

Product Information NVS-041, -061, -081
FOOD

Level Sensor with M12 Thread Hygienic


Application/intended use

- Limit detection of aqueous and conductive media in vessels and pipes with minimum conductivity. The conductivity depends on the evaluation device: 1 $\mu\text{S}/\text{cm}$ when using external evaluation units, e.g. VNV / ZNV series, and 10 $\mu\text{S}/\text{cm}$ when using the integrated evaluation unit MNV-1C or MNV-M.

Application examples

- Limit detection of fluids in vessels (where the sensor is built in from the side) or pipes
- Full alarm in vessels and tanks where the sensor is built in from the top
- Empty alarm in vessels and tanks where the sensor is built in from the bottom
- Product monitoring in pipes
- Pump/dry-running protection
- Level control in tanks
- Overfill protection in dosing systems

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 and PEEK
- 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.

Special features/advantages

- CIP/SIP cleaning up to 143 °C (289 °F)/120 minutes max.
- Defined position of the cable entry
- Available with or without an integrated level transmitter (evaluation unit)
- Different electrical connections available
- Miniature edition, installation in pipes beginning at DN15 possible
- Fully molded to avoid condensation

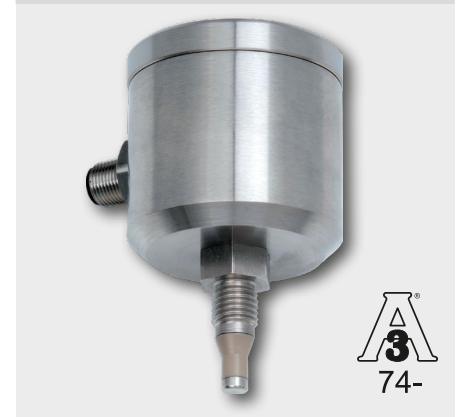
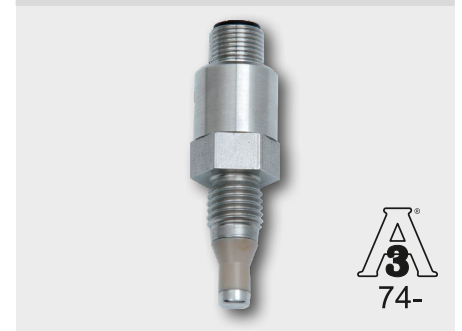
Options/accessories

- High-temperature version available (with 100-mm spacer; for use in processes with constant temperatures of up to 140 °C (284 °F))
- Fixed cable also available in other cable lengths

Accessories

Instead of the integrated level transmitter, standard multi-level sensors can also be used with external devices for installation on DIN rails, for example.

The full selection of external evaluation units, the technical data and the order code can be found in the „Evaluation units for conductive multilevel sensors“ product information.

Communication
 **0/1**
NVS-041

NVS-061

Overview of the evaluation units for DIN-rail installation ZNV-2, VNV-2


Specification of level sensor		
Process connection	crevice-free torque thread size	CLEANadapt build-in system, e.g. EMK-032 or EHG-.../M12 5...10 Nm M12 x 1.5
Material	connecting head rod insulating part	1.4301 (AISI 304) 1.4404 (AISI 316L) PEEK (FDA approval number 21CFR177.2414)
Surface quality		$R_a \leq 0.8 \mu\text{m}$ (wetted parts)
Weight		approx. 500 g
Rod length		9 mm
Operating pressure		max. 10 bar / 145 psi
Temperature ranges*	process NVS-04x process NVS-06x, NVS-08x cleaning ambient	0...140 °C (32...284 °F) 0...100 °C (32...212 °F) 143 °C (289 °F)/120 minutes -10...60 °C (14...140 °F)
Electrical connection	cable gland plug connection fixed cable 2.5 m - with level transmitter - without level transmitter	M16 x 1.5 M12 plug, 1.4301 (AISI 304) PVC 4x 0.25 mm ² silicone 2x 0.5 mm ²
Protection class	with M12 plug connection with cable connection	IP 69 K IP 67

*) When the MNV level module is integrated, please note the temperatures specified below in the technical data of the level transmitter.

Specification of MNV level transmitter (attention: differs from the basic unit)		
Temperature ranges	operation storage	-10...60 °C (14...140 °F) (with NVS standard equipment) -10...140 °C (14...284 °F) (with NVS high-temp. version) -20...60 °C (-4...140 °F)
Humidity	without condensation	0...95% r. H.
Power supply		18...36 V DC
Electrode E1	measuring voltage	1.5...2 VAC/300 Hz no DC signal
Selectable sensitivity	MNV-1C MNV-M	0,1 kΩ; 1 kΩ; 10 kΩ; 100 kΩ (via jumper) 0.2 kΩ; 2 kΩ; 20 kΩ (via control input voltage (Tri-State-Logic))
Output		PNP (active 50 mA, short-circuit-proof)
Delay	fixed	0.5 s
Switching function min/max selectable	MNV-1C MNV-M	via jumpers polarization of power supply

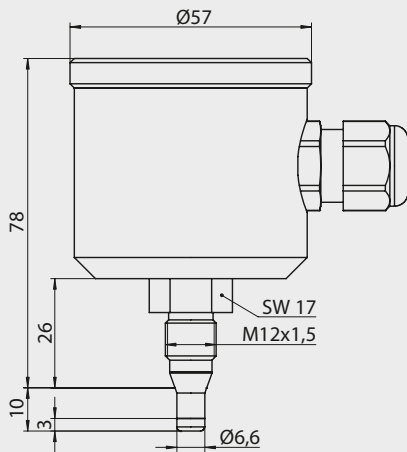
Selection of the right sensor type



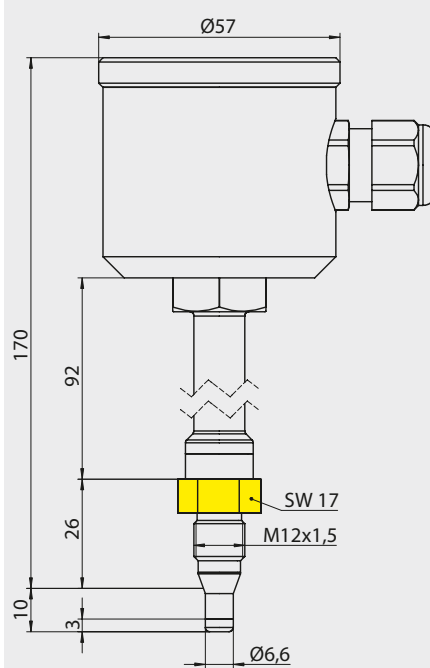
Temperature

If a sensor with an integrated level transmitter MNV is needed, we suggest using the high-temperature version (option H) with a spacer if the medium temperature exceeds 60 °C (140 °F).

NVS-041



NVS-041 ... / H

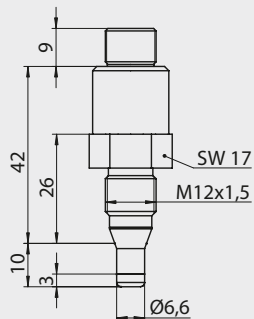


Advice for NVS-04x ... / H

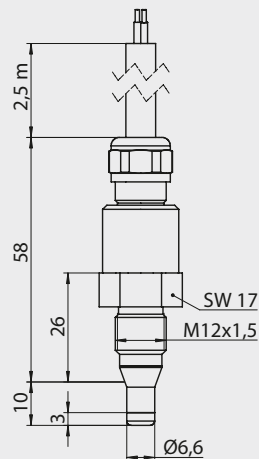


Tighten the sensor only at the lower, marked in yellow spanner flat (BE = 17 mm)!

NVS-061

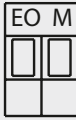


NVS-081



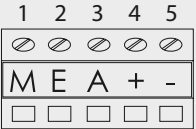
Electrical connection without level transmitter

With terminals

EO	rod (sensor)	
M	GND	

Electrical connection with MNV-1C, MNV-M transmitter

With clamps (with level transmitter MNV-1C)

1	GND	
2	rod (sensor)	
3	active output	
4	+power supply	
5	-power supply	

With M12 plug

Configuration of the M12 plug

1 (brown)	not connected	
2		
3 (blue)	GND	
4 (black)	rod (sensor)	


With M12 plug (with level transmitter MNV-M)

Configuration of the M12 plug (full alarm)

1 (brown)	+power supply	
2 (white)	control input sensitivity	
3 (blue)	-power supply	
4 (black)	active output	

With fixed cable

With PVC/silicone cable

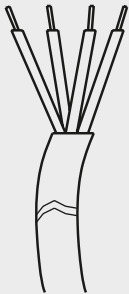
brown	rod (sensor)	
blue	GND	

With Teflon cable (PTFE)

red	rod (sensor)
white	GND

With fixed cable (with level transmitter MNV-M)

With PVC cable (full alarm)

white	+power supply	
yellow	control input sensitivity	
brown	-power supply	
green	active output	

Notice:
silicone and/or Teflon cables (PTFE)
are not available in this version.

Instructions on the electrical connection with level transmitters MNV-1C, MNV-M



The sensitivity and the switching behavior of sensors with level transmitters may be configured using an electrical connection or a jumper. Please also take note of the figures on the next page.

Setting up the MNV-1C, MNV-M level transmitters



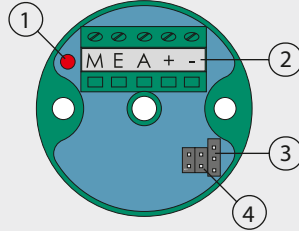
- Connect the supply voltage.
- Select the switching function (see "Configuration of the level transmitter").
- Select the minimum sensitivity (see "Configuration of the level transmitter").
- Wet the sensor with the least conductive medium.
- If the output switches, the selected sensitivity may be retained and calibration is finished. If the output does not switch, please continue as follows.
- Increase the sensitivity until the output switches. Once this happens, calibration is finished.

Switching state explanation

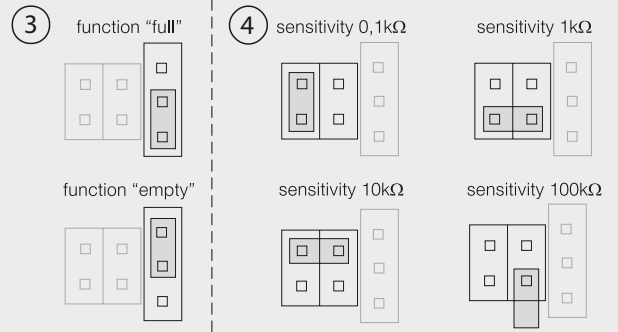
Full indicator: The output is active when immersed
Empty indicator: The output is active when not immersed

Level transmitter MNV-1C

- 1: LED sensor (lights up when the sensor is immersed, independent of the switching function)
- 2: Terminal block
- 3: Full/empty jumper
- 4: Sensitivity jumper



Configuration of the MNV-1C level transmitter



Standard setting on delivery
3: full
4: 10 kΩ

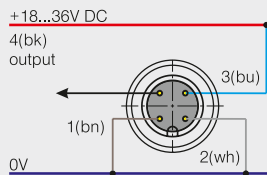
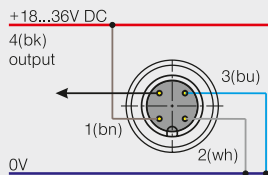
Configuration of the MNV-M level transmitter with NVS-061/M

Sensitivity

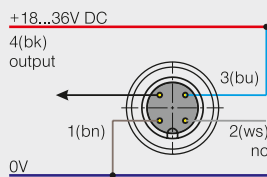
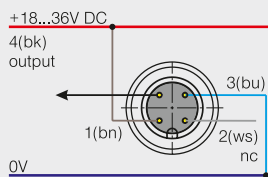
full alarm

empty alarm

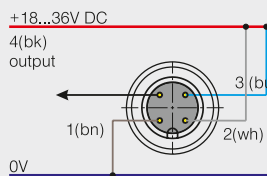
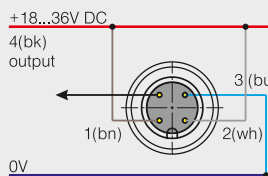
0.2 kΩ



2 kΩ



20 kΩ



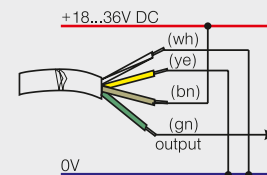
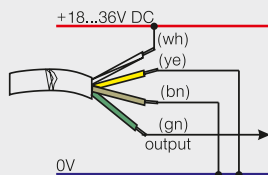
Configuration of the MNV level transmitter with NVS-081/M

Sensitivity

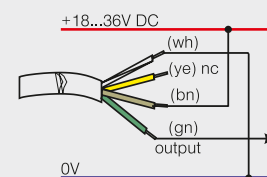
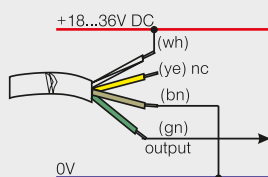
full alarm

empty alarm

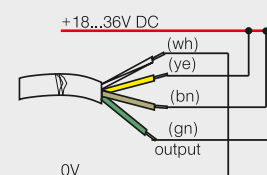
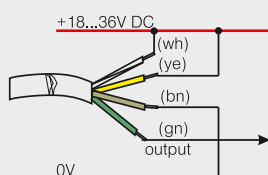
0.2 kΩ



2 kΩ



20 kΩ



Mounting instructions

- Do not exceed the maximum torque when you screw in the sensor.
- To guarantee reliable operation of the measuring point, make sure you have a good electrical connection between the process connection thread of the sensor and the pipe or vessel wall.
- Do not use any kind of sealing tape, such as Teflon tape. Also follow the instructions in the CLEANadapt product information if necessary.
- If the stub sensor is used in pipes, ensure that the rod emerges from the liquid when the medium is drained. We suggest installing the sensor in vertical pipes.
- Tank and pipe walls must be made of metal.
- For mounting and removing the sensor, please use the wrench flats only. Do not use the connecting head.

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

Click on the PDF icon to download the document.

Information on CLEANadapt process connections

Please find the complete overview of all adapters available as well as the respective technical data in the product information on CLEANadapt process adapters.

Selection of possible process connections

					
Process connection	Build-in system EHG (DIN 11865 series 2)	Weld-in sleeve	Weld-in ball	Collar sleeve	

Cleaning/maintenance

- When using a pressure washer, do not point the nozzle directly at the electrical connections.

Reshipment

- Sensors and process connection must be clean and must not be contaminated with hazardous media and/or heat-conductive paste. Note the cleaning information!
- To avoid damage of the equipment, use suitable transport packaging only.

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.

Transport/storage

- No outdoor storage
- Store in an area that is dry and dust-free
- Do not expose to corrosive media
- Protect against solar radiation
- Avoid mechanical shock and vibration
- Storage temperature -20...60 °C (-4...140 °F)
- Relative humidity max. 80 %

Standards and guidelines

- Compliance with the applicable regulations and directives is mandatory.

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.

Order code

NVS-04 connecting head \varnothing 55 mm with cable gland M16x1.5
NVS-06 connecting head \varnothing 18 mm with M12 plug
NVS-08 connecting head \varnothing 18 mm with fixed cable 2.5 m; other cable lengths: see at accessories

Rod (Ⓐ: 3-A compliant)

1 / 00 without coating, stub sensor EL = 9 mm, \varnothing 6.6 mm Ⓐ

Evaluation unit

X without

M integrated in connecting head; type-specific with MNV-1C or MNV-M

High-temperature version

X standard, only for sensors without evaluation unit and type-specific process temperatures (see technical data)

H with spacer: recommended for evaluation unit and process temperatures $> 60^{\circ}\text{C}$ (140°F)
ATTENTION: Please note the specifications regarding process temperature as given in the technical data.

Wire-break monitoring

(only possible with an external evaluation unit VNV-SD or VNV-W)

X without

D with wire-break resistor

NVS-04 **1 / 00 /** **M /** **H /** **X**