PRESSURE TRANSMITTER WITH MODBUS PROTOCOL

TYPE

EDT 23

Ideal for modern digital applications, where high accuracy, long-term stability and low power consumption are required

- **RANGES**
  - **from 0 to 20 kPa up to 0 to 7000 kPa gauge**
  - **from 0 to 100 kPa up to 0 to 7000 kPa absolute**
- **RS 485 DIGITAL INTERFACE**
- **MODBUS COMMUNICATION PROTOCOL**
- **EXTREMELY LOW POWER CONSUMPTION**
- **HIGH ACCURACY**
- **SMALL DIMENSIONS**
- **RUGGED STAINLESS STEEL CASE**
- **Ex CERTIFIED**
  II 2G Ex ia IIC T4 Gb

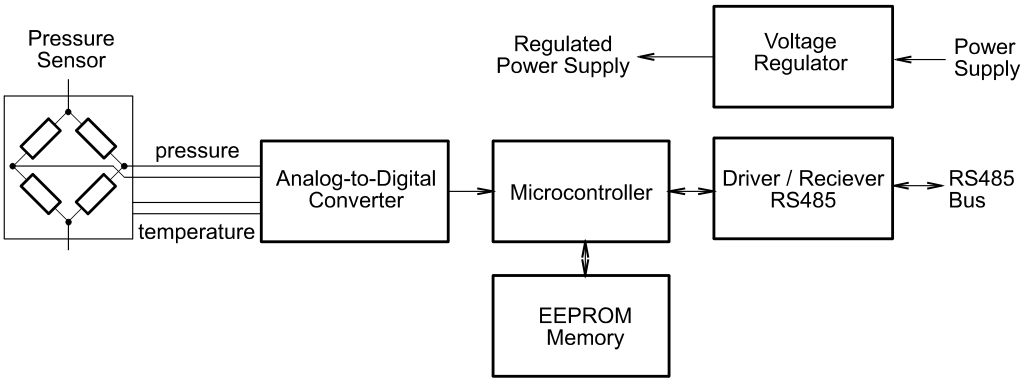
CE 1026

DESCRIPTION

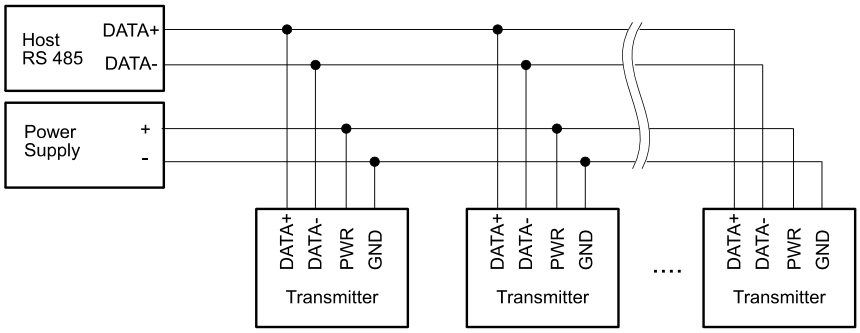
The EDT 23 pressure transmitter is a miniature precision device intended for pressure measurement in applications which require high precision and ultra low power consumption. The transmitter has direct digital output on RS 485 bus which makes it ideal for use in modern digital systems. The primary use of EDT 23 pressure transmitter is as a pressure sensing device for data loggers, gas-volume correction devices and remote monitoring systems.

FUNCTION

Figure shows a simplified functional diagram of the EDT 23 pressure transmitter. The pressure transmitter is based on a silicon piezoresistive sensor. The signal from the sensor is converted in a high resolution analog-to-digital converter and brought into a microcontroller which digitally compensates for the non-linearity and temperature drift of the sensor. Calibration data are stored in non-volatile EEPROM memory.
Pressure readout as well as all control functions are accessible via RS 485 interface. The transmitter is capable to measure the pressure on request or continuously in preset time intervals and store values in its internal memory for later retrieval.



Up to 32 devices may be wired on one RS 485 bus.



AVAILABLE VERSIONS

Electrical connection versions:

Version **A** ribbon cable PNLY

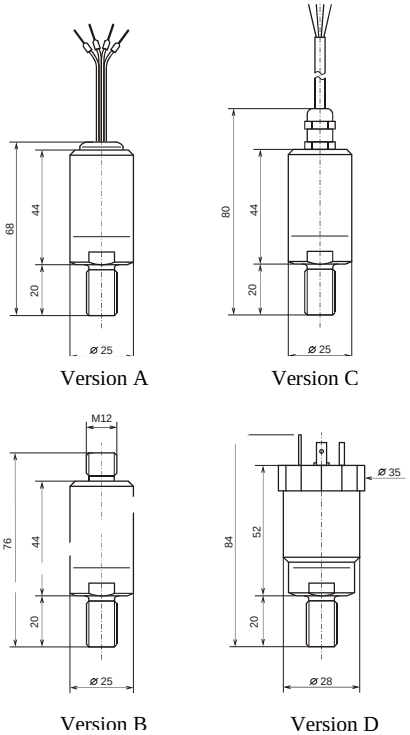
Version **B** M12 connector

Version **C** integral shielded cable (standard)

Version **D** DIN 43650 connector

Explosion-proof versions:

Version **I** type of protection "i"
(intrinsically safe device)



Version A Version C

Version B Version D

Dimensional drawing of EDT 23 pressure transmitter according to the electrical connection version

ELECTRICAL INSTALLATION

Signal	Description	Version A	Version B	Version C	Version D
		color	Pin no.	color	Pin no.
GND	negative power rail (ground)	green	3	green	2
PWR	positive power rail	yellow	1	brown	1
DATA-	RS485 inverted data signal	blue	4	yellow	⏚
DATA+	RS485 non-inverted data signal	white	2	white	3

The transmitter does not provide electrical isolation between the RS 485 bus and the transmitter power supply.

TECHNICAL SPECIFICATION

Measurement ranges	Absolute pressure: 80-520, 200-1000, 400-2000, 700-3500, 1400-7000 kPa Gauge pressure: 0 to 20, 100, 160, 400, 600, 1000, 2500, 4000, 7000 kPa Other ranges on request
Pressure media	Fluids compatible with a fully welded assembly of 316 (1.4401) stainless steel.
Overpressure	The rated pressure can be exceeded without degrading performance: - 1,25 x for absolute ranges - 2 x for gauge ranges
Accuracy	±0,25% of reading (all absolute ranges) ±0,1% of full scale (gauge ranges 100 kPa and above) ±0,3% of full scale (gauge ranges bellow 100 kPa) Comprises non-linearity, hysteresis, repeatability and temperature effects.

Long-term stability	±0,1% of reading / 12 months (all absolute ranges) ±0,1% of full scale / 12 months (gauge ranges 100 kPa and above) ±0,3% of full scale / 12 months (gauge ranges bellow 100 kPa)
Measurement time	Software selectable: from 30 ms for 12 bit resolution to 650 ms for 16 bit resolution.
Electrical connection	Version A: ribbon cable PNLY 4x0,15 Version B: M12 connector Version C: Integral shielded cable 4 x 0,25 mm^2 length 1 m outer diameter 5 to 7 mm. Other lengths on request. Shielding is connected to the case. Gauge pressure transmitters use vented cable Version D: DIN 43650 connector
Power supply	2,9 to 10 VDC. Reverse polarity protected with parallel diode (I_F = 200 mA).
Power consumption	Standby: 10 µA typical / 20 µA maximum (does not depend on power supply voltage) Measurement and communication: 1 mA typical / 4 mA maximum (depends on bus impedance)
Turn-on time	2s
Communication interface	RS 485, 2-wire, half-duplex, minimum bus impedance 1,5 kΩ. Unterminated bus recommended for lowest possible power consumption. Maximum wiring length 25 m.
Communication protocol	Modbus RTU, baud rate 38400 bit/s, 1 start bit, 8 data bits, no parity, 1 stop bit.
Datalogging	Measurement period: selectable from 30 ms to 512 s Memory capacity: 80 readings Timebase accuracy: ±100ppm
Insulation	Greater then 10 MΩ at 500 V AC, case and cable shielding versus signal and power-supply wires.
Weight	100 – 150 g (standard cable length)
Environment	Operating temperature: -25°C to +60°C standard, -40°C to +85°C optional Storage temperature: -40°C to +85°C Humidity: 0% to 95% rel., non-condensing Sealing: version A - IP 20, version B, C, D - IP 65 Vibration: 10g sine 10-2000Hz, EN 60068-2-6
Electro-magnetic compatibility	Complies with EN 61000-6-2 Electrostatic discharge immunity test, EN 61000-4-2: 8 kV, criterion B Electrical fast transients/burst immunity test, EN 61000-4-4: 2 kV, criterion B Radiated RF field immunity test, EN 61000-4-3: 80 - 2000 MHz, 10 V/m, criterion A Conducted RF field immunity test, EN 61000-4-6: 0.15 - 80 MHz, 10 V/m, criterion A
Explosion-proof design	Version I: Certificate no. FTZÚ 01 ATEX 0083, protection class: II 2G Ex ia IIC T4 Gb, Ta<60°C Location: hazardous area, zone 1,2 according to EN 60079-14

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Company approved to ISO 9001:2000