



TET-101/Exi- DS18B20

MULTIPOINT DIGITAL TEMPERATURE SENSOR

Purpose of multipoint temperature sensor TET-101-DS18B20 with bail type installation as well as flange or thread type installation is to provide measurement of temperature vertical distribution in grain silos, fodder facilities and bio-gas storage vessels. Measurement range is in practice limited to -40°C do +125°C. Measurement may be done in up to 64 points, distributed at several depths depending on customer requirements. Temperature detector – integrated circuit DS18B20 (Dallas) features digital serial signal transmission that allows data bus connection via single 2- or 3-wire bus cable; 1-wire transmission protocol is applied. Detectors are protected by metal tube or metal reinforced hose assuring high tensile strength. Protecting hose features helical steel wire construction covered by anti-static plastic sheath. Outer sheath is smooth enough to avoid adhering of product to be poured into silo. The basic version assures tensile strength up to 700 kN. On customer request an anchor eye is provided at the end of measuring cable however it may increase material adhering to the measuring cable. Measuring cable is fastened inside the silo using bail or mounted to the nozzle provided on the silo roof. In case of big silos there are several measuring cables which distribution as well as position of detectors are modified according to customer wish. The cables can be connected to one 1-wire bus. Connection head is located outside of silo/vessel to easy installation work. In case of small plants bus cable may be led directly to control room / PC. For hazardous area IS solution signal is connected via Zener barrier that is located in safe area to electronic module which assures conversion of 1-wire protocol to RS232/485 bus (protocol MODBUS RTU). For bio-gas plant vessels sensors in metal protection tubes are more suited than wire measuring cables.

Technical specification

Detector	Measuring Range	Accuracy	Connection
Dallas DS18B20	-55°C...+125°C	±0,5% of range -10°C...+85°C	3/2-wire

Length of measuring cable	No of Outputs	Transmission	Power Supply	Acceptance	Data Recording
Max 60 m	1	Modbus / RS485	24 VDC	ATEX CE	SCADA

Characteristic

- Each measuring cable May consists of maximum 64 measuring points with DS18B20 detectors.
- Measuring cable is connected to electronic module assuring conversion OneWire protocol to MODBUS RTU / RS485.
- Up to 64 measuring cables can be connected to one RS485.
- Temperature indication, recording and alarm system – SCADA – is implemented on PC, which may be located in distance up to 1200 m.
- Area classification: Ex II 1/2G Ex ia IIC T* Ga/Gb; Ex II 1D Ex ia IIIC T* °C Da



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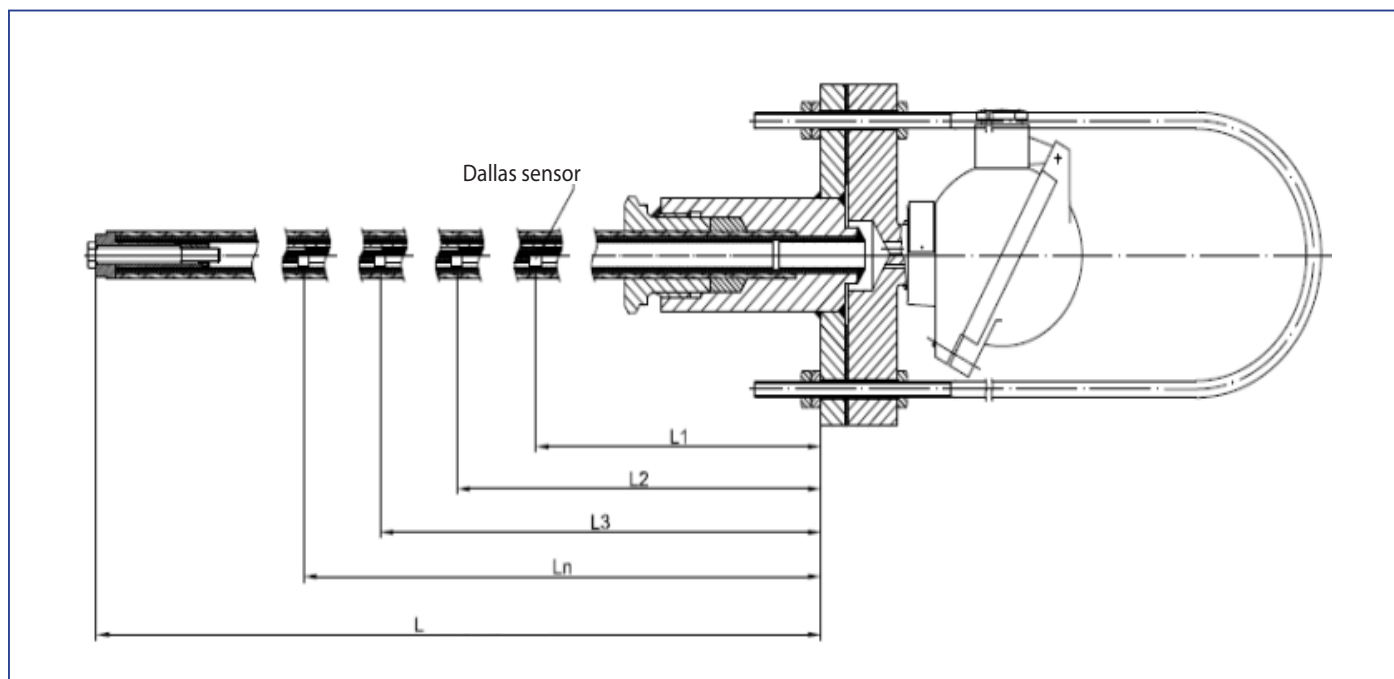
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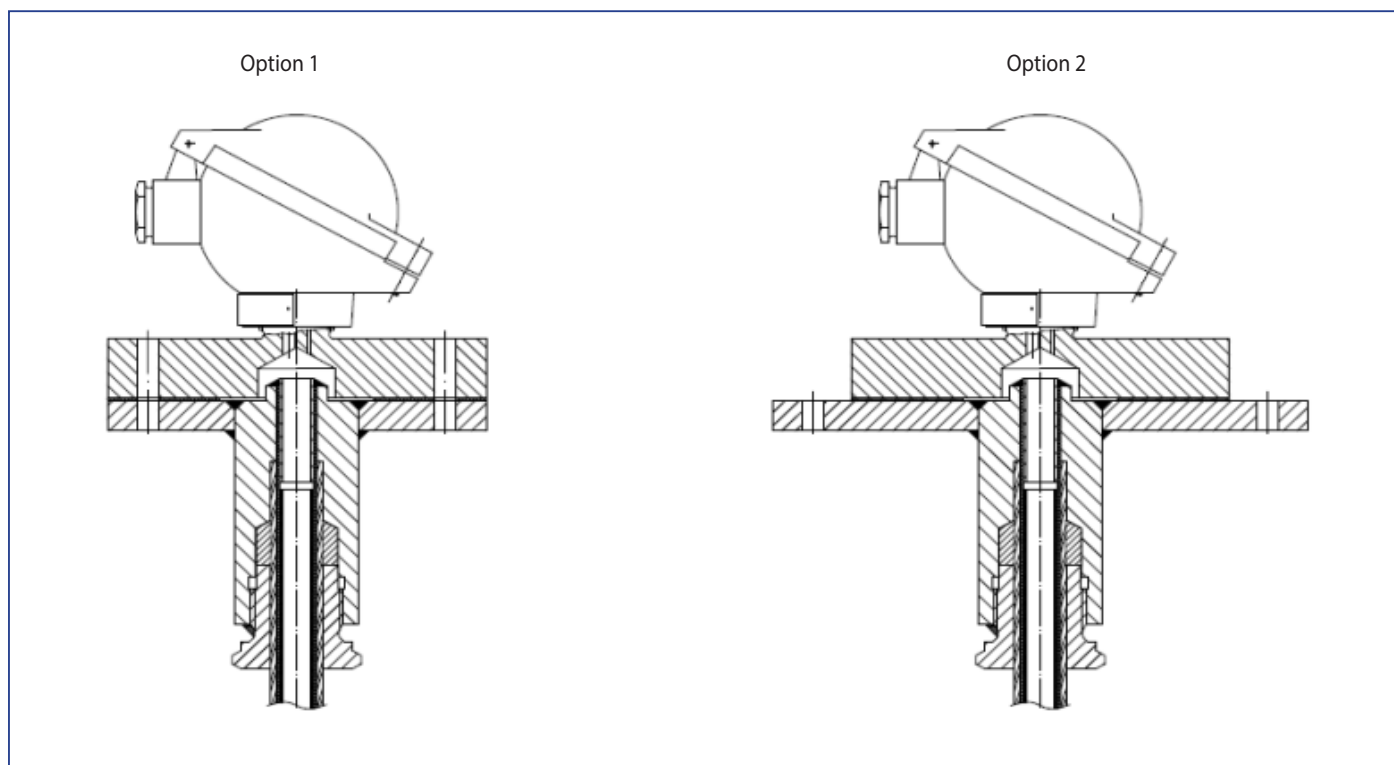
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Process Mechanical Connection

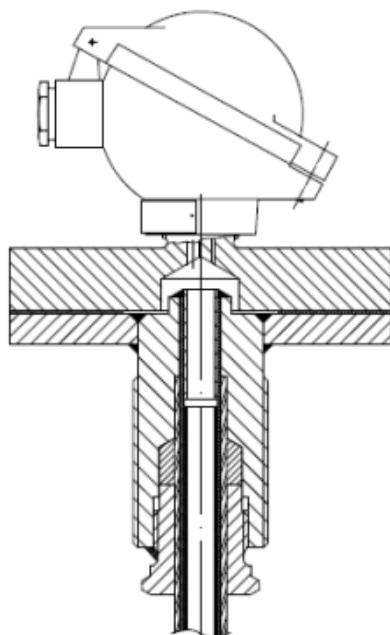


Bail Connection

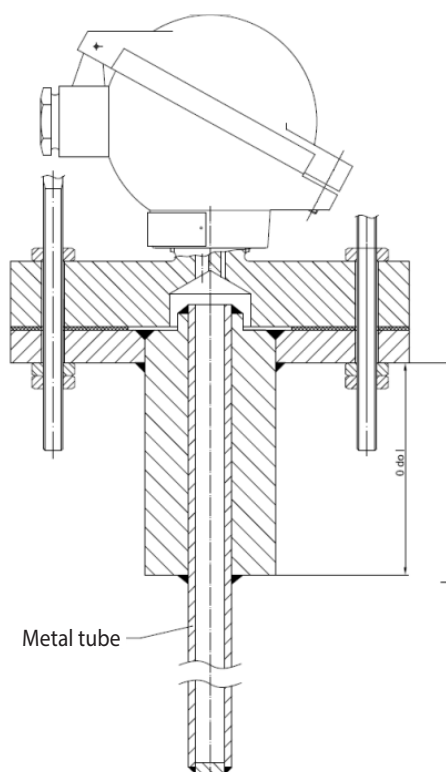


Flange connection

Process Mechanical Connection

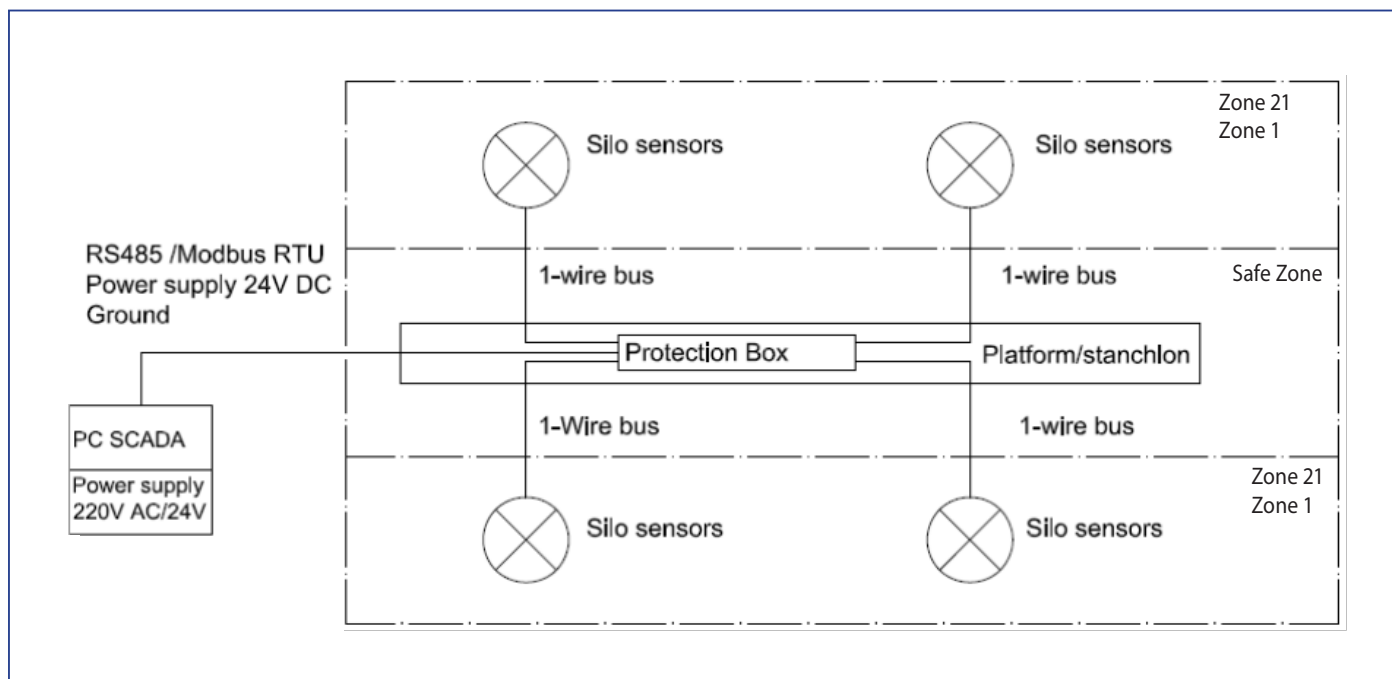


Thread Nozzle Connection

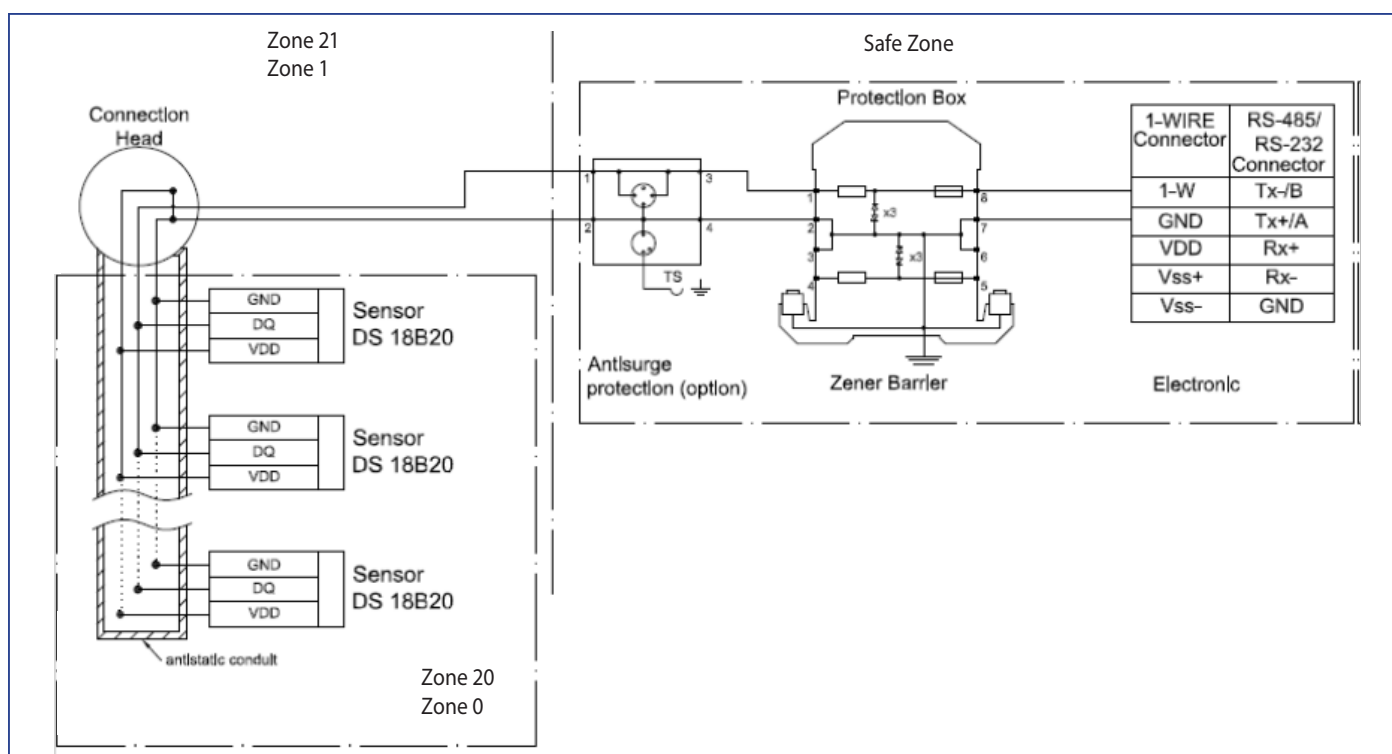


Flange Connection, Metal Tube Protected Sensors

Electric Connection



Note: example of signal connection



Hazardous area signal connection

Ordering Information

TET-101/Exi-DS18B20	A	B	C	D	E	F	G	H
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A Execution	
hose	Hose protection
tube	Metal tube protection, specify OD/Material

B Type of process connection	
bail	Bail
thread	Thread nozzle , specify type
flange	Flange nozzle, specify DN & PN

C Outside sheath diameter	
16	16 mm
	specify other diam. in mm

D Length of cable / metal tube	
	specify in m (max 60m for one cable)

E Number of measuring points	
	specify amount (max 32 points)

F Detector positions	
	Distance of the first detector from nozzle / bail [mm]
	Detector spaces [mm]
(optionally)	Special arrangement (Show on vessel drawing)

G Electric connection	
	Connection head, specify type
JB	Protection box

H Anti-surge protection	
yes	Required
not	Not required

Detail information regarding measuring arrangement shall be provided in:

"Multipoint Thermometer process data sheet"

Multipoint temperature sensor consists a part of Temperature Monitoring System described in separate data sheet.

Ordering Example

TET-101/Exi-DS18B20-hose-bail-16-3500-6-1000-500-XE_DAND-not

stands for: Detector with bail mounting, hose protection of measuring cable OD 16 mm & length 3500mm, 6 detectors, the first one in 1000mm distance from bail, spaced every 500mm, connection head type XE-DAND, without anti-surge protection.