Pressure transmitter COMPACT

for diaphragm seal operation, robust

Type series CC60 . . . .

Features

- Measuring ranges 0...250 mbar up to 0...400 bar
- Linearity error including hysteresis ≤ 0.2 % f.s.
- Piezoresistive measuring system
- Separating foil from stainless steel or special materials
- Completely encapsulated electronics
- Stainless steel housing as standard or field housing
- Degree of protection IP 65, IP 67 option
- Variuous output signals
- Process temperature up to 200 °C

Options

- Labom REconnect quick coupling device for easy and safe diaphragm seal systems, Type series MK1000, see data sheet D6-022
- Explosion protection for gases
- Classification per SIL 2
- As per UKCA regulations
- Inspection certificate: material certificate as per EN 10204-3.1

Application area

· Chemical industry
· Petrochemical industry

Application

The pressure transmitter COMPACT acts as a highly accurate converter of pressure measurements to load-independent current signals. Because of various variants of process connections and materials these transmitters are especially suited for pressure measurement with aggressive, highly viscous, solidifying or crystallizing media.The completely welded stainless steel housing can be designed up to protection type IP 67. The use of temperature decouplers means that the COMPACT pressure transmitter can be used for process temperatures up to 200 °C.

Technical Data

Case design
Designs
· field housing IP 65 or IP 67, with cable gland
· right-angle plug per DIN EN 175301-803-A (DIN 43650 Form A), IP 65
· cable connection, IP 67
· circular connector M12, IP 65
case material stainless steel
union nut: polyamide (with plug connector or cable connection for electr. connection)
electronics encapsulated with silicone.
Inner chamber aeration for measuring ranges < 16 bar over case thread or connection cable (depending on design)

Process connection
see page 3 and order code for variants
material-Nr.: 1.4404 (316L) for the sleeves

Temperature ranges
ambient temperature range: -25...+70 °C
option: -40...85 °C

storage temperature range: -10...+90 °C

process temperature: see order details

Measuring ranges/overrange limits
see order details
intermediate measuring ranges upon request

Response time
≤ 20 ms

Measuring accuracy
linearity error incl. hysteresis:
≤ 0.2 % f.s.
≤ 0.3 % f.s. for measuring ranges ≤ 0...60 bar
fixed-point adjustment accuracy of adjustment:
<± 0.2 % f.s.

Temperature effect
a) case
in compensated temperature range 0...50 °C:
- zero point ≤ 0.2 %/10 K
- span ≤ 0.2 %/10 K

in compensated temperature range -40...0 °C and 50...85 °C
- typical 0.3 %/10 K
- max. 0.3 %/10 K

b) process connection (diaphragm seal) depending on design

flat diaphragm	seal zero error
DN 25/1"	4.8 mbar/10 K
DN 32/1 1/2"	2.3 mbar/10 K
DN 40	1.6 mbar/10 K
DN 50/2"	0.6 mbar/10 K
inline diaphragm	seal zero error
DN 25/1"	9.5 mbar/10 K
DN 32/1 1/2"	4.1 mbar/10 K
DN 40	3.9 mbar/10 K
DN 50/2"	3.9 mbar/10 K

The specified zero error for the process connection is a guide value for a standard design. We can provide a detailed system calculation upon request. Systems with reduced diaphragm seal errors are also available.

Auxiliary energy supply
standard design:
· nominal voltage 24 V DC
· function range 6...30 V DC
· max. allowable operating voltage 30 V DC

Supply voltage influence
≤ 0.01 % f.s. / V

Output signal
4...20 mA, 2-wire technology
0...20 mA, 3-wire technology
4...20 mA, 3-wire technology
0...10 V, 3-wire technology

Current limitation in output signal
max. output current approx. 30 mA

Adjusting range
approx. ± 5 % f.s.; zero point and measuring span separately adjustable

Burden
2-wire circuitry
standard design $R_a = \frac{U_B - 6\ V}{20\ mA}$ (KOhm)
U_B= operating voltage
R_a= max. permissible burden resistance (incl. lead)

Functional safety
EN 61508, classification per SIL 2,
TÜV-Reg.-No. 44 799 13190204

Burden influence
for 500 ohm burden change: ≤ 0.1 % f.s.

Ex-approval
ATEX:
TÜV 00 ATEX 1557 X
marking:

⟨Ex⟩ II 2 G EEx ib IIC T6
· U_{max} ≤ 30 V DC
· I_{max} ≤ 150 mA
· P_{max} ≤ 1 W
· Ci ≤ 49 nF
· Li ≤ 33 µH

Further technical data see Ex-instruction XA_006.

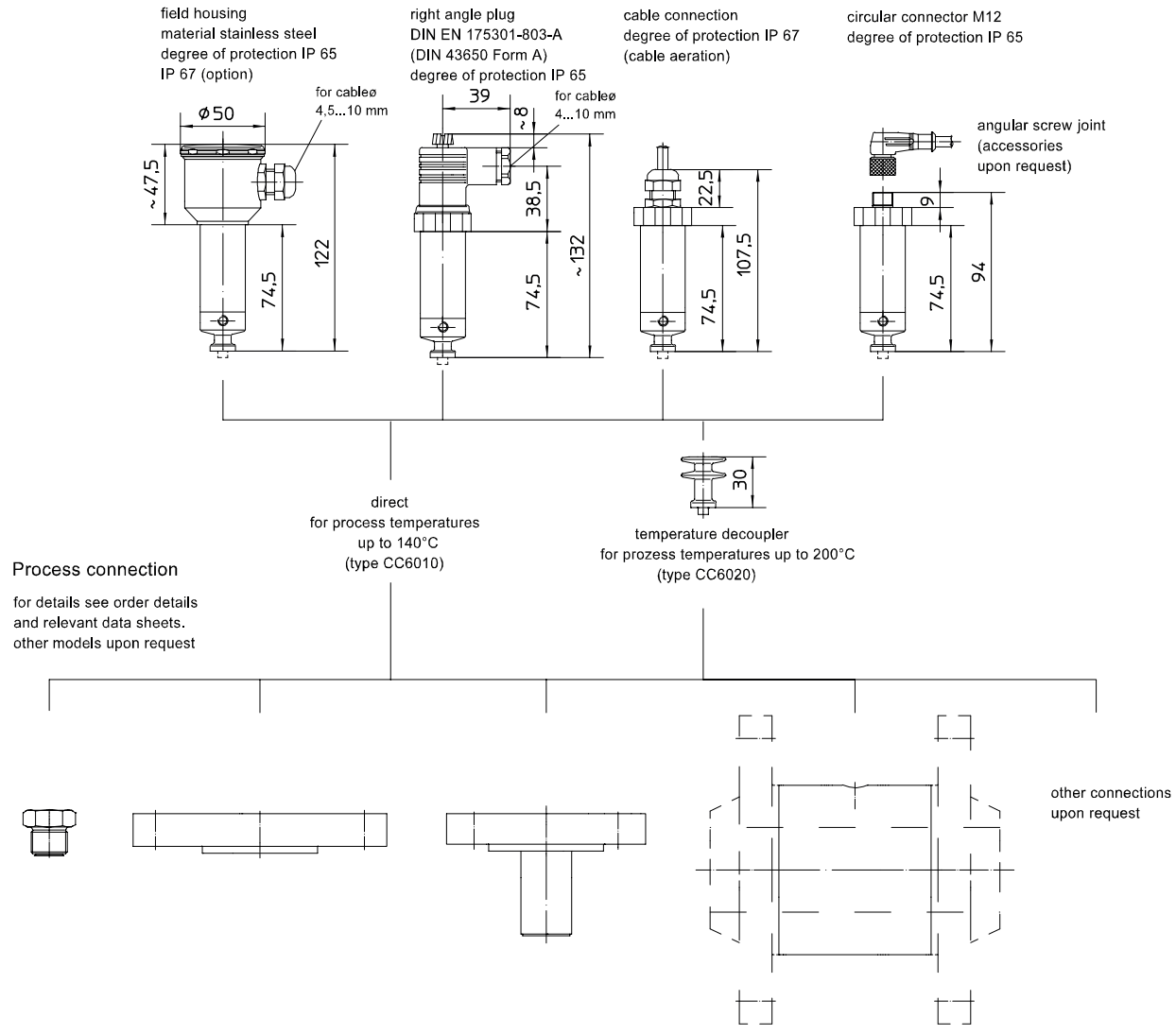
Weights (without diaphragm seal)
· field housing: approx. 460 g
· case with connector: approx. 200 g

Installation position
any

EMC test
· noise immunity according to EN 50082 section 2, version March 1995 issue for industry
· emitted interference according to EN 50081section 1, 1993 issue for residential and industrial areas

Device emits no radiation of its own

Dimensions



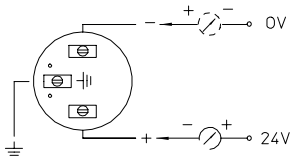
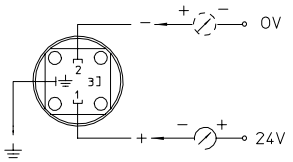
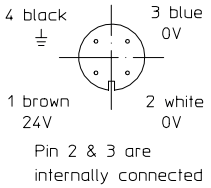
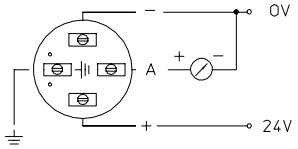
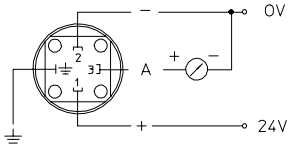
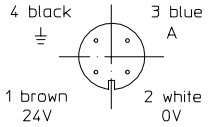
screw-in thread
with flush mounted
diaphragm
G1/2...G2A
data sheet D5-032

flange connection
per DIN or ASME
with flush mounted
diaphragm
DN25...DN125
DN 1" ... DN3"
data sheet D5-030

flange connection
per DIN or ASME
with extended diaphragm
DN25...DN125
DN 1" ... DN3"
data sheet D5-031

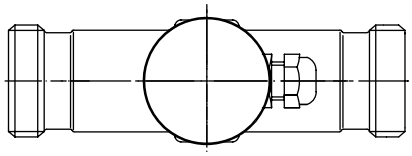
inline flange connection
per DIN or ASME
DN25...DN150
DN 1" ... DN6"
data sheet D5-039

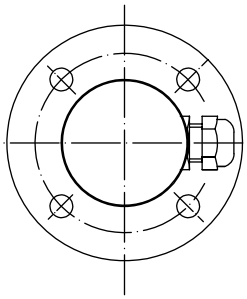
Connection diagram

	field housing	right-angle plug	cable connection	circular connector M12
2-wire connection			brown + supply white ⏚ ground green – supply	
3-wire connection			brown + supply white ⏚ ground green – supply black A output	

Pin 2 & 3 are internally connected

Standard position of el. connections.
Pls. specify different position.





Order details

Pressure transmitter COMPACT for diaphragm seal operation, robust							
design	· for process temperature to + 140 °C [1]					CC601.	
	· for process temperature to + 200 °C					CC602.	
Ex protection	· without					0	
	· ⟨Ex⟩ II 2G EEx ib IIC T6					1	
measuring range	meas. range	overload limit (bar)	sensor type				
	0...250 mbar [2]	1	piezoresistive				A1010
	0...400 mbar	3					A1011
	0...0,6 bar	3					A1052
	0...1 bar	3					A1053
	0...1.6 bar	10					A1054
	0...2.5 bar	10					A1055
	0...4 bar	20					A1056
	0...6 bar	60					A1057
	0...10 bar	60					A1058
	0...16 bar	60					A1059
	0...25 bar	60					A1060
	0...40 bar	100					A1061
	0...60 bar	200					A1062
	0...100 bar	200					A1063
	0...160 bar	600	thin film				A3064
	0...250 bar	600					A3065
	0...400 bar	600					A3066
	0...600 bar [1, 3]	900					A3068
	0...1050 bar [1, 3]	1050					A3620
	-250...0 mbar [2]	1	piezoresistive				A1027
	-400...0 mbar [2]	3					A1028
	-0,6...0 bar [4]	3					A1085
	-1...0 bar [4]	3					A1086
	-1...0.6 bar [4]	10					A1087
	-1...1.5 bar [4]	10					A1088
	-1...3 bar [4]	20					A1089
	-1...5 bar [4]	20					A1090
	-1...9 bar [4]	60					A1091
	-1...15 bar [4]	60					A1092
	0...1 bar abs	3					B1053
	0...1.6 bar abs	10					B1054
	0...2.5 bar abs	10					B1055
	0...4 bar abs	10					B1056
	0...6 bar abs	60					B1057
	0...10 bar abs	60					B1058
	measuring range as in writing						A9999
output signal: 4...20 mA, 2-wire technology							H1
case electrical connections	field housing of stainless steel, with cable gland	· IP 65, measuring ranges ≤ 16 bar, only [5]					T410
		· IP 67					T420
	right angle plug according to DIN EN 175301-803-A (DIN 43650 Form A), IP 65						T110
	cable connection IP 67	· 2 m cable length					T310
		· 5 m cable length					T311
		· 10 m cable length					T312
		· cable length as in writing					T319
	circular connector M12, IP 65 [6]						T120

continued next page

[1] measuring range ≥ 600 bar only available with type series CC6010 and with a max. medium temperature up to 85 °C

[2] low pressure ranges with increased temperature influence (zero point and span): max. = 0.4 %/10K

[3] only available with process connection DD8050 (see data sheet D5-042-1)

[4] negative relative pressure ranges (e.g. -1...+1 bar) are adjusted at works to 0...100%, e.g. 4...20mA.
Long-term vacuum measurements at temperatures above +50°C may cause changes in the properties of the measurement device.
Vacuum-proof designs are available upon request.

[5] not valid for absolute pressure

[6] plug connector with cable see product group D6 (accessories)

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

process connection	screw-in thread	· G 3/4 A								DE1280
		· G 1 A								DE1380
		· G 1 1/2 A								DE1580
		· G 2 A								DE1680
	flange	sealing surface EN 1092-1 Form B1 (DIN 2526 Form C/D)								DA1 . . .
		sealing surface form B2 (form E), incase of special diaphragm material								DA2 . . .
		DIN	· DN 25, PN 10/40							. . . 120
			· DN 25, PN 64/100							. . . 150
			· DN 50, PN 10/40							. . . 420
			· DN 50, PN 64							. . . 430
			· DN 80, PN 10/40							. . . 620
			· further DN/PN upon request							
		sealing surface ASME B16.5 RF125 - 250 AA								DA51 . . .
		sealing surface ASME B16.5 RFSF, erforderlich bei Sonder-Membranmaterial								DA5 . . .
		ASME	· DN 1", PN 150 psi							110
			· DN 1", PN 300 psi							120
			· DN 2", PN 150 psi							310
			· DN 2", PN 300 psi							320
			· DN 3", PN 150 psi							510
			· DN 3", PN 300 psi							520
			· further DN/PN upon request							
process connection	flange with diaphragm extension (trunk type design)	sealing surface EN 1092-1 form B1 (DIN 2526 form C/D)	· DN 25, PN 10-40							DB1120
			· DN 50, PN 25-40							DB1420
			· DN 80, PN 10-40							DB1620
			· DN 100, PN 10-16							DB1710
			· DN 100, PN 25-40							DB1720
			· DN 125, PN 10-16							DB1810
			· DN 125, PN 25-40							DB1820
		sealing surface ASME B16.5 RFSF	· DN 1", PN 300 psi							DB5120
			· DN 2", PN 300 psi							DB5320
			· DN 3", PN 150 psi							DB5510
			· DN 3", PN 300 psi							DB5520
			· DN 4", PN 150 psi							DB5610
			· DN 4", PN 300 psi							DB5620
	inline diaphragm seal (cell type)	EN 1092-1 with plain sealing surface, form B2	· DN 25							DP2180
			· DN 40							DP2380
			· DN 50							DP2480
			· DN 65							DP2580
			· DN 80							DP2680
			· DN 100							DP2780
			· DN 125							DP2880
			· DN 150							DP2980
			· weitere Nennweiten und Druckstufen auf Anfrage							
		ASME with plain sealing surface ASME B16.5 RF500 RFSF	· DN 1"							DP6180
			· DN 1 1/2"							DP6280
			· DN 2"							DP6380
			· DN 2 1/2"							DP6480
			· DN 3"							DP6580
			· DN 4"							DP6680
			· DN 5"							DP6780
			· DN 6"							DP6880
			· weitere Nennweiten und Druckstufen auf Anfrage							
wetted parts [1]	· stainless steel material no. 1.4404/1.4435 (316 L)									A4001
	· stainless steel material no. 1.4435 (316 L)									A4007
	· Tantalum									A4002
	· Hastelloy C276									A4003
	· other materials upon request									A4009
system filling [3]	liquid filling		operating temperature range							
	· foodstuff oil FD1, standard		-10...+140 °C							L22
	· foodstuff oil FD1, pls. specify temperature, max.		-10...+200 °C							L23
	other liquids upon request									
immersion [4] length L	· 60 mm standard at ≥ DN 80 (3")									F1
	· 100 mm standard at ≤ DN 65 (2 1/2")									F2
length of trunk [2] material no. 1.4571 (316 Ti)	· h = 50 mm									F1
	· h = 100 mm									F2
	· h = 150 mm									F3
	· h = 200 mm									F4
	· h (mm): special length									F9

additional features upon request (to be indecate in case of need, only)

ambient temperature -40...85 °C [5]	U11
materials certificate acc. to EN 10204-3.1, wetted parts (stainless steel)	W1020
functional safety per EN 61508, classification per SIL2	W2602
as per UKCA regulations	W2660
diaphragm seal electropolished	W4035

example:	pressure transmitter	CC6011	A1058	H1	T410					
	process connection					DA1420	A4001	L22		

[1] standard stainless steel mat. no. 1.4404 (316L), special material upon request
[2] to be specified for flange with trunk-type design, only
[3] for ideal system design the exact operating temperature should be specified
[4] for inline diaphragm seal (cell type), only
[5] not for Ex design and not in combination with SIL2