

**Product Information DAN-HH****FOOD**

# Compact Pressure Transmitter DAN-HH


**Application/Specified usage**

- Pressure measurement in pipes and vessels
- High Temperature applications up to 150 °C / 302 °F permanent

**Application examples**

- Sanitary pressure monitoring for breweries, dairies and food & beverage production

**Hygienic design/Process connection**

- Hygienic process connection with CLEANadapt
- Versions compliant to 3-A Standard 74- available
- All wetted materials are FDA-conform
- Sensor completely made of stainless steel
- Complete overview of process connections: see order code
- The Anderson-Negele CLEANadapt system offers a flow-optimized, hygienic and easily sterilizable installation solution for sensors.

**Features**

- CIP-/SIP-cleanable up to 150 °C / 302 °F
- Extremely durable in high temperature applications up to 150 °C / 302 °F permanent
- Fast response time 200 microseconds
- Vacuum-proof
- Easy to operate
- Electrical connection with M12 plug-in connector
- Selectively as relative or absolute measuring sensor available
- Integrated two-wire measurement transmitter 4...20 mA

**Options/Accessories**

- Special pressure ranges, customized adjustment ex works
- Preassembled cable for M12 plug-in connector

**Measuring principle of the pressure sensor**

This unit utilizes an internal piezoelectric transducer to convert the process measurement into a corresponding mV signal. The mV signal then passes through custom linearization and conditioning circuitry. The resulting signal is an industry standard 4...20 mA. This mA signal is factory set over the specified range of the unit.

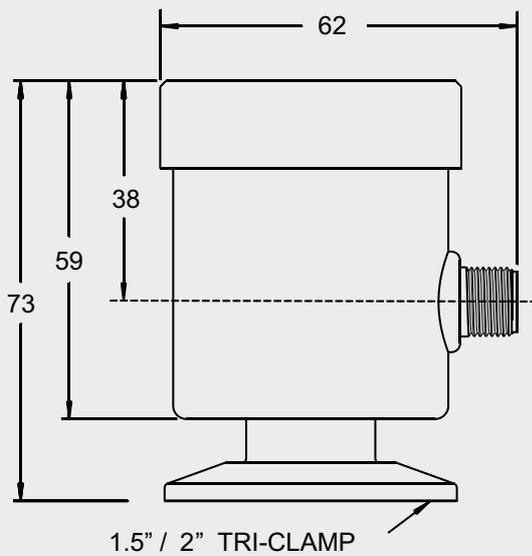
With relative (gauge) pressure sensor the back of the transducer is vented to atmospheric pressure, i.e. this sensor measures the gauge pressure and/or vacuum relative to the atmospheric pressure. With absolute pressure sensor the back of the transducer is subject to full vacuum and then permanently sealed, i.e. this sensor measures pressure relative to an absolute vacuum.

**Communication**

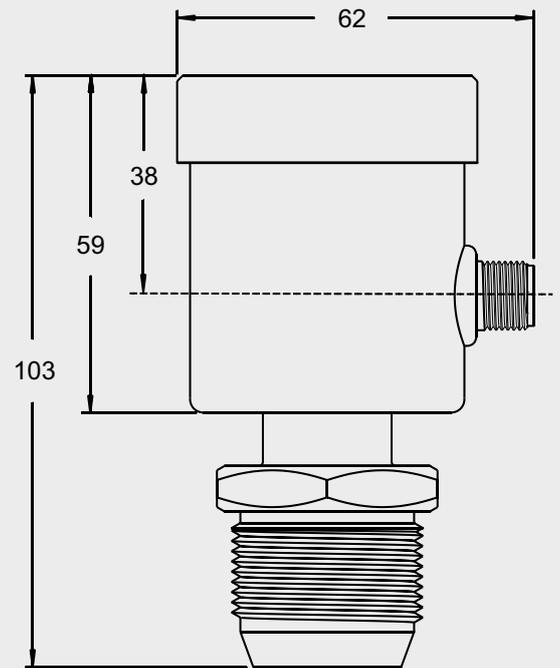
**4...20 mA**
**DAN-HH with EMZ-352**

Specification		
Pressure ranges	relative, standard [bar]	0...1.0 / 2.0 / 3.0 / 7.0 / 14.0 / 20.0 / 34.0
	absolute, standard [bar]	-1...1.0 / -1...2.5 / -1...6.0 / -1...13.0 0...2.0 / 3.0 / 7.0 / 14.0 / 20.0
Electrical connection	cable connection supply	M12-plug, stainless steel 1.4301 / AISI 304 12...36 V DC
Output		4...20 mA DC, 2 wire with non-interrupting circuit verification test points
Process	connection	thread G1" sensor, combined with Negele-weld-in- sleeves, build-in systems, adapter sleeves, or fixed Tri-Clamp 1,5" and 2" DIRECTadapt
	torque	maximum 20 Nm for G1" CLEANadapt only
Materials	wetted parts	stainless steel 1.4404 / AISI 316L, $R_a \leq 0,6 \mu\text{m}$
	housing	stainless steel 1.4301 / AISI 304
Protection class		IP 69 K
Accuracy		$\pm 0.5$ % of full scale
Repeatability		$\pm 0.3$ % of full scale
Hysteresis		$\pm 0.10$ % of full scale
Linearity		$\pm 0.10$ % of full scale
Stability		$\pm 0.30$ % of calibrated range for 6 months
Temperature ranges	ambient	-20...50 °C / -4...122 °F
	process	0...150 °C / 32...302 °F
	storage	-40...65 °C / -40...149 °F
Effect of temperature change		$\pm 0.1$ psig/10 °F / $\pm 7$ mbar/5.5 °C typical
Over-range rating	factor	Minimum of 2 times base range
Response time		200 $\mu\text{s}$
Adjustment	span	-50 % of range, except 1 bar rel. and 2 bar abs. cell: -10 %
	zero	$\pm 10$ %
Weight		640 g CLEANadapt G1" 490 g Tri-Clamp 1,5" 550 g Tri-Clamp 2"

Dimensional drawing DAN-HH with Tri-Clamp



Dimensional drawing DAN-HH with G1"

**Mechanical connection/Installation**

For G1" CLEANadapt only

- Attention: The maximum torque for mounting is 20 Nm!
- Use Negele CLEANadapt system for safe operation of measuring point.
- Use a welding mandril for correct installation of CLEANadapt weld-in-fittings. Please pay attention to the weld-in and installation details in the CLEANadapt product information.

**Conventional usage**

- Not suitable for applications in explosive areas.
- Not suitable for applications in security-relevant equipments (SIL).

**Note on 3-A Sanitary Standard 74-**

Information on installation according to 3-A standard is available on our website:

[www.anderson-negele.com/3A74.pdf](http://www.anderson-negele.com/3A74.pdf)

Click on the PDF icon to download the document.

### Startup

- Connect the sensor with power supply (12...36 V DC) -> see "Electrical Connection DAN-HH"
- Note: Factory-provided 0...100% of the complete measuring range are always adjusted to 4...20 mA at the output (for example 0...2 bar at the DAN-HH/2REL)
- Adjustments of the sensor are made via the potentiometers "ZERO" und "SPAN". Zero point (ZERO) and Span (SPAN) are non-interactive, meaning changing the zero will not change the span.
- As general maintenance to the unit, a zero check is recommended at approximately 6 month intervals.
- Other maintenance tasks are not necessary for the pressure sensor DAN-HH.

### Electrical connection/Installation

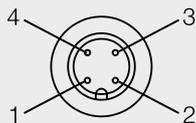


Although no interaction between zero and span occurs, when making adjustments you should be as close to the top and bottom transmitter range as possible. This will ensure the best possible linearity in the final signal output.

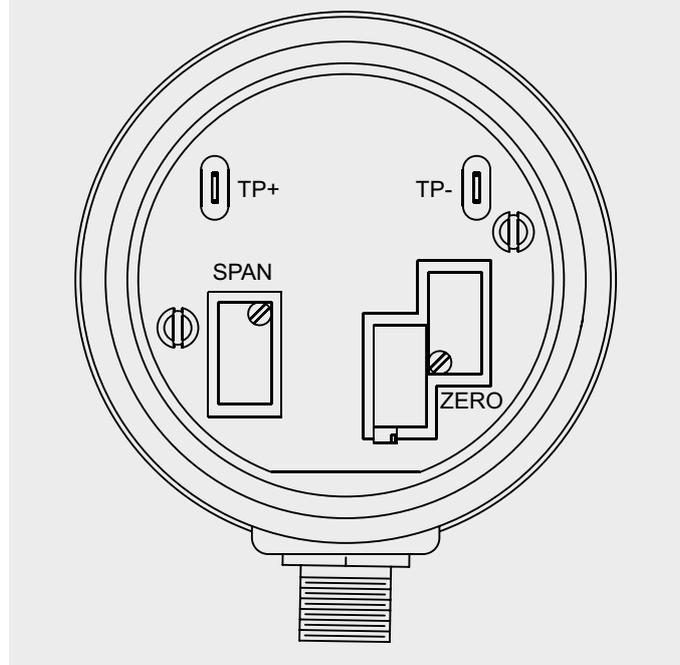
### Electrical connection DAN-HH

#### Configuration M12-plug

- 1: + supply
- 2: - supply 4...20 mA
- 3: not connected
- 4: not connected



### DAN-HH shown with cap removed





### Adjustment of sensor

The standard setting of the DAN-HH is: 0...100 % of the measurement range (for example 0...2 bar) are equivalent to 4...20 mA at the current output. If it necessary to change these settings for special measurement tasks, perform the following steps:

#### Adjustment of zero

- Connect ammeter to the current loop (to the terminals TP+ and TP-). If the ammeter displays 4,0 mA no adjustment is necessary.
- In other cases adjust the transmitter "ZERO" until you have the 4,0 mA at the output.
- If you use absolute pressure sensors the expected mA-signal of the zero point has to be calculated in the following way:

$$\text{mA output} = 16 \left[ \frac{\text{Applied pressure} - \text{Low end of range}}{\text{Transmitter span}} \right] + 4 \text{ mA}$$

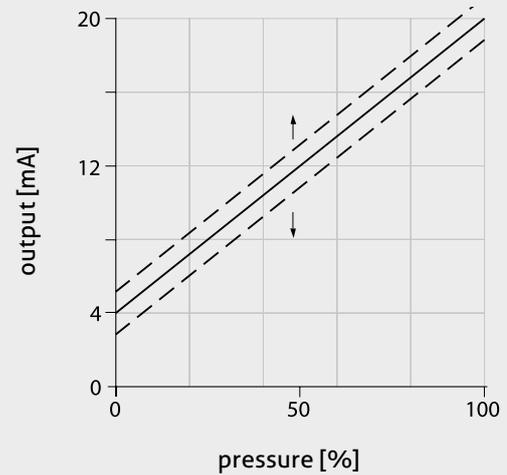
#### For example:

Applied pressure: 2 bar  
 Low end of range: 0 bar  
 Transmitter span: 7 bar  
 mA output: 8,57 mA

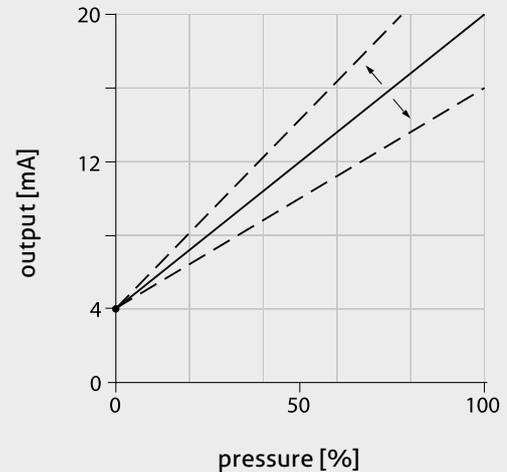
#### Adjustment of span

- Set the pressure to desired value.
- Connect ammeter to the current loop (to the terminals TP+ and TP-).
- Adjust the transmitter "ZERO" until you have the 20,0 mA you need at the output.
- Factory-provided standard measuring ranges may be turned down to a maximum of 50 % (for example DAN-HH/14REL with measuring range 0...14 bar may be turned down to 0...7 bar)  
 Exception: 1 bar rel. and 2 bar abs.: -10 % max.

#### Adjustment of zero



#### Adjustment of span



**Cleaning and maintenance**

- Don't use sharp items or aggressive detergents for cleaning.
- In case of using pressure washers, don't point nozzle directly to electrical connection!

**Transport**

- Sensors shall be clean and must not be contaminated with dangerous media!
- Use suitable transport packaging only to avoid damage of the equipment!

**Transport/Storage**

- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature  $-40...65\text{ }^{\circ}\text{C}$  /  $-40...149\text{ }^{\circ}\text{F}$
- Relative humidity max. 80 %

**Standards and guidelines**

- You have to comply with applicable regulations and directives.

**Note on CE**

- Applicable directives:  
Electromagnetic Compatibility Directive 2014/30/EU
- Compliance with the applicable EU directives is identified by the CE label on the product.
- The operating company is responsible for complying with the guidelines applicable to the entire installation.

**Disposal**

- Electrical devices should not be disposed of with household trash. They must be recycled in accordance with national laws and regulations.
- Take the device directly to a specialized recycling company and do not use municipal collection points.

**Overview of deliverable process connections** (basic device and adapters must be ordered separately!)  
The complete overview of all available adapters you will find at product information **CLEANadapt**.

DAN-HH					
Process Connection	<b>Build-in system EHG</b> (DIN 11850 series 2)	<b>Negele weld-in sleeve</b>	<b>Negele weld-in sleeve with leakage hole</b>	<b>Negele weld-in sleeve</b>	<b>DRD</b> (press ring optional)
<b>DN40</b>	EHG-40/1"	EMZ-352  suitable for installation in vessels	EMZ-351  suitable for installation in vessels	EMS-352  suitable for installation in pipes	AMK-352/50  (only one size)
<b>DN50</b>	EHG-50/1"				
<b>DN65</b>	EHG-65/1"				
<b>DN80</b>	EHG-80/1"				
<b>DN100</b>	EHG-100/1"				

**Overview of further possible process connections** (adapter must be ordered separately!)

G1"					
Diameter	<b>Dairy flange</b> (DIN 11851)	<b>Tri-Clamp</b>	<b>Varivent-Inline</b>	<b>Adapter</b>	
<b>DN25</b> 1"	AMK-352/DN25	AMC-352/DN25	AMV-352/DN25	AMG-352 G1½"  (G1½" to G1" hygienic)	
<b>DN32</b>	AMK-352/DN32	AMC-352/DN25	AMV-352/DN25		
<b>DN40</b> 1½"	AMK-352/DN40	AMC-352/DN25	AMV-352/DN40		
<b>DN50</b> 2"	AMK-352/DN50	AMC-352/DN50	AMV-352/DN40		
2½"	AMK-352/DN65	AMC-352/2½"	AMV-352/DN40		
<b>DN65</b>	AMK-352/DN65	AMC-352/DN65	AMV-352/DN40		
3"	-	AMC-352/DN65	AMV-352/DN40		
<b>DN80</b>	AMK-352/DN80	AMC-352/DN80	AMV-352/DN40		
<b>DN100</b>	AMK-352/DN100	AMC-352/DN100	AMV-352/DN40		

## Order code

DAN-HH

## Compact pressure sensor

## Process Connection (Ⓐ: 3-A compliant)

TC1,5 Tri-Clamp 1,5" Ⓐ  
 TC2 Tri-Clamp 2" Ⓐ  
 S CLEANadapt G1"

## Measurement range absolute

2ABS absolute pressure cell 0...2 bar  
 3ABS absolute pressure cell 0...3 bar  
 7ABS absolute pressure cell 0...7 bar  
 14ABS absolute pressure cell 0...14 bar  
 20ABS absolute pressure cell 0...20 bar  
 [end value] ABS other absolute pressure range, specify required range in "bar" with "ABS"

## Measurement range relative

1REL relative pressure cell 0...1 bar  
 2REL relative pressure cell 0...2 bar  
 3REL relative pressure cell 0...3 bar  
 7REL relative pressure cell 0...7 bar  
 14REL relative pressure cell 0...14 bar  
 20REL relative pressure cell 0...20 bar  
 34REL relative pressure cell 0...34 bar  
 -1...1REL relative pressure cell -1...1 bar  
 -1...2,5REL relative pressure cell -1...2,5 bar  
 -1...6REL relative pressure cell -1...6 bar  
 -1...13REL relative pressure cell -1...13 bar  
 [end value] REL other relative pressure range, specify required range in "bar" with "REL"

## Electrical connection

M12 M12-Stecker

DAN-HH /

S /

14ABS /

M12

## Accessories

## PVC-cable with M12 connection, brass nickel-plated, IP69K, shielded

M12-PVC/5G-8m 5 pin, length 8 m  
 M12-PVC/5G-15m 5 pin, length 15 m  
 M12-PVC/5G-30m 5 pin, length 30 m

CERT / 2.2

factory certification 2.2 acc. to EN10204  
 (only product contacting surface)