Submersible pressure transmitter

for hydrostatic level measurement

Type series CG2010 MO4.1



Features

- Measuring ranges from 0...35 mbar to 0...4000 mbar, each intermediate value adjustable
- Accuracy ≤ 0.2 %
- Titanium case
- Titanium diaphragm, Nanofinish coating as protection against adhesion
- Cable connection pluggable, free of halogen
- Degree of protection IP 68
- Output signal: 4...20 mA
- Can be parameterized via PC (FSK-Bus)
- Temperature range -40...100 °C

Options

- Approvals/Certificates
  - Ex-protection (ATEX / IECEx)
- Temperature measurement with Pt100
- As per UKCA regulations

Application

The submersible pressure transmitter is suitable for level measurement in wells, tank farms and open stretches of water. It converts the hydrostatic pressure measurements into a load-independent current or voltage signal.

Application area

- Water / Waste water
- Sea water desalinization plants
- Swimming baths
- Storage tank / store

Technical data

Nominal ranges

Nominal range	Measuring spans		Overload limit	Lower measuring limit
	min	max		
0...250 mbar	35 mbar	250 mbar	1 bar	750 mbar abs
0...2500 mbar	35 mbar	2500 mbar	6 bar	50 mbar abs
0...4000 mbar	50 mbar	4000 mbar	10 bar	50 mbar abs
0...2500 mbar abs	35 mbar	2500 mbar	6 bar abs	50 mbar abs
0...4000 mbar abs	40 mbar	4000 mbar	10 bar abs	50 mbar abs

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

Constructional design / case

Design:	immersion case
Material case:	titanium grade 2
Material diaphragm:	titanium grade 2
Material process connection adapter:	titanium grade 2
Gaskets:	FKM, NBR
Atmosphere. pressure equalisation housing:	via cable
Degree of protection per EN 60529:	IP 68
Electrical connection:	M20x1.5, screwable plug connector
Weight probe:	approx. 0.45 kg
Weight supply line:	approx. 0.1 kg/m

Measuring system

Sensor:	piezoresistive measuring bridge
System filling:	silicone-free synthetic oil, FDA-compliant

Accuracy

Reference cond. per EN 61298-1:	T_U = const. (15…25) °C
	φ = const. (45...75) % r.F.
	p_U = const. (860...1060) mbar
	U_B = 24 V DC (± 3 V DC)
	R_B = 50 Ω, HART: 250 Ω
	Ground connected
	MBA = 0 bar
Calibration position:	vertical

Reference accuracy:	**TD ≤ 5:1**	**TD > 5:1**
Per EN 60770 incl. non-linearity, hysteresis and repeatability refer to the adjusted measuring span:	≤ 0.2 %	≤ (0.04 % x TD)

Long term drift (refer to nominal range):	≤ 0.2 %/year

Temperature influence, case:	**Temp. -20...100 °C**	**Temp. -40...-20 °C**
	≤ 0.15 %/10K, max. 0.4 %	≤ 0.6 %/10K, max. ≤ 1.5 %

Temperature measurement:

Measuring element:	Pt100 per EN 60751, F 0.3

Output

Pressure measurement:

Output signal:	4…20 mA, 2-wire technology
Current range:	3.8…20.5 mA
Lower alarm current:	< 3.6 mA
Upper alarm current:	> 21 mA
Current limitation:	≤ 23 mA
Step response time T_{90}:	640 ms
Turndown:	up to 100:1
Burden, R_B:	$R_B \leq (U_V\text{-}12V)/0.022\ A\ [\Omega]$ U_V = supply voltage $R_B \geq 250\ \Omega$ for communication with LEVELcom

Temperature measurement:

Output signal:	Pt100 in 2-wire technology
Response time T_{90}:	approx. 10 min.

Supply voltage

Function range:	12…30 V DC

Temperature ranges

Ambient / Media:	-40...100 °C
Storage:	-40...100 °C

Tests and certificates

Ex approvals

ATEX:	BVS 25 ATEX E 032 X
	⟨Ex⟩ II 1G Ex ia IIC T1...T6 Ga
	⟨Ex⟩ II 1/2G Ex ia IIC T1...T6 Ga/Gb
	⟨Ex⟩ II 2G Ex ia IIC T1...T6 Gb
IECEx:	IECEx BVS 25.0032X
	Ex ia IIC T1...T6 Ga
	Ex ia IIC T1...T6 Ga/Gb
	Ex ia IIC T1...T6 Gb

For detailed information see Ex instruction XA_036.

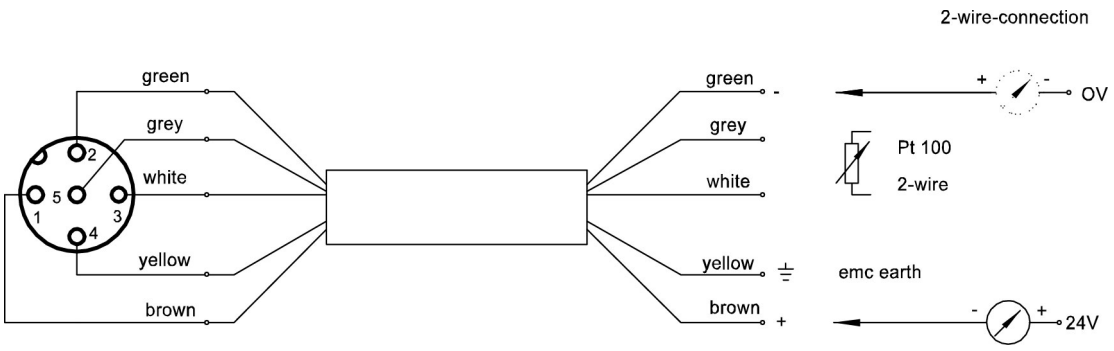
EMC:	per EN 61326-1

Parameterisation

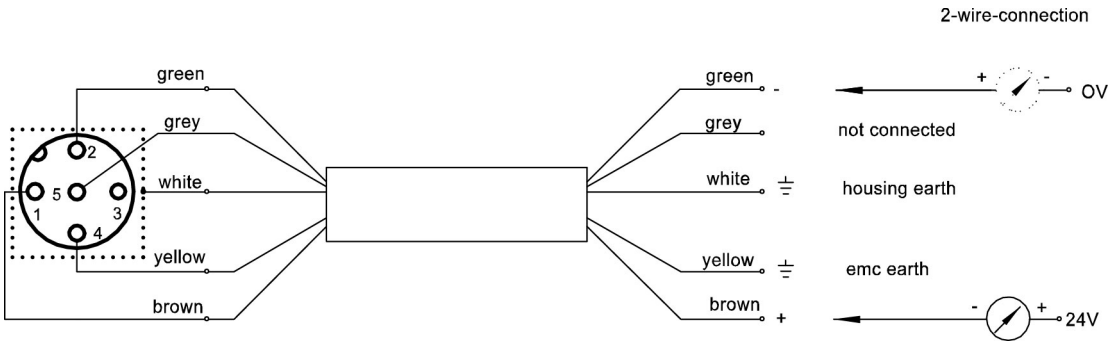
Parameter	Setting range	Standard
lower range value	see instrument ranges	nominal range
upper range value	see instrument ranges	nominal range
unit	mbar, mmH_2O	mbar
damping	0.0…999.9 s	0.0 sec.
alarm behaviour	< 3.6 mA, > 21.0 mA	< 3.6 mA
tank name		-
order number		-
pressure adjustment	zero point -50…50 % of nominal range	-
	span -10…10 % of nominal range	-
current adjustment	- 2 %...5 %	-
measuring circuit test	3.55…21.5 mA	-
maximum pointer	pressure and temperature, resettable	-

Connection diagram

Non-EX application



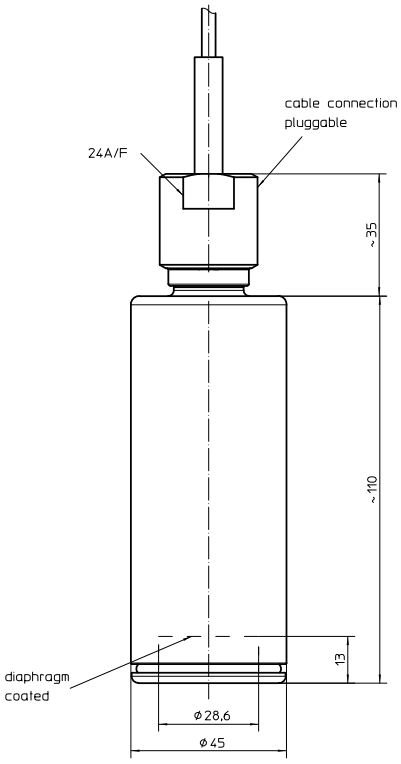
EX application



Please note XA_036 for Ex applications.

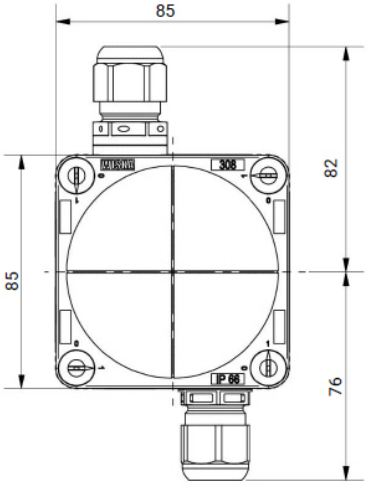
Dimensions

Submersible pressure transmitter

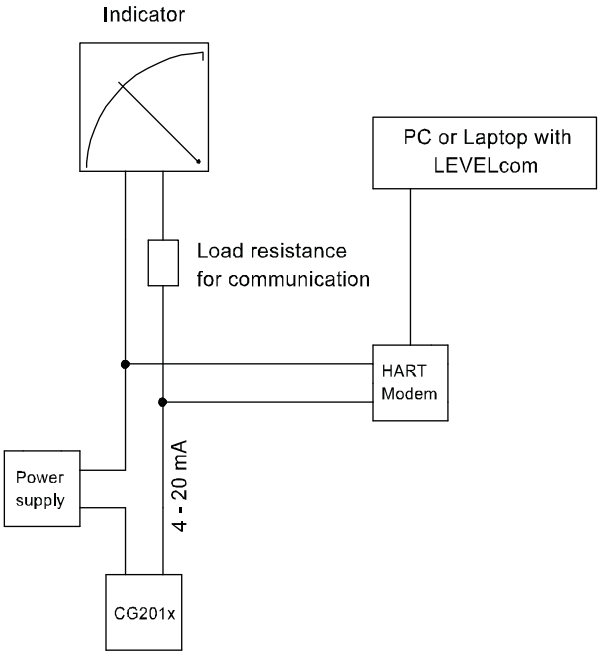


Accessories

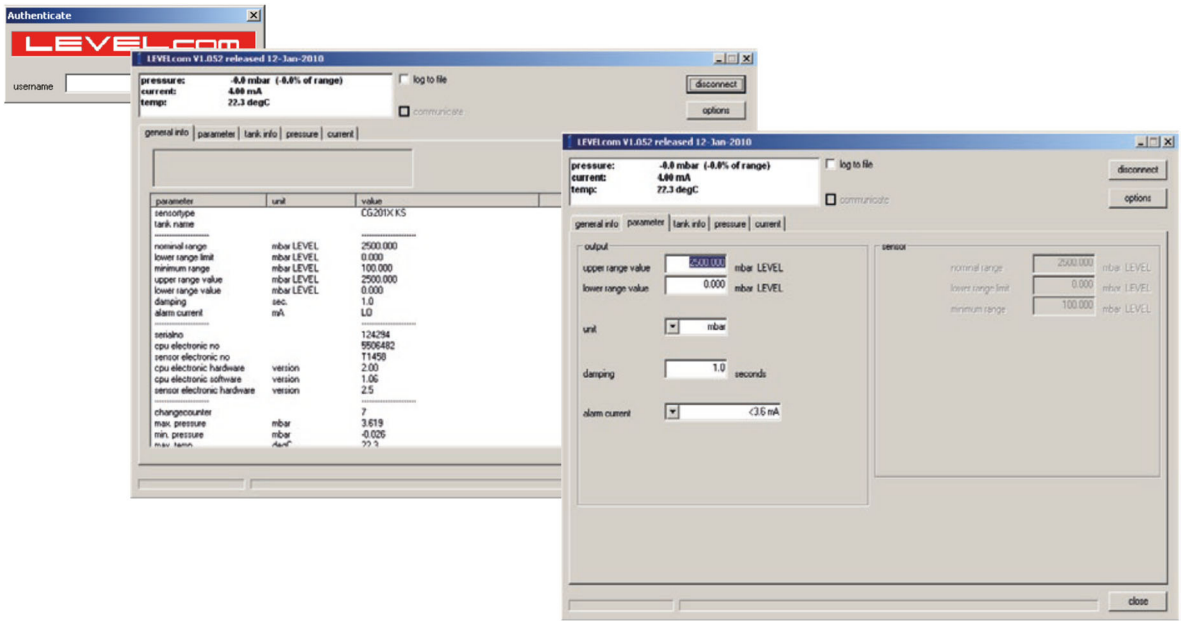
cable connection box including ventilation filter, cable glands and connection terminals, order details MC1640



Function diagram



LEVELcom



Order details

Submersible pressure transmitter for hydrostatic level measurement			
CG2010 MO4.1	submersible pressure transmitter for hydrostatic level measurement		
P1	output signal	temperature measurement Pt100 [1]	
P0		without temperature measurement	
M2	case design	titanium	
A1010	nominal range	0...250 mbar	
A1015		0...2500 mbar	
A1016		0...4000 mbar	
B1015		0...2500 mbar abs	
B1016		0...4000 mbar abs	
F1	configuration	standard as per the data sheet	
F2		as per customer's specification (pls. specify)	
		measuring range	initial value:
			full scale:
		unit: mbar (standard), mmH_2O (option)	
		alarm state: < 3.6 mA (standard), > 21 mA (option)	
		damping: 0.0...999.9 sec. (standard: 0.0 sec.)	
K5.	material diaphragm	titanium, nanofinish coating	
3	adapter	without (for suspended mounting)	
999		as per indication	
N2	material	titanium grade 2	

additional features (to be indicated in case of need, only)			
S104	Ex marking	ATEX	Ⓔx II 1G Ex ia IIC T1...T6 Ga
S105			Ⓔx II 1/2G Ex ia IIC T1...T6 Ga/Gb Ⓔx II 2G Ex ia IIC T1...T6 Gb
S106		IECEx	Ex ia IIC T1...T6 Ga
S107			Ex ia IIC T1...T6 Ga/Gb Ex ia IIC T1...T6 Gb
W2660	as per UKCA regulations [1]		

accessories		
MC1030	communication	LEVELcom software
MC1040		HART modem with USB interface
MC1640	cable connection box including ventilation filter, cable glands and connection terminals	
UG2021 . . .	cable connection pluggable, free of halogen, threaded adapter (cylindrical)	
UG2023 . . .	for Ex i with housing earth, free of halogen, threaded adapter (cylindrical)	
G24 . .	polyamide flexible tube, black [1]	
G27 . .	polyamide flexible tube, blue	
02	cable length	2.5 m
05		5.0 m
10		10.0 m
15		15.0 m
20		20.0 m
25		25.0 m
30		30.0 m
35		35.0 m
99		pls. specify (max. 35.0 m)

Order code (example): CG2010 - MO4.1 - P1 - M2 - A1015 - K53 - N2

[1] Not possible for devices with Ex marking.