



Features

- Multifunctional pressure transmitter/pressure switch
- Hygienic case with no notches or indentations
- 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...40 bar rel. 0...1 bar to 0...6 bar abs
- Output signal 4...20 mA, 2-wire technology
- Accuracy: ≤ 0.2 %
- Easy to program locally (as per VDM Standard)
- Galvanic isolation between transmitter and switching outputs
- Various process connections with flush mounted diaphragm

Options

- Parameterization via PC software for devices with contact available
- 2 floating contacts
- Switching contacts with high switching current (1A)
- Hygienic design
- Inspection certificates
 - material certificate per DIN EN 10204-3.1
 - calibration certificate per DIN EN 10204-3.1
 - roughness height rating
- Wetted parts electropolished
- Electrical connection rotatable by 300°
- Degree of protection IP 67

Application area

- Food industry
- Pharmaceutical industry
- Biotechnology

Technical data

Case design

Design	hygienic case design, fully encapsulated electronics unit
Material	case stainless steel mat.-no. 1.4301 (304) indication module macrolon
Pressure compensation	aeration via sintered filter
Degree of protection	IP 65 per EN 60529, optional IP 67
Climatic category	DIN EN 60721 3-4, 4K4H
Electrical connection	· circular connector M12, 4 pin · circular connector M12, 8 pin (needed with contacts option) incl. sealing-ring to ensure case is completely sealed

Output signal

Output signal	4...20 mA, 2-wire technology
Sampling rate	10 measurements / second
Current range	3.8...20.8 mA
Resolution	2 µA
Current limitation	≤ 22 mA
Load	$R \leq \frac{U_B - 14 V}{22 mA}$ Ohm

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.

Accuracy

Limit point setting	per DIN 16086
Linearity, hysteresis, repeatability	0.2 % of measuring range

Temperature effect

a) case	
range 0.....50 °C	≤ 0.25 % of mr (mr ≥ 400 mbar) ≤ 0.4 % of mr (mr ≤ 250 mbar) ≤ 0.5 % of mr (mr = 100 mbar)
range -20...0 and 50...85 °C	≤ 0.4 % of mr (mr ≥ 400 mbar) ≤ 0.6 % of mr (mr ≤ 250 mbar) ≤ 0.8 % of mr (mr = 100 mbar)

b) process connection (zero error)

DN 25/1"	= 4.8 mbar/10K
DN 32/1 1/2"	= 2.3 mbar/10K
DN 40	= 1.6 mbar/10K
DN 50/2"	= 0.6 mbar/10K

Long-term drift	≤ 0.1 % /year per EN 61298-1
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Indication

Type	4 digit, red LED with 7 segments
Digit height	8.5 mm
Resolution	-9999..9999 digit
Accuracy	± 0.2 % ± 1 digit
Temperature influence	± 0.1 % / 10 f.s.
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 keystroke.	
Measuring unit	bar/mbar, PSI, kPa, MPa, %, mA

Supply

Function range	14...30 VDC
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Measuring ranges/overload limits

Measuring ranges and overload limits see order code.
Vacuum tightness at < 50 °C is 20 mbar abs.
Continuous, long-term vacuum measurements at temperatures above +50 °C can alter the device characteristics.

Zero setting

Easy zero setting max. ± 20 %.

Process connection

Variants / material	see order code
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Hygienic design

As per EHEDG guidelines.
Surface formation of wetted parts $R_a \leq 0,8 \mu\text{m}$.

Measuring system

Sensor	piezoresistive measuring element
System filling	foodstuff oil FD1 (NSF-H1) as per FDA

Temperature range

Ambient temperature	-20...85 °C
Process temperature	-20...125 °C short term to 140 °C, 1 h option up to 160 °C ¹
Storage temperature	-40...85 °C

¹ other process temperatures upon request

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 window / hysteresis, programmable within range limits
Switching function	within range limits
Setting range	within range limits
Hysteresis	0.0...999.9 s
Switching delay	0.2 % of full-scale value
Repeat accuracy	between transmitter and outputs
Galvanic isolation	> 10 millions
Switching cycles	< 1 V (< 1.5 V, if current is > 100 mA)
Voltage drop	red LED per switching output
Output state indicator	3-key parameterization or via PC software
Parameterization	

Test

EMC directive	EMV 2004/108/EG
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Mounting information

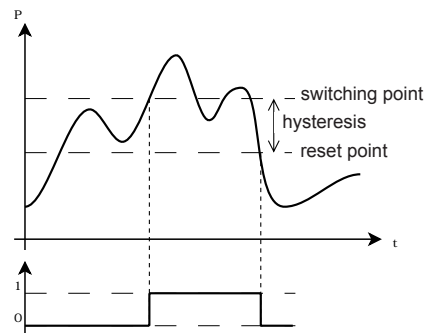
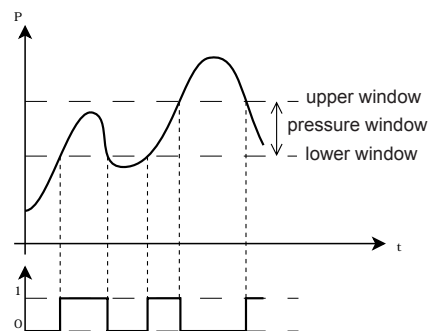
mounting position	at choice
calibration position	vertical

Parameterizing

The following parameters can be assigned with COMLINE.S software and via 3 keys:

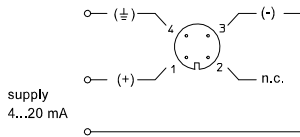
Parameter	Values	
unit	bar, mbar, PSI, %, kPa, MPa, %, mA	
pressure trimming	set zero point at 0 bar	
min/max-value	between upper range and lower range value, resettable	
display time for measurement	1.0...99.9 s	
display time for unit	0.0 ...99.9 s	
display rotation	0° / 180° (when installed upside down)	
decimal point	automatic, manual 0...3 decimal places	
contacts	2	
switching function	hysteresis function - breakers - makers	window function - breakers - 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	

Parameterization see operating instruction BTA-060

Hysteresis function**Window function**

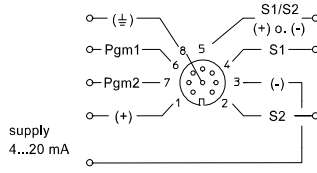
Connection diagram

output signal 4...20 mA
circular connector M12x1
4-pole



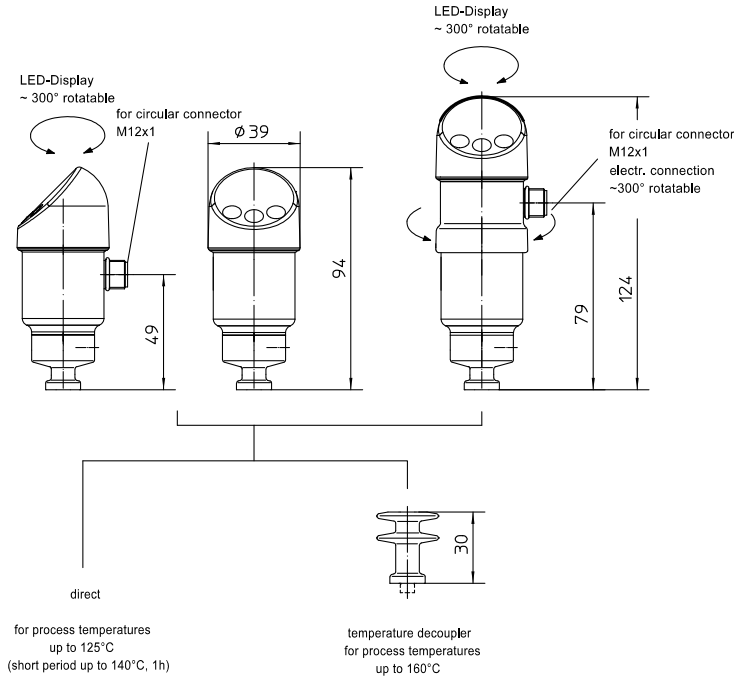
output signal 4...20 mA with 2 switching outputs

circular connector M12x1
8-pole

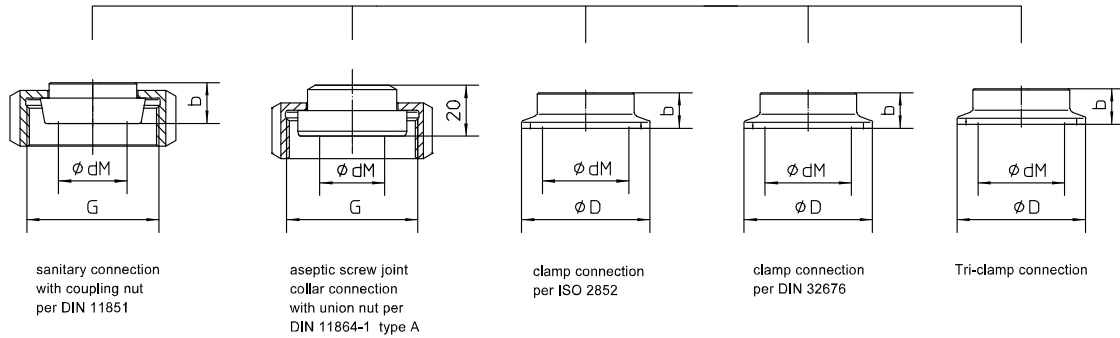


Examples see operating instruction BTA-060.

Dimensions



Process connections



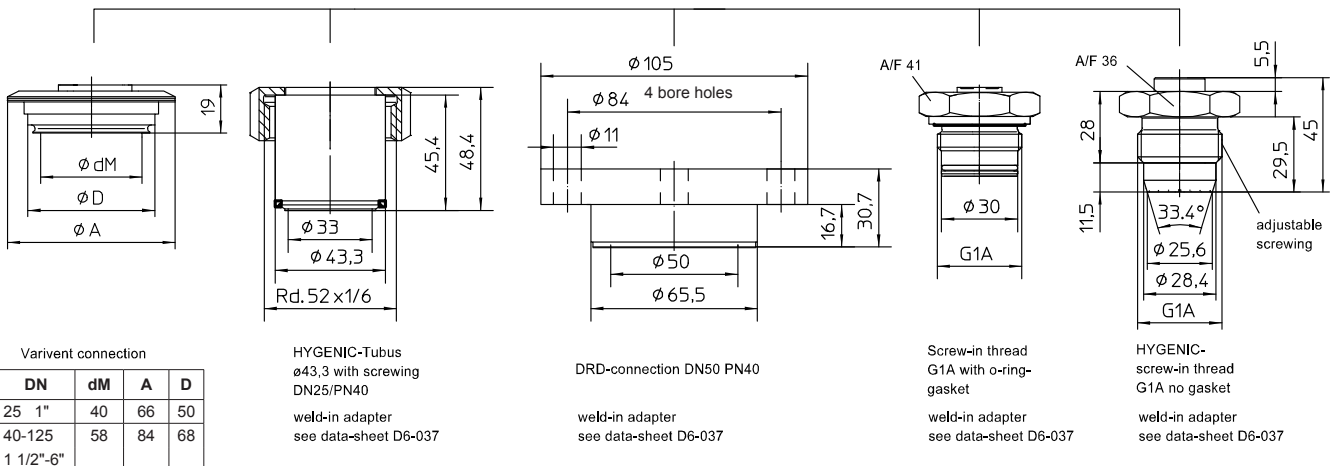
DN	PN	dM	b	G
25	40	27	16	Rd.52x1/6"
32	40	36	16	Rd.58x1/6"
40	40	40	16	Rd.65x1/6"
50	25	51	17	Rd.78x1/6"

DN	PN	dM	G
25	40	24	Rd.52x1/6"
32	40	30	Rd.58x1/6"
40	40	34	Rd.65x1/6"
50	25	48	Rd.78x1/6"

DN/Zoll	PN	ØdM	ØD	b
25 1"	16	22,6	50,5	14
38 1 1/2"	16	34	50,5	12
51 2"	16	46	64	14

DN	PN	ØdM	ØD	b
25	16	22,6	50,5	14
32	16	30	50,5	14
40	16	34	50,5	12
50	16	46	64	14

DN	PN	ØdM	ØD	b
3/4"	16	15	25	15
1"	16	22,6	50,5	15
1 1/2"	16	34	50,5	12
2"	16	46	64	14



Varivent connection

DN	dM	A	D
25 1"	40	66	50
40-125	58	84	68
1 1/2"-6"			

HYGENIC-Tubus
ø43,3 with screwing
DN25/PN40
weld-in adapter
see data-sheet D6-037

DRD-connection DN50 PN40
weld-in adapter
see data-sheet D6-037

Screw-in thread
G1A with o-ring-
gasket
weld-in adapter
see data-sheet D6-037

HYGENIC-
screw-in thread
G1A no gasket
weld-in adapter
see data-sheet D6-037

Order Details - please give additional specifications for models not listed -

Pressure transmitter PASCAL CS for food/pharmaceutical/biotechnology		CS2110	
surface roughness	· standard		
	· hygienic version as per EHEDG guidelines		HY
measuring ranges	measuring ranges overload limits (bar)		
	· 0...100 mbar	1	A1008
	· 0...160 mbar	1	A1009
	· 0...250 mbar	3	A1010
	· 0...400 mbar	3	A1011
	· 0...600 mbar	3	A1012
	· 0...1 bar	10	A1053
	· 0...1.6 bar	10	A1054
	· 0...2.5 bar	10	A1055
	· 0...4 bar	20	A1056
	· 0...6 bar	20	A1057
	· 0...10 bar	100	A1058
	· 0...16 bar	100	A1059
	· 0...25 bar	100	A1060
	· 0...40 bar	100	A1061
	· -100...0 mbar	1	A1025
	· -160...0 mbar	1	A1026
	· -250...0 mbar	3	A1027
	· -400...0 mbar	3	A1028
	· -600...0 mbar	3	A1552
	· -1...0 bar	10	A1086
	· -1...0.6 bar	10	A1087
	· -1...1.5 bar	10	A1088
	· -1...3 bar	20	A1089
	· -1...5 bar	20	A1090
	· -1...9 bar	100	A1091
	· -1...15 bar	100	A1092
	· -1...24 bar	100	A1093
	· 0...1 bar abs	10	B1053
	· 0...1.6 bar abs	10	B1054
	· 0...2.5 bar abs	10	B1055
· 0...4 bar abs	20	B1056	
· 0...6 bar abs	20	B1057	
	variant as in writing		A9999
output signal	· 4...20 mA, 2-wire technology		H11
	· without		N10
switching output	2 floating contacts	· with common ground (NPN) switching capacity 30 V DC, 200 mA	N70
		· with common ground (NPN) switching capacity 30 V DC, 1A	N70.1
		· with common power supply (PNP) switching capacity 30 V DC, 200 mA	N71
		· with common power supply (PNP) switching capacity 30 V DC, 1 A	N71.1
electrical connection	· circular connector M12	· 4 pin	T30
		· 8 pin 1	T31
design	· standard (process temperatures up to 125 °C, short term up to 140 °C)		K1085
	· with temperature decoupler (process temperatures up to 160 °C)		K2085
process connection material stainless steel mat.-no. 1.4404/1.4435 (316L)	sanitary connection with groove union nut according DIN 11851	· DN 25	K102
		· DN 32	K103
		· DN 40	K104
		· DN 50	K105
	collar connection with union nut per DIN 11864-1 type A	· DN 25	K162
		· DN 32	K163
		· DN 40	K165
		· DN 50	K166
	clamp connection per ISO 2852	· DN 1"	K124
		· DN 1 1/2"	K126
		· DN 2"	K127
		· DN 3/4"	K134
	Tri-Clamp	· DN 1"	K136
		· DN 1 1/2"	K137
		· DN 2"	K138
		· DN 25	K144
clamp connection per DIN 32676	· DN 32	K146	
	· DN 40	K147	
	· DN 50	K148	
	· D = 50 for Varivent DN 25 and 1"	K152	
Varivent	· D = 68 for Varivent DN 40, DN 125, 1 1/2...6"	K153	
	HYGIENIC Tubus · Ø 43.3 mm DN 25/PN 40	K172	
DRD-connection	· nominal width DN 50 / nominal pressure PN 40	K185	
screw-in thread	· G1A with O-ring gasket	K195	
	· HYGIENIC G1A, hygienic sealing (no elastomer), 1.4436 (316)	K80	
diaphragm seals see product group D5		K999	
additional features (to be indicated in case of need, only)			
parameterization as in writing			F2
electrical connection continuously rotatable by 300°			R88
degree of protection IP 67			T1
material certificate per DIN EN 10204-3.1, wetted parts (stainless steel)			W1020
order code (example):	CS2110	A1056	H11 N70 T30 K1085 K103
accessories			
programming kit (software COMLINE.S and USB interface)	MC1610		