PROGRAMMABLE LEVEL PRESSURE TRANSMITTER   SERIES (STRETTO)

DIGITALLY COMPENSATED / RANGEABLE / DIGITAL AND ANALOG OUTPUT

This pressure transmitter is designed for level measurement in narrow downhole applications where highest accuracy is required.

Product Benefits:

- Only **16 mm** diameter
- Mathematically compensated
- Programmable, assisting inventory reduction
- Filtering function 2 ms...30 sec
- Improved surge protection
- Bus-system capabilty (up to 128 transmitters)

36 X S level transmitter is available in two different versions:

• PA   Absolute Pressure, Zero at Vacuum

This probe is applied when the atmospheric pressure is measured by a separate barometer and when the water level is calculated as the difference between the absolute value and the ambient pressure. Venting of the electrical cable to atmosphere does not have to be considered for these installations.

• PR   Relative Pressure, Zero at ambient Pressure

This probe is fitted with a durable cable with an integral vent tube to the atmosphere. To prevent the formation of internal condensation caused by installations in cold water on warm, humid days, it is important to ensure only dry air enters the transmitter enclosure via the vent tube. If the vent tube is not terminated in a warm, dry enclosure, Ampere recommends and can supply a purpose built cartridge filled with a silica gel which is fitted at the end of the reference tube.

Programming

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

ELECTRICAL CONNECTIONS

Output	Function	Wire Color
4…20 mA / RS485	OUT/GND	white
	+Vcc	black
Digital	RS485A	blue
	RS485B	yellow

123 ±1

14.9 ±1

Ø16

18.5

Diaphragm position mark

CE

Specifications

Standard Pressure Range FS and Overpressure in Bar

PR	1	3	10
PA	0,8…3	0,8…10	
Overpressure	3	5	20

PAA: Absolute. Zero at vacuum   PR: Vented Gauge. Zero at atmospheric pressure

Output	4...20 mA / RS485
Supply (U)	10...30 Vcc
Compensated Temperature Range	0…50 °C
Error Band *	0,2 %FS (within compensated temperature range)
Linearity (best straight line)	0,025 %FS
True Output Rate	200 Hz
Resolution	0,002 %FS
Long Term Stability typ.	Range $\leq$ 1 bar: 2 mbar
	Range > 1 bar: 0,2 %FS

* Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance

Load Resistance (Ω)	< (U-10V) / 0,02A (2 wire)
Electrical Connection	Cable: PR-Version: Ø 5,8 mm, PE, vented
	PAA-Version: Ø 4,7 mm, PUR, double-coated
Insulation	> 100 MΩ / 500 V
Storage- / Operating Temperature Range	-20…80 °C
Vibration Endurance, IEC 68-2-6	20 g (5...2000 Hz, max. amplitude ± 3 mm)
Shock Endurance	20 g (11 ms)
Protection	IP68
CE-Conformity	EN 61000-6-1 to -6-4
Surge	Supply and RS485 200A @ 8/20 µs
	GND/CASE 2'000A @ 8/20 µs
Material in Contact with Media	Stainless Steel AISI 316L / Viton® / PE
Weight (without cable)	≈ 200 g

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.

Note: - Disturbance of the 4...20 mA signal can occur during communication through RS485

Options: - Special calculations with pressure and temperature
             - Different housing-material, oil filling or pressure thread

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Accessories Series 30

Each Series 30 transmitter also integrates a digital interface (RS485 halfduplex) which the user can make use of. The transmitter is being connected via a converter RS232-RS485 (i.e. K-102, K-104 or K-107) to a PC or Laptop. Two programs are offered:
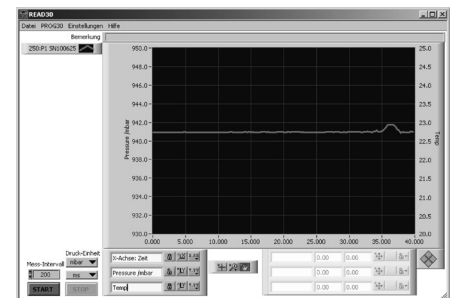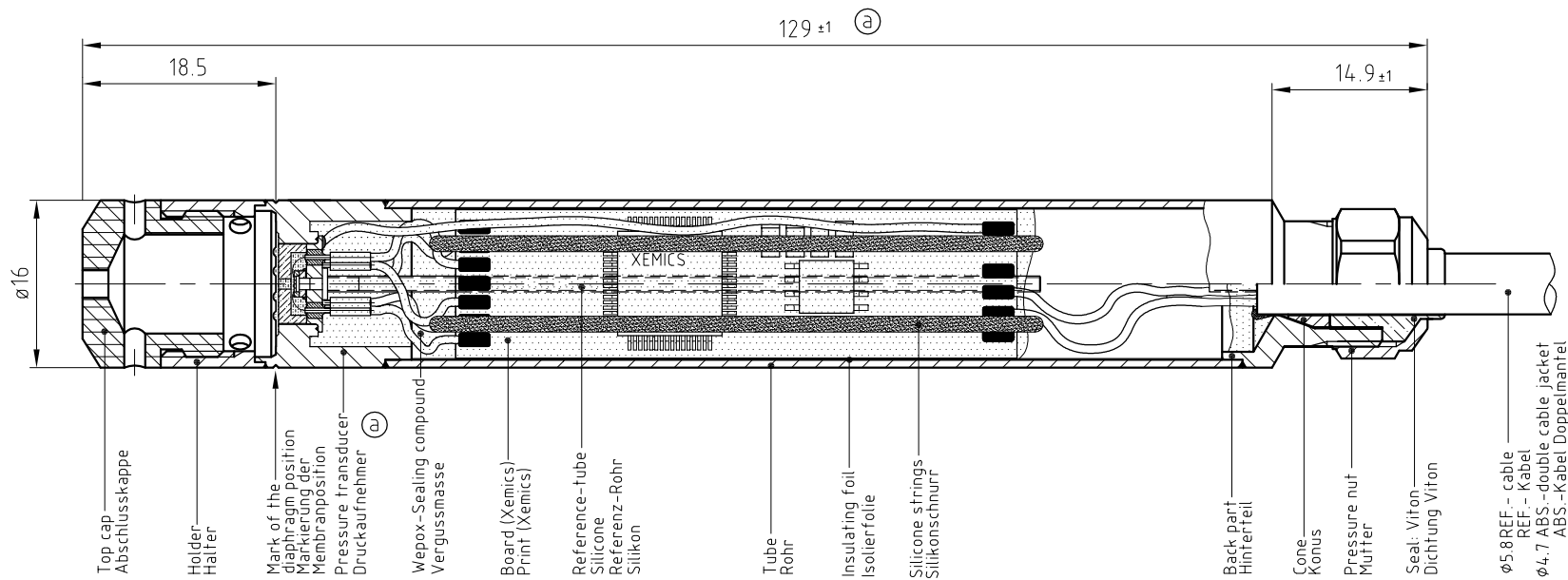
PROG: Instrument Settings
- Call up of information (pressure- and temperature range, version of software etc.)
- Indication of actual pressure value
- Selection of the units
- Setting of a new zero and gain for the transmitter
- Reprogramming of the analog output (i.e. different unit, other pressure range)
- Setting of the instrument address (for Bus-operation)
- Low-Pass Filter adjusting possibility

READ: 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)

Software READ

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

AMPERE	Tel. 02 -678491	Fax 02 - 66981363

Companies approved to ISO 9001:2000

129 ±1 (a)

18.5

14.9 ±1

ø16

XEMICS

Labels:
Top cap / Abschlusskappe
Holder / Halter
Mark of the diaphragm position / Markierung der Membranposition
Pressure transducer / Druckaufnehmer (a)
Wepox-Sealing compound / Vergussmasse
Board (Xemics) / Print (Xemics)
Reference-tube Silicone / Referenz-Rohr Silikon
Tube / Rohr
Insulating foil / Isolierfolie
Silicone strings / Silikonschnurr
Back part / Hinterteil
Cone / Konus
Pressure nut / Mutter
Seal: Viton / Dichtung Viton
ø5.8 REF.- cable / REF.- Kabel
ø4.7 ABS.-double cable jacket / ABS.-Kabel Doppelmantel
Case on the glass feed throughs

2 Leiter 4 ... 20mA 9I ...	
OUT / GND	weiss / white
+Vcc	schwarz / black
RS485A	blau / blue
RS485B	gelb / yellow

Case on the glass feed throughs

Pressure range: 1 ... 20 bar
Druck bereich   : 1 ... 20 bar
Temperature range: 0 ... 50°C
Temperatur bereich:0 ... 50°C

a	06.12.07	MAS	Gesamtlänge neu 129mm (alt 124mm) Weil: Optimierung d. Schweissbedingungen an 81128.7
Änd-Index :	Datum :	Vis. :	Änderung :

Gegenstand :		Werkstoff :		gez.	23.10.06	RaG
Transmitter				ges.		
				Massstab : 2:1 A3	FREIGABE	06.12.07	cle

Technische Änderungen vorbehalten.

Ersetzt durch :
Ersatz für :

Untolerierte Masse : ±0,1	⑱ Kanten gebrochen ⑲ᵐ Kanten scharf	nur gültig für Auftrag :

Serie : PR-36XW
81416.7

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