

# T&D Optional Products Catalog

## Temperature Sensors



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### Sensor Extension Cables

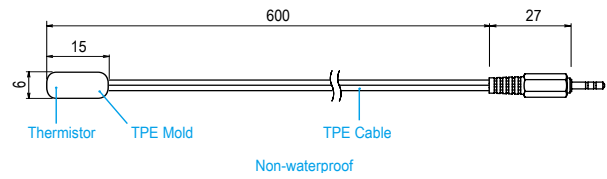
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## TR-0106



Provided with TR71A2 and TR-71nw

## TPE Resin-Shielded Sensor



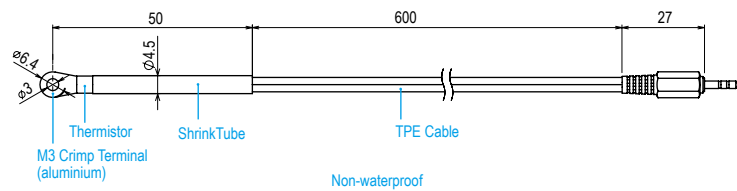
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C, Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 190 sec. (in air)
Waterproof Capacity	None
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-0206



## Screw-down Sensor



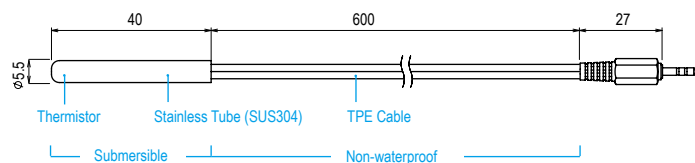
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C, Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 210 sec. (in air)
Waterproof Capacity	None
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-0306



## Stainless Protection Sensor



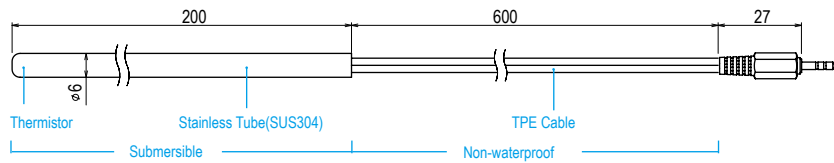
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C, Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 11 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 / TR-5C10

## TR-0406



## Stainless Protection Sensor



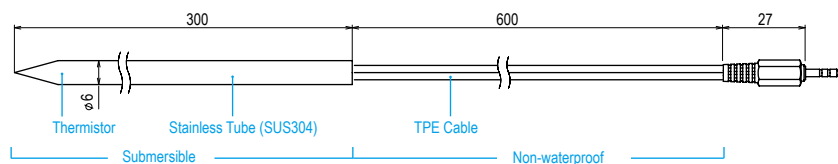
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 15 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30

## TR-0506



## Stainless Protection Sensor



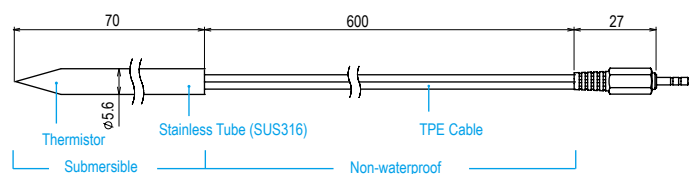
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C, Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 10 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-0706



## Stainless Protection Sensor



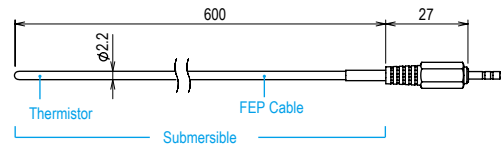
[Unit: mm]

Measurement Range	-40 to 110 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C, Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C
Response Time (90 %)	Approx. 11 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-1106



## Fluoropolymer Coated Sensor



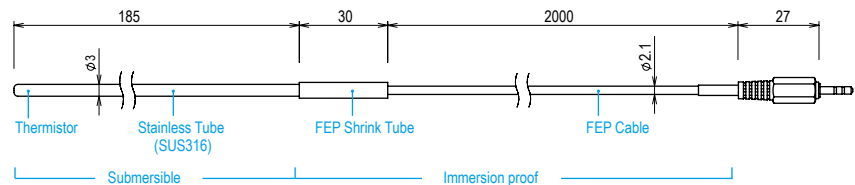
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.5$ °C at -40 to 80 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 80 to 100 °C Avg. $\pm 2.0$ °C at 100 to 155 °C
Response Time (90 %)	Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)
Waterproof Capacity	Submersible (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-1220



## Stainless Protection Sensor



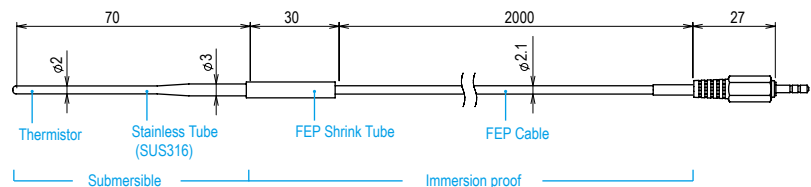
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.5$ °C at -40 to 80 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 80 to 100 °C Avg. $\pm 2.0$ °C at 100 to 155 °C
Response Time (90 %)	Approx. 150 sec. (in air) Approx. 7 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-1320



## Stainless Protection Sensor



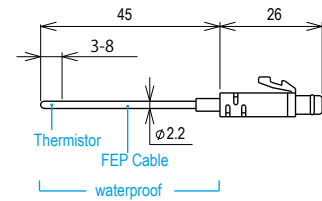
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.5$ °C at -40 to 80 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 80 to 100 °C Avg. $\pm 2.0$ °C at 100 to 155 °C
Response Time (90 %)	Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-1C30 or TR-5C10

## TR-5101



## Fluoropolymer Coated Sensor



[Unit: mm]

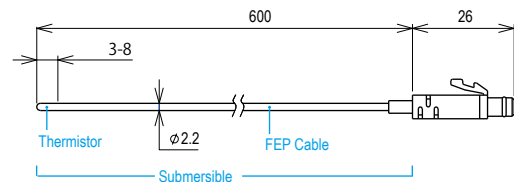
Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 110 to 155 °C
Response Time (90 %)	Approx. 80 sec. (in air)
Waterproof Capacity	Waterproof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5106



Provided with TR42A, TR-52i,  
RTR502B and RTR502BL

## Fluoropolymer Coated Sensor



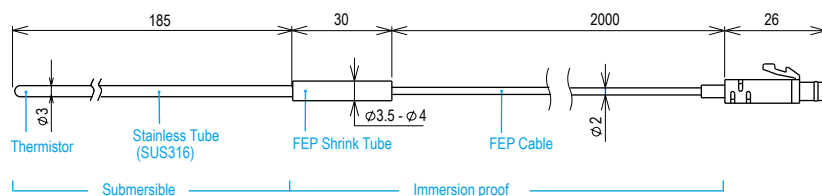
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 110 to 155 °C
Response Time (90 %)	Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)
Waterproof Capacity	Submersible (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5220



## Stainless Protection Sensor



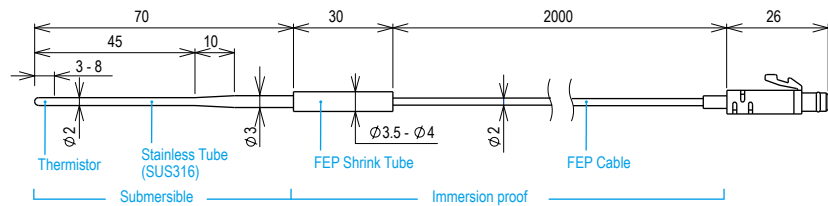
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C, 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C, 110 to 155 °C
Response Time (90 %)	Approx. 150 sec. (in air) Approx. 7 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5320



## Stainless Protection Sensor



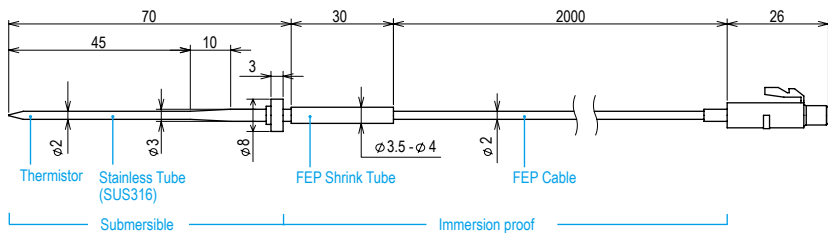
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C , 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C , 110 to 155 °C
Response Time (90 %)	Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5420



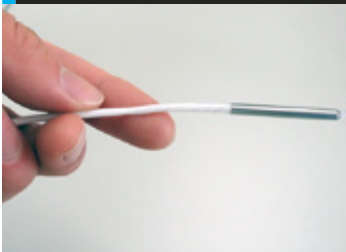
## Stainless Protection Sensor for Core Temperature



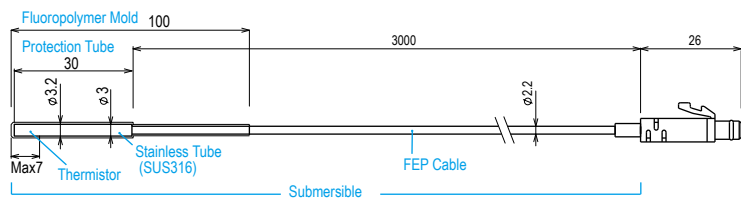
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C , 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C , 110 to 155 °C
Response Time (90 %)	Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5530



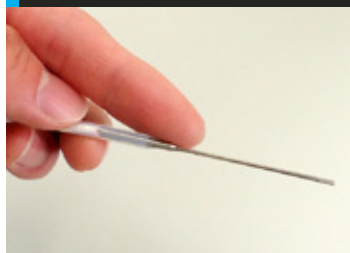
## Underwater Sensor



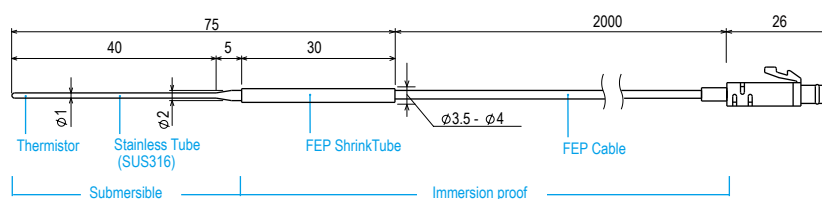
[Unit: mm]

Measurement Range	-60 to 155 °C
Accuracy	Avg. $\pm 0.3$ °C at -20 to 80 °C Avg. $\pm 0.5$ °C at -40 to -20 °C , 80 to 110 °C Avg. $\pm 1.0$ °C at -60 to -40 °C , 110 to 155 °C
Response Time (90 %)	Approx. 150 sec. (in air) Approx. 15 sec. (in agitated water)
Waterproof Capacity	Submersible
Note	Can be extended by 3 meters with the Extension Cable TR-2C30

## TR-5620



## High Sensitivity Ultra-thin Sensor



[Unit: mm]

Measurement Range	-60 to 155°C
Accuracy	Avg. $\pm 0.5^{\circ}\text{C}$ at $-20$ to $60^{\circ}\text{C}$ Avg. $\pm 1.0^{\circ}\text{C}$ at $-60$ to $-20^{\circ}\text{C}$ , $60$ to $80^{\circ}\text{C}$ Avg. $\pm 2.0^{\circ}\text{C}$ at $80$ to $155^{\circ}\text{C}$
Response Time (90 %)	Approx. 50 sec. (in air) Approx. 1 sec. (in agitated water)
Waterproof Capacity	Submersible (stainless protection tube) Immersion proof (cable)
Notes	Can be extended by 3 meters with the Extension Cable TR-2C30

## Pt Sensors



Model Number

TR-8       -       -                   M

A
B
C
D

To order, create the model number by selecting A, B, C, and D ( See below ).

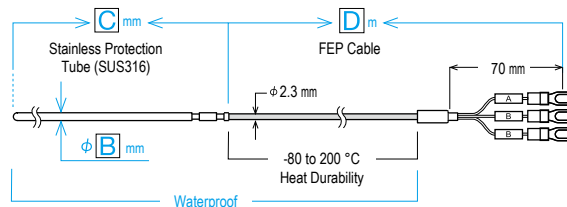
- A** Sensor Type (3 digits)  
**B** Protection Tube Diameter (2 digits)  
**C** Protection Tube Length (2-4 digits)  
**D** Cable Length (1-2 digits)

Sensor Device	Pt100
Electrical Current	2 mA
Insulation Resistance	DC100 V over 100 MΩ (TR-8130 is over 10 MΩ at DC500 V)
Conductor	3 wire type
Range of Error	$\pm(0.15 + 0.002 \times t) ^\circ\text{C}$ t = absolute value of measurement in $^\circ\text{C}$
Waterproof Capacity	TR-8200: Waterproof Others: Only stainless protection tube is water resistant.

- Pt100 sensors are produced only upon order, therefore please allow approximately 1.5 months from time of order until shipping. The lead time varies depending on the specifications and quantity.
- The thermistor (temperature detection section) is mounted in the tip of the sensor.

**A** Sensor Type (Select from 4 types)**TR-8200 Waterproof Type**Measurement Range: -50 to 200  $^\circ\text{C}$ 

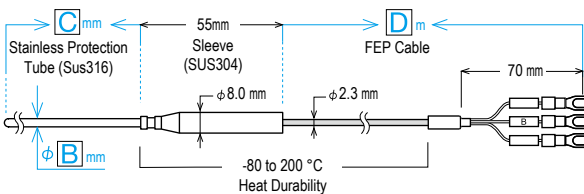
Response Time (90 %)\*: Approx. 13 seconds (In agitated water)

**TR-8210 Regular Type**Measurement Range: -200 to 300  $^\circ\text{C}$ 

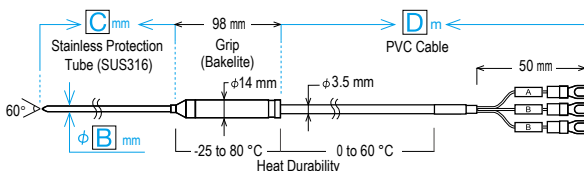
Response Time (90 %)\*: Approx. 6 seconds (In agitated water)

**TR-8220 Low to High Temp Type**Measurement Range: -200 to 500  $^\circ\text{C}$ 

Response Time (90 %)\*: Approx. 6 seconds (In agitated water)

**TR-8130 Handy Type**Measurement Range: -50 to 200  $^\circ\text{C}$ 

Response Time (90 %)\*: Approx. 6 seconds (In agitated water)



\* Stated Response Time (90 %) is for sensors with a protection tube diameter of  $\phi 3.2$ .

\* Insulation Resistance of TR-8130 is over 10 MΩ at DC 500 V.

**B** Protection Tube Diameter

		<b>A</b> Sensor Type			
		TR-8200	TR-8210	TR-8220	TR-8130
$\phi$ <b>B</b> mm	2.0	-	○	-	-
	2.3	-	○	-	-
	3.0	○	○	-	-
	3.2	◎	◎	◎	◎
	4.8	○	○	○	○
	6.0	○	○	-	-
	6.4	-	-	○	-

◎ Recommended ○ Available - Not Available

**C** Protection Tube Length

TR-8220: 50 to 2000 millimeters

Others: 50 to 1000 millimeters

Can be specified in 50 mm units.

**D** Cable Length

1 to 99 meters

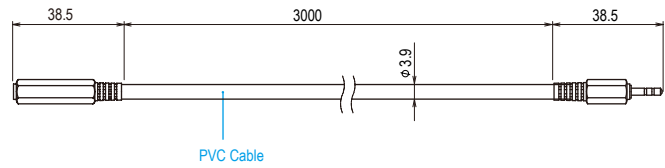
Can be specified in 1 m units.



## TR-1C30



### Sensor Extension Cable



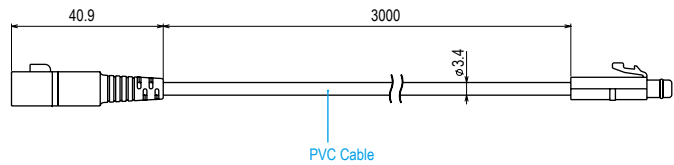
[Unit: mm]

Temperature Durability	-25 to 60 °C
Waterproof Capacity	None
Compatible Sensors	Temperature Sensor: TR-1106, TR-1220, TR-1320, TR-0106, TR-0206, TR-0306, TR-0406, TR-0506, TR-0706 Temp-Humidity Sensor: THA-3001, THA-3151, SHA-3151, HHA-3151 (Discontinued) Illuminance-UV Sensor: ISA-3151 Input Cable (Discontinued): VR-7101, VR-7102, VR-7103
Conditions for Use	Temperature sensors can use up to 3 meters of extension cables. Temp-Humidity sensors and Illuminance-UV sensors can use up to 9 meters of extension cables. Input cables can use multiple extension cables.

## TR-2C30



### Sensor Extension Cable



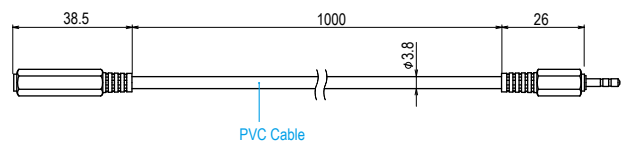
[Unit: mm]

Temperature Durability	-25 to 60 °C
Waterproof Capacity	Splash proof (rated for use in daily life)
Compatible Sensors	Temperature Sensor: TR-5101, TR-5106, TR-5220, TR-5320, TR-5420, TR-5530, TR-5620
Conditions for Use	Only one cable per sensor.

## TR-5C10



### Sensor Extension Cable



[Unit: mm]

Temperature Durability	-25 to 60 °C
Waterproof Capacity	None
Compatible Sensors	Temperature Sensor: TR-1106, TR-1220, TR-1320, TR-0106, TR-0206, TR-0306, TR-0406, TR-0506, TR-0706, Temp-Humidity Sensor: THA-3001, THA-3151, SHA-3151, TR-3100*, HHA-3151 (Discontinued) Illuminance-UV Sensor: ISA-3151
Conditions for Use	Temperature sensors can use up to 3 meters of extension cables. Temp-Humidity sensors and Illuminance-UV sensors can use up to 9 meters of extension cables. * Only 1 extension cable for TR-3100