

Capacitive Level Monitor for PHARMadapt

Range of Applications

- limit detection in media with a water content of >25% or a dielectric constant ϵ_r of the medium of >20
- insensitive to foam and adherence
- for pharmaceutical applications
- for media without electrical conductivity

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
- monitoring of WFI water

Hygienic Design

- using the Negele **EPA** system a flow-optimized, hygienic and easily sterilizable installation situation is achieved (3A certificate, EHEDG permit)
- CIP / SIP cleaning up to 150°C / max. 30min
- all materials, contacting the product, conform with FDA regulations
- Sensor completely made of stainless steel, probe tip from PEEK

Special Features of the Sensor

- capacitive measuring principle
- independent of the conductivity of the medium
- hygienic and lightweight construction; non-sensitive for vibrations
- very short response time (<1s)
- reversible output (full / empty active)

Options / Accessories

- material acc. to USP Class VI
- high temperature version (**option H**), suitable for usage in insulated vessels or for process temperatures up to 150°C
- lid with window (**option KF**) for LED state indicator
- adjustable switching delay (0.1; 2.5; 5 seconds)
- NPN output (open collector)
- M12 plug and matching cable assembly

Important information

This sensors are made for use in "PHARMadapt EPA" systems only (see separate product information in chapter 1).



NWM-841 / M12



NWM-641 / M12

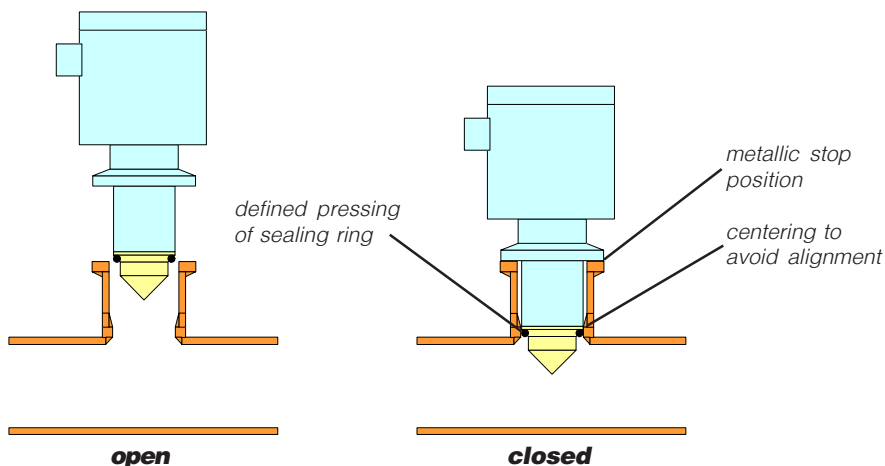


Option KF and M12-plug



NWM-841 / H / M12

Schematical description of Negele PHARMadapt-EPA system



EPA-8



EPA-18

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-641 NWM-841	PHARMadapt EPA-8 PHARMadapt EPA-18
Materials	connecting head	SS (1.4305) Ø55mm
	connecting piece	SS (1.4305)
	neck tube NWM-841 / H	SS (1.4305)
	coupling pc. NWM-841	PEEK
	coupling pc. NWM-641	1.4404
	sealing ring	EPDM (FDA conform)
Operating pressure		10bar max.
Type of protection		IP69K
Temperature range	ambient	-10...+50°C
	with option / H	-10...+50°C
	process	0...100°C
	with option / H	0...150°C
	CIP / SIP cleaning	150°C / 30min max.
	with option / H	0...150°C

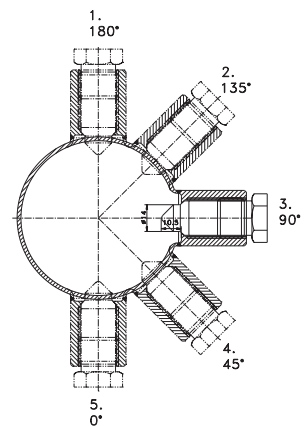
Supply voltage		18...36VDC (≤20mA)
Elect. connection	screwed cable gland	PG (M16x1.5)
	cable connection	2 pin, 1.5mm ²
output		M12 plug
		SS (1.4305)
Switching function	selectable	PNP (active 50mA)
		optional: NPN (max. 50mA)
Transmission power	measuring signal	high active
		low active
		(sensor wetted->high)
		(sensor free->high)
		≤1mW

Mechanical Connection

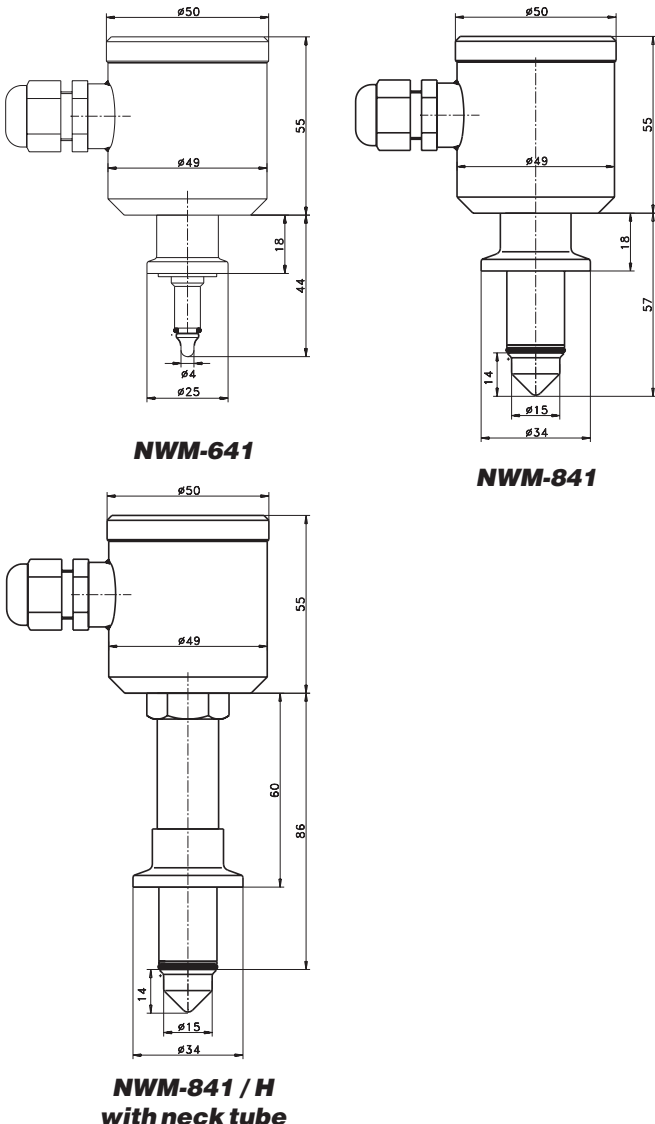
Installation Advice

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

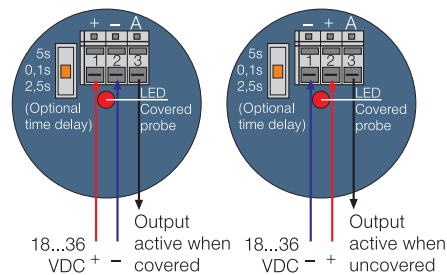


Dimensioned Drawing NWM-641, -841, -841 / H

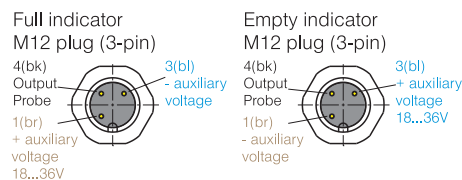


Electrical Connection NWM as:

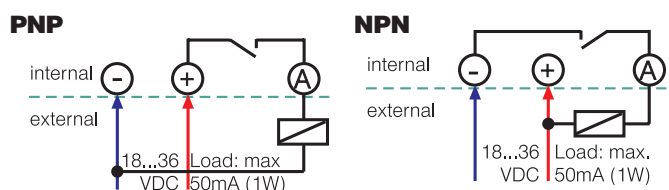
high active (full indicator) low active (empty indicator)



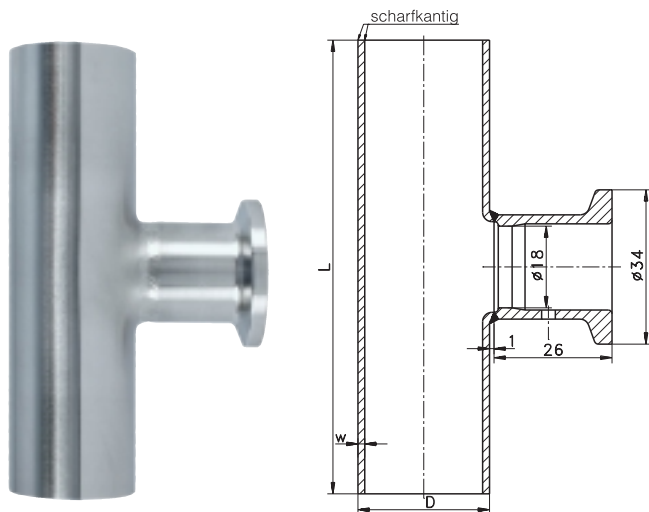
Pin Configuration, M12 plug



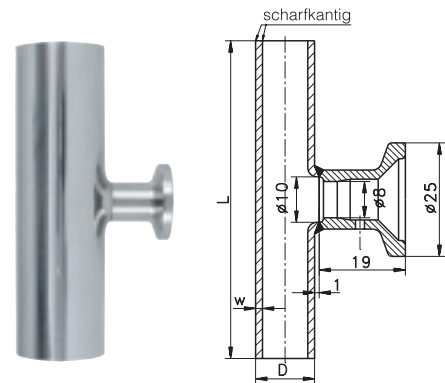
Output Circuit



Dimensioned Drawings of Pipes



**PHARMadapt
EPA-18**



**PHARMadapt
EPA-8**

Specification

Pipe specification	DIN 1	DIN 11850 series 1	Delta-Ferrite DF	standard	<1,0% (weld seam <3%)
	DIN 2	DIN 11850 series 2		option	<0,5% (weld seam <3%)
	ISO	DIN 11866 series A		Baseler Norm II	(BN II)
	ASME	DIN 11866 series B			
Material	ISO 1127	ISO 1127	Sulfure content	standard	0.030% max.
	ASME	DIN 11866 C		acc. to ASME	0.005% min. 0.017% max.
Surfaces	Material	pipes and sleeves			
	product contacted areas	stainless steel SS (1.4435, 316L) with 3.1.B	Nominal diameter	see PHARMadapt EPA, chapter 1	
	option	electro-polished	Tolerances	DN10...DN40	DN:±0,3; L:±1,0mm
		$R_a \leq 0,8 \mu\text{m}$ (not in welded areas)		DN50...	DN:±0,5; L:±1,0mm
		$R_a \leq 0,6 \mu\text{m}$	Sensor connection	EPA-8	Clamp ring DN10-20
		$R_a \leq 0,4 \mu\text{m}$		EPA-18	Clamp ring DN25-40
			Sealing principle	sealing ring	EPDM (FDA listed)
			Operating pressure		10bar max.

Note

The technical specification of pipes is according to DIN 11865 if no other is defined. DF values are valid for delivery condition. Mechanical treatment after delivery can increment the DF value.

Available Pipes

(dimensions and order code: see tables at page 3 in **product information PHARMadapt EPA** in chapter 1.)

DIN 11850 Series 1

**DIN 11850 Series 2
DIN 11866 Series A**

**DIN 11866 Series B
ISO 1127**

**DIN 11866 Series C
OD-Tube**

Order Code

NWM-641 (Process connection PHARMadapt EPA-8, pharma conform version)
NWM-841 (Process connection PHARMadapt EPA-18, pharma conform version)

Model (only with NWM-841)

X Standard (FDA conform)
 USP USP class VI (PEEK and sealing ring)

Output

PNP pnp activ 24VDC
 NPN npn open collector

Temperature Version

X standard: process temperatures up to 100°C; SIP 140°C / 30min
 H high temperature version: process temperatures up to 150°C

Switching Delay

X fixed (0,1s)
 T adjustable: 0,1s; 2,5s; 5,0s

Status-LED

X without
 KF lid with window; LED visible from outside

Electrical Connection

X cable entry M16x1,5
 M12 M12-plug

Example:

NWM-841 / X / PNP / H / T / KF / M12

Ordering Information:

NWM-641, -841

Standard model for use in media with $\epsilon_r > 20$ (or water portion $> 25\%$)

NWM-641 / H, -841 / H

This model is best for use in insulated vessels or at process temperatures up to 150°C.

Accessories / Options

Clamp Ring SRC*



*Note:

the Clamp ring is not included in delivery and must be ordered separately.

Identification with TAG-number plate



NWM-641 / M12 with TAG-number plate

Order Code

Item

SRC-05 (for NWM-641, material 1.4301 bright)
SRC-10 (for NWM-841, material 1.4301 bright)
TAG (labeled acc. to customer preference material 1.4301 bright)