



TS 300

Electronic Temperature Switch

with IO-Link interface

Temperature sensor Pt 1000 (class A)

accuracy according to IEC 60770:
0.35 % FSO

Nominal temperature

process connection in stainless steel:
from -40 up to 150 °C

process connection in PVDF:
from -30 up to 125 °C

Digital output signal

IO-Link according to specification V 1.1

smart sensor profile

data transfer rate 38.4 kbit/s

SIO mode (PNP / NPN), switchable

Analogue output

3-wire: 4 ... 20 mA or 0 ... 10 V,
switchable

Special characteristics

- ▶ indication of measured values on a 4-digit LED display
- ▶ rotatable and configurable display module
- ▶ parameter settings via IO-Link or menu (VDMA-conform)

Optional versions

- ▶ customer specific versions

The electronic temperature switch TS 300 is equipped with an IO-Link interface as standard in order to exchange process data, diagnostic reports and status messages with a superordinate control level.

The parameters are set either also via the control level or via the VDMA-compliant menu system, which can be carried out at a local level using two keys.

The TS 300 is designed for the mechanical and plant engineering sectors, to control temperature in industrial processes and manage the operation efficiently.

In addition, unusual display positions can be compensated to the multiple rotatability of the display so that the user is able to read the vital information without any problems.

Preferred areas of use are



Plant and machine engineering

- temperature detection
- status display
- system monitoring

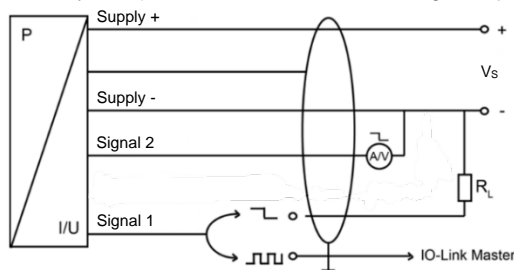


Measurement category			
Version of process connection	stainless steel	PVDF	
Temperature measuring range	-40 ... 150 °C	-30 ... 125 °C	
Pressure resistance	max. 160 bar within complete temperature range	max. 70 bar @ 23°C	
Measuring resistance	temperature sensor Pt 1000 according to DIN EN 60751 class A		
Supply			
Voltage supply	$V_S = 18 \dots 30 \text{ V}_{DC}$		
Output signal			
Output signal 1	IO-Link / SIO (PNP / NPN) switchable		
Output signal 2	4 ... 20 mA / 3-wire	or	
	0 ... 10 V / 3-wire	or	
	PNP / NPN switchable		
Signal characteristics switching signal			
Accuracy ¹	$\leq \pm 0.5 \% \text{ FSO}$		
Repeatability	$\leq \pm 0.2 \% \text{ FSO}$		
Switching current	max. 200 mA		
Switching frequency	max. 200 Hz		
Delay time	0.0 ... 50.0 sec		
Switching cycles	$> 100 \times 10^6$		
Response time	$< 12 \text{ msec}$		
Standby delay time	110 msec		
Signal characteristics analogue signal			
Accuracy ¹	$\leq \pm 0.35 \% \text{ FSO}$		
Long term stability	$\leq \pm 0.3 \% \text{ FSO} / \text{ year at reference conditions}$		
Permissible load (4 ... 20 mA)	$R_{max} = 330 \Omega$		
Permissible load (0 ... 10 V)	$R_{min} = 10 \text{ k}\Omega$		
Influence effects	supply: 0.05 % FSO load: $\leq 0.1 \% \text{ FSO}$		
Adjustability	offset: $\pm 5 \%$ span: -10%		
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			
Thermal effects (offset and span)			
Thermal error	$\leq \pm 0.3 \text{ }^\circ\text{C} + 0.005 \cdot T$		
In compensated range	0 ... 80 °C		
Permissible temperatures			
Permissible temperatures	operating area	process connection in stainless steel	process connection in PVDF
	medium:	-40 ... 150 °C	-30 ... 125 °C
	electronics / environment:	-40 ... 85 °C	-40 ... 85 °C
	storage:	-40 ... 85 °C	-40 ... 85 °C
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
IO-Link			
Interface	IO-Link 1.1; slave		
Data transfer	COM2 / 38.4 kbit/s		
Mode	SIO / IO-Link		
Standard	IEC 61131-2 IEC 61131-9		
Mechanical stability			
Vibration	10 g / 25 Hz ... 2 kHz	according to DIN EN 60068-2-6	
Shock	500 g / 1 msec	according to DIN EN 60068-2-27	
Materials			
Display housing	PA 6.6		
Housing	stainless steel 4404 (316L)		
Process connection (temperature)	standard: stainless steel 1.4435 (316L) option: PVDF		
Seal	FKM	others on request	
Media wetted parts	process connection, seal		

Miscellaneous	
Display	4-digit, 7-segment-LED display on black base body, white, blue foil digit height 7 mm range of indication -1999 ... +9999 visible range 22.5 x 10.5 mm 3 LEDs for unit switching (°C, °F, K) LED status display for IO-Link and contacts
Operation	2 buttons / functions according to VDMA 24574-1
Turn-on time	110 msec
Weight	approx. 220 g
Current consumption	≤ 40 mA
Protection class	IP 67
Installation position	any
CE-conformity	EMC Directive: 2014/30/EU

Wiring diagram

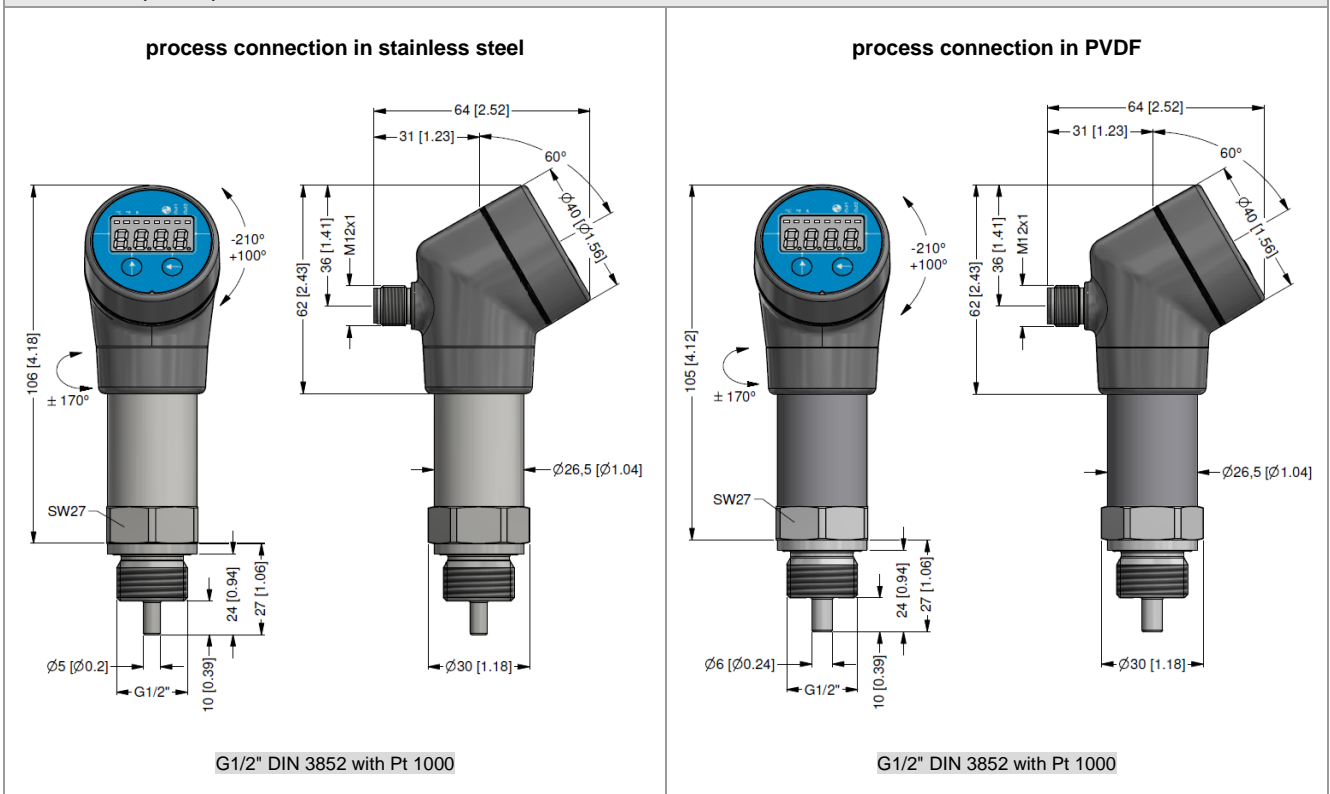
3-wire-system (IO-Link / SIO with contact, analogue output)



Electrical connection

Pin configuration	Description	M12x1 (4-pin), metal	
Supply +	supply	1	
Supply -	supply	3	
Output signal 1	IO-Link / SIO (PNP / NPN)	4	
Output signal 2	4 ... 20 mA – 3-wire / 0 ... 10 V – 3-wire (PNP / NPN)	2	
Shield	shielding	plug housing	

Dimensions (mm / in)



© 2021 BD|SENSORS GmbH - The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

Ordering code TS 300

TS 300



Measurement category									
temperature [°C, °F, K]	T	M	5						
Input									
[°C]									
-40 ... 150 ¹	M	4	0	1	5	0			
-30 ... 125 ²	M	3	0	1	2	5			
customer	9	9	9	9	9	9			consult
Output									
IO-Link + PNP/NPN + analogue output ³							I	X	
Accuracy									
0.35 % FSO							3		
customer							9		consult
Electrical connection									
male plug M12x1 (4-pin) / metal							M	1	B
customer							9	9	9
Mechanical connection									
G1/2" DIN 3852 (with Pt 1000)							1	0	0
customer							9	9	9
Seal									
FKM									1
customer									9
Process connection									
stainless steel 1.4435 (316L) ¹									6
PVDF ²									B
customer									9
Special version									
standard									0
customer									9
									0
									0
									0
									9
									9
									9
									consult

¹ temperature measuring range -40 ... 150 °C and process connection in stainless steel have to be ordered together

² temperature measuring range -30 ... 125 °C and process connection in PVDF have to be ordered together

³ contact PNP/NPN switchable; analogue output 0 ... 10 V / 4 ... 20 mA switchable