

Electronic Temperature Switch

TS2000

Features

- ▶ Temperature control digital display
- ▶ 2 solid state contacts or 1 solid state contact plus 1 analog output
- ▶ High accuracy with fully adjustable deadband
- ▶ Optional 4-20 mA analog output
- ▶ Built-In digital display readout
- ▶ Fully configurable via keypad
- ▶ UL/CSA approved

Applications

- ▶ Hydraulic and pneumatic systems
- ▶ Lubrication monitoring
- ▶ Construction machinery
- ▶ Automobile industry
- ▶ Machine tools
- ▶ Injection molding machines
- ▶ Apparatus engineering equipment



General Specifications*

| | |
|-------------------------------|--|
| Accuracy: | 0.5% f. s. |
| Linearity Error: | ±0.5% f. s. at 77°F (25°C) |
| Repeatability: | ±0.1% f. s. |
| Sensor Element: | PT100-element (Class B) |
| Sensor Diameter: | 1/4 in. (6 mm) |
| Sensor Length: | 0.67, 1.97, 11.82 in. |
| Wetted Parts: | Stainless steel 1.4435 (ST 316L) |
| Seals: | FKM (fluorelastomer) |
| Measuring Ranges: | 32° to +212°F (0° to +100°C); -22° to +302°F (-30° to +150°C) |
| Proof Pressure: | 8,700 psi (600 bar) |
| Process Connection: | 1/4" NPT (standard), G1/4 male |
| Electrical Connection: | Plug M 12 x 1, 4-pin |
| Power Supply: | 15 to 32 VDC reverse polarity protected |
| Power Consumption: | approx. 50 mA (without load) |
| A/D-Converter: | |
| Resolution: | 10 bit (1024 steps per measure. span) |
| Scanning Rate: | 100/s (for peak value memory) |
| Time Constant: | approx. 40s |
| Analog Output: | |
| Current Output: | 4-20 mA |
| Load: | max. RI = (Ub-12 V) / 20 mA RI = 600 Ohm at Ub =24 VDC |
| Load Influence: | 0.3% / 100 Ohm |
| Scanning Rate: | 5 ms |
| Voltage Output: | 0 to 10 VDC (optional) |
| Rating: | max. 10 mA, short circuit-protection |
| Adjustment Range | 25% to 100% f. s. |

| | |
|----------------------------------|--|
| Switching Output(s): | |
| Switching Function (adjustable): | 1 or 2 pnp open collector, standard-/window-mode |
| Adjustment Range: | 0% to 125% f. s. |
| Hysteresis: | 0% to 125% f. s. |
| Diagnosis Function | SP2 |
| Switching Frequency: | max. 100 Hz |
| Contact Rating: | max. 500 mA, short circuit-protection |
| Delay: | 0.0 to 9.9 s adjustable |
| Status Display(s): | Green LED(s) for activated switching point |
| Digital Display: | |
| | 3-digit LED display, 7-segment, height 10 mm (0.39 inch), red |
| Display Range: | -99 to 999 |
| Display Rate: | 20/s |
| Display Unit: | °F (°C) - adjustable |
| Error Display: | Orange LED display (AL). |
| Operating Elements: | 3 easy response push buttons |
| Temperature Range: | |
| Media: | -22° to +302°F (-30° to +150°C) |
| Electronics: | +14° to +158°F (-10° to +70°C) |
| Storage: | -22° to +176°F (-30° to +80°C) |
| Protection Class: | IP65 |
| Dimensions (Housing): | 1-7/16 x 5-1/8 inch (36 X 130 mm) (without electrical plug), housing rotates for switch adjustment after mounting |
| Additional Features: | 7-segment LED display, microprocessor controlled, self monitoring with error display, display rotateable around 330°, all parameters are configured by keypad. Tamper proof, keypad lock, rugged construction, vibration- and shockproof, long term stability. |
| Weight: | approx. 200 g with 17 mm sensor length approx. 0.44 lb. with 0.67 inch sensor length |
| Approvals: | c/ULus: file No. E42816 |

* See product configurator for additional options.

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Technical Drawings

CA. 12 (approx. 0.47)

3-1/2 (89)

1-1/2 (38)

1/4 (Ø 6)

"A"

1-7/16 (Ø 36)

Not supplied with connector

TS 2000

1 4-20 mA

2 3

+Ub

OV

SP1

TS 2000

1 4-20 mA

2 3

+Ub

OV

SP1

SP2*

*SP2+Diagnosis output

| Plug M 12 X 1 4 pin | Model with 2 switching outputs | Model with 1 switching output and 1 analog output |
|---------------------|--------------------------------|---|
| Pin 1 brown | +Ub (15 - 28 V DC) | +Ub (15 - 28 V DC) |
| Pin 2 white | SP2 (0.5 A max.) (0.4 A)* | Analog |
| Pin 3 blue | OV | OV |
| Pin 4 black | SP1 (0.5 A max.) | SP1 (0.5 A max.) |

Product Configurator

Example TS2000 -212 -A -N -2

Base Model

TS2000 Solid State temperature switch

Temperature Ranges

| | |
|------|----------------|
| -212 | 32° to 212° F |
| -302 | -22° to 302° F |

Sensor Length

| | |
|----|---------------|
| -A | 0.67" length |
| -B | 1.97" length |
| -C | 11.82" length |

Options

| | |
|----|---|
| -1 | Single switch plus 4-20 mA output |
| -2 | Dual switch capability (No analog output) |
| -6 | Single switch plus 0-10 VDC output |

Connection

| | |
|----|----------|
| -N | 1/4" NPT |
| -G | G1/4 |

Accessory

| Order # | Description |
|---------|--|
| 239236 | - 4 Pin, M12 Electrical mating connector |