

## Climatic Independent Level Transmitter



### 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.
- 3-A-certificate for versions with TriClamp DIRECTadapt available on request.
- CIP- / SIP-cleanable up to 140 °C / max. 30 min
- 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

### 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...20 mA

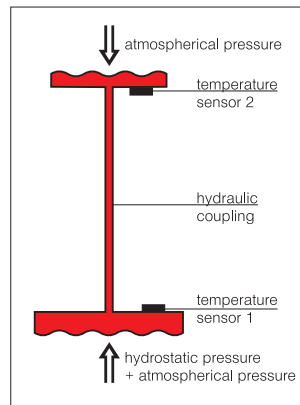
### Options / Accessories

- 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...0,35 / 1,0 / 2,0 / 3,3 / 4,0 bar
Overload stability	factor	two times of full scale
Process connection	thread	G1" sensor, comb. with Negele-weld-in sleeve
	torque	max. 20 Nm
Materials	connector head	SS 316 (1.4305) Ø 67 mm, R <sub>a</sub> < 0,8 µm
	thread connection	SS 316L (1.4404) R <sub>a</sub> < 0,4 µm
	membrane	SS 316L (1.4404) R <sub>a</sub> < 0,4 µm
	oil filling	mineral oil (FDA approved)



**internal fully closed measurement system**



**LAR-361 with weld-in sleeve EMZ-352**

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) / 30 min
Temperature compensation time T90		30s/10K
Accuracy (hysteresis, linearity, repeatability)		≤ 0,2 % of full scale
Temperature drift	zero	< 0,04 % f. s. / K
	span	< 0,04 % f. s. / K
Electr. connection	cable entry	PG (M16x1,5) 2pin, 1,5 mm <sup>2</sup>
	cable connection	M12-plug-in SS
	output	2-wire current loop 4...20 mA
	supply voltage	12...36 V DC
Type of protection		IP69K

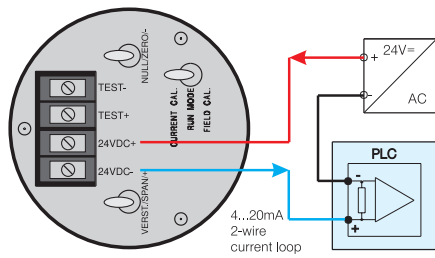
### Order Code

Type	Operating range max.	Calibration ex works	Electr. connection
LAR-361 / 0	0...0,35 bar (turn down to 0,1 bar)	X (no calibration)	X (PG M16x1,5)
LAR-361 / 1	0...1,0 bar (turn down to 0,35 bar)	end value (specify end value, e. g. 0,5 bar)	M12 (M12-plug)
LAR-361 / 2	0...2,0 bar (turn down to 1,0 bar)		
LAR-361 / 3	0...3,3 bar (turn down to 2,0 bar)		
LAR-361 / 4	0...4,0 bar (turn down to 3,3 bar)		

Order example: **LAR-361 / 1 / 0,5 / M12**



## Electrical Connection LAR-361



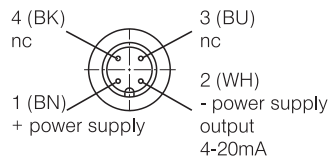
## Ambient Temperature

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

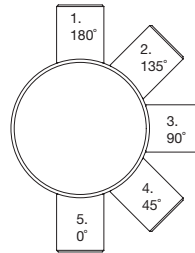
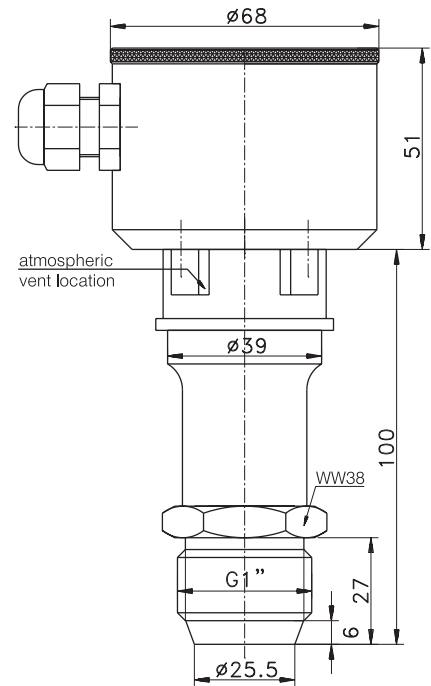
## Conditions for a measuring point according to 3-A-Standard 74-03:

- The sensor LAR-361 is approved according to the 3-A-Standard with special design DIRECTadapt (TriClamp).
- Self draining has to be warranted by the build-in position (pos. 1, 2 or 3).

## with M12 Plug-in



## Dimensioned Drawing LAR-361



## 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
LAR-361 / 4	0...3,3 bar	0...4,0 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
LAR-361 / 4	2	8,0

## Table Pressure Conversion

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

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

## 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**

## Installation

- Use only Negele weld-in systems to ensure a safe function of the measurement point.
- Install the **LAR-361** with max. torque 20 Nm.
- 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...36 V DC.

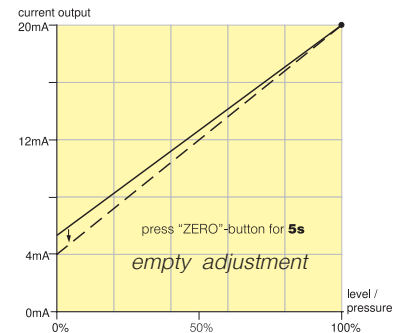
## Notes to Setting the Pressure Sensor

The standard setting of the **LAR-361** is following: 0...100,0 % of the measurement range (e.g. 0...0,35 bar 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 4,00 mA.
- 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.



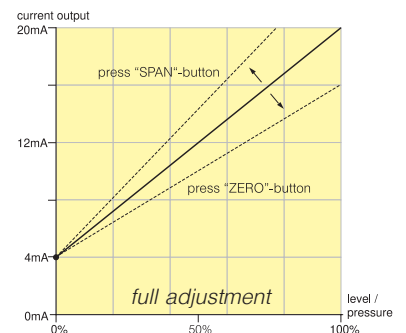
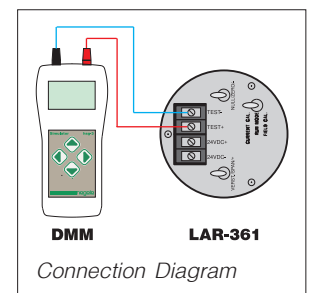
### Full Adjustment

#### 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: 4,00 mA)

#### 2. Utilizing on-board setup

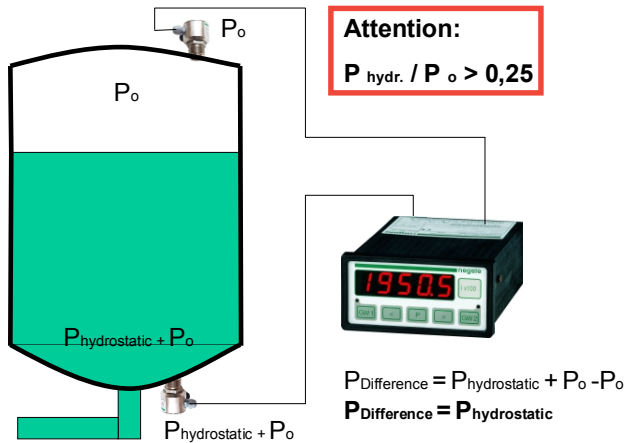
- Connect DMM to pins "TEST+" and "TEST-" (see connection diagram).
- Set mode switch to "FIELD CAL." position.
- DMM shows 19,99mA, sensor is waiting for new calibration range.
- Calculate the current corresponding to the desired new end value.  
**Attention:** this hydrostatic pressure value must remain 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).



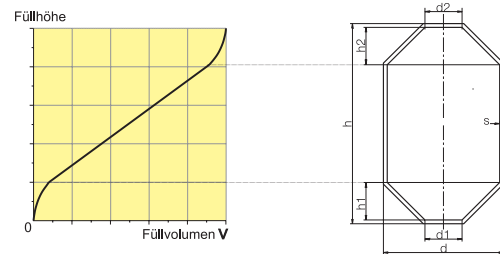
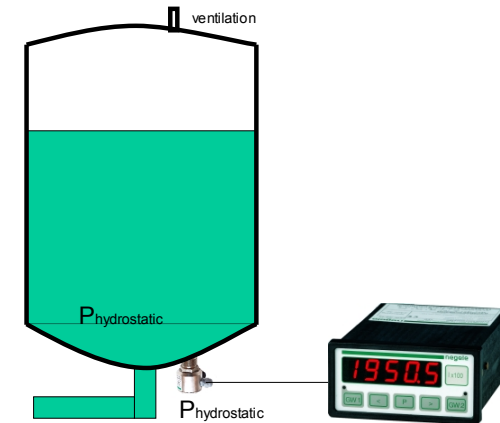
**Cleaning with fluids does not affect operation.  
Do not use sharp objects for cleaning.**

## 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!)

LAR-361 with Adapter								
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	-		AMC-352/1"-1,5"	AMK-352/25	-	-	-	AMG-352 suitable for existing G1 1/2" connection
DN40	EHG-40/1"	EMZ-352 suitable for installation in vessels	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:			<b>TriClamp for DN100:</b>	<b>AMC-352 / 4"</b>				