TED Digital pressure switches

For absolute or gauge vacuum and pressure measurements

Two threshold outputs

Thresholds: PNP transistors or galvanic isolation

4…20 mA or Modbus output signal

Totally stainless steel, rugged build for severe industrial environments

300° swivelling version (option)

TED range digital pressure switches are intended for pressure control for industrial process management, such as level management or jack control.
Based on microprocessor technology, the TED can be programmed completely on site using code protected keys.

Swivelling version TED

Specifications (20°C)

Measurement range	Absolute pressure: 0...1 to 0…400 bar Gauge pressure: -1...0 to 0…400 bar
Display	-1999 to +9999 points. 4 digit red LEDs (8 mm high)
Power supply voltage	**TED6-TEDM:** 10 …32 VDC, unregulated. **TED5:** 18 …32 VDC, unregulated Protection against polarity reversals
Consumption	**TED6** < 22 mA. **TED5** : 50 mA max. **TEDM** : Typ. 20 mA. Communicating : 100 mA
Load impedance	**TED6:** $R_L \leq (U_{supply}-10)/0.02$ **TED5:** $R_L \leq 400\ \Omega$
Output signal	**TED6:** 4…20 mA (2 wires) **TED5:** 4…20 mA (3 wires) **TEDM:** Modbus communication
Threshold outputs	**TED6:** PNP transistors, 400 mA at 24 VDC **TED5-TEDM**: static relays, 400 mA at 60 VDC or 40 VAC
Threshold adjustment range	2% to 98% of the measurement range
Typical response time of the threshold outputs	≤ 20 ms
Accuracy	± 0.5% of F.S.
Repeatability	± 0.2% of F.S.
Working temperature	**Ambient temperature:** - 25 ... 85°C **Fluid temperature:** - 25 ... 100°C **Storage temperature:** - 40 ... 85°C
Thermal drift	± 0.015% of F.S. /°C max.
Materials in contact with the fluid	Ceramic, 1.4404 (316L) stainless steel, NBR seal (standard)
Connections	**Electrical:** **TED6:** M12-5 pin connector **TED5-TEDM:** M12-8 pin connector
Connections	**Hydraulic:** G 1/2 EN837, G 1/4 EN837, G1/4 DIN 3852, G1/4 female, 1/2 NPT,1/4 NPT, M20x1.5 Aseptic union: on request
IP rating (EN 60 529)	IP 65
CE conformity	EMC directive 89/336 CE PED pressure directive 97/23/CE
Resistance to vibrations (EN 60068-2-6)	1.5 mm (10 Hz ... 55 Hz) / 20 g (55 Hz ... 2 kHz)
Resistance to shocks (EN 60028-2-32)	25 drops from 1 meter onto a concrete floor
Weight	530 g to 580 g depending on the version

Options

300° swivelling version. ***Code 0622***

Drinking water application. ***Code 0619***

Oxygen application. ***Code 0765***

Specific cleaning (gas application). ***Code 0829***

Thread locking. ***Code 0771***

10 mm dia. hole in the connection (for G1/2, 1/2NPT, M10x1.5 connection). ***Code 9022***

Mobile plugs and cables. See page 3

0…10 VDC output signal version (TED7): please contact us

Others (mounted on chemical seals, ...): please contact us

BOURDON HAENNI
made to measure

TED range – Description

Digital pressure switch range

- **TED6** Digital 2 threshold pressure switch, 4…20 mA output
- **TED5** Galvanically isolated digital 2 threshold pressure switch, 4…20 mA output
- **TEDM** Galvanically isolated digital 2 threshold pressure switch, Modbus communication
- **YTED** Digital 2 threshold pressure switch, 4…20 mA output.
  ATEX EEx ia intrinsic safety approval (see data sheet A31.04)

Version with galvanically isolated digital thresholds – TED5 and TEDM

The current supply to the pressure switch is electrically isolated from the threshold outputs and the threshold outputs are isolated from each other.
It is possible to have a separate power supply between the TEDM (32 VDC max.) and the threshold contacts (60 VDC max. or 40 VAC max.)

Modbus communication

The TEDM has a RS485 serial port and uses the Modbus RTU communication protocol.
The Modbus protocol is a two-way exchange protocol based on a hierarchical data base structure between a master and multiple slaves (stations). It enables the user to read the pressure and the status of each threshold (open or closed).
Exchange between the master and one slave: the master sends an order and waits for a reply.
Exchange between the master and all slave stations: the master broadcasts a message to all the slaves in the network and they perform the order in the message without sending a reply.
Two slave stations cannot talk together.
The bus stations are identified by addresses given by the user.
These addresses range from 1 to 247.

Parameter configuration and consultation

Parameter configuration mode

The three keys on the front panel are used to configure the following operating parameters:

Top switching point value for each threshold

Bottom switching point value for each threshold

Active status for each threshold (NO or NC)

Time delay of each threshold from 0 to 10 s in 0.1 s steps

Auto-zero function

Self test and parameter protection by a 4 digit code

Additional parameter for the TEDM:

Modbus slave address of the pressure switch

Parity selection

Parameter consultation mode

It is possible to consult the parameters entered without entering the access code:

Configured parameters of each threshold

Time delay of each threshold

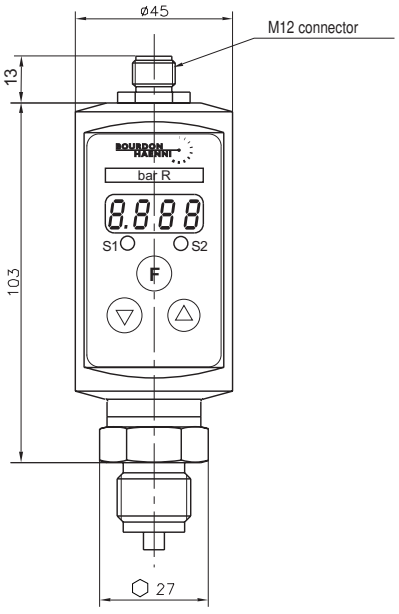
Modbus address and parity (TEDM only)

Max. and min. value consultation

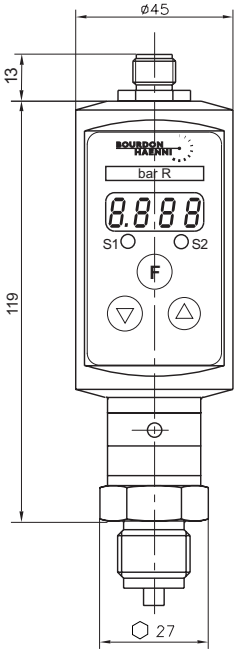
When the pressure switch is in the measurement mode it is possible to display or initialise the max. and min. pressure values saved at any time.

Dimensional drawing (mm), connections

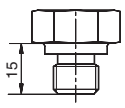
Standard version



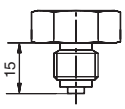
Swivelling version. Option code 0622



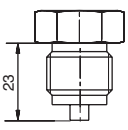
Pressure connections



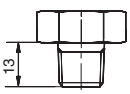
G 1/4 DIN 3852-E



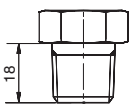
G 1/4 EN837



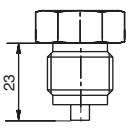
G 1/2 EN837



1/4 NPT EN837



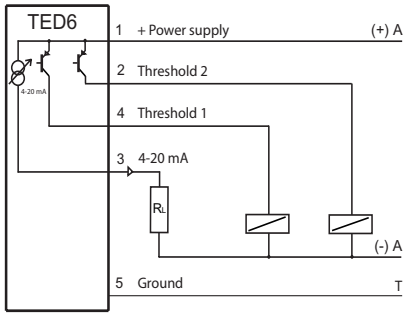
1/2 NPT EN837



M 20 x 1.5

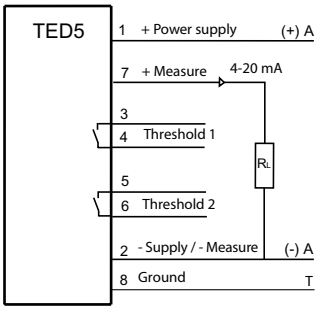
Connection diagrams

TED6



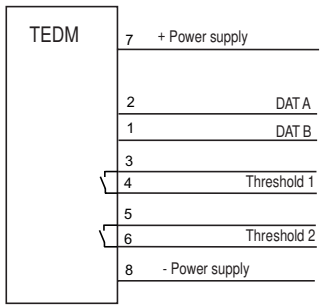
M12-5 connector

TED5



M12-8 connector

TEDM



M12-8 connector

Accessories

Model	Description	*Code*
	M12-5 pin mobile plug, screw terminal connection	***2260***
	Moulded M12-5 pin cable, length 2 m	***2267***
	Moulded M12-5 pin cable, length 5 m	***2269***
	Moulded M12-5 pin cable, length 10 m	***2236***
	Screened moulded M12-5 pin cable, length 2 m	***0604***
	Screened moulded M12-5 pin cable, length 5 m	***0605***
	Screened moulded M12-5 pin cable, length 10 m	***0606***
	Moulded M12-8 pin cable, length 2 m	***2255***
	Moulded M12-8 pin cable, length 5 m	***2170***
	Moulded M12-8 pin cable, length 10 m	***0628***
	Screened moulded M12-8 pin cable, length 2 m	***0607***
	Screened moulded M12-8 pin cable, length 5 m	***0608***
	Screened moulded M12-8 pin cable, length 10 m	***0609***

Important: TED series pressure switches have a immunity against high frequency interference. In environments with a high radiation (eg.GSM), we recommend to use screened cable.

Measuring ranges (bar)

Range														
	vacuum and pressure	-1 +0	-1 +0.6	-1 +1.5	-1 +3	-1 +5	-1 +9	-1 +15	-1 +24	-1 +39	–	–	–	–	–
	pressure	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Maximum overpressure		3	3	4	8	12	20	32	50	80	120	200	320	500	600
Burst pressure		6	6	7	12	18	30	48	75	120	180	300	480	600	800

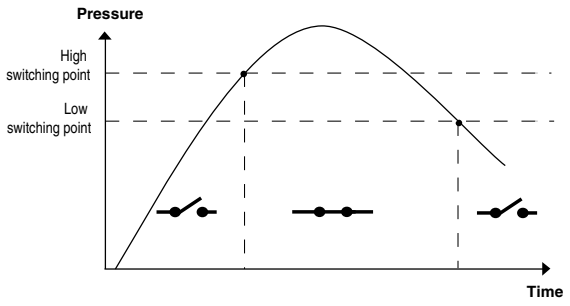
Ordering details – TED

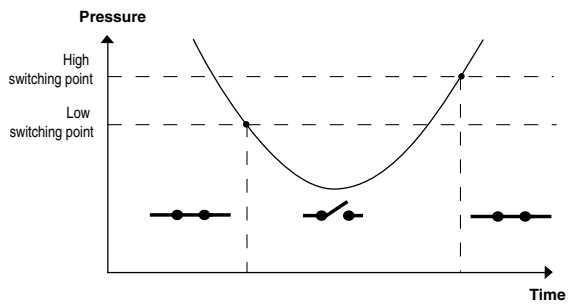
		TEDx xxxxxx
Type	**1´...4´ digits**	
Digital 2 threshold pressure switch, 4…20 mA output		TED6
Digital 2 galvanically isolated threshold pressure switch, 4…20 mA output		TED5
Digital 2 threshold pressure switch, Modbus communication		TEDM
Pressure connection	**5´ digit**	
G1/4		2
G1/4 DIN 3852		B
G 1/4 female		H
G1/2		3
1/4 NPT		5
1/2 NPT		6
M20x1.5		9
Sensor seal	**6´ digit**	
NBR (nitrile) standard		3
EPDM		5
FFKM Chemraz® 505		7
FKM (Viton®)		9
Measuring ranges	**7´...9´ digit**	
bar		Bxx
kPa		Dxx
kg/cm²		Fxx
psi		Hxx
Pressure mode	**10´ digit**	
Absolute		A
Gauge		R

code	bar kg/cm²	kPa	code	psi	A	R
59	-1 + 0	-1 + 0	**59**	-30"Hg + 0	-	R
72	-1 + 0.6	-1 + 60	**73**	-30"Hg + 15	-	R
74	-1 + 1.5	-1 + 150	**75**	-30"Hg + 30	-	R
76	-1 + 3	-1 + 300	**2C**	-30"Hg + 60	-	R
77	-1 + 5	-1 + 500	**78**	-30"Hg + 100	-	R
79	-1 + 9	-1 + 900	**79**	-30"Hg + 150	-	R
81	-1 + 15	-1 + 1500	**81**	-30"Hg + 220	-	R
82	-1 + 24	-1 + 2400	**82**	-30"Hg + 300	-	R
1L	-1 + 39	-1 + 3900	**1L**	-30"Hg + 600	-	R
15	0 + 1	0 + 100	**15**	0 + 15	A	R
16	0 + 1.6	0 + 160	**1C**	0 + 20	A	R
18	0 + 2.5	0 + 250	**17**	0 + 30	A	R
19	0 + 4	0 + 400	**19**	0 + 60	A	R
20	0 + 6	0 + 600	**21**	0 + 100	A	R
22	0 + 10	0 + 1000	**22**	0 + 160	A	R
24	0 + 16	0 + 1600	**23**	0 + 200	A	R
26	0 + 25	0 + 2500	**25**	0 + 300	A	R
27	0 + 40	0 + 4000	**26**	0 + 400	A	R
29	0 + 60	0 + 6000	**27**	0 + 600	A	R
31	0 + 100	0 + 10000	**30**	0 + 1000	A	R
33	0 + 160	0 + 16000	**31**	0 + 1500	A	R
35	0 + 250	0 + 25000	**34**	0 + 3000	A	R
38	0 + 400	0 + 40000	**38**	0 + 6000	A	R

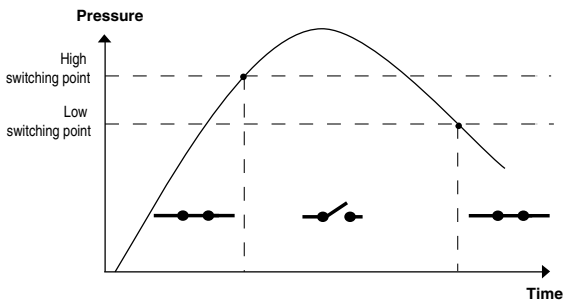
Curve showing change of threshold state

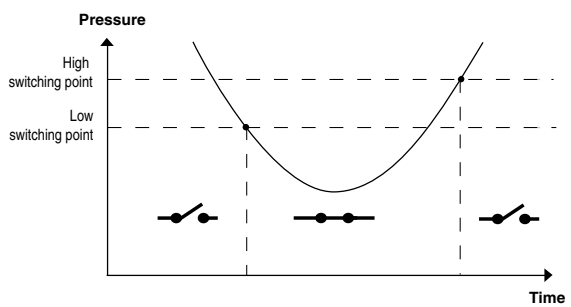
NO - Normally open *





NC - Normally closed *





* threshold state for pressure below the lower set point.