

# pro<sup>sense</sup>® TSD25 Series Temperature Switches



## Features

- Compact temperature switch with simple setup using mechanical adjustment dials
- Extremely durable housing with 316 stainless steel wetted parts
- No internal moving parts ensure long-term stability without setpoint drift
- LEDs indicate switching and operating status

- Two normally open or complementary normally open/normally closed PNP DC switching outputs
- Optional plastic protective cover: PSD-CV

## Agency Approvals

- cULus, File number E324411
- CE
- RoHS



| ProSense Series Temperature Sensors |   |         |        |         |          |
|-------------------------------------|---|---------|--------|---------|----------|
| Part Number                         | Description   | Pcs/Pkg | Wt(lb) | Price   | Use With |
| TSD25N-OP-0284-H                    | Temperature switch, two PNP complementary (1NO/1NC) switching DC outputs adjusted by setting dials. 1/4 inch NPT male port, 4-pin micro M12 DC plug, Set point scale: 3 to 284°F (-16 to 140°C). Probe length: 35 mm [1.38 inches]                      | 1       | 0.25   | \$89.75 | PSD-CV   |
| TSD25N-AP-0284-H                    | Temperature switch, two PNP (NO) switching DC outputs adjusted separately by setting dials with a fixed 9°F hysteresis. 1/4 inch NPT male port, 4-pin micro M12 DC plug, Set point scale: -4 to 284°F (-20 to 140°C). Probe length: 35 mm [1.38 inches] | 1       | 0.25   | \$89.75 | PSD-CV   |

*Note: Purchase cable separately*

| ProSense TSD25 Series Technical Specifications |  |  |
|--|--|--|
|  | TSD25N-AP-0284-H   | TSD25N-OP-0284-H   |
| Operating Voltage                              | 9.6 to 32 VDC  |  |
| Process Connection                             | 1/4" MNPT  |  |
| Electrical Connection                          | M12 connector; gold-plated contacts  |  |
| Outputs  | Two PNP N.O. switching DC outputs  | Two complementary PNP (1-N.O./1-N.C.) switching DC outputs |
| Current Rating                                 | 500 mA each output   |  |
| Current Consumption                            | < 30 mA  |  |
| Short-Circuit Protection                       | Yes (non-latching)   |  |
| Reverse Polarity Protection                    | Yes  |  |
| Overload Protection                            | Yes  |  |
| Voltage Drop                                   | < 2 VDC  |  |
| Pressure Rating                                | 4350 psi (300 bar)   |  |
| Set point scale                                | -4 to 284°F(-20 to 140°C)  | 3 to 284°F(-16 to 140°C)                                   |
| Reset point scale                              | Fixed 5°C below setpoint   | -4 to 277°F(-20 to 136°C)                                  |
| Adjustment of the Switch Point                 | Setting dials  |  |
| Setting Accuracy                               | ± 3°C  |  |
| Repeatability                                  | ± 0.1% of full range in °C   |  |
| Temperature Drift                              | ± 0.1%, of full temperature range/10°C; 32 to 176°F (0 to 80°C).               |  |
| Power-on Delay Time                            | 0.5 seconds  |  |
| Measuring Element                              | 1 x Pt 1000, to DIN EN 60751, class B  |  |
| Dynamic Response (DIN EN 60751)                | *to.5 = 1 sec/ to.9 = 3 sec  |  |
| Minimum Installation Depth                     | 0.6 in (15 mm)   |  |
| Housing Material                               | PBT (Pocan); PC (Makrolon); FPM (Viton); stainless steel (316S12)              |  |
| Materials (wetted parts)                       | Stainless steel (316S12)   |  |
| Display  | Switching Status: 2 LEDs: yellow   | Power: LED - green - Switching Status: LED - yellow        |
| Ambient Temperature                            | -13 to 158°F (-25 to 70°C)   |  |
| Medium Temperature                             | -13 to 257°F (-25 to 125°C) continuous, 258 to 293°F (126 to 145°C) 1 hour max |  |
| Storage Temperature                            | -40 to 212°F (-40 to 100°C)  |  |
| Protection                                     | IP 67, Class III   |  |
| Insulation Resistance                          | > 100 MΩ (500 VDC)   |  |
| Shock Resistance                               | 50g (DIN / IEC 68-2-27, 11ms)  |  |
| Vibration Resistance                           | 20g (DIN / EN 68-2-6, (10 to 2000 Hz)  |  |
| <b>EMC</b>                                     |  |  |
| EN 61000-4-2 ESD                               | 4 kV CD/8 kV AD  |  |
| EN 61000-4-3 HF Radiated                       | 10 V/m   |  |
| EN 61000-4-4 Burst                             | 2 kV   |  |
| EN 61000-4-6 HF Conducted                      | 10 V   |  |

\* to.5 = a 50% of full scale change in output when immersed in water at 0.4m/s, to.9 = a 90% FS change.

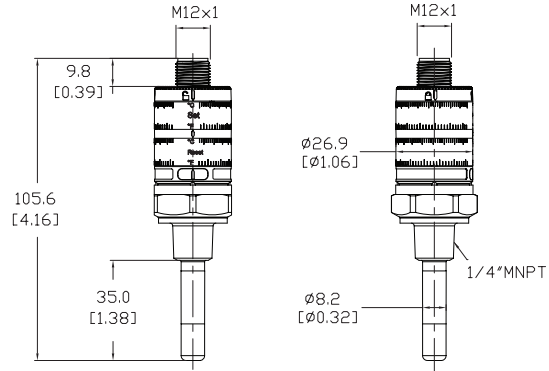


NOTE: CHECK THE CHEMICAL COMPATIBILITY OF THE SENSOR'S WETTED PARTS WITH THE MEDIUM TO BE MEASURED.  
[www.automationdirect.com/static/specs/prosensechemresistance.pdf](http://www.automationdirect.com/static/specs/prosensechemresistance.pdf)

# pro<sup>sense</sup> TSD25 Series Temperature Switches

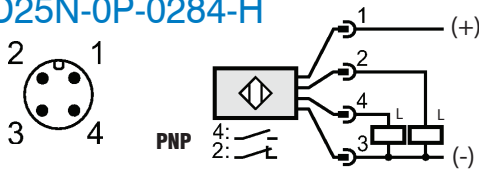
## TSD25N Series Dimensions

mm [inches]



## Wiring

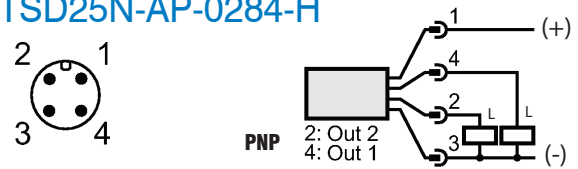
### TSD25N-0P-0284-H



Note: wiring colors are based on AutomationDirect CD12L and CD12M 4-pole cable assemblies.

**Cable Assembly Wiring Colors:**  
 Pin 1 - Brown  
 Pin 2 - White  
 Pin 3 - Blue  
 Pin 4 - Black

### TSD25N-AP-0284-H

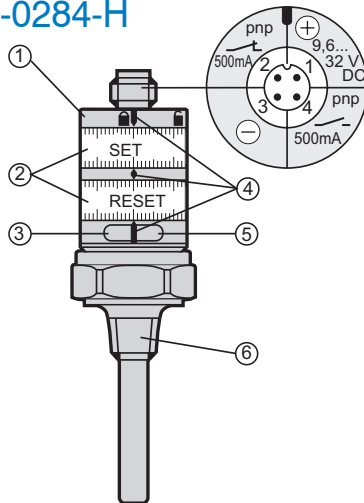


**Cable Assembly Wiring Colors:**  
 Pin 1 - Brown  
 Pin 2 - White  
 Pin 3 - Blue  
 Pin 4 - Black

Note: wiring colors are based on AutomationDirect CD12L and CD12M 4-pole cable assemblies.

## Setting and Operation

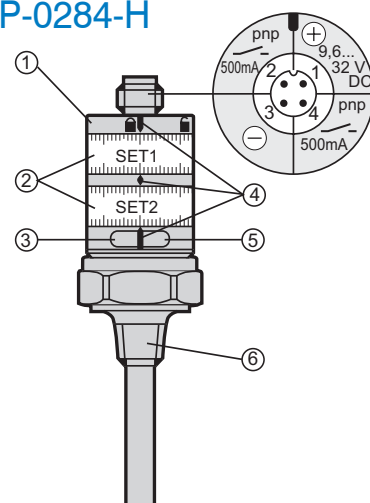
### TSD25N-0P-0284-H



- 1: locking ring
- 2: setting rings (manually adjustable after unlocking)
- 3: LED green: supply voltage O.K.
- 4: setting marks
- 5: LED yellow: value [SET] reached, OUT1 = ON / OUT2 = OFF
- 6: process connection 1/4" NPT  
pin 4 = OUT1 / pin 2 = OUT2

Minimum distance between [SET] and [RESET] = 3°C.  
 To obtain the setting accuracy: Set both rings to the minimum value, then set the requested values.

### TSD25N-AP-0284-H



- 1: locking ring
- 2: setting rings (manually adjustable after unlocking)
- 3: LED yellow: lights if OUT1 = ON, temperature ≥ [SET1]
- 4: setting marks
- 5: LED yellow: lights if OUT2 = ON, temperature ≥ [SET2]
- 6: process connection 1/4" NPT  
Pin 4 = OUT1 / Pin 2 = OUT2

To obtain the setting accuracy: Set both rings to the minimum value, then set the requested values.

# pro<sup>sense</sup> Thermocouple and RTD Temperature Range

| Thermocouple Temperature Range |   |   |
|--------------------------------|---|---|
| THMK-C06-04                    | 32 to 2100°F (0 to 1149°C)  |   |
| THMK-C12-04                    |   |   |
| THMK-C18-04                    |   |   |
| THMK-H06L01-03                 |   |   |
| THMK-H12L01-03                 | 32 to 2100°F (0 to 1149°C)<br>lead wire transition rated to 204°C (400°F) |   |
| THMK-H18L01-03                 |   |   |
| THMK-T06L06-03                 |   |   |
| THMK-T12L06-03                 |   |   |
| THMK-T18L06-03                 | 0 to 300°F (-17.8 to 148.9°C)   |   |
| TTD25C-20-0300F-H              |   |   |
| TTD25N-20-0300F-H              | 32 to 900°F (0 to 482°C)  |   |
| THMJ-A01L04-01                 |   |   |
| THMJ-A01L06-01                 |   |   |
| THMJ-A01L10-01                 |   |   |
| THMJ-A01L10-02                 |   |   |
| THMJ-B01L06-01                 |   |   |
| THMJ-B01L06-02                 |   |   |
| THMJ-B02L06-01                 |   |   |
| THMJ-B02L06-02                 |   |   |
| THMJ-D08L04-01                 |   |   |
| THMJ-D08L06-01                 |   |   |
| THMJ-D08L10-01                 |   |   |
| THMJ-D08L10-02                 |   |   |
| THMK-A01L04-01                 |   |   |
| THMK-A01L06-01                 |   |   |
| THMK-A01L10-01                 |   |   |
| THMK-A01L10-02                 |   |   |
| THMK-B01L06-01                 |   |   |
| THMK-B01L06-02                 |   |   |
| THMK-D08L04-01                 |   |   |
| THMK-D08L06-01                 |   |   |
| THMK-D08L10-01                 |   |   |
| THMK-D08L10-02                 |   |   |
| THMJ-T06L06-01                 |   | 32 to 970°F (0 to 521°C), lead wire transition rated to 400 °F (204 °C) |
| THMJ-T12L06-01                 |   |   |
| THMJ-T18L06-01                 |   |   |
| THMJ-P06-01                    |   | 32 to 970°F (0 to 521°C), plug rated to 400 °F (204 °C)                 |
| THMJ-P12-01                    |   |   |
| THMJ-P18-01                    |   |   |
| THMJ-C04-03                    | 32 to 1330°F (0 to 720°C)   |   |
| THMJ-C04R-03                   |   |   |
| THMJ-C06-01                    |   |   |
| THMJ-C06-02                    |   |   |
| THMJ-C06-03                    |   |   |
| THMJ-C06R-03                   |   |   |
| THMJ-C12-01                    |   |   |
| THMJ-C12-02                    |   |   |
| THMJ-C12-03                    |   |   |
| THMJ-C12R-03                   |   |   |
| THMJ-C18-01                    |   |   |
| THMJ-C18-02                    |   |   |
| THMJ-H04L01-02                 |   |   |
| THMJ-H06L01-01                 |   |   |
| THMJ-H06L01-02                 |   |   |
| THMJ-H12L01-01                 |   |   |
| THMJ-H12L01-02                 |   |   |
| THMJ-H18L01-01                 |   |   |

| Thermocouple Temperature Range |  |  |
|--------------------------------|--|--|
| THMJ-T06L06-02                 | 32 to 1330°F (0 to 720°C)<br>lead wire transition rated to 400 °F (204 °C)   |  |
| THMJ-T12L06-02                 |  |  |
| THMJ-T18L06-02                 |  |  |
| THMJ-P06-02                    | 32 to 1330°F (0 to 720°C)<br>plug rated to 400 °F (204 °C)                   |  |
| THMJ-P12-02                    |  |  |
| THMJ-P18-02                    |  |  |
| THMK-C04-03                    | 32 to 1700°F (0 to 927°C)  |  |
| THMK-C04R-03                   |  |  |
| THMK-C06-01                    |  |  |
| THMK-C06-02                    |  |  |
| THMK-C06-03                    |  |  |
| THMK-C06R-03                   |  |  |
| THMK-C12-01                    |  |  |
| THMK-C12-02                    |  |  |
| THMK-C12-03                    |  |  |
| THMK-C12R-03                   |  |  |
| THMK-C18-01                    |  |  |
| THMK-C18-02                    |  |  |
| THMK-H04L01-02                 |  |  |
| THMK-H06L01-01                 |  |  |
| THMK-H06L01-02                 |  |  |
| THMK-H12L01-01                 |  |  |
| THMK-H12L01-02                 |  |  |
| THMK-H18L01-01                 |  |  |
| THMK-T06L06-01                 |  | 32 to 1700°F (0 to 927°C)<br>lead wire transition rated to 400 °F (204 °C) |
| THMK-T06L06-02                 |  |  |
| THMK-T12L06-01                 |  |  |
| THMK-T12L06-02                 | 32 to 1700°F (0 to 927°C)<br>plug rated to 400 °F (204 °C)                   |  |
| THMK-T18L06-01                 |  |  |
| THMK-T18L06-02                 |  |  |
| THMK-P06-01                    | 32 to 1700°F (0 to 927°C)<br>plug rated to 400 °F (204 °C)                   |  |
| THMK-P06-02                    |  |  |
| THMK-P12-01                    |  |  |
| THMK-P12-02                    | 32 to 900°F (0 to 482°C)   |  |
| THMK-P18-01                    |  |  |
| THMK-P18-02                    |  |  |
| THMK-B02L06-01                 | -328 to 700°F (-200 to 371°C) plug rated to 400 °F (204 °C)                  |  |
| THMK-B02L06-02                 |  |  |
| THMT-P06-01                    |  |  |
| THMT-P12-01                    | -328 to 700°F (-200 to 371°C), lead wire transition rated to 400 °F (204 °C) |  |
| THMT-P18-01                    |  |  |
| THMT-T06L06-01                 |  |  |
| THMT-T12L06-01                 | 32 to 212°F (0 to 100°C)   |  |
| THMT-T18L06-01                 |  |  |
| TTD25C-20-0100C-H              | -4 to 284°F (-20 to 140°C)   |  |
| TTD25N-20-0100C-H              |  |  |
| TSD25N-0P-0284-H               |  |  |
| TSD25N-AP-0284-H               |  |  |

| RTD Temperature Range |   |
|-----------------------|---|
| RTD1-R01-01           | 40 to 185°F (-40 to 85°C)   |
| RTD1-S04-01           |   |
| RTD1-S04-02           |   |
| RTD1-S04-03           |   |
| RTD1-S04-04           |   |
| RTD1-B01L06-01        |   |
| RTD1-B02L06-01        |   |
| RTD1-C04-03           |   |
| RTD1-C04R-03          |   |
| RTD1-C06-01           |   |
| RTD1-C06-03           |   |
| RTD1-C06R-03          |   |
| RTD1-C12-01           | -58 to 572°F (-50 to 300°C)   |
| RTD1-C12-02           |   |
| RTD1-C12-03           |   |
| RTD1-C12R-03          |   |
| RTD1-C18-01           |   |
| RTD1-C18-02           |   |
| RTD1-H04L01-02        | -58 to 572°F (-50 to 300°C)<br>Plug rated to 400°F (204°C)                  |
| RTD1-H06L01-01        |   |
| RTD1-H06L01-02        |   |
| RTD1-H12L01-01        |   |
| RTD1-H12L01-02        |   |
| RTD1-H18L01-01        |   |
| RTD1-P06-01           | -58 to 572°F (-50 to 300°C)<br>Plug rated to 400°F (204°C)                  |
| RTD1-P12-01           |   |
| RTD1-P18-01           | -58 to 572°F (-50 to 300°C),<br>lead wire transition rated to 400°F (204°C) |
| RTD1-D08L10-01        |   |
| RTD1-T06L06-01        |   |
| RTD1-T12L06-01        |   |
| RTD1-T18L06-01        |   |

| J, K, & T Thermocouple Color Code |        |   |
|-----------------------------------|--------|---|
| J                                 | White  | + |
|                                   | Red    | - |
| K                                 | Yellow | + |
|                                   | Red    | - |
| T                                 | Blue   | + |
|                                   | Red    | - |