

Temperature Sensors Selection Guide



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|--------------|---------------------------------|---------------------------|--------------------|-----------------------------|
| Type | TS400/TS500 Temp Sensors | Temperature Probes | Thermowells | Compression Fittings |
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| | | |
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Precise, Reliable Temperature Sensors for Process Automation

Accurately determining temperature is one of the most important tasks in processing and manufacturing industries. Precision, reliability and interface flexibility are just some of the characteristics that make a great temperature sensor. **TURCK's** new TS400 and TS500 temperature sensor series provide all these traits and more, and adhere to the high standards consistent with all **TURCK** products.

TS400 and TS500 temperature sensors incorporate design elements that equate to real advantages in your applications. The TS400 and TS500 sensor series are platinum resistance temperature detectors (RTDs), commonly referred to as a Pt-100. Pt-100's are known to be highly precise, repeatable, and provide extremely short response times.

Pt-100's contain a platinum wire that is wrapped around a core or patterned as a thin film on a substrate so that it experiences minimal differential expansion or other strains. As the temperature changes, the controller measures the change in the electrical resistance of the platinum wire. Specifically, the hotter the wire becomes, the higher the value of electrical resistance. Pt-100 RTDs have a nominal resistance of 100 ohms at 0°C with an accuracy of 0.4°C at 50°C. The sensor's operating range varies from -50 to 500°C (-58 to 932°F).



Quality

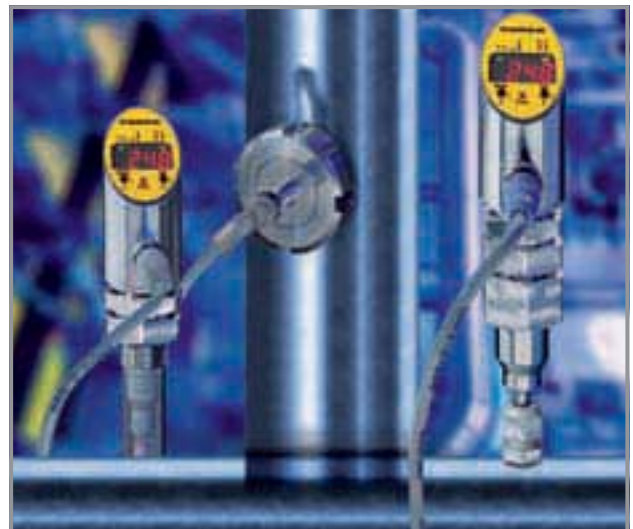
TS400 and TS500 sensors were designed to handle harsh manufacturing environments.

- High immunity to electromagnetic interference
- Reliable and accurate
- Compact design
- Robust stainless steel housing
- IP 67 environmental protection to increase operational durability

User-Friendly

TS400 and TS500 sensors were designed with the user in mind.

- Simple push-button programming
- Recessed button stores selected values and helps prevent unintentional operational errors
- The entire display can be inverted electronically
- The TS500 version can be rotated 320 degrees
- Does not require regular maintenance calibration
- M12 **euromast**® connection promotes easy integration in existing applications



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Flexible

TS400 and TS500 use state of the art technology to bring you a sensor that facilitates operational efficiency.

- Remote or direct mountable
- Compact, robust housing
- 4-pin M12 **euromast**® connection
- Compatible with 4-wire probes
- Displays output in °C, °F, K and ohms



Benefits

TS400 and TS500 temperature sensors allow you to realize immediate benefits in your application.

- May be implemented in nearly all factory or process automation applications
- Housing design permits sensors to be mounted directly next to each other or in restrictive places
- Large, bright LED display
- Versions with multiple outputs available; all are easy to program and use

How to Order TS400 and TS500 Sensors and Accessories

1. Determine your desired output and select the TS model that meets your needs.
2. Select the appropriate probe for your application.
 - a) Questions? Call 1-800-554-7769.
3. Choose remote or direct mounting.
 - a) For direct mounting with TP 203 and TP 206, order the stabilizer (STA-3 or STA-6).
 - b) For remote mounting, order a mating cordset (RK 4.4T-* -RS 4.4T).
4. Select a process connection.
 - a) For thermowells, order one length shorter than the length of probe you selected in step 2.
 - b) If no thermowell is selected, a compression fitting is needed for mounting the probe. (Note: The TP 104A does not require a process connection.)

* Length in meters.

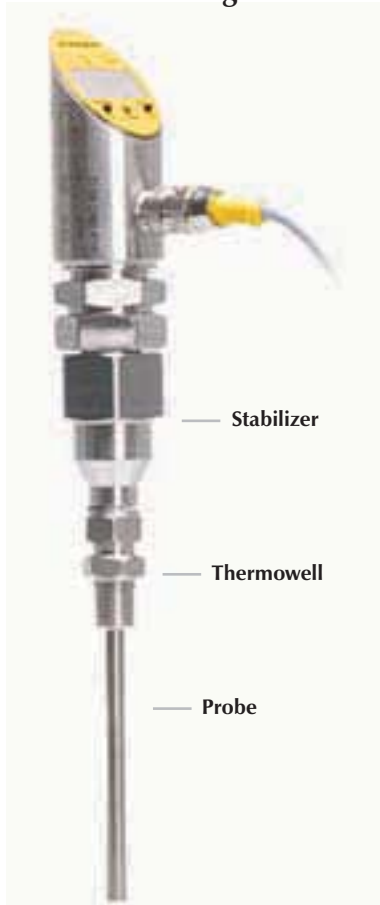


Direct Mounting



Remote Mounting

Direct Mounting Sensor



Remote Mounting Sensor



Accessories



Stabilizer
(use with TP 203A .. & TP 206A ..)



Remote Cordset
(RK 4.4T-* -RS 4.4T)

Probe Options



TP 104A ..



TP 306A ..



TP 203A ..
or TP 206A ..

Process Connection Options



Compression Fitting
(CF)



Thermowell
THW ... TRI

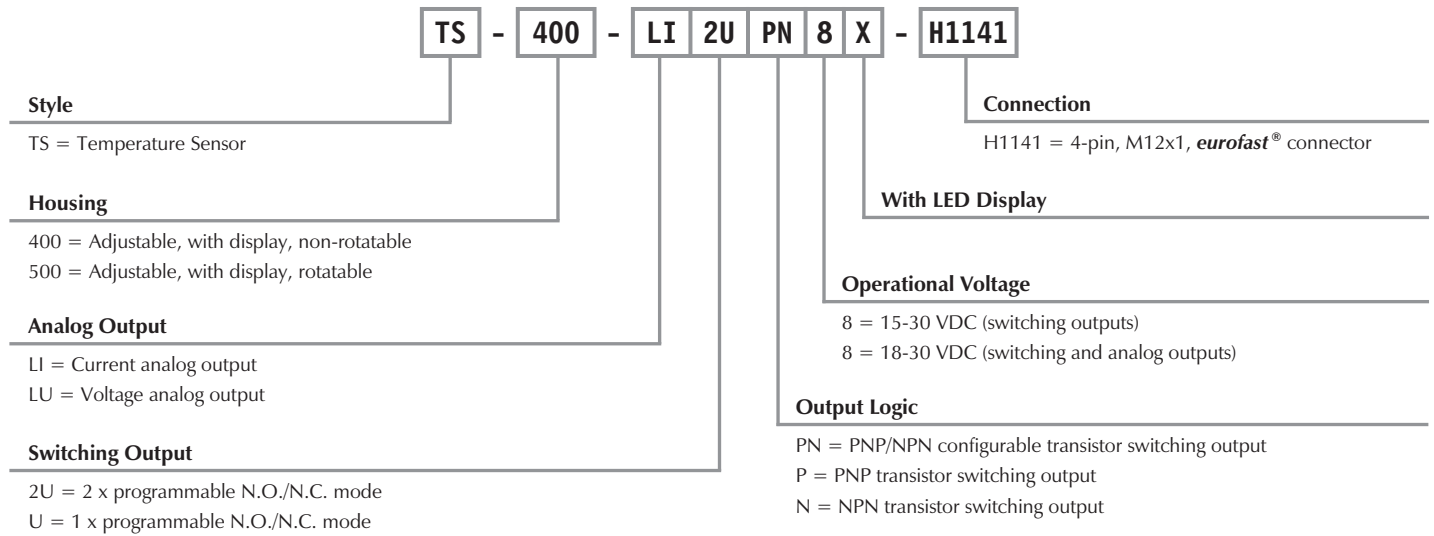


Thermowell
THW ... N

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TS400/TS500 Temperature Sensor Part Number Key





| | |
|---|---|
| Operating Voltage | 15-30 VDC (switching outputs) 18-30 VDC (switching and analog output) |
| No-Load Current | ≤50 mA |
| SELV. PELV | According to EN 50178 |
| Short-Circuit Protection | Yes |
| Reverse Polarity Protection | Yes |
| Insulation Class | III |
| Switching Output | |
| Switching Frequency | ≤180 Hz |
| Output Function | 2 x PNP or NPN, N.C./N.O. programmable |
| Voltage Drop at I_e | ≤2 V |
| Rated Operational Current | 0.2 A |
| Switching Point Distance | 0.2 K -49.8° to +500°C (-58° to +932°F) |
| Reset Points | -50° to +499.8°C (-58° to +932°F) |
| Analog Current Output | |
| Current Output | 4-20 mA, 0-20 mA, 20-4 mA, 20-0 mA programmable |
| Response Time | <100 ms |
| Load | ≥0.5 kΩ |
| Analog Voltage Output | |
| Voltage Output | 0-10 V, 0-5 V, 1-6 V, 10-0 V, 5-0 V, 6-1 V programmable |
| Response Time | <100 ms |
| Load | ≥2 kΩ |
| Temperature Sensor Accuracy | |
| Switching Output | |
| Switching Point Accuracy | ≤ ± 0.2 K |
| Repetition Accuracy | ≤ ± 0.1 K |
| Analog Output Accuracy (Lin.+Hys.+Rep.) | ≤ ± 0.2 K |
| Temperature Sensor Housing | |
| Housing Material | Stainless steel/plastic 1.4404 (AISI 316L)/PC |
| Electrical Connection | Connector M12x1 (eurofast ®), 4-pin with integrated high-speed connection technology. |
| Sensor Connection | Connector M12x1 (eurofast), 4-pin |
| Coupling Nut Size (with tightening torque) | SW 30 (max. 35 Nm) |
| Display | |
| Temperature Display | 4-digit 7-segment display can be rotated by 180° and switched off |
| Switch State Display | 2 x LED yellow |
| Measured Value/Programming | Switch/release points; hysteresis/window mode; N.O./N.C.; unit of display; peak value memory |
| Display of Temperature Unit | 4 x LED green (°C, °F, K, Ω) |
| EMC | |
| EN 61000-4-2 | ESD 4 kV CD / 8 kV AD |
| EN 61000-4-3 | HF radiated: 15 V/m ² |
| EN 61000-4-4 | Burst 2 kV |
| EN 61000-4-5 | Surge 1 kV, 42 Ω |
| EN 61000-4-6 | HF conducted: 10 V |
| Ambient Conditions | |
| Medium Temperature | Directly connected -50° to 150°C (otherwise see temperature probes) |
| Ambient Temperature | -40° to +80°C (-40° to +176°F) |
| Storage Temperature | -40° to +80°C (-40° to +176°F) |
| Degree of Protection | IP 67 |
| Vibration Resistance | 20 g (10-2000 Hz) according to IEC 68-2-6 |



| Housing | Part Number | ID Number | Temperature Range – Remote | Temperature Range – Direct | Output |
|--|-----------------------|-----------|----------------------------------|----------------------------------|---|
| Temperature Sensor for 4-wire PT100 | TS-400-2UP8X-H1141 | M6840001 | -50° to 500°C (-58° to 932°F) | -50° to 150°C (-58° to 302°F) | Dual PNP N.O./N.C. |
| | TS-400-LIUP8X-H1141 | M6840002 | | | Dual NPN N.O./N.C. |
| | TS-400-LUUP8X-H1141 | M6840003 | | | 1 PNP N.O./N.C. and Programmable Current |
| | TS-400-2UN8X-H1141 | M6840004 | | | 1 NPN N.O./N.C. and Programmable Current |
| | TS-400-LIUN8X-H1141 | M6840005 | | | 1 PNP N.O./N.C. and Programmable Voltage |
| | TS-400-LUUN8X-H1141 | M6840006 | | | 1 NPN N.O./N.C. and Programmable Voltage |
| | TS-400-LI2UPN8X-H1141 | M6840007 | | | 1 PNP/NPN N.O./N.C. and Programmable Current or 1 PNP/NPN N.O./N.C. |
| Temperature Sensor for 4-wire PT100, 320° Rotatable Housing | TS-500-2UP8X-H1141 | M6840009 | -50° to 500°C (-58° to 932°F) | -50° to 150°C (-58° to 302°F) | Dual PNP N.O./N.C. |
| | TS-500-LIUP8X-H1141 | M6840010 | | | Dual NPN N.O./N.C. |
| | TS-500-LUUP8X-H1141 | M6840011 | | | 1 PNP N.O./N.C. and Programmable Current |
| | TS-500-2UN8X-H1141 | M6840012 | | | 1 NPN N.O./N.C. and Programmable Current |
| | TS-500-LIUN8X-H1141 | M6840013 | | | 1 PNP N.O./N.C. and Programmable Voltage |
| | TS-500-LUUN8X-H1141 | M6840014 | | | 1 NPN N.O./N.C. and Programmable Voltage |
| | TS-500-LI2UPN8X-H1141 | M6840015 | | | 1 PNP/NPN N.O./N.C. and Programmable Current or 1 PNP/NPN N.O./N.C. |

For remote probes use cordset RK 4.4T-*-RS 4.4T. * Length in meters.
 See page M98 for additional cordset information.



| Voltage | Switching Current (mA) | Analog Load | Mating Cordset | Wiring Diagram # | Wiring Diagrams |
|-----------|------------------------|-------------|----------------|------------------|----------------------|
| 15-30 VDC | ≤200 | N/A | RK 4.4T-* | 1 | Diagram 1 |
| 15-30 VDC | ≤200 | N/A | RK 4.4T-* | 1 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 2 | Diagram 2 |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 2 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 3 | Diagram 3 |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 3 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 4 | Diagram 4 |
| 15-30 VDC | ≤200 | N/A | RK 4.4T-* | 1 | |
| 15-30 VDC | ≤200 | N/A | RK 4.4T-* | 1 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T- | 2 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 2 | or |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 2 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 3 | Diagram 3 |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 3 | |
| 18-30 VDC | ≤200 | ≤500 Ω | RK 4.4T-* | 4 | Diagram 4 |

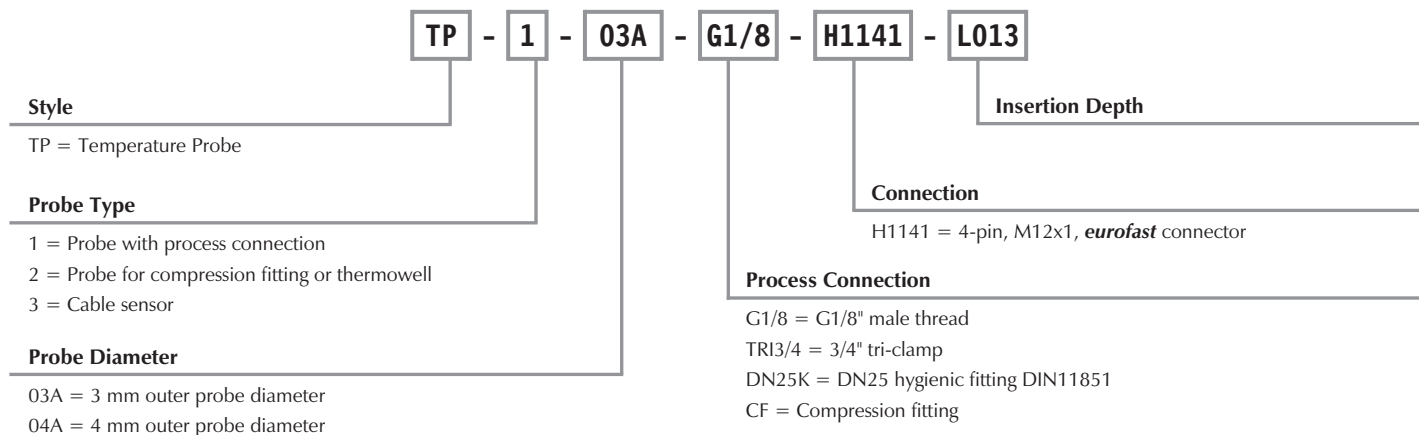
* Length in meters.

Simple Mounting

After the sensor is mounted, the actual processor unit is attached and fixed using a coupling nut. The sensor can still be rotated and aligned in all directions. TS500 shown.



Temperature Probes Part Number Key



Temperature Probes Technical Data

Probe (TP-104A ..)

| | |
|--|---|
| Temperature Operating Range | -50° to 120°C (-58° to +248°F) |
| Ambient Temperature | -20° to 90°C (-4° to +194°F) |
| Measuring Element | Pt100, DIN EN 60751, Class A |
| Response Time | t _{0.5} = 3 s; t _{0.9} = 10 s in water at 0.2 m/s |
| Output Function | 4-wire |
| Reverse Polarity Protection | Yes |
| Degree of Protection | IP 67 |
| Housing Material | Plastic/Stainless steel |
| Housing Quality | 1.4404 (AISI 316L) |
| Sensor Material | Stainless steel |
| Sensor Quality | 1.4404 (AISI 316L) |
| Pressure Rating (psi) | 580.15 |
| Connection | Connector, M12x1 (<i>eurofast</i> ®) |
| Mechanical Connection | Tri-Clamp 3/4"; DN25 hygienic fitting according to DIN 11851 |



Temperature Probes Technical Data

Probe (TP-203 .. / TP-206 ..)

| | |
|-----------------------------|---|
| Temperature Operating Range | -30° to +500°C (-22° to 932°F) ≤350°C accuracy class A (662°F) ≥350°C accuracy class B (662°F) |
| Ambient Temperature | -20° to 90°C (-4° to +194°F) |
| Measuring Element | Pt100, DIN EN 60751, Class A |
| Response Time | 203: $t_{0.5} = 1.5$ s; $t_{0.9} = 6$ s 206: $t_{0.5} = 6$ s; $t_{0.9} = 15$ s 306: $t_{0.5} = 8$ s; $t_{0.9} = 20$ s |
| Output Function | 4-wire |
| Reverse Polarity Protection | Yes |
| Degree of Protection | IP 67 |
| Housing Material | Stainless steel/plastic |
| Housing Quality | 1.4404 (AISI 316L) mineral insulated |
| Sensor Material | Stainless steel |
| Sensor Quality | 1.4404 (AISI 316L) |
| Pressure Rating (psi) | 1450.38 |
| Connection | Connector, M12x1 (eurofast ®) |
| Mechanical Connection | For compression fittings or thermowells |

Probe (TP-306A ..)

| | |
|-----------------------------|--|
| Temperature Operating Range | -50° to +105°C (-58° to +221°F) |
| Ambient Temperature | -20° to +90°C (-4° to +194°F) |
| Measuring Element | Pt100, DIN EN 60751, Class A |
| Response Time | $t_{0.5} = 8$ s; $t_{0.9} = 20$ s in water at 0.2 m/s |
| Output Function | 4-wire |
| Reverse Polarity Protection | Yes |
| Degree of Protection | IP 67 |
| Housing Material | Plastic/Stainless steel |
| Housing Quality | TPE (thermoplastic elastomer) |
| Sensor Material | Stainless steel |
| Sensor Quality | 1.4404 (AISI 316L) |
| Pressure Rating (psi) | 217.56 |
| Connection | Connector, M12x1 (eurofast) |
| Mechanical Connection | For compression fittings or thermowells or for direct mounting |



Temperature Probes

| Housing Style | Part Number | ID Number | Temperature Range | Length (mm) |
|---|---------------------------|-----------|------------------------------------|-------------|
| Pt100 Temperature Probe, 3/4" Tri-Clamp, Ø8 mm | TP-104A-TRI3/4-H1141-L035 | M9910429 | -50° to +120°C (-58° to +248°F) | 35 |
| | TP-104A-TRI3/4-H1141-L100 | M9910430 | | 100 |
| Pt100 Temperature Probe, Ø3 m | TP-203A-CF-H1141-L100 | M9910402 | -30° to +350°C (-22° to +662°F) | 100 |
| | TP-203A-CF-H1141-L150 | M9910403 | | 150 |
| | TP-203A-CF-H1141-L200 | M9910482 | | 200 |
| | TP-203A-CF-H1141-L250 | M9910404 | | 250 |
| | TP-203A-CF-H1141-L300 | M9910474 | | 300 |
| Pt100 Temperature Probe, Ø6 mm | TP-206A-CF-H1141-L100 | M9910475 | | 100 |
| | TP-206A-CF-H1141-L150 | M9910476 | | 150 |
| | TP-206A-CF-H1141-L200 | M9910477 | | 200 |
| | TP-206A-CF-H1141-L300 | M9910478 | | 300 |

For technical data see page M89 - M90.

Mating cordset for remote connections; RK 4.4T*-RS 4.4T. * Length in meters.

See page M97 for additional cordset information.



Temperature Probes

| Housing Style | Part Number | ID Number | Temperature Range | Length (m) |
|--|------------------------|-----------|-------------------------------|------------|
| Pt100 Cable Probe, 4-Pin M12x1 eurofast®, Ø8 mm | TP-306A-CF-H1141-L1000 | M9910479 | -50° to 105°C (-58° to 221°F) | 1 |
| | TP-306A-CF-H1141-L2000 | M9910480 | | 2 |
| | TP-306A-CF-H1141-L5000 | M9910481 | | 5 |

For technical data see page M90.

Rotatable Display

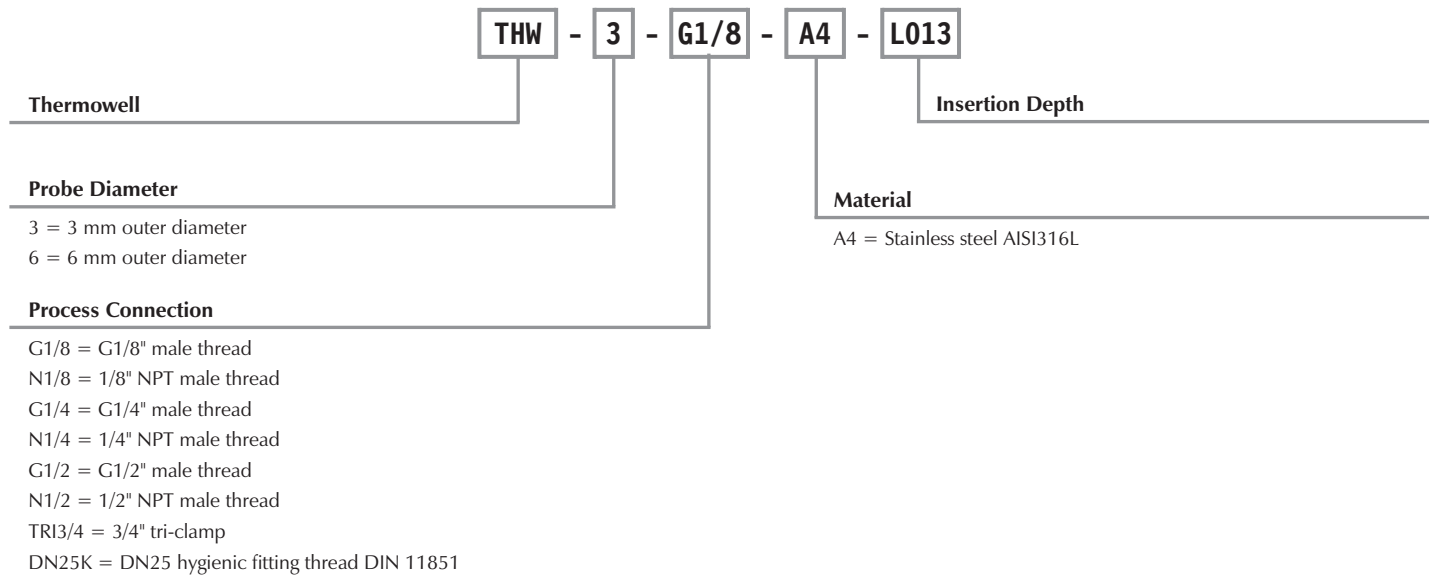
TS400 and TS500 sensors may also be installed horizontally. The display may be electronically inverted 180 degrees by software incorporated within the sensor.



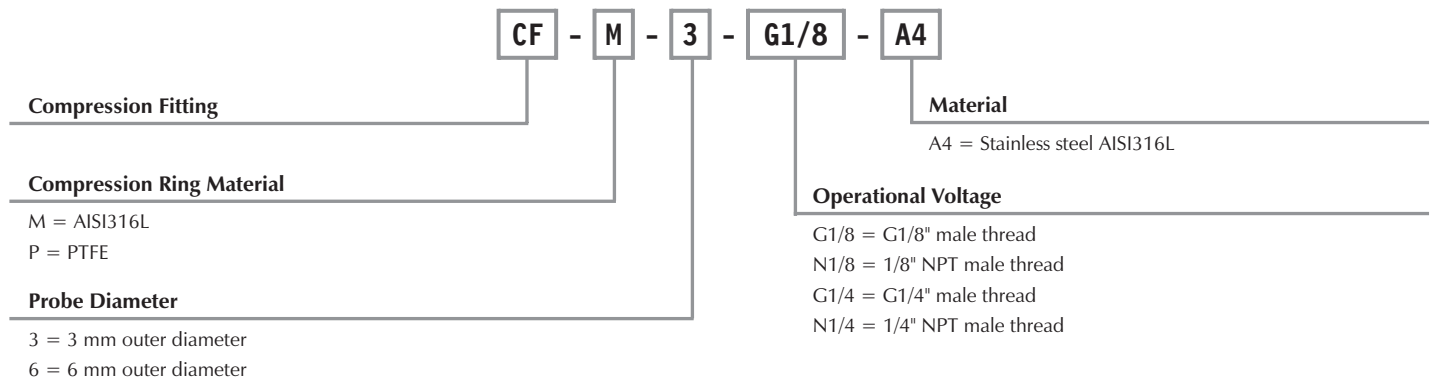
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Thermowell Part Number Key



Compression Fittings Part Number Key





Thermowells

| Housing Style | Part Number | ID Number | Process Connection | Length (mm) | Compatible Probe | Pressure Rating (psi) |
|---------------------------------------|----------------------|-----------|--------------------|-------------|------------------|-----------------------|
| Thermowell, 1/2" Male NPT | THW-3-N1/2-A4-L050 | M9910447 | 1/2" NPT | 50 | 3 mm | 5800 |
| | THW-3-N1/2-A4-L100 | M9910448 | 1/2" NPT | 100 | 3 mm | 5800 |
| | THW-3-N1/2-A4-L150 | M9910449 | 1/2" NPT | 150 | 3 mm | 5800 |
| | THW-3-N1/2-A4-L250 | M9910450 | 1/2" NPT | 250 | 3 mm | 5800 |
| Thermowell, 1/4" Male NPT | THW-3-N1/4-A4-L050 | M9910416 | 1/4" NPT | 50 | 3 mm | 5800 |
| | THW-3-N1/4-A4-L100 | M9910420 | 1/4" NPT | 100 | 3 mm | 5800 |
| | THW-3-N1/4-A4-L150 | M9910424 | 1/4" NPT | 150 | 3 mm | 5800 |
| | THW-3-N1/4-A4-L200 | M9910428 | 1/4" NPT | 200 | 3 mm | 5800 |
| Thermowell, 1/8" Male NPT | THW-3-N1/8-A4-L050 | M9910414 | 1/8" NPT | 50 | 3 mm | 5800 |
| | THW-3-N1/8-A4-L100 | M9910418 | 1/8" NPT | 100 | 3 mm | 5800 |
| | THW-3-N1/8-A4-L150 | M9910422 | 1/8" NPT | 150 | 3 mm | 5800 |
| | THW-3-N1/8-A4-L200 | M9910426 | 1/8" NPT | 200 | 3 mm | 5800 |
| Thermowell, 3/4" Tri-Clamp | THW-3-TRI3/4-A4-L035 | M9910433 | 3/4" Tri-Clamp | 35 | 3 mm | 5800 |
| | THW-3-TRI3/4-A4-L050 | M9910451 | 3/4" Tri-Clamp | 50 | 3 mm | 580 |
| | THW-3-TRI3/4-A4-L100 | M9910452 | 3/4" Tri-Clamp | 100 | 3 mm | 580 |
| | THW-3-TRI3/4-A4-L150 | M9910453 | 3/4" Tri-Clamp | 150 | 3 mm | 580 |
| | THW-3-TRI3/4-A4-L250 | M9910454 | 3/4" Tri-Clamp | 250 | 3 mm | 580 |

Note: Material is AISI 316L/1.4404



Thermowells

| Housing Style | Part Number | ID Number | Process Connection | Length (mm) | Compatible Probe | Pressure Rating (psi) |
|---------------------------------------|----------------------|-----------|--------------------|-------------|------------------|-----------------------|
| Thermowell, 1/2" Male NPT | THW-6-N1/2-A4-L050 | M9910463 | 1/2" NPT | 50 | 6 mm | 5800 |
| | THW-6-N1/2-A4-L100 | M9910464 | 1/2" NPT | 100 | 6 mm | 5800 |
| | THW-6-N1/2-A4-L150 | M9910465 | 1/2" NPT | 150 | 6 mm | 5800 |
| | THW-6-N1/2-A4-L250 | M9910466 | 1/2" NPT | 250 | 6 mm | 5800 |
| Thermowell, 3/4" Tri-Clamp | THW-6-TRI3/4-A4-L050 | M9910467 | 3/4" Tri-Clamp | 50 | 6 mm | 5800 |
| | THW-6-TRI3/4-A4-L100 | M9910468 | 3/4" Tri-Clamp | 100 | 6 mm | 580 |
| | THW-6-TRI3/4-A4-L150 | M9910469 | 3/4" Tri-Clamp | 150 | 6 mm | 580 |
| | THW-6-TRI3/4-A4-L250 | M9910470 | 3/4" Tri-Clamp | 200 | 6 mm | 580 |

Note: Material is AISI 316L/1.4404



Compression Fittings

| Housing Style | Part Number | ID Number | Compatible Probe Diameter | Compression Fitting | Temperature Range | Pressure Rating (psi) |
|---|----------------|-----------|---------------------------|---------------------|-------------------|-----------------------|
| Compression Fitting, 1/4" Male NPT | CF-M-3-N1/4-A4 | M9910408 | Ø3 mm | Metal | 350°C (662°F) | 580 |
| | CF-P-3-N1/4-A4 | M9910412 | Ø3 mm | PTFE | 100°C (212°F) | 87 |
| Compression Fitting, 1/8" Male NPT | CF-M-3-N1/8-A4 | M9910406 | Ø3 mm | Metal | 350°C (662°F) | 580 |
| | CF-P-3-N1/8-A4 | M9910410 | Ø3 mm | PTFE | 100°C (212°F) | 87 |
| Compression Fitting, 1/4" Male NPT | CF-M-6-N1/4-A4 | M9910484 | Ø3 mm | Metal | 350°C (662°F) | 580 |
| | CF-P-6-N1/4-A4 | M9910486 | Ø6 mm | PTFE | 100°C (212°F) | 87 |
| Compression Fitting, 1/2" Male NPT | CF-M-6-N1/2-A4 | A0950 | Ø6 mm | Metal | 350°C (662°F) | 580 |

Note: Material is AISI 316L/1.4404

Mounts in Compact Spaces

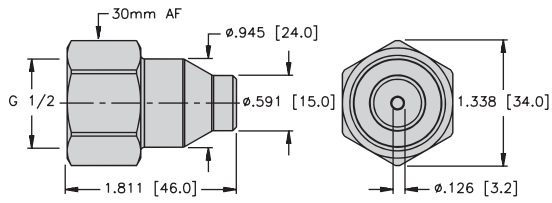
With a housing diameter of 34 mm, multiple temperature sensors can fit in tight spaces.





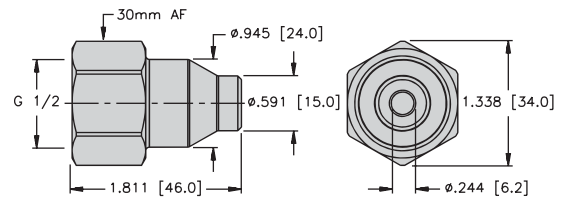
Stabilizer Accessories for Direct Mounting

Stabilizer for 3 mm Temperature Probe



STA-3
(M6835024)

Stabilizer for 6 mm Temperature Probe



STA-6
(M6830523)



4-Wire *euromast*® Cordsets, Standard Plug Body

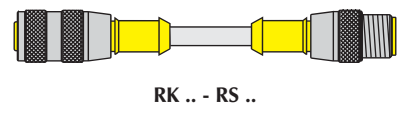
- Straight Male and Female Connectors
- NEMA 1, 3, 4, 6P and IEC IP 68 Protection
- 250 VAC/300 VDC, 4 A



| Housing Style | Part Number | Cable | Features | Pinout |
|----------------|---------------------|---|-------------------|----------------------------------|
| <p>RK ..**</p> | RK 4.4T-* | AWM PVC Grey 4x22 AWG 105°C 5.2 mm OD Cable #RF50516-*M | <i>flexlife</i> ® | 1. BN 2. WH 3. BU 4. BK |
| <p>RS ..**</p> | RK 4.4T-* - RS 4.4T | | | |

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.
 ** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates 316 stainless steel.

Extension Example: RK 4.4T - 2 - RS 4.4T



Self-Contained Temperature Monitors

The **TURCK** temperature monitor with digital readout is a fully programmable device that is easy to set up for a wide variety of applications. The self-contained temperature-monitoring device has two independently adjustable switching points or a single switch point with a separate analog output. The monitor can be used for limit-value monitoring or window functions. The TC01 sensor has an adjustable hysteresis, and can also be programmed to measure temperature in degrees Fahrenheit or degrees Celsius. These devices feature a highly visible digital display and a sensor housing that can be rotated to allow the viewing of temperature data from any direction. The 24 VDC devices include integral circuitry that protects against Short-Circuit damage, and a G1/2 threaded fitting for easy installation. They operate in temperatures from -40° to +120°C (-40° to +248°F).

Principles of Operation

The temperature sensors employ a calorimetric principle to provide continuous and accurate temperature analysis of liquid or paste-like media. They are ideal for temperature analysis in many industries including automotive, welding, hydraulic power units, beverage/brewery, plastics, pumps, pulp/paper, and semiconductor.

Operating Modes

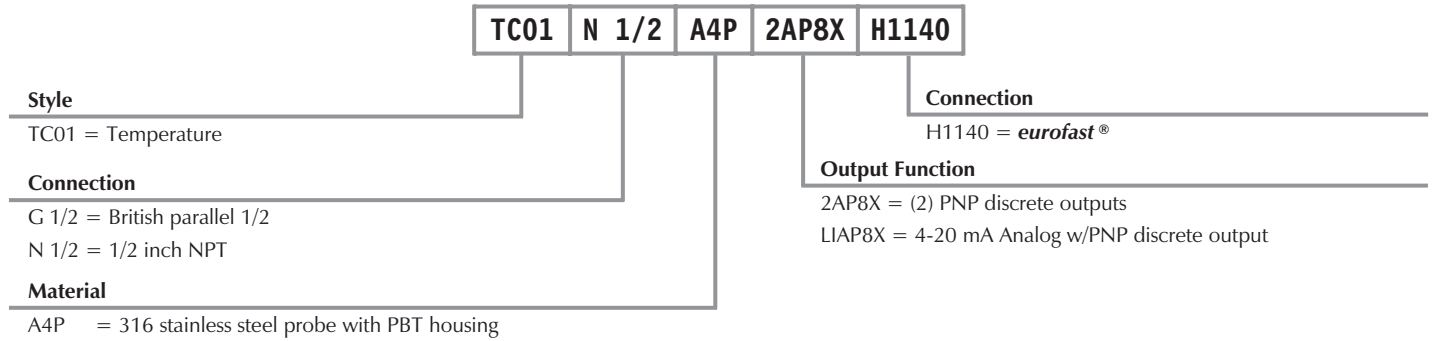
If an over-range of a certain temperature is to be monitored, select the Hysteresis-function. In this mode, a limit value must be set. If the temperature exceeds this value, the output either activates or de-activates, depending on the selected output function. A Hysteresis value is assigned to the limit value, which determines the differential between the switch-on or switch-off value. It is also possible to delay the switch-on and switch-off times. If the window-function is selected as the operating mode, the switching output activates when the adjusted limit temperature is reached (beginning of window range) and de-activates when the end value (defined by the window width value) is reached. The switch-on and switch-off delay may also be used in this operating mode.





Temperature Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.



Temperature General Specifications

| | |
|--|--|
| Operating Voltage | 21.6 - 26.4 VDC (including ripple) |
| Current Consumption | ≤70 mA |
| Voltage Drop at I_{max} | ≤2.5 VDC |
| Temperature Range | -20 to +60°C (-4 to +140°F) |
| Medium Temperature Range | -40 to +120°C (-40 to +248°F) |
| Measuring Range | -40 to +120°C (-40 to +248°F) |
| Tolerance Range | ±2.5°C (0° to +80°C: ±1°C) ±36.5°F (+32° to +176°F: ±33.8°F) |
| Switch Point Accuracy | ±3% of full scale |
| Display Resolution | 0.1°C (-9.9° to +99.9°C: 0.1°C) ±36.5°F (+33.8°F +14°F to +210°F: +32°F) |
| Programmable Ranges | -39° to +120°C (-38° to +248°F), 0.5°C/step |
| Hysteresis Range | +0.5° to +99.5°C (+32.9° to +211.1°F), 0.5°C/step (0.9°F/step) |
| Window Range | +0.5° to +99.5°C (+32.9° to +211.1°F), 0.5°C/step (0.9°F/step) |
| Switch-on and Switch-off Delay Time | 0 to 50 s (0.5 s/step) |
| LED Indications/ Display | 3-digit 7-segment display |
| at Limit Value S1/S2 | Yellow (2x) |
| Display Resolution (3-digit) | +0.1°C (+32.1°F) |
| Protection | IP 65 |



| Housing Style | Part Number | ID Number | Output |
|---|---------------------------|-----------|---------------------------------|
| Self-Contained Temperature Controls, PBT Housing | TC01-G1/2A4P-2AP8X-H1140 | M6877001 | Dual PNP N.O./N.C. |
| | TC01-G1/2A4P-LIAP8X-H1140 | M6877002 | PNP N.O./N.C. and 4-20 mA |
| Self-Contained Temperature Controls, PBT Housing | TC01-N1/2A4P-2AP8X-H1140 | M6877005 | Dual PNP N.O./N.C. |
| | TC01-N1/2A4P-LIAP8X-H1140 | M6877004 | PNP N.O./N.C. and 4-20 mA |

Material

| | |
|---------|------------------------|
| Housing | PBT |
| Probe | 316 Ti Stainless Steel |



| Voltage | Pressure Rating (psi) | Switching Current /Analog Load | Operating Temperature (°C) | Temperature Measuring Range (°C) | Process Connection | Mating Cordset | Wiring Diagram # | Wiring Diagrams |
|---------------|-----------------------|--------------------------------|----------------------------|----------------------------------|--------------------|----------------|------------------|---|
| 21.6-26.4 VDC | 1450 | 200 mA | -20 to +60 | -40 to +120 | G 1/2 | RK 4.4T-* | 1 | <p>Diagram 1</p> <p>Diagram 2</p> |
| 21.6-26.4 VDC | 1450 | 200 mA / <500 Ω | -20 to +60 | -40 to +120 | G 1/2 | RK 4.4T-* | 2 | |
| 21.6-26.4 VDC | 1450 | 200 mA | -20 to +60 | -40 to +120 | 1/2 NPT | RK 4.4T-* | 1 | |
| 21.6-26.4 VDC | 1450 | 200 mA / <500 Ω | -20 to +60 | -40 to +120 | 1/2 NPT | RK 4.4T-* | 2 | |

* Length in meters.