

Pressure transmitter/Pressure switch PASCAL CS

with threaded connection

Type series CS2100



Application area

- General process engineering
- General process technology
- Chemical and petrochemical industry

Features

- Multifunctional pressure transmitter/pressure switch
- Degree of protection IP 65
- 4 digit LED display, can be mirror-imaged by 180°
- Indication module rotatable by 300°
- Measuring ranges
 - 0...100 mbar to 0...400 bar rel.
 - 0...1 bar to 0...6 bar abs.
- Output signal 4...20 mA, 2-wire technology
- Accuracy $\leq 0,2 \%$
- Easy to program locally (as per VDMA standard)
- Galvanic isolation between transmitter and switching outputs
- Various process connections

Options

- Approvals / Certificates
 - Material certificate as per EN 10204-3.1
 - Calibration certificate as per EN 10204-3.1
- As per UKCA regulations
- 2 floating contacts
- Switching contacts with high switching current (1A)
- Degree of protection IP 67

Application

The pressure transmitter/pressure switch PASCAL CS is suited for measuring the relative and absolute pressures of gases, vapors and liquids. The multifunctional PASCAL CS displays the measurement; outputs a current signal proportional to the pressure. It has two optional contacts.

Technical data

Constructional design / case

Design:	Sturdy case design Fully encapsulated electronics unit
Material:	Stainless steel mat.-no. 1.4301 (304) Indication module: macrolon
Degree of protection per EN 60529:	■ IP 65 ■ Optional IP 67
Pressure compensation:	Aeration via sintered filter
Electrical connection:	■ circular connector M12, 4 pin ■ circular connector M12, 8 pin (necessary for devices with switch function) Incl. sealing ring to ensure case is completely sealed
Climatic category:	4K4H per EN 60721 3-4

Process connection

Design:	See order details
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Material wetted parts

Sensor :	Piezoresistive	Thin film
Sensor dia-phragm:	1.4404/1.4435 (316L)	1.4542 (630)
Socket:	1.4404/1.4435 (316L)	1.4301/1.4404 (304/316L)

Measuring system

Sensor:	Piezoresistive	Thin film
Sensor filling:	Synthetic oil, free of silicone FD1, FDA listed	Without

Measuring ranges / overload limits

Measuring range / overload limit:	See order details
Vakuum tightness:	Long term vacuum measurements < 100 mbar abs at relative measurement ranges can alter the device characteristics. (piezoresistive measuring system, only)

For information on definitions of terms regarding the Pressure Equipment Directive, see Technical Instruction TA_068.

Zero settings

Zero point:	Easy zero setting max. $\pm 20\%$.
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Accuracy

Limit point setting:	per DIN 16086
Accuracy (Lin./Hyst./Repr.):	0.2 % v. of mr (mr ≥ 250 mbar) 0.5 mbar (mr < 250 mbar)
Long-term drift:	$\leq 0.1\%$ / year per EN 61298-1
Temperature influence:	<u>Range:</u> 0...50 °C: $\leq 0.25\%$ of mr (mr ≥ 400 mbar) $\leq 0.4\%$ of mr (mr < 400 mbar) $\leq 0.5\%$ of mr (mr < 160 mbar) <u>Range:</u> -20...0 and 50...85 °C: $\leq 0.4\%$ of mr (mr ≥ 400 mbar) $\leq 0.6\%$ of mr (mr < 400 mbar) $\leq 0.8\%$ of mr (mr < 160 mbar) mr = measuring range

Indication

Type:	4 digit, red LED with 7 segments
Digit high:	8.5 mm
Resolution:	-9999...9999 digit
Accuracy:	$\pm 0,2\% \pm 1$ digit
Temperature-influence:	$\pm 0,1\%/10K$
Alignment:	Can be rotated through 300°, Can be mirror-imaged by 180° when installed upside down
Indication:	Visual confirmation for operator when a button is pressed
Decimal point:	Automatic setting depending on measuring range/unit, max. 3 decimal places Or manual setting 0...3 decimal places

Indication automatically changing from measurement value to measurement unit or indication of unit or value per key-stroke.

Measuring unit:	bar, mbar, PSI, kPa, MPa, %, mA
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Output

Signal:	4...20 mA , 2-wire technology
Sampling rate:	10 measurements / second
Current range:	3.8...20.8 mA
Resolution:	2 μ A
Current limitation:	≤ 22 mA
Alarm state:	< 3.6 mA
Load, R:	$R \leq (U-14V)/0.02$ A [Ω] U = supply voltage

Switching output (option)

Type:	2 floating contacts with common ground (low side NPN) or common power supply (high side PNP)
Switching capacity:	200 mA, short-circuit-proof Optional 1 A
Switching status:	breakers or makers, programmable, device off circuit: open contact
Switching function:	window / hysteresis, programmable
Setting range:	within range limits
Hysteresis:	within range limits
Switching delay:	0,0...999.9 s
Repeat accuracy:	0.2 % of full-scale value
Temperature influence:	± 0.1 % / 10K
Galvanic isolation:	between transmitter and outputs
Switching cycles:	> 10 millions
Voltage drop:	< 1 V (< 1.5 V, if current is > 100 mA)
Output state indicator:	red LED per switching output
Parameterisation:	3-key parameterisation

Supply voltage

Functional range:	14...30 V DC
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Temperature ranges

Ambient:	-20...85 °C
Media:	-20...100 °C
Storage:	-40...85 °C

Tests and certificates

EMC:	EMC directives 2014/30/EU
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Mounting information

Mounting position:	At choice
Calibration position:	Vertical

Parameterisation

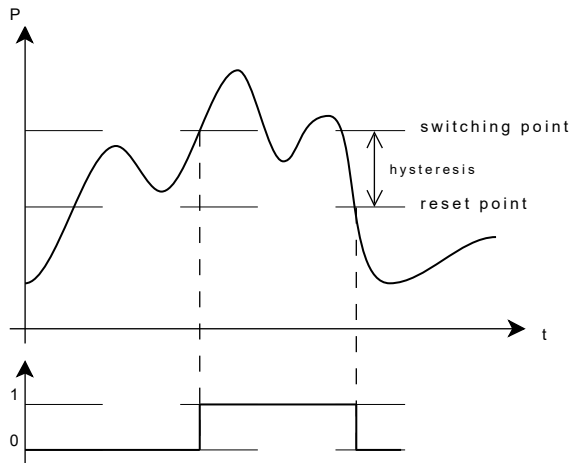
The following parameters can be assigned via 3 keys:

Parameter	Values						
unit	Bar, mbar, PSI, kPa, MPa, %, mA						
pressure trimming	Zero						
min/max-value	between upper range and lower range value, resettable						
display time for measurement	1.0...99.9 s						
display time for unit	0.0...99.9 s						
display rotation	0° / 180° (when installed upside down)						
decimal point	automatic, manual 0...3 decimal places						
switching function	<table><tr><td>hysteresis function</td><td>window function</td></tr><tr><td>breakers</td><td>breakers</td></tr><tr><td>makers</td><td>makers</td></tr></table>	hysteresis function	window function	breakers	breakers	makers	makers
hysteresis function	window function						
breakers	breakers						
makers	makers						
switching point	between upper range value and reset point						
reset point	between lower range value and switching point						
ON delay	0.0...999.9 s						
OFF delay	0.0...999.9 s						

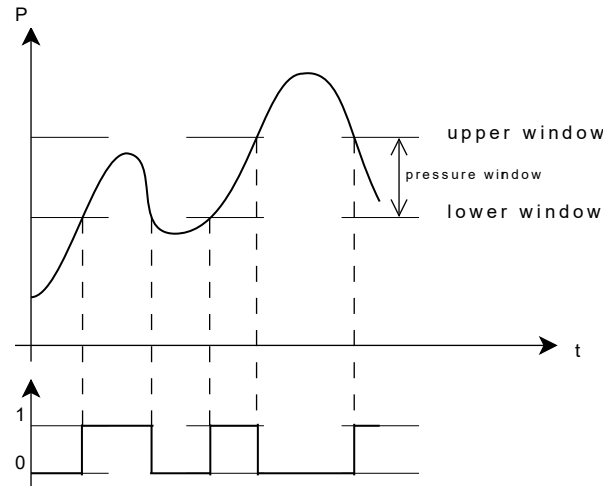
Parameterisation see operating instruction BA_060.

Hysteresis functions

Hysteresis function

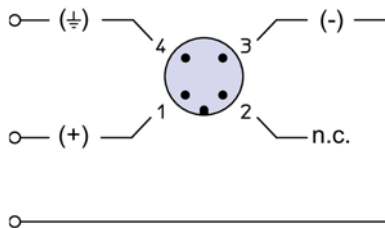


Window function

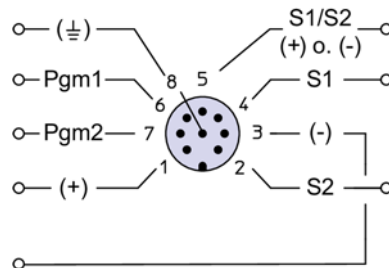


Connection diagram

4-pin connector



8-pin connector (for switching outputs)

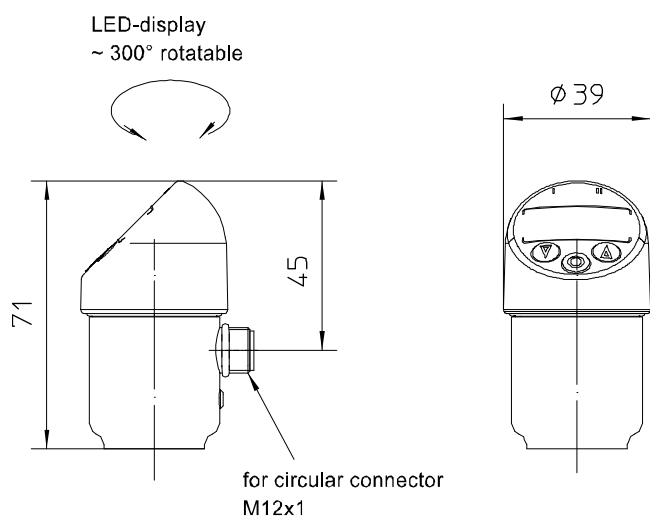


Explanations

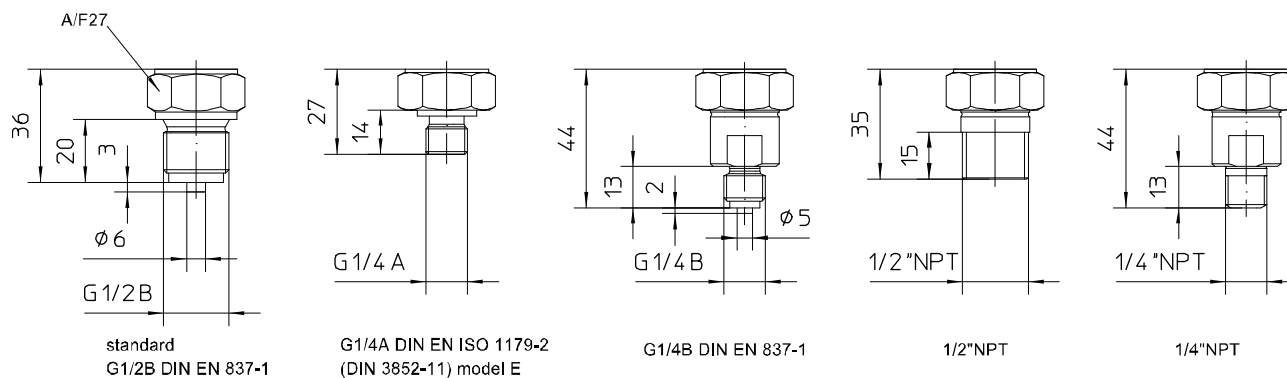
(+)	plus-side of supply
(-)	minus-side of supply
n.c.	not connected
S1/S2	common pin of switching outputs (see below)
S1	switching output 1
S2	switching output 2
Pgm 1/2	programming pins

Dimensions

Case

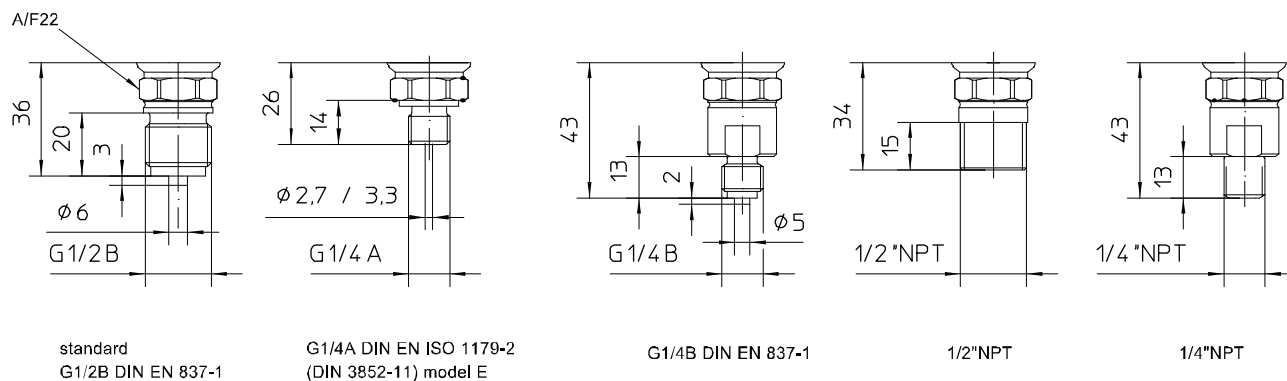


Process connections piezoresistive, internal diaphragm



All dimensions are in mm

Process connections thin film, internal diaphragm



All dimensions are in mm

Order details

Pressure transmitter PASCAL CS with threaded connection					
CS2100		Pressure transmitter PASCAL CS with threaded connection			
		measuring range	overload limit	type of sensor	
A1008	measuring range	0...100 mbar	1 bar	piezoresistive	
A1009		0...160 mbar	1 bar		
A1010		0...250 mbar	3 bar		
A1011		0...400 mbar	3 bar		
A1012		0...600 mbar	3 bar		
A1053		0...1 bar	10 bar		
A1054		0...1,6 bar	10 bar		
A1055		0...2,5 bar	10 bar		
A1056		0...4 bar	20 bar		
A1057		0...6 bar	20 bar		
A1058		0...10 bar	100 bar		
A1059		0...16 bar	100 bar		
A1060		0...25 bar	100 bar		
A1061		0...40 bar	100 bar		
A3062		0...60 bar	200 bar	thin film	
A3063		0...100 bar	200 bar		
A3064.5		0...160 bar	200 bar		
A3065.5		0...250 bar	500 bar		
A3066.5		0...400 bar	500 bar		
A1025		-100...0 mbar	1 bar	piezoresistive	
A1026		-160...0 mbar	1 bar		
A1027		-250...0 mbar	3 bar		
A1028		-400...0 mbar	3 bar		
A1552		-600...0 mbar	3 bar		
A1086		-1...0 bar	10 bar		
A1087		-1...0,6 bar	10 bar		
A1088		-1...1,5 bar	10 bar		
A1089		-1...3 bar	20 bar		
A1090		-1...5 bar	20 bar		
A1091		-1...9 bar	100 bar		
A1092		-1...15 bar	100 bar		
A1093		-1...24 bar	100 bar		
B1053		0...1 bar abs	10 bar		
B1054		0...1,6 bar abs	10 bar		
B1055		0...2,5 bar abs	10 bar		
B1056		0...4 bar abs	20 bar		
B1057		0...6 bar abs	20 bar		
A9999		variants as in writing			
H11	output signal	4...20 mA, 2-wire technology			
N10	switching output	without			
N70		2 floating contacts	with common ground (NPN) switching capacity 30 V DC, 200 mA		
N70.1			with common power ground (NPN) switching capacity 30 V DC, 1 A		
N71			with common power supply (PNP) switching capacity 30 V DC, 200 mA		
N71.1			with common power supply (PNP) switching capacity 30 V DC, 1 A		
T30	electrical connection	circular connector M12	4-pin		
T31			8-pin ¹		
K1002	process connection material stainless steel	internal diaphragm	G1/4 B per EN 837-1		
K1010			G1/2 B per EN 837-1		
K1024			G1/4 A per DIN EN ISO 1179-2 (DIN 3852-11) Form E		
K1070			1/2" NPT		
K1072			1/4" NPT		

Additional features (to be indicated if required)		
F2	parametrisation	as in writing
T1	degree of protection	IP 67
W1020	material certificate	per EN 10204-3.1, wetted parts (stainless steel) ²
W2660	As per UKCA regulations	

Order code (example): CS2100 - A1056 - H11 - N70 - T30 - K1070 - ...

¹ Needed with contacts.

² Only for piezoresistive measuring systems.