

# Relative pressure transmitter type 520

Pressure range

-1 ... 9 bar / 0 ... 2.5 – 600 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
- Saving time by quick cable mounting by the customer with swift connector
- Large selection of connections available.

## 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
	Ambient	-30 ... +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

Pressure Connection	Stainless steel 1.4404 / AISI 316L (inside thread Schrader 1.4305 / AISI 303 only)	
Plug accommodation	Polyarylamide 50% GF VO	
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	$< \frac{\text{supply voltage} - 7 \text{ V}}{0.02 \text{ A}}$ [Ohm]	< 23 mA
2 wire (Ex)	4 ... 20 mA	10 ... 30 VDC	$< \frac{\text{supply voltage} - 10 \text{ V}}{0.02 \text{ A}}$ [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 ratiom. 10 ... 90%	24 VAC ± 15% 5 VDC ± 10%	>10 kOhm / < 100 nF >10 kOhm / < 100 nF	< 7 mA < 7 mA
Polarity reversal protection	Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.			
Insulation voltage			standard	500 VDC
			optional	1000 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
Braids (for oxygen applications)	IP 30

### Electrical connection

Swift connector with or without cable 1.5 m (PVC spec.)

Connector DIN EN 175301-803-A  
Connector DIN EN 175301-803-C (mini DIN)  
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	
	1/4 - 18 NPT	
	G 1/4	sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)
	R 1/4	DIN 2999
	G 1/2	sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)
	M20x1.5	
	G 1/2	sealed at front

### Installation arrangement

Unrestricted

### Tests / Admissions

Electromagnetic compatibility	CE conformity acc. EN 61326-2-3
Shock acc. IEC 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 recognized component marks	acc. E325110

### Protection against explosion

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

		520.9 X X X X X X X X X X												
Pressure range <sup>3)</sup>	-1 ... 9 bar	0	6											
	0 ... 2.5 bar	1	4											
	0 ... 4 bar	1	5											
	0 ... 6 bar	1	7											
	0 ... 10 bar	3	0											
	0 ... 16 bar	3	1											
	0 ... 25 bar	3	2											
	0 ... 40 bar	3	3											
	0 ... 60 bar	4	0											
	0 ... 100 bar	4	1											
	0 ... 160 bar	4	2											
	0 ... 250 bar	4	3											
	0 ... 400 bar	5	4											
	0 ... 600 bar	5	5											
Application	standard							S	0					
	for oxygen applications							S	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		
	0 ... 10 V	24 VAC ±15% (not possible with M12x1 connector or metri Pack)										8		
	Ratiom. 10 ... 90%	5VDC ±10%										7		
	4 ... 20 mA	7 ... 33 VDC										3		
	4 ... 20 mA	10 ... 30 VDC								0	4	1,3	1	
Electrical connection	Swift connector											0		
	Connector DIN EN 175301-803-A <sup>5)</sup>											1		
	Connector DIN EN 175301-803-C (mini DIN) <sup>5)</sup>											2		
	Connector M12x1 <sup>5)</sup>	2w: IN=1 / OUT=3	3w: IN=1 / OUT=4 / GND=3									3		
	Connector M12x1 <sup>5)</sup>	2w: IN=1 / OUT=4	3w: IN=1 / OUT=3 / GND=4									M		
	Connector M12x1 <sup>4),5)</sup>	2w: IN=1 / OUT=2	3w: IN=1 / OUT=2 / GND=3									P		
	Connector RAST 2.5 <sup>5)</sup>								0	7	4			
	Metri Pack Serie 150 <sup>5),6)</sup>								0	5				
	Braids	80 ±10 mm										6		
	Braids	290 ±10 mm										7		
	Braids	480 ±10 mm										8		
	Braids	730 ±10 mm										9		
		Swift connector with cable 1.5 m										L		
Pressure connection <sup>3)</sup>	Inside thread	7/16-20 UNF Schrader										0	0	N
	Inside thread	7/16-20 UNF										K	0	1
	Inside thread	1/2 -14 NPT (≤ 60 bar)										D	0	1
	Inside thread	G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)										1	0	1
	Outside thread	7/16 -20 UNF										2	0	1
	Outside thread	1/4 -18 NPT										3	0	1
	Outside thread	G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)										4	0	1
	Outside thread	R 1/4 acc. to DIN 2999										7	0	1
	Outside thread	G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)										8	0	1
	Outside thread	M20x1.5 <sup>4)</sup>										E	0	1
	Outside thread	G 1/2 sealed at front										9	0	1
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... + 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 (mini DIN) with seal	104244
Female connector for connector M12x1	106975
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>3)</sup> Other pressure ranges or pressure connections on request

<sup>4)</sup> UL admission applied

<sup>5)</sup> Delivery without female connector

<sup>6)</sup> For pressure ranges ≤ 16 bar only possible if deaeration through the cable is assured

Order code selection table in psi		520.9	X	X	X	X	X	X	X	X	X	X	X		
Pressure range <sup>1)</sup>	-15 ... 130 psi	A	6												
	0 ... 30 psi	B	4												
	0 ... 60 psi	B	5												
	0 ... 100 psi	B	7												
	0 ... 200 psi	C	1												
	0 ... 300 psi	C	2												
	0 ... 500 psi	C	3												
	0 ... 750 psi	D	0												
	0 ... 1000 psi	D	1												
	0 ... 2000 psi	D	2												
	0 ... 3000 psi	D	3												
	0 ... 5000 psi	E	4												
	0 ... 7500 psi	E	5												
	Application	standard						S	0						
for oxygen applications							S	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			
	0 ... 10 V	24 VAC ±15% (not possible with M12x1 connector or metri Pack)										8			
	Ratiom. 10 ... 90%	5VDC ±10%										7			
	4 ... 20 mA	7 ... 33 VDC										3			
	4 ... 20 mA	10 ... 30 VDC							0	4	1,3		1		
Electrical connection	Swift connector											0			
	Connector DIN EN 175301-803-A <sup>3)</sup>											1			
	Connector DIN EN 175301-803-C (mini DIN) <sup>3)</sup>											2			
	Connector M12x1 <sup>3)</sup>	2w: IN=1 / OUT=3	3w: IN=1 / OUT=4 / GND=3									3			
	Connector M12x1 <sup>3)</sup>	2w: IN=1 / OUT=4	3w: IN=1 / OUT=3 / GND=4									M			
	Connector M12x1 <sup>2),3)</sup>	2w: IN=1 / OUT=2	3w: IN=1 / OUT=2 / GND=3									P			
	Connector RAST 2.5 <sup>3)</sup>							0	7			4			
	Metri Pack Serie 150 <sup>3),4)</sup>							0				5			
	Braids	80 ±10 mm										6			
	Braids	290 ±10 mm										7			
	Braids	480 ±10 mm										8			
	Braids	730 ±10 mm										9			
		Swift connector with cable 1.5 m											L		
Pressure connection <sup>1)</sup>	Inside thread	7/16-20 UNF Schrader										0	0	N	
	Inside thread	7/16-20 UNF										K	0	1	
	Inside thread	1/2 -14 NPT (≤ 750 psi)										D	0	1	
	Inside thread	G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)										1	0	1	
	Outside thread	7/16 -20 UNF										2	0	1	
	Outside thread	1/4 -18 NPT										3	0	1	
	Outside thread	G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)										4	0	1	
	Outside thread	R 1/4 acc. to DIN 2999										7	0	1	
	Outside thread	G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)										8	0	1	
	Outside thread	M20x1.5										E	0	1	
	Outside thread	G 1/2 sealed at front										9	0	1	
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... + 400psi/OUT1...8V)														W

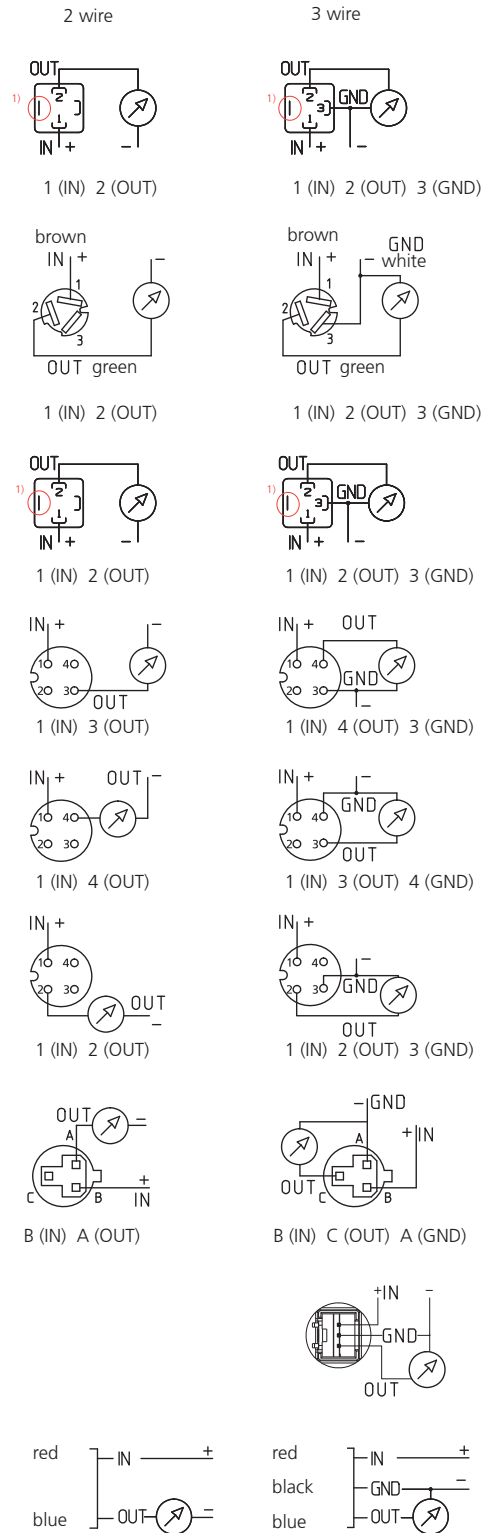
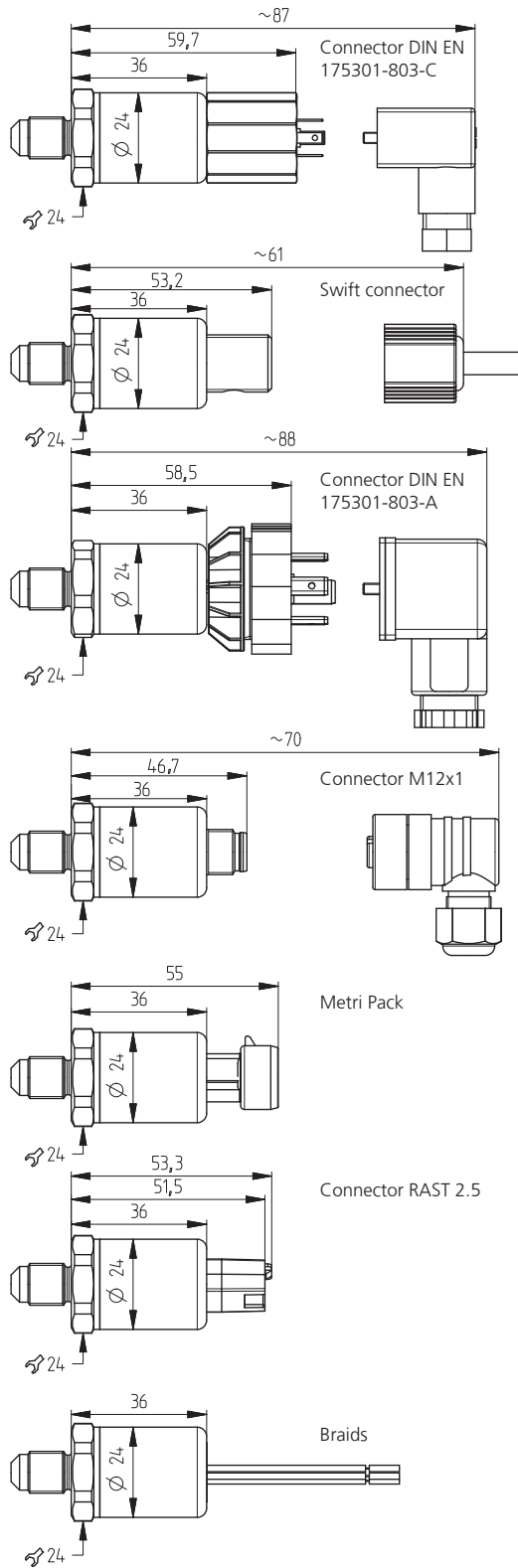
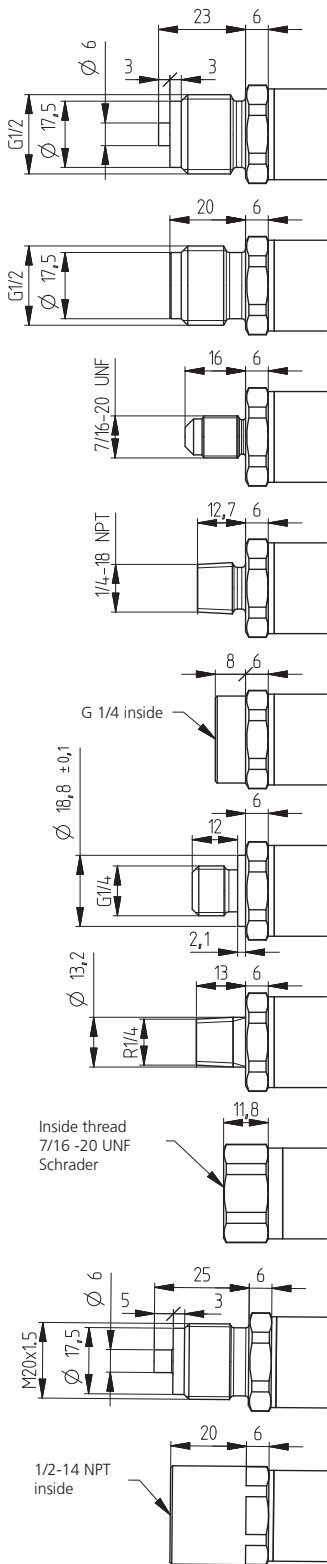
<sup>1)</sup> Other pressure ranges or pressure connections on request  
<sup>3)</sup> Delivery without female connector

<sup>2)</sup> UL admission applied  
<sup>4)</sup> For pressure ranges ≤ 200 psi only possible if deaeration through the cable is assured

Order code selection table in MPa		520.9	X	X	X	X	X	X	X	X	X	X	X	
Pressure range <sup>1)</sup>	-0.1 ... 0.9 MPa	F	6											
	0 ... 0.25 MPa	G	4											
	0 ... 0.4 MPa	G	5											
	0 ... 0.6 MPa	G	7											
	0 ... 1 MPa	H	0											
	0 ... 1.6 MPa	H	1											
	0 ... 2.5 MPa	H	2											
	0 ... 4 MPa	H	3											
	0 ... 6 MPa	K	0											
	0 ... 10 MPa	K	1											
	0 ... 16 MPa	K	2											
	0 ... 25 MPa	K	3											
	0 ... 40 MPa	L	4											
	0 ... 60 MPa	L	5											
Application	standard						S	0						
	for oxygen applications						S	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			
	0 ... 10 V	24 VAC ±15% (not possible with M12x1 connector or metri Pack)									8			
	Ratiom. 10 ... 90%	5VDC ±10%									7			
	4 ... 20 mA	7 ... 33 VDC									3			
	4 ... 20 mA	10 ... 30 VDC							0	4	1,3		1	
Electrical connection	Swift connector										0			
	Connector DIN EN 175301-803-A <sup>3)</sup>										1			
	Connector DIN EN 175301-803-C (mini DIN) <sup>3)</sup>										2			
	Connector M12x1 <sup>3)</sup>	2w: IN=1 / OUT=3	3w: IN=1 / OUT=4 / GND=3								3			
	Connector M12x1 <sup>3)</sup>	2w: IN=1 / OUT=4	3w: IN=1 / OUT=3 / GND=4								M			
	Connector M12x1 <sup>2),3)</sup>	2w: IN=1 / OUT=2	3w: IN=1 / OUT=2 / GND=3								P			
	Connector RAST 2.5 <sup>3)</sup>							0	7	4				
	Metri Pack Serie 150 <sup>3),4)</sup>							0	5					
	Braids	80 ±10 mm									6			
	Braids	290 ±10 mm									7			
	Braids	480 ±10 mm									8			
	Braids	730 ±10 mm									9			
	Swift connector with cable 1.5 m									L				
Pressure connection <sup>1)</sup>	Inside thread	7/16-20 UNF Schrader									0	0	N	
	Inside thread	7/16-20 UNF									K	0	1	
	Inside thread	1/2 -14 NPT (≤ 6 MPa)									D	0	1	
	Inside thread	G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)									1	0	1	
	Outside thread	7/16 -20 UNF									2	0	1	
	Outside thread	1/4 -18 NPT									3	0	1	
	Outside thread	G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)									4	0	1	
	Outside thread	R 1/4 acc. to DIN 2999									7	0	1	
	Outside thread	G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)									8	0	1	
	Outside thread	M20x1.5 <sup>2)</sup>									E	0	1	
	Outside thread	G 1/2 sealed at front									9	0	1	
	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... + 0.5MPa/OUT1...8V)													W

<sup>1)</sup> Other pressure ranges or pressure connections on request  
<sup>3)</sup> Delivery without female connector

<sup>2)</sup> UL admission applied  
<sup>4)</sup> For pressure ranges ≤ 1.6 MPa only possible if deaeration through the cable is assured



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

**Ex**

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 (⊥)