Pressure transmitter COMPACT

for diaphragm seal operation, hygienic

Type series CC60 . .

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

- Labom REconnect quick coupling device for easy and safe separation and connection of diaphragm seal systems; Type series MK1000, see data sheet D6-022
- Explosion protection for gases
- As per UKCA regulations
- Classi ication per SIL 2
- Inspection certi icate: material certi icate as per EN 10204-3.1

Application area

· Food industry
· Pharmaceutical industry
· Biotechnology

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
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
standard design $R_a = \frac{U_B - 6\ V}{20\ mA}$ (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
ATEX:
TÜV 00 ATEX 1557 X
marking:
Ex II 2 G Ex ib IIC T6 Gb
· 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

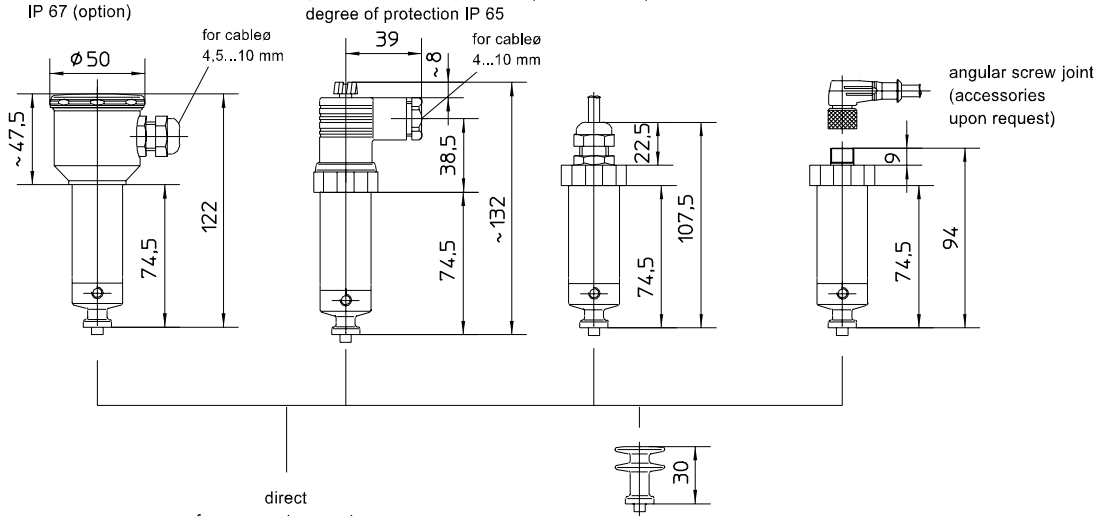
Dimensions

field housing
material stainless steel
degree of protection IP 65
IP 67 (option)

right angle plug
DIN EN 175301-803-A
(DIN 43650 Form A)
degree of protection IP 65

cable connection
degree of protection IP 67
(cable aeration)

circular connector M12
degree of protection IP 65



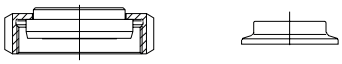
process connection

for details see order details
and relevant data sheets.
Other models upon request

direct
for process temperatures
up to 140°C
(type CC6010)

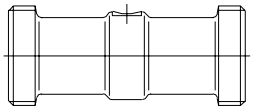
temperature decoupler
for process temperatures up to 200°C
(type CC6020)

standard connections

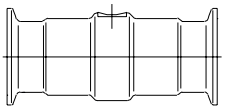


sanitary connection
union nut
per DIN 11851
DN25...100
data sheet D5-025

clamp connection
per DIN 32676
ISO 2852
DN25...100
1"...4"
data sheet D5-026



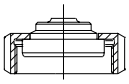
sanitary pipe connection
round thread
per DIN 11851
DN25...100
data sheet D5-064



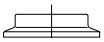
clamp pipe connection
per DIN 32676
DN25...100
per ISO 2852
1"...4"
data sheet D5-064

other connections
upon request,
for example:
-SMS-connection
-IDF-screw thread
-screwed thread
-flange design
-flange connection
DRD design

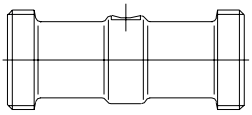
aseptic connections



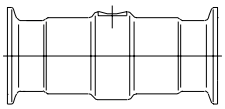
aseptic connection
round thread
Neumo, Südmo, Guth
DIN 11864-1
DN25...100, 1"...4"
data sheet D5-024



clamp connection
Neumo, Südmo, Guth
DN25...100
1"...4"
data sheet D5-024



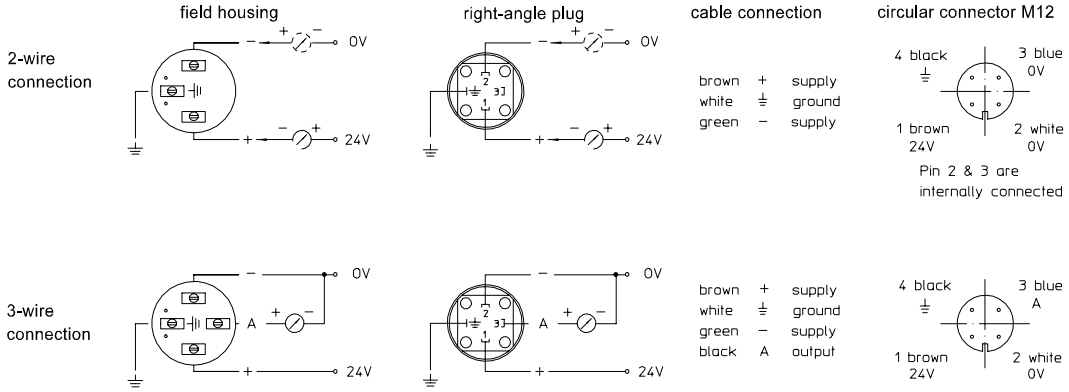
aseptic pipe connection
round thread
Neumo, Südmo, Guth
DIN 11864-1
DN25...100, 1"...4"
data sheet D5-065



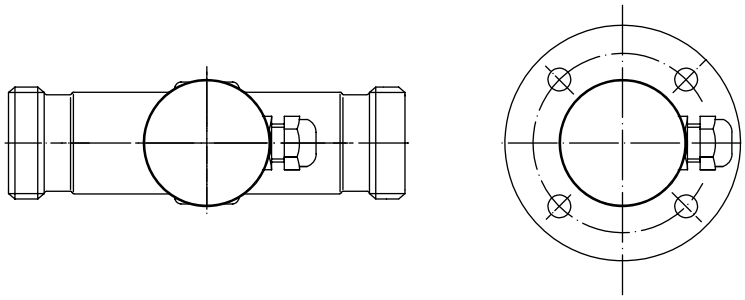
clamp pipe connection
Neumo, Südmo, Guth
DN25...100
1"...4"
data sheet D5-065

other connections
can be supplied,
for example:
-DIN 11864-1
-Varivent version
-BioControl

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 .	
	· for process temperature to + 200 °C						CC602 .	
Ex protection	· without						0	
	· ⟨Ex⟩ II 2G EEx ib IIC T6						1	
meas. range	meas. range	overload limit (bar)						
	0...250 mbar³	1						A1010
	0...400 mbar³	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 mbar³	1						A1027
	-400...0 mbar³	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							A9999
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 lengt						T310
		· 5 m cable lengt						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 absolte 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**
		clamp connection according to DIN 32676	· 25	**DL4100**
			· 32	**DL4200**
			· 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					
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 diaphram seal	sterile connection acc. to DIN 11864-1	collar connection sleeve with coupling nut	**S1101**
		Südmo aseptic	collar connection sleeve with coupling nut	**S2101**
			clamp connnection (W601)	**S2202**
		Guth aseptic	collar connection sleeve with coupling nut	**S3101**
			clamp connnection (recess)	**S3202**
		Neumo aseptic	collar connection sleeve with coupling nut	**S4101**
			clamp connnection model R	**S4202**
	for inline diaphragm seal connections both sides	sterile conn. acc. to DIN 11864-1	threaded couplings	**S1001**
		Südmo 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)

ambient temperature -40...85 °C [3]	**U11**
materials certificate acc. to EN 10204-3.1, wetted parts (stainless steel)	**W1020**
functional safety per EN 61508, classification per SIL 2	**W2602**
as per UKCA regulations	**W2660**
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
[3] not for Ex design and not in combination with SIL2

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