HIGH TEMPERATURE PRESSURE TRANSMITTER

SERIES 35 X HTC

FOR BIOTECHNOLOGY / FOOD-INDUSTRIES

This piezoresistive high temperature transmitter is suited for media temperatures up to 300 °C. The pressure, acting onto the flush diaphragm, is transferred over an oil-filled capillary onto the silicon measuring cell. The capillary has the function of a cooling spiral, allowing media temperatures of up to 300 °C. The temperature of the electronics, which can be read out with the PROG30 software, may not exceed 120°C.

Digital Output of Transmitter

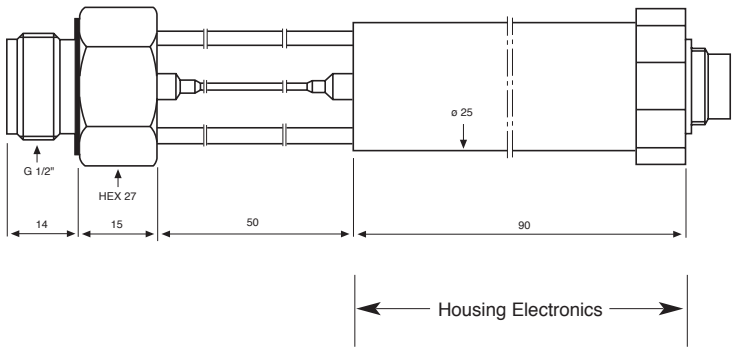
These Series are based on the stable, piezoresisitive transducer and a micro-processor electronics with integrated 16 bit A/D converter. Temperature dependencies and non-linearities of the sensor are mathematically compensated. With the READ30 software and the interface cable K-107, the calculated pressure can be displayed on a Palmtop, Laptop or PC. The READ30 software also allows the recording of pressure signals and the graphic display on the PC. Up to 128 transmitters can be hooked together to a Bus-system.

Transmitter with Analog Output

The micro-processor integrates a D/A converter of 16 bit for analog signal outputs of 4…20 mA or 0…10 V. The output rate is 100 Hz (adjustable). The digital output is available on all transmitters with analog output.

Programming

With the computer software READ30 and PROG 30, a RS485 converter (i.e. K-102, K-104 or K-107 part numbers) and a PC, the pressure can be displayed, the units changed, a new gain or zero set. The analog output can be set to any range within the compensated range.



PIN ASSIGNMENT

Output	Function	Binder 723	DIN 43650	MIL C-26482
4…20 mA	OUT / GND	1	1	C
2 Wire	+Vcc	3	3	A
0…10 V	GND	1	1	C
3 Wire	OUT	2	2	B
	+Vcc	3	3	A
Digital	RS485A	4		D
	RS485B	5		F

CE

Subject to alterations

SPECIFICATIONS

STANDARD PRESSURE RANGES (FS) AND OVERPRESSURE IN BAR

PR 35 X HTC	3	10	30			
PAA 35 X HTC	3	10	30	100	300	1000
Overpressure	5	20	60	200	400	1100

All intermediate ranges for the analog output are realizable with no surcharge by spreading the standard ranges.

Option: Adjustment directly to intermediate ranges (below 20 pieces against surcharge).

	(digital)	2 Wire (analog)	3 Wire (analog)
Output	RS485	4 20 mA	0 10 V
Supply (U)	8…28 Vcc	8…28 Vcc	13…28 Vcc
Accuracy, Error Band [1] (20…300 °C) [2]	0,5 %FS	0,5 %FS	0,5 %FS

[1] Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance

[2] Media Temperature (temperature of electronics max. 120 °C)

Linearity (best straight line)	0,05 %FS
True Output Rate	100 Hz
Resolution	0,002 %FS
Long Term Stability typ.	0,2 %FS

Load Resistance (Ω)	<(U-7V) / 0,02A (2-wire) > 5'000 (3-wire)
Electrical Connection	- Binder-Plug 723 (5 pole) - DIN 43650 Plug (4 pole) - MIL C-26482-Plug (6 pole)
Insulation	> 10 MΩ / 50 V
Storage- / Operating Temperature Range	Media: 0…300 °C Electronics: 0…120 °C
Pressure Endurance	10 Million Pressure Cycles 0…100 %FS at 25 °C
Vibration Endurance, IEC 68-2-6	20 g (5...2000 Hz, max. amplitude ± 3 mm)
Shock Endurance	20 g (11 ms)
Protection	IP65 optional: IP 67
CE-Conformity	EN 61000-6-1 to -6-4
Material in Contact with Media	Stainless Steel 316L (DIN 1.4435) / Viton®
Weight	≈ 300 g
Dead Volume Change	< 0,1 mm^3
Mounting	- Horizontal position (carrying-off of heat) - Cooling spiral exposed to room temperature

Remark: - RS485 pins (for digital output and for programming) is available on all types.

Options: - Switch output, programmable via interface
- Special calculations with pressure and temperature
- Different housing-material, oil filling, pressure thread or connector

Polynomial Compensation

This uses a mathematical model to derive the precise pressure value (P) from the signals measured by the pressure sensor (S) and the temperature sensor (T). The microprocessor in the transmitter calculates P using the following polynomial:

$$P(S,T) = A(T)\cdot S^0 + B(T)\cdot S^1 + C(T)\cdot S^2 + D(T)\cdot S^3$$

With the following coefficients A(T)…D(T) depending on the temperature:

$$A(T) = A_0\cdot T^0 + A_1\cdot T^1 + A_2\cdot T^2 + A_3\cdot T^3$$
$$B(T) = B_0\cdot T^0 + B_1\cdot T^1 + B_2\cdot T^2 + B_3\cdot T^3$$
$$C(T) = C_0\cdot T^0 + C_1\cdot T^1 + C_2\cdot T^2 + C_3\cdot T^3$$
$$D(T) = D_0\cdot T^0 + D_1\cdot T^1 + D_2\cdot T^2 + D_3\cdot T^3$$

The transmitter is factory-tested at various levels of pressure and temperature. The corresponding measured values of S, together with the exact pressure and temperature values, allow the coefficients A0…D3 to be calculated. These are written into the EEPROM of the microprocessor.

When the pressure transmitter is in service, the microprocessor measures the signals (S) and (T), calculates the coefficients according to the temperature and produces the exact pressure value by solving the P(S,T) equation.

Calculations and conversions are performed at least 400 times per second.

ACCESSORIES SERIES 30

SOFTWARE PROG30

Each Series 30 transmitter also integrates a digital interface (RS485 halfduplex) which you can make use of: Connect the transmitter to a PC or Laptop via a converter RS232-RS485 (i.e. K-102, K-104 or K-107). Two programs are offered:

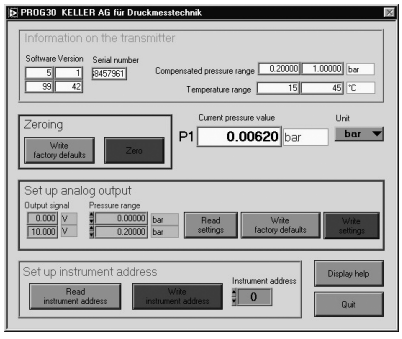
PROG30 : Instrument Settings

- Call up of information (pressure- and temperature range, version of software etc.)
- Indication of actual pressure value
- Selection of the units
- Setting of a new zero and gain for the transmitter
- Reprogramming of the analog output (i.e. different unit, other pressure range)
- Setting of the instrument address (for Bus-operation)
- Programming of the switch output
- Changing the output rate

READ30: Data collection with graphs

- Fast read-out and viewing of the pressure signals in a graph
- Documentation of dynamic measurements
- Up to 16 transmitters on one serial connection (Bus-operation)

You can also tie up the transmitters into your own software. You have then a documentation, a DLL and numerous examples at your disposal.



SensorsONE
Pressure Measurement Instrumentation

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