

CCP-P-200



- electronic pressure switch
- nominal pressure: from 0...100 mbar up to 0...600 bar
- 1 or 2 independent PNP contacts, freely configurable
- output signals: 2-wire: 4...20 mA; 3-wire: 0/4...20 mA / 0...10 V
- stainless steel sensor
- accuracy 0.35 % / 0.25 % span
- indication of measured values on a 4-digit LED display
- rotatable and configurable display module
- option: pressure sensor welded

The electronic pressure switch **CCP-P-200** is the successful combination of intelligent pressure switch and digital display and has been specially designed for numerous applications in various industrial sectors.

As standard the CCP-P-200 offers a PNP contact and a rotatable display module with 4-digit LED display. Optional versions like e.g. an analogue output complete the profile.

PREFERRED AREAS OF USE ARE



Plant and Machine Engineering



Heating and Air Conditioning

Environmental Engineering
(water – sewage – recycling)

TECHNICAL DATA

Input pressure range												
Nominal pressure gauge ¹	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Level gauge ¹	[mH ₂ O]	-	1	1.6	2.5	4	6	10	16	25	40	60
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge ¹ / abs.	[bar]	10	16	25	40	60	100	160	250	400	600
Level gauge ¹	[mH ₂ O]	100	160	250	400	600	-	-	-	-	-
Overpressure	[bar]	40	80	80	105	210	210	600	1000	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	420	1000	1250	1250	1250
Vacuum resistance	P _N ≥ 1 bar: unlimited vacuum resistance; P _N < 1 bar: on request										

¹ from 60 bar: measurement starts with ambient pressure

Contact ²	
Standard	1 PNP contact
Options	2 independent PNP contacts
Max. switching current	4 ... 20 mA / 2- and 3-wire: contact rating 125 mA, short-circuit resistant; V _{switch} = V _S - 2V 0 ... 10 V / 3-wire: contact rating 125 mA, short-circuit resistant
Accuracy of contacts ³	standard: P _N < 0.4 bar: ≤ ± 0.5 % span P _N ≥ 0.4 bar: ≤ ± 0.35 % span option: P _N ≥ 0.4 bar: ≤ ± 0.25 % span
Repeatability	± 0.1 % span
Switching frequency	max. 10 Hz
Switching cycles	> 100 x 10 ⁶
Delay time	0 ... 100 sec

² max. 1 contact for 2-wire current signal with plug ISO 4400

no contact possible with 3-wire in combination with plug ISO 4400

³ accuracy according to EN IEC 62828-2 – limit point adjustment (non-linearity, hysteresis, repeatability)

Analogue output (optionally) / Supply	
2-wire current signal	4 ... 20 mA / V _S = 13 ... 36 V _{DC} permissible load: R _{max} = [(V _S - V _{S min}) / 0.02 A] W response time: < 10 msec
3-wire current signal	4 ... 20 mA / V _S = 19 ... 30 V _{DC} adjustable (turn-down of span 5:1) ⁴ permissible load: R _{max} = 500 W response time: < 3 sec
3-wire voltage signal	0 ... 10 V / V _S = 15 ... 36 V _{DC} permissible load: R _{min} = 10 kW response time: < 3 msec
without analogue output	V _S = 15 ... 36 V _{DC}
Accuracy ³	standard: P _N < 0.4 bar: ≤ ± 0.5 % span; P _N ≥ 0.4 bar: ≤ ± 0.35 %span option: P _N ≥ 0.4 bar: ≤ ± 0.25 % span

⁴ with turn-down of span the analogue signal is adjusted automatically to the new measuring range

Thermal effects (O set and Span)			
Nominal pressure P _N	[bar]	-1 ... 0	< 0.40 ≥ 0.40
Tolerance band	[% span]	≤ ± 0.75	≤ ± 1 ≤ ± 0.75
in compensated range	[°C]	-20 ... 85	0 ... 70 -20 ... 85
Permissible temperatures			
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °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 (25 ... 2000 Hz) according to DIN EN 60068-2-6		
Shock	500 g / 1 msec according to DIN EN 60068-2-27		
Materials			
Pressure port	stainless steel 1.4404 (316 L)		
Housing	stainless steel 1.4404 (316 L)		
Display housing	PA 6.6, polycarbonate		
Seals (media wetted)	standard: FKM option: NBR; welded version ⁵ others on request		
Diaphragm	stainless steel 1.4435 (316 L)		
Media wetted parts	pressure port, seals, diaphragm		
⁵ welded version only for pressure ports according to EN 837; possible for nominal pressure ranges P _N ≤ 40 bar			
Miscellaneous			
Display	4-digit, red 7-segment-LED display, digit height 7 mm, range of indication -1999 ... +9999; accuracy 0.1 % ± 1 digit; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)		
Current consumption (without contacts)	2-wire signal output current: max. 25 mA 3-wire signal output current: approx. 45 mA + signal current 3-wire signal output voltage: approx. 45 mA		
Ingress protection	IP 65		
Installation position	any ⁷		
Weight	min. 160 g (depending on mechanical connection)		
Operational life	> 100 x 10 ⁶ cycles		
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁸		
⁷ Pressure switches are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges P _N ≤ 1 bar.			
⁸ This directive is only valid for devices with maximum permissible overpressure > 200 bar			

ELECTRICAL CONNECTION

Wiring diagrams

2-wire-system (current)

Diagram illustrating the wiring for a 2-wire system (current). The pressure switch has terminals p, supply +, supply -, contact 1, and contact 2. The supply + terminal is connected to the positive terminal of the voltage source Vs. The supply - terminal is connected to a load resistor RL, which is then connected to the positive terminal of Vs. The contact 1 terminal is connected to another load resistor RL, which is then connected to the negative terminal of Vs. The contact 2 terminal is connected to the negative terminal of Vs. The current I flows through the load resistors.

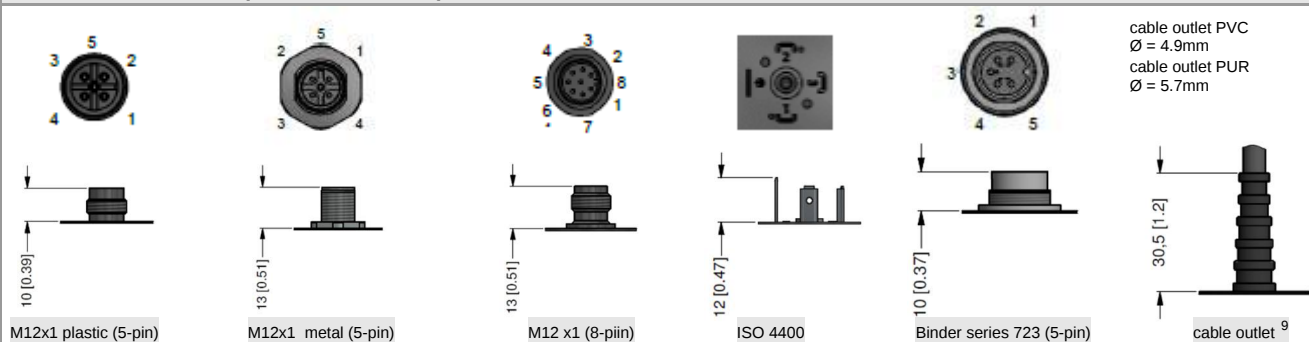
3-wire-system (current / voltage)

Diagram illustrating the wiring for a 3-wire system (current / voltage). The pressure switch has terminals p, supply +, supply -, signal +, contact 1, contact 2, contact 3, and contact 4. The supply + terminal is connected to the positive terminal of the voltage source Vs. The supply - terminal is connected to the negative terminal of Vs. The signal + terminal is connected to an A/V (amplifier/voltage) block. The contact 1 terminal is connected to a load resistor RL, which is then connected to the positive terminal of Vs. The contact 2 terminal is connected to another load resistor RL, which is then connected to the positive terminal of Vs. The contact 3 terminal is connected to a third load resistor RL, which is then connected to the positive terminal of Vs. The contact 4 terminal is connected to a fourth load resistor RL, which is then connected to the negative terminal of Vs. The current I/U flows through the load resistors.

Pin configuration						
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	cable colours (DIN 47100)
Supply +	1	1	1	1	1	wh (white)
Supply -	3	3	3	2	3	bn (brown)
Signal + (only 3-wire)	2	2	2	3	2	gn (green)
Contact 1	4	4	4	3	4	gy (grey)
Contact 2	5	5	5	-	5	pk (pink)
Contact 3	-	-	6	-	-	-
Contact 4	-	-	7	-	-	-
Shield	via pressure port	plug housing/ pressure port	via pressure port	ground contact	plug housing/ pressure port	ye/gn (yellow/green)



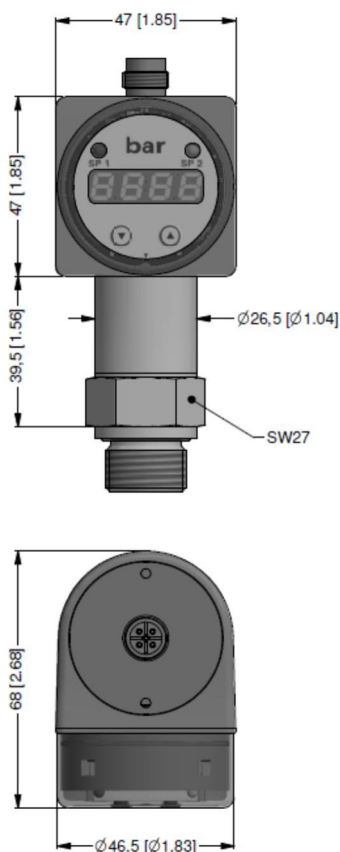
Electrical connections (dimensions in mm)



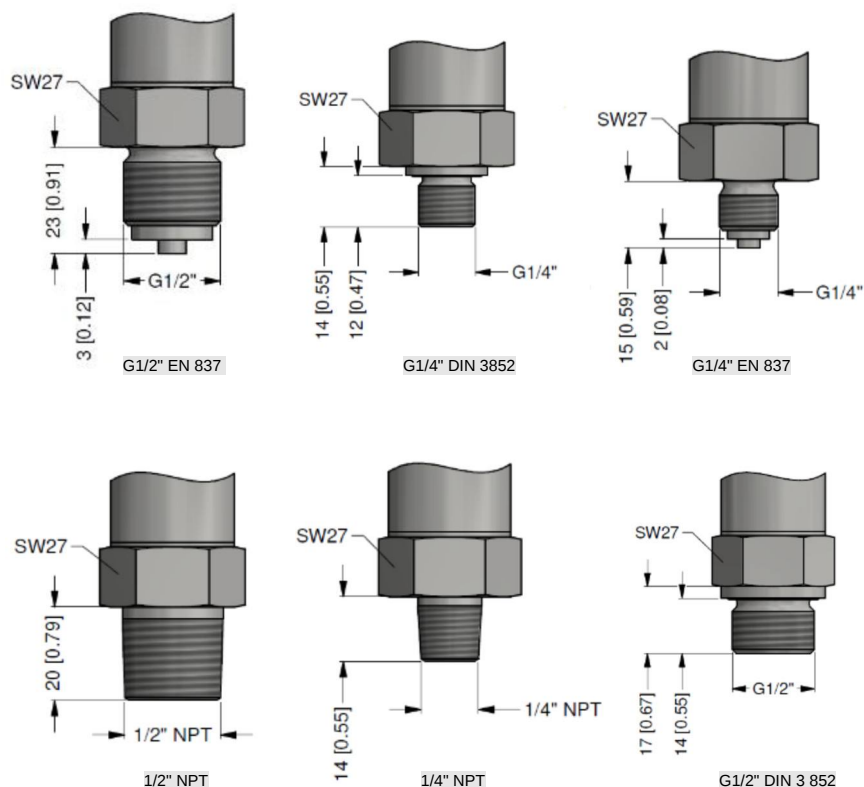
⁹ different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

DIMENSION DRAWINGS

standard

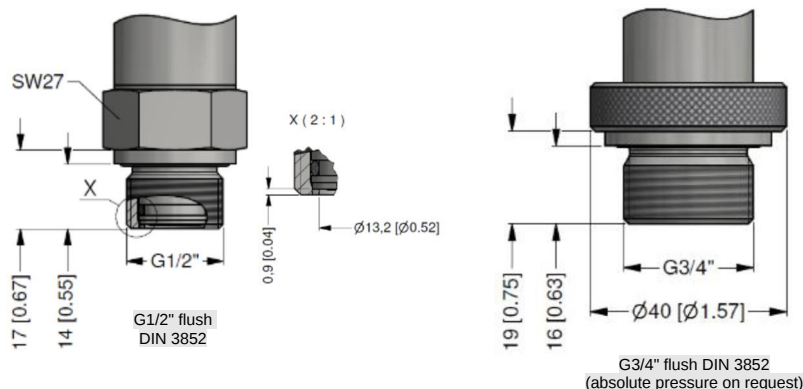
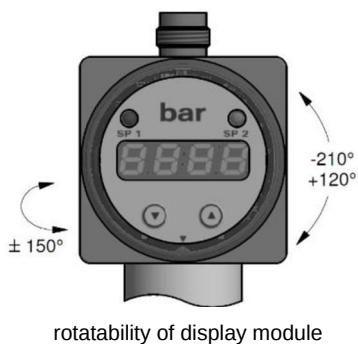


optionally



for nominal pressure $P_N > 400$ bar increases the length of devices by 19 mm

optionally for P_N from 0.1 up to 40 bar



metric threads and other versions on request

ORDER CODE

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Pressure												
Gauge ¹	7	8	0									
Absolute ²	7	8	1									
Input [bar]												
0 ... 0,1 ²				1	0	0	0					
0 ... 0,16 ²				1	6	0	0					
0 ... 0,25 ²				2	5	0	0					
0 ... 0,4				4	0	0	0					
0 ... 0,6				6	0	0	0					
0 ... 1				1	0	0	1					
0 ... 1,6				1	6	0	1					
0 ... 2,5				2	5	0	1					
0 ... 4				4	0	0	1					
0 ... 6				6	0	0	1					
0 ... 10				1	0	0	2					
0 ... 16				1	6	0	2					
0 ... 25				2	5	0	2					
0 ... 40				4	0	0	2					
0 ... 60				6	0	0	2					
0 ... 100				1	0	0	3					
0 ... 160				1	6	0	3					
0 ... 250				2	5	0	3					
0 ... 400				4	0	0	3					
0 ... 600				6	0	0	3					
-1 ... 0				X	1	0	2					
Customer				9	9	9	9					
Customer - underpressure				X	X	X	X					
Electrical output / Analog output												
4 ... 20 mA / 2-wire							1					
0 ... 20 mA / 3-wire							2					
0 ... 10 V / 3-wire							3					
4 ... 20 mA / 3-wire							7					
Customer							9					
Contact												
Without switching contact							0					
1 switching contact (version 3-wire only with 5-pin connector) ³							1					
2 switching contacts (only with 5-pin connector) ³							2					
Accuracy												
0,5 % (P _N ≤ 0,4 bar)							5					
0,35 % (P _N > 0,4 bar)							3					
0,25 % (P _N > 0,4 bar)							2					
0,5 % including Calibration Certificate (P _N ≤ 0,4 bar)							T					
0,35 % including Calibration Certificate (P _N > 0,4 bar)							S					
0,25 % including Calibration Certificate (P _N > 0,4 bar)							R					
Table of measured values for accuracy 0,5 %							N					
Table of measured values for accuracy 0,35 %							M					
Customer							9					
Electrical connection												
Connector DIN 43650 (ISO 4400) (IP 65) ³							1	0	0			
Cable gland PG7 / cable length specify (IP 65)							4	0	0			
+ PVC cable / 1 m												
Connector M 12 x 1 (5-pin) (IP 65)							N	0	1			
Connector M 12 x 1 (5-pin) (IP 65) - metal							N	1	1			
Connector Binder 723 7-pin (IP 65)							A	0	0			
Customer							9	9	9			



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Mechanical connection									
G 1/2" DIN 3852	1	0	0						
G 1/2" EN 837	2	0	0						
G 1/4" DIN 3852	3	0	0						
G 1/4" EN 837	4	0	0						
M 20 x 1,5 DIN 3852	5	0	0						
M 12 x 1 DIN 3852	6	0	0						
M 10 x 1 DIN 3852	7	0	0						
M 20 x 1,5 EN 837	8	0	0						
M 12 x 1,5 DIN 3852	C	0	0						
G 1/2" DIN 3852 with flush sensor diaphragm ⁴	F	0	0						
G 3/4" DIN 3852 with flush sensor diaphragm ⁴	K	0	0						
1/2" NPT	N	0	0						
1/4" NPT	N	4	0						
Customer	9	9	9						
Seals									
Viton (FKM) (P _N ≤ 40 bar)				1					
Without seals - welded (only with EN 837) ⁵				2					
EPDM (P _N < 160 bar)				3					
NBR (P _N > 40 bar)				5					
Customer				9					
Special version									
Standard							0	0	0
Customer							9	9	9

- 1 - from 60 bar: measurement starts with ambient pressure
- 2 - absolute pressure possible from 0.4 bar
- 3 - with connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible
- 4 - not possible for nominal pressure P_N > 40 bar; for G3/4" flush nominal pressure abs. on request
- 5 - welded version only with pressure ports according to EN 837; possible for nominal pressure ranges P_N ≤ 40 bar

Manufacturer reserves the right to change sensor specifications without further notice.

