TS2000

Solid State Temperature Switch
TS2000

- ✧ **High Accuracy with Fully Adjustable Deadband**
- ✧ **Optional 4-20 mA analog output**
- ✧ **Built-In Digital Temperature Readout**
- ✧ **Fully Configurable via Keypad**

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Barksdale's **TS2000** offers the accuracy of a solid state temperature switch combined with a temperature transducer in a single, economical package. Our **TS2000** is available in two different configurations: as a dual temperature switch or as a single switch with integrated 4-20 mA analog output. Setpoints and deadband are easily adjusted by using the keypad and the user-friendly menu. Analog transducer outputs are scalable from 25% to 100% of the full adjustable range. A 10-bit microprocessor provides built-in self-diagnostics and allows for switch time delays and cycling up to 100 times per second. For applications requiring precise temperature monitoring and control at an affordable price, the **TS2000** is the ideal solution.

Barksdale
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

Exceeding Your Expectations Through Our People, Products and Performance

TS2000

Temperature control digital display, 2 solid state contacts or 1 solid state contact plus 1 analog output 4 - 20 mA, accuracy class 0.5% f. s.

Features

7-segment LED display, microprocessor controlled, self monitoring with error display, display rotateable around 330°, all parameters are configured by keypad.

Additional Features

Tamper proof, keypad lock, rugged construction, vibration- and shock-proof, long term stability, DESINA®-conformity (see also www.desina.de).

Measuring Ranges

32° to +212°F (0° to +100°C); -22° to +302°F(-30° to +150°C)

Applications

Hydraulics and pneumatics (e. g. presses), lubrication monitoring, machine industry, automobile industry, machine tools, injection molding machines

Electrical Connector Not Included.

Shown with G1/4 Connection

Technical Data

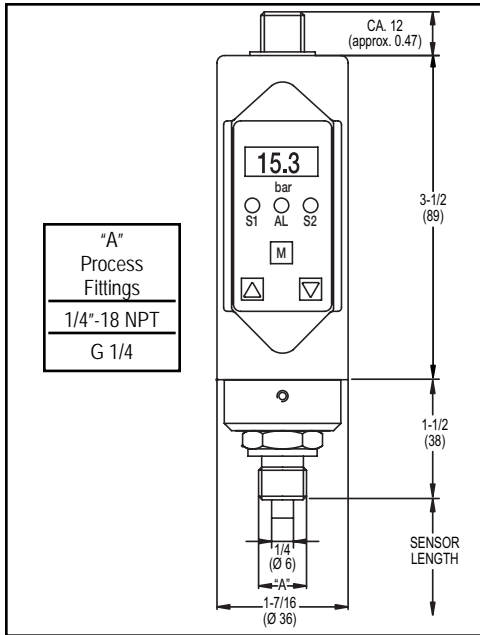|	
Sensor Element	: PT100-element (Class B)
Materials :	
Wetted Parts	: Stainless steel 1.4435 (ST 316L)
Seals	: FKM (flourelastomer)
Proof Pressure	: 600 bar (8,700 psi)
Operating Elements	: 3 easy response push buttons
Protection Class	: IP65
Process Connection	: G1/4 male, 1/4" NPT
Dimensions (Housing)	: 1-7/16 x 5-1/8 inch (36 X 130 mm) (without electrical plug), housing rotates for switch adjustment after mounting
Weight	: approx. 200 g with 17 mm sensor length
	: approx. 0.44 lb. with 0.67 inch sensor length
Measuring Ranges	: 32° to +212°F, -22° to +302°F
Linearity Error	: ±0.5% f. s. at 77°F (25°C)
Time Constant	:approx. 40s
A/D-Converter	
Resolution	: 10 bit (1024 steps per measure. span)
Scanning Rate	:100/s (for peak value memory)
Electrical Connection	: Plug M 12 x 1, 4-pin, DESINA®-conforming
Sensor Length	: 0.67, 1.97, 11.82 inch
Sensor Diameter	: 1/4 inch (6 mm)

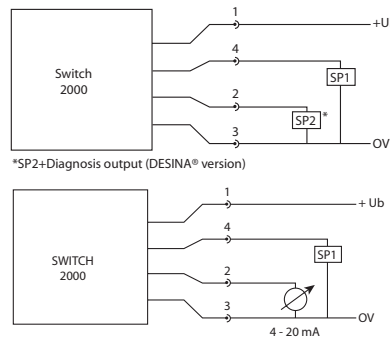|	
Repeatability	: ±0.1% f. s.
Temperature Range:	
Media	: -22° to +302°F (-30° to +150°C)
Electronics	: +14° to +158°F (-10° to +70°C)
Storage	: -22° to +176°F (-30° to +80°C)
Power Supply	: 15 to 28 V DC
Digital Display	: 3-digit LED display, 7-segment, height 10 mm (0.39 inch), red
Display Range	: -99 to 999
Display Rate	: 20/s
Display Unit	: °F (°C) - adjustable
Error Display	: LED yellow and alphanumeric display (Diagnosis function acc. DESINA®)
Power Consumption	: approx. 50 mA (without load)
Analog Output	
Current Output	: 4 - 20 mA
Load	: max. Rl = (Ub-12 V) / 20 mA Rl = 600 Ohm at Ub = 24 V DC
Load Influence	: 0.3% / 100 Ohm
Scanning Rate	: 5 ms
Voltage Output	: 0 to 10 V DC (Optional)
Rating	max. 10 mA, short circuit-proof
Adjustment Range	: 25% to 100% f. s.
Switching Output(s)	
Switching Function (adjustable)	: Normally open/ normally closed, standard-/windows-mode
Adjustment Range	: 0% to 125% f. s.
Hysteresis	: 0% to 125% f. s.
Diagnosis Function	: SP2 (DESINA®-version)
Switching Frequency	: max. 100 Hz
Contact Rating	max. 400 mA, short circuit-proof
Delay	: 0.0 to 9.9 s adjustable
Status Display(s)	: LED(s) red for activated switching point

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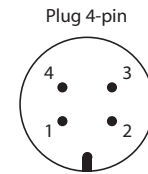
TS2000

Dimensions


```
                            CA. 12
                            (approx. 0.47)

              15.3
               bar
           S1   AL   S2
                M
                                          3-1/2
                                          (89)
   "A"
   Process
   Fittings

   1/4"-18 NPT
   G 1/4
                                          1-1/2
                                          (38)

                                          SENSOR
                                          LENGTH
           1/4
           (Ø 6)
           "A"
           1-7/16
           (Ø 36)
```

Connection Chart

Plug M 12 X 1, 4-pin	Version with 2 switching output (Desina®- version)	Version with 1 switching output and 1 analog output
Pin 1	(12 to 32 VDC)	(12 to 32 VDC)
Pin 2	SP2 (0.4 A max.)	analog (4-20 mA)
Pin 3	O V	O V
Pin 4	SP1 (0.4 A max.)	SP1 (0.4 A max.)

Connection Scheme


```
                    1           +Ub
       Switch       4
       2000                  SP1
                    2
                    3        SP2*     OV
```
*SP2+Diagnosis output (DESINA® version)

```
                    1           + Ub
       SWITCH       4
       2000                  SP1
                    2
                    3                OV
                        4 - 20 mA
```
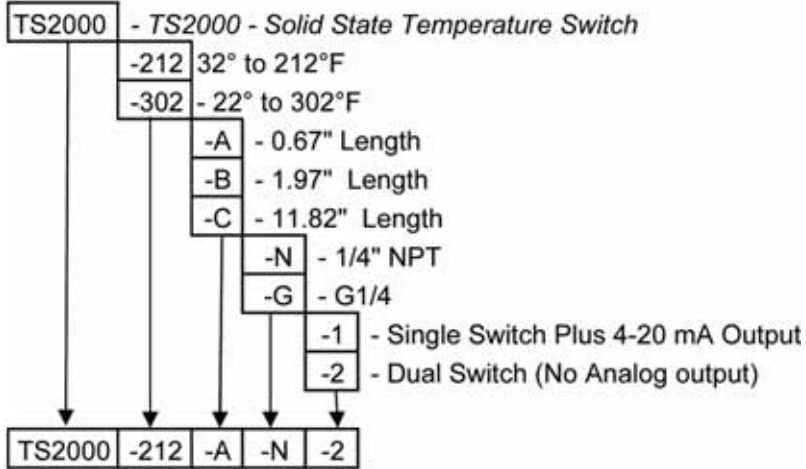
Plug

Plug 4-pin


```
       4       3

       1       2
```

Temperature Ranges

TS2000	Analog Output	Temperature Range	Sensor Length	Part Number (with G1/4 Thread)
Dual PNP Transistor	None	32 to +212 °F	0.67 inch	TS2000-212-A-G-2
Dual PNP Transistor	None	32 to +212 °F	1.97 inch	TS2000-212-B-G-2
Dual PNP Transistor	None	32 to +212 °F	11.82 inch	TS2000-212-C-G-2
Dual PNP Transistor	None	-22 to +302 °F	0.67 inch	TS2000-302-A-G-2
Dual PNP Transistor	None	-22 to +302 °F	1.97 inch	TS2000-302-B-G-2
Dual PNP Transistor	None	-22 to +302 °F	11.82 inch	TS2000-302-C-G-2
Single PNP Transistor	4-20 mA	32 to +212 °F	0.67 inch	TS2000-212-A-G-1
Single PNP Transistor	4-20 mA	32 to +212 °F	1.97 inch	TS2000-212-B-G-1
Single PNP Transistor	4-20 mA	32 to +212 °F	11.82 inch	TS2000-212-C-G-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	0.67 inch	TS2000-302-A-G-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	1.97 inch	TS2000-302-B-G-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	11.82 inch	TS2000-302-C-G-1

TS2000	Analog Output	Temperature Range	Sensor Length	Part Number (with 1/4-18 NPT Thread)
Dual PNP Transistor	None	32 to +212 °F	0.67 inch	TS2000-212-A-N-2
Dual PNP Transistor	None	32 to +212 °F	1.97 inch	TS2000-212-B-N-2
Dual PNP Transistor	None	32 to +212 °F	11.82 inch	TS2000-212-C-N-2
Dual PNP Transistor	None	-22 to +302 °F	0.67 inch	TS2000-302-A-N-2
Dual PNP Transistor	None	-22 to +302 °F	1.97 inch	TS2000-302-B-N-2
Dual PNP Transistor	None	-22 to +302 °F	11.82 inch	TS2000-302-C-N-2
Single PNP Transistor	4-20 mA	32 to +212 °F	0.67 inch	TS2000-212-A-N-1
Single PNP Transistor	4-20 mA	32 to +212 °F	1.97 inch	TS2000-212-B-N-1
Single PNP Transistor	4-20 mA	32 to +212 °F	11.82 inch	TS2000-212-C-N-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	0.67 inch	TS2000-302-A-N-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	1.97 inch	TS2000-302-B-N-1
Single PNP Transistor	4-20 mA	-22 to +302 °F	11.82 inch	TS2000-302-C-N-1

TS2000

Solid State Temperature Switch

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TS2000  - TS2000 - Solid State Temperature Switch
     -212  32° to 212°F
     -302  - 22° to 302°F
        -A  - 0.67" Length
        -B  - 1.97"  Length
        -C  - 11.82"  Length
          -N  - 1/4" NPT
          -G  - G1/4
            -1  - Single Switch Plus 4-20 mA Output
            -2  - Dual Switch (No Analog output)

TS2000  -212  -A  -N  -2
Example: TS2000-212-A-N-2
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