



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.

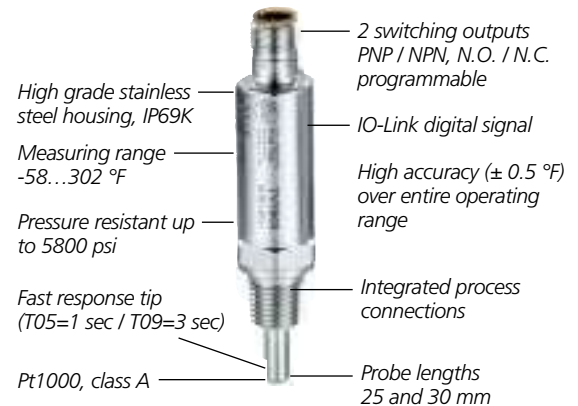
Fast and precise

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.






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	








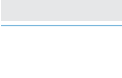
Product + accessory selector

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

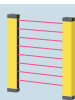
ID Systems

Machine Condition

Power Supplies

Wiring Technology

Safety products



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Pressure



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Flow



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Temperature



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AS-i network



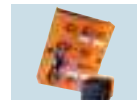
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Safety systems



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RF identification systems



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Diagnostic systems



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Power supplies



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Cordset solutions



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.

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



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 with-

stands 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.

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 (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	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)
Supply voltage:	18...32 VDC	Wetted parts:	316 stainless steel; FKM O-ring
Maximum load current:	250 mA	Protection rating:	IP67
Accuracy of analog signal:	± 0.54 °F (± 0.3 °C)		

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 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.

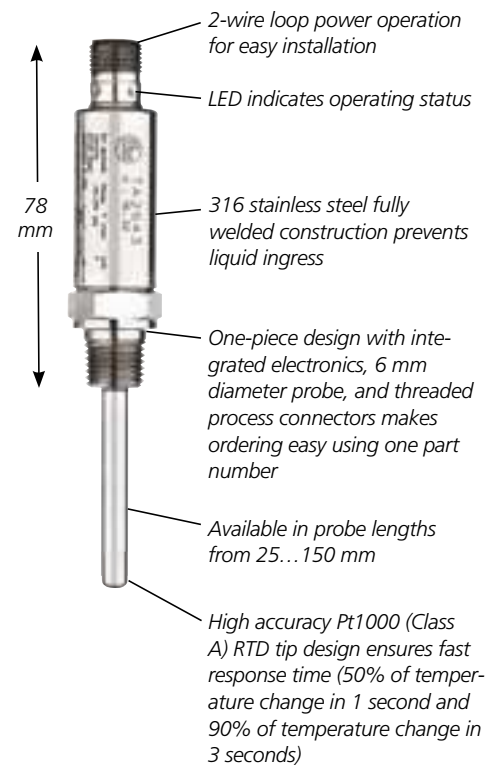
Fast and precise

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.



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

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

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

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	AS-i network	Safety systems	RF identification systems	Diagnostic systems	Power supplies				
Flow	Level	Temperature				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!

- 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 accuracy over the full working range and calibrated to within 0.5 °F. 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.

One-piece solution mounts directly in process



The TD temperature transmitter reliably monitors the fluid temperature in many industrial applications.

Challenge	Solution
<p>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.</p>	<p>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.</p>

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.


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




Product + accessory selector

Maximum Temperature Range	RTD Length [mm]	RTD Diameter [mm]	Optional Thermowell 1/2" NPT	Part No.			List Price (1-pc.)
				Factory Default	Temperature Range (scaled 4...20 mA)		
				-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

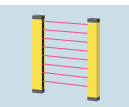



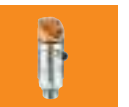


Optional Accessories

	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	AS-i network	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.

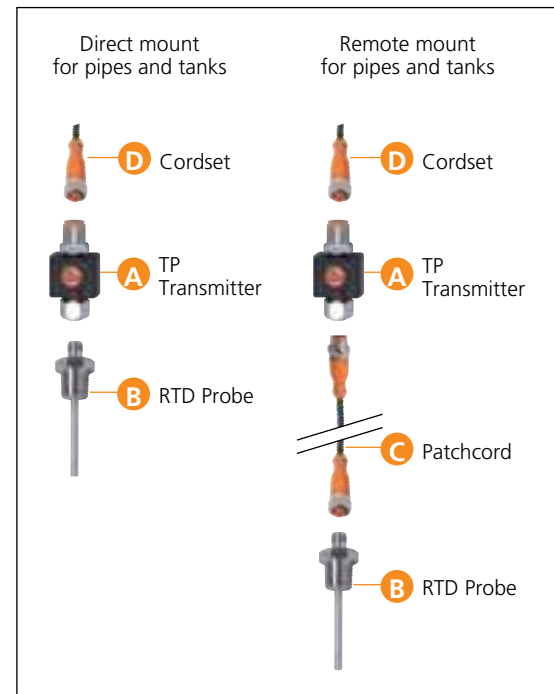
Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED gives local indication that the transmitter is powered and transmitting.

Challenge	Solution
 <p>Bulky traditional head transmitters are costly and are subject to moisture ingress.</p>	 <p>ifm's compact TP transmitter is rated to withstand liquid ingress and provide reliable temperature indication</p>

Completely configurable

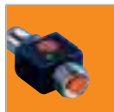
Compatible with any Pt100 or Pt1000 probe, the TP temperature module verifies the type of RTD and automatically makes the correct settings. Usable with 2, 3, or 4-wire RTDs, the TP can be scaled and offset using ifm's USB interface. With its "overmolded" construction, the TP is suitable for harsh environments allowing for use in almost any application.

Component guide



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
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Product + accessory selector

A Transmitter Module

Type	Output	Factory Default Range	Scaleable Analog Start Point	Scaleable Analog End Point	In steps of	Part No.	List Price (1-pc.)
	4...20 mA	-58...302 °F (-50...150 °C)	-58...563 °F (-50...295 °C)	-49...572 °F (-45...300 °C)	0.1 °F (0.1 °C)	TP3231	\$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
	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)	TP3237	\$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)	TP9237	\$95.00

B Pt 100 RTD Probes, 316L Stainless Steel*

Process Connection	Insertion Depth	RTD Diameter	Temperature Range	Response Time	Part No.	List Price (1-pc.)
1/2" NPT	50 mm	6 mm	-40...302 °F (-40...150 °C)	1/3 sec.	TM4311	\$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.

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

D 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

C Patchcords for remote mount

Type	Description	Part No.	List Price (1-pc.)
	M12, straight to straight, 2 m, PUR	EVC013	\$20.00
	M12, straight to straight, 5 m, PUR	EVC014	\$21.00
	M12, straight to straight, 10 m, PUR	EVC108	\$26.00

Safety Technology

Process Sensors

Industrial Networks

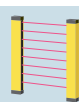
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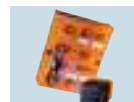
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Top product features!

- 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

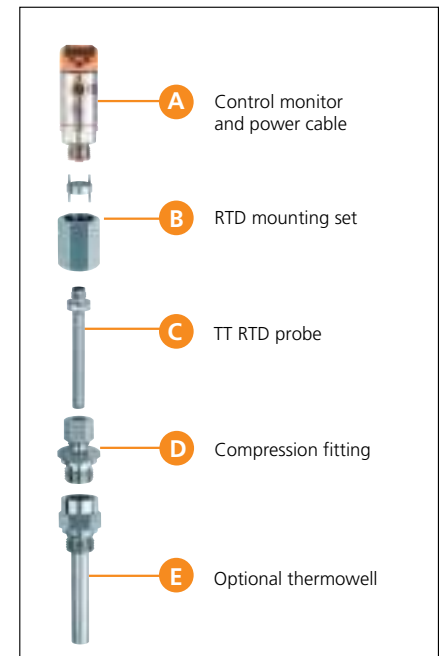
The TR Series process temperature monitors provide highly accurate temperature indication of fluids. The monitor's integrated display allows a user to view temperature directly at the process. The robust, stainless steel housing withstands harsh conditions. Programmable in either °F or °C, the highly-visible display can be viewed from a distance which is advantageous in low-lit areas.

Challenge	Solution
<p><i>Bulky head-and-well assemblies with open cavities are subject to liquid ingress and do not have localized displays.</i></p>	<p><i>ifm's zero-leak, compact temperature monitor connects to a variety of RTDs and features local numeric display.</i></p>

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.

Component Guide



Company	IO-Link	Position Sensors	Inductive	Capacitive	Cylinder / valve position	Photoelectrics / lasers / fiber optics	Distance / Application specific	Ultrasonic	Motion Control	Vision Sensors
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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

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

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

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

R&D that delivers solutions



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

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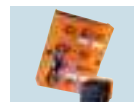
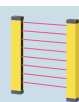
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Top product features!

- 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




Type	Adapter	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




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


Company	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
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Selection Guide for RTD Probes, Fittings and Thermowells (continued)

A 6 mm diameter · Pt 100 · M12 quick disconnect					B Compression Fitting			C Optional Thermowell, 1/2" NPT (requires E30049)*			
	Usable Length (after fitting)	Temperature Range	Part No.	List Price (1-pc.)		Part No.	List Price (1-pc.)		Length	Part No.	List Price (1-pc.)
	12 mm	-40...302 °F (-40...150 °C)	TT9291	\$94.00		E30049 1/4" NPT	\$34.00		-	-	-
	62 mm	-40...302 °F (-40...150 °C)	TT0291	\$103.00					-	-	-
	100 mm	-40...302 °F (-40...150 °C)	TT1291	\$105.00					100 mm	UT0022	\$35.00
	200 mm	-40...302 °F (-40...150 °C)	TT2291	\$103.00					200 mm	UT0023	\$40.00
	300 mm	-40...302 °F (-40...150 °C)	TT3291	\$113.00					300 mm	UT0024	\$46.00

A 10 mm diameter · Pt 100 · M12 quick disconnect					B Compression Fitting			C Optional Thermowell, 1/2" NPT (requires E30024)*			
	Usable Length (after fitting)	Temperature Range	Part No.	List Price (1-pc.)		Part No.	List Price (1-pc.)		Length	Part No.	List Price (1-pc.)
	100 mm	-40...302 °F (-40...150 °C)	TT1081	\$82.00		E30024 1/2" NPT	\$26.00		100 mm	UT0009	\$34.00
	200 mm	-40...302 °F (-40...150 °C)	TT2081	\$90.00					200 mm	UT0010	\$40.00
	300 mm	-40...302 °F (-40...150 °C)	TT3081	\$96.00					300 mm	UT0011	\$46.00
	500 mm	-40...302 °F (-40...150 °C)	TT5081	\$105.00					500 mm	UT0012	\$55.00

A 10 mm diameter Pt 100 · Prewired with M12 quick disconnect					B Compression Fitting			C Optional Thermowell, 1/2" NPT (requires E30025)*			
	Cable Length	Temperature Range	Part No.	List Price (1-pc.)		Part No.	List Price (1-pc.)		Length	Part No.	List Price (1-pc.)
	2 m, PUR	-40...194 °F (-40...90 °C)	TS2089	\$60.00		E30025 1/2" NPT	\$27.00		100 mm	UT0009	\$36.00
	5 m, PUR	-40...194 °F (-40...90 °C)	TS5089	\$66.00					200 mm	UT0010	\$40.00
	2 m, PTFE	-58...482 °F (-50...250 °C)	TS2056	\$117.00					300 mm	UT0011	\$46.00
									500 mm	UT0012	\$55.00



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

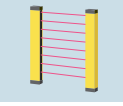






Technical Specs

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

*Thermal grease for thermowells (order separately), Part No. 700692, List price: \$2.50

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

Safety Technology	Process Sensors	Industrial Networks	ID Systems	Machine Condition	Power Supplies	Wiring Technology
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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.

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
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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

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

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

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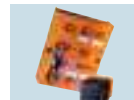
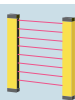
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