

Potentiometric Level Switch

Range of Applications

- Especially for level control of pastes and very adhesive media
- Level monitoring in metallic pipes and vessels
- Product monitoring in pipes
- Minimum conductivity 1 $\mu\text{S}/\text{cm}$ (e.g. dest. water)

Application Examples

- Pump protection / dry run protection of mono pumps
- Full / empty detection in metallic pipes and vessels
- Level detection in cream cheese production

Hygienic Design

- By using Negele weld-in sleeves **EMZ-132** or the build-in system **EHG-.../ 1/2"** an optimized hygienic and easy cleanable measurement point will be achieved (3-A-certificate, EHEDG-registration)
- CIP cleanable up to 100 °C
- High temperature version CIP-/ SIP cleanable up to 150 °C / 30 min max.
- FDA conformable sensor materials
- Sensor completely made of stainless steel (protection type IP69K)
- Available process connections:
TriClamp, diary flange, DRD, APV, Varivent, BioControl

Features

- Potentiometric measurement principle
- Defined PG-position
- Integrated evaluation circuit with 4...20 mA output signal
- Defined empty signal

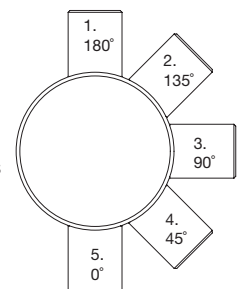
Options / Accessories

- High temperature version up to 150 °C (with spacer)
- Evaluation electronics **VGW-E**
- Electrical connection with M12 plug-in
- Readymade cable for M12 plug-in

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

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

- The sensor NSS-157A is approved according to the 3-A-Standard.
- Only with the build-in system CLEANadapt (EMZ, EMK, EHG with tube > DN25, ISO 20 and 1", Adapter AMC, AMV, AMA und AMB) allowed.
- The welding seam by using of EMZ and EMK has to correspond with 3-A-Standard 74-03, D6.1.4:
"The minimum radii for fillets of welds in product contact surfaces shall be not less than 1/4 in. (6.35 mm) except that the minimum radii for such welds may be 1/8 in. (3.18 mm) when the thickness of one or both parts joined is less than 3/16 in. (4.76 mm).
- Self draining has to be warranted by the build-in position (pos. 1, 2 or 3).
- The process connection needs a self-draining leakage hole.



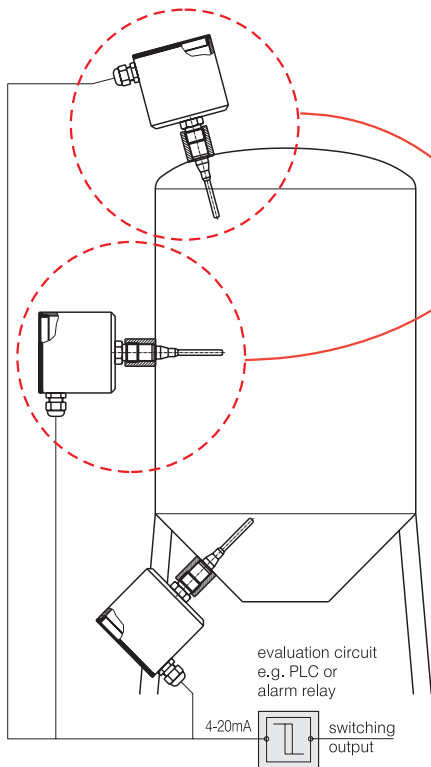
Specification

Process connection	thread	G1/2"	Electr. connection	2x cable entry	PG (M16x1,5)
	torque	10 Nm max.		cable connection	2pin. 1,5 mm ²
Materials	head /	stainless steel V2A, (1.4305) Ø 55 mm / WW 36 mm	Output	supply voltage	SS V2A, (1.4305)
	thread connection			18...36 V DC	
	isolator	PEEK		analog	4...20 mA, burden resist. 500 Ω max.
Temperature ranges	rods	stainl. steel (1.4404) Ø 3 mm or 6 mm	Empty signal	output	2,4 mA (conductivity > 1 $\mu\text{S}/\text{cm}$)
	ambient	0...50 °C	Type of protection		IP69K
	process	-10...100 °C	Operation pressure		10 bar max.
	high temp. version	-10...150 °C 30 min max.			



Installation Examples

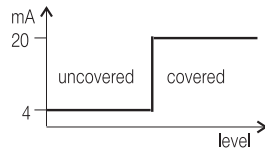
level control in vessels
e.g. full- / empty monitoring



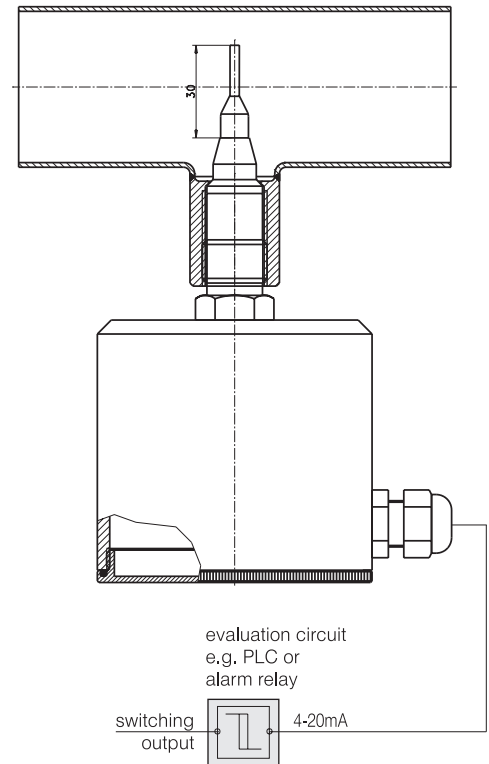
Attention:

If the level probe will be installed into the top of a vessel or horizontally the current output is like the diagram shows:

- probe uncovered: 4 mA
- probe covered: 20 mA



installation in pipes
e.g. dry run protection



Electrical Connection

Important information: To guarantee a trouble-free function the power supply cable as well as the signal cable should be shielded and grounded at the electric control box.

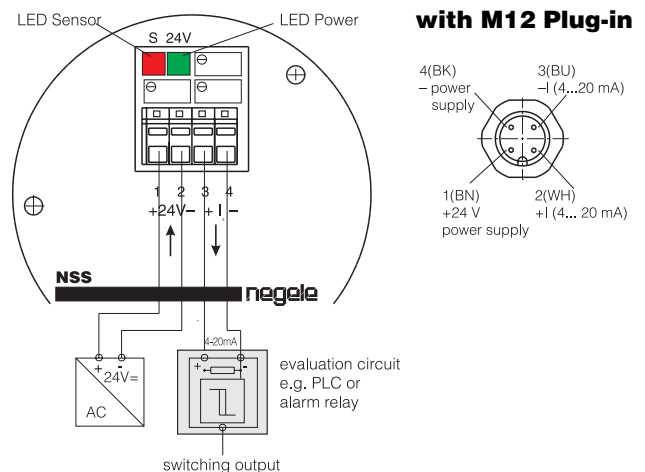
Adjustment Zero and Gain

The device will be shipped exactly calibrated, thus normally there is no calibration necessary.

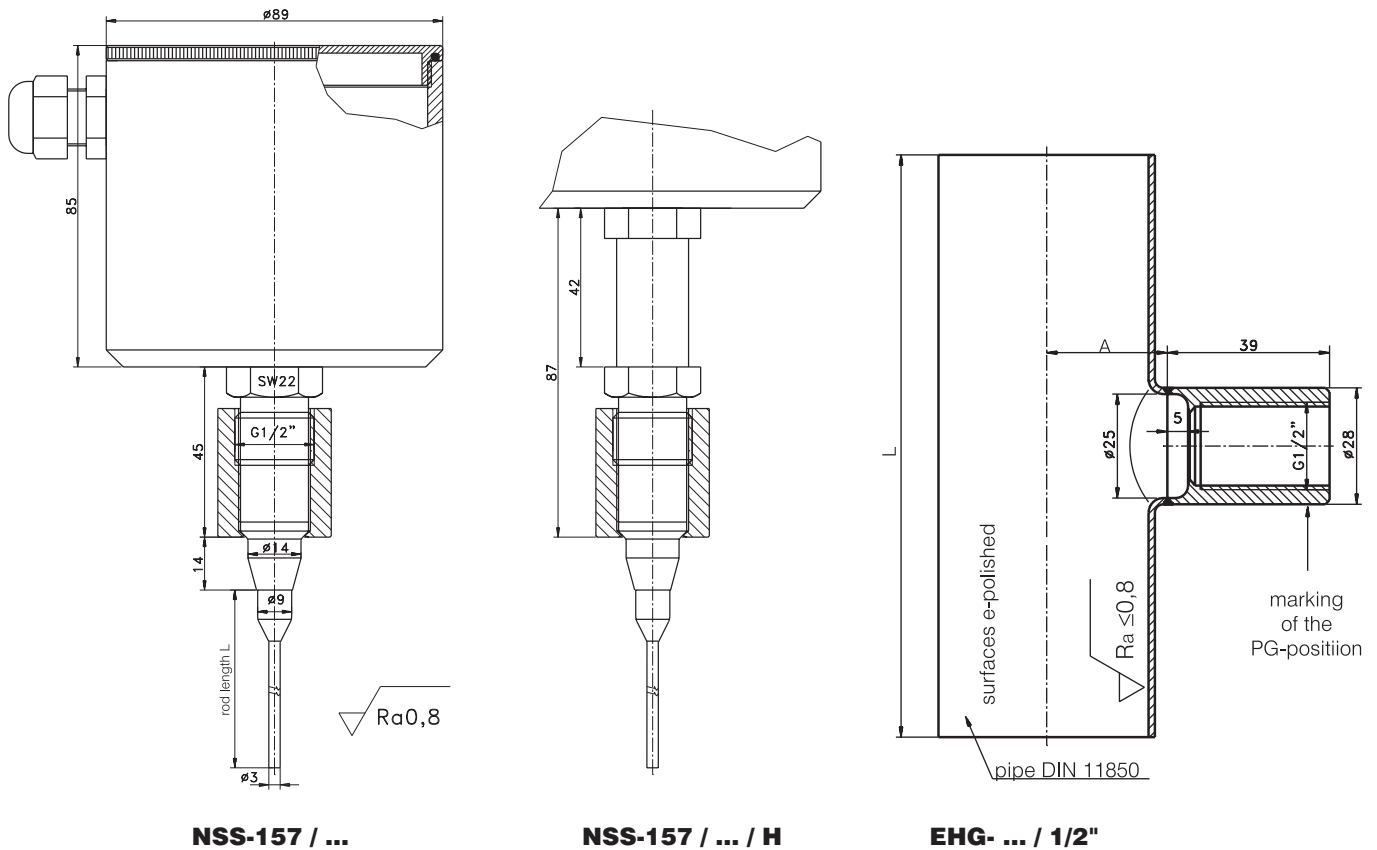
First-time Operation

- Make the electrical connection according to the electrical connecting plan and apply supply voltage.
- Set the alarm point of the evaluation unit as required.
Give attention to the following:
 - a more higher alarm point causes a lower sensitivity to adhesions.
 - when installing the sensor in pipes the setting of the alarm point depends of the filling high that is defined "full".
 - if it is required to monitor the pipe to completely filling high we recommend to set the alarm point between 19 mA and 20 mA.

Connecting Plan NSS-... (view from above, lid open)



Dimensioned Drawings of NSS-157 and build-in system EHG



NSS-157 / ...

NSS-157 / ... / H

EHG- ... / 1/2"

Mechanical Installation

- **Attention:** Do not shorten the rod of the level probe!
- To guarantee a trouble-free function of the measurement point give attention to a good electrical contacting of the process connection of the level probe to the pipe or vessel.
- **Do not use any isolating sealing materials like Teflon or similar!**
- **When installing into a pipe the level probe has to be mounted from the bottom side!** In this case use the Negele build-in systems type **EHG**. The length of the rod is optimized for these build-in systems.
- When installing into a vessel you can do the mounting from all directions. If you will install the level probe from above, give attention to the note of the **Installation Examples** (see above)!
- The vessel or pipe has to be made of an electrical conducting material like stainless steel.

Dimensions of EHG-... / 1/2"

Type	DN	L[mm]	A[mm]
EHG-40 / 1/2"	40	120	22
EHG-50 / 1/2"	50	140	29
EHG-65 / 1/2"	65	160	38
EHG-80 / 1/2"	80	180	46
EHG-100 / 1/2"	100	200	55

Order Code

Type	Process connection	Probe length [mm]*	High temperature version up to 150°C	Electr. connection
NSS-157 NSS-157A	G1/2" G1/2" (with 3-A TPV verification acc. to standard 74-03)	30 for DN 50 45 for DN 65 60 for DN 80 80 for DN 100 100 for DN 125 130 for DN 150 200 for vessels	X standard H high temperature (with neck tube)	PG M12
*these lengths are optimized to the Negele build-in systems EHG-1/2".				
Order example: NSS-157 / 40 / H / M12				

Application Example

level switch **NSS-157** mounted in **EHG-50 / 1/2"** and evaluation electronics **VGW-E**

Specification vgw-e

input	analog	4...20 mA
output	1 relay contact	250 V AC / 3 A
alarm point	free adjustable	0...100% of rod length
supply voltage	standard	230 V AC
	optionally	24 V AC, 115 V AC 24 V DC

order example: **VGW-E / 230V AC**



evaluation electronics **VGW-E** with free adjustable alarm point



level switch **NSS-157 / 30 / M12** with **EHG-50 / 1/2"**

Other Process Connections (sensor and adapter must be ordered separate!)

G1/2" adapter for: NSS-157								
	Negele weld-in sleeve	sleeve with collar (for vessels)	TriClamp	diary flange (DIN 11851)	Varivent-Inline	DRD (press ring optionally deliverable)	APV-Inline	BioControl
process connection								
Size								
DN50	EMZ-132	EMK-132	AMC-132/2"	AMK-132/50	AMV-132/ 40	AMK-132/50	AMA-132	AMB-50/1/2" and AMB-65/1/2" from DN50 up to DN100
DN65	(only 1 size)	(only 1 size)	AMC-132/3"	AMK-132/65	AMV-132/ 40	(only 1 size)	AMA-132	
DN80			AMC-132/80	AMK-132/80	AMV-132/ 40		AMA-132	
DN100			AMC-132/4"	AMK-132/100	AMV-132/ 40		AMA-132	
Order example:	DRD adapter:			AMK-132 / 50				