

# Relative pressure transmitter type 520

Pressure range

-1 ... 9 bar / 0 ... 2.5 – 1000 bar



The compact type 520 pressure transmitter is based upon the Huba Control developed thick film technology where the pressure measuring cell is fully welded. This transmitter meets the high burst protection demands and is suitable for the use in all types of refrigerants including ammonia.

- Compact, rugged construction
- Welded without sealing parts, no elastomer seals
- Large selection of connections available.
- Saving time by quick cable mounting by the customer with swift connector

## Technical overview

### Pressure range

Relative -1 ... 9 bar / 0 ... 2.5 – 600 bar

### Operating conditions

Medium	Liquids, gases and refrigerants (incl. ammonia)	
Temperature	Medium	-40 ... +135 °C (Ex) -30 ... +120 °C
	Ambient	-30 ... +85 °C (Ex) -25 ... +85 °C
	Storage	-50 ... +100 °C
Tolerable overload	≤ 6 bar	5 x fs
	> 6 bar	3 x fs (max. 1500 bar)
Rupture pressure	≤ 6 bar	10 x fs
	> 6 bar	6 x fs (max. 2500 bar)

### Materials

Cover	Stainless steel 1.4404 / AISI 316L (inside thread Schrader 1.4305 / AISI 303 only)	
Plug accommodation	Polyarylamide 50% GF UL 94 V-0	
Materials in contact with medium	Pressure connection	Stainless steel 1.4404 / AISI 316L (inside thread Schrader 1.4305 / AISI 303 only)
	Sensor	Stainless steel

### Electrical overview

	Output	Power supply	Load	Current consumption
2 wire	4 ... 20 mA	7 ... 33 VDC	< $\frac{\text{supply voltage} - 7V}{0.02 A}$ [Ohm]	< 23 mA
	4 ... 20 mA (Ex)	10 ... 30 VDC	< $\frac{\text{supply voltage} - 10V}{0.02 A}$ [Ohm]	< 23 mA
	0 ... 5 V	7 ... 33 VDC	>10 kOhm / < 100 nF	< 7 mA
3 wire	1 ... 6 V	8 ... 33 VDC	>10 kOhm / < 100 nF	< 7 mA
	0 ... 10 V	12 ... 33 VDC	>10 kOhm / < 100 nF	< 7 mA
	0 ... 10 V	12 ... 33 VDC / 24 VAC ± 15%	>10 kOhm / < 100 nF	< 7 mA
Polarity reversal protection	ration. 10 ... 90%			
Insulation voltage	Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.			
			standard	500 VDC

### Protection class

Protection class III

### Dynamic response

Response time	< 2 ms, 1 ms typ.
Load cycle	< 100 Hz

### Protection standard

Connector DIN EN 175301-803, Braids	IP 65
Connector RAST 2.5	IP 00
Swift connector, Metri Pack, Connector M12x1	IP 67

### Electrical connection

Swift connector with or without cable 1.5 / 2.0 / 3.0 / 5.0 m (PVC spec.)

Connector DIN EN 175301-803-A

Connector DIN EN 175301-803-C (industrial standard 9.4 mm)

Metri Pack Serie 150

Connector M12x1

Braids

Connector RAST 2.5 (3 wire only)

### Pressure connection

Inside thread	7/16 - 20 UNF	without or with Schrader
	1/2 - 14 NPT	(≤ 60 bar)
	G 1/4	with O-Ring seal FPM spec. (-30 ... +135 °C)
Outside thread	7/16 - 20 UNF	sealed at front or sealing cone
	1/4 - 18 NPT	
	G 1/4	sealed at back DIN 3852-E with profile seal ring in FPM spec. (-30 ... +135 °C)
	G 1/4	sealed at back and manometer (combi) with profile seal ring in FPM spec. (-30 ... +135 °C) (≤ 60 bar)
	R 1/4	EN 10226
	G 1/2	sealed at back and manometer (combi) with profile seal ring in FPM spec. (-30 ... +135 °C)
	1/8 - 27 NPT	(≤ 60 bar)
	G 1/8	sealed at front (≤ 60 bar)
	G 1/8	sealed at back, with profile seal ring in FPM spec. (-30 ... +135 °C) (≤ 60 bar)
	M10x1	sealed at back with Profile seal ring in FPM spec. (-30 ... +135 °C) (≤ 60 bar)
M20x1.5	sealed at front and manometer (combi)	
G 1/2	sealed at front	

### Installation arrangement

Unrestricted

### Tests / Admissions

Electromagnetic compatibility	CE conformity acc. EN 61326-2-3
Raised noise resistantcy	EN 50121-2-3
Shock acc. IEC 68-2-27	100 g, 11 ms half sine wave, all 6 directions, free fall from 1 m on concrete (6x)
Constant shock acc. IEC 68-2-29	40 g for 6 ms, 1000x all 3 directions
Vibration acc. IEC 68-2-6	20 g, 15 ... 2000 Hz, 15 ... 25 Hz with amplitude ± 15 mm, 1 Octave/min. all 3 directions, 50 constant load
UL	ANSI/UL 61010-1 acc. E325110
Drinking water approval	NSF/ANSI 61/372 acc. MH60087

### Protection against explosion (Ex)

Intrinsic safety "i" (with current output only)	Ex II 1/2 G Ex ia IIC T4 Ga/Gb
EC type examination certificate	Ex II 1/2 D Ex ia IIC T125°C Da/Db
Connection to certified intrinsically safe resistive circuits with maximum values	SEV 10 ATEX 0145
Effective internal inductance and capacitance for versions with plugs complying with EN 175301-803-A or M12x1	Ui = 30 VDC; li = 100 mA = Pi = 0.75 W Li = 0 nH; Ci = 0 nF

### Weight

~ 90 g

### Packaging (Please state on order)

Single packaging in cardboard	accessories integrated
Multiple packaging in cardboard (25 pcs)	

## Accuracy

Parameter	Unit	
Characteristic line <sup>1)</sup>	% fs	± 0.3
Resolution	% fs	0.1
Thermal characteristic <sup>2)</sup>	max. % fs/10K	± 0.2
Long term stability acc. IEC EN 60770-1	max. % fs	± 0.25

Test conditions: 25 °C, 45% RH, power supply 24 VDC

## Order code selection table in bar

		1	2	3	4	5	6	7	8	9	10	11
		<b>520. X X X X X X X X X X X</b>										
Pressure range <sup>3)</sup>	-1 ... 9 bar	9	0	6								
	0 ... 2.5 bar	9	1	4								
	0 ... 4 bar	9	1	5								
	0 ... 6 bar	9	1	7								
	0 ... 10 bar	9	3	0								
	0 ... 16 bar	9	3	1								
	0 ... 25 bar	9	3	2								
	0 ... 40 bar	9	3	3								
	0 ... 60 bar	9	4	0								
	0 ... 100 bar	9	4	1								
	0 ... 160 bar	9	4	2								
	0 ... 250 bar	9	4	3								
	0 ... 400 bar	9	5	4								
0 ... 600 bar	9	5	5									
0 ... 1000 bar	9	5	7									
Application	standard					S	0					
	for oxygen applications					S	1			0		
	with drinking water approval NSF 61					S	4		F,H,8	0	1	
Output / power supply	0 ... 5 V							1				
	1 ... 6 V							6				
	0 ... 10 V							2				
								8				
	ration. 10 ... 90%							7				
								3				
4 ... 20 mA	7 ... 33 VDC							A				
	7 ... 33 VDC							A				
10 ... 30 VDC							0	4	1,3		1	
Electrical connection	DIN EN 175301-803-A <sup>4)</sup>									1		
	DIN EN 175301-803-C (industrial standard 9.4 mm) <sup>4)</sup>									2		
	M12x1 <sup>4)</sup> 2w: IN=1 / OUT=3 3w: IN=1 / OUT=4 / GND=3									3		
	M12x1 <sup>4)</sup> 2w: IN=1 / OUT=4 3w: IN=1 / OUT=3 / GND=4									M		
	M12x1 <sup>4)</sup> 2w: IN=1 / OUT=2 3w: IN=1 / OUT=2 / GND=3									P		
	RAST 2.5 <sup>4)</sup>						0	7		4		
	Metri Pack Serie 150 <sup>4),5)</sup>						0			5		
	80 ±10 mm									6		
	290 ±10 mm									7		
	480 ±10 mm									8		
	730 ±10 mm									9		
	without cable									0		
	with cable 1.5 m									L		
with cable 2.0 m									N			
with cable 3.0 m									Q			
with cable 5.0 m									R			
Pressure connection <sup>3)</sup>	Inside thread									0	0	N
	$\frac{7}{16}$ -20 UNF sealing cone									K		1
	$\frac{7}{16}$ -20 UNF sealing cone									D		1
	$\frac{1}{2}$ -14 NPT <sup>6)</sup>											
	G $\frac{1}{4}$ with O-Ring seal FPM spec.									1		1
	$\frac{7}{16}$ -20 UNF sealing cone									2		1
	$\frac{1}{4}$ -18 NPT									3		1
	G $\frac{1}{4}$ sealed at back DIN 3852-E, with profile seal ring in FPM spec.									4		1
	G $\frac{1}{4}$ sealed at back and manometer, with profile seal ring in FPM spec. <sup>6)</sup>									5	0	1
	R $\frac{1}{4}$ acc. to EN 10226									7		1
	G $\frac{1}{2}$ sealed at back and manometer, with profile seal ring in FPM spec.									8		1
	$\frac{7}{16}$ -20 UNF sealed at front									G		1
	$\frac{1}{8}$ -27 NPT <sup>6)</sup>									A		1
G $\frac{1}{8}$ sealed at front <sup>6)</sup>									M		1	
G $\frac{1}{8}$ sealed at back DIN 3852-E, with Profile seal ring in FPM spec. <sup>6)</sup>									H		1	
M10x1 sealed at back, with profile seal ring in FPM spec. <sup>6)</sup>									F		1	
M20x1.5 sealed at front and manometer (combi)									E		1	
G $\frac{1}{2}$ sealed at front									9		1	
Pressure orifice	without (inclusive pressure tip orifice from 100 bar on)									0		
	with									2		
Material pressure connection	Stainless steel 1.4305 / AISI 303											N
	Stainless steel 1.4404 / AISI 316L											1
Pressure range variation (optional)	Indicate W and state range on order (e.g.: W0... + 3bar/OUT0...5V)											W

## Accessories

	Order number
Swift connector	107359
Female connector DIN EN 175301-803-A with seal	103510
Female connector DIN EN 175301-803-C with seal	104244
Corner-wire box for connector M12x1	106975
Corner-wire box for connector M12x1 with cable 2.0 m	114604
Straight-wire box for connector M12x1	114570
Straight-wire box for connector M12x1 with cable 2.0 m	114605
Mounting bracket with screw	118716
Calibration certificate	104551

<sup>1)</sup> typ. ; max. 0.5% fs (incl. zero point, full scale, linearity, hysteresis and repeatability)

<sup>2)</sup> -15 ... 85 °C

<sup>4)</sup> Delivery without female connector

<sup>5)</sup> For pressure ranges ≤ 16 bar only possible if deaeration through the cable is assured

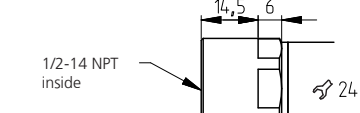
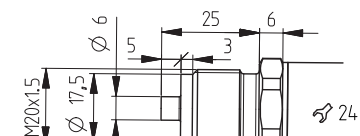
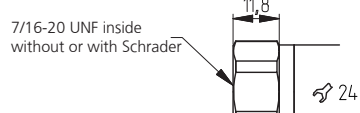
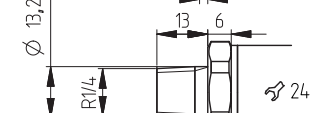
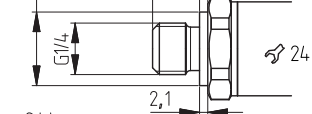
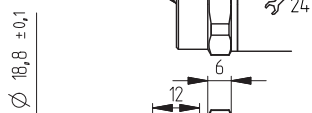
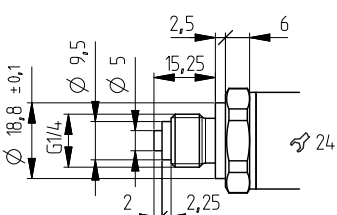
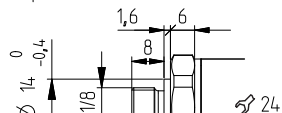
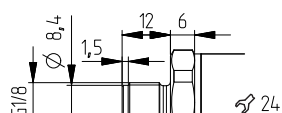
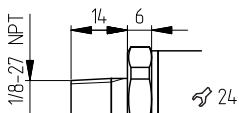
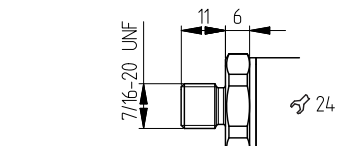
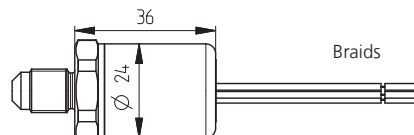
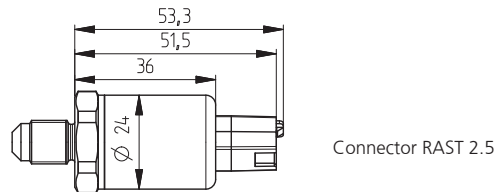
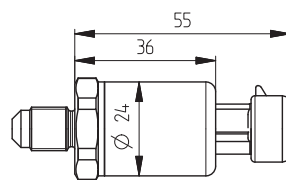
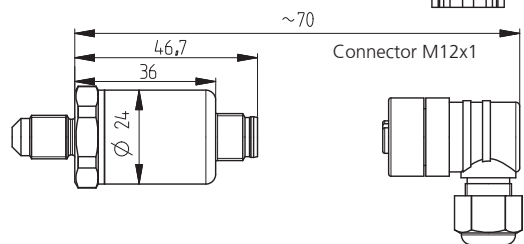
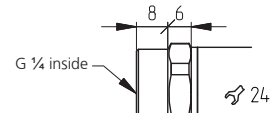
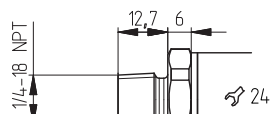
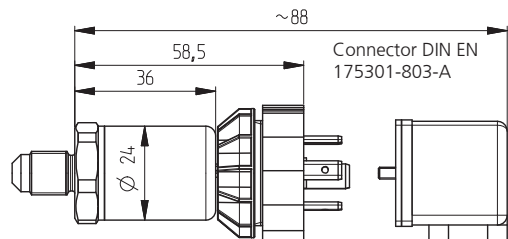
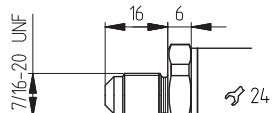
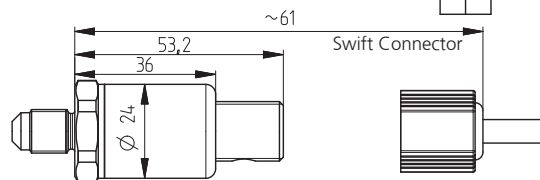
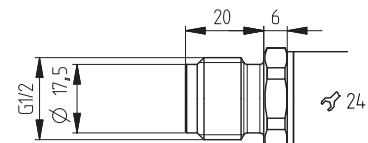
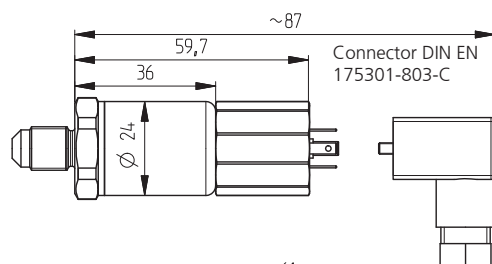
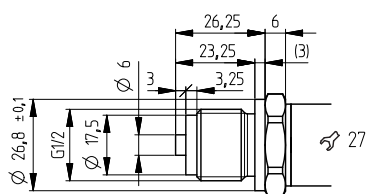
<sup>3)</sup> Other pressure ranges or pressure connections on request

<sup>6)</sup> (≤ 60 bar)

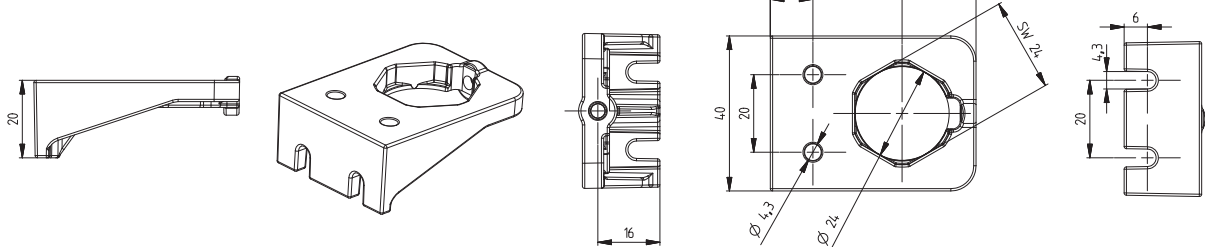
		1	2	3	4	5	6	7	8	9	10	11			
Order code selection table in psi		520. X X X X X X X X X X X X													
Pressure range <sup>1)</sup>	-15 ... 130 psi	9	A	6											
	0 ... 30 psi	9	B	4											
	0 ... 60 psi	9	B	4											
	0 ... 100 psi	9	B	7											
	0 ... 200 psi	9	C	1											
	0 ... 300 psi	9	C	2											
	0 ... 500 psi	9	C	3											
	0 ... 750 psi	9	D	0											
	0 ... 1000 psi	9	D	1											
	0 ... 2000 psi	9	D	2											
	0 ... 3000 psi	9	D	3											
	0 ... 5000 psi	9	E	4											
0 ... 7500 psi	9	E	5												
0 ... 14500 psi	9	E	7												
Application	standard				S	0									
	for oxygen applications				S	1				0					
	with drinking water approval NSF 61				S	4			F,H,8	0	1				
Output / power supply	0 ... 5 V							1							
	1 ... 6 V							6							
	0 ... 10 V							2							
	12 ... 33 VDC							8							
	12 ... 33 VDC / 24 VAC ±15% (not possible with M12x1 or metri Pack)														
	ration. 10 ... 90%								7						
	5VDC ±10%								3						
4 ... 20 mA	7 ... 33 VDC								A						
	7 ... 33 VDC														
	10 ... 30 VDC							0	4	1,3		1			
Electrical connection	Connector	DIN EN 175301-803-A <sup>2)</sup>										1			
		DIN EN 175301-803-C (industrial standard 9.4 mm) <sup>2)</sup>											2		
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=3 3w: IN=1 / OUT=4 / GND=3											3		
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=4 3w: IN=1 / OUT=3 / GND=4											M		
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=2 3w: IN=1 / OUT=2 / GND=3											P		
		RAST 2.5 <sup>2)</sup>							0	7			4		
	Braids	Metri Pack Serie 150 <sup>2),3)</sup>							0				5		
		80 ±10 mm											6		
		290 ±10 mm											7		
		480 ±10 mm											8		
		730 ±10 mm											9		
	Swift connector	without cable											0		
		with cable 1.5 m											L		
		with cable 2.0 m											N		
		with cable 3.0 m											Q		
with cable 5.0 m												R			
Pressure connection <sup>1)</sup>	Inside thread	7/16-20 UNF sealing cone with schrader										0	0	N	
		7/16-20 UNF sealing cone											K	1	
		1/2-14 NPT <sup>4)</sup>											D	1	
		G 1/4 with O-Ring seal FPM spec.											1	1	
		G 1/4 sealed at back DIN 3852-E, with profile seal ring in FPM spec.											4	1	
	Outside thread	7/16-20 UNF sealing cone											2	1	
		1/4-18 NPT											3	1	
		G 1/4 sealed at back DIN 3852-E, with profile seal ring in FPM spec.											4	1	
		G 1/4 sealed at back and manometer, with profile seal ring in FPM spec. <sup>4)</sup>											5	0	1
		R 1/4 acc. to EN 10226											7	1	
		G 1/2 sealed at back and manometer, with profile seal ring in FPM spec.											8	1	
		7/16-20 UNF sealed at front											G	1	
		1/8-27 NPT <sup>4)</sup>											A	1	
		G 1/8 sealed at front <sup>4)</sup>											M	1	
		G 1/8 sealed at back DIN 3852-E, with Profile seal ring in FPM spec. <sup>4)</sup>											H	1	
M10x1 sealed at back, with profile seal ring in FPM spec. <sup>4)</sup>											F	1			
M20x1.5 sealed at front and manometer (combi)											E	1			
G 1/2 sealed at front											9	1			
Pressure orifice	without (inclusive pressure tip orifice from 750 psi on)											0			
	with											2			
Material pressure connection	Stainless steel 1.4305 / AISI 303												N		
	Stainless steel 1.4404 / AISI 316L												1		
Pressure range variation (optional)	Indicate W and state range on order (e.g.: W0... + 400psi/OUT0...5V)												W		

<sup>1)</sup> Other pressure ranges or pressure connections on request <sup>2)</sup> Delivery without female connector <sup>3)</sup> For pressure ranges ≤ 200 psi only possible if deaeration through the cable is assured <sup>4)</sup> (≤ 870 psi)

Order code selection table in MPa		1	2	3	4	5	6	7	8	9	10	11			
		520.	X	X	X	X	X	X	X	X	X	X			
Pressure range <sup>1)</sup>	-0.1 ... 0.9 MPa	9	F	6											
	0 ... 0.25 MPa	9	G	4											
	0 ... 0.4 MPa	9	G	5											
	0 ... 0.6 MPa	9	G	7											
	0 ... 1 MPa	9	H	0											
	0 ... 1.6 MPa	9	H	1											
	0 ... 2.5 MPa	9	H	2											
	0 ... 4 MPa	9	H	3											
	0 ... 6 MPa	9	K	0											
	0 ... 10 MPa	9	K	1											
	0 ... 16 MPa	9	K	2											
	0 ... 25 MPa	9	K	3											
	0 ... 40 MPa	9	L	4											
0 ... 60 MPa	9	L	5												
0 ... 100 MPa	9	L	7												
Application	standard					S	0								
	for oxygen applications					S	1				0				
	with drinking water approval NSF 61					S	4			F,H,8	0	1			
Output / power supply	0 ... 5 V	7 ... 33 VDC					1								
	1 ... 6 V	8 ... 33 VDC					6								
	0 ... 10 V	12 ... 33 VDC					2								
		12 ... 33 VDC / 24 VAC ±15% (not possible with M12x1 or metri Pack)					8								
	ration. 10 ... 90%	5VDC ±10%					7								
	4 ... 20 mA	7 ... 33 VDC					3								
	7 ... 33 VDC						A								
	10 ... 30 VDC							0	4	1,3		1			
Electrical connection	Connector	DIN EN 175301-803-A <sup>2)</sup>								1					
		DIN EN 175301-803-C (industrial standard 9.4 mm) <sup>2)</sup>									2				
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=3 3w: IN=1 / OUT=4 / GND=3										3			
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=4 3w: IN=1 / OUT=3 / GND=4											M		
		M12x1 <sup>2)</sup> 2w: IN=1 / OUT=2 3w: IN=1 / OUT=2 / GND=3												P	
		RAST 2.5 <sup>2)</sup>						0	7			4			
		Metri Pack Serie 150 <sup>2),3)</sup>					0				5				
	Braids	80 ±10 mm										6			
		290 ±10 mm											7		
		480 ±10 mm												8	
		730 ±10 mm												9	
		without cable												0	
	Swift connector	with cable 1.5 m												L	
with cable 2.0 m													N		
with cable 3.0 m													Q		
with cable 5.0 m													R		
Pressure connection <sup>1)</sup>	Inside thread	7/16-20 UNF sealing cone with schrader								0	0	N			
		7/16-20 UNF sealing cone										K	1		
		1/2 -14 NPT <sup>4)</sup>											D	1	
		G 1/4 with O-Ring seal FPM spec.										1		1	
	Outside thread	7/16-20 UNF sealing cone										2		1	
		1/4 -18 NPT											3	1	
		G 1/4 sealed at back DIN 3852-E, with profile seal ring in FPM spec.										4		1	
		G 1/4 sealed at back and manometer, with profile seal ring in FPM spec. <sup>4)</sup>										5	0	1	
		R 1/4 acc. to EN 10226											7	1	
		G 1/2 sealed at back and manometer, with profile seal ring in FPM spec.											8	1	
		7/16-20 UNF sealed at front											G	1	
		1/8 - 27 NPT <sup>4)</sup>												A	1
		G 1/8 sealed at front <sup>4)</sup>												M	1
G 1/8 sealed at back DIN 3852-E, with Profile seal ring in FPM spec. <sup>4)</sup>												H	1		
M10x1 sealed at back, with profile seal ring in FPM spec. <sup>4)</sup>												F	1		
M20x1.5 sealed at front and manometer (combi)												E	1		
G 1/2 sealed at front												9	1		
Pressure orifice	without (inclusive pressure tip orifice from 10 MPa on)											0			
	with											2			
Material	Stainless steel 1.4305 / AISI 303												N		
pressure connection	Stainless steel 1.4404 / AISI 316L												1		
Pressure range variation (optional)	Indicate W and state range on order (e.g.: W0... + 0.3MPa/OUT0...5V)												W		



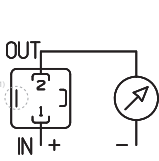
Mounting bracket



# Electrical connections

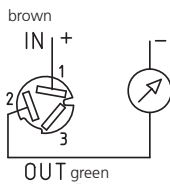
## 2 wire

Connector DIN  
EN 175301-803-A or C



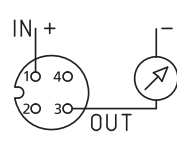
1 (IN) 2 (OUT)

Swift connector



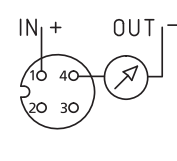
1 (IN) 2 (OUT)

Connector M12x1



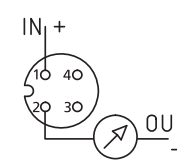
1 (IN) 3 (OUT)

Connector M12x1



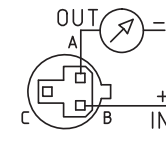
1 (IN) 4 (OUT)

Connector M12x1



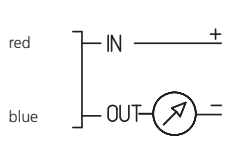
1 (IN) 2 (OUT)

Metri Pack Serie 150



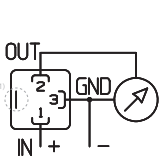
B (IN) A (OUT)

Braids



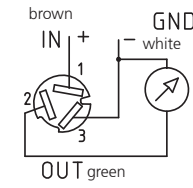
## 3 wire

Connector DIN  
EN 175301-803-A or C



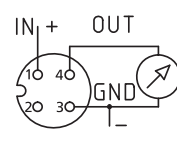
1 (IN) 2 (OUT) 3 (GND)

Swift connector



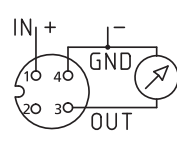
1 (IN) 2 (OUT) 3 (GND)

Connector M12x1



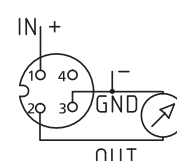
1 (IN) 4 (OUT) 3 (GND)

Connector M12x1



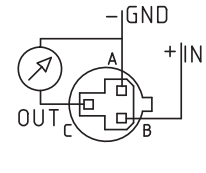
1 (IN) 3 (OUT) 4 (GND)

Connector M12x1



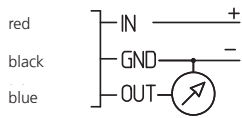
1 (IN) 2 (OUT) 3 (GND)

Metri Pack Serie 150

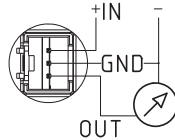


B (IN) C (OUT) A (GND)

Braids

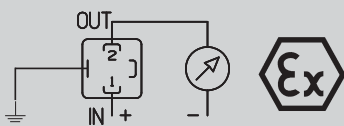


Connector RAST 2.5



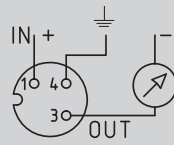
Device design with explosion protection: 4 ... 20 mA  
The grounding connection is conductively connected to the transmitter housing.

Connector DIN  
EN 175301-803-A (Ex)



1 (IN) 2 (OUT) ↓

Connector M12x1 (Ex)



1 (IN) 3 (OUT) 4 (↓)

<sup>1)</sup> Not connected with transmitter housing