

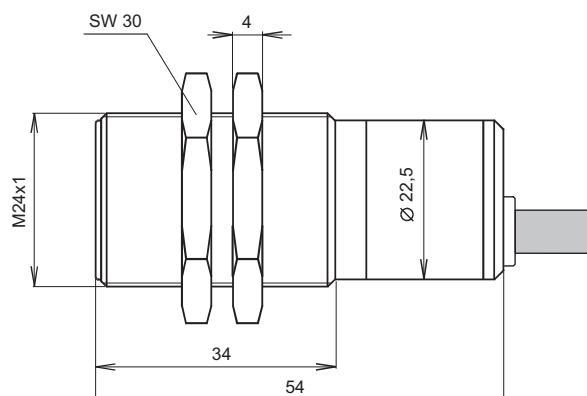
## Description

Capacitive proximity switch CPS-24 is intended for detection of proximity or motion of solid objects. It is suitable for indication of the liquid level through non-conductive walls of vessels or on non-conductive gauge-pipes. It is excellent for liquid leakage detection in collection pits or directly on floors.

The sensor state is indicated by LED. The sensitivity is adjustable by a trimmer located under a cover screw on the rear side.

The design and housing materials of CPS allow the use in complicated environments (harsh, dusty, explosive, aggressive) as well as in clean environments (medical technology).

## Dimension



## Technical specification

Operational areas (acc. to EN 60079-14) and performance

CPS-24N-\_-\_-

CPS-24Xi-\_-\_-



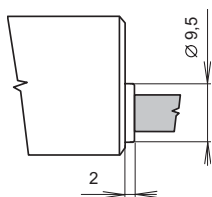
II1GEXiallCT6 with Namur supply unit (e.g. NSSU, NDSU, NLCU)

non-explosive

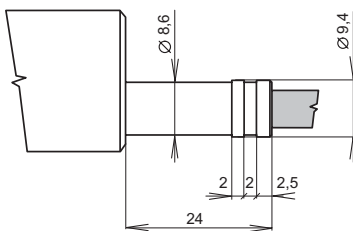
whole sensor zona 0

Type	CPS-24
Supply voltage: CPS-24N-_-_- CPS-24Xi-_-_-	7 ÷ 36 V DC 8 ÷ 9 V DC (max. 12 V DC)
Coupling capacity	2,2 nF
Electric strength (housing - supply leads)	500 V AC
Supply current (LED off / on): CPS-24N-_-_- CPS-24R-_-_-	3 / 6 mA ≤1mA / ≥ 2,2 mA
Output: CPS-24N-_-NO / CPS-24N-_-NC open collector CPS-24N-_-PO / CPS-24N-_-PC open collector CPS-24Xi-_-RO CPS-24Xi-_-RC	NPN normally - open / closed PNP normally - open / closed NAMUR normally - lower current NAMUR normally - higher current
Output switching current (NPN, PNP output)	max. 200 mA
Maximum inner parameters - Xi version	Ui=12VDC, Ii=15mA, Pi=45mW, Ci=15nF, Li=10uH
Max. switching frequency	5 Hz
Sensitivity - sensing distance (S)	adjustable 0 ÷ 10 mm
Basic sensitivity - metal plate (S <sub>p</sub> )	8 mm
Hysteresis (H)	5 ÷ 15 %
Ambient temperature	-20 až +70 °C
Protection class	IP 67
Cable: CPS-24N-_-_- CPS-24Xi-_-_-	PVC 3x0,5 mm <sup>2</sup> PVC 2x0,75mm <sup>2</sup>
Cable length (variant CPS-24_-A,B-_-_-)	standard 2 m (on request up to 30 m)
Weight (incl. 2 m cable)	ca. 0,3 kg
Material: housing sensing surface ending cable outlet var. A cable outlet var. B	stainless steel W.Nr. 1.4541 PTFE stainless steel W.Nr. 1.4541 plastic POM stainless steel W.Nr. 1.4541

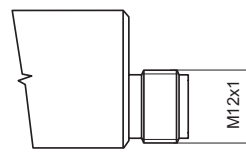
## Dimension and connection variants



performance "A" with short cable outlet



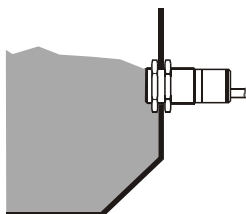
performance "B" with long cable outlet



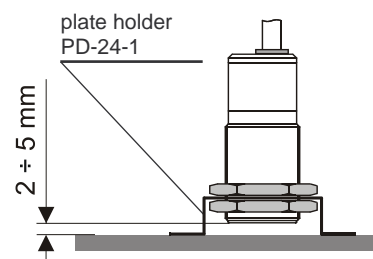
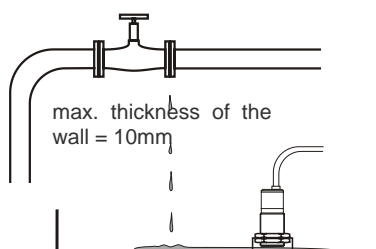
performance "C" with connector

## Basic ways of use

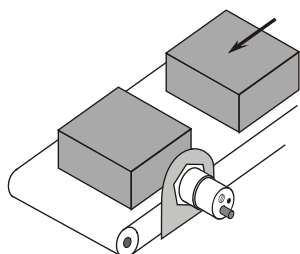
### Sensing of bulky materials in small containers



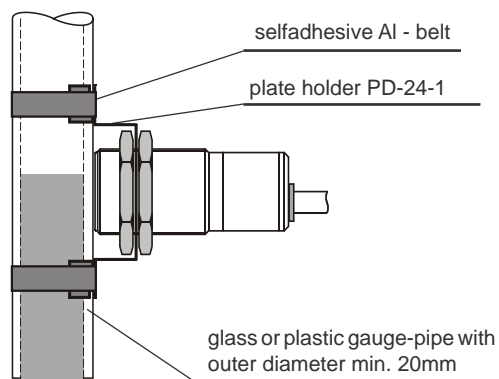
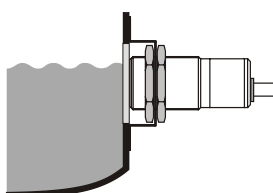
### Leakage indication in detention pits and boxes



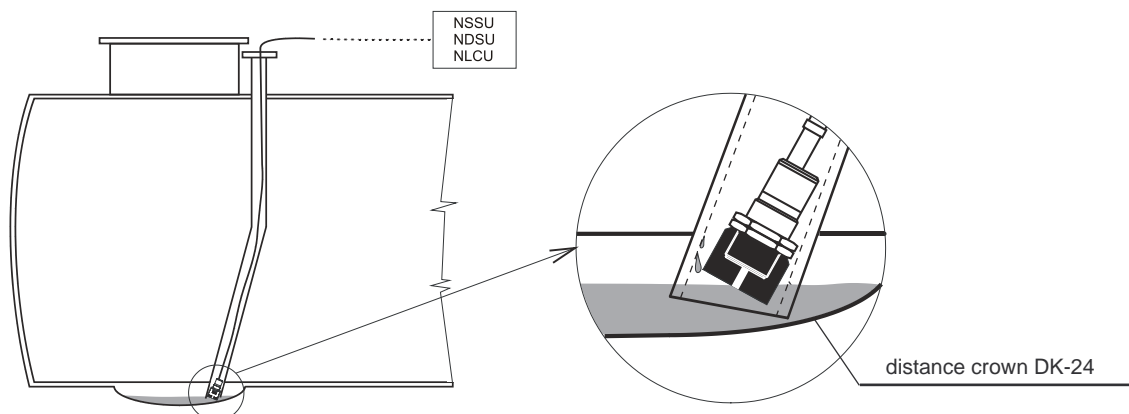
### Sensing of moving objects on conveyor



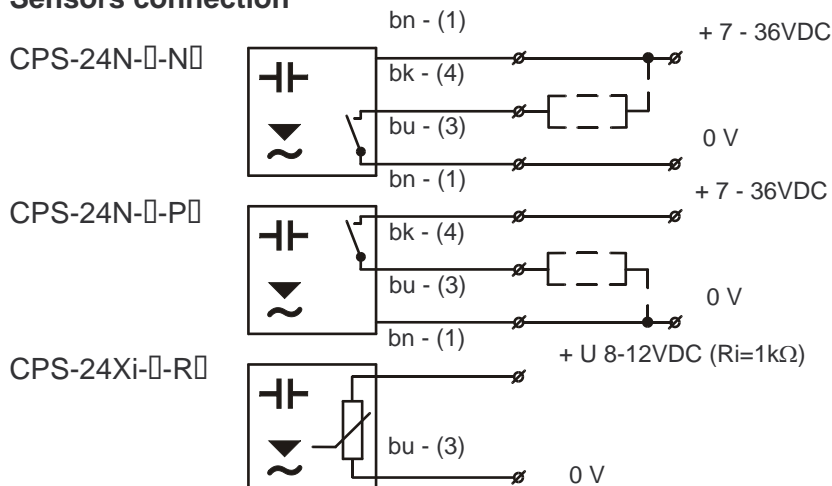
### Level sensing through glass or plastic walls



### Leakage detection in inter-wall space of dual-wall tanks



## Sensors connection



### Notes for connection :

- 1) The sensor with NPN or PNP output is allowed to lead only by resistive or inductive lead. The output is equipped with pulse short circuit protection. The capacitive leads (> c. 100nF) and leads with low zero-time resistance are taken as a short circuit.
- 2) It is recommended to lead the cable separately from power distribution leads and strong sources of EMI (frequency converters, electric motors).
- 3) Shielded cable is necessary to use when length of the line is longer than 30m.

## Example of correct function - level sensing

func.	level state	output state	LED
minimum level sensing		CPS-24N-□-NO CPS-24N-□-PO closed	
		CPS-24Xi-□-RO higher current	
		CPS-24N-□-NO CPS-24N-□-PO closed	
		CPS-24Xi-□-RO lower current	
maximum level sensing		CPS-24N-□-NC CPS-24N-□-PC closed	
		CPS-24Xi-□-RC higher current	
		CPS-24N-□-NC CPS-24N-□-PC closed	
		CPS-24Xi-□-RC lower current	

Notes for picture: for minimum level sensing we recommend to use the sensor with normally open output - NO, PO, RO. It is due to maximum safety - eventual failure of the sensor or cable line would behave equally to alarm level state.

By analogically for maximum level sensing we recommend the sensor with normally closed output - NC, PC, RC.

For leakage detection we recommend the NC, PC, resp. RC version too. It is maximum level sensing as well, despite the sensor is at the lowest place in the room.

## Adjustment and the sensitivity calculation

The sensitivity is set by trimmer located under cover screw on the rear side. Clockwise turning makes the sensitivity lower, reverse direction turning makes the sensitivity higher.

The sensor is factory adjusted to basic sensitivity  $S_b$ . Real sensitivity (sensing distance) depends on sensing material (see table).

$$S_r = k \cdot S$$

material	k
metal	1
water	0,9
wood (dry)	0,6
glass	0,4
PVC	0,2
paper - carton	0,1

## Protections, safety, compatibility, explosion proof.

The CPS is equipped with protection against reverse polarity connection, overvoltage transients, output current overload and short circuit.

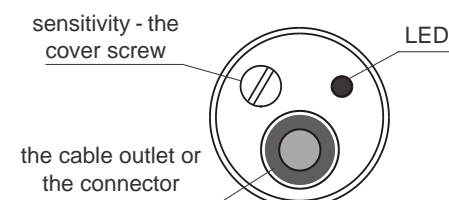
The protection against electric shock is done by safety voltage use.

EMC is ensured by performance of next requirements:

EN55022/B, EN61326-1, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6.

Explosion proof of CPS-24Xi is attested by FTZÚ-AO 210 Ostrava - Radvanice Certificate No.: FTZÚ 02 ATEX 0233X.

## Rear side of the sensor



## Accessories

*standard*

- to each sensor - 2 pcs of stainless steel fixing nuts
- to each delivery (each 5 pcs) - 1 pc screwdriver for sensitivity adjustment

*optional (see datashhet "accessories")*

- plate holder - PD-24-1
- distance crown DK-24
- connector - ELWIKA ...

### Ordering code

**CPS-24** □ - □ - □ □ — output state at non activated electrode: **O** - open (R - lower current)  
**C** - closed (R - higher current)

diameter — type of output: **N** - NPN - open collector  
**P** - PNP - open collector  
**R** - NAMUR

— electric connection: **A** - short / **B** - long cable outlet / **C** - connector

performance: **N** - normal - for non-explosive areas - transistor. output (NPN or PNP)  
**Xi** - explosion proof - intrinsically safe - for hazardous (explosive) areas up to zone 0 - NAMUR output

## Examples of correct specification

CPS-24N-A-PC	cable 2 m
CPS-24Xi-B-RO	cable 7 m
CPS-24N-C-NO	+ type of connector