
Ideal switchpoint setting range for oils: 3…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, FKM
Protection rating: IP67

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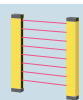| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

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Top 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.
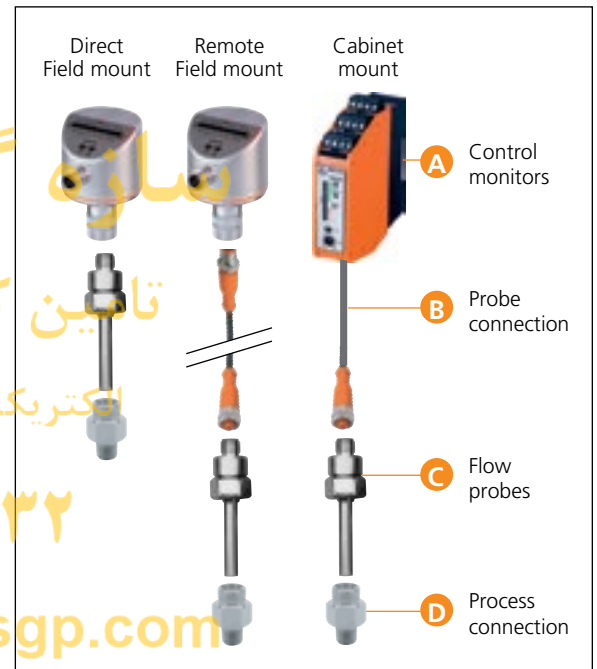
Cabinet mount control monitor

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.

Direct Field mount	Remote Field mount	Cabinet mount	
			A Control monitors
			B Probe connection
			C Flow probes
			D Process connection

| Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Search Bar

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	$304.00
	Field mount control monitor	AC, relay, N.O. / N.C.	1/2" Micro AC	90...240 AC	yes / no / yes	SR5906	$345.00
	Cabinet mount control monitor	3 x SPDT relay	Combicon	24 VDC	yes / yes / yes	SR0150	$429.00
	Cabinet mount control monitor	3 x SPDT relay	Combicon	90...240 AC	yes / yes / yes	SN0150	$429.00

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	$251.00
	6" insertion depth, requires E40174	Connect directly for field mount or use EVC059 patchcord for remote mount	Use EVC074 cordset for remote mount	SF6200	$290.00
	4" insertion depth, requires E40174	Connect directly for field mount or use EVC059 patchcord for remote mount	Use EVC074 cordset for remote mount	SF6201	$276.00
	Requires E40106, E40107, U40085, or U40080	Use E11506 connector for remote mount	Wire directly to combicon cable connector	SF5300	$359.00

D Process connection

Type	Description	Part No.	List Price (1-pc.)
	1/2" NPT adapter (SF6200 or SF6201)	E40174	$63.00
	1/4" NPT adapter (SF5200 or SF5300)	E40106	$22.00
	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	$11.00
	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	$35.00
	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 (page 176)

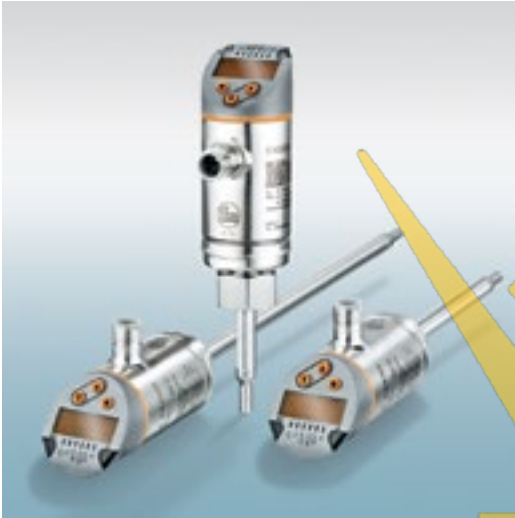| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
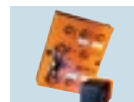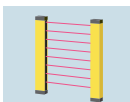
Top product features!

- *Flow meter optimized for water, oils, glycol and air*

- *⊗ Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *⊗ Digital transmission of two process values: flow rate and temperature*

- *Fast response time and integrated temperature measurement*

- *Red / green numeric display for process values and at-a-glance status*

- *Internal pipe diameter selectable from 0.6" to 16" and selectable outputs for switching, frequency and analog*

Thermal flow meter with digital display for liquids and gases

NEW! The new SA Series flow sensors are designed to detect and measure the flow and temperature of oil, water, glycol and air in large internal pipe diameters up to 16 inches.

These volumetric flow sensors operate using the calorimetric measuring principle. The sensor tip houses two RTD elements and a heat source. When power is applied, the tip of the sensor is heated. The flow rate is determined as these RTDs react to the physical effect of a flowing medium conducting heat energy away from the sensor tip. This temperature-based operating principle can reliably sense the flow of virtually any liquid or gas.

Quick setup

A simple pushbutton menu allows the sensor to be programmed to fit your application setpoints. Switching, frequency or analog outputs are also selectable. Designed with an integrated digital display, values may be set in green or red for indicating if process values are within range or if limits have been exceeded. Parameters may also be set via ifm's LineRecorder software or IO-Link.

Various mounting options

ifm's SA Series flow sensors are available in various probe lengths and process connections to fit most mounting requirements.

ifm flow sensors are solid state alternatives to mechanical flow switches. Because there are no moving parts to jam or break, ifm flow switches eliminate the maintenance of mechanical flow switches.

		IO-Link	Position Sensors						Motion Control	Vision Sensors
Company		*⊗ IO-Link*	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
Search Bar										
	1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

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Product + accessory selector

Process Connection	RTD Length (mm)	Display Units	Measuring Range (Water)	Measuring Range (Air)	Outputs Switching / Frequency and 4…20 mA Analog Part No.	Outputs Dual 4…20 mA Analog Part No.	List Price (1-pc.)
1/2" NPT	27	%, fps, g/m, cfm, °F	0.15…9.8 ft/s	6.5…328 ft/s	SA6010 ☼	SA6014 ☼	$330.00
M18 x 1.5	45				SA5010 ☼	SA5014 ☼	$330.00
Compression fitting	100				SA4110 ☼	SA4114 ☼	$345.00
	200				SA4310 ☼	SA4314 ☼	$355.00
G 1/2 BSPP	19	%, m/s, l/min, m³/h, °C	0.04…3 m/s	2…10 m/s	SA2000 ☼	SA2004 ☼	$330.00
M18 x 1.5	45				SA5000 ☼	SA5004 ☼	$330.00
Compression fitting	100				SA4100 ☼	SA4104 ☼	$345.00
	200				SA4300 ☼	SA4304 ☼	$355.00

Required Accessories (for SA4xxx)

Type	Description	Part No.	List Price (1-pc.)
	Compression fitting 1/2" NPT	E40261	$22.00
	Compression fitting 1/4" NPT	E40262	$22.00

Required Accessories (for SA5xxx)

Type	Description	Part No.	List Price (USD)
	1/4" NPT adapter	E40106	$22.00
	1/2" NPT adapter	E40107	$24.00
	3/4" NPT adapter	U40085	$45.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR cable	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR cable	EVC002	$15.00
	M12 Micro DC (4-pin) 2 m, PUR cable	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR cable	EVC005	$15.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug, parameter memory for IO-Link sensors	E30398	$51.00

Technical Specs

Operating voltage:	18…30 VDC
Current consumption:	< 100 mA
Current rating:	250 mA
Accuracy flow measurement:	± (5 % of measured value + 2 % of full range) for water
Accuracy temp monitoring:	± 1.8 °F (1 °C)
Protection:	IP65 / IP67
Housing materials:	316L stainless, steel, PBT
Response time:	0.5 sec. (water)

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Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Flow meter monitors flow rate and temperature of water and oil-based media*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Digital transmission of two process values: flow rate and temperature*

- *Fast response time 10 ms: great for cycling applications*

- *Two-color digital display for at-a-glance status*

- *Ideal for applications with rapid temperature changes of media*

ifm mechatronic flow meter

The ifm SBN Series mechatronic flow meter monitors water and oil-based media and provides reliable flow control for various flow applications.

The mechatronic flow meter sensing principle ensures extremely fast response time and can be easily set via pushbuttons or IO-Link.

The SBN mechatronic flow meter 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 a magnetic sensor and is output as a binary or analog 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.
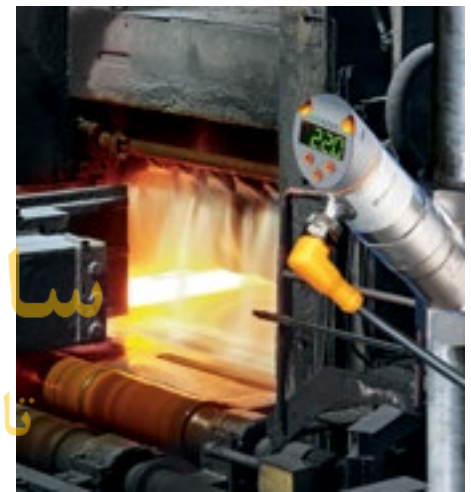
The mechatronic sensor reliably monitors the flow of water in cooling loops of an induction furnace.

	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics/ lasers/fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
Company	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Measuring Range (Flow)	Measuring Range (Temperature)	Output 1	Output 2	Process Connection	Part No.	List Price (1-pc.)
0.1…4 gpm	14…212 °F		PNP/NPN switching or 4…20 mA analog (flow or temperature)	3/4" NPT female	SBN232	$282.00
0.1…6 gpm	14…212 °F	PNP/NPN switching or frequency (flow or temperature)		3/4" NPT female	SBN233	$275.00
0.2…10 gpm	14…212 °F			3/4" NPT female	SBN234	$275.00
0.5…27 gpm	14…212 °F			1" NPT female	SBN246	$295.00
0.3…15 lpm	-10…100 °C		PNP/NPN switching or 4…20 mA analog (flow or temperature)	G 1/2 BSPP	SBG232	$275.00
0.5…25 lpm	-10…100 °C	PNP/NPN switching or frequency (flow or temperature)		G 1/2 BSPP	SBG233	$275.00
1.0…50 lpm	-10…100 °C			G 1/2 BSPP	SBG234	$275.00
2.0…100 lpm	-10…100 °C			G 3/4 BSPP	SBG246	$345.00
4.0…200 lpm	-10…100 °C			G 1-1/4 BSPP	SBG257	$420.00
0.3…15 lpm	-10…100 °C		PNP/NPN switching or 4…20 mA analog (flow or temperature)	R 3/4 BSPT	SBY232	$275.00
0.5…25 lpm	-10…100 °C	PNP/NPN switching or frequency (flow or temperature)		R 3/4 BSPT	SBY233	$275.00
1.0…50 lpm	-10…100 °C			R 3/4 BSPT	SBY234	$275.00
2.0…100 lpm	-10…100 °C			R 1 BSPT	SBY246	$295.00
4.0…200 lpm	-10…100 °C			R 1-1/2 BSPT	SBY257	$395.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR cable	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR cable	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR cable	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR cable	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR cable	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR cable	EVC006	$19.00

For more information on IO-Link, see pages 6 - 21.

Technical Specs

Operating voltage: 18…30 VDC
Current consumption: < 50 mA
Accuracy flow measurement: ± (4 % measured value + 1 % full range)
Accuracy temp monitoring: ± 5.4 °F (3 °C)
Protection: IP65 / IP67
Wetted parts: 316, 316L stainless steel, brass, nickel-plated brass, PPS, FKM

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Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Vortex flow meter simultaneously monitors flow rate up to 25 gpm and fluid temperature up to 194° F*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Digital transmission of two process values: flow rate and temperature*

- *Two-color TFT digital display rotates for at-a-glance status*

- *Mounts in-line with rotatable process connections for quick installation*

- *Selectable outputs for switching and frequency or dual analog*

Reliable vortex flow meter for water-based applications

NEW! ifm's SV Series vortex flow meter is designed to simultaneously monitor flow rate and detect fluid temperature of circulating water in industrial applications.

Encased in a compact robust housing for harsh environments, the meter utilizes the vortex flow principle. Behind a blunt body (or shedder) integrated in a measuring pipe, the flowing medium generates swirling vortices depending on the velocity. A piezoceramic sensor detects these vortices. Since the cross-section of the pipe is known, the number of the vortices determines the flow rate, independent of the medium's pressure and temperature fluctuations. The vortex flow technology enables a simple sensor design that can be easily manufactured at a very low cost.

At-a-glance display and easy installation takes less than five minutes

The meter provides a high contrast TFT LCD digital display that can be customized to best suit the application. The setpoints are established through a simple pushbutton menu by using scroll and enter buttons. The meter can be programmed to provide switching output (flow rate and/or temperature), flow frequency, or analog output (flow rate or temperature).

The meter's NPT process connection is easy to mount in line and fits either ½ inch or ¾ inch piping.

With features that ensure reliability and convenience, ifm's compact SV Series Vortex flow meter offers an excellent price / performance value.

In welding applications, it is essential to control the flow rate and temperature of cooling water to prolong the life of the welding tip and to assure that the weld cools rapidly for optimum quality. The SV Vortex flow meter is an ideal solution.

Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Search Bar

184

Product + accessory selector

Measuring Range (Flow)	Measuring Range (Temperature)	Output 1	Output 2	Process Connection	Part No.	List Price (USD)
0.3…5.3 gpm				1/2″ NPT	SV4610 ◉	$283.00
0.6…10.5 gpm	14…194 °F	PNP/NPN switching or frequency (flow)	PNP/NPN switching or frequency (flow or temp)	1/2″ NPT	SV5610 ◉	$283.00
1.3…26.3 gpm				3/4″ NPT	SV7610 ◉	$299.00
0.3…5.3 gpm				1/2″ NPT	SV4614	$283.00
0.6…10.5 gpm	14…194 °F	4…20 mA scalable analog (temp)	4…20 mA scalable analog (flow)	1/2″ NPT	SV5614	$283.00
1.3…26.3 gpm				3/4″ NPT	SV7614	$299.00
1…20 lpm				G 1/2 BSPP	SV4200 ◉	$283.00
2…40 lpm	-10…90 °C	PNP/NPN switching or frequency (flow)	PNP/NPN switching or frequency (flow or temp)	G 1/2 BSPP	SV5200 ◉	$283.00
5…100 lpm				G 3/4 BSPP	SV7200 ◉	$299.00
1…20 lpm				G 1/2 BSPP	SV4204	$283.00
2…40 lpm	-10…90 °C	4…20 mA scalable analog (temp)	4…20 mA scalable analog (flow)	G 1/2 BSPP	SV5204	$283.00
5…100 lpm				G 3/4 BSPP	SV7204	$299.00
1…20 lpm				R 1/2 BSPT	SV4500 ◉	$283.00
2…40 lpm	-10…90 °C	PNP/NPN switching or frequency (flow)	PNP/NPN switching or frequency (flow or temp)	R 1/2 BSPT	SV5500 ◉	$283.00
5…100 lpm				R 3/4 BSPT	SV7500 ◉	$299.00
1…20 lpm				R 1/2 BSPT	SV4504	$283.00
2…40 lpm	-10…90 °C	4…20 mA scalable analog (temp)	4…20 mA scalable analog (flow)	R 1/2 BSPT	SV5504	$283.00
5…100 lpm				R 3/4 BSPT	SV7504	$299.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Mounting plate	E40249	$6.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

◉ **For more information on IO-Link, see pages 6 - 21.**

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC, 2 m, PUR cable	EVC001	$11.00
	M12 Micro DC, 5 m, PUR cable	EVC002	$15.00
	M12 Micro DC, 2 m, PUR cable	EVC004	$11.00
	M12 Micro DC, 5 m, PUR cable	EVC005	$15.00

Technical Specs

Operating voltage:	18…30 V DC
Current consumption	typ. 25 (at 24 V) mA
Accuracy flow measurement	2 % of full range
Accuracy temperature monitoring	± 1.8 °F (1 °C)
Medium temperature	14…194 °F (-10…90 °C)
Protection rating	IP 65 / IP 67
Max. pressure	175 psi
Wetted parts	316L stainless steel, PTFE, PA6T, PPS, FKM

SM2
2" pipe

SM6
1/2" pipe

NPT connection – no additional fittings necessary

Top product features!

- Magnetic inductive flow technology provides high-precision measurement of all conductive media up to 160 gpm

- Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- Digital transmission of three process values: flow rate, flow volume and temperature

- Compact, in-line stainless steel housing with NPT connection – fits up to 2" pipes

- 4-digit numeric display indicates flow rate, total volume and temperature

- No compromise in quality – high performance at a great price

The next generation of magmeters from ifm

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 volumetric flow meter monitors a variety of conductive media > 20 μS / cm including
- industrial water
- drinking water
- water-based coolants
- water/glycol mixtures

Conductivity

water/glycol mixtures

water-based coolants

drinking water

industrial water

Types of medium with electrical conductivity   20 μS/cm

The next generation of magmeters from ifm – smaller in size at a great price/performance

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

	IO-Link	**Position Sensors**		Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	**Motion Control**	**Vision Sensors**
Company	*IO-Link*	*Inductive*	*Capacitive*					*Encoders/Speed monitors*	*2D/3D inspection*
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Search Bar

Product + accessory selector

Measuring Range (Flow)	Measuring Range (Temperature)	Output 1	Output 2	Display Units Available	Empty Pipe Detection	Process Connection	Part No.	List Price (1-pc.)
0…6.6 gpm		PNP / NPN Switching or pulse (flow)	PNP / NPN Switching or 4…20 mA / 0…10 V DC Scaleable analog (flow or temperature)	gpm, gph, gal, °F	No	1/2" NPTF	SM6601 ⟳	$513.00
0…13.2 gpm	-4...176 °F					3/4" NPTF	SM7601 ⟳	$617.00
0…26.4 gpm						1" NPTF	SM8601 ⟳	$719.00
0…80 gpm	-4...176 °F	PNP / NPN Switching, pulse or frequency (flow)		gpm, gph, gal, °F	Yes	1-1/2" NPTF	SM9601 ⟳	$961.00
0…160 gpm						2" NPTF	SM2601 ⟳	$999.00
0…13.2 gpm		4…20 mA Scaleable analog (temperature)	4…20 mA Scaleable analog (flow)	gpm, gph, lpm, m³/h, °F, °C	No	3/4" NPTF	SM7604	$617.00
0…26.4 gpm	-4...176 °F					1" NPTF	SM8604	$719.00
0…80 gpm					Yes	1-1/2" NPTF	SM9604	$961.00
0…160 gpm						2" NPTF	SM2604	$999.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00

⟳ **For more information on IO-Link, see pages 6 - 21.**

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)	< ± (0.8% 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™, FKM
Protection rating	IP67

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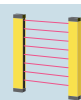| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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Types of medium with electrical conductivity   20 µS/cm

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- Totalize flow of process water
- Pump run dry protection

	Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
		IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Measuring Range (Flow)	Measuring Range (Temperature)	Output 1	Output 2	Display Units Available	Empty Pipe Detection	Part No.	List Price (1-pc.)
5...3000 ml/min	-20...80 °C	PNP / NPN Switching or pulse (flow)	N.O. / N.C. programmable or analog 4...20 mA 0... 10 V scaleable	ml/min, l/h, l, m³, °C	No	SM4000 ●	$530.00
5...3000 ml/min						SM4100 ●	$530.00
0...6.6 gpm	-4...176 °F	PNP / NPN Switching or pulse (flow)	PNP / NPN Switching 4...20 mA / 0...10V Scaleable analog (flow or temperature)	gpm, gph, gal, °F	No	SM6001 ●	$536.00
0...13.2 gpm						SM7001 ●	$644.00
0...26.4 gpm						SM8001 ●	$751.00
0...25 l/min	-20...80 °C	PNP / NPN Switching or pulse (flow)	PNP / NPN Switching 4...20 mA / 0...10V Scaleable analog (flow or temperature)	lpm, m³/h, L, °C	No	SM6000 ●	$536.00
0...50 l/min						SM7000 ●	$644.00
0...100 l/min						SM8000 ●	$751.00
0...25 l/min	-20...80 °C	4...20 mA Scaleable analog (temperature)	4...20 mA Scaleable analog (flow)	lpm, m³/h, gpm, gph, °C, °F	No	SM6004	$536.00
0...50 l/min						SM7004	$644.00
0...100 l/min						SM8004	$751.00
0...80 gpm	-4...176 °F	PNP / NPN Switching / pulse / frequency (flow)	PNP / NPN Switching 4...20 mA / 0...10V Scaleable analog (flow or temperature)	gpm, gph, gal, °F	Yes	SM9001 ●	$971.00
0...160 gpm						SM2001 ●	$1059.00
0...300 l/min	-20...80 °C			lpm, m³/h, L, °C		SM9000 ●	$971.00
0...600 l/min						SM2000 ●	$1059.00
0...300 l/min	-4...176 °F	4...20 mA Scaleable analog (temperature)	4...20 mA Scaleable analog (flow)	lpm, m³/h, gpm, gph, °C, °F	Yes	SM9004	$971.00
0...600 l/min						SM2004	$1059.00

Required Accessories (2 adapters per package)

Type	Description	Use With	Part No.	List Price (1-pkg.)
	1/2" NPT adapter	SM6	E40200	$58.00
	1/2" NPT adapter	SM7	E40191	$58.00
	1/2" NPT adapter	SM8	E40192	$58.00
	3/4" NPT adapter	SM8	E40193	$58.00
	1-1/2" NPT adapter	SM2 and SM9	E40229	$122.00
	2" NPT adapter	SM2 and SM9	E40228	$122.00
	1/4" NPT adapter	SM4	US0059	$30.00

Optional Accessories and Cordsets

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00

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)	< ± (0.8% 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™, FKM
Protection rating	IP67

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	*Pressure*	*Flow*	*Level*	*Temperature*	*AS-i network*	*Safety systems*	*RF identification systems*	*Diagnostic systems*	*Power supplies*	*Cordset solutions*
144 - 155	*156 - 175*	*176 - 191*	*192 - 207*	*208 - 225*	*226 - 239*	*240 - 251*	*252 - 253*	*254 - 259*	*260 - 263*	*264 - 277*
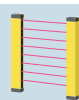
Top product features!

- 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.
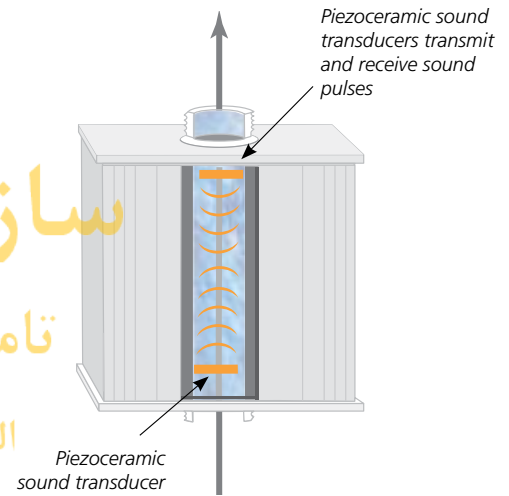
The meter provides a four-digit numeric display of the liquid's flow rate (gal/min or l/min), total quantity accumulated (gallons or liters), and medium temperature (°F or °C). The setpoints are established through a simple pushbutton setup. The meter can be programmed to provide switching output (flow 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

Piezoceramic sound transducers transmit and receive sound pulses

Piezoceramic sound transducer

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.

Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Search Bar
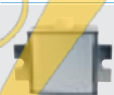
Product + accessory selector

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 or pulse (flow)	PNP / NPN Switching / 4...20 mA / 0...10V Scaleable analog (flow or temperature)	14...176 °F	gpm, gph, gal, °F	SU7001	$739.00
0...26.4 gpm					SU8001	$763.00
0...53 gpm					SU9001	$1,320.00
0...50 lpm	PNP / NPN Switching or pulse (flow)	PNP / NPN Switching / 4...20 mA / 0...10V Scaleable analog (flow or temperature)	-10...80 °C	lpm, m³/h, L, °C	SU7000	$739.00
0...100 lpm					SU8000	$801.00
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	$58.00
	1/2" NPT adapter	SU8	E40192	$58.00
	3/4" NPT adapter	SU8	E40193	$58.00
	1" NPT female adapter	SU8	US0041	$54.00
	1" NPT adapter	SU9	E40206	$223.00

Adapter material: 316 stainless steel

Optional Accessories and Cordsets

Type	Description	Part No.	List Price (1-pc.)
	SU mounting bracket	E40166	$27.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

▶ 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)
	SU7 and SU8: ±5% of measured value + 0.5% of full range (oil and glycol)
	SU9: ±8% of measured value + 0.5% of full range (oil and glycol)
Repeatability (flow):	SU7, SU8: 0.2% of full range
	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); FKM; PES (Ultrason 2010); Centellen 200
Protection rating:	IP67

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Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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Top product features!

- Accurate point-level indication of liquids and solids with low dielectric constant (e.g. oils, plastic pellets)

- Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- Continuous digital transmission of capacitance value with IO-Link

- 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 micro-processor 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.
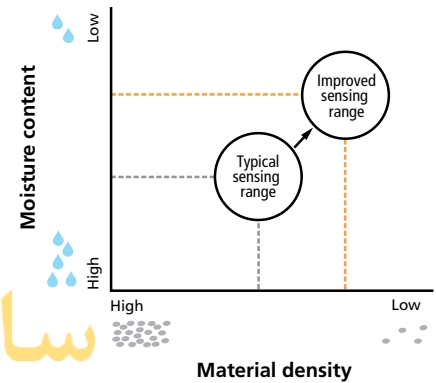
Plastic materials are now being dried at higher temperatures producing very low moisture content. The resulting materials can cause sensing problems for traditional capacitive level sensors.

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.

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 ⟲	$133.00
PNP - N.O. / N.C.	30 mm	-13…230 °F (-25…110 °C)	M12 Micro DC	KI5083 ⟲	$131.00
PNP / NPN - N.O. / N.C.	18 mm	-13…230 °F (-25…110 °C)	M12 Micro DC	KG5065 ⟲	$169.00
PNP - N.O. / N.C.	18 mm	-13…230 °F (-25…110 °C)	M12 Micro DC	KG5066 ⟲	$169.00
AC units `AC`					
N.O. / N.C.	30 mm	-13…230 °F (-25…110 °C)	1/2" Micro AC	KI0054	$166.00
N.O. / N.C.	18 mm	-13…230 °F (-25…110 °C)	1/2" Micro AC	KG0016	$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
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00
	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

⟲ **For more information on IO-Link, see pages 6 - 21.**

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.
Leakage current:	N.A.	1.7 mA @ 110 V AC
Housing material:	Plastic (PBT, PC and TPE)	Plastic (PBT, PC and TPE)
Protection rating:	IP65 / IP67	IP65 / IP67

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Safety Technology		Process Sensors			Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products		Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155		156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

KG Series with terminal chamber connection

KI6000 Series with innovative bar display

KI Series prewired and pigtail

KG Series prewired and pigtail

Top product features!

- *No moving parts for reliable point-level indication*

- *⊘ Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Easy setpoint adjustment with multi-turn potentiometer*

- *Senses level through mounting well, sight glass, plastic tank or by direct contact with media*

- *Sensor offers superior immunity to electrical noise*

Point-level sensor with easy setpoint adjustment saves time!
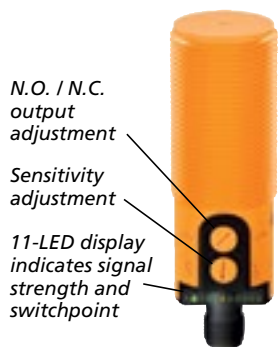
N.O. / N.C. output adjustment

Sensitivity adjustment

11-LED display indicates signal strength and switchpoint

NEW! ifm's KI6000 and KG6000 point-level sensors provide accurate level detection of solid and liquid materials. A unique 11-LED bar display indicates power and output and alerts the user if conditions have changed, build-up is occurring or if more material needs to be delivered.

The setup process is simplified by using a potentiometer to select a normally open or normally closed output and to adjust sensitivity for your application.

Reliable level detection

ifm offers a variety of point-level sensors to fit your application. Standard housings are available with AC or DC voltage and various connections. Using capacitive technology, they feature a potentiometer that adjusts the sensitivity of the sensors for a specific application. LEDs provide power and output indication. LEDs can alert if conditions have changed, buildup is occurring, or if more materials need to be delivered.

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 environments.

The KI and KG sensors detect granulars such as plastic regrind.

Using a mounting well, the sensor detects the level of liquid.

Tank empty

Tank full
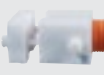
Company	IO-Link	Position Sensors						Motion Control	Vision Sensors
	⊘ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

	Output Function	Housing Diameter	Sensing Face Temperature	Electrical Connection	Supply Voltage	Part No.	List Price (1-pc.)
DC units `DC`							
NEW!	PNP, N.O. / N.C.	30 mm	-13...176 °F (-25...80 °C)	M12 connector	10…36 VDC	KI6000 ◈	$99.00
	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	$132.00
	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	$132.00
	PNP, N.O.	18 mm	-13...176 °F (-25...80 °C)	Prewired, 2 m cable	10…36 VDC	KG5043	$199.00
	PNP, N.C.	18 mm	-13...176 °F (-25...80 °C)	Prewired, 2 m cable	10…36 VDC	KG5044	$199.00
NEW!	PNP, N.O.	18 mm	-13...176 °F (-25...80 °C)	M12 connector	10…36 VDC	KG6000 ◈	$99.00
AC units `AC`							
	N.O.	30 mm	-13...158 °F (-25...70 °C)	Prewired, 2 m cable	20…250 VAC	KI0202	$159.00
	N.C.	30 mm	-13...158 °F (-25...70 °C)	Prewired, 2 m cable	20…250 VAC	KI0203	$159.00
	N.O. / N.C.	30 mm	-13...158 °F (-25...70 °C)	Terminal chamber	20…250 VAC	KI0205	$171.00
	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	$159.00
	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	$159.00
	N.O.	18 mm	-13...158 °F (-25...70 °C)	Prewired, 2 m cable	20…250 VAC	KG0009	$178.00
	N.C.	18 mm	-13...158 °F (-25...70 °C)	Prewired, 2 m cable	20…250 VAC	KG0010	$178.00
	N.O. / N.C.	18 mm	-13...158 °F (-25...70 °C)	Terminal chamber	20…250 VAC	KG0008	$178.00

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.)
	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	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00

Technical Specs

DC sensors `DC`
Maximum load current: 250 mA, 500 mA (KI6000, KG6000)
Voltage drop: <2.5
Protection rating: IP65 (KI020x, KI520x, KI6000, KG6000), IP67 (KI6000, KG00xx, KG504x, KG6000), IP69K (KI6000, KG6000)

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
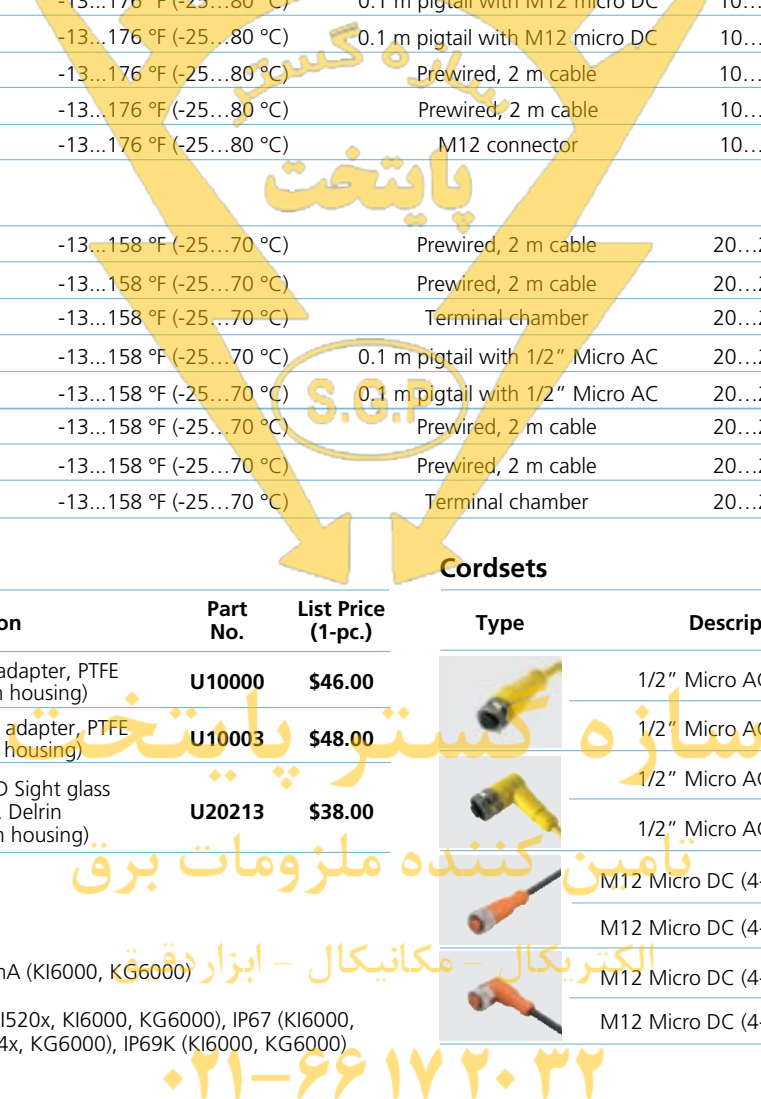
Safety Technology	Process Sensors		Level	Temperature	Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Detects bulk materials or liquids through non-metallic materials such as plastic and glass*

- ⊗ *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- ⊗ *Continuous digital transmission of capacitance value with IO-Link*

- *Sensor offers low-profile mounting – less than 15 mm high – provides same sensing range as traditional 30 mm tubular sensor*

- *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 14 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
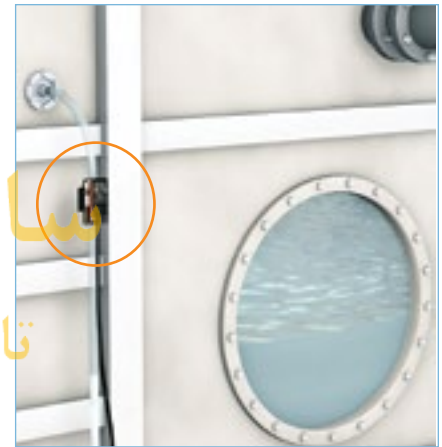
Detection of liquids on a bypass tube.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	⊗ *IO-Link*	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

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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...30 VDC	100 mA	17 mA	2.5 V	2m PVC cable	KQ6001 ◉	$100.00
PNP, N.O. / N.C.	10...30 VDC	100 mA	17 mA	2.5 V	2m PVC cable	KQ6002 ◉	$100.00
PNP / NPN, N.O. / N.C.	10...30 VDC	100 mA	17 mA	2.5 V	40 mm PVC pigtail with M8 Pico DC	KQ6003 ◉	$99.00
PNP, N.O. / N.C.	10...30 VDC	100 mA	17 mA	2.5 V	40 mm PVC pigtail with M8 Pico	KQ6004 ◉	$99.00
PNP, N.O. / N.C.	10...30 VDC	100 mA	17 mA	2.5 V	100 mm PVC pigtail with M12 Micro DC	KQ6005 ◉	$108.00

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	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M8 Pico DC (4-pin) 2 m, PUR cable	EVC150	$15.00
	M8 Pico DC (4-pin) 5 m, PUR cable	EVC151	$18.00

Optional Accessories

Type	Description	Part No.	List Price
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

◉ **For more information on IO-Link, see pages 6 - 21.**

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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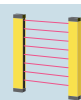| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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Top 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
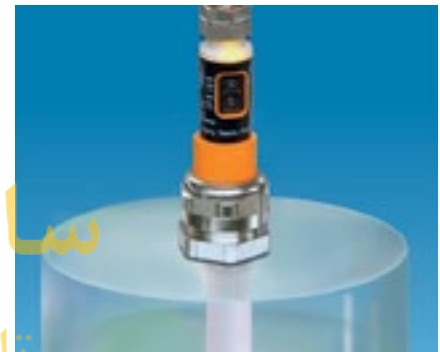
The operating concept enables setting and adjustment of the output function via two pushbuttons. Deposits can be suppressed during operation without carrying out a new adjustment.

Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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**	**$173.00**
PNP, N.O. / N.C.	273 mm	31 mm	See Required Accessories	32...149 °F (0...65 °C)	**LI5142**	**$179.00**
PNP, N.O. / N.C.	481 mm	31 mm	See Required Accessories	32...149 °F (0...65 °C)	**LI5143**	**$184.00**
PNP, N.O. / N.C.	737 mm	31 mm	See Required Accessories	32...149 °F (0...65 °C)	**LI5144**	**$191.00**

Required Accessories (choose one)

Type	Description	Part No.	List Price (1-pc.)
	3/4" NPT adapter	**E43012**	**$41.00**
	1" NPT adapter	**E43013**	**$45.00**
	G3/4 BSPP adapter	**E43003**	**$41.00**
	G1 BSPP adapter	**E43004**	**$43.00**
	Flange adapter	**E43001**	**$39.00**
	Weldable adapter	**E43002**	**$41.00**

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	**EVC001**	**$11.00**
	M12 Micro DC (4-pin) 5 m, PUR	**EVC002**	**$15.00**
	M12 Micro DC (4-pin) 10 m, PUR	**EVC003**	**$19.00**
	M12 Micro DC (4-pin) 2 m, PUR	**EVC004**	**$11.00**
	M12 Micro DC (4-pin) 5 m, PUR	**EVC005**	**$15.00**
	M12 Micro DC (4-pin) 10 m, PUR	**EVC006**	**$19.00**

▶ 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
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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Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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Top product features!

- Point level sensor with the most reliable deposit suppression on the market

- ⟳ Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- ⟳ Media differentiation is possible via IO-Link

- Plug and play setup with factory media settings for water or oil

- Compact stainless steel housing with IP69K environmental protection

- Robust electronics with high shock and vibration resistance

Point level sensor reliably suppresses residues, splashes and foam

NEW! The LMC family reliably monitors level in a variety of industrial applications including machine tools, wastewater management, hydraulic systems, and pump run dry protection. Additionally, the back thread option provides a top-mount level solution for custom depths.

Versatile sensor for all media types

The LMC sensor can be set to detect almost any liquid or viscous media as well as bulk materials. Permanent media temperatures up to 212 °F (100 °C) or heavy adhesion are no problem for the LMC.

Identifying two different types of media is possible due to the two programmable switching outputs. Parameters can be set for each output independently with IO-Link LR device software and USB cable accessory.

The LMC sensor is ideal for pipe level applications and eliminates obstructions in the flow path that reduce throughput.

Search Bar	Company	IO-Link	Position Sensors		Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Motion Control	Vision Sensors
		IO-Link	Inductive	Capacitive					Encoders/Speed monitors	2D/3D inspection
	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Process Connection	Insertion Length (mm)	Factory Default Media Setting	Programmable	Medium Temp	Part No.	List Price (1-pc.)
M12 connector · N.O. / N.C. complementary						
1/2″ NPT	34	Water-based	Yes	-13…212 °F	**LMC500**	**$145.00**
1/2″ NPT	34	Oil-based	Yes	-13…212 °F	**LMC510**	**$145.00**
1/2″ NPT	38	Water-based	Yes	-13…212 °F	**LMC502**	**$213.00**
G 1/2 BSPP	12	Water-based	Yes	-13…212 °F	**LMC100**	**$145.00**
G 1/2 BSPP	12	Oil-based	Yes	-13…212 °F	**LMC110**	**$145.00**
G 1/2 BSPP Thread at the back	21	Water-based	Yes	-13...212 °F	**LMC400**	**$145.00**
G 1/2 BSPP Thread at the back	21	Oil-based	Yes	-13…212 °F	**LMC410**	**$145.00**

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Welding adapter for LMC4xx, G 1/2, 316 stainless steel	E43375	$12.00
	Flat seal for LMC1xx and LMC4xx, pack of 6	E43376	$4.00
	LR device (supplied on USB flash drive) Software for online and offline parameter setting	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00

For more information on IO-Link, see pages 6 - 21.

Technical Specs

Operating Voltage: 18...30 V DC
Current Rating: 100 mA
Housing materials: 316L stainless steel
Materials wetted parts: PEEK, 316L stainless steel, FPM
Protection: IP 68 / IP 69K
Ambient temp: -13...185 °F
Medium temp: -13... 212 °F

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Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Ideal for level detection of water-based media in compact tanks*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Easy setup and commissioning with IO-Link parameterization*

- *No moving parts – replaces float switches*

- *Built-in switching and analog output*

- *Simple mounting with cut-to-length measuring probe*

Water-based media

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.
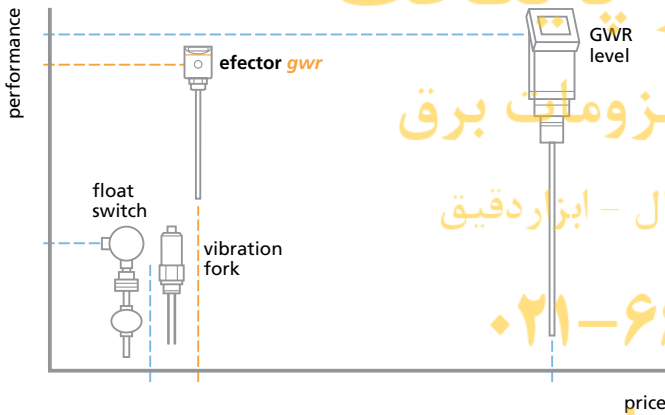
Easy installation

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".

	Company	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics/ lasers/fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
		IO-Link	Inductive	Capacitive					Encoders / Speed monitors	2D / 3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Output	Process Connection	Probe Length	Media	Medium Temperature Range	Part No.	List Price (1-pc.)
With 4-digit LED Display						
NEW! 4…20 mA / 0…10 V and PNP, N.O. / N.C.	3/4" NPT	See required accessories	Water-based solutions	-4…212 °F (-20…100 °C)	LR2350	$525.00
2 x PNP, N.O. / N.C.	3/4" NPT	See required accessories	Water-based solutions	32…176 °F (0…80 °C)	LR7300	$441.00
4 x PNP, N.O. / N.C.	3/4" NPT	See required accessories	Water-based solutions	32…176 °F (0…80 °C)	LR8300	$518.00
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	$526.00
NEW! 4…20 mA / 0…10 V and PNP, N.O. / N.C..	G3/4 BSPP	See required accessories	Water-based solutions	-4…212 °F (-20…100 °C)	LR2050	$525.00
2 x PNP, N.O. / N.C.	G3/4 BSPP	See required accessories	Water-based solutions	32…176 °F (0…80 °C)	LR7000	$441.00
4 x PNP, N.O. / N.C.	G3/4 BSPP	See required accessories	Water-based solutions	32…176 °F (0…80 °C)	LR8000	$518.00
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	$526.00
Without Display						
4…20 mA / 0…10 V DC	G3/4 BSPP	See required accessories	Water-based solutions	32…176 °F (0…80 °C)	LR9020	$386.00

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	$31.00
	700 mm Sensing probe, 316 SS	E43205	$42.00
	1000 mm Sensing probe, 316 SS	E43207	$68.00
	1200 mm Sensing probe, 316 SS	E43208	$79.00
	1400 mm Sensing probe, 316 SS	E43209	$94.00
	1600 mm Sensing probe, 316 SS	E43210	$110.00
	2000 mm Sensing probe, 316 SS for LR2xxx	E43353	$105.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Mounting flange, 3/4" NPT	E43206	$48.00
	Mounting flange, G3/4 BSPP	E43201	$48.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00
	M12 Micro DC (8-pin) 2 m, PUR (for LR8)	E11231	$29.00
	M12 Micro DC (8-pin) 5 m, PUR (for LR8)	E11232	$36.00
	T-splitter (8-pin female M12 to two 4-pin male M12)	E11627	$55.00

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, FKM
Protection rating: IP67, IP169K (LR2350, LR2050, LR9020)

For more information on IO-Link, see pages 6 - 21.

Safety Technology	Process Sensors		Level	Temperature	Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
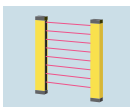
Top product features!

- *Modular level sensor is ideal for level detection of oils or water-based media in compact tanks*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Easy setup and commissioning with IO-Link parameterization*

- *Stainless steel housing with no moving parts that can stick is an ideal alternative to float switches*

- *Built-in switching and analog output*

- *Simple mounting with cut-to-length measuring probe*

Oil and water-based media
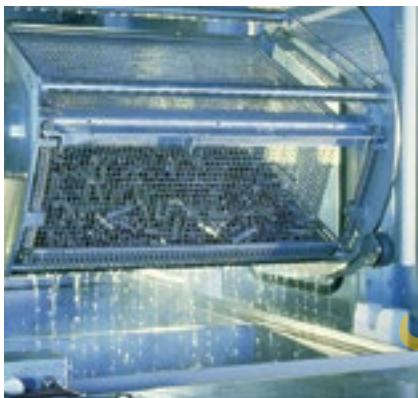
Reliable level detection for oils or water-based media

Versatile level sensor for harsh applications

The LR Series level sensor's measuring principle uses guided wave radar technology to detect liquid level in applications such as parts cleaning, coolant monitoring, water treatment, hydraulic power units and hot glue in corrugated cardboard manufacturing. This technology enables a powerful signal and the ability to suppress foam and buildup that causes false triggers.

Quick and easy installation

The modular design consists of a compact, 316 stainless steel sensor housing with digital display, pushbutton setup and stainless steel measuring probe that easily attaches to the sensor housing. A wide variety of common adapters and probe lengths are available. Probes can be cut to fit any custom length.

To monitor oil and low-dielectric fluids, a coaxial tube is required that slips over the probe and provides a direct 3/4" NPT (or G3/4 BSPP) process connection.

Resistant construction materials

The one-piece, completely welded LR2050 sensor eliminates moisture ingress and has a high protection rating of IP 69K. Parameters are easily set by using the sensor's pushbutton menu, ifm's LineRecorder software or IO-Link.

ifm's LR Series continuous level sensor has no moving parts to stick and break, withstands the harshest of environments and provides long life-in-application.

Modular level system is easy to install

A *LR sensor housing indicates level on its 4 digit display*

B *Standard level probe*

C *Coaxial tube focuses the radar signal and is required for oils and low dielectric applications*

Company	IO-Link	Position Sensors		Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Motion Control	Vision Sensors
	IO-Link	Inductive	Capacitive					Encoders/Speed monitors	2D/3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

A LR Level Sensor

Output	Display	Media	Medium Temperature Range	Part No.	List Price (1-pc.)
4…20 mA and PNP / NPN switching	4 digit LED	Oil and water-based solutions	-4…212 °F (-20…100 °C)	LR2050	$525.00
2 x PNP, N.O. / N.C.	4 digit LED	Oil and water-based solutions	32…176 °F (0…80 °C)	LR7000	$441.00
4 x PNP, N.O. / N.C.	4 digit LED	Oil and water-based solutions	32…176 °F (0…80 °C)	LR8000	$518.00
4…20 mA / 0…10 V and PNP, N.O. / N.C.	4 digit LED	Oil and water-based solutions	32…176 °F (0…80 °C)	LR3000	$526.00
4…20 mA / 0…10 V DC	No display	Oil and water-based solutions	32…176 °F (0…80 °C)	LR9020	$386.00

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	$31.00
	700 mm Probe, 316 SS	E43205	$42.00
	1000 mm Probe, 316 SS	E43207	$68.00
	1200 mm Probe, 316 SS	E43208	$79.00
	1400 mm Probe, 316 SS	E43209	$94.00
	1600 mm Probe, 316 SS	E43210	$110.00
	2000 mm Probe, 316 SS for LR2xxx	E43353	$105.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00
	M12 Micro DC (8-pin) 2 m, PUR for (LR8)	E11231	$29.00
	M12 Micro DC (8-pin) 5 m, PUR (for LR8)	E11232	$36.00
	T-splitter (8-pin female M12 to two 4-pin male M12)	E11627	$55.00

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, FKM
Protection rating: IP67; IP69K (LR2350, LR2050, LR9020)

C Required Accessory - Coaxial Tube (choose one)

Type	Description	Part No.	List Price (1-pc.)
	450 mm tube, 3/4" NPT, 304 SS	E43218	$92.00
	700 mm tube, 3/4" NPT, 304 SS	E43219	$105.00
	1000 mm tube, 3/4" NPT, 304 SS	E43220	$120.00
	1200 mm tube, 3/4" NPT, 304 SS	E43223	$144.00
	1400 mm tube, 3/4" NPT, 304 SS	E43224	$170.00
	1600 mm tube, 3/4" NPT, 304 SS	E43221	$191.00
	2000 mm tube, 3/4" NPT (for LR2xxx only)	E43378	$218.00
	240 mm tube, G3/4 BSPP, 304 SS	E43211	$80.00
	450 mm tube, G3/4 BSPP, 304 SS	E43212	$92.00
	700 mm tube, G3/4 BSPP, 304 SS	E43213	$105.00
	1000 mm tube, G3/4 BSPP, 304 SS	E43214	$120.00
	1200 mm tube, G3/4 BSPP, 304 SS	E43215	$144.00
	1400 mm tube, G3/4 BSPP, 304 SS	E43216	$169.00
	1600 mm tube, G3/4 BSPP, 304 SS	E43217	$191.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Replacement centering piece with fixing bracket and o-ring for coaxial tubes	E43222	$15.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
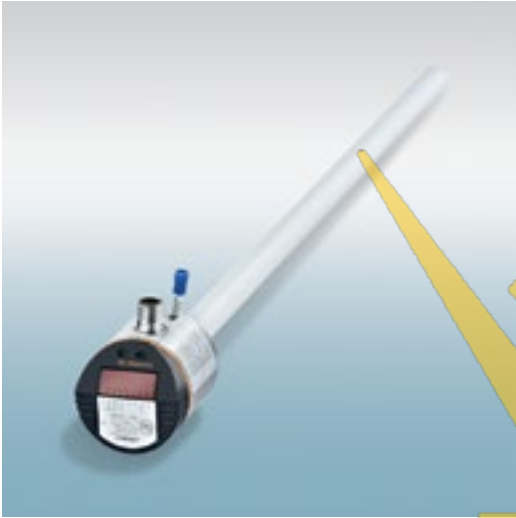
Top product features!

- *Electronic level sensor replaces mechanical float switches that can stick*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *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. Versions are available with a single swtichpoint indicating an overflow alarm.

The LT Series level sensors are designed with a Pt element at the base of the probe and are capable of monitoring temperature as well as continuous level indication.

Easy mounting

ifm's electronic LK level sensors can be inserted into a tank opening as small as 20 mm in diameter.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	*IO-Link*	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Continuous Level Monitoring

Output	Probe Length	Active Measuring Zone	Required Accessories	Suitable Media	Part No.	List Price (1-pc.)
2x PNP / NPN, N.O. / N.C.	264 mm	196 mm	See below	Water / Oil	LK1022	$441.00
2x PNP / NPN, N.O. / N.C.	472 mm	391 mm	See below	Water / Oil	LK1023	$478.00
2x PNP / NPN, N.O. / N.C.	729 mm	584 mm	See below	Water / Oil	LK1024	$510.00
3x PNP / NPN, N.O. / N.C. & OP*	264 mm	196 mm	See below	Water / Oil	LK8122	$503.00
3x PNP / NPN, N.O. / N.C. & OP*	472 mm	391 mm	See below	Water / Oil	LK8123	$546.00
3x PNP / NPN, N.O. / N.C. & OP*	729 mm	584 mm	See below	Water / Oil	LK8124	$575.00
4…20 mA / 0…10 V & OP*	264 mm	196 mm	See below	Water / Oil	LK3122	$509.00
4…20 mA / 0…10 V & OP*	472 mm	391 mm	See below	Water / Oil	LK3123	$552.00
4…20 mA / 0…10 V & OP*	729 mm	584 mm	See below	Water / Oil	LK3124	$581.00

*Dedicated overflow output protection

Continuous Level and Temperature Monitoring

Output	Probe Length	Active Measuring Zone	Required Accessories	Suitable Media	Part No.	List Price (1-pc.)
NEW! 4…20 mA / 0…10 V, PNP / NPN, N.O. / N.C.	264 mm	195 mm	See below	Water / Oil	LT3022	$530.00
NEW! 4…20 mA / 0…10 V, PNP / NPN, N.O. / N.C.	472 mm	391 mm	See below	Water / Oil	LT3023	$565.00
NEW! 4…20 mA / 0…10 V, PNP / NPN, N.O. / N.C.	728 mm	585 mm	See below	Water / Oil	LT3024	$590.00
2x PNP / NPN, N.O. / N.C. (level and temp)	264 mm	196 mm	See below	Water / Oil	LT8022	$536.00
2x PNP / NPN, N.O. / N.C. (level and temp)	472 mm	391 mm	See below	Water / Oil	LT8023	$577.00
2x PNP / NPN, N.O. / N.C. (level and temp)	729 mm	584 mm	See below	Water / Oil	LT8024	$606.00

Required Accessories

Type	Description	Part No.	List Price (1-pc.)
	3/4" NPT adapter	E43012	$41.00
	1" NPT adapter	E43013	$45.00
	G3/4 BSPP adapter	E43003	$41.00
	G1 BSPP adapter	E43004	$41.00
	Flange adapter	E43001	$39.00
	Weldable adapter	E43002	$41.00

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
Protection rating: IP67

Optional Accessory and Cordsets

Type	Description	Part No.	List Price (1-pc.)
	T-splitter (8-pin female M12 to two 4-pin male M12)	E11627	$52.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00
	M12 Micro DC (8-pin) 5 m, PUR (for LK8 and LT8)	E11232	$36.00

| Safety Technology		Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products		Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155		156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
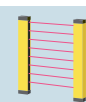
Top product features!

- One-piece temperature switch with high protection rating for harsh environments

- Measuring range -58...302 °F (-50...150 °C)

- Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- Two solutions: continuous transmission of process value via IO-Link and 2 switching outputs

- Extremely high accuracy of ± 0.5 °F

Two temperature sensors in one

NEW! The TV temperature sensor provides long-term, highly accurate temperature monitoring of fluids in a variety of industrial applications. The one-piece housing, with integrated electronics, 6 mm diameter probe and threaded process connector, is made of durable 316 stainless steel and can withstand harsh environments. Its compact design is ideal for mounting the TV sensor in tight application spaces.

Fast and precise

ifm's TV temperature sensors use a high accuracy Pt1000 class A RTD with a low mass tip design for fast response.

The sensor has two switch points that can be easily set via the Line Recorder device software. The sensor can be integrated into any control system either by using the dual switching outputs or via an IO-Link master block connected to the plc.

Reliable digital transmission via IO-Link

IO-Link provides a pure digital transmission that is more accurate than analog signal transmission. Using IO-link, the TV temperature sensor reliably transmits minimum and maximum temperature values to the controller. By continually analyzing real-time process data, machines can be maintained with greater accuracy and operators can better maximize overall equipment effectiveness.

Callouts:
- High grade stainless steel housing, IP69K
- Measuring range -58...302 °F
- Pressure resistant up to 5800 psi
- Fast response tip (T05=1 sec / T09=3 sec)
- Pt1000, class A
- 2 switching outputs PNP / NPN, N.O. / N.C. programmable
- IO-Link digital signal
- High accuracy (± 0.5 °F) over entire operating range
- Integrated process connections
- Probe lengths 25 and 30 mm

Product + accessory selector

RTD Length (mm)	Pressure Rating (psi)	Process Connection	Factory Default PNP N.O. Setpoint 1/2	Maximum Temperature Range	Part No.	List Price (1-pc.)
2 x PNP / NPN · NO / NC						
25	5800	1/4″ NPT	140 °F / 248 °F	-58...302 °F (-50...150 °C)	TV7603 ◉	$134.00
30	4350	1/2″ NPT	140 °F / 248 °F	-58...302 °F (-50...150 °C)	TV7303 ◉	$139.00
25	5800	G 1/4	60 °C / 120 °C	-58...302 °F (-50...150 °C)	TV7105 ◉	$134.00
30	4350	G 1/2	60 °C / 120 °C	-58...302 °F (-50...150 °C)	TV7405 ◉	$139.00

Accessories

	Description	Part No.	List Price (1-pc.)
	LineRecorder device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Cordsets

	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

▶ 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 A
Supply voltage: 18...32 VDC
Maximum load current: < 100 mA
Accuracy of switch point: ± 0.54 °F (± 0.3 °C)
Response time T05 / T09: 1/3 sec
Ambient temperature: -13...176 °F (-25...80 °C)
Wetted parts: 316L stainless steel
Protection rating: IP69K

On-time delivery with accuracy
Our goal in the ifm Distribution Center is to ensure uptime in your facility.

✎ **Place orders, tech support** 800-441-8246
🖱 **Visit our product catalog** www.ifm.com/us
🛒 **Shop for products online** Easy ordering via eShop

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top 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.

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.

	IO-Link	**Position Sensors**							**Motion Control**	**Vision Sensors**	
Company	IO-Link	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*		*Encoders / Speed monitors*	*2D / 3D inspection*	
Search Bar	ifm										
	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143	

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	50mm	3...284 °F (-16…140 °C)	-4...277 °F (-20...136 °C)	1/4" NPT	< 3 sec.	TK6310	$140.00
PNP, N.O. and N.C. adjustable hysteresis	50 mm	3...284 °F (-16…140 °C)	-4...277 °F (-20...136 °C)	G1/4 BSPP	< 3 sec.	TK6110	$140.00
PNP, 2X N.O. with fixed hysteresis (9 °F / 5 °C)	50 mm	-4...284 °F (-20...140 °C)	–	G1/4 BSPP	< 3 sec.	TK7110	$140.00
PNP, N.O. and N.C. with fixed hysteresis (9 °F / 5 °C)	250 mm	-4...284 °F (-20...140 °C)	–	G1/2 BSPP	< 3 sec.	TK7460	$140.00

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	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

▶ 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 A
Supply voltage: 9.6…32 VDC
Maximum load current: 2x 500 mA
Accuracy of switch point: ± 5.4 °F (± 3 °C)
Pressure rating: 5800 psi (400 bar); TK7460 is 4350 psi (300 bar)
Ambient temperature: -40... 176 °F (-40... 80 °C) at max 176 °F (80 °C);
                         -40... 122 °F (-40... 50 °C) at max 293 °F (145 °C)
Wetted parts: 316L stainless steel
Protection rating: IP67

Simple and comprehensive website

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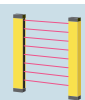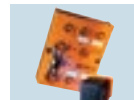| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- Integrated solution: RTD, display and switching/transmitter output

- Integrated process connections: 1/2" NPT, 1/4" NPT, G 1/2" and G 1/4"

- ⟳ Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- ⟳ Digital transmission of process value eliminates analog signal drift and noise

- Parameter setup in less than 5 minutes with 3-pushbutton menu

- Configurable for dual switching output (2 x PNP / NPN) or 1 switching and 1 analog output (4…20 mA / 0…10 V)

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.

	IO-Link	Position Sensors				Distance / Application specific		Motion Control	Vision Sensors
Company	⟳ IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Output	Probe Length (mm)	Switchpoint Setting Range	Scaleable Analog Start Point	Scaleable Analog End Point	Pressure Rating (psi)	Process Connection	Part No.	List Price (1-pc.)
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	45	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	4350	See required accessories	TN2511	$299.00
PNP / NPN N.O. / N.C.	45	-58…302 °F (-50…150 °C)	-	-	4350	See required accessories	TN7511	$299.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	30	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	4350	1/2" NPT	TN2303	$314.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	50	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	4350	1/2" NPT	TN2313	$314.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	100	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	3625	1/2" NPT	TN2333	$319.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	150	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	3625	1/2" NPT	TN2343	$319.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	25	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	5800	1/4" NPT	TN2603	$309.00
4-20 mA / 0-10 V and PNP / NPN N.O. / N.C.	50	-58…302 °F (-50…150 °C)	-58…293 °F (-50…145 °C)	-49…302 °F (-45…150 °C)	5800	1/4" NPT	TN2613	$309.00

Required Accessories (choose 1)

	Description	Part No.	List Price (1-pc.)
	1/4" NPT adapter	E40106	$22.00
	1/2" NPT adapter	E40107	$24.00
	3/4" NPT adapter	U40085	$45.00
	1" NPT adapter, 304 stainless steel and brass	U40080	$72.00
	G1/4 BSPP adapter	E40099	$22.00
	G1/2 BSPP adapter	E40096	$27.00
	Weldable adapter, carbon steel	E40113	$19.00
	Weldable adapter, 316 stainless steel	E40124	$41.00
	1/2" NPT thermowell, 27 mm (no other adapters required)	UT0028	$46.00

Cordsets and Optional Accessories

	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00
	Transparent protective cover	E30006	$8.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Technical Specs

Measuring element:	Pt1000, Class A
Response time T05/T09:	1/3 sec
Supply voltage:	18…32 VDC
Maximum load current:	250 mA
Accuracy of analog signal:	± 0.54 °F (± 0.3 °C)
Accuracy of switch point:	± 0.54 °F (± 0.3 °C)
Ambient temperature:	-13…176 °F (-25…80 °C)
Wetted parts:	316 stainless steel; FKM O-ring
Protection rating:	IP67

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Top product features!

- One-piece temperature transmitter with 2-wire loop power installation and maximum temperature up to 200 °C (392 °F)

- Fast response time: T05 / T09 = 1/3 sec

- LED indicates the operating status

- Installation lengths from 25...150 mm

- ⊘ Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- ⊘ Digital transmission of process value eliminates analog signal drift and noise

Compact one-piece design, fast response temperature transmitters

ifm's new line of TA2 transmitters offer an ideal combination of features, performance and value. The TA2 is a compact transmitter with a 4...20 mA current output and pre-scaled to common measuring ranges. Scaling over the maximum measuring range is done simply via LineRecorder or IO-Link.

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.
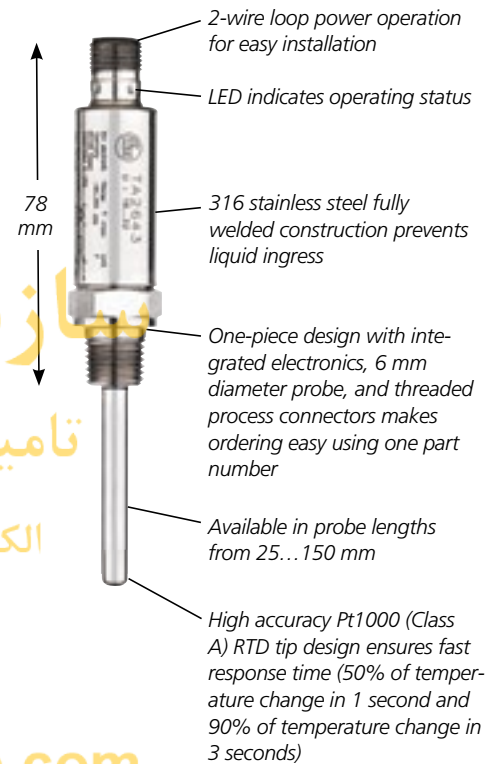
78 mm

2-wire loop power operation for easy installation

LED indicates operating status

316 stainless steel fully welded construction prevents liquid ingress

One-piece design with integrated electronics, 6 mm diameter probe, and threaded process connectors makes ordering easy using one part number

Available in probe lengths from 25...150 mm

High accuracy Pt1000 (Class A) RTD tip design ensures fast response time (50% of temperature change in 1 second and 90% of temperature change in 3 seconds)

	Company	IO-Link ⊘ IO-Link	Position Sensors Inductive	Capacitive	Cylinder/valve position	Photoelectrics/ lasers/fiber optics	Distance/ Application specific	Ultrasonic	Motion Control Encoders/ Speed monitors	Vision Sensors 2D/3D inspection
Search Bar	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

RTD Length (mm)	Pressure Rating (psi)	Process Connection	Factory Default Temperature Range (scaled 4…20 mA)	Maximum Temperature Range	Part No.	List Price (1-pc.)
25	5800	1/4 NPT	0...300 °F	-58...302 °F	TA2603	$174.00
50	5800	1/4 NPT	0...300 °F	-58...302 °F	TA2613	$174.00
100	4350	1/4 NPT	0...300 °F	-58...302 °F	TA2633	$179.00
150	4350	1/4 NPT	0...300 °F	-58...302 °F	TA2643	$179.00
30	5800	1/2 NPT	0...300 °F	-58...302 °F	TA2303	$184.00
50	4350	1/2 NPT	0...300 °F	-58...302 °F	TA2313	$184.00
100	4350	1/2 NPT	0...300 °F	-58...302 °F	TA2333	$190.00
150	4350	1/2 NPT	0...300 °F	-58...302 °F	TA2343	$190.00
25	5800	G 1/4 BSPP	-50…150 °C	-50…150 °C	TA2105	$174.00
50	5800	G 1/4 BSPP	-50…150 °C	-50…150 °C	TA2115	$174.00
100	4350	G 1/4 BSPP	-50…150 °C	-50…150 °C	TA2135	$179.00
150	4350	G 1/4 BSPP	-50…150 °C	-50…150 °C	TA2145	$179.00
30	5800	G 1/2 BSPP	-50…150 °C	-50…150 °C	TA2405	$184.00
50	4350	G 1/2 BSPP	-50…150 °C	-50…150 °C	TA2415	$184.00
100	4350	G 1/2 BSPP	-50…150 °C	-50…150 °C	TA2435	$190.00
150	4350	G 1/2 BSPP	-50…150 °C	-50…150 °C	TA2445	$190.00
150	2320	1/2 NPT	-50…150 °C	-50…150 °C	TA2345	$190.00
50	4350	G 1/2 BSPP	0…100 °C	-50…150 °C	TA2417	$184.00
100	2320	G 1/2 BSPP	0…100 °C	-50…150 °C	TA2437	$190.00
150	4350	G 1/2 BSPP	-50…150 °C	-50…150 °C	TA2445	$100.00
150	2320	G 1/2 BSPP	0…100 °C	-50…150 °C	TA2447	$185.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	1/2" NPT thermowell, 63.5 mm insertion length for TA2333, TA2435	E37210	$23.00
	1/2" NPT thermowell, 114 mm insertion length for TA2343, TA2445	E37220	$35.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

For more information on IO-Link, see pages 6 - 21.

Cordsets

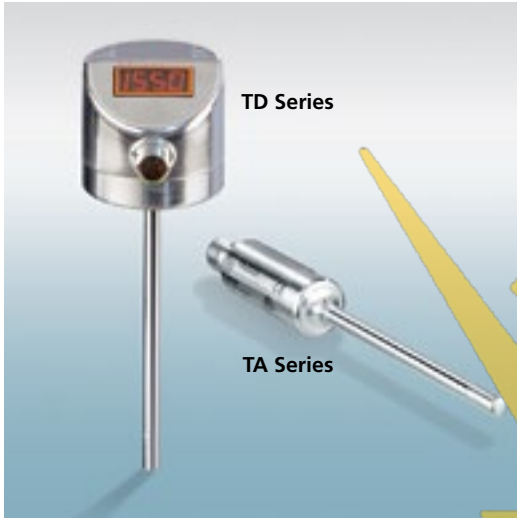| Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

Technical Specs

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) ± 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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TD Series

TA Series

Top product features!

- Transmitters provide highly accurate temperature indication

- ⊘ *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- ⊘ *Digital transmission of process value eliminates analog signal drift and noise*

- *One-piece 316 stainless steel housing features integrated electronics, process connector and Class "A" RTD probe that are laser-welded and factory calibrated*

- *LED indicates the operating status of the TA; the bright, 4-digit LED display of the TD indicates measured temperature directly at the instrument*

Temperature transmitters are completely assembled, calibrated and ready to install

NEW! The TD and TA 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 of the TD 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 and TA come fully assembled and factory calibrated for the highest degree of reliability. This saves both installation and commissioning time.

Challenge

Solution

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.

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.

Product + accessory selector

Maximum Temperature Range	RTD Length [mm]	RTD Diameter [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	
TD with display							
-58…302 °F (-50…150 °C)	50	6	–	**TD2211**	**TD2213**	**TD2217**	$235.00
-58…302 °F (-50…150 °C)	100	6	–	**TD2231**	**TD2233**	**TD2237**	$242.00
-58…302 °F (-50…150 °C)	150	6	UT0050 / E37210	**TD2241**	**TD2243**	**TD2247**	$247.00
-58…302 °F (-50…150 °C)	200	6	UT0051 / E37220	**TD2251**	**TD2253**	**TD2257**	$255.00
-58…302 °F (-50…150 °C)	250	6	–	**TD2261**	**TD2263**	**TD2267**	$260.00
-58…302 °F (-50…150 °C)	300	6	E37230 / E37430	**TD2271**	**TD2273**	**TD2277**	$266.00
-58…302 °F (-50…150 °C)	350	6	E37250 / E37450	**TD2291**	**TD2293**	**TD2297**	$272.00
TA without display				-10…150 °C		0…200 °C	
-58…392 °F (-50…200 °C)	50	6	–	–		**TA2212**	$185.00
-58…392 °F (-50…200 °C)	100	6	–	–		**TA2232**	$191.00
-58…392 °F (-50…200 °C)	150	6	UT0050 / E37210	**TA2241**		**TA2242**	$191.00
-58…392 °F (-50…200 °C)	250	6	–	–		**TA2262**	$197.00
-58…392 °F (-50…200 °C)	350	6	E37250 / E37450	–		**TA2292**	$202.00

Thermowell Mounting (Requires UT0042 compression fitting)

Type	Description	Part No.	List Price (1-pc.)
	1/2" NPT compression fitting with nylon ferrules for removable installation in thermowell	**UT0042**	$31.00

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**	$35.00

Cordsets

	M12 Micro DC (4-pin) 2 m, PUR	**EVC001**	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	**EVC002**	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	**EVC003**	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	**EVC004**	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	**EVC005**	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	**EVC006**	$19.00

Optional Accessories

	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

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 ± 0.3 + (0.19 % of measuring span) °C
Pressure rating	232 psi
Ambient temperature	-13…176 °F (-25…80 °C)
Wetted parts	316L stainless steel
Protection rating	IP67 / IP68 / IP69K

For more information on IO-Link, see pages 6 - 21.

Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top product features!

- *Compact transmitter with "Lock in Place" M12 connectors*

- *Plug-and-play connection eliminates wiring errors*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Digital transmission of process signal eliminates analog signal drift and noise*

- *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.
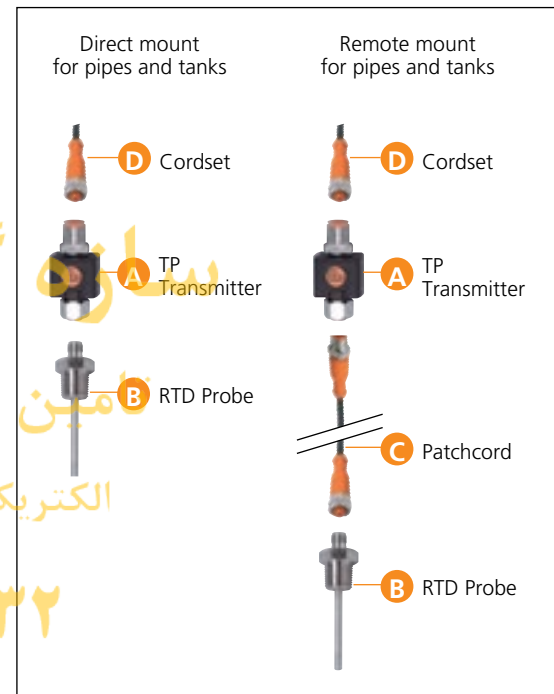
Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED gives local indication that the transmitter is powered and transmitting.

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

Direct mount for pipes and tanks

D Cordset
A TP Transmitter
B RTD Probe

Remote mount for pipes and tanks

D Cordset
A TP Transmitter
C Patchcord
B RTD Probe

Product + accessory selector

Ⓐ 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 ⟳	$95.00
		-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 ⟳	$95.00
		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 ⟳	$95.00
		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 ⟳	$95.00
	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 ⟳	$95.00

Ⓑ 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	$100.00
1/2″ NPT	100 mm	6 mm	-40…302 °F (-40…150 °C)	1/3 sec.	TM4331	$103.00
1/2″ NPT	150 mm	6 mm	-40…302 °F (-40…150 °C)	1/3 sec.	TM4341	$105.00
1/2″ NPT	250 mm	6 mm	-40…302 °F (-40…150 °C)	1/3 sec.	TM4361	$114.00

* For other RTD probes and accessories, please see pages 222 - 223.

Optional Accessories

	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

⟳ **For more information on IO-Link, see pages 6 - 21.**

Ⓓ Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

Ⓒ 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

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 ±0.3 °C + (± 0.1%) of the scaled span
Housing material:	TPU with FKM seal
Material coupling nut:	316L stainless steel
Protection rating:	IP67

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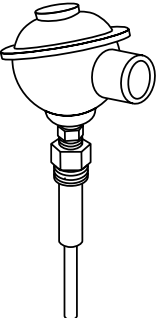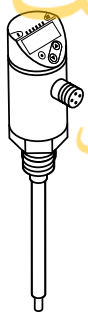| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277
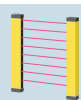
Top product features!

- *Temperature monitor has integrated display with switching and transmitter outputs*

- *Dual color (red / green) display for at-a-glance indication; large bright LEDs can be seen from all angles and indicate output status*

- *Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback*

- *Digital transmission of process value eliminates analog signal drift and noise*

- *Directly interfaces with any 2, 3, and 4 wire RTDs*

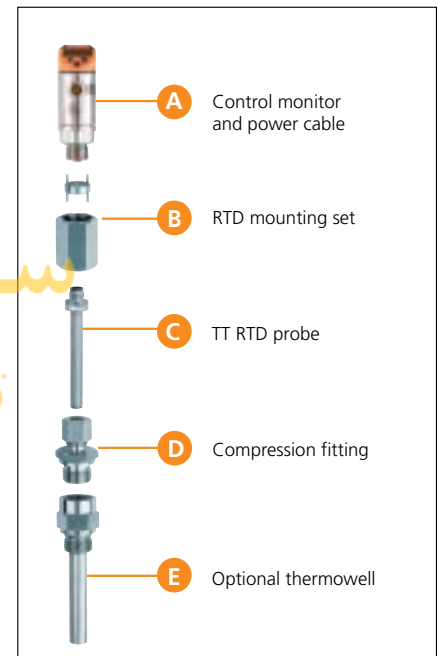## More compact and easier to install than head-and-well assemblies

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.

Two monitors available:
- Model TR2439 provides a scaleable analog and switching output.
- Model TR7439 features a dual switching output.
- Both monitors have a temperature range of -40 to 1112 °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.

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.

Component Guide

A	Control monitor and power cable
B	RTD mounting set
C	TT RTD probe
D	Compression fitting
E	Optional thermowell

	IO-Link	**Position Sensors**						**Motion Control**	**Vision Sensors**
Company	*IO-Link*	*Inductive*	*Capacitive*	*Cylinder / valve position*	*Photoelectrics / lasers / fiber optics*	*Distance / Application specific*	*Ultrasonic*	*Encoders / Speed monitors*	*2D / 3D inspection*
1 - 5	*6 - 21*	*22 - 55*	*56 - 61*	*62 - 71*	*72 - 111*	*112 - 117*	*118 - 119*	*120 - 127*	*128 - 143*

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.)
4-20 mA / 0-10V and PNP / NPN N.O. / N.C.	-148…1112 °F (-100…600 °C)	0.1 °F (0.1 °C)	-148…1103 °F (-100…595 °C)	-139… 1112°F (-95…600.0 °C)	TR2439 ⬡	$303.00
Dual PNP / NPN N.O. / N.C.	-148…1112 °F (-100…600 °C)	0.1 °F (0.1 °C)	–	–	TR7439 ⬡	$244.00

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	$82.00
200 mm	260 mm	10 mm	-40…302 °F (-40…150 °C)	TT2081	$90.00
300 mm	360 mm	10 mm	-40…302 °F (-40…150 °C)	TT3081	$96.00
500 mm	560 mm	10 mm	-40…302 °F (-40…150 °C)	TT5081	$105.00

* For other RTD probes and accessories, please see pages 222 - 223.

Accessories

Type	Description	Part No.	List Price (1-pc.)
B	RTD mounting set	E30017	$36.00
D	1/2" NPT Compression fitting, 316 stainless steel	E30024	$26.00
E	1/2" NPT Thermowell, 100 mm, 316 stainless steel	UT0009	$34.00
	1/2" NPT Thermowell, 200 mm, 316 stainless steel	UT0010	$40.00
	1/2" NPT Thermowell, 300 mm, 316 stainless steel	UT0011	$46.00
	1/2" NPT Thermowell, 500 mm, 316 stainless steel	UT0012	$55.00

Optional Accessories and Cordsets

Type	Description	Part No.	List Price (1-pc.)
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$13.50
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$18.00

⬡ **For more information on IO-Link, see pages 6 - 21.**

Technical Specs

Supply voltage: 18...32 VDC
Maximum load current: 250 mA
Accuracy of switch point: ±0.54 °F (±0.3 °C)
Accuracy of analog signal: ± 0.54 °F (±0.3 °C)
Ambient temperature: -13…176 °F (-25…80 °C)
Protection rating: IP67

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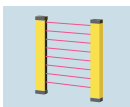| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
144 - 155	156 - 175	176 - 191	192 - 207	208 - 225	226 - 239	240 - 251	252 - 253	254 - 259	260 - 263	264 - 277

Top 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	$100.00
	100 mm	-40…302 °F (-40… 150 °C)	TM4331	$103.00
	150 mm	-40…302 °F (-40… 150 °C)	TM4341	$105.00
	250 mm	-40…302 °F (-40… 150 °C)	TM4361	$114.00

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	$119.00

B   Process Fitting

	Part No.	List Price (1-pc.)
1/4" NPT adapter	E40106	$22.00
1/2" NPT adapter	E40107	$24.00
3/4" NPT adapter	U40085	$45.00
1" NPT adapter, 304 stainless steel and brass	U40080	$72.00
G1/4 BSPP adapter	E40099	$22.00
G1/2 BSPP adapter	E40096	$27.00
Weldable adapter, carbon steel	E40113	$19.00
Weldable adapter, 316 ss	E40124	$41.00

C   Optional Thermowell, 1/2" NPT

	Part No.	List Price (1-pc.)
1/2" NPT thermowell, 27 mm (no other adapters required)	UT0028	$46.00

	IO-Link	Position Sensors		Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
Company	IO-Link	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Encoders / Speed monitors	2D / 3D inspection
Search Bar									
	1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

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	$94.00
62 mm	-40…302 °F (-40…150 °C)	TT0291	$103.00
100 mm	-40…302 °F (-40…150 °C)	TT1291	$105.00
200 mm	-40…302 °F (-40…150 °C)	TT2291	$103.00
300 mm	-40…302 °F (-40…150 °C)	TT3291	$113.00

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.)
–	–	–
–	–	–
100 mm	UT0022	$35.00
200 mm	UT0023	$40.00
300 mm	UT0024	$46.00

A 10 mm diameter · Pt 100 · M12 quick disconnect

Usable Length	Temperature Range	Part No.	List Price (1-pc.)
100 mm	-40…302 °F (-40…150 °C)	TT1081	$82.00
200 mm	-40…302 °F (-40…150 °C)	TT2081	$90.00
300 mm	-40…302 °F (-40…150 °C)	TT3081	$96.00
500 mm	-40…302 °F (-40…150 °C)	TT5081	$105.00

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	$34.00
200 mm	UT0010	$40.00
300 mm	UT0011	$46.00
500 mm	UT0012	$55.00

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	$60.00
5 m, PUR	-40…194 °F (-40…90 °C)	TS5089	$66.00
2 m, PTFE	-58…482 °F (-50…250 °C)	TS2056	$117.00

B Compression Fitting

Part No.	List Price (1-pc.)
E30025 1/2" NPT	$27.00

C Optional Thermowell, 1/2" NPT (requires E30025)*

Length	Part No.	List Price (1-pc.)
100 mm	UT0009	$36.00
200 mm	UT0010	$40.00
300 mm	UT0011	$46.00
500 mm	UT0012	$55.00

*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	$74.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (4-pin) 2 m, PUR	EVC001	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC002	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC003	$19.00
	M12 Micro DC (4-pin) 2 m, PUR	EVC004	$11.00
	M12 Micro DC (4-pin) 5 m, PUR	EVC005	$15.00
	M12 Micro DC (4-pin) 10 m, PUR	EVC006	$19.00

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

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Top product features!

- Non-contact temperature sensor reliably detects hot objects up to 4500 °F (2500 °C) using long-distance sensing technology

- Additional features such as plug-and-play replacement, real-time recipe changes and diagnostic feedback

- Digital transmission of process value eliminates analog signal drift and noise

- Integrated LED aiming pointer for alignment and control

- Integrated scratch-resistant precision quality lens for reliability in extremely harsh environments

Compact infrared temperature sensor for detecting objects with temperatures up to 4500 °F

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 4500 °F.

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 or via IO-Link.

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.

	IO-Link	Position Sensors						Motion Control	Vision Sensors
Company	IO-Link	Inductive	Capacitive	Cylinder/valve position	Photoelectrics/lasers/fiber optics	Distance/Application specific	Ultrasonic	Encoders/Speed monitors	2D/3D inspection
1 - 5	6 - 21	22 - 55	56 - 61	62 - 71	72 - 111	112 - 117	118 - 119	120 - 127	128 - 143

Product + accessory selector

Type	Output	Temperature Range	Accuracy (E=1)	Wave Length	Laser Pointer	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	$1,142.00
NEW! 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	Yes	TW2100	$1,535.00
NEW! 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	$1,427.00
NEW! 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	Yes	TW2101	$1,726.00
NEW! 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	$1,443.00
NEW! 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	$2,072.00
Self-contained	2 x PNP N.O. / N.C.	122…932 °F (50…500 °C)	< ±1% of measured value	8…14 µm	–	TW7000	$854.00
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	$1,208.00
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	$1,154.00

Required Accessories TW2011/TW7011

	Description	Part No.	List Price (1-pc.)
	Fiber optic cable, 2 m	E35061	$290.00
	Fiber optic cable, 5 m	E35062	$350.00
	Sensor head, lens attachment for IR temperature sensors	E35060	$300.00

Cordsets

Type	Description	Part No.	List Price (1-pc.)
	M12 Micro DC (5 pin) 10 m, PUR, shielded	EVC546	$47.00
	M12 Micro DC (5 pin) 10 m, PUR, shielded	EVC549	$47.00

Optional Accessories

Type	Description	Part No.	List Price (1-pc.)
	Air purge	E35063	$127.00
	Cooling jacket	E35068	$290.00
	Mounting bracket	E35065	$59.00
	Protective tube	E35066	$87.00
	Heat isolator	E35067	$47.00
	LineRecorder Device, software for parameter setting (requires E30390 cable)	QA0011	$110.00
	USB IO-Link master cable for parameter setting	E30390	$367.00
	Memory plug to store sensor's parameters for easy upload without a computer	E30398	$51.00

Technical Specs

Supply voltage: TW2: 18…32 V DC; TW7: 10…34 V DC
Current rating: 150 mA per switching output
Ambient temperature: TW2: 32…149 °F (0…65 °C)
TW7: 32…140 °F (0…60 °C)
E35060: -4…480 °F (-20…250 °C)
Protection rating: IP65

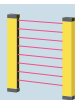| Safety Technology	Process Sensors				Industrial Networks		ID Systems	Machine Condition	Power Supplies	Wiring Technology
Safety products	Pressure	Flow	Level	Temperature	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies	Cordset solutions
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