

Level Detector with integrated Temperature Sensor



Application

- level detection and temperature measurement in one device

Example of use

- dry running and temperature protection in pipes
- level detection and temperature measurement in vessels

Hygienic Design / Process Connection

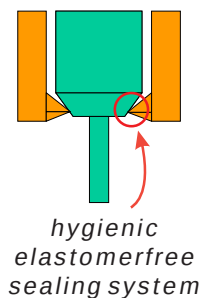
- hygienic measurement point which is easy to sterilize (EHEDG, 3A-certificates)
- because of elastomer free sealing system, the connection will be without gaps and crevices
- CIP-/ SIP-cleaning up to 140°C
- food compatible materials according to FDA
- sensor completely made of stainless steel and PEEK
- adapters available for all current process connections

Features

- level detection and temperature measurement in one measurement point
- available with or without integrated electronic

Options / Accessories

- integrated temperature and level electronic (mpu-4, mnv-1)
- other insertion length (20...500mm)
- Pt100 chip with other classes of accuracy, e.g. 1/3 DIN B, 1/10 DIN B
- readymade connecting cable for M12 plug-in
- neck tube 50mm for permanent temperature up to 150°C
- fast response sensor tip



NFP-41



NFP-41 with electronic module



EMZ-132



EMK-132



EHG-1/2"

Order Code

Sensor	Insertion length [mm]	Transmitter	Electrical connection	Ranges mpu-4	Sensor tip diameter	Accuracy class
NFP-41	15 special length ...500	x without	PG only	-10...+40°C 0...50°C 0...100°C 0...150°C	3mm 4mm	A 1/3B 1/10B
		m (temperature and level)	M12 only			
		mnv-1 (only level)				

Order example: NFP-41/ 015 / m / 0...150 / 1/3B

negele

Specification NFP-41

Process connection	hygienic	Weld-in fitting e.g. EMK-132 or EHG-25 / 1/2"
Insertion length	standard	15mm, max. 500mm
Material	head	stainless steel 303 (1.4305)
	protection tube	316 L (1.4404)
sensing resistor	acc. ITS 90	1xPt100 class A
Protection class		IP69K
Temperature range	ambient	-50...+80°C
	sensor tip	-50...+150°C
Operating pressure		max. 10bar
electr. connection	cable junction	M16x1,5 (PG)
	plug-in	M12-plug 303 (1.4305) 5pins

Level Module mnv-1

Temperature	operating	-10...+80°C
	storage	-20...+90°C
Humidity	without condensate	0...95%
Supply		15...36VDC
Electrode E1	voltage	1,5...2VAC/300Hz no DC signal
Sensitivity selectable	mnv-1	0,1; 1; 10; 100kOhm
Output	short-circuit-proof	active 50mA
Delay	fix	0,5s
Switching logic min/max selectable	mnv-1	via jumpers

Pt100 Transmitter mpu-4

Temperature range	standard	-10...+40, 0...50°C 0...100 / 150 / 200°C
Accuracy		<±0,1% (full scale)
Temperature drift	zero, span	<0,01%/K (full scale)
Electrical connection	supply	8...35VDC
Output	analog	4-20mA
Temperature range	ambient	-40...+85°C
	storage	-40...+120°C
Humidity	without condensate	0...98%

Accuracy Class Pt100

Tolerances of Pt100 acc. DIN ITS 90

Pt100	class B	class A	class 1/3B	class 1/10B
0°C	±0,3K	±0,15K	±0,10K	±0,03K
100Ω	±0,12Ω	±0,06Ω	±0,04Ω	±0,01Ω
100°C	±0,8K	±0,35K	±0,27K	±0,08K
138,5Ω	±0,30Ω	±0,13Ω	±0,10Ω	±0,03Ω

Mounting Instruction

- Take attention of the maximal torque when you build in the sensor!
- To guarantee a safe function, take a look on a good electrical connection between process connection of the sensor and the pipe or vessel.
Do not use any kind of sealing band like e.g. TEFLON tape!
- Using the NFP-41/015 in pipes for dry running protection, take care that the electrode will emerge if the pipe runs out. We propose to install the sensor in vertical pipes.
- Vessel resp. pipe wall must be made of steel!
- Please mounting and demounting the sensor, please use the spanner flat only! Do not use the connecting head!
- Do not cut the electrode!

General Operating Manual

- Mounting the sensor into the fitting. Electrical connection see page 3.

Startup the level module mnv-1

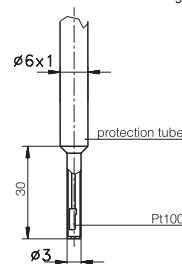
- connecting to the voltage supply
- setup the switching logic
(description see page 3: configuration mnv-1)
- select the lowest sensitivity (0,1KΩ).
- wetting the electrode with the medium with the lowest conductivity
- if the output is switching, the setup is finished.
- if the output is not switching, increase the sensitivity until the output is switching. Setup is finished.

Sensor tip diameter and response time

All temperature sensors are available with smaller sensor tips, to ensure a shorter response time. The below-mentioned times are according to a PT100 sensor in boiling water.

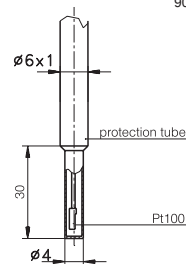
Sensor tip ø3mm

validity: $t_{50} \leq 0,5s$
90%-time: $t_{90} \leq 1,5s$



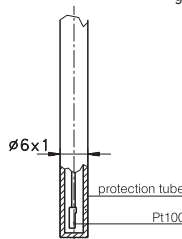
Sensor tip ø4mm

validity: $t_{50} \leq 2,4s$
90%-time: $t_{90} \leq 6,5s$

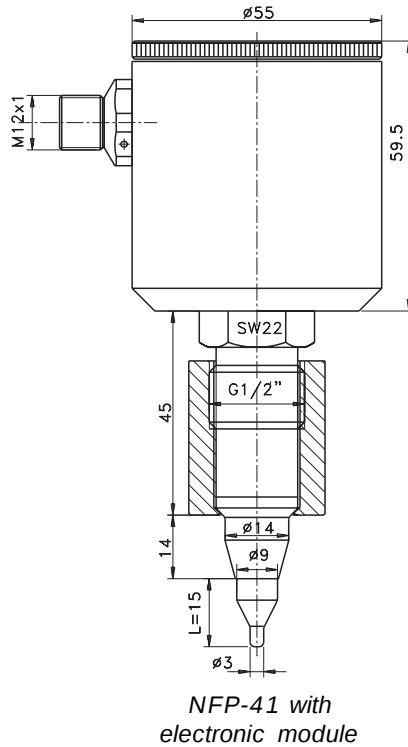
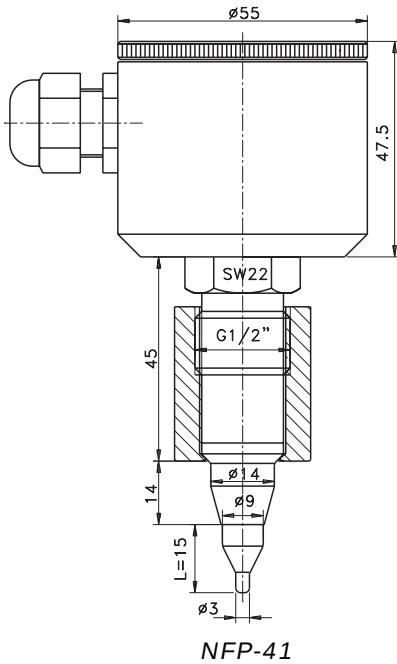


Sensor tip ø6mm

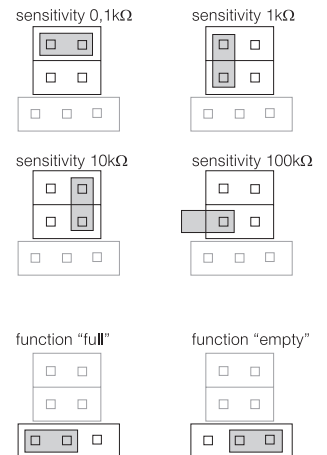
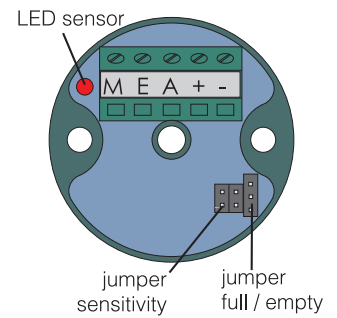
validity: $t_{50} \leq 3,0s$
90%-time: $t_{90} \leq 8,0s$



Drawings

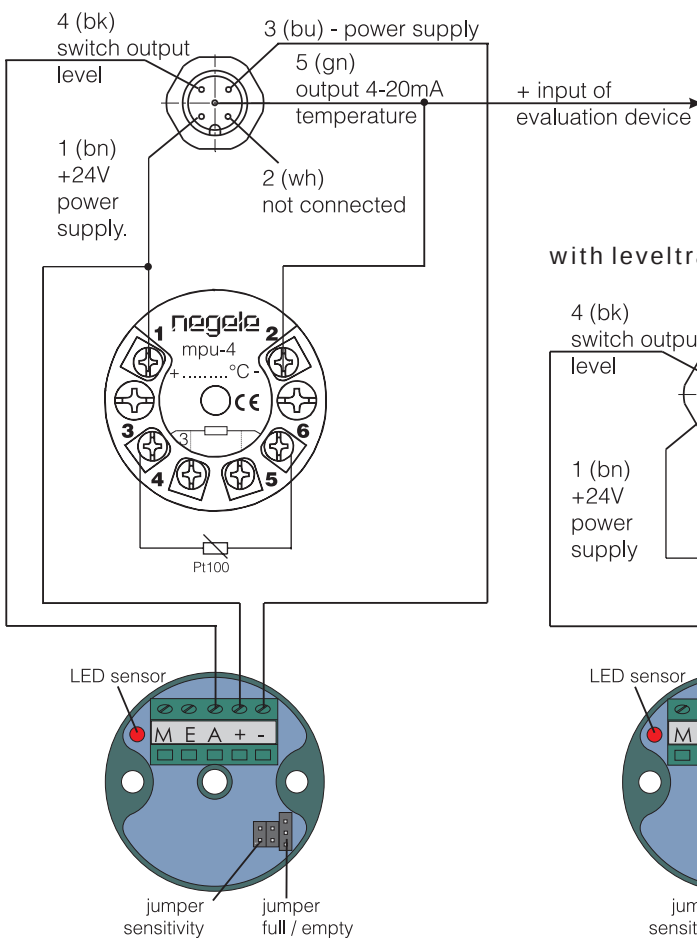


Configuration mnv-1

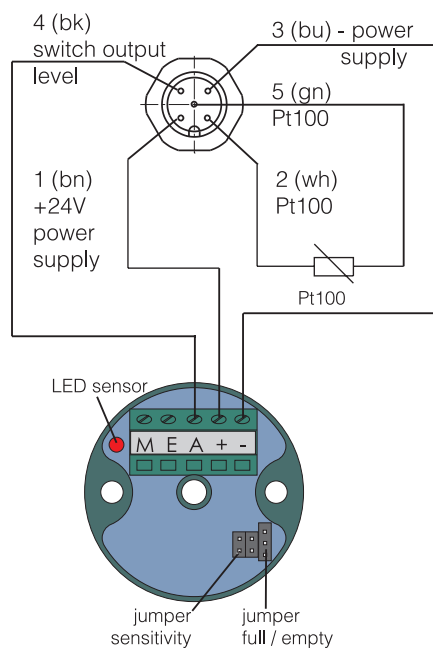


Electrical Connection

with transmitter for temperatur and level



with leveltransmitter and Pt100



without transmitter

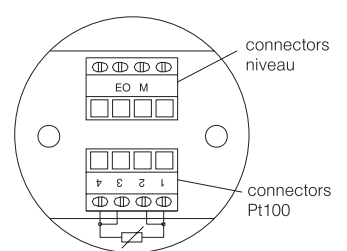


Table Torque

Thread size	Sealing system	Torque min. [Nm]	Torque max. [Nm]
G1/2"	PEEK / SS	5	10

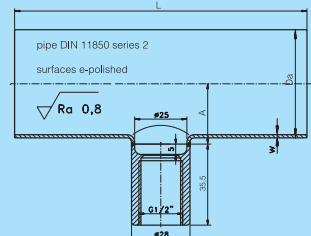
Important information: Use only Negele weld-in systems, to guarantee a safe function of the measurement point!

Process connection G1/2" hygienic

Cylindrical weld-in fitting (standard)	Cyl. fitting with weld-on ring (standard)	Cylindrical fitting with control-holes	Weld-in fitting with collar	Weld-in ball	Dummy flange BST
for vessels	for installation in pulled-out pipes	for vessels, with leakage detection	for thick-walled vessels	for sloped installation	to close existing measurement point
 Technical drawing of EMZ-132 showing dimensions: outer diameter 30mm, inner diameter 19mm, length 34mm, and a 15mm section.	 Technical drawing of EMS-132 showing dimensions: outer diameter 29mm, inner diameter 19mm, length 39mm, and a 31mm section.	 Technical drawing of EMZ-131 showing dimensions: outer diameter 30mm, inner diameter 19mm, length 34mm, and a 15mm section.	 Technical drawing of EMK-132 showing dimensions: outer diameter 30mm, inner diameter 19mm, length 34mm, and a 10mm section.	 Technical drawing of KEM-132 showing dimensions: outer diameter 30mm, inner diameter 19mm, length 34mm, and a 15mm section.	 Technical drawing of BST-130 showing dimensions: outer diameter 30mm, inner diameter 19mm, length 45mm, and a 37mm section.
EMZ-132	EMS-132	EMZ-131	EMK-132	KEM-132	BST-130

Dimension table EHG... / 1/2"

Type	DN	L[mm]	A[mm]
EHG-25 / 1/2"	25	100	15
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



Overview of all available process connections

Thread size	TriClamp	Dairy flange (DIN11851)	DRD (press ring optional available)	Varivent	APV-Inline	BioControl	Adapter G1/2" / G1"
G1/2" adapter							
Pipe size							
DN25	AMC-132/1"-1,5"	AMK-132/25		AMV-132/25	-	-	AMG-1
DN40	AMC-132/1"-1,5"	AMK-132/40		AMV-132/40	AMA-132	AMB-50/1/2"	
DN50	AMC-132/2"	AMK-132/50	AMK-132/50	AMV-132/40	AMA-132	and	
DN65	AMC-132/3"	AMK-132/65		AMV-132/40	AMA-132	AMB-65/1/2"	
DN80	AMC-132/80	AMK-132/80	(only one size)	AMV-132/40	AMA-132	from DN40	
DN100	AMC-132/4"	AMK-132/100		AMV-132/100	AMA-132	up to DN100	