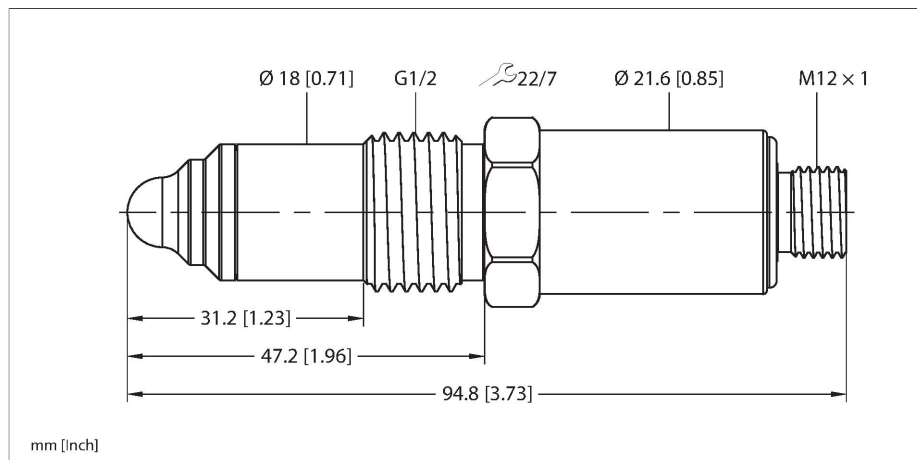


# NCLS-30-UP6X-H1141

## Capacitive Limit Level Sensor



### Technical data

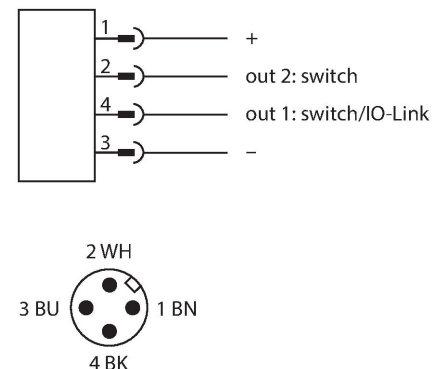
|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| Type                                   | NCLS-30-UP6X-H1141                                                                |
| ID                                     | 100004248                                                                         |
| Mounting location                      | any                                                                               |
| Installation information               | Please use the NCLS limit level sensor only with original Turck process adapters! |
| Required permittivity ( $\epsilon_r$ ) | 1.5                                                                               |
| Pressure resistance                    | 10 bar                                                                            |
| Vacuum resistance                      | -1 bar                                                                            |
| Ambient temperature                    | -10...+70 °C                                                                      |
| Medium temperature                     | 0...+100 °C                                                                       |
| Comment on the media temperature       | 0...+130 °C for < 1 h at an ambient temperature of 40 °C                          |
| Storage temperature                    | -20...+70 °C                                                                      |
| CIP/SIP-capable                        | yes                                                                               |
| <b>Electrical data</b>                 |                                                                                   |
| Operating voltage $U_B$                | 12...32 VDC                                                                       |
|                                        | In IO-Link mode                                                                   |
| Power consumption                      | 3 W                                                                               |
| Switch-on time                         | < 0.3 s                                                                           |
| Response time                          | < 0.2 s                                                                           |
| Switching frequency                    | ≤ 5 Hz                                                                            |
| Isolation test voltage                 | 0.5 kV                                                                            |
| Communication protocol                 | IO-Link                                                                           |
| SIO mode-compatible                    | Yes                                                                               |
| Number of digital outputs              | 2                                                                                 |
| Output function                        | 4-wire, NO/NC, PNP                                                                |
| Short-circuit protection               | yes                                                                               |



### Features

- Media-contacting detection of limit levels in tanks and pipes
- Detection of different substances (liquid, viscous, granular, powder form)
- Hygienic PEEK tip, CIP/SIP compatible
- EHEDG certified (with NCLS-WA1 process adapter)
- Highly visible ring LED
- 12...32 VDC, power consumption: typically 1 W, max. 3 W
- Two digital outputs, separately adjustable as NO/NC
- PNP, NPN or push-pull, switchable
- IO-Link for parameterization/process values
- Process connection G1/2" male thread, hygienic (in combination with TURCK adapters)
- 4-pin connector device, M12 x 1

### Wiring diagram



### Functional principle

Capacitive proximity switches are designed for wear-free detection of metal (electrically conductive) as well as non-metal (not electrically conductive) objects. A key feature

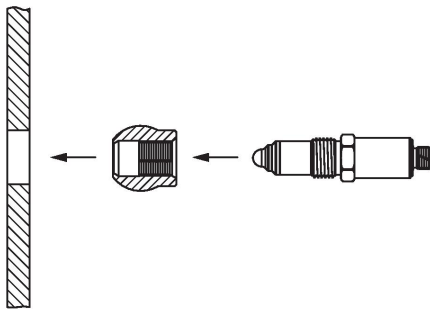
## Technical data

|                                        |                                                           |
|----------------------------------------|-----------------------------------------------------------|
| Wire break/reverse polarity protection | yes/Complete                                              |
| Insulation class                       | III                                                       |
| Tests/approvals                        |                                                           |
| Approvals                              | CE<br>EHEDG                                               |
| IO-Link                                |                                                           |
| IO-Link specification                  | V 1.1                                                     |
| Programming                            | FDT/DTM                                                   |
| Transmission physics                   | corresponds to 3-wire physics (PHY2)                      |
| Transmission rate                      | COM 2/38.4 kbps                                           |
| Process data width                     | 16 bit                                                    |
| Measured value information             | 14 bit                                                    |
| Switchpoint information                | 2 bit                                                     |
| Frame type                             | 2.2                                                       |
| Included in the SIDI GSDML             | Yes                                                       |
| Mechanical data                        |                                                           |
| Design                                 | Threaded barrel, G ½"                                     |
| Dimensions                             | 94.8 x 22 x 22 mm                                         |
| Housing material                       | Stainless steel, 1.4404 (AISI 316L)                       |
| Materials (contact with media)         | Plastic, PEEK                                             |
| Max. tightening torque of housing nut  | 20 Nm                                                     |
| Process connection                     | G 1/2" male thread, hygienic                              |
| Electrical connection                  | Connector, M12 × 1                                        |
| Vibration resistance                   | 2 Hz (1 mm)                                               |
| Shock resistance                       | 7 g (11 ms)                                               |
| Protection class                       | IP67<br>IP69K                                             |
| MTTF                                   | 1080 years acc. to SN 29500 (Ed. 99) 40 °C                |
| Power-on indication                    | Ring LED, Green                                           |
| Switching state                        | Ring LED, Green, (Reverse of operating voltage indicator) |

of the NCLS limit level sensors is the ability to detect and differentiate between various liquids, viscous materials, granular materials and powders by making contact with the media. They are extremely well suited for detecting level limits (max./min.) and changes to the media in tanks and pipelines.

## Mounting instructions

## Product features



Please use the NCLS limit level sensor only with original Turck process adapters!

In principle, the sensor can be installed in any position and any location.

Mounting positions where deposits occur as a result of highly adhesive or viscous media or air pockets must be avoided.

A minimum distance of 15 mm must be maintained between the sensor tip and any adjacent objects (e.g. the wall of a container or pipe).

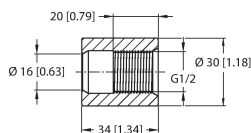
The relative permittivity ( $\epsilon_r$ ) of the medium must be  $>1.5$ .

## Accessories

### NCLS-WA0

100004429

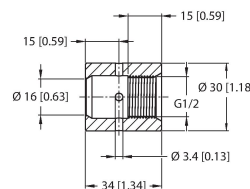
G1/2" cylindrical welding sleeve process adapter without control bore for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



### NCLS-WA1

100004430

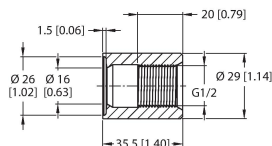
G1/2" cylindrical welding sleeve process adapter with control bore for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C, EHEDG



### NCLS-WA2

100004431

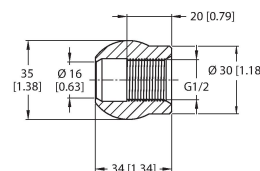
G1/2" weld collar sleeve process adapter without control bore for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



### NCLS-WA4

100004432

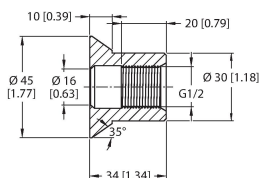
G1/2" ball sleeve process adapter without control bore for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



### NCLS-WA7

100004433

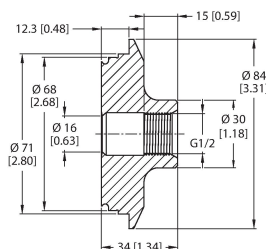
G1/2" welding sleeve process adapter with collar for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



### NCLS-VA

100004434

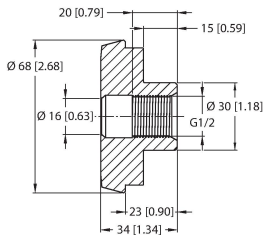
G1/2" Varivent process adapter DN50 for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



NCLS-DF50

100004435

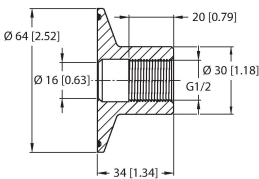
G1/2" dairy screw connection process adapter DN50 for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



NCLS-TC50

100004436

G1/2" triclamp process adapter DN50 for NCLS capacitive limit level sensors, metallic sealing for hygienic applications, material 316L, max. temperature 140 °C



Accessories

| Dimension drawing | Type               | ID      |                                                                                                                                                                        |
|-------------------|--------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | RKC4.4T-P7X2-2/TEL | 6626162 | Connection cable, M12 female connector, straight, 4-pin, 2 LEDs, cable length: 2 m, jacket material: PVC, black; cULus approval                                        |
|                   | RKC4.4T-P7X2-2/TXL | 6626795 | Connection cable, M12 female connector, straight, 4-pin, 2 LEDs, cable length: 2 m, jacket material: PUR, black; cULus approval                                        |
|                   | RKC4.4T-2/TXL      | 6627544 | Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; stainless steel coupling nut; cULus approval                  |
|                   | RKC4.4T-2/TXL1001  | 6628825 | Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, protective jacket material: aramid fibers, yellow; temperature peak: 200 °C                |
|                   | RKC4.4-2/TFE       | 6934473 | Connection cable, M12 female connector, straight, 4-pin, stainless steel coupling nut, cable length: 2 m, jacket material: PVC, gray; temperature range: -25...+80 °C  |
|                   | RKC4.4-2/TFG       | 6933086 | Connection cable, M12 female connector, straight, 4-pin, stainless steel coupling nut, cable length: 2 m, jacket material: TPE, gray; temperature range: -40...+105 °C |

| Dimension drawing | Type          | ID      |                                                                                                                         |
|-------------------|---------------|---------|-------------------------------------------------------------------------------------------------------------------------|
|                   | RKC4.4T-2/TEL | 6625013 | Connection cable, M12 female connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval |



Accessories

| Dimension drawing | Type           | ID      |                                         |
|-------------------|----------------|---------|-----------------------------------------|
|                   | USB-2-IOL-0002 | 6825482 | IO-Link Master with integrated USB port |

