

UniTrans

The intrinsically safe universal transmitter for applications
in hazardous environments

TRONIC LINE

IS - pressure transmitter • Model IUT-10

IS - pressure transmitter, flush diaphragm • Model IUT-11

- Explosion protection EEx ia IIC T6 acc. to ATEX 100a
- For the use in hazardous environments:
 - gases and mists: zone 1, zone 2 and connection to zone 0
- Accuracy 0.15 %
- Scaleable measuring ranges via Turn down of up to 1 : 20
- Limits of measuring range from 0 ... 20 mbar up to 0 ... 4,000 bar
- Wetted parts made of stainless steel
- Medium temperature from -40°C up to +105°C
- Ingress protection IP 65, optionally IP 67
- Output signal 4 ... 20 mA, 2-wire
- Communication signal HART®

Description

With its maximal Turn down of 1 : 20 the **UniTrans** even adapts to applications with large changes in measuring range (e.g. a 100 bar transmitter can be turned down to 5 bar). Due to its internal digital signal processing the **UniTrans** has a very good measuring accuracy.

As IS - pressure transmitter the IUT-10 can perfectly meet the hardest requirements of industrial pressure measurement. It is approved by the high grade CENELEC certificate complying with the new ATEX 100a.

With the ATEX 100a approval these transmitters can still be delivered after 30 June, 2003.

The display can be adjusted mechanically and set electronically, two features which guarantee an optimal readout from the front side and from above and result in a multifunction display. Bargraph and trend are displayed permanently.

The parameters such as user language, units, zero point, span, inverted signal etc. can easily be set (in several languages) via the self-explaining menu. All common units can be displayed. Additional text (e.g. min. / max. values, or temperature at the sensor) can be set via two extra lines.

The **UniTrans** also offers the possibility of a tank linearisation. This is achieved by assigning the non-linear relation between filling level and amount (e.g. of a spherical tank) to the 4 ... 20 mA signal via a value table. Here up to 32 holding points can be programmed.

Design

All wetted parts are made of stainless steel and the measuring cell is hermetically welded. In contrast to ceramic measuring cells there are no sealing elements to restrict the choice of measuring media.

The **UniTrans** is fed via intrinsically safe line transformers (e.g. Wika Model A-IVB-1), or via standard barriers with an input power of 12 ... 30 V. The output signal is 4 ... 20 mA, two-wire system.



Model IUT-10

Model IUT-11 (flush diaphragm)



Specifications		Model IUT-10 and Model IUT-11											
Pressure ranges *	bar	0.4	1.6	6	16	40	100	250	600	1000	1600	2500	4000
Over pressure safety	bar	2	10	35	80	80	200	500	1200	1500	2000	3000	4400
Burst pressure	bar	2	10	35	80	400	800	1200	2400	3000	4000	5000	7000
Pressure reference		relative pressure {absolute pressure up to 16 bar, beyond 16 bar upon request}											
Pressure connection		G ½ B (½ NPT) per EN 837, part 1, chapter 7.3											
• Model IUT-10		M 16 x 1.5 with sealing cone higher than 1600 bar, ¼"-28 UNF LH M 250-C higer than1600 bar											
• Model IUT-11		G 1 B flush diaphragm with o-ring (pressure ranges: 0 ... 0.4 bis 0 ... 1.6 bar)											
		G ½ B flush diaphragm with o-ring (pressure ranges: 0 ... 6 bis 0 ... 600 bar)											
		G 1 ½ flush diaphragm with ISO 228 (pressure ranges: 0 ... 0.4 bis 0 ... 16 bar)											
• Model IUT-11 EHEDG-version		G 1 flush diaphragm with o-ring (pressure ranges: 0 ... 0.4 bis 0 ... 16 bar)											
Materials		highly resistive, fiberglass-enforced plastic (PBT); {Aluminum}											
• case		stainless steel 1.4571 and 2.4711 (1.4534 for pressure range > 1000 bar)											
• press. conn./diaphr. (IUT-10)		stainless steel 1.4571 {Hastelloy C4}, o-ring: NBR {Viton or EPDM}											
• press. conn./diaphr. (IUT-11)		Synthetical oil (only for pressure ranges up to 0 ... 16 bar or flush diaphragm units)											
internal transmission fluid		{halocarbon oil for oxygen applications ¹⁾ ; {listed by FDA for food industry}											
Power supply U _B	DC V	12 ... 30											
Signal output and maximum load R _A		4 ... 20 mA, 2-wire, optionally with modulated communication signal HART®											
Adjustability:		R _A ≤ (U _B - 12 V) / 0.023 A with R _A in Ohm and U _B in Volt											
• zero point	%	-2.5 ... 99											
• span		Turn down 1 : 20 (1 : 2 for pressure range > 1000 bar)											
Measuring rate	Hz	≤ 100											
• (with HART®-Protocol)	Hz	≤ 10											
Accuracy **	% of span	≤ 0.10 (≤ 0.3 for pressure range > 1000 bar)											
Behavior with Turn down (1 : k)		no change of accuracy											
• Turn down up to 1 : 5		the accuracy must be multiplied by the factor (Turn down / 5)											
• Turn down 1 : 5 to 1 : 20		[calculation example for Turn down = 1 : 15] Accuracy = 0.10 x (15 : 5)= 0.3											
Hysteresis	% of span	≤ 0.04											
Repeatability	% of span	≤ 0.05											
1-year stability	% of span	≤ 0.1 (at reference conditions)											
Permissible temperature of		(please consider the safety related values according to EC-type test certificate!)											
• medium	°C	-40 ... +105											
• ambiemt	°C	-40 ... + 70 (-20 ... +70 with display)											
• storage	°C	-40 ... + 85 (-35 ... + 80 with display)											
Overall deviation													
• at +10 ... +40 °C	%	≤ 0.15 (≤ 0.6 for pressure ranges higher than 1000 bar)											
Compensated temp. range	°C	-20 ... +80											
Temperature coefficients in compensated temp range:		(temp. related deviations in the range +10 ... +40 °C (50 ... 104 °F) already included in the overall deviation)											
• mean TC of zero / span	% of span/10K	≤ 0.1											
Damping (display and signal)	s	0 ... 40 (adjustable)											
Explosion protection		The instruments are certified for environments that require category 1/2G, 2G, 3G .											
Output signal		4 ... 20 mA, 2-wire, optionally with modulated communication signal HART®											
Ignition protection typre		EEx ia IIC T4						EEx ia IIC T5 / T6					
Certificate No.	Display	(DMT 99 ATEX E 091 U)						(DMT 99 ATEX E 091 U)					
	Pressure Transmitter	(DMT 99 ATEX E 093)						(DMT 99 ATEX E 093)					
Safety-related max. values:													
• Power supply U _i	V DC	30						30					
• Short circuit rating I _i	mA	100						93					
• Power limitation P _i	mW	750						697					
• Medium temperature	°C	-40 ... +105						-40 ... +60					
• Ambient temperature	°C	-40 ... +70						-40 ... +60					
• Intenal capacity Ci/ inductivity Li	nF / μH	9 / very low											
CE -conformity		Interference emission and immunity see EN 61 326; declaration of conformity on request											
		General directives acc. to EN 50 014 :1997											
		Intrinsic safety 'i' acc. to EN 50 020 :1994 (VDE 0170/ 0171 part 7/4.96)											
		Electrical equipment of group II, category 1G acc. to EN 50 284 :1999											
Shock resistance	g	100 according to IEC 770 (mechanical shock)											
Vibration resistance	g	5 according to IEC 770 (vibration under resonance)											
Electrical connection		locking plug M 20 x 1.5 with internal clamping block											
		(for cable diameters of 7 ... 13 mm, wire diameters up to 2.5 mm ²)											
Wiring protection		protected against polarity crossing, overvoltage and short circuiting											
Degree of protection per EN 60529 / IEC 529		IP 65 {IP 67} with aluminum case always IP 67											
Weight	kg	approx. 0.7 (aluminum version approx. 1.0)											
Dimensions		see drawings											
Items in curved brackets { } are optional extras for additional price.													

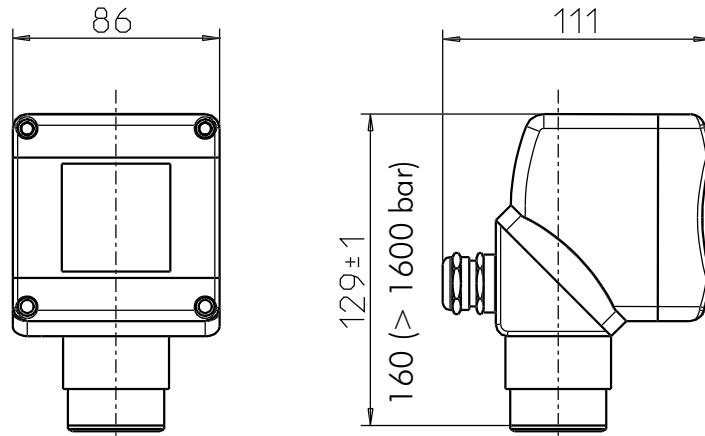
* Other measuring ranges (e.g. 4 bar) can be set via the respective Turn down. Even when the measuring range is present by us on (e.g. 4 bar) the standard range of 6 bar can be set again by a reset.

** included calibration error with zero, and span, hysteresis and linearity, calibrated in vertical mounting position with the pressure connection facing down

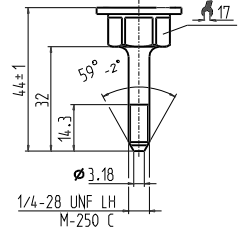
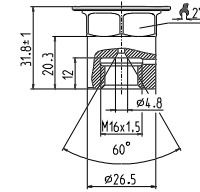
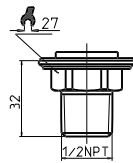
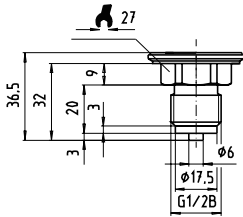
1) The oxygen version must not be operated under medium temperatures higher than 60 °C (140 °F)

The oxygen version cannot be manufactured for negative pressure ranges and for absolute pressure ranges < 1 bar abs.

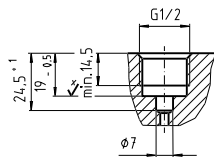
Dimensions in mm



Pressure connections



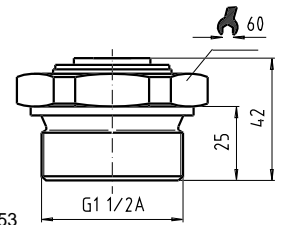
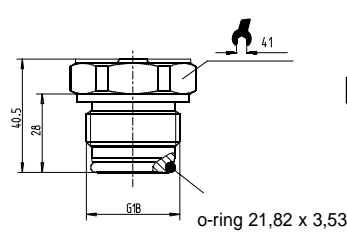
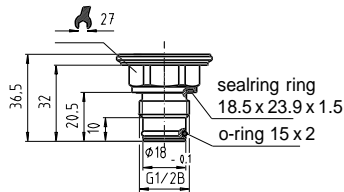
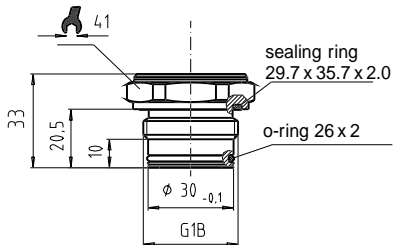
Socket



(higher than 1600 bar,
see PE 81.29)

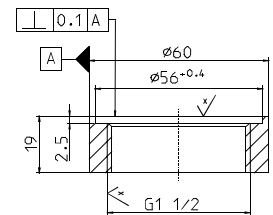
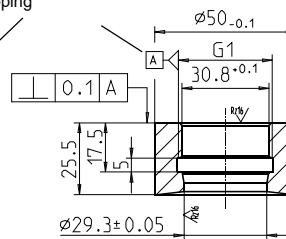
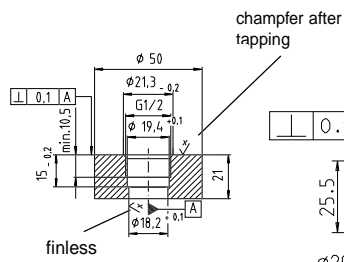
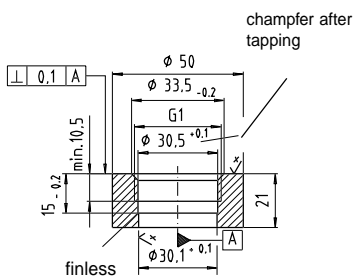
(higher than 1600 bar)

Pressure connection flush diaphragm



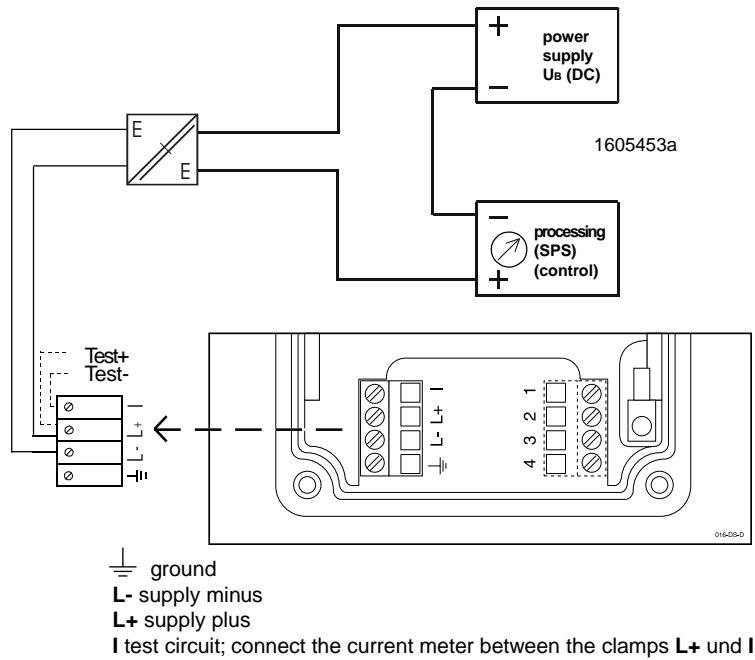
acc. EHEDG

Weld-on adaptors resp. sockets for flush diaphragm pressure connection



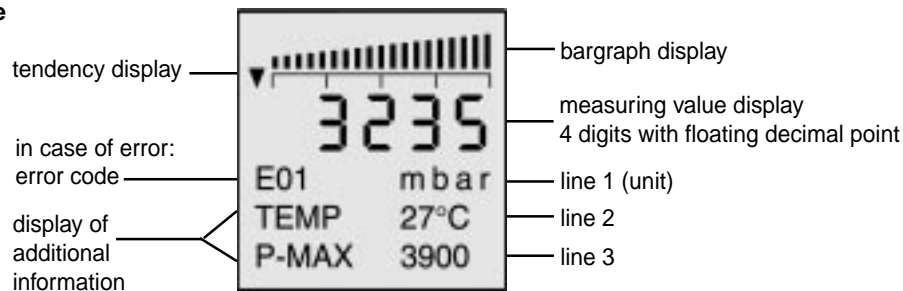
Wiring details

2-wire system

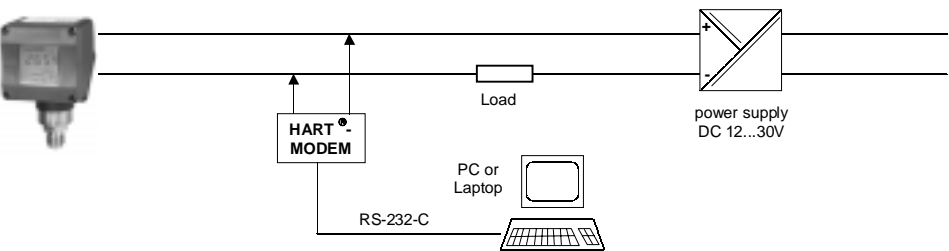


Random example of the optional display

Measuring value - display mode

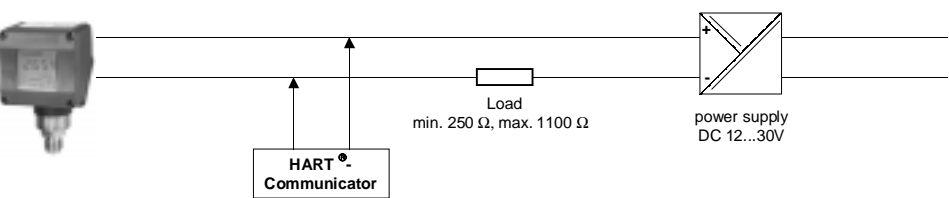


Communication between PC and transmitter for versions with HART®-communication signal



The configuration software **PACTware™** starter version comes supplied with the transmitter !

Communication between HART® communicator and transmitter



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