Pressure Transmitter with Pressure Proof Housing

for hazardous applications

Series 23 Ed / 25 Ed
Series 33 X Ed / 35 X Ed

These piezoresistive pressure transmitters with pressure proof housing are approved for use in explosion risk areas of group II. They provide stable and accurate measurements of absolute and gauge pressures of liquid and gaseous media in the pressure range between 0,1 and 300 bar.

Series 23 Ed
Series 33 X Ed

Flexibility

The modular structure of this product range allows highly flexible applications and solutions that are tailored to users' requirements. Numerous versions are available, for example with different pressure connections, materials and filling oils, or versions for use with oxygen and with special performance characteristics. In addition to the classical analog output signal (Series 23 Ed and 25 Ed), a digital solution based on the successful high-precision Series 30 X transmitters is also available (33 X Ed and 35 X Ed).

Analog transmitters, Series 23 Ed and 25 Ed

This series is based on the stable piezoresistive transducer with analog electronics. The zero point and sensitivity, and the temperature coefficients for the zero point and sensitivity, are compensated by resistors and/or potentiometers.

Digital transmitters Series 33 X Ed and 35 X Ed

This series features microcontroller-based electronic evaluation to ensure maximum accuracy. Each transmitter is gauged across the entire pressure and temperature range. This provides the basis for calculating a mathematical model that corrects all reproducible errors. The pressure value can be read via the interface and at the same time it is also available in analog form as a 4…20 mA or 0…10 V version.

Interface: RS485 half-duplex for 9600 and 115'200 baud for line lengths up to 1400 m and a maximum of 128 bus subscribers. Protocol: KELLER Bus and MODBUS RTU. The devices can be configured (scale analog output, switch units, change filter settings, zeroing, etc.) and measured values can be recorded with the CCS30 or PROG30 software, available free of charge.

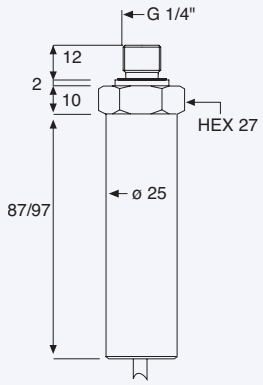
Series 25 Ed
Series 35 X Ed

Ex-Classification

Ex II 2 G Ex db IIC T6 to T4 LCIE 03 ATEX 6082 X	CE 0081

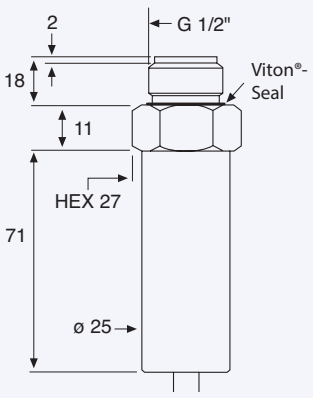
T4: -30 °C ≤ T_a ≤ +100 °C, T5: -30 °C ≤ T_a ≤ +95 °C, T6: -30 °C ≤ T_a ≤ +80 °C

Series 23 Ed / Serie 33 X Ed



Pressure connection: illustrations of examples

Series 25 Ed / Series 35 X Ed



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KELLER

Specifications

	Standard Pressure Ranges (FS) and Overpressure in bar							
PR-23/25 Ed, PR-33/35 X Ed	-1	1	3	10	30			
PA(A)-23 Ed, PA(A)-33 X Ed		1	3	10	30	100	200	300
PA-25 Ed, PA-35 X Ed		1	3	10	30	100		
Overpressure	-1	3	7	20	60	200	300	450

All intermediate ranges for the analog output of Series 33/35 X Ed are realizable by spreading the standard ranges. Smallest range: 0,1 bar.

PAA: Absolute. Zero at vacuum PA: Sealed Gauge. Zero at 1000 mbar abs. PR: Vented Gauge. Zero at atmospheric pressure

Stability	0,1 %FS typ. (FS > 1 bar)	1 mbar typ. (FS ≤ 1 bar)

Series 23 Ed / 25 Ed

Accuracy @ RT [1]	0,2 %FS typ.	0,5 %FS max.
Compensated Temperature Range	-10...80 °C	
Storage- / Operating Temperature [2]	-30...100 °C	
Temperature Coefficients…	…of Zero	…of Sensitivity
· FS > 1 bar	0,01 %FS/°C max.	0,02 %/°C max.
· FS 1 bar	0,02 %FS/°C max.	0,02 %/°C max.
· FS 0,5 bar	0,03 %FS/°C max.	0,02 %/°C max.
· FS 0,2 bar	0,05 %FS/°C max.	0,02 %/°C max.

Series 33 X Ed / 35 X Ed	analog	digital
Accuracy @ RT [3]	0,03 %FS typ.[4]	0,02 %FS typ.
Error Band (10…40 °C)	0,1 %FS [4]	0,05 %FS
Error band (-10…80 °C)	0,15 %FS [4]	0,1 %FS
Storage- / Operating Temperature [2]	-30...100 °C	

[1] Linearity (best straight line through zero) + hysteresis + repeatability

[2] $T4: -30\ °C \le T_a \le +100\ °C$, $T5: -30\ °C \le T_a \le +95\ °C$, $T6: -30\ °C \le T_a \le +80\ °C$

[3] Linearity (BFSL) + hysteresis + repeatability

[4] Disturbance of the 4...20 mA signal occurs during communication through RS485.

	2-Wire	3-Wire	Digital (only 33/35 X Ed)
Signal Output	4...20 mA	0...10 V	RS 485
Supply (U)	8...32 Vcc	13...32 Vcc	8...32 Vcc / 3,5…12 Vcc
Load Resistance (R_Ω)	(U-8 V) / 0,025 A	> 5 k	

Electrical Connection	PUR-cable, length 2 m (with PE-sheath and reference tube for gauge). Others on request.
Volumetric Change	< 0,1 mm³ / FS
Pressure Connection	G 1/4″, G 1/2″, G 3/4″, 1/2″-14 NPT, 1/4″-18 NPT
Material in Media Contact	Stainless steel 1.4435 (316L), Viton®
Protection	IP50 (IP65/IP68 on request)
EMC Conformity	EN 61000-6-2:2005 / EN 61000-6-3:2007 / EN 61326-2-3:2006
Weight	PR/PA/PAA ≈ 200 g
Insulation	> 10 MΩ @ 50 V
Endurance	> 10 million cycles 0…100 %FS at 25 °C

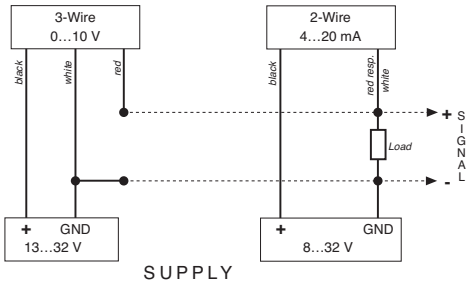
Optionen

Pressure Connection	On request
Pressure Ranges	All pressure ranges between 0,1 and 300 bar
Material in Media Contact	Hastelloy C-276 (C-22), gold-plated. Others on request.
Oil Filling	Fluorized oil (O_2-compatible), olive-oil, low temperature oil

ELECTRICAL CONNECTIONS

Series 23 Ed / 25 Ed			Series 33 X Ed / 35 X Ed	
2-Wire Transmitter	3-Wire Transmitter	Cable	2-Wire Transmitter	3-Wire Transmitter
–	GND	white	OUT/GND	GND
OUT/GND	+OUT	red	–	+OUT
+Vcc	+Vcc	black	+Vcc	+Vcc
		blue	RS 485A	RS 485A
		yellow	RS 485B	RS 485B

TRANSMITTER



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