

Pressure transmitter COMPACT

for diaphragm seal operation, hygienic

Type series CC60 . . -F



SIL2



Application area

- Food industry
- Pharmaceutical industry
- Biotechnology

Features

- Measuring ranges 0...250 mbar up to 0...100 bar
- Linearity error including hysteresis <+ 0.2 % f.s.
- Piezoresistive measuring system
- Hygienic design according to EHEDG, FDA und GMP recommendations
- Material and surface quality according to the hygienic requirements
- Wetted parts of stainless steel; completely welded
- Stainless steel housing as standard or field housing
- Degree of protection IP 65, IP 67 option
- Various output signals
- Process temperature up to 200 °C

Options

- Explosion protection for gases
- Classification per SIL 2
- Inspection certificate: material certificate as per EN 10204-3.1

Application

The pressure transmitter COMPACT acts as a highly accurate converter of pressure measurements to load-independent current signals (4...20 mA, for example). Special attention has been given to a hygienic design. 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 next page or order code for variants
material-Nr.: 1.4404 (316L) for the sleeves

Temperature ranges

ambient temperature range: -25...+70 °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 in the rated temperature range 0...50°C

a) case

- zero point < 0.2 %/10 K f.s.
- span < 0.2 %/10 K f.s.

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

standard design $R_a = \frac{U_a - 6 V}{20 \text{ mA}}$ (KOhm)
 $U_b =$ operating voltage
 $R_a =$ max. permissible burden resistance (incl. lead)

Burden influence

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

Functional safety

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

Ex-approval

CENELEC approval according to ATEX
TÜV 00 ATEX 1557 X

marking:

 II 2 G Ex ib IIC T6 Gb

- U_{max} ≤ 30 V DC
- I_{max} ≤ 150 mA
- P_{max} ≤ 1 W
- Ci_{max} ≤ 49 nF
- Li ≤ 33 μH

Weights (without diaphragm seal)

- field housing: approx. 460 g
- case with connector: approx. 200 g

Installation position

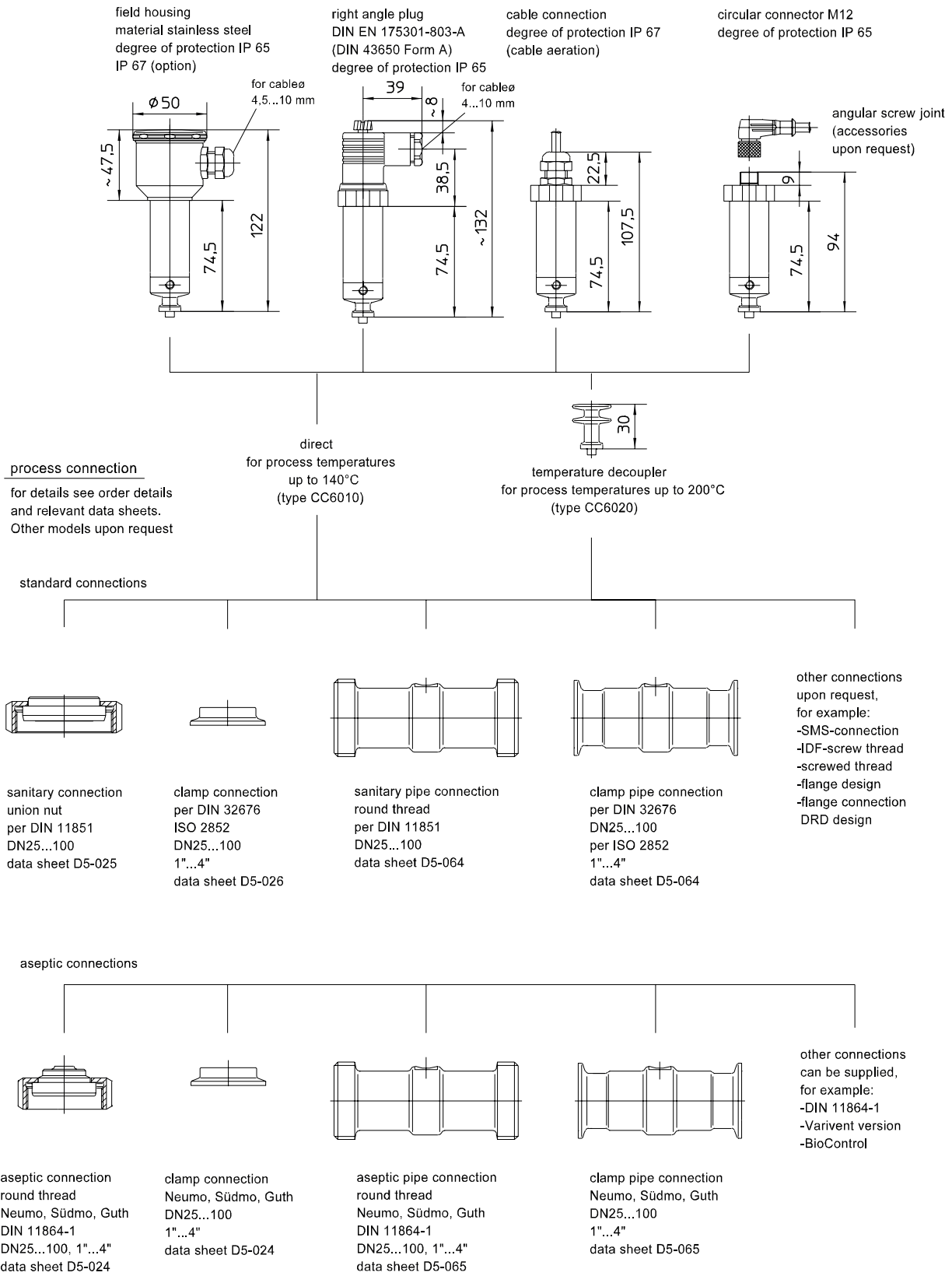
any

EMC test

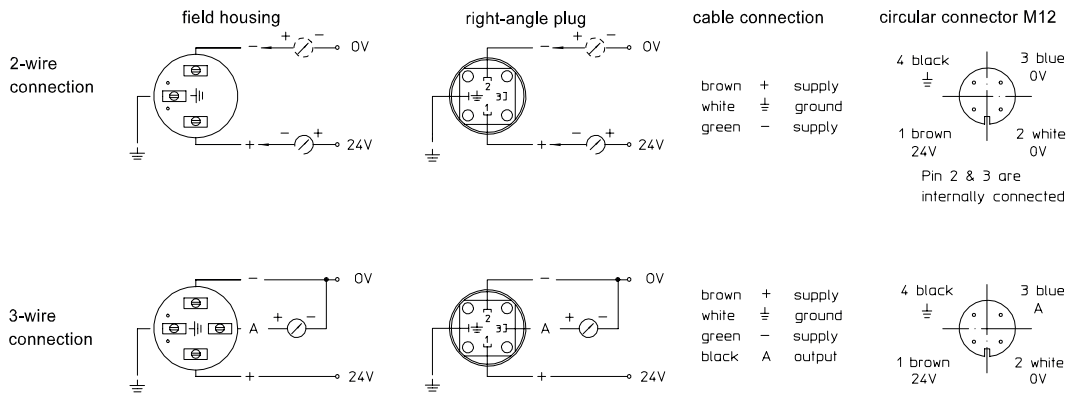
- noise immunity according to EN 50082 section 2, version March 1995 issue for industry
- emitted interference according to EN 50081section 1, 1993 issue for residential and industrial areas

Device emits no radiation of its own

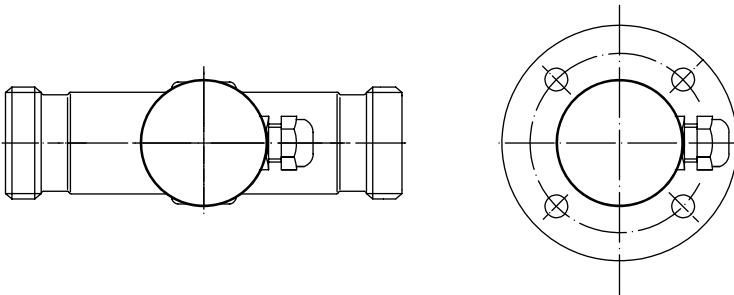
Dimensions




Connection diagram



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



Order details

Pressure transmitter COMPACT for food /pharmaceutical/bioengineering			
design	· for process temperature to + 140 °C		CC601 .-F
	· for process temperature to + 200 °C		CC602 .-F
Ex protection	· without		0
	·  II 2 G Ex ib IIC T6 Gb		1
meas. range	meas. range	overload limit (bar)	
	0...250 mbar ³	1	A1010
	0...400 mbar ³	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
	-250...0 mbar ³	1	A1027
	-400...0 mbar ³	3	A1028
	-0,6...0 bar ¹	3	A1085
	-1...0 bar ¹	3	A1086
	-1...0.6 bar ¹	10	A1087
	-1...1.5 bar ¹	10	A1088
	-1...3 bar ¹	20	A1089
	-1...5 bar ¹	20	A1090
	-1...9 bar ¹	60	A1091
	-1...15 bar ¹	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		
output signal	· 4...20 mA, 2-wire technology, standard		H1
	· 0...20 mA, 3-wire technology		H2
	· 4...20 mA, 3-wire technology		H3
	· 0...10 V, 3-wire technology		H4
case/ electrical connections	· field housing of stainless steel, with cable gland	IP 65, measuring ranges ≤ 16 bar, only ⁴	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 ²		T120	
continued next page			

- ¹ 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
- ² connector with cable see product group D6 (accessories)
- ³ low pressure ranges with increased temperature influence (zero point and span): max. = 0.4 %/10K
- ⁴ not valid for absolute pressure

process connection (further process connections upon request)										
standard connection	flat diaphragm seal			DN						
		tapered coupling with groove union nut according to DIN 11851		· 25						DL2100
				· 32						DL2200
				· 40						DL2300
				· 50						DL2400
		clamp connection ISO 2852		· 1"						DL3100
				· 1 1/2"						DL3200
				· 2"						DL3300
				· 25						DL4100
				· 32						DL4200
	clamp connection according to DIN 32676		· 40						DL4300	
			· 50						DL4400	
	inline diaphragm seal	tapered coupling with groove union nut according to DIN 11851 both sides		· 25						DF1110
				· 32						DF1120
				· 40						DF1130
				· 50						DF1140
		clamp connection according to DIN 32676, both sides for pipes according to DIN 11850		· 25						DF3110
				· 32						DF3120
				· 40						DF3130
				· 50						DF3140
clamp connection according to ISO 2852 both sides, for pipes according to BS 4825 Part 3 and O.D. Tube		· 1"						DF3210		
		· 1 1/2"						DF3230		
		· 2"						DF3240		
aseptic connections	flat diaphragm seal	aseptic diaphragm seal for pipes acc. to DIN 11850								DL51 ..
		aseptic diaphragm seal for pipes per DIN EN ISO 1127								DL52 ..
		aseptic diaphragm seal for inch pipes acc. to BS 4825 Part 3 and O.D. Tube								DL53 ..
	inline diaphragm seal	aseptic diaphragm seal for pipes acc. to DIN 11850								DF61 ..
		aseptic diaphragm seal for pipes per DIN EN ISO 1127								DF62 ..
		aseptic diaphragm seal for inch pipes acc. to BS 4825 Part 3 and O.D. Tube								DF63 ..
	nominal sizes	pipes DIN 11850	pipes per DIN EN ISO 1127	pipes according to BS 4825 Part 3 and O. D. Tube						
		· DN 25	· DN 25	· 1"						10
		· DN 32	· DN 32	-						20
		· DN 40	· DN 40	· 1 1/2"						30
	· DN 50	· DN 50	· 2"						40	
surface roughness	· standard									
	· hygienic version ¹ as per EHEDG guidelines								HY	
diaphragm material	· stainless steel material no. 1.4435 (316L)								A4007	
	other material upon request								A4009	
system filling ²	liquid filling		operating temperature range							
	· foodstuff oil FD1, standard		+10...+140 °C, Standard							L22
	· foodstuff oil FD1, pls specify temperature, max.		-10...+200 °C							L23
	other liquids upon request									
type of aseptic connection (specifications required for aseptic process connection only)	for flat diaphragm seal	sterile connection acc. to DIN 11864-1		collar connection sleeve with coupling nut						S1101
		Südmø aseptic		collar connection sleeve with coupling nut clamp connection (W601)						S2101
		Guth aseptic		collar connection sleeve with coupling nut clamp connection (recess)						S3101
		Neumo aseptic		collar connection sleeve with coupling nut clamp connection model R						S4101
	for inline diaphragm seal connections both sides	sterile conn. acc. to DIN 11864-1		threaded couplings						S1001
		Südmø aseptic		threaded couplings (W501)						S2001
				clamp connection (W601)						S2002
		Guth aseptic		threaded couplings						S3001
				clamp connection (recess)						S3002
		Neumo aseptic		threaded couplings						S4001
				clamp connection (model R)						S4002
additional features (to be indicated in case of need, only)										
materials certificate acc. to EN 10204-3.1, wetted parts (stainless steel)									W1020	
functional safety per EN 61508, classification per SIL 2									W2602	
diaphragm seal electropolished									W4035	
example:	pressure transmitter				CC6010-F	A1057	H1	T410		
	process connection								DL5110	A4007 L22 S1101

¹ for aseptic connections
² for ideal system design the exact operating temperature should be specified