

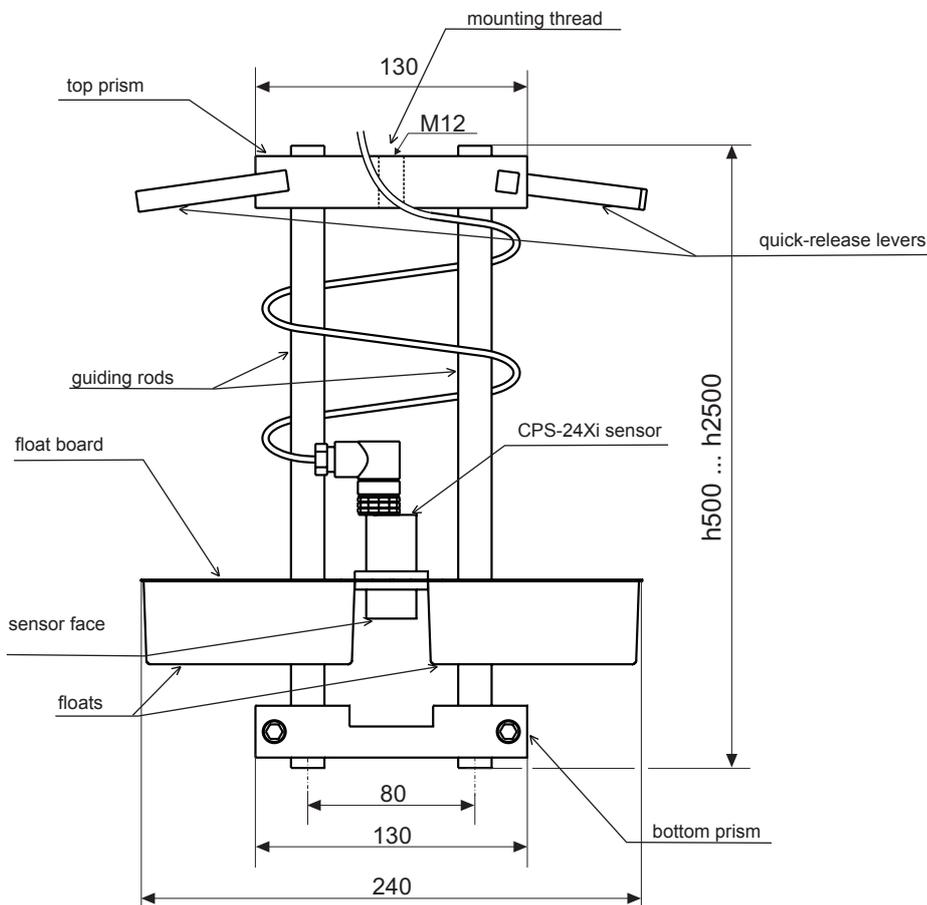
### FOR DETECTION OF LEAKAGE OF PETROLEUM AND PETROLEUM PRODUCTS IN BOTH EMPTY AND WATER FILLED TRAP RESERVOIRS

- The unit is intended for an assembly with CPS-24Xi-C-RO capacitive sensor and NSSU-811 SP2 assessment unit with a relay output and power supply voltage of 230 V and 24 V AC/DC
- Float guiding rods of any length (max. 2.5m)



**FS-4 Petroleum leakage float system** is intended for detection of leakage of petroleum and petroleum products in trap or protection reservoirs. It consists of two guiding rods and a float on which CPS-24Xi-C-RO sensor and NSSU-811 spark resistant assessment unit are installed. The float has been designed so that the sensor face can be submerged under the medium surface. If the sensor face is in contact with water or with the bottom steel prism (when the reservoir is empty), then the sensor is activated. If the sensor face is in contact with petroleum or petroleum products, then the sensor is deactivated, i.e. it is put in an emergency status. The capacitive sensor will be electrically connected to a specially adapted NSSU-811 evaluation unit with a relay output. It is possible to select a unit type with power supply voltage either 230 V AC or 24 V DC.

### DIMENSIONAL DRAWING



## BASIC TECHNICAL SPECIFICATION

Range of ambient operational temperatures	-20 ... +60°C, the float should be protected against freezing (see Maintenance and operational conditions)
Range of the sensed medium densities	800 ... 950 kg/m <sup>3</sup>
Minimum layer thickness of medium for detection - on water level - in empty reservoir	5 mm 25 mm
Cable	PUR 3x0.14 mm <sup>2</sup> (brown: + pole, white: - pole, green: not used)
Float weight (board + 4 floats + CPS-24Xi sensor)	600 g
Working area	With spark resistant power supply unit NSSU-811-230V(24V)-R SP2, complete float system zone 1
Other parameters	see manual for CPS-24Xi sensor see manual for NSSU-811 sensor

## MATERIALS USED

part of float system	material
Float board	stainless steel no. 1.4301 (AISI 304)
Floats	PP plastic
Guiding tubes	stainless steel no. 1.4301 (AISI 304)
Prism (both bottom and top)	stainless steel no. 1.4301 (AISI 304)

## MECHANICAL DESIGN

The float carrying the sensor slides along two guiding rods. These rods are joined with two stainless steel prisms. The bottom prism is used for sensor activation if the reservoir is completely empty. It is necessary to adjust its height so that the sensor face could lean against it if the reservoir is empty. The top prism with a thread can be used for mounting of the complete structure. The sensor power supply cable is wound on the guiding rods.

## INSTALLATION INSTRUCTIONS

1. Prepare vertical mounting in the top structure of the reservoir (in lid, in steel fitting, etc.) using a screw with an M12 thread.
2. Loosen the top prism of the float system using quick-release levers in order to achieve free movement along the guiding rods.
3. Insert the float system into the reservoir perpendicularly so that the guiding rods could reach the bottom.
4. Move the top prism in the point where mounting is prepared and attach it to the reservoir top structure using the screw.
5. Check whether the guiding rods are in contact with the reservoir bottom and then fix the top prism by means of the quick-release levers to the guiding rods.

## ELECTRIC CONNECTION

The cable wound on the guiding rods begins at the float where it is connected to the sensor connector. The other end of the cable is to be connected to NSSU-811 SP2 spark resistant power supply unit using the following method: the brown wire of the cable connects to the terminal (5) while the white wire connects to the terminal (6). The terminals (9) and (13) are used for connection of power supply voltage (AC/DC) and the terminals (10), (11) and (12) are output relay contacts. A wiring diagram is illustrated below.

CPS-24Xi-C-RO

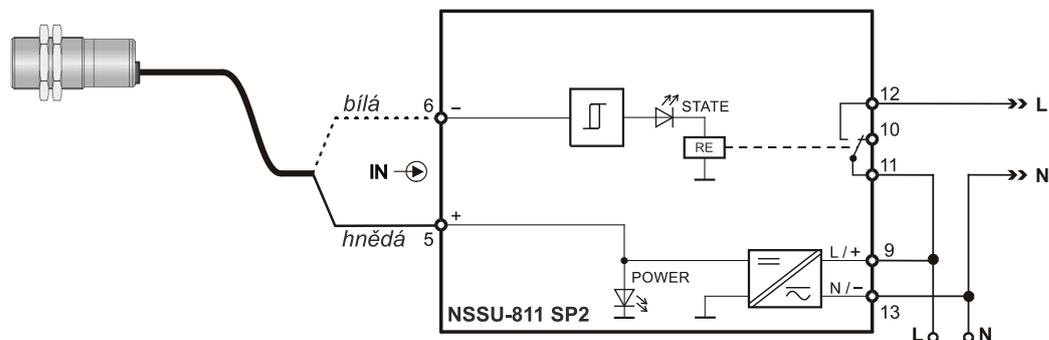


Diagram of float sensor electric connection



**Napájecí zdroj**  
provedení 24 V nebo 230 V



Electric connection may be carried out only if power supply is disconnected!

## SENSOR OPERATION

The FS-4 float system can operate in 3 modes (modes 1 and 2 are operational while mode 3 is for testing):

### 1. Detection of petroleum or petroleum products in a reservoir which contains no water

#### a) *Reservoir is dry - there is no liquid under the float*

- the float is lowered on the bottom - the sensor face is in contact with the bottom steel prism and the sensor is *activated - closed (LED is on)*.

#### b) *Reservoir is flooded with petroleum (emergency situation)*

- the float is buoyed with petroleum - the sensor face is submerged under petroleum surface and the sensor is *deactivated - open (LED is on)*.

### 2. Detection of petroleum or petroleum products in a reservoir which contains water

#### a) *Reservoir is flooded with water*

- the float is buoyed with water - the sensor face is submerged under water surface and the sensor is *activated - closed (LED is on)*.

#### b) *Reservoir is flooded with water and petroleum is present on water surface (emergency situation)*

- the float is buoyed with water - the sensor face is submerged under surface It is separated from water with a layer of petroleum on water surface. Sensor is *deactivated - open (LED is on)*.

### 3. Test of operation

#### a) *The float rests on the bottom*

- the sensor face is in contact with the bottom steel prism and the sensor is *activated - closed (LED is on)*.

#### b) *The float is supported by the operator*

- the sensor face is lifted and the sensor is *deactivated - open (LED is on)*.

NSSU-811 SP2 assessment unit is a special variant with output time delay (filtration). The sensor must be closed (or open) for at least 10 seconds in order to allow output switch-over.

**In non-emergency situation** (cases 1 and 2), the LED on the sensor and the "State" LED on the unit are on. The relay contacts 11 and 12 on the unit are closed. The relay contacts 11 and 10 are open.

**In emergency situation** (cases 3, 4 and 5 or disconnected or broken cable to the sensor), neither the LED on the sensor nor the "State" LED on the unit is on. The relay contacts 11 and 12 on the unit are open. The relay contacts 11 and 10 are closed.

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## MAINTENANCE AND OPERATIONAL CONDITIONS

- Proper operation of the float system is guaranteed if the float system can slide freely on the guiding rods. When installing the float, it is necessary to ensure free movement of the float. Potential foreign materials which could block the float must be removed.
- It is necessary to keep the face of the CPS-24Xi sensor clean. It is necessary to check cleanness of the sensor face and clean it if necessary (e.g. with technical petrol) at regular inspections.
- The operator can check operation of NSSU-811 SP2 unit (green LED POWER and possibly orange LED according to the status of the sensor on the input is ON). Maintenance of the unit consists in removal of dust from the surface of the unit and checks of integrity of the housing and terminal blocks. If any visible defects are detected, notify the manufacturer or the distributor of the unit immediately.
- It is forbidden to make any modifications of the unit or interventions without a consent of the manufacturer. Potential repairs should be carried out only by the manufacturer or by an authorized service company. Mounting, installation, operating and maintenance of the unit should be carried out in accordance with these technical conditions and the provisions of the applicable standards for installation of electric equipment should be complied with.



The float should be protected against freezing in ice. There is a risk of damage (breaking) of individual floats or blocking of free movement. In winter months, it is necessary to lift the bottom prism on the guiding rods above the level of water which is usually present in reservoirs (it is also necessary to retain the area for float movement upwards). The sensor face will rest on this lifted prism in such case, however, individual floats will not be submerged in water - there is not a risk of them freezing.

## METHOD OF IDENTIFICATION

- **FS-4** h   
└─ Length of guiding rods ( 500 ... 2500 mm)
- **CPS-24Xi-C-RO** cable
- **NSSU-811-****-R SP2**  
└─ Type:       **230V** – 30...230 V AC/DC  
              **24V** – 10...30 V AC (10...40 V DC)

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## EXAMPLES OF CORRECT IDENTIFICATION

FS-4 h1500, CPS-24Xi-C-RO cable 15m, NSSU-811-230V-R

(**h1500**) length of guiding rods 1500mm; (**15m**) length of cable wound on guiding rods; (**230V**) power supply voltage for spark resistant unit  
NSSU-811 is 30...230 V AC/DC.

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## PROTECTION, SAFETY, COMPATIBILITY AND EXPLOSION RESISTANCE

### CPS-24Xi

The level sensor is provided with a reverse polarity protection or short-term power supply over-voltage and against current overload or short-circuit on the output. Protection against hazardous contact is ensured through safe power supply voltage in accordance with ČSN 33 2000-4-41 standard. Electromagnetic compatibility (EMC) is guaranteed by compliance with ČSN EN 55022/B, ČSN EN 61326-1 and ČSN EN 61000-4-2 through 6 standards.

Explosion-proof design of CPS-24Xi has been verified by FTZÚ - AO210 Ostrava - Radvanice, Report No. FTZÚ 02 ATEX 0233X

### NSSU-811 SP2

Connection to the electrical mains can be done only through a fuse or a circuit breaker (max. 16A). Electric equipment with protection class II. Electric safety in accordance with ČSN EN 61010-1 standard. Electromagnetic compatibility is guaranteed by compliance with ČSN EN 55022, ČSN EN 61000-6-2, and ČSN EN 61000-4-2, -3, -4, -5, -6 and -11 standards.

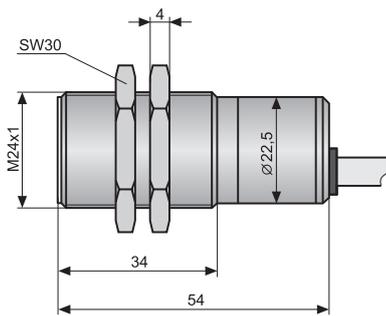
Spark resistance on the input terminals of the unit is in compliance with ČSN EN 60079-0 and ČSN EN 60079-11 standards. Explosion-proof design has been verified by FTZÚ-AO 210 Ostrava-Radvanice, Report No.: FTZÚ 04 ATEX 0136X.

- Detect liquids in glass or plastic pipes, indicate liquids in inter-coat space of double coated tanks
- Adjustable sensitivity
- NPN, PNP or NAMUR output
- Material of housing and nut from stainless steel
- Version for usage in explosive areas
- LED state indication

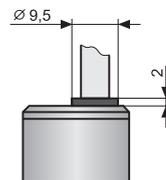


**Capacitive proximity switch CPS-24** is intended for detection of proximity or motion of solid objects. It is suitable for indication of the liquid level through non-conductive walls of vessels or on non-conductive gauge-pipes. It is excellent for liquid leakage detection in collection pits or directly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

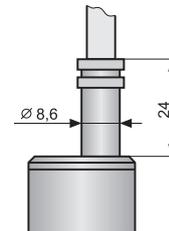
### DIMENSIONAL DRAWING



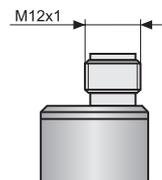
Variant "A" with short cable outlet



Variant "B" with long cable outlet



Variant "C" with connector



### SPECIFICATIONS

TECHNICAL SPECIFICATIONS		
Supply voltage		7 ... 36V DC *
Current supply (state OFF / ON)		3 / 6mA *
Switching current (NPN, PNP output)		200mA *
Electric strength		500V AC
Coupling capacity		2.2nF
Max. switching frequency		5Hz
Sensitivity – sensing distance		0 ... 10mm (adjustable)
Hysteresis		5 ... 15%
Ambient temperature range		-20 ... +70°C
Protection class		IP67
Cable (version with cable outlets)	CPS-24N CPS-24Xi	PVC 3x0.5mm <sup>2</sup> PVC 2x0.75mm <sup>2</sup>
Weight (incl. 2 m cable)		Approx. 0.3kg

\* Only for variants "N"

## ELECTRICAL PARAMETERS – variant Xi

Supply voltage	8 ... 9V DC (Max. 12V DC)
Current supply (state OFF / ON) – NAMUR	≤ 1 mA / ≥ 2.2 mA
Max. internal values	$U_i = 12\text{VDC}$ ; $I_i = 15\text{mA}$ ; $P_i = 45\text{mW}$ ; $C_i = 15\text{nF}$ ; $L_i = 10\mu\text{H}$

## WORKING AREAS (EN 60079-0, EN 60079-10-1(2))

CPS-24N	Basic performance for non-explosive atmospheres.
CPS-24Xi	Intrinsically safe explosion-proof performance for use in hazardous areas (explosive gas atmospheres or explosive atmospheres with dust), <b>Ex II 1G Ex ia IIC T6 Ga</b> with intrinsically safe supply units, whole sensor zone 0.

## USED MATERIALS

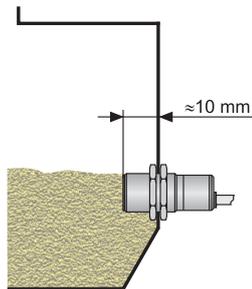
Part of the sensor	Material
Housing	St. steel W.Nr. 1.4301
Sensing surface	PTFE
Ending	St. steel W.Nr. 1.4301
Cable outlet (Variant "A")	Plastic POM
Cable outlet (Variant "B")	St. steel W.Nr. 1.4301

## TYPE OF OUTPUT

Output	Variants
NPN ("NC", "NO")	N
PNP ("PC", "PO")	N
NAMUR ("RC", "RO")	Xi

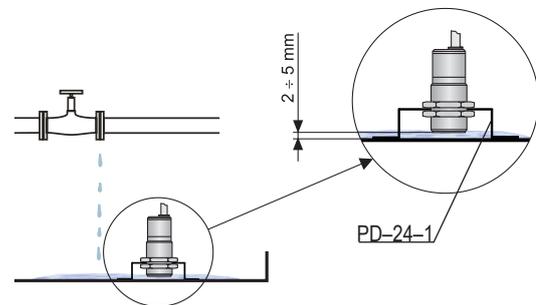
## INSTALLATION INSTRUCTIONS

Sensing of **bulky-solid materials** in metal containers or tanks. The position of the sensor is set so that it is approximately 10 mm from the inner wall of a storage tank.



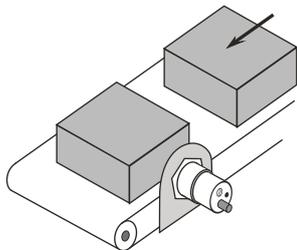
Sensing bulk-solid materials in storage tanks

Sensor is used for sensing leakages in an **interception tank**. Leakage indication in detention pits and boxes with "Plate holder PD-24-1".



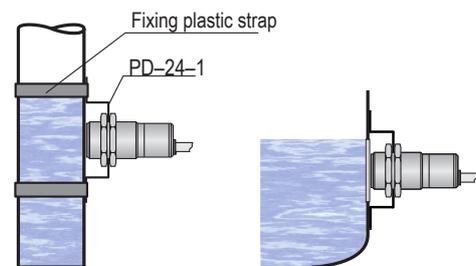
Use of CPS for sensing leakages in an interception tank

Sensing of moving **objects on conveyor**. The distance of the sensor from moving objects is set according to their size, shape and material composition (approx. 1 to 8 mm).



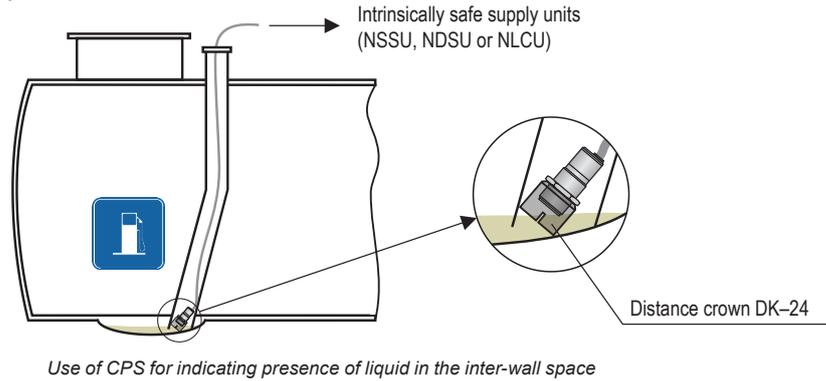
Sensing objects on a conveyor

Sensor application for **level gauges and eye sights**. The maximum wall thickness in both cases is up to 10 mm. A glass or plastic level gauge (tube) must have an outer diameter of at least 20 mm. The face of the sensor must be touching the wall.

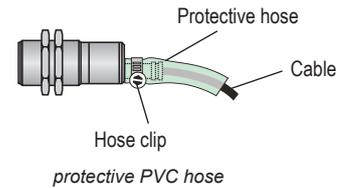


CPS sensor application for level gauges and eye sights

Detection of liquid presence in the **inter-wall space** of double-walled storage tanks. The sensor is suspended down into the inter-wall space on its own cable. For this application, we recommend variant „B“ with an extended cable terminal with the installation variant of a PVC hose for cable protection.



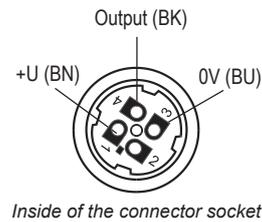
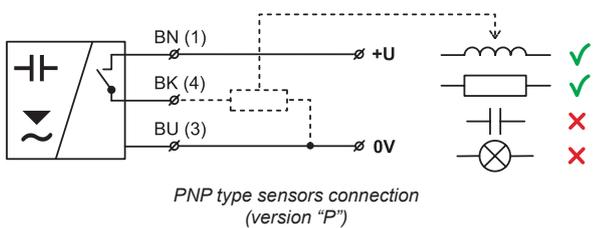
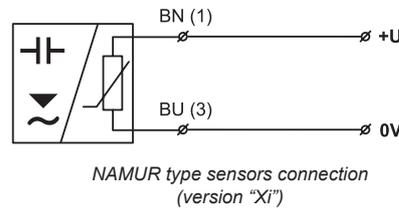
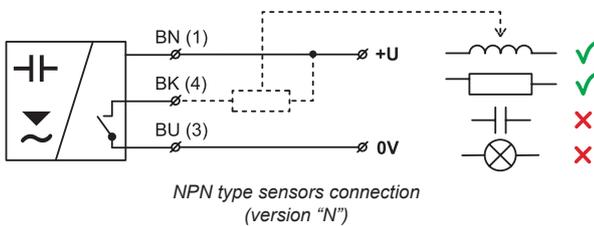
In the case of vertical mounting in outer areas or in the case of high mechanical exertion we recommend to install in Variant "B" **protective hose** on the cable (see figure).



## ELECTRICAL CONNECTION

Sensor with NPN or PNP output is allowed to lead only by resistive or inductive load. Positive supply voltage (+U) is connected to the brown conductor BN (1), negative (0V) to the blue conductor BU (3) and the leads (only NPN or PNP type of output) to the black conductor BK (4). The capacity loads and low resistance loads (bulb) is evaluated by the sensor as short circuit.

The line from CPS-24N to the connecting device is from a suitable three wire (min. 3x0.5 mm<sup>2</sup>) cable, in the case of variant CPS-24Xi using a two wire (min. 2x0.5 mm<sup>2</sup>) cable. In the event that a disassemblable socket ELWIKA or ELKA 4012 K PG7 are used, the max. outer diameter of the cable is 6 mm. Connector socket is not part of the sensor.



### Legend:

- (\*) – Numbers of terminals inside of the connector
- BK – Black
- BN – Brown
- BU – Blue



**Electrical connection can only be made when de-energized!**

The source of the power voltage must comprise of a stabilised safe low power source with galvanic separation. In the event that a switch-mode power supply is used, it is essential that its construction effectively suppresses common mode interference on the secondary side. In the event that the switch-mode power supply is equipped with a PE safety terminal, it must be unconditionally grounded! Spark-safe devices (type CPS-24) must be powered from a spark-safe power source meeting the above-mentioned requirements.



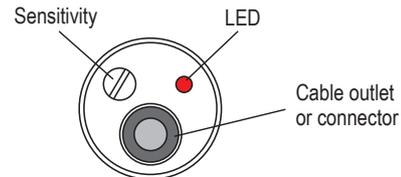
Due to the possible occurrence of an electrostatic charge on the non-conductive parts of the sensor, it is necessary to ground all sensors intended for use in environments with an explosion hazard (type CPS-24Xi). This can be performed by grounding el. conductive tanks or el. conductive tank lids, and in the case of el. non-conductive tanks using and grounding an auxiliary plate electrode PDE-27.

In the event that the water level meter (sensor) is installed in an outdoor environment at a distance greater than 20 m from the outdoor switchboard, or from an enclosed building, it is necessary to supplement the electrical cable leading to the water level meter (sensor) with suitable overvoltage protection.

In the event of strong ambient electromagnetic interference, paralleling of conductors with power distribution, or for distribution to distances over 30 m, we recommend using a shielded cable and grounding the shielding on the side of the power source.

## SETTINGS

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 base sensitivity of the sensor is factory set (sensing distance on the metal surface) 8 mm. The actual sensitivity (sensing distance) depends on the dielectric properties or where appropriate the conductivity of the sensed material.



Top view of level sensor

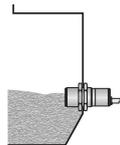
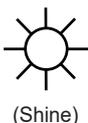
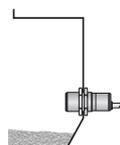
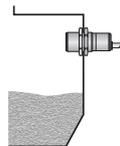
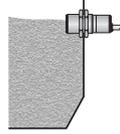
## RANGE OF APPLICATION

Detection of approach or assessment of the movement of solid objects, level indication in electrically non-conductive storage tanks (plastic, glass) and level gauges. Limit sensing of non-abrasive bulk-solid materials (cereals, grains, granulates, sand, etc.) in metal storage tanks. Detection of the presence of liquids in the inter-wall area of double-walled storage tanks, liquid leakage detection in interception traps, concrete sumps or directly on the floor.



We do not recommend using for the measurement of el. conductive liquids that leave a continuous film on the inner wall of an el. non-conductive storage tank or level gauge and liquids that exude el. conductive particles that deposit themselves on the wall of a storage tank or level gauge (e.g. heavily mineralised water, chemically treated waste water). Likewise, the sensor is also not intended for measuring levels on level gauges and walls of storage tanks with antistatic treatment (partially electrically conductive).

## FUNCTION AND STATUS INDICATION

	Level state	Type of output	Output state	LED indication
Minimum level sensing		CPS-24N--NO CPS-24N--PO	CLOSED	 (Shine)
		CPS-24Xi--RO	HIGHER CURRENT	
		CPS-24N--NO CPS-24N--PO	OPEN	 (Dark)
		CPS-24Xi--RO	LOWER CURRENT	
Maximum level sensing		CPS-24N--NC CPS-24N--PC	CLOSED	 (Shine)
		CPS-24Xi--RC	HIGHER CURRENT	
		CPS-24N--NC CPS-24N--PC	OPEN	 (Dark)
		CPS-24Xi--RC	LOWER CURRENT	

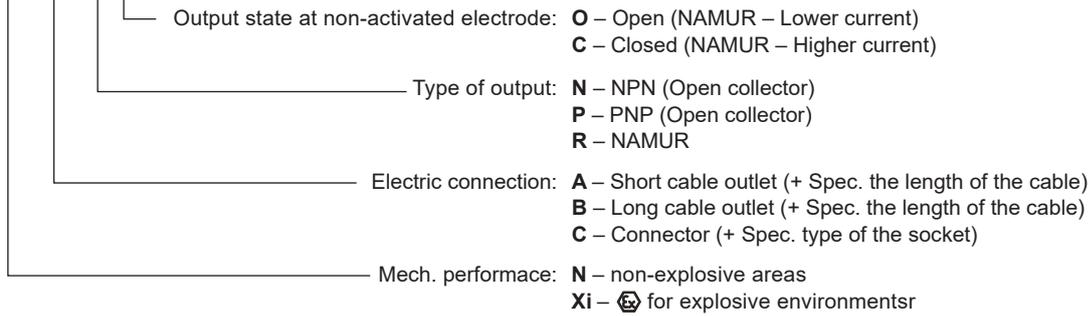
For **minimum level** sensing we recommend sensor with normally open output (NO, PO, RO). It is for failure safety reasons – eventual failure of sensor behaves similarly as an exceeding of the limit state.

Analogically for **maximum level** sensing we recommend normally closed outputs (NC, PC, RC).

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

## ORDER CODE

CPS-24□-□-□-□



## CORRECT SPECIFICATION EXAMPLES

CPS-24N-A-PC cable 4 m

(N) Performance for non-explosive areas; (A) Short cable outlet with 4 m cable length; (PC) Output type PNP with closed state at non-activated electrode.

CPS-24Xi-B-RO cable 7 m

(Xi) Explosion-proof performance; (B) Long cable outlet with 7 m cable length; (RO) Output type NAMUR with lower current at non-activated electrode

CPS-24N-C-NO cable 7 m

(N) Performance for non-explosive areas; (C) Connector; (NO) Output type NPN with open state at non-activated electrode.

## ACCESSORIES

**Standard** - included in the level sensor price

- 2 pcs. of stainless steel fixing nuts
- 1 pcs. Screwdriver for adjustment (each 5 pcs.)

**Optional** – for a surcharge (see catalogue sheet of accessories)

- Extra cables over the standard length 2 m (for electric connection type “A” or “B”)
- Connector plug (type ELWIKa or ELKA)
- Plate holder PD-24-1
- Distance crown DK-24

## SAFETY, PROTECTIONS, COMPATIBILITY AND EXPLOSION PROOF

The level sensor is equipped with protection against electric shock on the electrode, reverse polarity, output current overload, short circuit and against current overload on output.

Protection against dangerous contact is provided by low safety voltage according to EN 33 2000-4-41. Electromagnetic compatibility is provided by conformity with standards EN 55 022/B, EN 61326-1/Z1, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-6.

Explosion proof CPS-24Xi is provided by conformity with standards EN 60079-0:2013, EN 60079-11:2012.

Explosion proof CPS-24Xi is verified FTZÚ – AO 210 Ostrava – Radvanice: FTZÚ 02 ATEX 0233X

A declaration of conformity was issued for this device in the wording of Act No. 90/2016 Coll., as amended. Supplied electrical equipment matches the requirements of valid European directives for safety and electromagnetic compatibility.

### Special conditions for safe use of variant CPS-24Xi

The level sensor is designed to be connected with supply unit type NSSU, NDSU and NLCU. If some other approved apparatus is used, its output parameters comply with above mentioned parameters, then it is necessary to include galvanic separation and/or in case of application of apparatus without galvanic separation (Zener safety barriers) it is necessary to provide equipotential equalisation between sensor and point of barrier earthing.

For zone 0 application the present potentially explosive atmosphere of air mixture with gases, mists or vapours shall comply the following:

Tamb = -20 to +60°C, p = 0.8 bar to 1.1 bar.

Maximum input parameters:

Ui = 12 V; Ii = 15 mA; Pi = 45 mW; Ci = 15 nF; Li = 10 µH

CPS-24-dat-5.3



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ISO 9001

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- For energizing and state-detection of NAMUR sensors (EN 60947-5-6)
- Connected sensor can be located in hazardous explosive areas up to zone 0
- Relay or transistors output
- High frequency switching (up to 2kHz – ver. "T")
- LED state indication
- Power supply 230 V AC or 24 V DC
- Mounting on DIN rail 35 mm



Supply and switching units NxxU are used for energizing of NAMUR output sensors (DLS–27Xi, CPS–24Xi etc.) located in hazardous explosive areas. Due to state of connected sensor they switch their output changeover relay contact or transistor switch. Moreover they can provide simple 2-state level regulation (pump-up and pump-down control).

Classification of explosive-proof performance:

 II (1)G [Ex ia] IIC  
 I (M1) [Ex ia] I

### FEATURES OF VARIANTS

- **NSSU–811**      **Single channel unit without additional functions** for supply and state detection of one NAMUR sensor. Output in variant "T" (transistor switch) or "R" (relay contact).
- **NSSU–812**      **Single channel unit with LFD\* system** for supply and state-detection of one NAMUR sensor. Output in variant "R" (relay contact).
- **NDSU–822**      **Dual channel unit without additional functions** for supply and state detection of two NAMUR sensors. Output in variant "T" (transistor switch) or "R" (relay contact).
- **NLCU–821**      **2-state level regulation unit** by means of two connected limit NAMUR sensors. Output in variant "R" (relay contact).
- **NLCU–822**      **2-state level regulation unit with LFD\* system** by means of two connected NAMUR sensors, protection against non-logical states of level sensors. Output in variant "R" (relay contact).

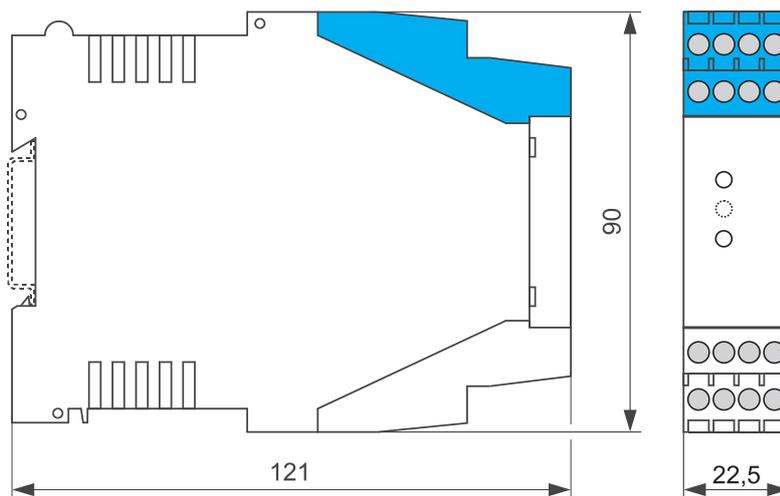
\* LFD – Line Fault Detection (detection of short circuit or line break)

## TECHNICAL SPECIFICATIONS

		<i>NSSU-811</i>	<i>NSSU-812</i>	<i>NDSU-822</i>	<i>NLCU-821</i>	<i>NLCU-822</i>
Number of connectable sensors		1	1	2	2	2
Failure signalization (LFD system)		NO	YES	NO	NO	YES
Nominal supply voltage	Version 230 V Version 24 V	30 ... 230 V AC/DC (+10%) 50 ÷ 60 Hz 10 ... 30 V AC (+10%) 50 ÷ 60 Hz; 10 ... 40 V DC (+10%)				
Nominal power demand (AC / DC)		4 VA / 4 W				
Output open – Circuit voltage		9.2 V DC				
Output current – Treshold		1.55 mA (± 0.1 mA)				
Current limits for LFD system		–	< 0.1 mA > 6 mA	–	–	< 0.1 mA > 6 mA
Allowable short-circuit time in input terminals		Unlimited				
Limit parameters		$U_0 = 10.5 \text{ V}$ ; $I_0 = 10.4 \text{ mA}$ ; $P_0 = 27.3 \text{ mW}$ ; $C_0 = 1.8 \text{ }\mu\text{F}$ ; $L_0 = 150 \text{ mH}$				
Safe isolation voltage $U_m$ (term. 9 - 16)		253 V				
Contact voltage drop (output transistor is closed)		2 V (Variant "T")				
Dynamic parameters * (Triggering / Gap pulse)	Variant "R" Variant "T"	Min. 50 ms Min. 250 $\mu\text{s}$	–	Min. 50 ms Min. 250 $\mu\text{s}$	–	–
Max. switching frequency (Max. load / Without load)	Variant "R" Variant "T"	0.1 Hz / 10 Hz 2 kHz / 2 kHz				
Output characteristic (Variant "R")	Version 230 V Version 24 V	250 V AC / 2 A / 100 VA; 250 V DC / 2 A / 50 W 40 V AC / 2 A / 80 VA; 40 V DC / 2 A / 80 W				
Output characteristic (Variant "T")		40 V / 50 mA	–	40 V / 50 mA	–	–
Relay contact life (Variant "R")		Min. $30 \times 10^6$				
Ambient temperature		$-20^\circ\text{C} \dots +60^\circ\text{C}$				
Protection		IP20				
Housing material		Polycarbonate				
Material of terminals		CuBe				
Max. conductor size		$1 \times 2.5 \text{ mm}^2$				
Isolating voltage (mains terminal / output)		3500 V				
Weight		Approx. 0.2 kg				

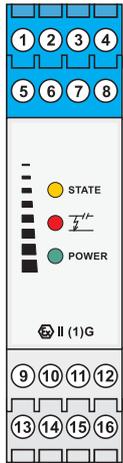
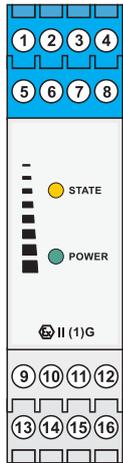
\* Dynamic parameters are valid by connection to contact on input unit (impulse transmitting from gas-meter, etc.)

## DIMENSIONAL DRAWING

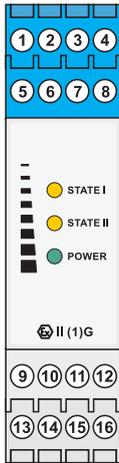


# FRONT PANEL AND TERMINAL BLOCK

NSSU-811      NSSU-812  
NLCU-821      NLCU-822

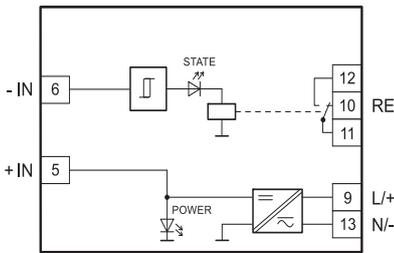


NDSU-822



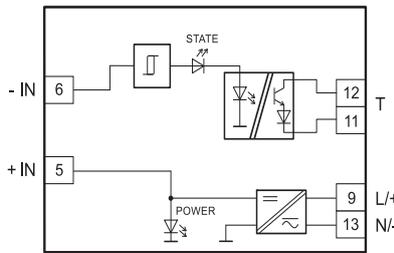
	NSSU-811	NSSU-812	NDSU-822	NLCU-821	NLCU-822
1					
2					
3					
4					
5	+ IN	+ IN	+ IN1	+ IN <sub>min</sub>	+ IN <sub>min</sub>
6	- IN	- IN	- IN1	- IN <sub>min</sub>	- IN <sub>min</sub>
7			+ IN2	+ IN <sub>max</sub>	+ IN <sub>max</sub>
8			- IN2	- IN <sub>max</sub>	- IN <sub>max</sub>
9	L / +	L / +	L / +	L / +	L / +
10	RE	RE	RE1	RE	RE
11	RE / T	RE	RE1 / T1	RE	RE
12	RE / T	RE	RE1 / T1	RE	RE
13	N / -	N / -	N / -	N / -	N / -
14		RE AL	RE2		RE AL
15		RE AL	RE2 / T2		RE AL
16		RE AL	RE2 / T2		RE AL

## BLOCK DIAGRAMS



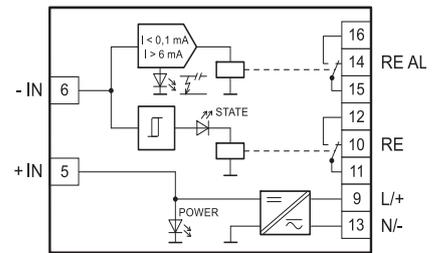
NSSU-811 (var. "R")

- IN Blue wire of sensor
- + IN Brown wire of sensor
- RE Output relay contacts
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



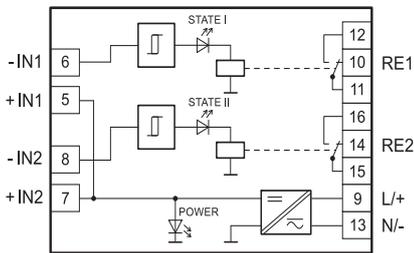
NSSU-811 (var. "T")

- IN Blue wire of sensor
- + IN Brown wire of sensor
- T Contacts of transistor switch
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



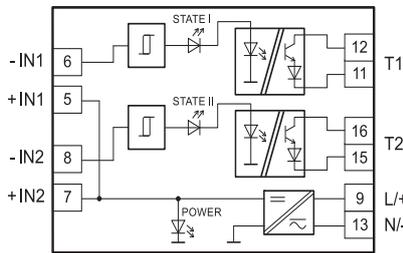
NSSU-812

- IN Blue wire of sensor
- + IN Brown wire of sensor
- RE AL Signalization relay contacts (Alarm)
- RE Output relay contacts
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



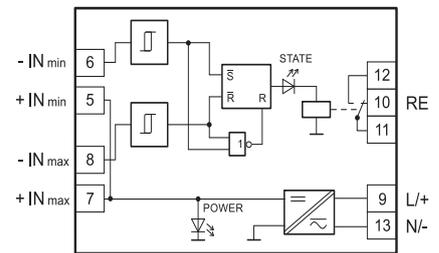
NDSU-822 (var. "R")

- IN1 Blue wire of sensor No.1
- + IN1 Brown wire of sensor No.1
- IN2 Blue wire of sensor No.2
- + IN2 Brown wire of sensor No.2
- RE1 Contacts of transistor switch No.1
- RE2 Contacts of transistor switch No.2
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



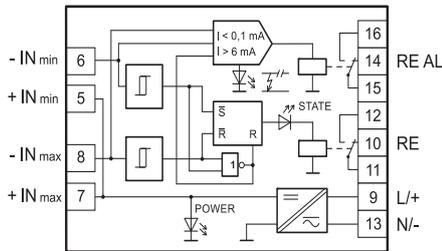
NDSU-822 (var. "T")

- IN1 Blue wire of sensor No.1
- + IN1 Brown wire of sensor No.1
- IN2 Blue wire of sensor No.2
- + IN2 Brown wire of sensor No.2
- T1 Contacts of transistor switch No.1
- T2 Contacts of transistor switch No.2
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



NLCU-821

- IN<sub>min</sub> Blue wire of sensor No.1 (RO)
- + IN<sub>min</sub> Brown wire of sensor No.1 (RO)
- IN<sub>max</sub> Blue wire of sensor No.2 (RC)
- + IN<sub>max</sub> Brown wire of sensor No.2 (RC)
- RE Output relay contacts
- L/+ Power supply (AC/DC)
- N/- Power supply (AC/DC)



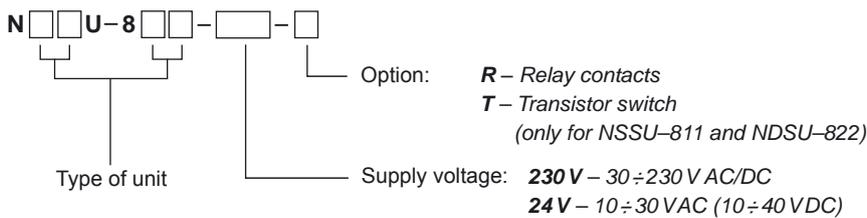
NLCU-822

- **IN1** Blue wire of sensor No.1 (RO)
- + **IN1** Brown wire of sensor No.1 (RO)
- **IN2** Blue wire of sensor No.2 (RC)
- + **IN2** Brown wire of sensor No.2 (RC)
- RE AL** Signalization relay contacts (Alarm)
- RE** Output relay contacts
- L/+** Power supply (AC/DC)
- N/-** Power supply (AC/DC)

## STATUS SIGNALIZATION AND FAILURE ALARM

LED indicators	Color	Function
<b>STATE I, II</b>	Orange	<b>Shines</b> - Sensor is activated and output relay (transistor) is closed. <b>Dark</b> - Sensor is not activated and output relay (transistor) is in open state.
	Red	<b>Shines</b> - Line short circuit of failure of the sensor (NLCU-822 further non-logical combination of connected sensors) <b>Dark</b> - Line and combination of inputs respectively are OK (NSSU-812, NLCU-822)
<b>POWER</b>	Green	<b>Shines</b> - Device connected to supply voltage, correct function <b>Dark</b> - Power loss or internal failure

## ORDER CODE



## CORRECT SPECIFICATION EXAMPLES

NSSU-811-230V-T                      NDSU-822-24V-T                      NLCU-821-230V-R  
 NSSU-812-230V-R                      NDSU-822-230V-R                      NLCU-822-24V-R

## SAFETY, PROTECTION, COMPATIBILITY AND EXPLOSION PROOF

Connection to the supply line can be realised only through a fuse or a circuit breaker (max. 16 A). NSSU-811-T and NSSU-812-T units (with transistor switch) are equipped with protection against reverse polarity and current overload output terminals.

Working areas according to EN 60079-10 without risk of explosion, or in the flameproof enclosure "d".

Electrical equipment of protection class II. Electrical safety according to EN 61010-1. Electromagnetic compatibility according to EN 55022, EN 61000-6-2, EN 61000-4-2,-3, -4, -5, -6 and -11. The intrinsic safety of input terminals of the unit according to EN 60079-0 and EN 60079-11. Explosion proof of Intrinsically safe supply units examined by FTZÚ-AO 210 Ostrava-Radvanice, certificate No.: FTZÚ 04 ATEX 0136X.

version 01/2011



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