Barksdale®
CONTROL PRODUCTS

Electronic Dual Temperature Switch

BTS3000

IO-Link

Features

- Measuring range: -22° to +284°F (-30° to +140°C)
- One or two switch points
- Analog output 4 - 20 mA
- Display & electronic connection: rotatable by 320°
- Simple navigation menu
- Superior EMI protection
- 0.50% accuracy
- IO-Link communication interface
- Enclosure Rating: Type 4X (IP65) / Type 6 (IP67)

Applications

- Machine tool industry
- Hydraulic & pneumatic systems
- Injection molding machines
- Cooling monitoring / circuits
- Lubrication systems
- Construction machinery
- Automobile industry

General Specifications*

Sensor element:	PT100 Class A DIN/IEC 60751
Materials: Wetted parts: Enclosure: Seals:	 304 Stainless steel 304 Stainless steel / PBT, PA6.6 GF30 FKM fluoroelastomer (standard) EPDM (optional)
Operating elements:	3 easy-response push-buttons
Enclosure rating:	Type 4X (IP65) / Type 6 (IP67)
Protection class:	III
Electrical connection:	Plug M12 x 1, 4-pin / 5-pin / 8-pin
Process connection:	1/4" NPT Male, 1/2" NPT Male, 7/16-20 UNF (SAE-4) Male, G1/4" Male
Dimensions Enclosure:	1.6 Ø x 4.4 inches (without plug connector and sensor)
Weight:	Approx. 0.4 lb (200 g)
Measuring ranges:	-22°F to +284°F (-30°C to +140°C)
Max. pressure:	2,900 psi (200 bar)
A/D-Converter: Resolution: Scanning rate:	 12 bit (4,096 steps per measure span) 1000/s
Time Constant:	Approx. 40 s
Accuracy:	< ±0.5 % f. s. at +25 °C
Repeatability:	±0.1% f. s.
Temperature range: Electronics: Storage:	 14°F to 140°F (-10°C to +60°C) -22°F to 176°F (-30°C to +80°C)
Power supply:	15 to 28 V DC, reversed polarity protected (SELV, PELV) Class 2
Digital display: Display rate:	4-digit 14-segment LED red display, digit height .35 inches (9 mm) 20/s
Error display:	LED RED and alphanumeric display
Power consumption:	Approx. 50 mA (without load) Approx. 80 mA (Output Code 6)
Relay output (option 6):	Relay 1 NC Relay 2 NO Load: max. 1A, max. 60V, max. 30VA

Analog output: Current output: Scanning rate: Adjustment range:	 4-20 mA 2 ms 25% to 100% f. s.
Transistor switching outputs:	
Switching function:	Normally open / normally closed, standard /window mode and diagnosis function adjustable
Switching output:	PNP / (NPN field-selectable on IO-Link units)
Adjustment range for switching point and hysteresis:	0% to 125% f. s.
Switching frequency:	Max. 100 Hz
Load:	Max. 500mA, short-circuit-proof IO-Link: Max. 250mA
Delay:	0.0 s to 50.0 s adjustable
Status display(s):	LED(s) red
IO-Link Communication Interface:	
Transmission type:	COM2 (38.4 kBaud)
IO-Link revision:	1.1
SDCI standard:	IEC 61131-9
Profiles:	Smart Sensor, Process Data Variable, Device Identification, Device Diagnosis
SIO modules:	Yes
Required master port type:	A
SIO output:	1 analog / 2 binary (switch points) [see product configurator]
Min. process cycle time [ms]:	2.5
Device ID:	0x011...
Approvals:	cULus*** - E302981
EMI	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 61000-4-5-Surge: 1/2 kV
	EN 61000-4-6 HF conducted: 10 V
Shock resistance**	DIN EN 60028-2-27: 50 g (11 ms)
Vibration resistance**	DIN EN 60028-2-26: 20 g (10 to 2000 Hz)

** At probe length over 100mm shock & vibration resistance can be influenced by the application
*** 1 - 5 output options only
* See product configurator for additional options.

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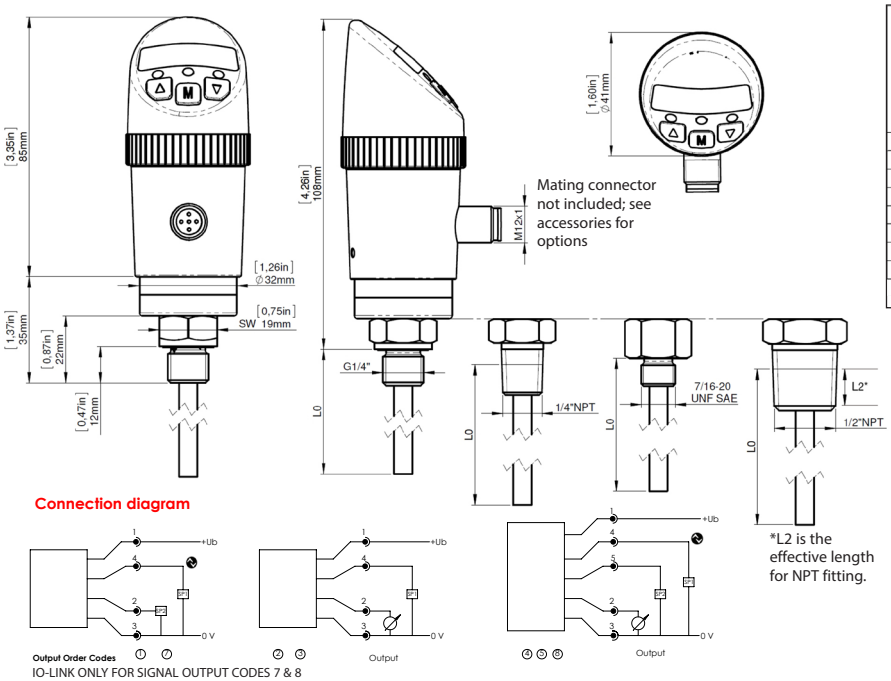
Technical information: Barksdale. Contact Mod-Tronic for selection and availability.

Electronic Dual Temperature Switch

BTS3000

Technical Drawings



Electrical Connection Chart

Pin	Signal Output Code 1 & 7	Signal Output Code 2 & 3	Signal Output Code 4 &5 & 8	Signal Output Code 6	
1	+Ub	+Ub	+Ub	+Ub	
2	SP2	Signal	Signal	SP1a	NC
3	0V	0V	0V	SP1b	
4	SP1/ IO-Link *	SP1	SP1/ IO-Link *	0V	
5	-	-	SP2	SP2a	NO
6	-	-	-	SP2b	
7	-	-	-	-	
8	-	-	-	Housing	

* IO-LINK ONLY FOR SIGNAL OUTPUT CODES 7 & 8

Length	1/4" NPT / 1/2" NPT / 7/16-20 UNF (SAE-4)	G1/4"
L0	.7" [17.78 mm]	0.67" [17 mm]
	2" [50.8 mm]	0.98" [25 mm]
	4" [101.6 mm]	1.97" [50 mm]
	6" [152.4 mm]	3.94" [100 mm]
	12" [304.8 mm]	11.80" [300 mm]
		25.59" [650 mm]

Dimensions inches [mm]

Product Configurator

Example	BTS3	8	E	V	M	2.00Z	1

Series:

BTS3	Series BTS3000, electronic dual temperature switch

Output:

1	Dual switch point
2	Single switch point plus 4-20mA (0-10V field selectable)
3	Single switch point plus 0-10V (4-20mA field selectable)
4	Dual switch point plus 4-20mA (0-10V field selectable)
5	Dual switch point plus 0-10V (4-20mA field selectable)
6	Dual switch points (1 x NO SPST / 1 x NC SPST), not UL approved
7	IO-Link / Dual switch point, no UL
8	IO-Link / Dual switch point plus 4-20mA (0-10V field selectable), no UL

Process Connections:

N[9]	1/4" NPT male thread
3[1,9]	1/2" NPT male thread (Consult factory)
E	7/16-20 UNF (SAE 4)
G	G1/4" male thread
2	G1/2" male thread (Consult factory)

Electrical Connection:

M[3]	M12

Sealing:

V[2]	FKM fluoroelastomer (standard)
E[2]	EPDM (EPR) (optional)
X	No seal (Required for units with NPT thread)
F	FFKM (optional) (Consult factory)

Temperature Ranges:

1	0 to 100°C
2	-30 to 140°C
3	32 to 210°F
4	-22 to 280°F

Sensor Length[4]:

0017M[5]	17 mm probe
0025M[5]	25 mm probe
0050M[5]	50 mm probe
0100M[5]	100 mm probe
0300M[5]	300 mm probe
0650M[5,6]	650 mm probe
0.70Z[1,7]	0.7" probe
2.00Z[1,7]	2" probe
4.00Z[1,7]	4" probe
6.00Z[1,7]	6" probe
12.0Z[6,7]	12" probe

Accessories

Order Number	Description
239535-1M-R-S[8]	4 Pin M12 Female Right Angle Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239535-1M-S[8]	4 Pin M12 Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239537	4 Pin M12 Female Straight Connector
239236	4 Pin M12 Female Right Angle Connector
239546-1M-R-S[8]	5 Pin M12 Female Right Angle Molded Cable, 3.28 Feet (1 Meter), Shielded
239546-1M-S[8]	5 Pin M12, Female Straight Plug Molded Cable, 3.28 Feet (1 Meter), Shielded
239548-S	5 Pin M12 Female Straight Connector
239548-R	5 Pin M12 Female Right Angle Connector
208779[1]	2" Probe - Brass Thermowell
208779-SS[1]	2" Probe - 316 Stainless Steel Thermowell
208780[1]	4" Probe - Brass Thermowell
208780-SS[1]	4" Probe - 316 Stainless Steel Thermowell
208781[1]	6" Probe - Brass Thermowell
208781-SS[1]	6" Probe - 316 Stainless Steel Thermowell

Note:
1. Thermowell option available for 1/2" NPTF only with 2", 4" and 6" probes only; consult factory for details.
2. Available only for G and UNF thread.
3. Mating connector not included with unit; mating connectors are available and can be ordered as an accessory.
4. Custom probe length available; minimum quantities may apply.
5. Available only for G1/4" or G1/2" thread.
6. At probe length over 11.8" (300 mm), the probe must be kept out of the direct path of the flowing media.
7. Available only for NPT and UNF thread.
8. See Cable Connectors & Accessories for more options.
9. Requires sealing code X

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