

## Product Information NCS-M

## FOOD

# Capacitive Limit Switch Food NCS-M



## Application / Specified Usage

- Limit detection of fluid also with low or no water content like syrup, fruit concentrates, alcohols und oils with a dielectric constant  $\epsilon_r$  (Dk)  $\geq 2$

## Application Examples

- Limit detection in vessels or pipes
- Product monitoring in pipes
- Pump/dry running protection
- Detection of syrup and fruit concentrate

## Hygienic Design / Process Connection

- Hygienic process connection with CLEANadapt
- Conforming to 3-A Sanitary Standard
- All wetted materials are FDA-conform
- Sensor completely made of stainless steel, sensor tip made of 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.

## Features

- CIP- / SIP cleaning up to 143 °C / max. 120 minutes
- Compact installation size
- No adjustment necessary
- Capacitive measuring principle
- Independent of the medium conductivity
- Insensitive to foam and adherence
- Very short response time (< 100 ms)
- By using M12 angular connector, self-adjusting to "PG" label of CLEANadapt system.

## Measuring Principle

The capacity of a capacitor is affected by 3 factors: **Distance** and **size of the electrodes** as well as the **kind of fluid (medium)** between the electrodes. Using the capacitive sensors only the kind of medium is of interest.

The electrode of the sensor and surface of tank can be seen as capacitor, the medium as dielectric fluid. Caused by the higher Dk-value of the medium compared to air the capacity increases if the sensor is covered with the medium. The change of capacity is evaluated by electronics and converted into a corresponding switching order. This functional principle requires that the sensor tip is completely covered with medium. That way the sensor is insensitive to foam and adherences.

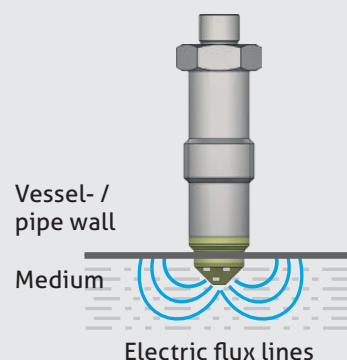
## Authorizations



## NCS-M

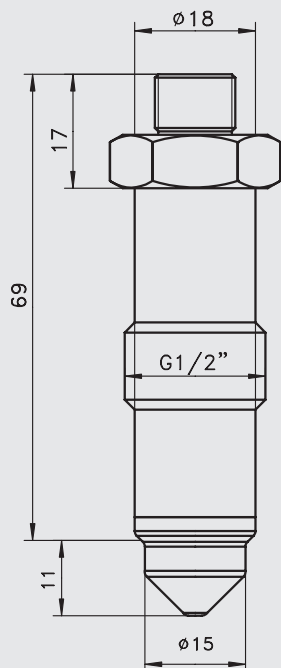


## Measuring principle



Specification		
Process Connection	thread	G1/2" CLEANadapt combined with Anderson-Negele weld-in sleeves, build-in systems, adapter sleeves
	tightening torque	max. 10 Nm
Materials	connection piece sensor tip	stainless steel 1.4305 (303) PEEK (FDA approval number 21 CFR 177.2415)
Surface Quality		$R_a \leq 0.8 \mu\text{m}$
Weight		approx. 100 g
Operating Pressure		max. 10 bar
Protection Class		IP 69 K
Electrical Connection	cable connection	M12-plug, stainless steel 1.4305 (303)
Supply		16...32 V DC
Output		PNP (active 50 mA, short-circuit-proof)
Response Time		approx. 1 s
	optional	approx. 100 ms
Measuring Range	NCS-M-11	$D_k \geq 20$
	NCS-M-12	$D_k \geq 2$
Temperature Range	ambient	0...70 °C
	process	-10...+115 °C
	CIP-/ SIP-cleaning	143 °C max. 120 minutes

Dimensional Drawing NCS-M



Electrical Connection

M12-plug	High active	Low active
	1: +24 V DC 3: 0 V 4: Output	1: 0 V 3: +24 V DC 4: Output

### Conventional Usage

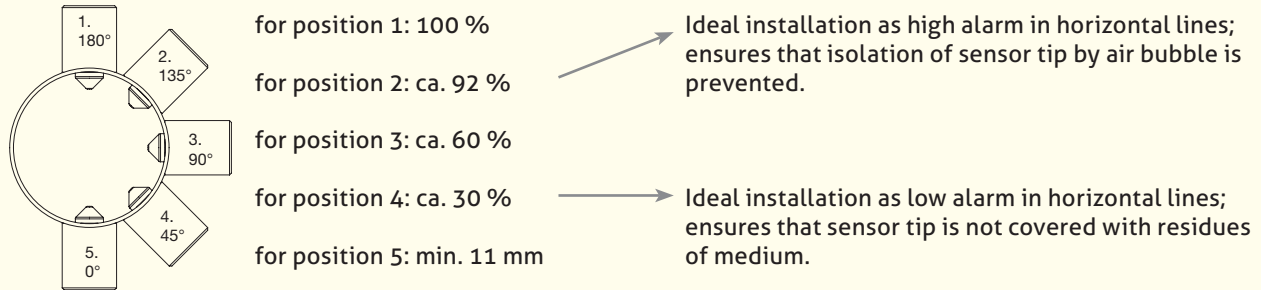


- Not suitable for applications in explosive areas.
- Not suitable for applications in safety-relevant equipments (SIL).

### Mechanical Connection/Installation in Pipes



To guarantee a definite function, the sensor tip must be completely covered by the medium! A minimum filling level in the pipe is necessary to ensure that the sensor operates. This varies according to the mounting position:



- Use Negele CLEANadapt system for safe operation of measuring point!
- Attention: The maximum tightening torque for mounting is 10 Nm!
- Use a welding mandril for correct installation of CLEANadapt weld-in fittings. Please pay attention to the weld-in and installation details in the CLEANadapt product information (chapter one).
- Do not use non-conducting sealants such as PTFE (Teflon) or similar.

### Conditions for a measuring point according to 3-A Sanitary Standard 74-06



- The sensors NCS-M conforming to the 3-A Sanitary Standard.
- The Sensors are designed for CIP-/ SIP-cleaning. Maximum 143 °C / 120 minutes.
- Only with the build-in system CLEANadapt (EMZ, EMK, EHG with pipe diameter > DN25, ISO 20 and 1", Adapter AMC and AMV) allowed.
- Using the weld in sleeve EMZ, EMK the weld must comply to the requirements of the current 3-A Sanitary Standard.
- Mounting position, self draining and the position of the leakage hole must be in accordance to current 3-A Sanitary Standard.

**Cleaning / Maintenance**

- In case of using pressure washers, don't point nozzle directly to electrical connections!

**Transport / Storage**

- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature 0...40 °C
- Relative humidity max. 80 %

**Reshipment**

- Sensors shall be clean and must not be contaminated with dangerous media!
- Use suitable transport packaging only to avoid damage of the equipment!

**Standards and Guidelines**

- You have to comply with applicable regulations and directives.

**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.

**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**

<b>NCS-M-11</b>	(version with standard measurement range, fix adjustment to $D_k \geq 20$ ; process connection CLEANadapt G1/2" hygienic)
<b>NCS-M-12</b>	(version with enhanced measurement range for critical media (e.g. Oil, Fat, ...), fix adjustment to $D_k \geq 2$ ; process connection CLEANadapt G1/2" hygienic)
↓	<b>Response time</b>
	<b>X</b> (standard, response time approx. 1 s)
	<b>S</b> (response time approx. 100 ms)
<b>NCS-M-11 /</b>	<b>S</b>