



IMP 304

Industrial Pressure Transmitter for Ultra High Pressure

accuracy according to IEC 60770:
standard: 0.5 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 2 000 bar up to 0 ... 6 000 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V

Special characteristics

- ▶ adjustability of offset and span via front sided potentiometers
- ▶ pressure port 9/16" UNF
- ▶ 80 % calibration signal with MIL / Bendix plug




Optional versions

- ▶ IS-version:
Ex ia
- ▶ accuracy according to IEC 60770:
0.25 % FSO
- ▶ pressure port M20x1.5 and M16x1.5

The ultra-high-pressure transmitter type IMP 304 has been especially designed for applications with highest demand on precision and reliability. IMP 304 series is based on a compensated strain gauge, bonded onto a hardened stainless steel diaphragm.

Due to the rugged stainless steel housing usage under extreme conditions and in IS-required areas is no problem.

Preferred areas of use are

-  High pressure hydraulic circuits
-  Water jet cutting
-  High pressure applications in chemical and petrochemical industry



Input pressure range	
Nominal pressure gauge [bar]	2 000 4 000 5 000 6 000
Overpressure [bar]	3 000 5 000 6 000 7 000
Burst pressure [bar]	4 000 8 000 10 000 10 000
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / $V_S = 10 \dots 30 V_{DC}$
IS-protection	2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$
Option 3-wire	3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$
Performance	
Accuracy ¹	standard: $\leq \pm 0.50 \% \text{ FSO}$ option: $\leq \pm 0.25 \% \text{ FSO}$ (on request)
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$
Long term stability	$\leq \pm 0.2 \% \text{ FSO} / \text{year}$ at reference conditions
Response time	< 2.5 msec
Adjustability	Via a front sided potentiometer is an adjustment of the offset possible within the range of $\pm 5 \%$ of the nominal pressure range, without an influence of characteristic curve and accuracy.
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Calibration (only with MIL / Bendix plug)	
Calibration signal accuracy	$\leq \pm 0.25 \% \text{ FSO}$
Calibration	80 % FSO calibration (e.g. for 4 ... 20 mA / 2-wire: signal = $0.8 \cdot 16 \text{ mA} + 4 \text{ mA} = 16.8 \text{ mA}$)
Thermal effects (Offset and Span)	
Thermal error	$\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ in compensated range -20 ... 85 °C
Permissible temperatures	
Permissible temperatures	medium: -40 ... 85 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec
Materials	
Pressure port / diaphragm	stainless steel 1.4548 (17-4 PH)
Housing	stainless steel 1.4301 (304)
Seals (media wetted)	none (welded version)
Media wetted parts	pressure port, diaphragm
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approval DX17-IMP 304	IBExU 09 ATEX 1144 X zone 0: II 1G Ex ia IIC T4
Safety technical maximum values	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C
Connecting cables (by factory)	cable capacity: signal line/shield as well as signal line/signal line: 160 pF/m cable inductance: signal line/shield as well as signal line/signal line: 1 $\mu\text{H}/\text{m}$
Miscellaneous	
Insulation strength / resistance	standard: insulation strength 100 M Ω @ 35 V IS-version: insulation resistance 100 M Ω @ 35 V_{DC} 100 M Ω @ 500 V_{AC} (relative to housing)
Current consumption	2-wire signal output current: max. 28 mA 3-wire signal output voltage: max. 15 mA
Weight	approx. 260 g
Operational life	10 million load cycles
Installation position	any
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A)
ATEX Directive	2014/34/EU

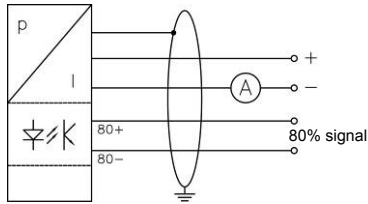
IMP 304

Ultra High Pressure Transmitter

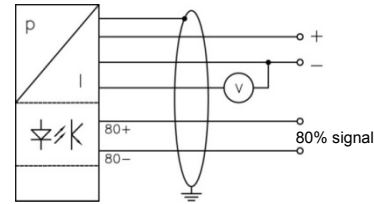
Technical Data

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



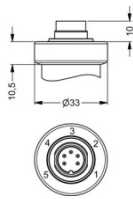
Pin configuration

Electrical connections	Binder 723 (5-pin)	M12x1 (4-pin)	ISO 4400	cable colour (IEC 60757)
Supply +	3	1	1	wh (white)
Supply -	4	2	2	bn (brown)
Signal + (only for 3-wire)	1	3	3	gn (green)
Shield	5	4	pin	gnye (green-yellow)

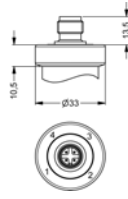
Pin configuration MIL-/ Bendix plug (optional)

Version	Pin A	Pin B	Pin C	Pin D	Pin E	Pin F
2-wire current signal 4 ... 20 mA	supply +/ signal +	supply -/ signal -	-	-	calibration +	calibration -
3-wire	signal +	supply - / signal - / calibration -	supply +	-	-	calibration +

Electrical connections (dimensions in mm)



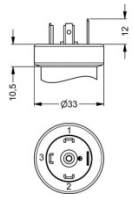
Binder series 723 (IP 67)



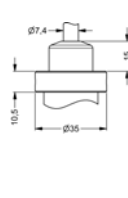
M12x1 4-pin (IP 67)



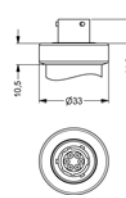
cable outlet with PVC-cable (IP 67)²



ISO 4400 (IP 65)



cable outlet (IP 68)³



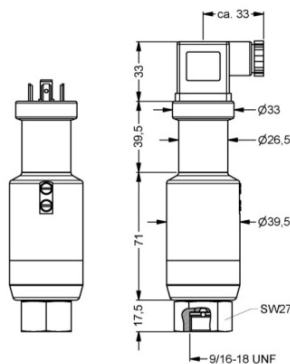
MIL-/ Bendix plug (type PT 02 A 10-6 P)

² standard: 2 m PVC-cable without air tube (permissible temperature: -5 ... 70 °C)

³ different cable types and lengths available, permissible temperature depends on kind of cable

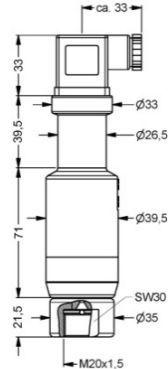
Mechanical connections (dimensions in mm)

Standard

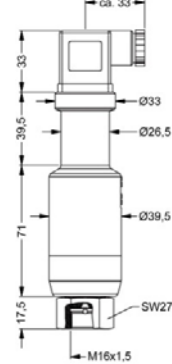


9/16" UNF internal thread

Options



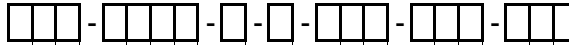
M20x1.5 internal thread



M16x1.5 internal thread

Ordering code IMP 304

IMP 304



Pressure											
	gauge	2	2	0							
Input											
	[bar]										
	2 000	2	0	0	4						
	4 000	4	0	0	4						
	5 000	5	0	0	4						
	6 000	6	0	0	4						
	customer	9	9	9							consult
Output											
	4 ... 20 mA / 2-wire									1	
	intrinsic safety 4 ... 20 mA / 2-wire									E	
	0 ... 10 V / 3-wire									3	
	customer									9	consult
Accuracy											
standard:	0.50 % FSO									5	
option:	0.25 % FSO									2	consult
	customer									9	consult
Electrical connection											
	male and female plug ISO 4400									1	0 0
	male plug Binder series 723 (5-pin)									2	0 0
	cable outlet with PVC cable (IP67) ¹									T	A 0
	cable outlet,									T	R 0
	cable with ventilation tube (IP68) ²										
	male plug M12x1 (4-pin), metal									M	1 0
	MIL-/Bendix (type PT 02 A 10-6 P)									B	G 0
	customer									9	9 9
Mechanical connection											
	9/16" UNF internal thread									V	0 0
	M16x1.5 internal thread									P	0 0
	M20x1.5 internal thread									D	2 8
	customer									9	9 9
Special version											
	adjustable										0 4 1
	customer										9 9 9
											consult

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths