

ED 701 – Hygienic Pressure Transmitter

Hygienic process connections

Complete range of electrical connections

4 ... 20 mA and Voltage outputs

Accuracy: 0.1%, 0.2% and 0.4% FS

Quick response time < 25 ms (Option 5 ms)

High long-term stability

Excellent repeatability

Active compensation for temperature drifts

ATEX II 1G, II 2G, II 1/2G and II 1D

Lloyd's Register Approval

Compatibility with CIP/SIP



Description

The large choice of pressure and electrical connections makes the ED 701 series suitable for a large variety of applications. The ED 701 pressure transmitters are available in 4 ... 20 mA current loop or in voltage output signal versions. These transmitters offer a very high accuracy over a wide temperature range, an excellent repeatability and long time stability as well as a short response time (down to 5 ms).

The piezo-resistive silicon sensor is anodic bonded on a very stable glass base, which is attached to a stainless steel construction. This assembly guarantees an excellent thermal isolation.

The sensor is isolated from the process by a stainless steel diaphragm (1.4435 / 316L) and a filling liquid. The electronics is located within the hermetically sealed transmitter housing which gives the ED 701 an excellent resistance to humidity, shock and vibration. Protection class, from IP 65 to IP 67 only depends on the choice of the electrical connection.

The electronics is a state-of-the-art signal processing unit fitted with a fast micro-controller allowing the compensation of drift effects due to temperature on the sensor signal, over a wide temperature range with a fast response time.

The ED 701 is available with a great variety of pressure and electrical connections to meet all requirements. The electrical connection can be replaced easily and gives access to the Autozero adjustment.

The hygienic design of the ED 701 series is particularly dedicated to the food and beverage processing industry, the pharma and the biotechnology industry. According to its ATEX approval the ED 701 can be used in potentially explosive atmospheres (gases, vapors and dust). The ED 701 has got the Lloyd's Register approval, which makes it the ideal product for environments such as in the marine, offshore and industrial applications.

ED701 for general industry applications:
refer to datasheet ED701_Industrial (D6.180, ED701 – General Industry Transmitter)



Baumer

Ordering details

Ordering code digit: Positions	1	2	3	4	5	6	7	8	9	10	11	12
Pressure connection												
Male thread G1" flush diaphragm cone	J											
Male thread G1" flush diaphragm O'ring	K											
Male thread G½" flush dia. DIN 3852 (Combi Connect) ¹⁾	L											
Male thread G½" flush diaphragm O'ring ^{1) 2)}	Z											
Male thread G½" flush diaphragm cone ³⁾	W											
Aseptic Clamp DIN 11864-3 (Additional code needed)	F											
Neumo BioConnect® aseptic connection (Additional code needed)	I											
Clamp ISO 2852 (Additional code needed) ¹⁾	N											
Tri-Clamp®, sanitary clamp connection (Additional code needed) ^{1) 2)}	Y											
Male thread G½" EN 837-1 for assembly with pressure seal ^{2) 4)}	8											
Male thread G¼" EN 837-1 for assembly with pressure seal ^{2) 4)}	9											
Specific pressure connection (Additional code needed)	0											
Output signal												
4 ... 20 mA		2										
0 ... 10 V DC		4										
0 ... 5 V DC		5										
Approval												
CE conform			0									
ATEX			1									
Lloyd's Register ⁵⁾			3									
Lloyd's Register ⁵⁾ + ATEX			4									
Electrical connection												
2 meter shielded cable 3 conductors, IP 65				1								
2 meter shielded cable 3 conductors, IP 67				9								
Fischer Plug, IP 67				2								
DIN 41524 Binder Plug, IP 65				3								
DIN 43650 Plug, IP 65				4								
Bendix 6 pole Plug, IP 65				5								
M12, 4 pole Industrial Plug, IP 67				6								
½" NPT, cable length 1 m, IP 67				7								
Field Housing, cable gland brass nickel-plated, IP 67 ⁶⁾				A								
Field Housing, cable gland stainless steel, IP 67 ⁶⁾				B								
Field Housing cable gland PA, IP 67 ⁶⁾				C								
Field Housing M12 Plug, stainless steel, IP 67				D								
Accuracy												
Medium temperature up to 125°C												
0.4% FS, compensated temperature range -10°... +125°C					1							
0.2% FS, compensated temperature range -10°... +125°C					2							
0.1% FS, compensated temperature range -10°... +80°C					3							
5 ms response time												
0.4% FS, 5 ms, compensated temperature range -10°... +80°C					6							
0.2% FS, 5 ms, compensated temperature range 0°... +60°C					7							
High medium temperature												
0.4% FS, integrated cooling neck (up to max. 300°C) ^{7) 8)}					A							
0.2% FS, integrated cooling neck (up to max. 200°C) ⁷⁾					B							
Pressure unit												
Gauge pressure (100 mbar up to 40 bar)						3						
Absolute pressure (400 mbar up to 40 bar)						4						
Negative gauge pressure (0...-100 mbar, -1...40 bar)						5						
Pressure range												
100 mbar up to 40 bar: gauge pressure								See table				
400 mbar up to 40 bar: absolute pressure								Pressure range				

- 1) Pressure connection L, Z, N /9412 and Y /9451: Not available for pressure ranges <400 mbar. Available only with an accuracy of 0.4% (Ordering code Position 5) for pressure ranges <1 bar. Available with every accuracy codes for pressure ranges ≥1 bar.
- 2) Pressure connection Z, Y /9451, 8 and 9: Only available without cooling neck. The accuracy codes A and B are then not available (Ordering code Position 5).
- 3) Pressure connection W: Only available with the accuracy codes A and B (Ordering code Position 5), because a cooling neck is always integrated. Only available for pressure ranges ≥10 bar.
- 4) Pressure connection 8 and 9: These connections haven't got any diaphragm. They are then only available without any oil filling (Code 9 of the ordering code Position 11).
- 5) Lloyd's Register approved ED701 have a reduced supply voltage range and the ambient temperature is limited depending on the medium temperature. Check the Lloyd's Register paragraph.

- 6) Field Housing: The cable gland are compatible with cable diameter of 5 mm to 12 mm.
- 7) Accuracy code A and B (high temperature): If no calibration temperature is specified (Option 9007/TTTT), the compensated temperature range is [-10°... +80°C]. The maximum medium temperature is depending on the ambient temperature (T_{amb}):
 If $T_{amb} \leq 40^\circ\text{C}$ the max. allowed medium temperature is 300 °C.
 If $T_{amb} \leq 60^\circ\text{C}$ the max. allowed medium temperature is 200 °C.
 If $T_{amb} \leq 80^\circ\text{C}$ the max. allowed medium temperature is 150 °C.
 The max. medium temperature must never go over +200 °C, when the oil filling is the FDA approved white oil.
- 8) Accuracy code A: For temperature above 200 °C only the pressure connections J and W with silicon or halocarbon oil are available (Ordering code Position 11).

Ordering details (continued)

Ordering code digit: Positions 1 2 3 4 5 6 7 8 9 10 11 12

Wetted parts

All stainless steel	1	
All Hastelloy C	2	
All stainless steel, with electro polished pressure connection (Ra 0.8)	8	
Strengthened stainless steel diaphragm ⁹⁾	3	
Stainless steel, gold plated ⁹⁾	9	

Oil filling

FDA approved white oil (Standard) ¹⁰⁾	1	
Silicon oil ¹⁰⁾	0	
Halocarbon oil ¹⁰⁾	2	
No oil filling ¹¹⁾	9	

9) Strengthened diaphragm and gold plated: If no calibration temperature is specified (Option 9007/TTTT), the compensated temperature range is -10°... +80°C.
Only available with the pressure connections J, K, N, P, Q.
Only available for the accuracy classes 0.2% und 0.4% (Ordering code Position 5).
Only available for pressure ranges ≥ 1 bar.

10) Operating temperature: refer to the technical data.
11) No oil filling: only for assembly with pressure seal.

Additional ordering codes

The following ordering codes have to be completed with an additional code to be precisely defined:

Pressure connection Code F (Ordering code Position 1) – Aseptic clamp DIN 11864-3

The following additional codes are available. Others on request:

- /9390 Clamp connection with external diameter 50.5 mm, BKS, Series A, Form A, Nominal diameter DN 25 DIN. Pipe according to DIN 11866-A.
 - /9391 Clamp connection with external diameter 50.5 mm, BKS, Series B, Form A, Nominal diameter DN 33.7 ISO. Pipe according to DIN 11866-B
- Example: ED701 Fxx.xxx.xxx.xx /9391

Pressure connection Code I (Ordering code Position 1) – Neumo BioConnect® aseptic connection

The following additional codes are available. Others on request:

- /9402 Flange form V, Nominal Dimension 48.3. Flange external diameter 100 mm. Pipe according to DIN 11866-B, DIN EN ISO 1127
- Example: ED701 Ixx.xxx.xxx.xx /9402

Pressure connection Code N (Ordering code Position 1) – Clamp ISO 2852

The following additional codes are available. Others on request:

- /9412 Clamp connection, external diameter 34 mm, Nominal Dimension DN 21.3. Pipe according to ISO 2037
 - /9413 Clamp connection, external diameter 50.5 mm, Nominal Dimension DN 25. Pipe according to ISO 2037
 - /9414 Clamp connection, external diameter 50.5 mm, Nominal Dimension DN 33.7 and DN 38. Pipe according to ISO 2037
 - /9416 Clamp connection, external diameter 64 mm, Nominal Dimension DN 40 and DN 51. Pipe according to ISO 2037
 - /9418 Clamp connection, external diameter 77.5 mm, Nominal Dimension DN 63.5. Pipe according to ISO 2037
- Example: ED701 Nxx.xxx.xxx.xx /9414

Pressure connection Code Y (Ordering code Position 1) – Tri-Clamp®, sanitary clamp connection

The following additional codes are available. Others on request:

- /9451 Tri-Clamp® 3/4" connection, external diameter 24.9 mm.
 - /9452 Tri-Clamp® 1" connection, external diameter 50.4 mm.
 - /9453 Tri-Clamp® 1 1/2" connection, external diameter 50.4 mm.
 - /9454 Tri-Clamp® 2" connection, external diameter 63.9 mm.
- Example: ED701 Yxx.xxx.xxx.xx /9451

Pressure connection Code 0 (Ordering code Position 1) – Specific pressure connection

The following additional codes are available. Others on request:

- /9483 BBS-Systems®, Quick-Connect aseptic clamp with notch, ISO DN 25, External clamp diameter 50.5 mm
- Example: ED701 0xx.xxx.xxx.xx /9483

Standard ED 701 – Delivery

Calibration temperature:

The ED 701 are calibrated at +25 °C. If another calibration temperature is needed, the option /9007/TTTT has to be mentioned, as part of the ordering code (see Options).

Electrical connections:

No cable socket will be provided. Such accessories have to be ordered separately (see Accessories).

Test Certificate:

Each ED 701 will be delivered with a Test Certificate at the calibration temperature (6 points). If not specified, the Certificate will be in German (see Options).

O-Ring seals:

The pressure connections J, K, L, Z and W (Ordering code Position 1) are always delivered with a NBR O-Ring. Other O-Rings are available (see Accessories). All the O-Rings are approved by the FDA.

The ED701 with pressure connection F, I, N, Y and O are delivered without any seals.

Options

Description	Ordering code
Specific pressure range: An application specific pressure range can be defined here. The range must be given in plain text. Example: /SETR 500 mbar...2500 mbar	/SETR
Specific calibration temperature (temperature of the medium): Example: /9007/0100. The ED 701 will be calibrated for a medium temperature of 100 °C (ex factory). This option is reducing the compensated temperature range to ± 25 °C around the specified calibration temperature.	/9007/TTTT
Ferrite content according to customer specifications Ferrite content of the pieces in contact with the fluid according to customer specifications. Example: /9330/ Pressure connection < 1%, weld < 3%.	/9330
Free of oil and grease Free of oil and grease (pieces in contact with the fluid). The ED701 is cleaned and packed accordingly.	/9331
Pressure connection electropolished according to customer specifications The pressure connection is electropolished according to customer specifications. Only available with code 8 at the position 10 of the ordering code. Example: /9344/ Ra 0.4.	/9344
Language of the Test Certificate and Operating Manual: Both documents are available in German, French and English. The desired language must be specified in plain text with the ordering code. Standard will be German.	

Pressure range

Code	Range mbar	Code	Range mbar	Code	Range bar	Code	Range bar
126	0...100	D46	0...-400 ²⁰⁾	L25	1...10	L55	0...30
B06	0...150	D56	0...-500 ²⁰⁾	015	0...0.6	105	0...40
136	0...160	D66	0...-600 ²⁰⁾	025	0...1	D85	0...-1 ²⁰⁾
A56	0...200	A76	0...2000	035	0...1.6	E05	-0.1...1 ²⁰⁾
146	0...250	196	0...2500	A15	0...2	E15	-0.1...2 ²⁰⁾
B26	0...300	206	0...4000	045	0...2.5	315	-1...0 ²⁰⁾
B36	0...350	A86	0...5000	L35	0...2.8	H05	-1...1 ²⁰⁾
156	0...400	216	0...6000	055	0...4	525	-1...3 ²⁰⁾
A66	0...500	P76	0...7300	A25	0...5	535	-1...5 ²⁰⁾
166	0...600	226	0...10000	065	0...6	545	-1...9 ²⁰⁾
B46	0...700	P86	0...18300	L45	0...7	E65	-1...1.6 ²⁰⁾
176	0...1000	H66	-100...100 ²⁰⁾	L05	0...8	F05	-1...2 ²⁰⁾
P46	0...1250	H76	-200...200 ²⁰⁾	075	0...10	F15	-1...10 ²⁰⁾
B56	0...1400	H86	-500...500 ²⁰⁾	L15	0...12	F45	-1...12.5 ²⁰⁾
186	0...1600	C46	-200...0 ²⁰⁾	085	0...16	F25	-1...20 ²⁰⁾
D06	0...-100 ²⁰⁾	C56	-500...0 ²⁰⁾	A35	0...20	F35	-1...24 ²⁰⁾
D16	0...-160 ²⁰⁾			095	0...25	F65	-1...40 ²⁰⁾
D26	0...-200 ²⁰⁾						

²⁰⁾ Negative gauge pressure ranges: only available with the pressure unit code 5 (Ordering code Position 6).

Pressure range

Code	Range psi	Code	Range psi	Code	Range in H ₂ O [4°C]
05D	0...1.5	17D	0...300	17G	0...40
06D	0...2.5	18D	0...400	18G	0...50
07D	0...3	32D	0...500	19G	0...60
08D	0...4	70D	-1.5...1.5 ²⁰⁾	22G	0...100
09D	0...6	71D	-3...3 ²⁰⁾	30G	0...300
45D	0...7.5	72D	-6...6 ²⁰⁾	40G	0...750
10D	0...10	80D	-15...15 ²⁰⁾		
11D	0...15	60D	-1.5...0 ²⁰⁾		
12D	0...30	61D	-3...0 ²⁰⁾		
13D	0...60	62D	-6...0 ²⁰⁾		
51D	0...75	81D	-15...30 ²⁰⁾		
14D	0...100	82D	-15...60 ²⁰⁾		
15D	0...150	83D	-15...150 ²⁰⁾		
16D	0...200				

Code	Range mm H ₂ O [4°C]	Code	Range m H ₂ O [4°C]	Code	Range m H ₂ O [4°C]	Code	Range m H ₂ O [4°C]
177	0...1000	028	0...1	L58	0...30	H08	-1...1 ²⁰⁾
P47	0...1250	038	0...1.6	L78	0...32	H18	-2...2 ²⁰⁾
187	0...1600	A18	0...2	108	0...40	H28	-5...5 ²⁰⁾
A77	0...2000	048	0...2.5	A48	0...50	H38	-10...10 ²⁰⁾
197	0...2500	L38	0...2.8	118	0...60	C08	-2...0 ²⁰⁾
207	0...4000	058	0...4	L88	0...64	C18	-5...0 ²⁰⁾
A87	0...5000	A28	0...5	L68	0...70	D88	0...-1 ²⁰⁾
217	0...6000	068	0...6	128	0...100	E08	-0.1...1 ²⁰⁾
P77	0...7300	L48	0...7	L98	0...128	E18	-0.1...2 ²⁰⁾
227	0...10000	L08	0...8	B08	0...150	E68	-1...1.6 ²⁰⁾
P87	0...18300	078	0...10	138	0...160	F08	-1...2 ²⁰⁾
		L28	1...10	A58	0...200	F18	-1...10 ²⁰⁾
		L18	0...12	148	0...250	F28	-1...20 ²⁰⁾
		088	0...16	B28	0...300	F38	-1...24 ²⁰⁾
		A38	0...20	B38	0...350	F48	-1...12.5 ²⁰⁾
		098	0...25	158	0...400		

Code	Range MPa	Code	Range KPa	Code	Range KPa	Code	Range KPa
013	0...0.6	072	0...10	A62	0...500	392	-60...0 ²⁰⁾
023	0...1	L22	1...10	162	0...600	402	-100...0 ²⁰⁾
033	0...1.6	L12	0...12	B42	0...700	C92	0...-60 ²⁰⁾
A13	0...2	082	0...16	172	0...1000	D02	0...-100 ²⁰⁾
043	0...2.5	A32	0...20	P42	0...1250	642	-10...15 ²⁰⁾
053	0...4	092	0...25	B52	0...1400	652	-15...10 ²⁰⁾
883	-0.1...0.9 ²⁰⁾	L52	0...30	182	0...1600	662	-15...25 ²⁰⁾
E03	-0.1...1 ²⁰⁾	L72	0...32	A72	0...2000	672	-25...15 ²⁰⁾
E13	-0.1...2 ²⁰⁾	102	0...40	192	0...2500	682	-20...40 ²⁰⁾
		A42	0...50	202	0...4000	692	-40...20 ²⁰⁾
		112	0...60	H32	-10...10 ²⁰⁾	702	-40...60 ²⁰⁾
		L82	0...64	H42	-20...20 ²⁰⁾	712	-60...40 ²⁰⁾
		L62	0...70	H52	-50...50 ²⁰⁾	722	-60...100 ²⁰⁾
		122	0...100	H62	-100...100 ²⁰⁾	732	-100...60 ²⁰⁾
		132	0...160	352	-10...0 ²⁰⁾	742	-100...150 ²⁰⁾
		A52	0...200	362	-16...0 ²⁰⁾	G02	-100...200 ²⁰⁾
		142	0...250	C22	-20...0 ²⁰⁾	922	-100...300 ²⁰⁾
		B22	0...300	372	-25...0 ²⁰⁾	932	-100...500 ²⁰⁾
		B32	0...350	382	-44...0 ²⁰⁾		
		152	0...400	C32	-50...0 ²⁰⁾		

20) Negative gauge pressure ranges: only available with the pressure unit code 5 (Ordering code Position 6).

Technical data

Measurement characteristics

Pressure range

Gauge pressure: from 0...100 mbar up to 0...40 bar.

Absolute pressure: from 0...400 mbar up to 0...40 bar.

The standard pressure ranges are listed in the pressure range table. Other specific ranges are available with the option SETR.

Over pressure limit P_{max}.

Depending on the pressure range 0...P

P [bar]	0,1...0,35	0,4...1,0	1,6...5	6...20	25	30...40
Maximum pressure						
P _{max} [bar]	1	3	15	60	70	135

Accuracy

0.1%FS, 0.2%FS und 0.4%FS classes

(see ordering code Position 5).

Hysteresis and repeatability ± 0.05% FS

Long term stability ± 0.2% FS / year

Response time (10 ... 90%)

25 ms

5 ms with the accuracy codes 6 und 7

(Ordering code Position 5).

Temperature influence (in compensated range)

Depending on the accuracy class:

Ordering code, Position 5 = 1 and 6 (class 0.4%)

Zero: TC ± 0.20% FS / 10K.

Span: TC ± 0.15% FS / 10K.

Ordering code, Position 5 = 2 and 7 (class 0.2%)

Zero: TC ± 0.15% FS / 10K.

Span: TC ± 0.10% FS / 10K.

Ordering code, Position 5 = 3 (class 0.1%)

Zero: TC ± 0.05% FS / 10K.

Span: TC ± 0.05% FS / 10K.

Ordering code, Position 5 = A and B (high temperature)

Zero: TC ± 0.20% FS / 10K.

Span: TC ± 0.15% FS / 10K.

Depending on the wetted parts material:

Ordering code, Position 10 = 3 and 9

Zero: TC ± 0.30% FS / 10K.

Span: TC ± 0.20% FS / 10K.

Admissible temperature of the medium

ED701 without integrated cooling neck (Ordering code

Position 5: Code 1, 2, 3, 6 or 7):

ED701 with FDA white oil: -10°C...+125°C

ED701 with silicon or halocarbon oil: -30°C...+125°C

ED701 with integrated cooling neck (Ordering code Position 5: Code A or B):

For high medium temperature (120°C and higher) the ED701 has to have an integrated cooling neck.

ED701 with cooling neck with

FDA white oil: -10°C...+200°C

ED701 with cooling neck with silicon or

halocarbon oil: -30°C...+300°C

Ambient temperature (housing)

-10°C ... +80°C

Storage temperature

-10°C ... +80°C

Sterilisation temperature (SIP Process)

Sterilisation: max. +140°C, max. 30 minutes

Sterilisation

Complete device, not powered, only for executions with the Fischer electrical plug.

Process duration max. 60 minutes, sterilisation temperature max. 140°C, pressure 3500 mbar, not powered.

Materials specification

Wetted part

Stainless Steel 1.4435 (AISI 316L)

Parts not in contact with medium

Stainless Steel 1.4301, 1.4305 and electrical connector material.

Certificate EN10204 3.1 available on request

Electrical specification

Supply voltage

9...30 V DC (4...20 mA)

10...28 V DC (4...20 mA EEX)

14...24 V DC (4...20 mA Lloyd's Register)

15...30 V DC (0...10 and 0...5 V DC)

20...24 V DC (0...10 and 0...5 V DC Lloyd's Register)

Insulation Resistance >1 GOhm, 500 V DC

Load (current output) $R_L \leq 50 \times U_B - 450$

Load (voltage output) $R_L \geq 5 \text{ kOhm}$

Protected against reverse signal polarity.

Switch ON time

5 sec.

EMC

Influence of EMC Less than 0.15% FS

Conformity EN 61000-6-3, EN 61000-6-2, EN 61326, EN 50121-4

ATEX data

Intrinsically safe conforming to EN 50020 and EN 50281-1-1

Applications:

II 1G II 1D Device located in zone 0/zone 20

II 1/2G II 1D Pressure connection in zone 0/zone 20
Housing and electrical connection in zone 1/zone 20

II 2G II 1D Device located in zone 1/zone 20

Intrinsically safety EEx ia IIC. The device can only be connected to an approved intrinsically safe current loop with the following boundary values:

$U_0 = 28 \text{ V}$ $I_k = 100 \text{ mA}$ $P = 1.5 \text{ W}$

The device internal capacity and inductivity values are:

$C_i = 1 \text{ nF}$ $L_i = 0.1 \text{ mH}$

For the application in EEx zone you have to respect the conditions mentioned in the ATEX Type Examination Certificate. You find the certificates and manuals under <http://www.bourdon-haenni.com/en/downloads/>.

Environmental specification

Humidity According to EN 60068-2-38

Vibrations According to EN 60068-2-6

Shocks According to EN 60068-2-31

Protection class

Rating IP 65 and IP 67, depending on electrical plug.

Mounting

Position at calibration time: Vertical

Physical characteristics

Weight

Between 223 and 885 g depending of the version.

Dimensions

See drawings.

Disposal of product and packing

According to national laws or by returning to the manufacturer.

Technical data

Zero adjustment and factory setting:

The zero adjustment and factory setting are directly available on the ED 701 by removing the electrical plug. A push button on the top of the electronic unit can be activated.

Zero adjustment: By pressing the push button the applied pressure will be considered as the new zero point and the output signal will be reset (i.e. 4 mA or 0 VDC). This function allows some corrections if the mounting position influences the measurement, if temperature or long term drifts occurs and if a resetting in a level measurement application is needed.

Factory setting (zero): The factory setting can be reloaded at any time. To do it the push button must be pressed during at least 10 seconds.

Oil filling

Standard: The standard oil filling is the FDA approved white oil (Paraffin oil). This is the best choice for all the applications in the food, beverages, pharmaceutical and biotech industries. Temperature below -10°C and above $+200^{\circ}\text{C}$ should not be used, it could severely damage the ED 701.

Alternative: The silicon oil can be recommended for all general industrial applications and can be used in a temperature range from -30°C up to $+300^{\circ}\text{C}$. For oxygen service or painting industry, choose the halocarbon oil. Halocarbon is silicon free and withstands temperatures from -30°C up to $+300^{\circ}\text{C}$. With this particular filling, we guarantee that all parts that may be in contact with the medium (e.g. in case of diaphragm damage) are silicon free. Components located inside of the sealed transmitter housing may contain silicon in solid form.

Pressure connection tightness with O-Ring

The mounting examples on the next pages show the appropriate tightness methods for each type of pressure connection.

A metal to metal seal is possible with the pressure connection J and W. This unique Bourdon-Haenni cone construction has to be realized using the adequate welding sleeve (see Accessories).

The pressure connections K and Z are usually sealed by the O-ring located on the front of the connection.

The connection L is compatible with the CombiConnect system proposed by Bourdon-Haenni, allowing a hygienic seal at the front of the connection. The CombiConnect system consists of a series of hygienic, replaceable connections. More details on request.

All the pressure connections J, K, L, W, Z can also be sealed by the O-ring located at the rear of the thread (or tightness surface).

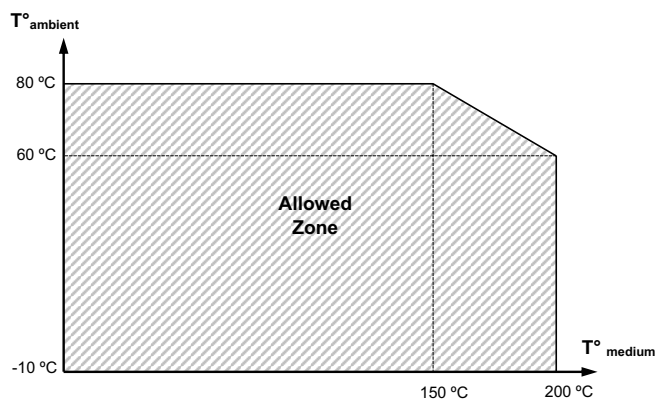
Lloyd's Register (LR)

The ED701 has been tested with satisfactory results in accordance with the requirements of the LR Type Approval System.

Certificate number: 06/20034. (Expires: 29 August 2011).

Applications: Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 - 2002.

Limitations: The supply voltage range of ED701 is reduced compared to the non LR approved ED701. (Please refer to the paragraph Technical data - Electrical specification). According to the curve below the allowed ambient temperature for Lloyd's Register approved ED701 is derated at medium temperatures above 150°C .



Pressure connection availability – Overview table

Code	Pressure connection	Material			Oil filling			Accuracy						
		1.4435	Hastelloy-C	Gold plated	Strengthened diaphragm	FDA	Silicon	Halocarbon	P < 1 bar	P ≥ 1 bar	0.1% FS	0.2% FS	0.4% FS	0.2% for high medium temperature (up to 200°C)
J	Male thread G1" flush diaphragm with cone	●	●	○ ³⁰⁾	○ ³⁰⁾	●	●	●	●	●	●	●	●	● ³⁵⁾
K	Male thread G1" flush diaphragm with O'ring	●	●	○ ³⁰⁾	○ ³⁰⁾	●	●	●	●	●	●	●	●	● ³⁵⁾
L	Male thread G½" flush diaphragm DIN 3852	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
Z	Male thread G½" flush diaphragm with O'ring	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
W	Male thread G½" flush diaphragm with cone	●	●			●	●	●		○ ³²⁾				● ³⁵⁾
F	/9390 Clamp DIN 11864-3, BKS, DN 25 DIN	●	●			●	●	●	●	●	●	●	●	● ³⁵⁾
F	/9391 Clamp DIN 11864-3, BKS, DN 33.7 ISO	●	●			●	●	●	●	●	●	●	●	● ³⁵⁾
I	/9402 Neumo BioConnect®, Form V, DN 48.3	●	●			●	●	●	●	●	●	●	●	● ³⁵⁾
N	/9412 Clamp ISO 2852, DN 21.3	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
N	/9413 Clamp ISO 2852, DN 25	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
N	/9414 Clamp ISO 2852, DN 33.7, DN 38	●	●	○ ³⁰⁾	○ ³⁰⁾	●	●	●	●	●	●	●	●	● ³⁵⁾
N	/9416 Clamp ISO 2852, DN 40, DN 51	●	●	○ ³⁰⁾	○ ³⁰⁾	●	●	●	●	●	●	●	●	● ³⁵⁾
N	/9418 Clamp ISO 2852, DN 63.5	●	●	○ ³⁰⁾	○ ³⁰⁾	●	●	●	●	●	●	●	●	● ³⁵⁾
Y	/9451 Tri-Clamp® ¾"	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
Y	/9452 Tri-Clamp® 1"	●	●			●	●	●	○ ³¹⁾	●	○ ³³⁾	○ ³³⁾	○ ³¹⁾	● ³⁵⁾
Y	/9453 Tri-Clamp® 1½"	●	●			●	●	●	●	●	●	●	●	● ³⁵⁾
Y	/9454 Tri-Clamp® 2"	●	●			●	●	●	●	●	●	●	●	● ³⁵⁾
8	Male thread G½" EN 837-1 for pressure seal	●							●	●	●	●	●	
9	Male thread G¼" EN 837-1 for pressure seal	●							●	●	●	●	●	
0	/9483 BBS, Quick-Connect, ISO DN 25	●							●	●	●	●	●	● ³⁵⁾

30) Only for pressure ranges ≥ 1 bar and accuracy classes 0.2% and 0.4%.
31) Only for pressure ranges ≥ 400 mbar and with the accuracy class 0.4%.
32) Only for pressure ranges ≥ 10 bar and with the accuracy classes A and B.
33) Only for pressure ranges ≥ 1 bar.
34) Only available with silicon oil or halocarbon oil.

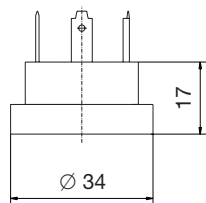
35) Use appropriate O-Ring or seal for temperature up to 200°C. We recommend Viton®.

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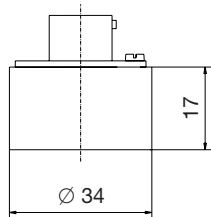
● Available
○ Available with restrictions

Drawing (all dimensions in mm)

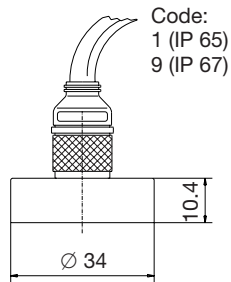
DIN 43650 plug
Code: 4



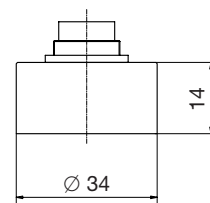
Bendix 6 pole plug
Code: 5



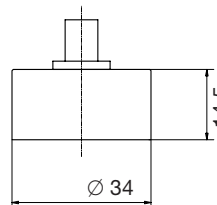
Cable 3 conductors
IP 65 / IP 67



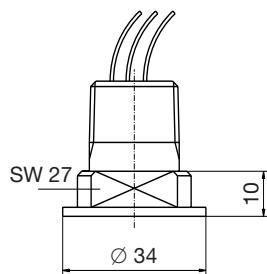
DIN 41524
Binder plug
Code: 3



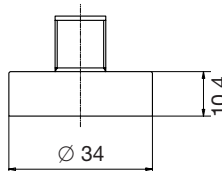
Fischer plug
Code: 2



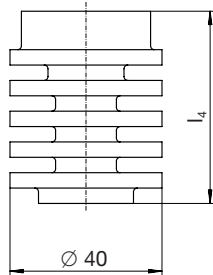
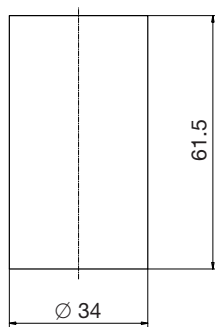
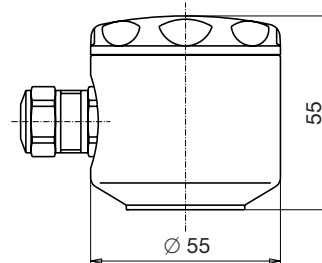
NPT 3 conductors
Code: 7



M12 industrial plug
Code: 6



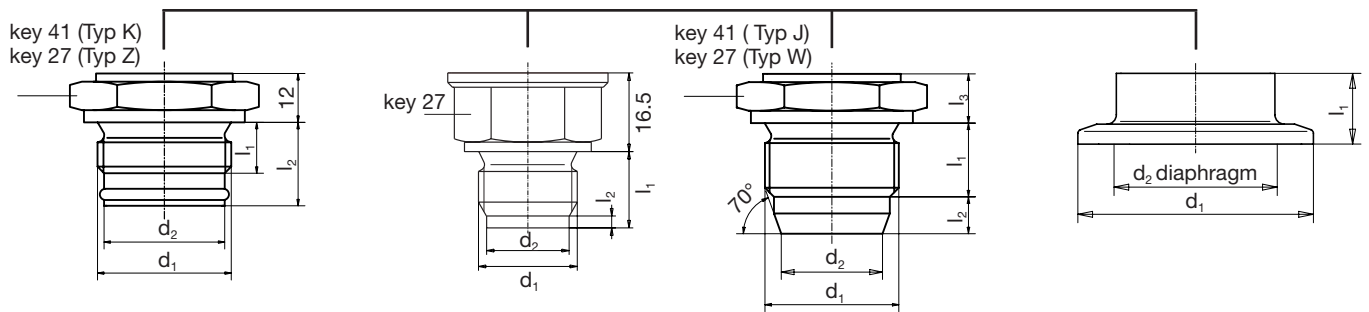
Field housing
Code: A, B, C and D



Only for ordering code Position 5 = A and B

Code	I ₄
K, J	48
L, W	50
F /9390, F /9391	50
I /9402	50
N /9412, N /9413, N /9414	50
N /9416, N /9418	50
O /9483	

Drawing (all dimensions in mm)

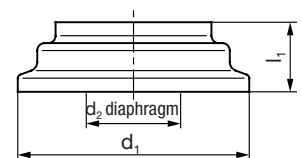


Code	Thread	d ₁	d ₂	l ₁	l ₂
K	G1"	30	12.5	20.5	
Z	G½"	18	10.5	20.5	

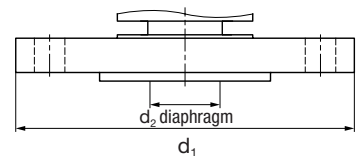
Code	Thread	d ₁	d ₂	l ₁	l ₂
L	G½"	17.5	16	2.5	

Code	Thread	d ₂	l ₁	l ₂	l ₃
J	G1"	25.5	18	9	
W	G½"	15.2	13.7	9	16.5

Code	Nominal size	d1	d2	l1
N /9412	DN 21,3	34	17,5	15
N /9413	DN25	50,5	17,5	15
N /9414	DN 33,7/DN 38	50,5	24	15
N /9416	DN 40/DN 51	64	24	15
N /9418	DN 63,5	77,5	24	15
Y /9451	¾"	24,9	16	31,7
Y /9452	1"	50,4	17,5	
Y /9453	1½"	50,4	24	
Y /9454	2"	63,9	24	
O /9483	ISO DN25	50,5	24	

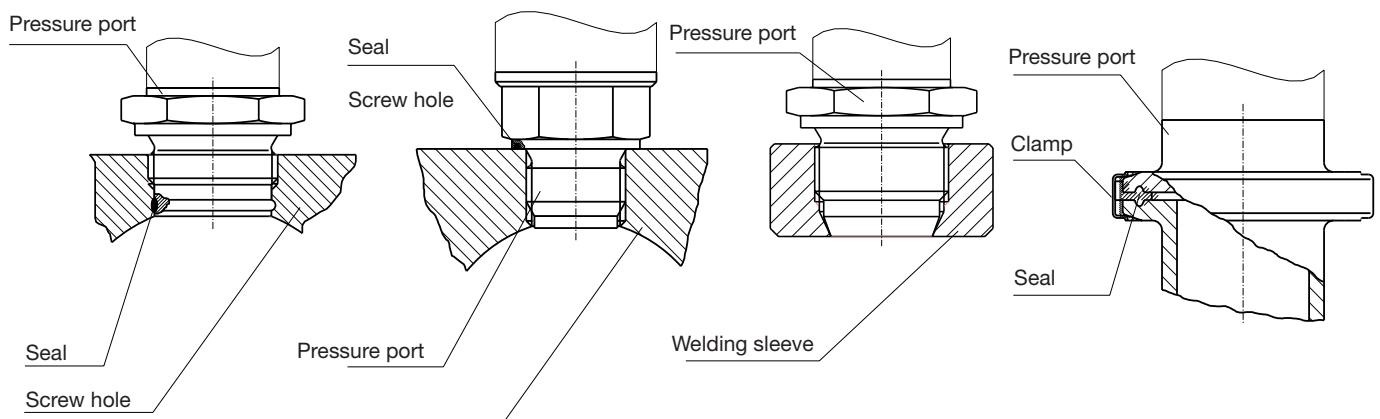


Code	Nominal size	d1	d2	l1
F /9330	DN 25 DIN	50.5	24	15
F /9331	DN 33.7 ISO	50.5	24	15



Code	Nominal size	d1	d2	l1
I /9402		100	24	

Mounting example

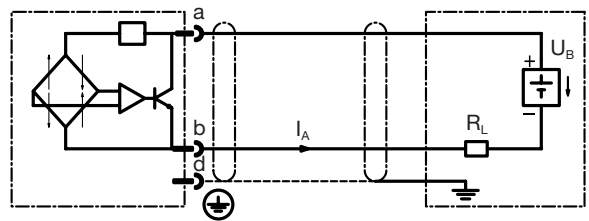
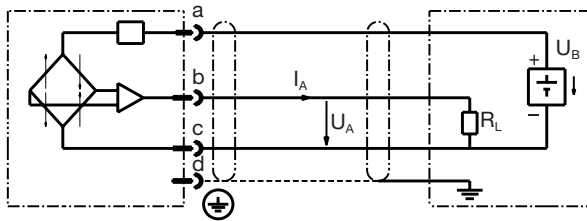


Connecting diagram

Electrical connection

For Voltage signal Output 0 ... max. 10 V

For 4 ... 20 mA current loop version



Pin assignment

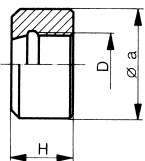
Contact	DIN 43650 plug		Bendix 6 poles plug		Cable 3 conductors		DIN 41524 Binder plug	
a	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC
b	1	1	B	B	Blue	Blue	3	3
c	2	2	E	E	Brown	Brown	1	1
d	-	3	-	D	-	Black	-	4
	GND	GND	Case	Case	Shield	Shield	Case	Case
View soldering side, cable socket								

Pin assignment

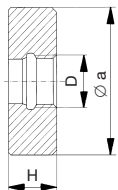
Contact	Fischer plug		NPT 3 conductors		M12 industrial plug		Field housing	
a	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC	4...20 mA	0...5/10 V DC
b	1	1	Red	Red	3	3	1	1
c	2	2	Black	Black	1	1	2	2
d	-	3	-	Green	-	4	-	3
	Case	Case			Case	Case	4	4
View soldering side, cable socket								

Accessories

Welding sleeves

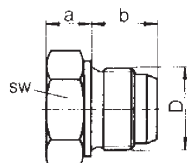


Code	D	a	H	Material	Ordering code
J	G1"	55	23	Stainless steel 1.4435	D 11737.0002
J	G1"	55	23	Hastelloy C	D 11737.0022
W	G1/2"	35	20	Stainless steel 1.4435	D 11737.0000
W	G1/2"	35	20	Hastelloy C	D 11737.0020



Code	D	a	H	Material	Ordering code
K	G1"	60	20.5	Stainless steel 1.4435	D 12403.1
Z	G1/2"	60	20.5	Stainless steel 1.4435	D 12403.0

Front piece with thread



Code	D	a	b	sw	Material	Ordering code
J	G1"	18	27	41	Stainless steel 1.4435	D 11870.0002
J	G1"	18	27	41	Hastelloy C	D 11870.0022
W	G1/2"	12	23	27	Stainless steel 1.4435	D 11870.0000
W	G1/2"	12	23	27	Hastelloy C	D 11870.0020

Accessories

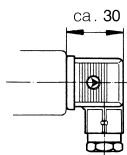
Electrical sockets

Description

Cable socket connector DIN 43650

Ordering code

E 6844.0

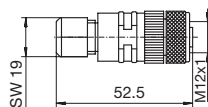


Description

Cable socket connector M12

Ordering code

E 15560.0

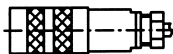


Description

Cable socket connector Binder

Ordering code

E 13265.0

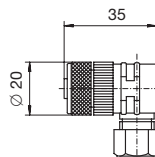


Description

Cable socket connector M12

Ordering code

E 15560.1

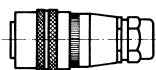


Description

Cable socket connector Bendix

Ordering code

E 6586.1



Description

Cable socket connector Fischer

Ordering code

E 13267.0



Cable

Cable with M12 socket connector for ED701

Ordering code

E 15543.x LLL

Type

Shielded PVC Kabel

Shielded PUR Kabel

0
1

Length

2 meters

5 meters

10 meters

20 meters

002
005
010
020

O-Rings

The FDA approved O-rings are available in NBR, EPDM and Viton® (FPM). They are delivered in packs of 5 units.

The following operating temperature of the O-rings are only indicative values (dry air):

NBR (FDA): -25° ... +125 °C

EPDM (FDA): -40° ... +160 °C

FPM / Viton® (FDA): -20° ... +200 °C

Pressure connection	Designation	Material	Ordering code
L, W, Z	O-Ring for male thread G $\frac{1}{2}$ " (at the rear)	NBR (FDA)	A8550.9110
L, W, Z	O-Ring for male thread G $\frac{1}{2}$ " (at the rear)	FPM / Viton® (FDA)	A8550.9111
L, W, Z	O-Ring for male thread G $\frac{1}{2}$ " (at the rear)	EPDM (FDA)	A8550.9112
J, K	O-Ring für G1" (at the rear)	NBR (FDA)	A8550.9120
J, K	O-Ring für G1" (at the rear)	FPM / Viton® (FDA)	A8550.9121
J, K	O-Ring für G1" (at the rear)	EPDM (FDA)	A8550.9122
K	O-Ring für G1" (on the front)	NBR (FDA)	A8550.9130
K	O-Ring für G1" (on the front)	FPM / Viton® (FDA)	A8550.9131
K	O-Ring für G1" (on the front)	EPDM (FDA)	A8550.9132
Z	O-Ring für G $\frac{1}{2}$ " (on the front)	NBR (FDA)	A8550.9140
Z	O-Ring für G $\frac{1}{2}$ " (on the front)	FPM / Viton® (FDA)	A8550.9141
Z	O-Ring für G $\frac{1}{2}$ " (on the front)	EPDM (FDA)	A8550.9142

Accessories for CombiConnect

See Data Sheet 3400-3, Flexbar HRT accessories.

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