

## 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\*

<b>Accuracy:</b>	0.5% f. s.
<b>Linearity Error:</b>	±0.5% f. s. at 77°F (25°C)
<b>Repeatability:</b>	±0.1% f. s.
<b>Sensor Element:</b>	PT100-element (Class B)
<b>Sensor Diameter:</b>	1/4 in. (6 mm)
<b>Sensor Length:</b>	0.67, 1.97, 11.82 in.
<b>Wetted Parts:</b> Seals:	Stainless steel 1.4435 (ST 316L) FKM (fluorelastomer)
<b>Measuring Ranges:</b>	32° to +212°F (0° to +100°C); -22° to +302°F (-30° to +150°C)
<b>Proof Pressure:</b>	8,700 psi (600 bar)
<b>Process Connection:</b>	1/4" NPT (standard), G1/4 male
<b>Electrical Connection:</b>	Plug M 12 x 1, 4-pin
<b>Power Supply:</b>	12 to 32 VDC reverse polarity protected
<b>Power Consumption:</b>	approx. 50 mA (without load)
<b>A/D-Converter:</b> Resolution: Scanning Rate:	10 bit (1024 steps per measure. span) 100/s (for peak value memory)
<b>Time Constant:</b>	approx. 40s
<b>Analog Output:</b> Current Output: Load:  Load Influence: Scanning Rate: Voltage Output: Rating: Adjustment Range	4-20 mA max. RI = (Ub-12 V) / 20 mA RI = 600 Ohm at Ub =24 VDC 0,3% / 100 Ohm 5 ms 0 to 10 VDC (optional) max. 10 mA, short circuit-protection 25% to 100% f. s.

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

\* See product configurator for additional options.

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## Technical Drawings

Plug M 12 X 1 4 pin	Model with 1 switching output	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)	+Ub (15 - 28 V DC)
Pin 2 white	-	SP2 (0.5 A max.) (0.4 A)*	Analog
Pin 3 blue	0 V	0 V	0 V
Pin 4 black	SP1 (0.5 A max.)	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)

### Connection

-N	1/4" NPT
G	G1/4

## Accessory

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