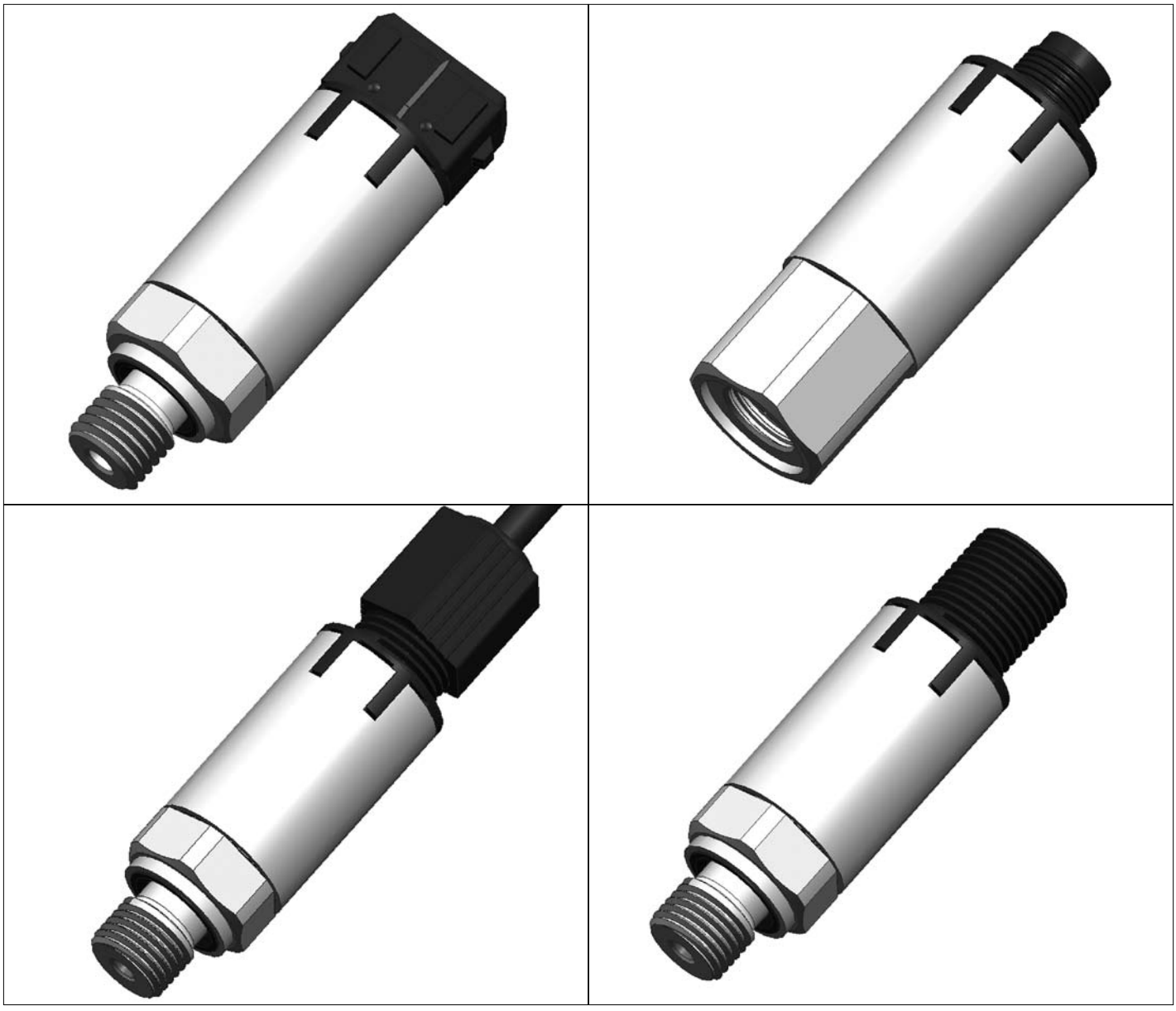
511

OEM Relative and absolute pressure transmitter

-1 … 0 – 600 bar

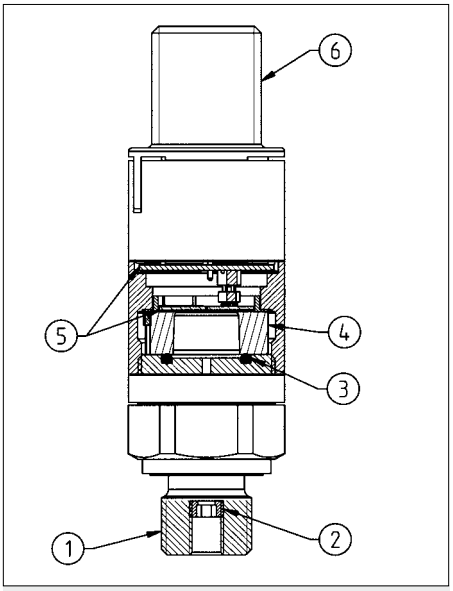


Huba Control

FEINE MESSIDEEN FÜR DRUCK UND STRÖMUNG
FOR FINE PRESSURE AND FLOW MEASUREMENT
LA FINESSE DES MESURES DE PRESSION ET DE DEBIT

Technical overview

These compact OEM pressure transmitters typ series 511 meet the highest specification for mechanical stress, EMC compatibility, and operational reliability, which means that this range is particulary suitable for all demanding industrial applications.
This sensor utilises a ceramic technology, developed by Huba Control and for the last 10 years, in millions of applications, used in combination with unique integrated electronic design, means that the type 511 series has a high degree of accuracy for all temperature ranges. These units are available in small or production quantities, with an excellent price to performance ratio.



Legend to cross-section drawing

1 Pressure connection
2 Protection of media leakage
3 Sealing
4 Ceramic cell
5 Electronic with EMC-protection
6 Electrical connection (example Quickon)

The distinct advantages

- Compact, rugged construction for highest operational reliability
- Protection IP 67 standard
- No media egress when exceeding rupture pressure (patented)
- Negligible temperature influence on accuracy
- Excellent EMC-capacity
- Saving time by quick cable mounting by the customer with Quickon-System

Medium

Liquids and neutral gases

Pressure range

Absolute	0 … 25 bar
Relative	-1 … 0 – 600 bar

Other pressure ranges on request

Overload

3.0 x full scale at	-1 … 4 bar
2.5 x full scale at	6 … 600 bar
but as a maximum	900 bar

Higher overload on request

Rupture pressure

3.0 x full scale at	-1 … 4 bar
2.5 x full scale at	6 … 600 bar
but as a maximum	900 bar

Higher rupture pressure on request

Media stop system

Patented media stop system to prevent media egress when exeeding rupture pressure range (≥ 40 bar nominal value)

Materials in contact with the medium

Pressure connection:
Stainless steel 1.4305 / AISI 303
Measuring cell: Ceramic Al_2O_3 (96%)
Media stopper: PPS
Sealing: FPM, NBR, others on request

Housing material

Stainless steel 1.4305 / AISI 303

Temperature

Medium temperature with sealing:

FPM	-15 …+125 °C
EPDM	-25 …+125 °C
NBR	-25 … +85 °C
FPM spec.	-40 …+150 °C

Ambient temperature:

Ratiometric output	
with connnector AMP	max. 125 °C
for all other versions	max. 85 °C

(Versions up to 150 °C on request)

Output / Power supply

Output	Power supply
3-wire	
0 … 5 VDC	8 … 33 VDC
1 … 6 VDC	8 … 33 VDC
0 … 10 VDC	11.4 … 33 VDC
0 … 10 VDC	24 VAC ±15%
Ratiom. 0.5 … 4.5V	5 VDC (4.75 … 5.25)
2-wire	
4 … 20 mA	8 … 33 VDC

Load

3-wire	> 10 kOhm / <100 nF
2-wire	$\leq \frac{\text{supply voltage} - 8\ V}{0.02\ A}$ [Ohm]

Current consumption

At nominal pressure

3-wire	< 4 mA
2-wire	< 20 mA

Dynamic response

Suitable for static and dynamic measurements.

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

Polarity reversal protection

Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.

Protection standard

Quickon, M12x1, Cable, AMP JPT	IP 67
Connector DIN EN 175301-803-C	IP 65

Installation arrangement

Unrestricted

Insulation voltage

Standard	500 VDC / 350 VAC
Optional	1000 VDC / 700 VAC

Tests / Admissions

Shock acc. IEC 68-2-27
100 G, 11 ms half sine wave, all 6 directions.
Free fall from 2 m on concrete (6x).

Constant shock acc. IEC 68-2-29
40 G for 6 ms, 1000 x all 3 directions.

Vibration acc. IEC 68-2-6
20 G, 9 … 2000 Hz, 2 … 9 Hz with amplitude ± 15 mm, 1 Octave/min. all 3 directions, 50 constant load.

UL according to standard 873

Weight

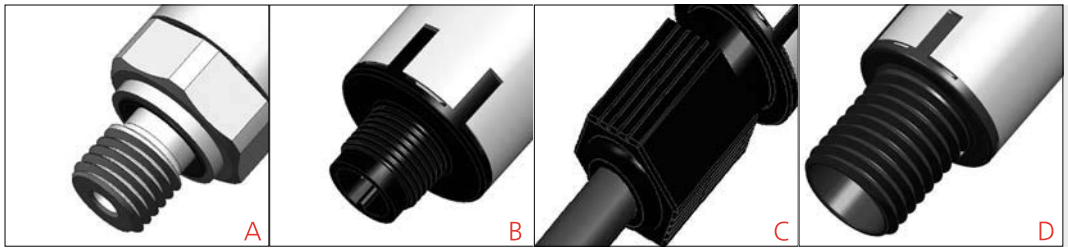
Version inside thread	approx. 85 g
Version outside thread	approx. 95 g

Packaging

Please state on order

Single packaging
in cardboard, accessories integrated

Multiple packaging
in cardboard (25 pcs)



Versions

A – Outside thread G 1/4
B – Connector M12x1
C – Cable 1.5 m
D – Quickon

Accuracy

Parameter		Unit	
Tolerance zero point	max.	% fs	± 0.3
Tolerance full scale	max.	% fs	± 0.3
Resolution		% fs	± 0.5
Total of linearity, hysteresis and repeatability	max.	% fs	± 0.3
Long term stability acc. to DIN EN 60770		% fs	± 1.0
TC zero point *)	max.	% fs/10 K	± 0.15
TC sensitivity *)	max.	% fs/10 K	± 0.15

*) TC = Temperature coefficient

Test conditions:
25 °C, 45% rF, Power supply 24 VDC
TC0 / TCE -40 … +125 °C

Order code selection table in bar

				511.	X	X	X	X	X	X	X	X	X	X
Pressure mode	Relative pressure				9									
	Absolute pressure				8									
Pressure range [1]	-1… + 0 bar				9	0	0							
	0 … + 1 bar					1	1							
	0 … + 1.6 bar					1	2							
	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				9	3	3						2,4	
	0 … + 60 bar				9	4	0						2,4	
	0 … + 100 bar				9	4	1						2,4,5	
	0 … + 160 bar				9	4	2						2,4,5	
	0 … + 250 bar	not free of oil and grease			9	4	3						2,5	
	0 … + 250 bar	free of oil and grease [2]	FPM spez. seal only		9	4	4	6					4	
	0 … + 400 bar	free of oil and grease [2]	FPM spez. seal only		9	5	3	6					4	
	0 … + 400 bar	not free of oil and grease	FPM spez. seal only		9	5	4	6					2,5	
	0 … + 600 bar	not free of oil and grease	FPM spez. seal only		9	5	5	6					2,5	
	▲ Full scale signale at these pressures													
Sealing material [3]	FPM	Fluoro-elastomer	-15 … +125 °C					0						
	EPDM	Ethylene propylene	-25 … +125 °C					1						
	NBR	Butadiene Acrylonitrile	-25 … +85 °C					2						
	FPM spec.	Fluoro-elastomer spec.	-40 … +150 °C					6						
Adjustment [4]	factory-set								0					
Output and power supply	0 … 5 V	8.0 … 33.0 VDC	3-wire							1				
	1 … 6 V	8.0 … 33.0 VDC	3-wire							6				
	0 … 10 V	11.4… 33.0 VDC	3-wire							2				
	0 … 5 V	8.0 … 33.0 VDC	3-wire [5]							F	5			
	1 … 6 V	8.0 … 33.0 VDC	3-wire [5]							G	5			
	0 … 10 V	11.4… 33.0 VDC	3-wire [5]							H	5			
	0 … 10 V	24 VAC ±15%	3-wire *							7	1			
	4 … 20 mA	8.0 … 33.0 VDC	2-wire							3				
	0.5 … 4.5 V ratiom.	5 VDC (4.75 … 5.25)	3-wire							4				
	*only with Quickon- and cable version													
Electrical connections	Cable 1.5 m		IP 67 max. 85 °C								0			
	Quickon including cable screwing		IP 67 max. 85 °C								1			
	Connector AMP (without female connector)		IP 67 max. 125 °C								2			
	Connector M12x1, plastic thread (without female connector)		IP 67 max. 85 °C								5			
	Connector M12x1, metal thread (without female connector)		IP 67 max. 85 °C								7			
	Connector Mini-DIN K		IP 65 max. 85 °C								8			
	Connector Mini-DIN W		IP 65 max. 85 °C								9			
Pressure connection [6]	Inside thread	G 1/4 with O-ring sealing										1		
	Outside thread	G 1/4 sealed at back, DIN 3852/E										4		
	Outside thread	1/4 -18 NPT										3		
	Outside thread	R 1/4 DIN 2999										7		
	Outside thread	M12x1.5 sealed at back, DIN 3852/E										5		
	Outside thread	M14x1.5 sealed at back, DIN 3852/E										6		
Version	Stainless steel without media stopper												1	
	Stainless steel with media stopper (standard from ≥ 40 bar on)												2	
	Stainless steel without media stopper, free of oil and grease, only seal FPM spez.							6					3	
	Stainless steel with media stopper (standard from ≥ 40 bar on), free of oil and grease, only seal FPM spez.							6					4	
	Stainless steel with pressure tip orifice (from 100 bar)												5	
Pressure range variation	Indicate W and state switching points on order (e.g.: 0 … 12 bar / Out 0 … 10 V)													W

Order code selection table in psi					511.	X	X	X	X	X	X	X	X	X	X
Pressure mode	Relative pressure					9									
	Absolute pressure					8									
Pressure range [1]	-30 … + 0 hg					9	A	0							
	0 … + 15 psi						B	1							
	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					9	C	3						2,4	
	0 … + 750 psi					9	D	0						2,4	
	0 … + 1000 psi					9	D	1						2,4,5	
	0 … + 2000 psi					9	D	2						2,4,5	
	0 … + 3000 psi	not free of oil and grease				9	D	4	6					2.5	
	0 … + 3000 psi	free of pil and grease [2]		FPM spez. seal only		9	D	4	6					4	
	0 … + 5000 psi	free of pil and grease [2]		FPM spez. seal only		9	E	3	6					4	
	0 … + 5000 psi	not free of oil and grease		FPM spez. seal only		9	E	4	6					2,5	
	0 … + 7500 psi	not free of oil and grease		FPM spez. seal only		9	E	5	6					2,5	
	▲ Full scale signale at these pressures														
Sealing material [3]	FPM	Fluoro-elastomer		-15 … +125 °C					0						
	EPDM	Ethylene propylene		-25 … +125 °C					1						
	NBR	Butadiene Acrylonitrile		-25 … +85 °C					2						
	FPM spec.	Fluoro-elastomer spec.		-40 … +150 °C					6						
Adjustment [4]	factory-set									0					
Output and power supply	0 … 5 V	8.0 … 33.0 VDC		3-wire							1				
	1 … 6 V	8.0 … 33.0 VDC		3-wire							6				
	0 … 10 V	11.4… 33.0 VDC		3-wire							2				
	0 … 5 V	8.0 … 33.0 VDC		3-wire [5]							F	5			
	1 … 6 V	8.0 … 33.0 VDC		3-wire [5]							G	5			
	0 … 10 V	11.4… 33.0 VDC		3-wire [5]							H	5			
	0 … 10 V	24 VAC ±15%		3-wire *							7	1			
	4 … 20 mA	8.0 … 33.0 VDC		2-wire							3				
	0.5 … 4.5 V ratiom.	5 VDC (4.75 … 5.25)		3-wire							4				
	*only with Quickon- and cable version														
Electrical connections	Cable 1.5 m			IP 67 max. 85 °C								0			
	Quickon including cable screwing			IP 67 max. 85 °C								1			
	Connector AMP (without female connector)			IP 67 max. 125 °C								2			
	Connector M12x1, plastic thread (without female connector)			IP 67 max. 85 °C								5			
	Connector M12x1, metal thread (without female connector)			IP 67 max. 85 °C								7			
	Connector Mini-DIN K			IP 65 max. 85 °C								8			
	Connector Mini-DIN W			IP 65 max. 85 °C								9			
Pressure connection [6]	Inside thread			G 1/4 with O-ring sealing								1			
	Outside thread	G 1/4 sealed at back, DIN 3852/E											4		
	Outside thread	1/4 -18 NPT											3		
	Outside thread	R 1/4 DIN 2999											7		
	Outside thread	M12x1.5 sealed at back, DIN 3852/E											5		
	Outside thread	M14x1.5 sealed at back, DIN 3852/E											6		
Version	Stainless steel without media stopper													1	
	Stainless steel with media stopper (standard from ≥ 500 psi on)													2	
	Stainless steel without media stopper, free of oil and grease, only seal FPM spez.								6					3	
	Stainless steel with media stopper (standard from ≥ 500 psi on), free of oil and grease, only seal FPM spez.								6					4	
	Stainless steel with pressure tip orifice (from 1000 psi bar)													5	
Pressure range variation	Indicate W and state switching points on order (e.g.: 0 … 800 psi / Out 0 … 10 V)														W

Order code selection table in MPa

				511.	X	X	X	X	X	X	X	X	X	X
Pressure mode	Relative pressure				9									
	Absolute pressure				8									
Pressure range [1]	-0.1…+ 0 MPa				9	F	0							
	0 … + 0.1 MPa					G	1							
	0 … +0.16 MPa					G	2							
	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 … + 4MPa				9	H	3						2,4	
	0 … + 6 MPa				9	K	0						2,4	
	0 … + 10 MPa				9	K	1						2,4,5	
	0 … + 16 MPa				9	K	2						2,4,5	
	0 … + 25 MPa	not free of oil and grease			9	K	3						2,5	
	0 … + 25 MPa	free of pil and grease [2]	FPM spez. seal only		9	K	4	6					4	
	0 … + 40 MPa	free of pil and grease [2]	FPM spez. seal only		9	L	3	6					4	
	0 … + 40 MPa	not free of oil and grease	FPM spez. seal only		9	L	4	6					2,5	
	0 … + 60 MPa	not free of oil and grease	FPM spez. seal only		9	L	5	6					2,5	
	▲ Full scale signale at these pressures													
Sealing material [3]	FPM	Fluoro-elastomer	-15 … +125 °C					0						
	EPDM	Ethylene propylene	-25 … +125 °C					1						
	NBR	Butadiene Acrylonitrile	-25 … +85 °C					2						
	FPM spec.	Fluoro-elastomer spec.	-40 … +150 °C					6						
Adjustment [4]	factory-set								0					
Output and power supply	0 … 5 V	8.0 … 33.0 VDC	3-wire							1				
	1 … 6 V	8.0 … 33.0 VDC	3-wire							6				
	0 … 10 V	11.4… 33.0 VDC	3-wire							2				
	0 … 5 V	8.0 … 33.0 VDC	3-wire [5]							F	5			
	1 … 6 V	8.0 … 33.0 VDC	3-wire [5]							G	5			
	0 … 10 V	11.4… 33.0 VDC	3-wire [5]							H	5			
	0 … 10 V	24 VAC ±15%	3-wire *							7	1			
	4 … 20 mA	8.0 … 33.0 VDC	2-wire							3				
	0.5 … 4.5 V ratiom.	5 VDC (4.75 … 5.25)	3-wire							4				
	*only with Quickon- and cable version													
Electrical connections	Cable 1.5 m		IP 67 max. 85 °C								0			
	Quickon including cable screwing		IP 67 max. 85 °C								1			
	Connector AMP (without female connector)		IP 67 max. 125 °C								2			
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	Connector Mini-DIN W		IP 65 max. 85 °C								9			
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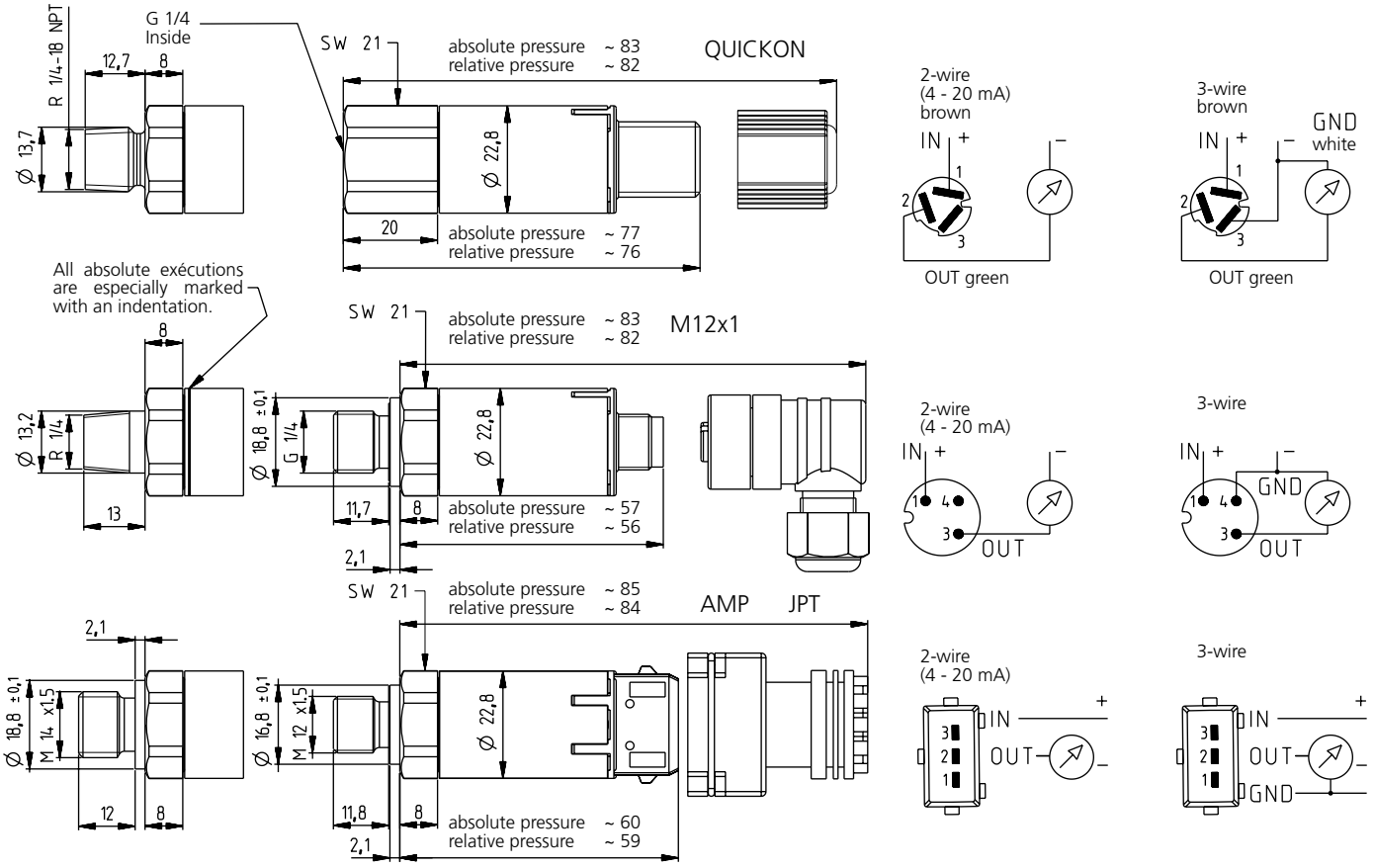
	Outside thread	G 1/4 sealed at back, DIN 3852/E										4		
	Outside thread	1/4 -18 NPT										3		
	Outside thread	R 1/4 DIN 2999										7		
	Outside thread	M12x1.5 sealed at back, DIN 3852/E										5		
	Outside thread	M14x1.5 sealed at back, DIN 3852/E										6		
Version	Stainless steel without media stopper												1	
	Stainless steel with media stopper (standard from ≥ 4 MPa on)												2	
	Stainless steel without media stopper, free of oil and grease, only seal FPM spez.							6					3	
	Stainless steel with media stopper (standard from ≥ 4 MPa on), free of oil and grease, only seal FPM spez.							6					4	
	Stainless steel with pressure tip orifice (from ≥ 10 MPa)												5	
Pressure range variation	Indicate W and state switching points on order (e.g.: 0 … 1.2 MPa / Out 0 … 10 V)													W

Accessories

		Order number
Female connector for connector M12x1	(not included in delivery)	106975
Female connector AMP (Junior Power Timer) 2-wire	(not included in delivery)	110442
Female connector AMP (Junior Power Timer) 3-wire	(not included in delivery)	108767
Quickon cable screwing	(included in delivery)	107359

[1] Other pressure ranges on request
[2] Until 85 °C Medium and Ambient temperature only
[3] According to ISO standard R 1629, other sealing materials on request
[4] Adjustment in psi on request
[5] With M12x1 plastic or metal thread only
[6] Other pressure connections and materials on request



Electromagnetic compatibility

CE conformity according EN 61326-2-3.