

# Intrinsically Safe Pressure Transmitters

for hazardous environments

## TRONIC LINE

**Ex** - Pressure Transmitter • Model IS-10

**Ex** - Pressure Transmitter with Flush Diaphragm • Model IS-11

- Pressure ranges from 0 ... 0.1 bar to 0 ... 4000 bar
- Case and wetted parts of stainless steel
- **Ex** - protection: EEx ia I/II CT6 in compliance with ATEX
- Applicable in the following hazardous environments:
  - Gases and vapour: Connection to Zone 0  
Zone 1 and Zone 2
  - Dust: Connection to Zone 20  
Zone 21 and Zone 22
  - Mining: Category M1 and M2
- Special version for oxygen application



Model IS-10



Model IS-11



### Description

The intrinsically safe pressure transmitters have been specially designed to comply with the most difficult requirements of industrial applications and represent an ideal solution for almost any task in hazardous environments.

A stock program ensures short delivery times. The most important features are the wide ranging certifications for hazardous applications (CENELEC certificate complying with the new ATEX). This certificate will still be valid after June 30, 2003.

### Structure

All wetted parts are made of stainless steel and are completely welded. Therefore there are no restrictions of the sealing material based on the pressure medium.

The compact case is also made of stainless steel and at provides least IP 65 ingress protection (special versions up to IP 68).

The transmitters are supplied via appropriate intrinsically safe line transformers, or via typical zener diode barriers with an input power of 10 ... 30 V. The output signal is 4 ... 20 mA, two-wire system.

An oxygen version is available for the pressure ranges from 0 ... 0.25 bar up to 0 ... 1600 bar .



Model IS-10 mit Snap Cap

### Supplementary data sheets:

• IS-Level Probe  
(see data sheet PE 81.23)

**Model IL-10**

• IS-Universal Transmitter UniTans  
(see data sheet PE 86.02)

**Model IUT-1X**

Specifications		Model IS-10 and Model IS-11															
Pressure ranges	bar	0.1 0.16 0.25 0.4 0.6 1 1.6 2.5 4 6 10 16 25 40 60 100 160 250 400 600 1000 1600 2500 4000															
Over pressure safety	bar	1 1.5 2 2 4 5 10 10 17 35 35 80 50 80 120 200 320 500 800 1200 1500 2000 3000 4400															
Burst pressure	bar	2 2 2 2 4 5 10 10 17 35 35 80 250 400 550 800 1000 1200 1700 2400 3000 4000 5000 7000															
		{absolute pressure: 0 ... 0.25 bar abs to 0 ... 16 bar abs}															
Pressure connection		G ½ B per DIN 16288 (G ¼ B, ½ NPT, ¼ NPT) {other connections on request} (M 16 x 1.5 female for pressure range 0 ... 2500 bar or higher)															
• Model IS-10		G 1 B flush diaphragm with o-ring (pressure ranges: 0 ... 0.1 to 0 ... 1.6 bar)															
• Model IS-11		G ½ B flush diaphragm with o-ring (pressure ranges: 0 ... 2.5 to 0 ... 600bar)															
		{weld-on socket for flush diaphragm units with connection G ½, G 1}															
European Hygienic Equipment Design Group		G 1 flush diaphragm with o-ring and cooling element (pressure ranges: 0 ... 0.4 bis 0 ... 16 bar)															
Material		stainless steel 1.4571 (other materials see WIKA chemical seal)															
• wetted parts		stainless steel 1.4571 and 1.4542															
Model IS-10 from 25 bar		stainless steel 1.4571 and o-ring: NBR {Viton or EPDM}; {hastelloy C4}															
Model IS-11		stainless steel 1.4571															
• case		stainless steel 1.4571															
internal transmission fluid		Synthetic oil (only for pressure ranges up to 0 ... 16 bar or flush diaphragm units) {halocarbon oil for oxygen applications <sup>2)</sup> }; {listed by FDA for food industry}															
Power supply U <sub>B</sub>	DC V	10 < U <sub>B</sub> ≤ 30 {with el. connection Snap Cap: 11 < U <sub>B</sub> ≤ 30}															
Signal output and maximum load R <sub>A</sub>		4 ... 20mA, 2-wire system R <sub>A</sub> ≤ (U <sub>B</sub> - 10 V) / 0.02 A with R <sub>A</sub> in Ohm and U <sub>B</sub> in Volt															
Adjustability zero/span	%	± 10															
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at medium temperatures below < -30 °C for pressure ranges up to 16 bar or with flush diaphragm)															
Accuracy	% of span	≤ 0.5 {0.25 <sup>1)</sup> } (limit point calibration) (calibrated in vertical mounting position with pressure connection facing down)															
Hysteresis	% of span	≤ 0.25 {0.125 <sup>1)</sup> } (BFSL)															
Repeatability	% of span	≤ 0.1															
1-year stability	% of span	≤ 0.05															
Permissible temperature of		≤ 0.2 (at reference conditions)															
• medium *	°C	-30 ... +100 {-50 ... +105}								-22 ... +212 °F {-58 ... +221 °F}							
• ambient*	°C	-30 ... +100 {-50 ... +105}								-22 ... +212 °F {-58 ... +221 °F}							
• storage	°C	-30 ... +100 {-50 ... +105}								-22 ... +212 °F {-58 ... +221 °F}							
Compensated temp. range	°C	0 ... +80															
Temperature coefficients in compensated temp range:																	
• mean TC of zero	% of span/10K	≤ 0.2 (< 0.4 with pressure ranges ≤ 250 mbar)															
• mean TC of range	% of span/10K	≤ -0.2 ... +0,3 with pressure ranges < 100 bar with IS-10															
• mean TC of range	% of span/10K	≤ 0.2															
Ⓢ - protection		Categories * 2G {M1, M2, 1/2G, 1/2D, 2D}															
Signal output		4 ... 20 mA, 2-wire system															
Ⓢ - certification		EEx ia I/II C T4 (DMT 00 ATEX E 045 X)				EEx ia I/II C T5 (DMT 00 ATEX E 045 X)				EEx ia I/II C T6 (DMT 00 ATEX E 045 X)							
Conformity specifications:																	
• power supply	DC V	30				30				30							
• short circuit rating	mA	100				100				100							
• power limitation	W	1				1				1							
• medium temperature *	°C	-20 {-50} ... +105				-20 {-50} ... +80				-20 {-50} ... +60							
• ambient temperature *	°C	-20 {-50} ... +105				-20 {-50} ... +80				-20 {-50} ... +60							
• storage temperature	°C	-50 ... +105				-50 ... +105				-50 ... +105							
• internal capacity Ci	nF	≤ 22															
• internal inductivity Li	μH	≤ 100															
		for further safety information please see the EC-type homologation certificate (DMT 00 ATEX E 045 X)															
Ⓒ -conformity		Interference emission and immunity see EN 61 326 EN 50 014 (general part), EN 50 020 (intrinsic safety), {EN 50284 (zone 0)}, {EN 50 281-1 (dust)}, {prEN 50 303 (mining industry)}															
HF-immunity	V/m	10 {30}															
BURST	KV	4															
Shock resistance	g	1000 according to IEC 770 (mechanical shock)															
Vibration resistance	g	20 according to IEC 770 (vibration under resonance)															
Electrical connection		4-pin L-plug per DIN 43 650 {flying lead with 1.5 m of vented cable, (zero/span adjustable)} {flying lead with 1.5 m of vented cable, (zero/span not adjustable)} {locking plug M 12 x 1. 4-pin}; {MIL-plug, 6-pin}; {plug, 5-pin} {Snap Cap with internal Clamp of 1.5 mm <sup>2</sup> max., rotatable by 300°, material: polyamide}															
Wiring protection		protected against polarity crossing															
Ingress protection		IP 65															
per EN 60 529 / IEC 529		{IP 67 with cable, locking plug, Snap Cap; IP 68 with cable and special case}															
Weight	kg	approx. 0.2															
Dimensions		see drawings															

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

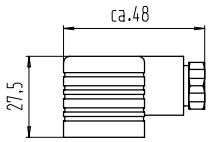
1) only available for measuring ranges beyond 0 ... 0.25 bar \* see list of EC-type homologation certificate

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

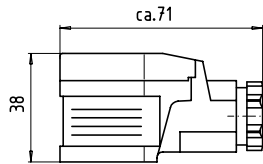
The oxygen version cannot be manufactured for negative pressure ranges and for absolute pressure ranges < 1 bar abs.

**Dimensions in mm**

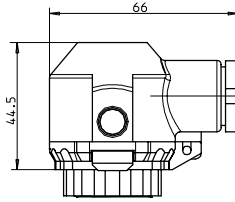
4-pin L-plug  
DIN 43 650, IP 65



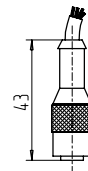
large 4-pin L-plug.  
DIN 43 650, IP 65



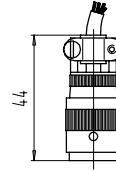
Snap Cap, IP 67



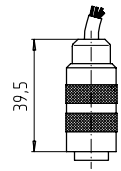
5-pin round plug  
M 16 x 0.75, IP 67



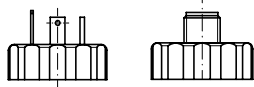
MIL-plug, IP 67



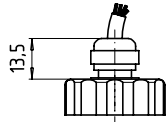
Plug, 5-pin,  
IP 40



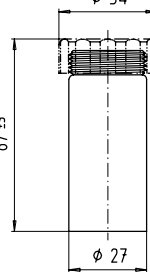
4-pin locking plug  
M 12x1, IP 67



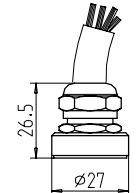
flying lead, IP 67



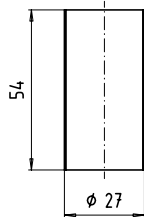
flying lead without access to  
zero and span pots, IP 68



flying lead  
IP 68

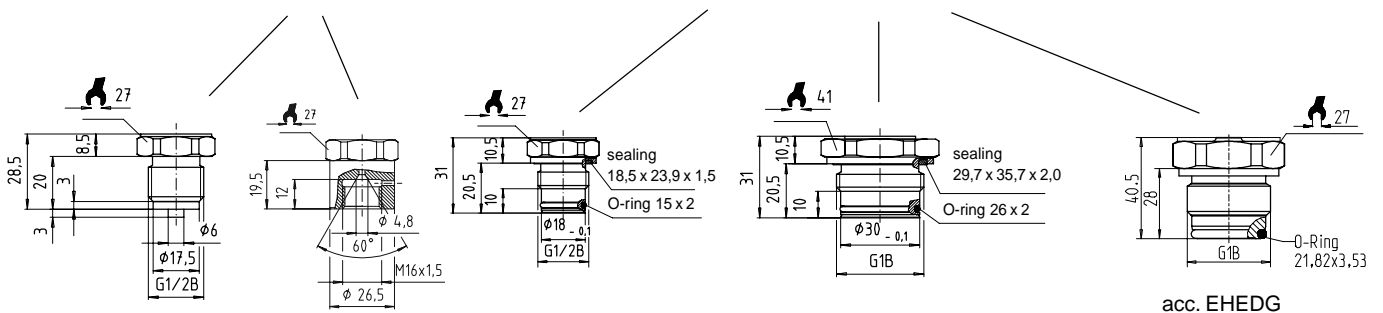


flying lead with access to  
zero and span pots, IP 68

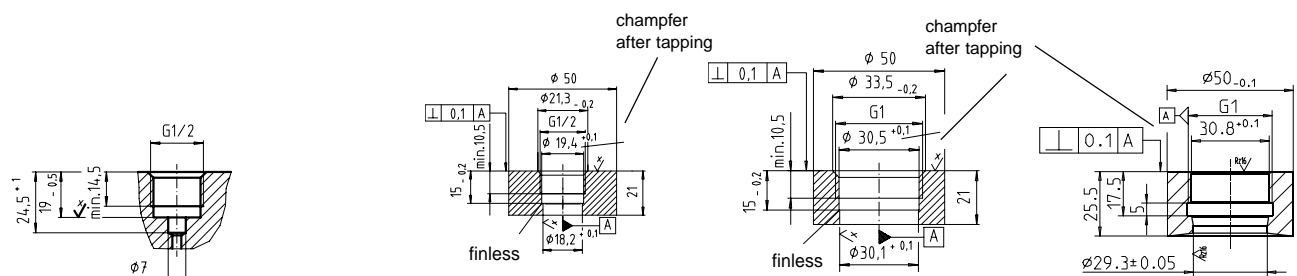


**Pressure connections: model IS-10**

**model IS-11 with flush diaphragm**



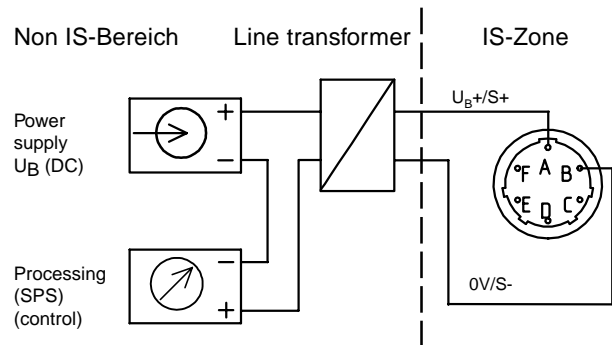
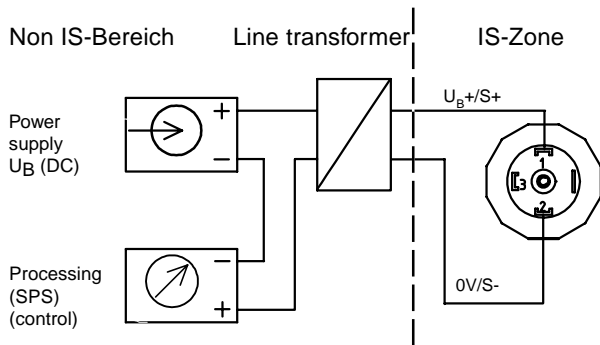
**Weld-on adaptors / sockets for pressure connections**



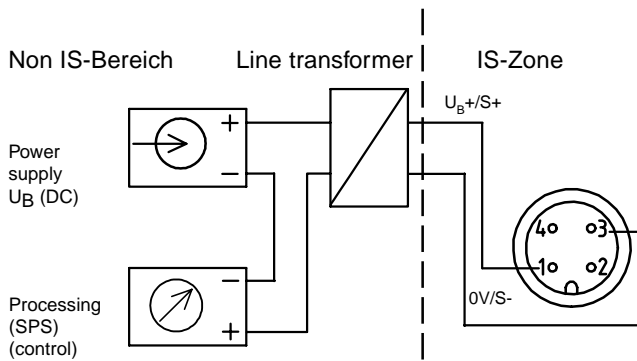
# Wiring details

## 2-wire system

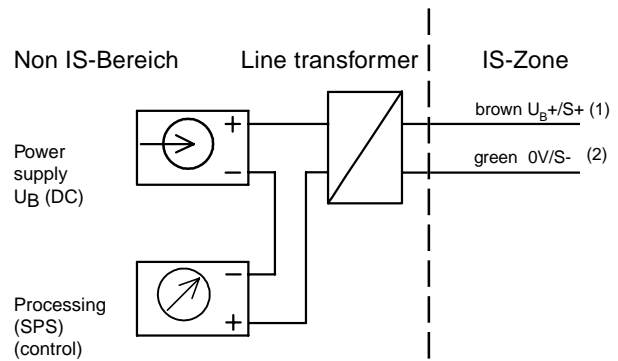
### 4-pin L-plug DIN 43 650



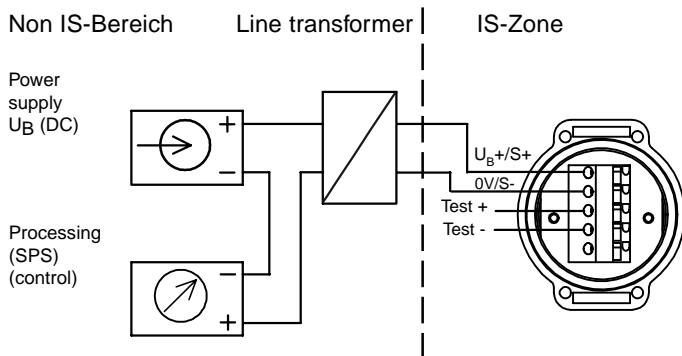
### 4-pin locking plug M 12x1



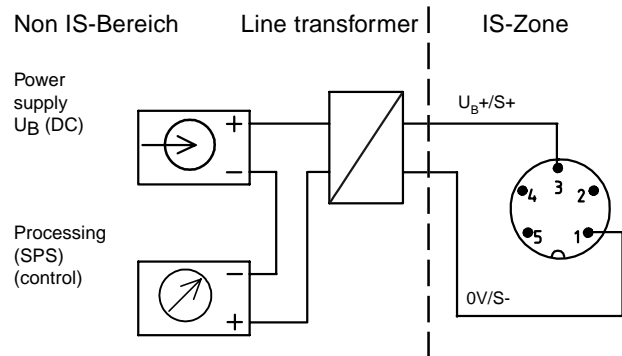
### flying leads



### Snap Cap



### 5-pin round plug M 16 x 0.75



Specifications and dimensions given in this document 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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