Ceramic Pressure Sensor

Application
- hydrostatic level measurement of vessels and tanks
- precise pressure measurement in pipes

Application Examples
- level measurement with dac-341, linearization and evaluation with pem-dd (6 standard styles, 1 style programmable)
- difference pressure measurement with 2 x dac-341 and evaluation device pem-dd

Hygienic Design / Process Connection
- by using the Negele weld-in sleeve EMZ-352 or the build-in system EHG-.../1" a front-flush, hygienic and easy cleanable measurement point will be achieved (3A-certificate, EHEDG-registration)
- CIP-/ SIP-cleanable up to 140°C / max. 30min
- front-flush ceramic sensor cell
- sensor materials are FDA conform
- sensor completely made of stainless steel
- protection type IP69K
- available process connections: TriClamp, diary flange, SMS, DRD, Varivent, BioControl

Features
- high accuracy and overload stability
- capacitive measurement cell without fluid
- easy set up function with pushbuttons
- defined PG position
- integrated two-wire measurement transducer 4-20mA

Options / Accessories
- special pressure ranges, absolute pressure cells
- integrated indicator (azm-55) incl. window in lid
- electrical connection with M12 plug-in
- cable for M12 plug-in ex work

dac-341


EHG-.../G1"


azm-55


EMZ-352

Attention: Use only Negele weld-in systems to ensure a safety function of the measurement point!

Specification

Pressure ranges	standard	0...0,2 / 0,4 / 1,0 / 2,0 4,0 / 10,0bar rel. 1,0 / 2,0 / 4,0 / 10,0 20,0bar abs.
Overload stability	factor	see backside
Process connection	thread	G1" sensor, comb. with Negele-weld-in sleeve
	torque	max. 20Nm (2kgm)
Materials	connector head	SS V2A, (1.4305), Ø55mm
	thread connection	SS V4A, (1.4571)
	measurement cell	ceramics Al_2O_3

Temperature ranges	ambient	-20...60°C
	process	0...100°C
	compensated	up to 85°C
Temperature compensation time T90		≤ 91s
Accuracy		≤ 0,2% of f. s.
Temperature drift	zero	< 0,02% f. s. / K
	span	< 0,02% f. s. / K
Electr. connection	cable entry	PG (M16x1,5)
		2pin. 1,5mm²
	cable connection	M12-plug-in V2A
	output	current loop 4-20mA
	supply voltage	12...36V DC
Type of protection		IP69K

Order Code

Type	Process connection	Range [bar]	Indicator**	Electr. connection
dac-341	G1"	0...0,2 / 0,4 / 1,0	without*	PG*
dac-941	BioControl 25	2,0 / 4,0 / 10,0 rel.*	azm-55**	M12
dac-942	BioControl 50	1,0 / 2,0 / 4,0 /		
dac-943	BioControl 65	10,0 / 20,0abs.		

Order example: dac-341 / 4,0abs / azm-55 / M12

*standard, no declaration necessary.
**indicator module (azm-55), with indicator and window lid, separate order possible.

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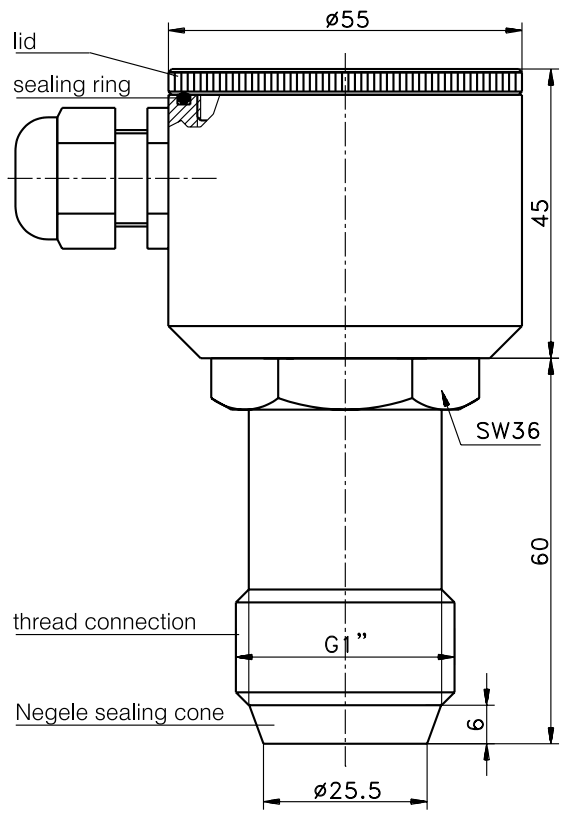
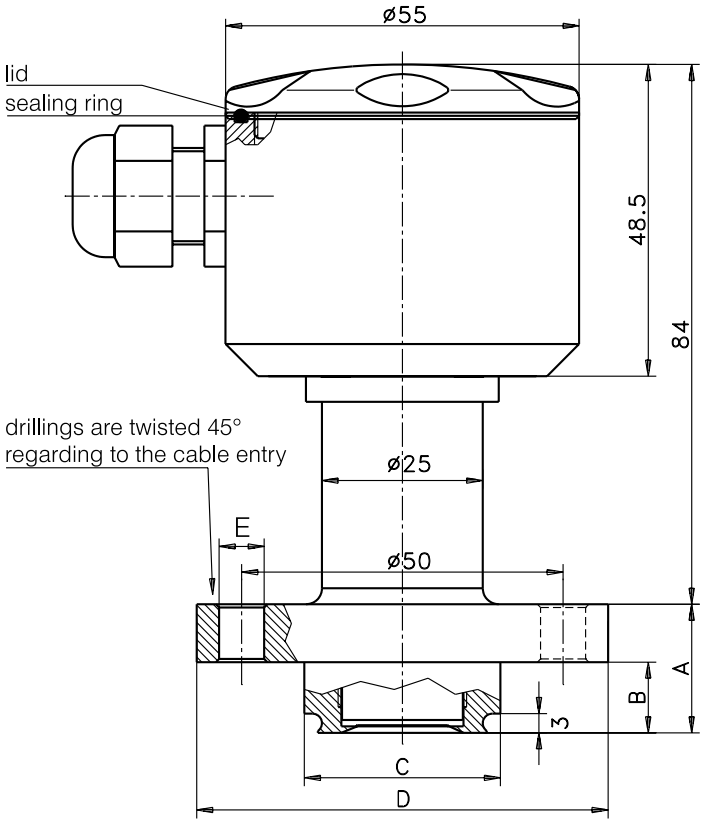
Dimensioned Drawing dac-341



Dimensioned Drawing dac-94x



Installation

Attention: The maximum torque for installation is 20Nm!

Dimension table BioControl connection

DN	A	B	C	D	E [mm]
25	20	11	30,5	64	7
50	27	17	49,9	90	9
65	27	17	67,9	120	11

Electrical Connection dac-341

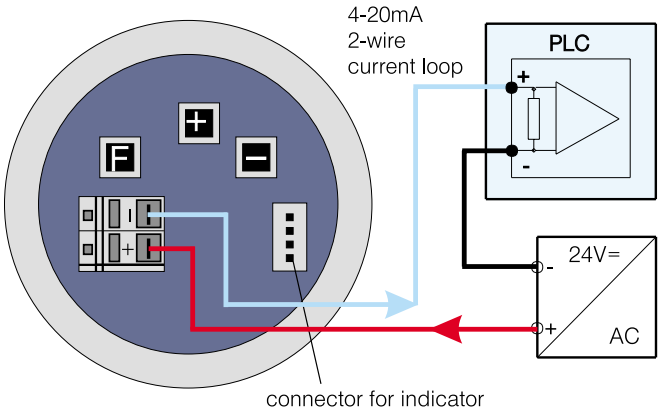
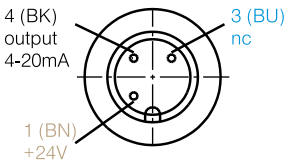


Table Overload Stability

range [bar]	factor	[bar]
0,2	30	6,0
0,4	15	6,0
1,0	10	10,0
2,0	9	18,0
4,0	6,25	25,0
10,0	4	40

with M12 Plug-in



Connection

- plug in the optional indicator module azm-55 (helpful for setting)
- apply supply voltage (12...36V DC), see terminal label
- after a short segment test the indicator shows shortly 'dac', the program-version, 'abs' or 'rel' and the presetted range
- level in % (one digit after decimal point) or pressure in bar (two digits after decimal point) is indicated
- note at level measurement: 0-100% means 4-20mA; this range can be adjusted by the user. If the pressure is indicated in bar, the indicator always shows the pressure measured at the measurement cell. In this kind the range of the indicator can't be adjusted!

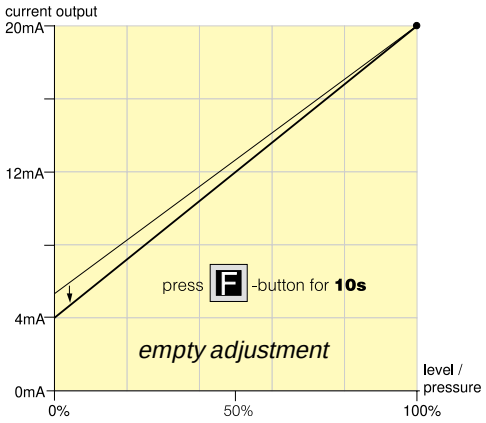
Notes to Setting the Pressure Sensor

The standard setting of the dac-341 is following: 0...100,0% of the measurement range (e.g. 0...400mbar) are corresponding to 4-20mA of the current output. If it is necessary to change these settings for special measurement tasks, you have to do following:

1. Empty Adjustment

1.1 Level Measuring

- empty vessel completely
- connect ammeter into the current output loop
- the ammeter displays 4,0mA, the internal indicator, azm-55 displays 0,0%
  In this case no adjustment is necessary
- in other case make the adjustment in the following way:
- press button "**F**" for at least 10 seconds, the indicator shows shortly "Stor",
  the setting is done
- ammeter displays 4,0mA, the internal indicator azm-55 displays 0,0%



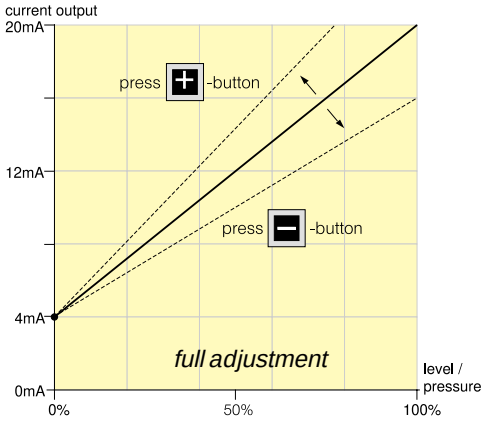
1.2 Process Pressure Measuring (relative / absolute)

- Set the pressure to the wished value at 4mA
- connect ammeter into the current output loop
- the ammeter displays 4,0mA
  in this case no adjustment is necessary
- in other case make the adjustment in the following way:
- press button "**F**" for at least 10 seconds. The indicator shows shortly "Stor",
  the setting is done
- ammeter displays 4,0mA

2. Full Adjustment

2.1 Level Measuring

- fill vessel completely
- connect ammeter into the current output loop
- the ammeter displays a value lower than 20 mA, e.g. 14 mA, the internal display azm-55 displays a value lower than 100,0
- press button "**+**" or "**-**", until the ammeter displays 20mA and the internal indicator shows100%
- after about 20 seconds the settings are stored, "Stor" shortly appeares in the display



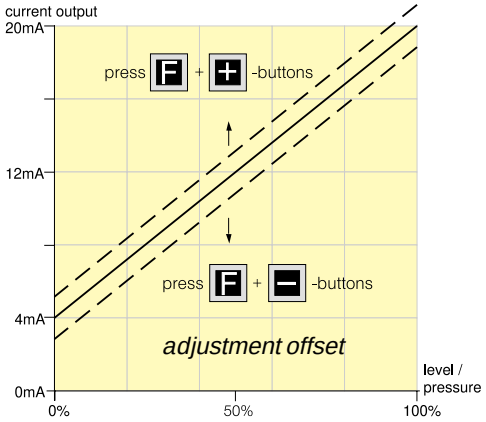
2.2 Process Pressure Measuring (relativ / absolute)

- Set the pressure to hi-value (e.g. 6bar)
- connect ammeter into the current output loop
- the ammeter displays 20,0mA, the internal indicator azm-55 displays the measured pressure in bar. In this case no adjustment is necessary.
- in other case make the adjustment in the following way:
- press button "**+**" or "**-**", until the ammeter displays 20mA.
- after about 20 seconds the settings are stored, "Stor" shortly appeares in the display

3. Offset adjustment

- hold "**F**" pressed and modify with "**+**" or "**-**" the standard characteristic parallelly,
  in this way offsets are compensated
- the settings are stored after 20s of the last adjustment, the indicator shows "Stor"

This function is needed very rarely.



4. Reset to standard settings

- press buttons "**F**", "**+**" and "**-**" togehter about 10 seconds. When the indicator displays "rES", the standard settings are stored

Attention: *All your settings will be deleted with this function . The pressure sensor is set to the standard settings.*

5. Switching the indicator

- by double-pressing the button "**F**" you can swith between the indication in bar and %

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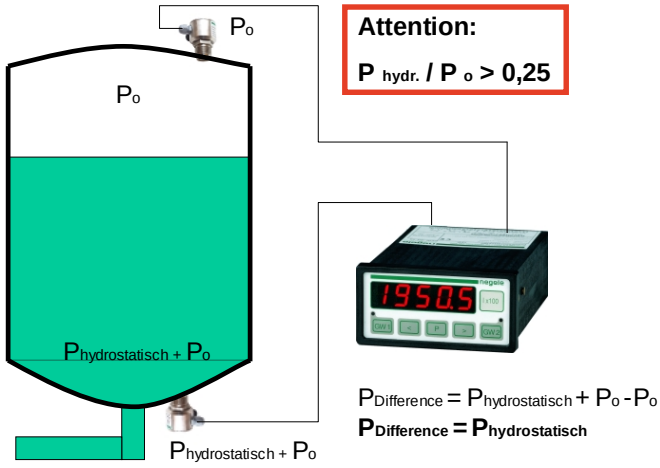
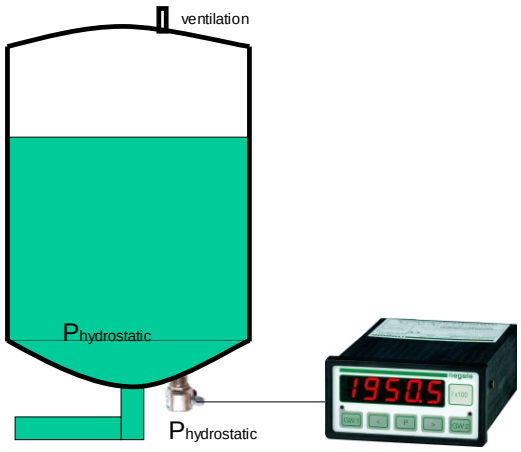
Application Examples

electrical pressure difference
with 2 x dac-341 and pem-dd



tank linearity with dac-341 and pem-dd



Overview of Deliverable Process Connections (Basic device and adapters must be ordered separately!)

Process Connection	build-in system EHG (DIN 11850 series 2)	Negele weld-in sleeve	TriClamp	Diary flange (DIN 11851)	DRD (press ring optional deliverable)	Varivent	APV-Inline	Adapter G1 1/2" to G1"
size								
DN25	-	EMZ-352 suitable for installation in vessels	AMC-352/ 1"-1,5"	AMK-352/25	-	-	-	AMG-352 suitable for existing G1 1/2" connection
DN40	EHG-40/1"		AMC-352/ 1"-1,5"	AMK-352/40	-	AMV-352	AMA-352	
DN50	EHG-50/1"		AMC-352/2"	AMK-352/50	AMK-352/50	"	"	
DN65	EHG-65/1"	EMS-352 suitable for installation in pipes	AMC-352/3"	AMK-352/65	"	"	"	
DN80	EHG-80/1"		AMC-352/80	AMK-352/80	"	"	"	
DN100	EHG-100/1"		AMC-352/4"	AMK-352/100	"	-	"	

Order example: TriClamp for DN100: AMC-352 / 4"

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