

# Capacitive Level Monitor

## Range of Applications

- Limit detection in media with a water content of >25% or a dielectric constant  $\epsilon_r$  of the medium of >20
- Insensitive to foam and adherence
- Monitoring of substances, which are a danger to water, with the WHG\* variant (\*WHG = German Water Resources Law)

## Application Examples

- Detection of the filling level of liquids in vessels or pipes
- Full / empty monitoring in vessels
- Product monitoring in pipes
- Pump / dry running protection
- Detection of syrup and fruit concentrate in fruit preparation

## Hygienic Design

- Using the Negele EMZ-132 welding in sleeve or the EHG-.../ 1/2" welding in pipe a flow-optimized, hygienic and easily sterilizable installation situation is achieved (3A certificate, EHEDG permit)
- CIP / SIP cleaning at up to 150°C / max. 30min
- All materials, which come into contact with the product, conform with FDA regulations
- Sensor completely made from stainless steel, probe tip from PEEK
- Additional process connections: TriClamp, dairy flange, DRD, Varivent, APV, BioControl

## Special features of the sensor

- Capacitive measuring principle
- Independent of the conductivity of the medium
- Very short response time (<1s)
- Defined position of screwed cable glands
- Reversible output (full / empty active)

## Options / accessories

- WHG-approved variants available
- LED state indicator with inspection window cover (kf)
- Adjustable switching delay (0.1; 2.5; 5 seconds)
- NPN output (open collector)
- M12 plug and matching cable assembly

Important information: Use only Negele welding in systems, to guarantee the safe function of the measuring point!

Ordering Information:	nwm-141	Standard variants for use in media with $\epsilon_r > 20$ (or water portion >25%)
	nwm-041	
	nwm-141 / hs:	This variant should be used for fruit concentrates, e.g. in fruit preparation, or also for highly-concentrated sugar solutions.
	nwm-141 / h:	This variant is best for use in insulated vessels or at process temperatures which are often up to 150 °C.

## Order Code

Type	Process connection	WHG-approval	Output	Display	Time delay	elect. connection
nwm-141	G1/2"	without*	PNP*	o without*	0,1s* (fixed setting)	
nwm-141 / hs***	G1/2" (highly sensitive)	w**	NPN	kf with inspection window	t (adjustable: 0.1; 2.5; 5s)	PG*
nwm-141 / h***	G1/2" (with neck tube)					M12
nwm-041***	M12x1,5					

Ordering example: nwm-141 / kf / M12

\* Standard, no details necessary.  
 \*\* No other options possible.  
 \*\*\* No WHG version available.



nwm-041 / M12 with EMS-032



nwm-141 / M12 with EMZ-132



kf option and M12 plug



EHG-.../ 1/2"

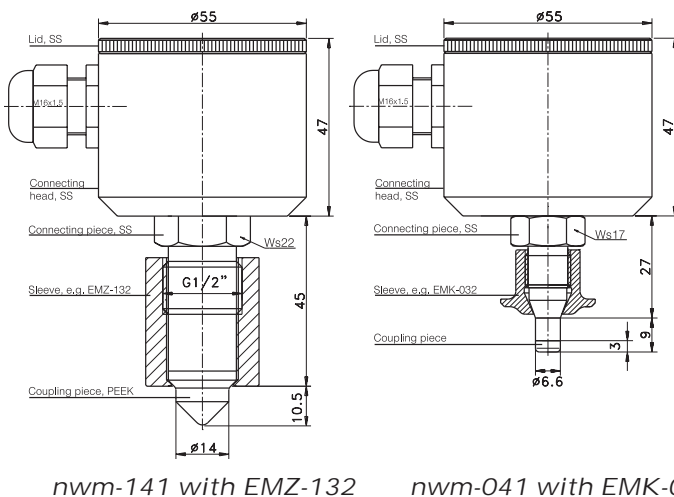
## Specification

Function	full / empty signal	establ. by polarity of the auxiliary voltage
Time delay	fixed setting	0,1s
	optionally adjustable	0,1; 2,5; 5s***
Process connection	nwm-141	G1/2" at sensor
	nwm-041	M12x1,5 comb. with Negele welding in sleeve
	Tightening torque	5-10Nm
Materials	Connecting head	SS (1.4305) Ø55mm
	Connecting piece	SS (1.4305)
	Neck tube nwm-141/h	SS (1.4305)
	Coupling pc. nwm-141	PEEK
	Coupling pc. nwm-041	PFA
Operating pressure	max. 10bar	
Type of protection	IP69K	

Temperature range	Ambient	-10...60°C
	with option /h***	-10...50°C
Process		0...100°C
	with option /h***	0...150°C
	CIP / SIP cleaning	0...150°C max. 30min
	with option /h***	0...150°C
Auxiliary voltage	18...36VDC (≤20mA)	
elect. connection	Screwed cable gland	PG (M16x1.5)
		2 pin, 1.5mm <sup>2</sup>
Cable connection		M12 plug***
		V2A (1.4305)
Output		PNP (active 50mA)
		optional: NPN (max. 50mA)***
		Short circuit-proof
Switching function	selectable****	high active***
		low active
		(Sensor free->high)
Transmission power	Measuring signal	≤1mW

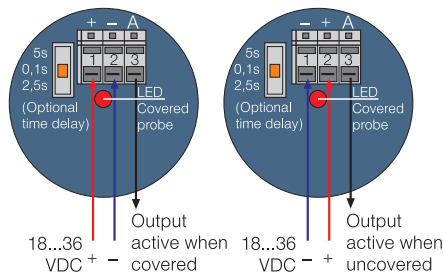
\*\*\* not with the WHG variant.

## Dimensional drawing nwm-141, -041

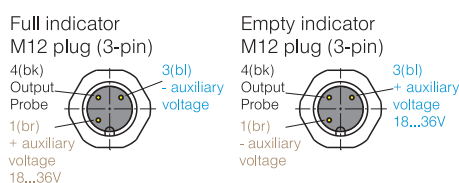


nwm-141 with EMZ-132      nwm-041 with EMK-032

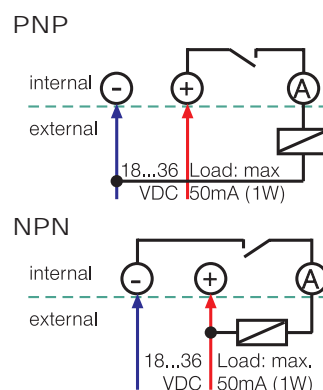
Electrical connection nwm as:  
 high active (Full indicator)  
 low active (Empty indicator)  
 and WHG variant



## Pin configuration, M12 plug



## Output circuit

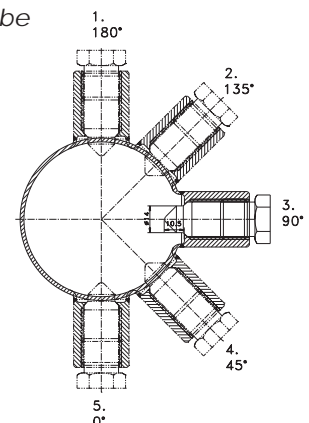


## Mechanical connection Installation advice

- During installation note that the maximum permitted tightening torque is 10Nm!
- Do not use non-conducting sealants such as Teflon or similar!
- To guarantee a definite function, the PEEK coupling piece must be completely covered by the medium! A minimum filling level is necessary in the pipe to ensure that the sensor operates. This varies according to the mounting position:

- for Pos. 1: 100%
- for Pos. 2: approx. 92%
- for Pos. 3: approx. 60%
- for Pos. 4: approx. 30%
- for Pos. 5: min. 11mm

## nwm-141-h with neck tube and EMZ-132



## WHG-approved versions

Level monitor nwm-141.w, nwm-041.w

WHG-approved probes can be used everywhere where substances, which are dangerous for water, are stored. They are used as protection from overflowing in tanks and containers in such areas.

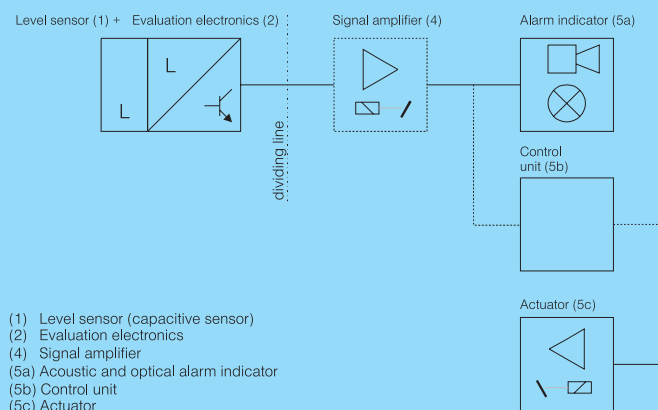
Sensors, which are used in these areas, must be able to provide evidence of acceptance by the TÜV as well as the approval of the Deutsche Institut für Bautechnik (DIBT = German Institute for Building Technology).

The constructive design of the probes must be such that an alarm signal can be sent even in the event of an error.



Inside view with LED switching status indicator nwm-141.w, nwm-041.w

## Electrical connection



- (1) Level sensor (capacitive sensor)
- (2) Evaluation electronics
- (4) Signal amplifier
- (5a) Acoustic and optical alarm indicator
- (5b) Control unit
- (5c) Actuator

## Function

Status	Tank	Output A	Display Dual-LED
Operation		high (+24V=)	LED green
Level alarm		low (0V)	LED red
Power failure		low (0V)	LED off

Explanation: In normal operation (no overflowing) the output of the nwm is active, the LED is green. In the case of an error (overflowing) the output changes over to low, and the LED to red. In the evaluation system, which is connected on the outgoing side, this change in status is further processed as an alarm. In the case of a wire breakage or power failure at the nwm, the output similarly changes to low, the LED goes out. This change in status is also further processed as an alarm.

## Important information:

The information on WHG sensors found on these pages is only in excerpt form. During commissioning or maintenance work, connecting work etc., please read the separate operating instructions. You will get these together with the sensor or upon request!

## Building Inspector's approval from the DIBT



Summary of further possible process connections (basic device and adapter must be ordered separately!)

nwm-041 with adapter								
	Process connection	Build-in system, EHG (DIN 11850 Series 2)	Negele welding in sleeve	Ball welding in sleeve	Collar sleeve	TriClamp	Varivent Inline	Vibration switch adapter G1"
Size								
DN15	EHG-15/M12	EMS-032	KEM-032	EMK-032	AMC-032/10	AMV-032/25	not available	not available
DN25	EHG-25/M12	Suitable for installing in pipes	Suitable for installing in elbow pipes or vessels	Suitable for installation in thick or thin-walled vessels	-	AMV-032/40		
DN40	EHG-40/M12				-	AMV-032/40		
DN50	EHG-50/M12				-	AMV-032/40		
DN65	EHG-65/M12				-	AMV-032/40		
DN80	EHG-80/M12"				-	AMV-032/40		
Ordering example:	TriClamp for DN15:		AMC-032 / 10					

nwm-141 with adapter								
	Process connection	Build-in system, EHG (DIN 11850 Series 2)	Negele welding in sleeve	Ball welding in sleeve	Varivent Inline	TriClamp	Dairy flange (DIN 11851)	Vibration switch adapter G1"
Size								
DN25	EHG-25/1/2"	EMS-132	KEM-132	AMV-132/25	AMC-132/1"-1,5"	AMK-132/25	-	-
DN40	EHG-40/1/2"	Suitable for installing in pipes	KEM-132	AMV-132/40	AMC-132/1"-1,5"	AMK-132/40	AMG-132	-
DN50	EHG-50/1/2"		KEM-132	AMV-132/40	AMC-132/2"	AMK-132/50	AMG-132	AMB-50/ 1/2"
DN65	EHG-65/1/2"		KEM-132	AMV-132/40	AMC-132/3"	AMK-132/65	AMG-132	AMB-65/ 1/2"
DN80	EHG-80/1/2"	EMZ-132	KEM-132	AMV-132/40	AMC-132/80	AMK-132/80	AMG-132	-
DN100	EHG-100/1/2"	Suitable for installing in vessels	KEM-132	AMV-132/40	AMC-132/4"	AMK-132/100	AMG-132	-
Ordering example:	TriClamp for DN100:		AMC-132 / 4"					