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 (on request)

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 = intrinsically safe for gases
- 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 co m-pensated strain gauge, bonded onto a 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

- hydraulic circuits
- water jet cutting
- high pressure applications in chemical and petrochemical industry

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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 ... 30 V_{DC}
IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}
Option 3-wire (on request)	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}
Performance	
Accuracy[1]	standard: ≤ ± 0.50 % FSO option: ≤ ± 0.25 % FSO (on request)
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\ min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.2 % FSO / year
Response time	< 2.5 msec
Adjustability	Via a front sided potentiometer is an adjustment of the offset possible within the range of ± 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	≤ ± 0.25 % FSO
Calibration	80 % FSO calibration (e.g. for 4 ... 20 mA / 2-wire: signal = 0.8*16 mA + 4 mA = 16.8 mA)
Thermal effects (Offset and Span)	
Thermal error	≤ ± 0.2 % FSO / 10 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	standard: stainless steel 1.4301 (304)
Seals (media wetted)	none (welded version)
Media wetted parts	pressure port, diaphragm
IS-protection (only for 4 ... 20 mA / 2-wire)	
Approval DX17-DMP 304	zone 0: II 1G Ex ia IIC T4
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW
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 µH/m
Miscellaneous	
Insulation strength / resistance	standard: insulation strength 100 MΩ @ 35 V IS-version: insulation resistance 100 MΩ @ 35 V_{DC} 100 MΩ @ 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
Installation position	any
CE-conformity	EMC Directive: 2004/108/EC Pressure Equipment Directive: 97/23/EC (module A)

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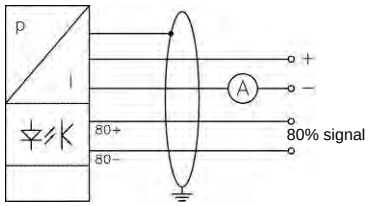
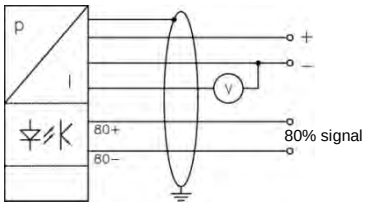
Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



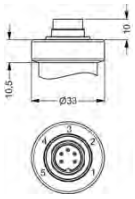
Pin configuration

Electrical connections	Binder 723 (5-pin)	M12x1 (4-pin)	ISO 4400	cable colours (DIN 47100)
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	gn/ye (green / yellow)

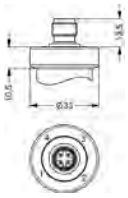
Pin configuration MIL / Bendix plug (optional)

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 +

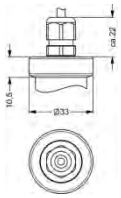
Electrical connections (dimensions in mm)



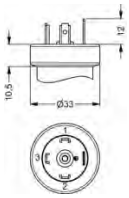
Binder series 723 (IP 67)



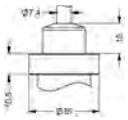
M12x1 4-pin (IP 67)



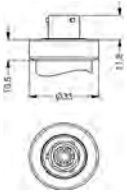
cable outlet with PVC-cable (IP 67)[2]



ISO 4400 (IP 65)



cable outlet (IP 67)[3]

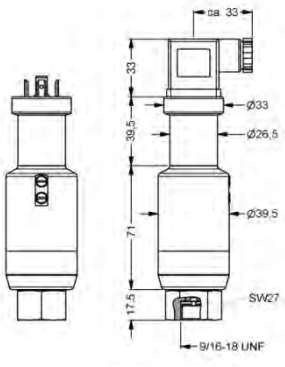


MIL / Bendix plug (Typ PT 02 A 10-6 P)

[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*

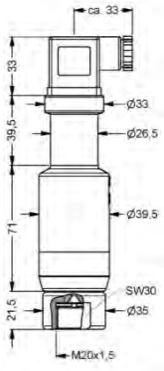
Mechanical connections (dimensions in mm)

Standard

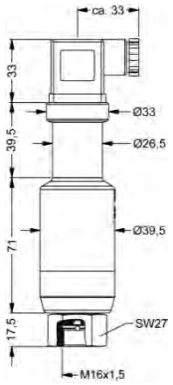


9/16“ UNF internal thread

Option



M20x1,5 internal thread



M16x1,5 internal thread

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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	9											consult
Output																			
	4 … 20 mA / 2-wire								1										
	Intrinsic safety 4 … 20 mA / 2-wire								E										
	0 … 10 V / 3-wire								3										consult
	customer								9										consult
Accuracy																			
standard	0.5 %									5									
option	0.25 %									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 [1]										T	A	0						
	Cable outlet [2]										T	R	0						
	Male plug M12x1 (4-pin), metal										M	1	0						
	MIL-/Bendix (Typ PT 02 A 10-6 P)										B	G	0						consult
	customer										9	9	9						consult
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			consult
Special version																			
	adjustable																0	4	1
	customer																9	9	consult

[1] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70 °C), optionally cable with ventilation tube

[2] different cable types and lengths deliverable (permissible temperature depends on kind of cable)

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