Climatic Independent Level Transmitter

NEW!

Application

- hydrostatic level measurement in ambients with high humidity
- especially capable for vessels with base and acid of CIP

Application Examples

- level measurement with LAR-361, linearization and evaluation with pem-dd (6 standard geometries, 1 geometry programmable)
- difference pressure measurement with 2 x LAR-361 and evaluation device pem-dd
- suitable for ambient conditions with very high humidities
- absolute base and acid resistant for using in CIP-vessels

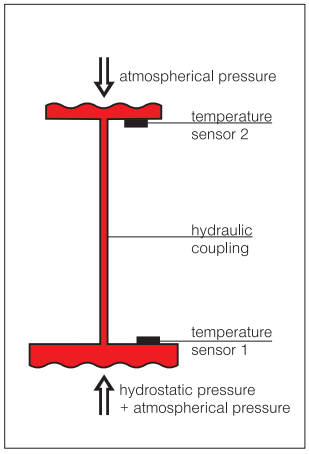
Hygienic Design / Process Connection

- 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 stainless steel sensor cell
- sensor materials FDA conform
- sensor completely made of stainless steel
- protection type IP69K
- available process connections: TriClamp, diary flange, SMS, DRD, Varivent, BioControl

LAR-361 with weld-in sleeve EMZ-352

Features

- measurement cell without any contact to atmosphere, fully closed measurement system
- no drift problems caused by condensation
- very high accuracy and long term stability
- measurement up to 130°C medium temperature
- mineral oil filling, FDA approved
- field or ex works calibration
- integrated two-wire measurement transducer 4-20mA



internal fully closed measurement system

Options / Accessories

- special pressure ranges (field or ex works calibration)
- cable for M12 plug-in ex works

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

Specification

Pressure ranges	standard, relative	0...0,35bar / 1,0bar / 2,0bar / 3,3bar
Overload stability	factor	two times of f.s.
Process connection	thread	G1" sensor, comb. with Negele-weld-in sleeve
	torque	max. 20Nm
Materials	connector head	SS 316 (1.4305) Ø67mm, Ra < 0,8µm
	thread connection	SS 316L (1.4404) Ra < 0,4µm
	measurement cell	SS 316L (1.4404) Ra < 0,4µm
	oil filling	mineral oil (FDA approved)

Temperature ranges	ambient	-10...50°C (15...120°F)
	process	-20...130°C (0...265°F)
	compensated	-20...120°C (0...250°F)
	CIP / SIP	140°C (284°F) / 30min
Temperature compensation time T90		30s/10K
Accuracy (hysteresis, linearity, repeatability)		≤ 0,2% of f. s.
Temperature drift	zero	< 0,04% f. s. / K
	span	< 0,04% f. s. / K
Electr. connection	cable entry	PG (M16x1,5) 2pin. 1,5mm²
	cable connection	M12-plug-in SS
	output	2-wire current loop 4-20mA
	supply voltage	12...36V DC
Type of protection		IP69K

Order Code

Type	max operating range	Calibration ex works (specify end value) e. g. 0,5bar	Electr. connection
LAR-361 / 0	0...0,35bar (turn down to 0,1bar)		PG*
LAR-361 / 1	0...1,0bar (turn down to 0,35bar)		M12
LAR-361 / 2	0...2,0bar (turn down to 1,0bar)		
LAR-361 / 3	0...3,3bar (turn down to 2,0bar)		
Order example:	LAR-361 / 1 / 0,5 / M12		

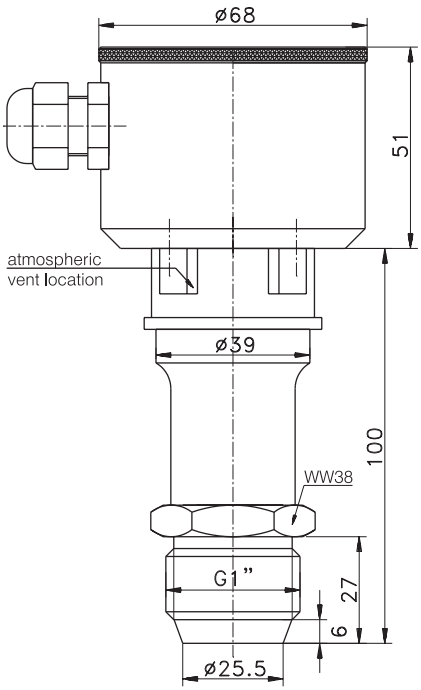
*standard, no declaration necessary.

Negele Messtechnik GmbH • Raiffeisenweg 7 • D-87743 Egg a.d. Günz • Telefon +49 (0) 83 33 / 92 04-0 • Fax +49 (0) 83 33 / 92 04-49

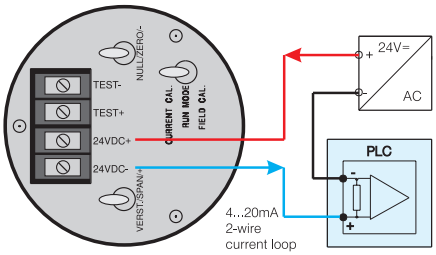
Ambient Temperature

Attention: For a well working temperature compensation the ambient temperature of the sensor head has to be lower than 50°C!

Dimensioned Drawing LAR-361



Electrical Connection LAR-361



with M12 Plug-in

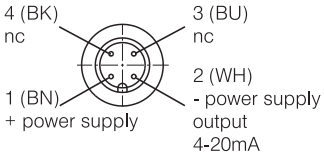


Table Pressure Ranges

type	min. operation range	max. operation range
LAR-361 / 0	0...0,1 bar	0...0,35 bar
LAR-361 / 1	0...0,35 bar	0...1,0 bar
LAR-361 / 2	0...1,0 bar	0...2,0 bar
LAR-361 / 3	0...2,0 bar	0...3,3 bar

Table max overload

type	factor	max load [bar]
LAR-361 / 0	2	0,6
LAR-361 / 1	2	2,0
LAR-361 / 2	2	4,0
LAR-361 / 3	2	6,6

Table Pressure Conversion

	psi	bar	N/m² (Pa)	m WS (+4°C)	inch WC (+4°C)
psi	1	0,0689	6894,8	0,7031	27,68
bar	14,504	1	10^5	10,197	401,47
N/m²(Pa)	$145,0x10^{-6}$	10^{-5}	1	$1,0197x10^{-4}$	$4,015x10^{-3}$
mWS	1,4223	0,0981	9806,4	1	39,37
inch WC	$36,13x10^{-3}$	$2,490x10^{-3}$	249,08	0,0254	1

for example: 1psi = 0,0689 bar; 1bar = 14,504psi

N-TOOLS Additional Products (for more informations: please see separate product informations)

Simulator hsg-3

Alarm Relay vgw-dc

Digital Display doh-VA

Processor Digital Display pem-dd

Negele Messtechnik GmbH • Raiffeisenweg 7 • D-87743 Egg a.d. Günz • Telefon +49 (0) 83 33 / 92 04-0 • Fax +49 (0) 83 33 / 92 04-49

Installation

- Use only Negele weld-in systems to ensure a safe function of the measurement point.
- Install the LAR-361 with max. torque 20Nm.
- Pay attention to remain open the 4 ports of atmospheric vent location.
  Cleaning with fluids does not affect operation. Do not use sharp objects for cleaning.
- Apply supply voltage 12...36VDC.

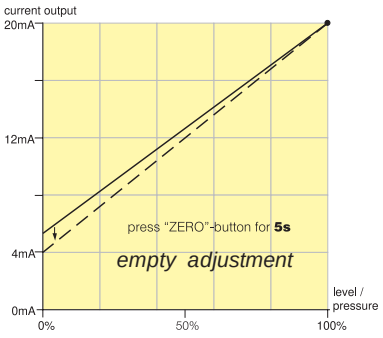
Notes to Setting the Pressure Sensor

The standard setting of the LAR-361 is following: 0...100,0% of the measurement range (e.g. 0...0,35bar with type LAR-361/0) 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:

Empty Adjustment

- Empty adjustment must be done after installation.
- Empty vessel completely (no pressure or product contact to the measurement cell).
  Vessel must be vented to atmosphere.
- Depress "ZERO" button switch for 5 seconds.
- Empty adjustment is complete. Sensor output signal is 4,00mA.
- For maximum accuracy it is recommended to perform the empty adjustment about 3 weeks after initial installation.
  Afterwards: recommended adjustment once a year.

Note: no adjustment of SPAN is necessary. ZERO and SPAN settings have no effect on each other.



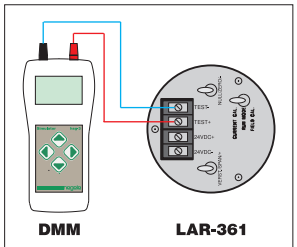
Full Adjustment

1. Utilizing level in vessel

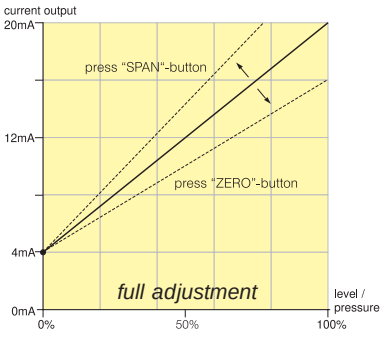
- Fill vessel completely.
  Attention: This hydrostatic pressure value must remain within range parameters of the sensor (minimum range, maximum range). See table pressure ranges!
- Depress "SPAN" button for five seconds. The new calibration is stored.
- Empty the vessel and check the empty adjustment of the sensor (rated value: 4,00mA)

2. Utilizing on-bord setup

- Connect DMM to pins "TEST+" and "TEST-" (see connection diagram).
- Set mode switch to "FIELD CAL." position.
- DMM shows 19,99mA, sensor is waiting for new calibration range.
- Calculate the current corresponding to the desired new end value.
  Attention: this hydrostatic pressure value must remain within range parameters of the sensor (minimum range, maximum range). See table pressure ranges!
- "SPAN" button secondary function is "+", "Zero" button secondary function is "-".
- Use these buttons to raise or lower the displayed value until the calculated value is reached.
- Depress simultaneously the buttons "SPAN" and "ZERO" for 1 second.
- New calibration is stored. Desired new pressure end value is corresponding to 20mA.
- Set mode switch to "RUN MODE" position.
- Perform empty adjustment (see above).



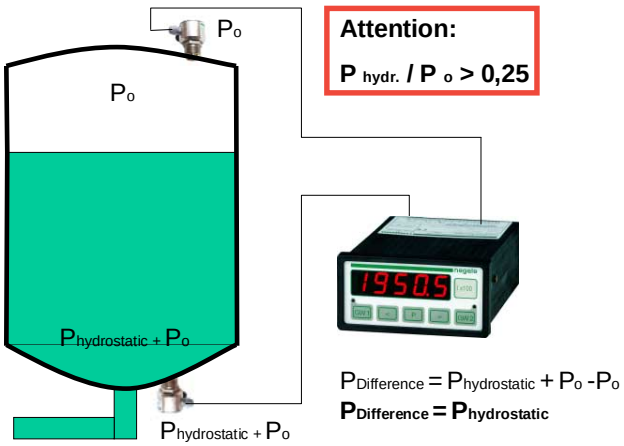
Connection Diagram



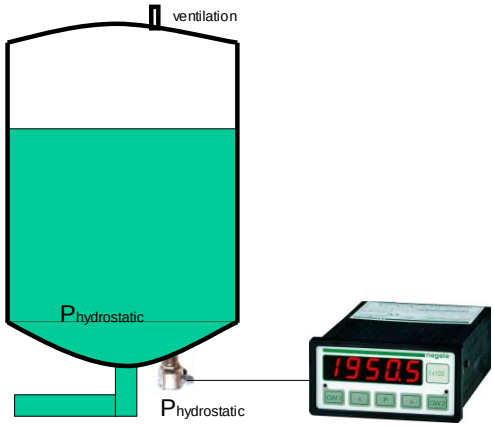
Cleaning with fluids does not affect operation.
Do not use sharp objects for cleaning.

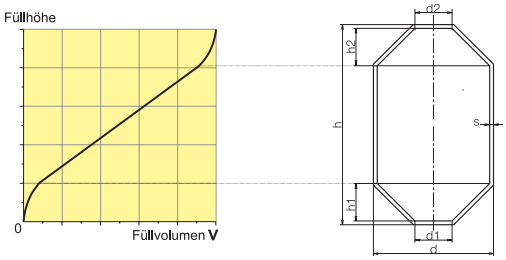
Application Examples

electrical pressure difference
with 2 x LAR-361 and pem-dd



tank linearisation with
LAR-361 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-Inline	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-352/40	AMA-352	
DN50	EHG-50/1"		AMC-352/2"	AMK-352/50	AMK-352/50	AMV-352/40	AMA-352	
DN65	EHG-65/1"	EMS-352 suitable for installation in pipes	AMC-352/3"	AMK-352/65	AMK-352/50	AMV-352/40	AMA-352	
DN80	EHG-80/1"		AMC-352/80	AMK-352/80	AMK-352/50	AMV-352/40	AMA-352	
DN100	EHG-100/1"		AMC-352/4"	AMK-352/100	AMK-352/50	AMV-352/40	AMA-352	

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

Negele Messtechnik GmbH • Raiffeisenweg 7 • D-87743 Egg a.d. Günz • Telefon +49 (0) 83 33 / 92 04-0 • Fax +49 (0) 83 33 / 92 04-49