

### Features



- intrinsically safe supply and switching units
- for energizing and state-detection of NAMUR sensors e.g. Dinel - DLS-27Xi, CPS-24Xi etc.
- possibility of relay contact connection in explosive areas (gas-meter, etc.)
- connected sensor can be located in hazardous
  - explosive areas - up to zone 0 (acc. to EN 60079-10)
- output - changeover contact
- classification of explosive-proof performance
  - ⊕ II (1)G [Ex ia] IIC
  - ⊕ I (M1) [Ex ia] I
- certified according to EN 50020
- installation on DIN rail 35 mm
- variants for 24V and 230V



### Description

Supply and switching units NxxU are used for energizing of NAMUR output sensors located in hazardous - explosive areas. Due to state of connected sensor they switch their output changeover relay contact. Moreover they can provide simple 2-state level regulation - pump-up and pump-down control with possible ALARM output. Basic models have these functions:

**NSSU-811** - for energizing and state detection of one sensor, no special functions

**NSSU-812** - as NSSU-811 equipped by LFD system - line fault (it means short circuit or line break) detection

**NDSU-822** - for energizing and state detection of two sensors, no special functions

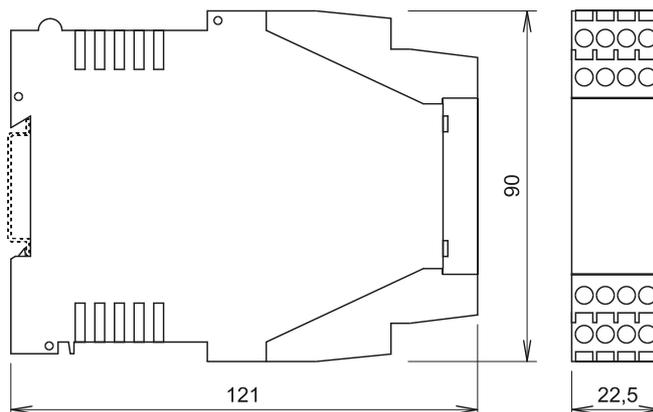
**NLCU-821** - for 2-state level regulation by means of two connected NAMUR sensors

**NLCU-822** - as NLCU-821 equipped by LFD system and further with protection against non-logical states of level sensors (which can occur in fail or wrong connection of sensors)

### List of all variants

### Dimensions

- |               |                          |
|---------------|--------------------------|
| variants 24V  | <b>NSSU - 811 - 24V</b>  |
|               | <b>NSSU - 812 - 24V</b>  |
|               | <b>NDSU - 822 - 24V</b>  |
|               | <b>NLCU - 821 - 24V</b>  |
|               | <b>NLCU - 822 - 24V</b>  |
| variants 230V | <b>NSSU - 811 - 230V</b> |
|               | <b>NSSU - 812 - 230V</b> |
|               | <b>NDSU - 822 - 230V</b> |
|               | <b>NLCU - 821 - 230V</b> |
|               | <b>NLCU - 822 - 230V</b> |



## Technical data

Type	NSSU-811	NSSU-812	NDSU-822	NLCU-821	NLCU-822
Number of connectable sensors	1	1	2	2	2
Line Fault Detection System - LFD	NO	YES	NO	NO	YES
Nominal supply voltage: variant 230 V variant 24 V	30 ÷ 230 V AC / 50 ÷ 60 Hz, 30 ÷ 230 V DC (+10%) 10 ÷ 30 V AC / 50 ÷ 60 Hz, 10 ÷ 40 V DC (+10%)				
Nominal power demand	4 VA				
Output voltage - no-load	9,2 V DC				
Output current treshold	1,55 mA ( ± 0,1 mA )				
Maximum output voltage $U_o$	10,5 V DC				
Maximum output current - short circuit $I_o$	10,4 mA				
Maximum output power $P_o$	27,3 mW				
Safe isolation voltage (terminals 9-16) $U_m$	253 V				
Allowed short circuit time	unlimited				
Current limits for LFD system	————	< 0,1 mA > 6 mA	————	————	< 0,1 mA > 6 mA
Max. external entity parameters	$C_o = 1,8 \mu F$ $L_o = 150$ mH				
Dynamic parameters*: triggering pulse width space width	min. 50 ms min.100 ms	————	min. 50 ms min. 100 ms	————	————
Ambient temperature	-20 to +60°C				
Relay characteristic: variant 230 V variant 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				
Max. switching frequency - at max. load	360 / h				
Contact life - at max. load - cycles	min. 30 x 10 <sup>6</sup>				
Protection degree	IP 20				
WeightRelay characteristic	c. 0,2 kg				
Housing material	polycarbonate				
Material of terminals	CuBe				
Max. conductor size	1 x 2,5 mm <sup>2</sup>				
Isolating voltage: mains terminals / output	3,5 kV				

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

## Safety, protections, compatibility and explosion proof

Working areas acc. to EN 60 079-10 - non-explosive, or installation in flameproof enclosure "d"

Connection to mains only through fuse or overcurrent circuit breaker - max. 16 A.

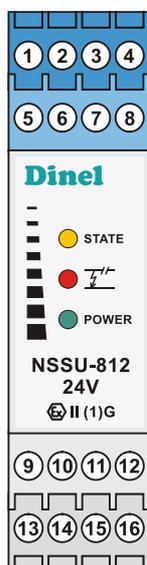
Electrical equipment of protection group II

Electrical safety according to EN 61010 - 1

EMC according to EN 55022, EN 61000-6-2, EN 61000-4-2, -3, -4, -5, -6, -11

Intrinsically safety according to EN 50014, EN 50020

**Approval:** FTZU - AO 210 Ostrava - Radvanice **Certificate No.:** FTZU 04 ATEX 0136X



### Front view and LED function

#### Orange LED "STATE I, II"

- on - sensor is activated and output relay is closed
- off - sensor is not activated and output relay is in open state

#### Red LED " $I/I'$ " (NSSU-812, NLCU-822)

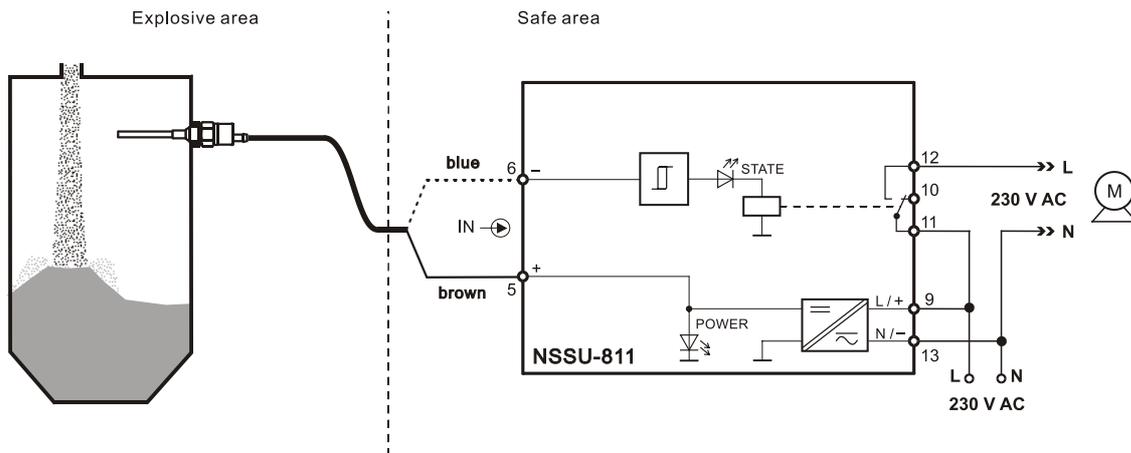
- on - line short circuit of failure of the sensor, for NLCU-822 further non-logical combination of connected sensors
- off - line and combination of inputs respectively are OK

#### Green LED "POWER"

- on - device connected to mains, correct function
- off - internal failure

## Typical applications and wiring examples

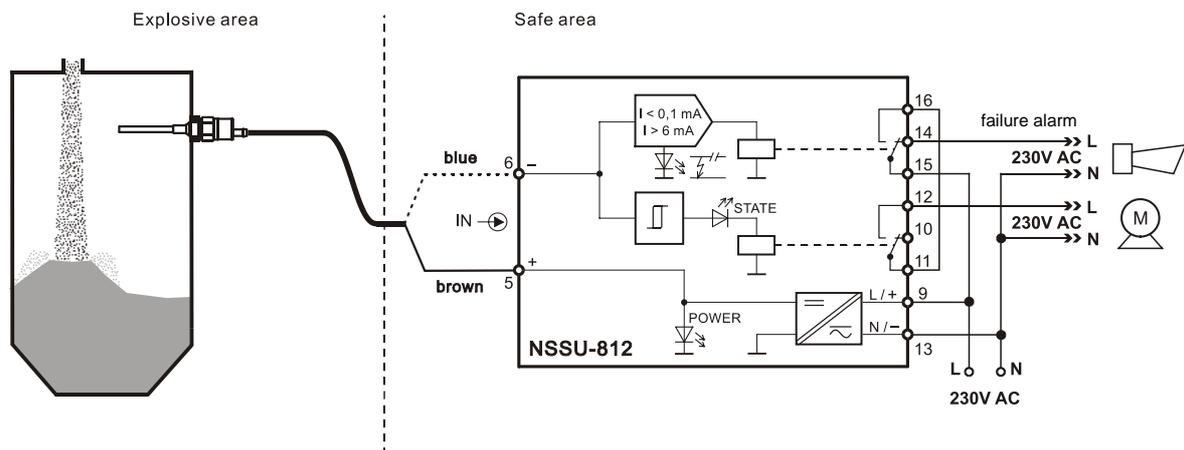
NSSU-811-230V (connection of single switch-sensor for level detection)



Function table

IN	OUT	LED
$I < 1,55\text{mA}$		●
$I > 1,55\text{mA}$		☀

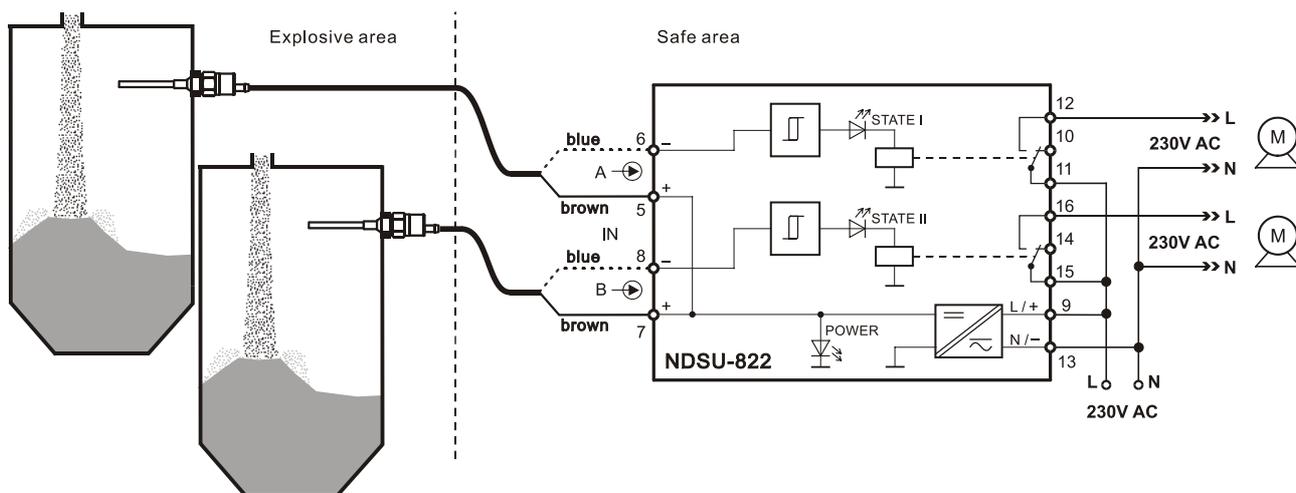
NSSU-812-230V (connection of single switch-sensor for level detection with LFD - line fault detection, activated LFD function blocks the output)



Function table

IN	OUT	LED		LED
$I < 0,1\text{mA}$		●		☀
$I > 0,1\text{mA}$ $I < 1,55\text{mA}$		●		●
$I > 1,55\text{mA}$ $I < 6\text{mA}$		☀		●
$I > 6\text{mA}$		☀		☀

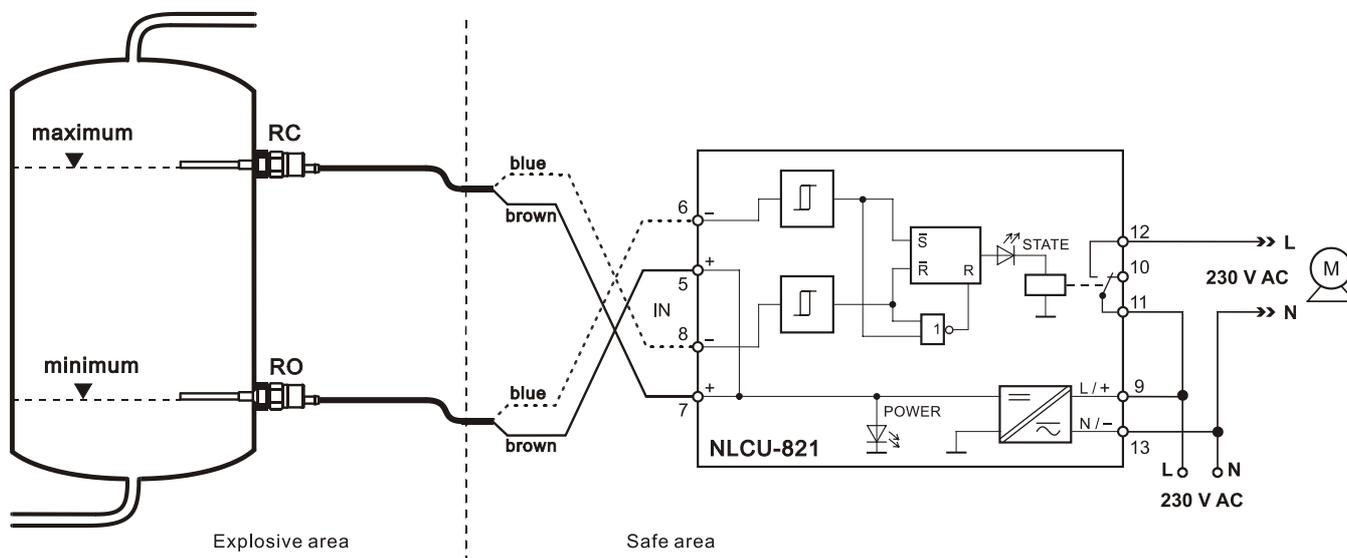
NDSU-822-230V (connected to 2 independent level switches)



Function table

IN A/B	OUT A/B	LED
$I < 1,55\text{mA}$		●
$I > 1,55\text{mA}$		

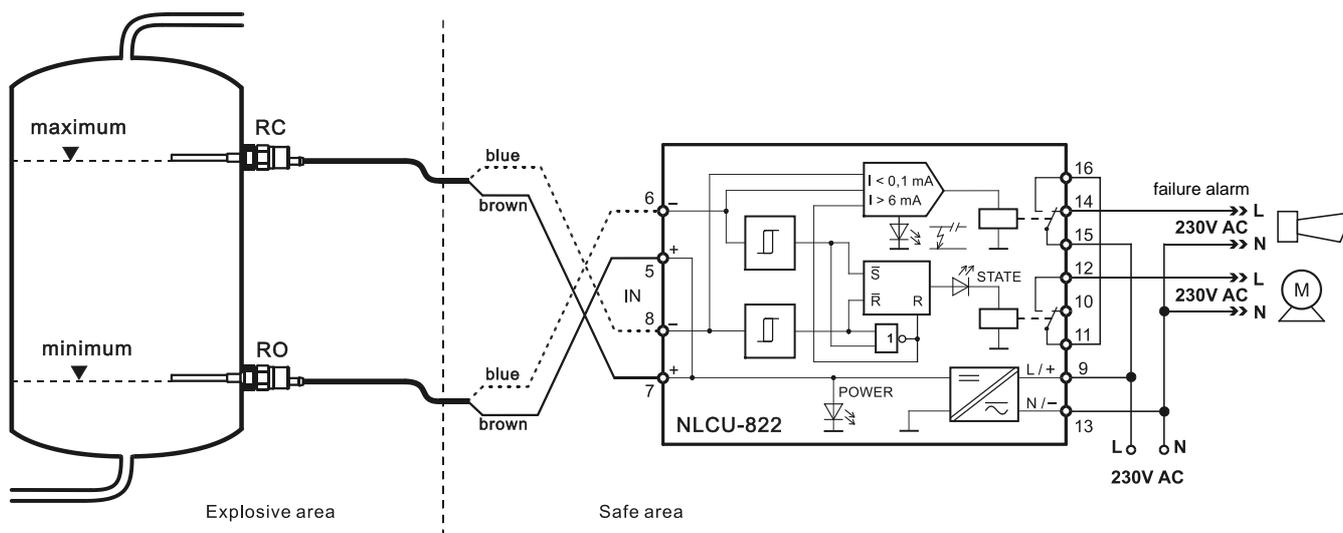
NLCU-821-230V (wiring for automatic filling of material by pump-up control)



Function table

IN MIN	IN MAX	OUT	LED
$I < 1,55\text{mA}$	$I < 1,55\text{mA}$		●
$I < 1,55\text{mA}$	$I > 1,55\text{mA}$		
$I > 1,55\text{mA}$	$I < 1,55\text{mA}$		●
$I > 1,55\text{mA}$	$I > 1,55\text{mA}$	unchanged	

NLCU-822-230V (wiring for automatic filling of material by pump-up control with LFD - line fault detection which blocks the output)



Function table

IN MIN	IN MAX	OUT	LED	$\overline{Z}$	LED
$I < 1,55 \text{ mA}$	$I < 1,55 \text{ mA}$		●		
$I < 1,55 \text{ mA}$	$I > 1,55 \text{ mA}$				●
$I > 1,55 \text{ mA}$	$I < 1,55 \text{ mA}$		●		●
$I > 1,55 \text{ mA}$	$I > 1,55 \text{ mA}$	unchanged			●
$I < 0,1 \text{ mA}$ $I > 6 \text{ mA}$	$I < 0,1 \text{ mA}$ $I > 6 \text{ mA}$	not defined			

**Note:** These wiring diagrams are examples, which show possible uses of different power supply and regulation units. We reserves ourselves the right to change some features in case new norms would occur. The 24 V models can be used in the same way as shown 230V variant. For safe applications, it is necessary to supply outer relays or other circuits from the same voltage. Relays for signalling a failure (models NSSU-812 and NLCU-822) are normally closed (connection between terminals 15 and 16) and in case of fail switches to an open state (connection between 14 a 15).