

Intrinsically safe universal transmitter for hazardous environments Model IUT-10 and IUT-11

WIKA data sheet PE 86.02



Applications

- Process engineering
- Chemical engineering
- Plant construction

Special features

- Explosion protection EEx ia IIC T6 acc. to ATEX and CSA
For the use in hazardous environments:
gases and mists: zone 1, zone 2 and connection to zone 0
dust: zone 21, zone 22 and connection to zone 20
- High measuring accuracy
- Scaleable measuring ranges via Turn down of up to 1:20
- Configuration via DTM (Device Type Manager) according to the FDT (Field Device Tool) - concept
(e.g. PACTware) oder SIMATIC PDM
- Fully welded, stainless steel diaphragm

UniTrans®



Fig. left Pressure transmitter IUT-11 (flush)

Fig. right Pressure transmitter IUT-10 with display

Description

With its maximal 1 : 20 turndown ratio the UniTrans can be used in many different applications. This turndown ratio eliminates the necessity of keeping several transmitters in stock; it is much easier to turn down the transmitter instead of changing transmitters (e.g. a 100 bar transmitter can be turned down to 5 bar). As IS - pressure transmitter the UniTrans can perfectly meet the hardest requirements of industrial pressure measurement. It is approved by the high grade CENELEC certificate complying with the ATEX and CSA approval.

High measuring accuracy

The internal, digital signal processing allows for high measuring accuracy at fast measuring rates and pressure ranges from 20 mbar to 4000 bar.

Multifunctional display

The optional display can be adjusted mechanically and electronically, thus guaranteeing many display variations and an optimal reading from different directions. Bargraph and trend are permanently displayed.

Only a minor modification of the case is required in order to be able to read the display from above. All standard units can be displayed. Two further lines are available for entering additional text (e.g. min./max. values or temperature at the sensor).

Configuration

With the easy-to-use menu, the user can set parameters such as language, unit, zero point, span or inverted signal. The displayed language for transmitters with HART®-Communication is always English (other languages through configuration software).

The UniTrans also offers the possibility of a tank linearisation with up to 32 holding points.

Power Supply

The UniTrans is fed via intrinsically safe line transformers (e.g. WIKA Model KFD2-STC4-Ex1) or via standard barriers with an input power of 12 ... 30 V. The output signal is 4 ... 20 mA, 2-wire system.

Specifications		Model IUT-10, standard version Model IUT-11 flush diaphragm							
Pressure ranges ^{1) *}	bar	0.4	1.6	6	16	40	100	250	600
Over pressure safety	bar	2	10	35	80	80	200	500	1,200
Burst pressure	bar	2.4	12	42	96	400	800	1,200	2,400 ³⁾
Pressure ranges ^{1) *}		1,000 ²⁾	1,600 ²⁾	2,500 ²⁾	4,000 ²⁾				
Over pressure safety		1,500	2,000	3,000	4,400				
Burst pressure		3,000	4,000	5,000	7,000				
{Vacuum, gauge pressure, compound range, absolute pressure are available}									
Materials									
■ Wetted parts		(other materials see WIKA diaphragm seal program)							
➢ Model IUT-10		Stainless steel (pressure ranges > 16 bar additional Elgiloy®)							
➢ Model IUT-11		Stainless steel {Hastelloy C4}; O-ring: NBR ⁴⁾ {FPM/FKM or EPDM}							
■ Case		Highly resistive, fibreglass-enforced plastic (PBT); {Aluminum}							
Internal transmission fluid ⁵⁾		Synthetic oil {Halocarbon oil for oxygen applications} {Listed by FDA for Food & Beverage}							
Power supply U _B	DC V	12 ... 30							
Signal output		4 ... 20 mA, 2-wire, optionally with modulated communication signal HART®							
Permissible max. load R _A		R _A ≤ (U _B - 12 V) / 0.023 A with R _A in Ohm and U _B in Volt							
Adjustability									
■ Zero Point	%	-2.5 ... 99							
■ Span		Turn down of 1 : 20 (1 : 2 for pressure ranges > 1,000 bar)							
Internal measuring rate	Hz	100 (≤ 10 with HART® protocol)							
Accuracy	% of span	≤ 0.1 ⁵⁾ (≤ 0.3 for pressure ranges > 1,000 bar)							
Behavior with Turn down (1 : k)									
■ Turn down of up to 1 : 5		No change of accuracy							
■ Turn down of 1 : 5 to 1 : 20		The accuracy must be multiplied by the factor (k / 5) [Calculation example for TD = 1 : 15] Accuracy = 0.1 x (15 : 5) = 0.3							
Non-linearity	% of span	≤ 0.05 (≤ 0.2 for pressure ranges > 1,000 bar); (BFSL) per IEC 61298-2							
1-year stability	% of span	≤ 0.1 (at reference conditions)							
Permissible temperature of Compensated temp. range	°C	See safety-related max. values							
Overall deviation	%	-20 ... +80							
Temperature coefficients within compensated temp range		at +10 ... +40 °C ≤ 0.15 (≤ 0.5 for pressure ranges > 1,000 bar)							
■ Mean TC of zero	% of span	(the temperature related deviations in the range +10 ... +40 °C included in the overall deviation)							
■ Mean TC of range	% of span	≤ 0.1 / 10 K							
Damping	s	≤ 0.1 / 10 K							
Explosion protection		display and signal: 0 ... 40 (adjustable)							
Ignition protection type		The instruments are certified for environments that require category 1/2G, 2G, 3G {1/2D, 2D, 3D}							
Certificate No.	Display	EEx ia II C T4				EEx ia II C T5 / T6			
	Transmitter	(DMT 99 ATEX E 091 U)				(DMT 99 ATEX E 091 U)			
		(DMT 99 ATEX E 093)				(DMT 99 ATEX E 093)			
Safety-related max. values:									
■ Power supply	DC V	30				30			
■ Short circuit rating	mA	100				93			
■ Power limitation	mW	750				697			
■ Medium temperature ^{*)}	°C	-40 ... +105				-40 ... +60			
■ Ambient temperature	°C	-30 ... + 70 ^{6) 7)} (-20 ... +70 with display)				-30 ... +60 ^{6) 7)} (-20 ... +70 with display)			
■ Storage temperature	°C	-40 ... + 85 (-35 ... +80 with display)				-40 ... +85 (-35 ... +80 with display)			
■ Internal capacity C _i	nF	9							
■ Internal inductivity L _i	μH	very low							
CE-conformity									
■ Pressure equipment directive		97/23/EG (Modul H)							
■ EMV directive		2004/108/EG, EN 61326 Emission (Group 1, Class B) and immunity (industrial locations)							
■ ATEX directive		94/9/EG, Category 1/2G, 2G, {1/2D, 2D}, Ex ia IIC							
Shock resistance	g	100 per IEC 60068-2-27 (mechanical shock)							
Vibration resistance	g	5 per IEC 60068-2-6 (vibration under resonance)							
Wiring protection		Protected against reverse polarity, short circuiting and {overvoltage} on the instrument side							
Weight	kg	approx. 0.7 {Aluminum version approx. 1.0}							

{ } Items in curved brackets are optional extras for additional price.

*) In an oxygen version model IUT-11 is not available. In an oxygen version model IUT-10 is only available in gauge pressure ranges up to max. 1000 bar and with media temperatures between -20 ... +60 °C.

1) 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.

2) Only Model IUT-10.

3) For Model IUT-11: The value specified in the table applies only when sealing is realised with the sealing ring underneath the hex. Otherwise max. 1500 bar applies.

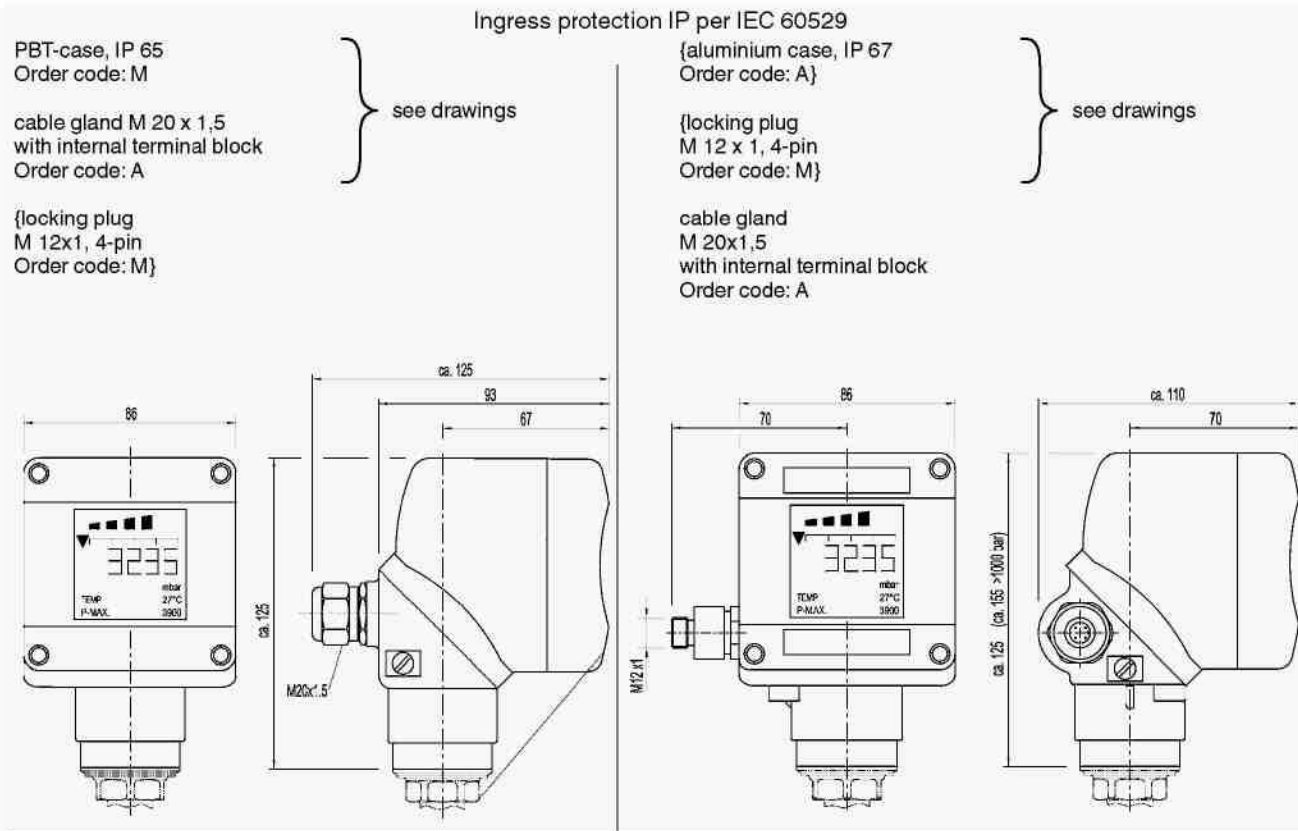
4) Not for IUT-10 with pressure ranges > 16 bar

5) Including non-linearity, hysteresis, non-repeatability, zero point and full scale error (corresponds to error of measurement per IEC 61298-2). Adjusted in vertical mounting position with lower pressure connection.

6) Permissible temperature range in non hazardous area -40 ... +85 °C / -40 ... +185 °F

7) -40 °C only with Aluminium case.

Dimensions in mm



Pressure connections UT-10

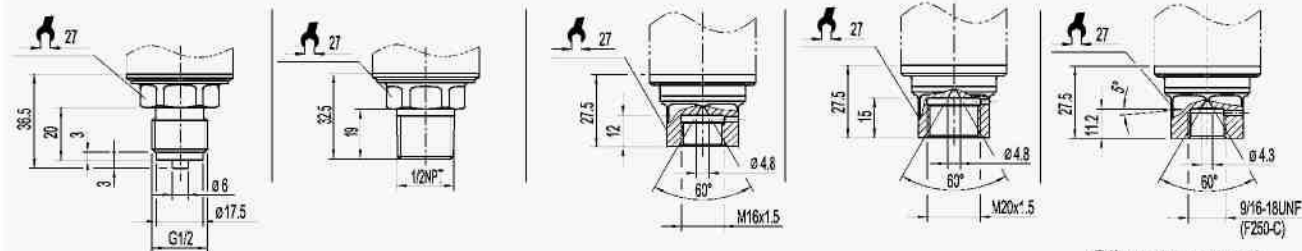
G 1/2
EN 837
max. 1600 bar
Order code: GD

1/2 NPT
per „Nominal size for US
standard tapered pipe
thread NPT“
max. 1600 bar
Order code: ND

M 16x1,5 female ¹⁾
from 1600 bar
Order code: ML

M 20x1,5 ¹⁾
from 1600 bar
Order code: MI

9/16-18 UNF female ¹⁾
from 1600 bar
Order code: VZ



Others on request

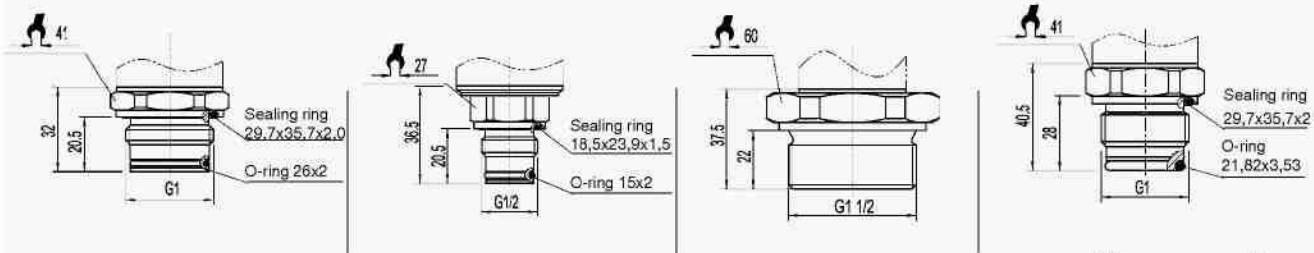
Pressure connections UT-11

G 1
0 ... 0,4 up to 0 ... 1,6 bar
Order code: 85

G 1/2
> 1,6 bar
Order code: 86

G 1 1/2
without O-ring
0 ... 0,4 up to 0 ... 16 bar
Order code: G6

G 1
acc. EHEDG ²⁾
0 ... 0,4 up to 0 ... 16 bar
Order code: 83



Others on request

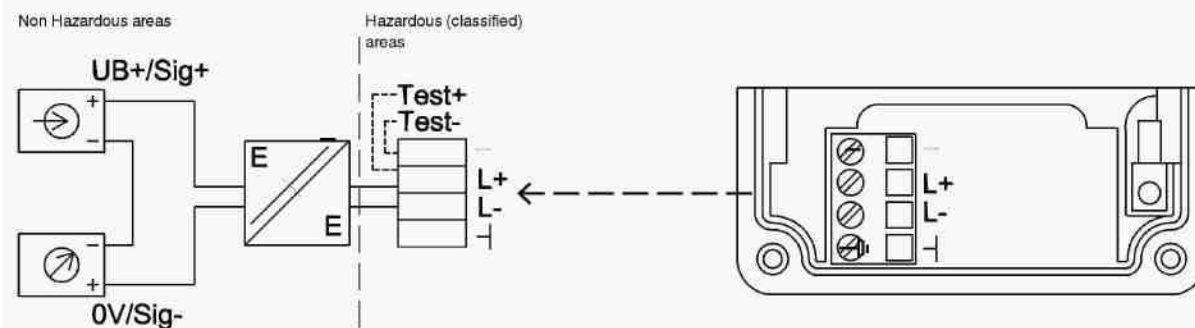
For installation and safety instructions see the operating instructions for this product.

For tapped holes and welding sockets please see Technical information IN 00.14 for download at www.wika.de - Service

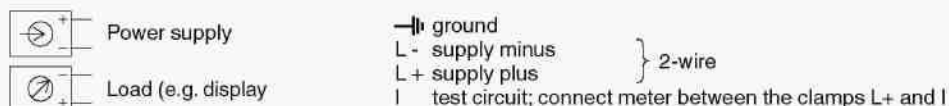
- ¹⁾ The respective values for your mounting position please find in the documentation of your high-pressure equipment supplier.
²⁾ European Hygienic Equipment Design Group
 {} Items in curved brackets are optional extras for additional price.

Wiring details

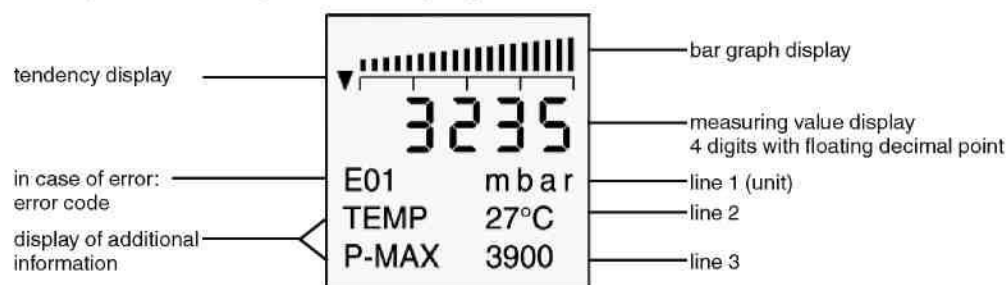
2-wire



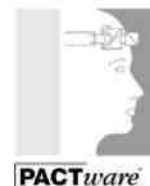
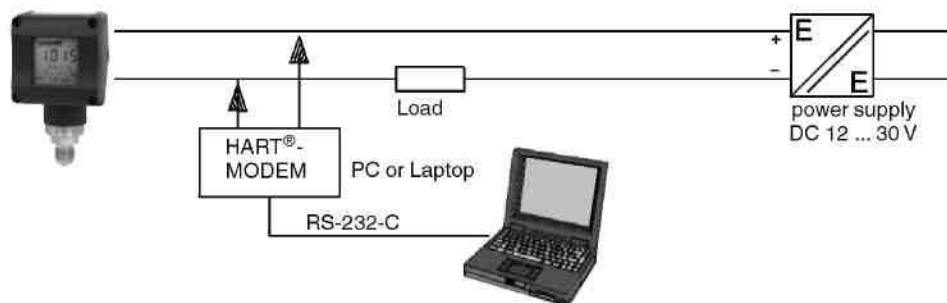
Legend:



Random example of the optional display

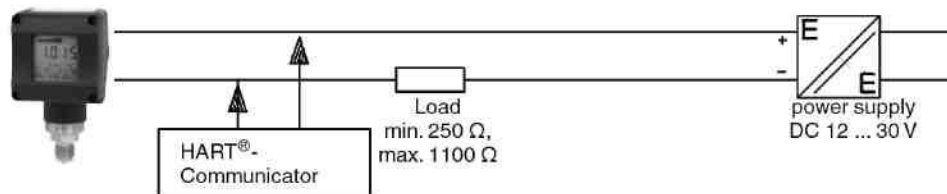


Communication between PC and transmitter for versions with HART®-communication signal



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

Communication between HART® communicator and transmitter



Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

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