

- Suitable for connecting water level meters with a current or voltage output.
- 4-digit LED display.
- Up to 4 relay outputs, option of an insulated analogue output.
- Includes an auxiliary voltage power supply for current loop 4 ... 20 mA.
- Front panel performance (IP40).
- Communication interface RS-485 / Modbus RTU.
- Power supply 230 V AC or 24 V DC.



The PDU-4xx-P meter is equipped with one current input 0-20 / 4-20mA and one voltage input 0-5 / 1-5 / 0-10 / 2-10V. Current input has additionally overcurrent protection circuit, which protects standard resistor. The selection of active input is realised by software, and selected input can be changed at any time. Additionally the PDU-4xx-P allows user to select a conversion characteristic of several kinds: linear, square, square root, user defined (max.20 points length) and and volume characteristics of a cylindrical tank in the vertical and horizontal position. Result is showed on 4-digit LED display. Displayed values range can be selected by user, from -999 to 9999, plus decimal point. The device can be equipped with two or four relay (or OC type) outputs. Optionally PDU-4xx-P with two relays outputs can be equipped with active current output. Device PDU-4xx-P is equipped with RS-485 / Modbus RTU communication interface and sensor supply output. The meter can be ordered in two power supply versions.

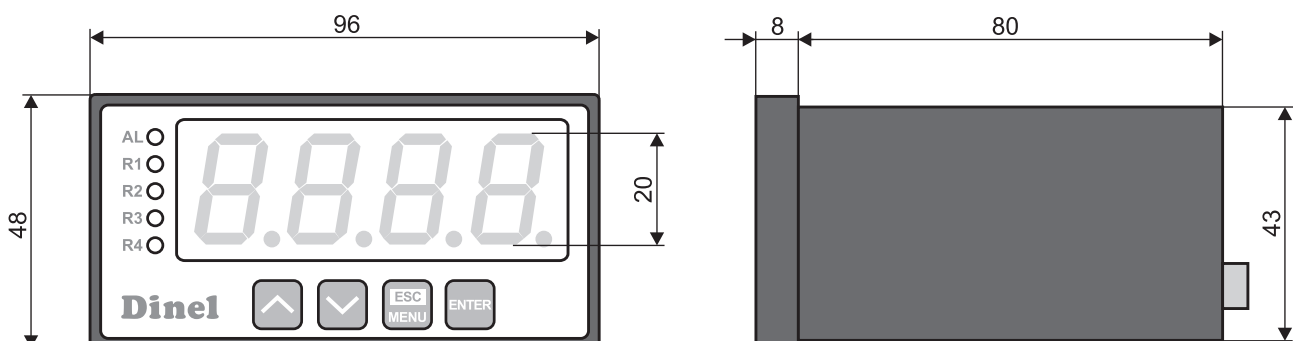
RANGE OF APPLICATION

PDU-4xx-P can be used for controlling and regulation of processes need proportional and threshold control like: temperature processes (heating or cooling), valves controlling or other.

VARIANTS OF UNITS

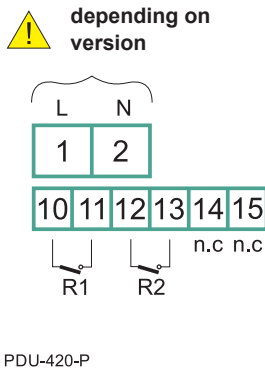
- PDU-420-P **2 independent relay outputs (2 limits)**, panel version. Power supply 230 V or 24 V, interface RS-485 / Modbus RTU.
- PDU-421-P **2 independent relay outputs (2 limits)**, panel version. Power supply 230 V or 24 V, interface RS-485 / Modbus RTU, analogue current output.
- PDU-440-P **4 independent relay outputs (4 limits)**, panel version. Power supply 230 V or 24 V, interface RS-485 / Modbus RTU.

DIMENSIONAL DRAWINGS

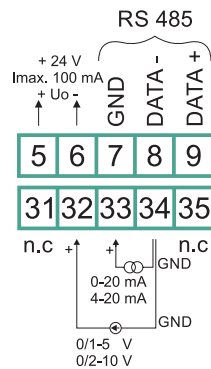


TERMINAL DESCRIPTION

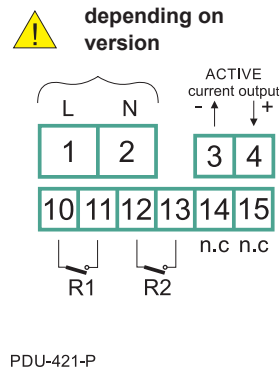
UNIT TERMINAL BLOCK			
terminal No.	PDU-420-P	PDU-421-P	PDU-440-P
1	L / + (230 / 24 V)	L / + (230 / 24 V)	L / + (230 / 24 V)
2	N / - (230 / 24 V)	N / - (230 / 24 V)	N / - (230 / 24 V)
3		- (analogue output)	RE 4
4		+ (analogue output)	RE 4
5	+Uo	+Uo	+Uo
6	-Uo	-Uo	-Uo
7	GND (RS 485)	GND (RS 485)	GND (RS 485)
8	B - (RS 485)	B - (RS 485)	B - (RS 485)
9	A + (RS 485)	A + (RS 485)	A + (RS 485)
10	RE 1	RE 1	RE 1
11	RE 1	RE 1	RE 1
12	RE 2	RE 2	RE 2
13	RE 2	RE 2	RE 2
14			RE 3
15			RE 3
31			
32	+ IN (voltage)	+ IN (voltage)	+ IN (voltage)
33	+ IN (current)	+ IN (current)	+ IN (current)
34	GND	GND	GND
35			



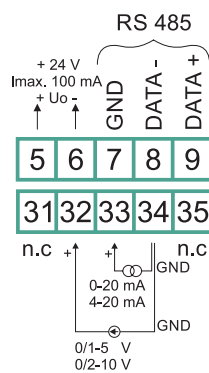
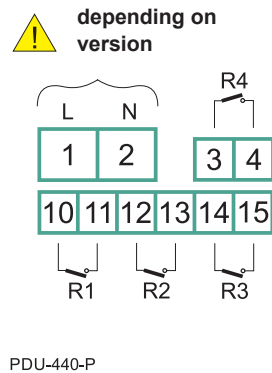
Terminal description PDU-420-P



Terminal description PDU-421-P



Terminal description PDU-440-P



* applicable to 230 V version: 85 - 260 V AC/DC, 50/60 Hz

* applicable to 24 V version: 19 - 50 V DC, 16 - 35 V AC, 50/60 Hz

TECHNICAL SPECIFICATIONS

BASIC TECHNICAL DATA		
Location		panel version
Power supply voltage	version 230V version 24V	85 ... 260 V AC/DC 19 ... 50 V DC; 16 ... 35 V AC
Power consumption	version 230V version 24V	4,5 W (4,5 VA)
Voltage input		current 0/4 ... 20 mA (limited input current to 40 mA) voltage 0/1 ... 5 V; 0/2 ... 10 V
Voltage input resistance		< 65 Ω (current input) > 50 kΩ (voltage input)
Display range		-999 ÷ 9999, plus decimal point
Voltage measurement accuracy		±0.25 % (±one digit over the entire measuring range)
Display		4-digit, seven-segment, LED, red
Outputs relay		2 or 4 (relay 1A / 250V AC)
Sensor power supply outputs	version 230V version 24V	24 V DC + 5% - 10% / max. 100 mA
Outputs		0 ... 24 mA
Communication interface		RS-485, 8N1 and 8N2, Modbus RTU, no galvanic separation
Baud rate		1 200 ... 115,200 sec
Operating temperature		0 ... +50 °C
Storage temperature		-10 ... +70 °C
Protection	Front panel Terminal	IP40 (standard); IP65 (optional)* IP20
Housing material		Noryl – GFN2S E1
Weight		cca 210 g

* with sealing gasket

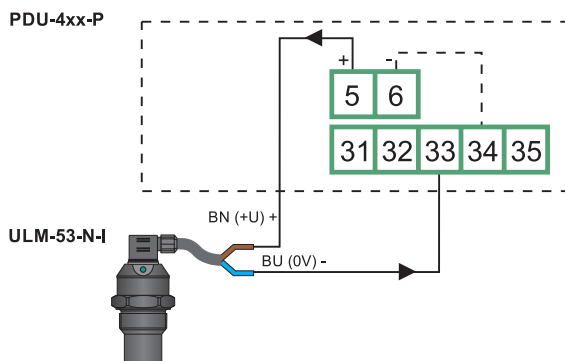
ELECTRICAL CONNECTION

The unit is not equipped with an internal fuse or power supply circuit breaker. Because of this an external time-delay cut-out fuse with a small nominal current value must be used (recommended bipolar, max. 2A) and a power supply circuitbreaker located near the unit. In the case of using a monopolar fuse it must be mounted on the phase cable (L). The power supply network cable diameter must be selected in such a way that in the case of a short circuit of the cable from the side of the unit the cable shall be protected against destruction with an electrical installation fuse.

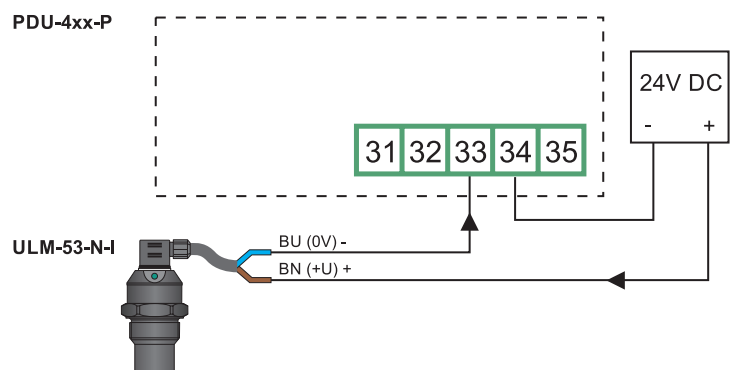
Note: In case of measurement (evaluation) of the values from the level meter located in areas with explosion hazard, it is necessary to install an isolating repeater between the PDU display unit and the level meter.

Non-explosive areas

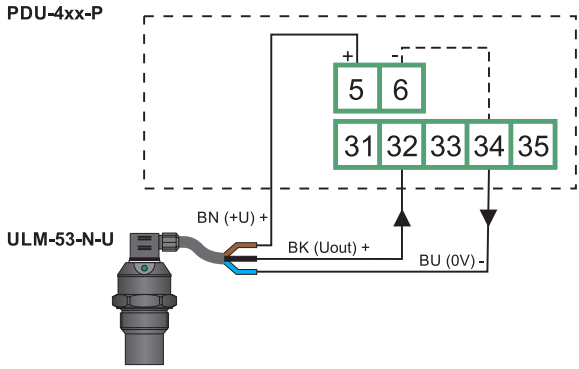
Connection of the sensors without shielded cable



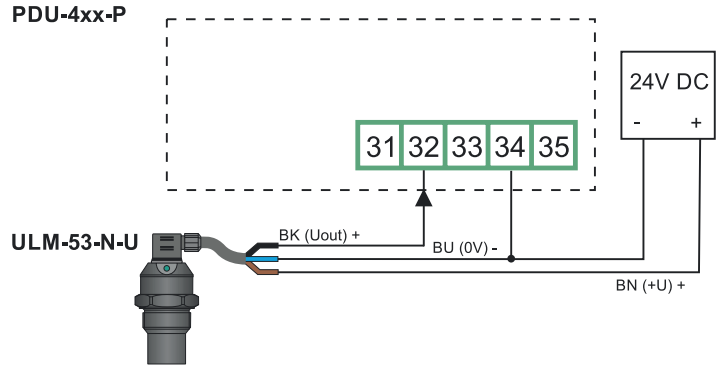
Connection diagram - level meter with current output to PDU unit, using internal power source



Connection diagram - level meter with current output to PDU unit, using external power source



Connection diagram - level meter with voltage output to PDU unit, using internal power source



Connection diagram - level meter with voltage output to PDU unit, using external power source

i Connection diagram is the same for all types of level meters with current or voltage outputs.

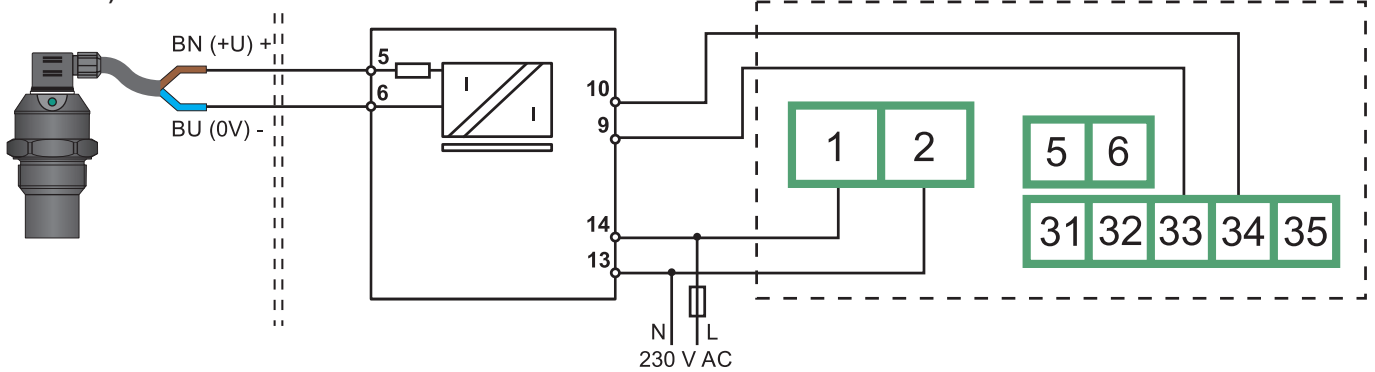
Explosive areas

Connection of the sensors without shielded cable

Level meter with current output (e.g. ULM-53Xi, CLM-36Xi)

Isolating repeater (IRU-420-I)

PDU-4xx-P



Connection of the unit to the level meters with current output located in explosive areas

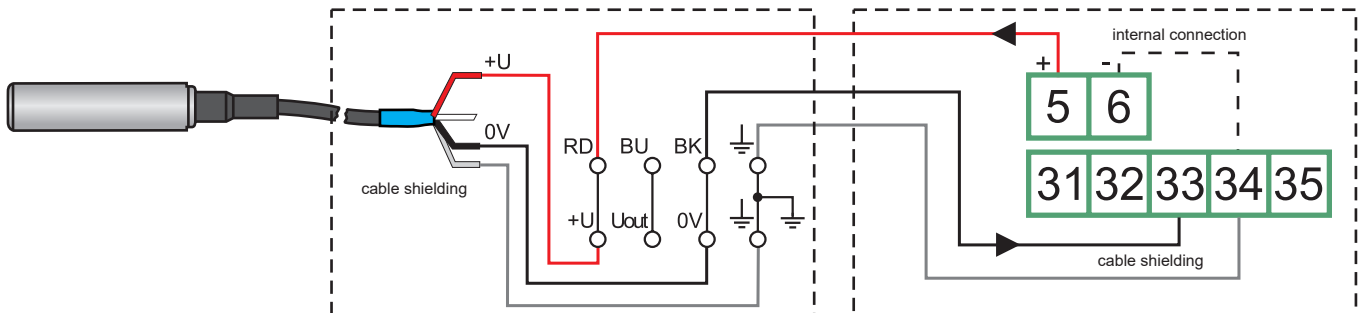
Non-explosive areas

Connection of the sensors with shielded cable

HLM-25C-I

NB

PDU-4xx-P

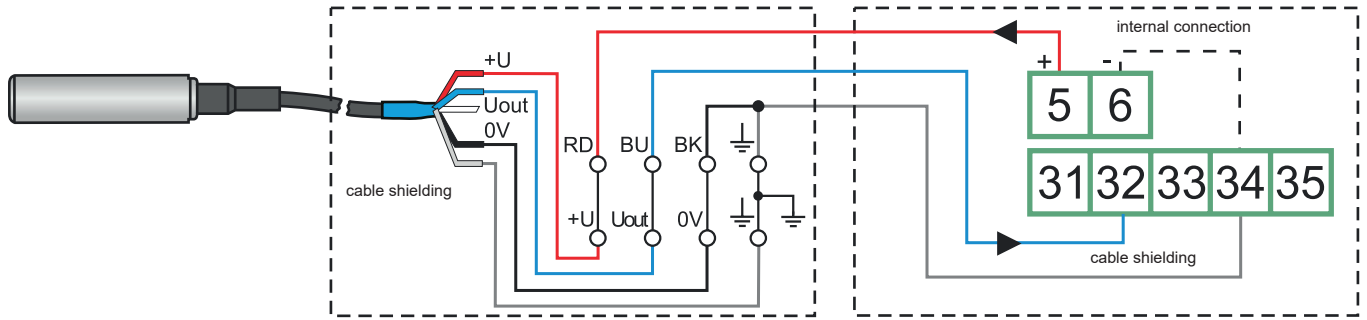


Connection diagram - level meter with current output to PDU unit, using internal power source

HLM-25C-U

NB

PDU-4xx-P



Connection diagram - level meter with voltage output to PDU unit, using internal power source

Legend:

RD – red
BU – blue

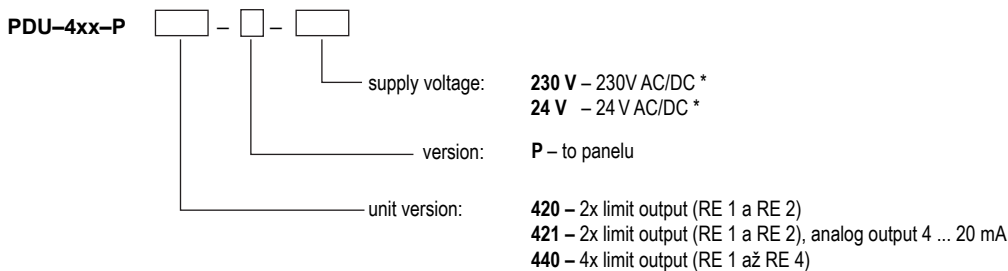
BK – brown
BN – black

If junction box with integrated overvoltage protection is used, the sensor must be connected to the bottom contacts of the terminal block. These contacts are identified with SENSOR label.

FUNCTION AND STATUS INDICATION

LED control	colour	function
„AL“	red	lit – input current (voltage) on the terminals "+ IN" is outside of the allowed range (adjustable) dark – correct function
1:	red	lit – relay RE 1 is energized (threshold status value exceeded) dark – relay RE 1 de-energized (threshold status value not reached)
2:	red	lit – relay RE 2 is energized (threshold status value exceeded) dark – relay RE 2 de-energized (threshold status value not reached)
3:	red	lit – relay RE 3 is energized (threshold status value exceeded) dark – relay RE 3 de-energized (threshold status value not reached)
„R 4“	red	lit – relay RE 4 is energized (threshold status value exceeded) dark – relay RE 4 de-energized (threshold status value not reached)

ORDER CODE



* for accurate range of power supply voltage see table "Technical specification".

CORRECT SPECIFICATION EXAMPLES

PDU-421-P-230V

(421) 2x limit output (2 relays); (P) panel version; (230V) power supply voltage 85 ... 260 V AC/DC.

PDU-440-P-24V

(440) 4x limit output (4 relays); (P) panel version; (24V) power supply voltage 19 ... 50V DC (16 ... 35 V AC).

ACCESSORIES

standard - included in the price of the unit

- 2x metallic brackets for panel mounting

optional - extra charge

(see catalogue sheet for accessories)

- 2x metallic brackets for panel mounting

SAFETY, PROTECTIONS, COMPATIBILITY AND EXPLOSION PROOF

PDU-4xx-P display unit is equipped with power supply voltage polarity reversal, protection against overcurrent and protection against short-term overvoltage.

Protection against hazardous contact is provided through small safe voltage, according to EN 33 2000-4-41.

The electrical equipment of the protection class II. Connected to 230 V power supply only through fuse or breaker (max. 2 A).

The electrical equipment of the protection class II. Electrical safety according to EN 61010-1.

The electromagnetic compatibility is ensured by compliance with standards EN 61326.

verze 06/2019

- For measuring and displaying physical quantities (level, temperature, flow, etc.).
- For connection of level meters with current or voltage output (e.g. CLM, DLM, GRLM, HLM, ULM).
- Up to 4 independent relay outputs.
- Wall-mounted and panel-mounted design.
- Isolated analogue current output option.
- Supply voltage 230 V or 24 V AC/DC.



The PDU-4x0-W meter is equipped with one current input 0-20 / 4-20mA and one voltage input 0-5 / 1-5 / 0-10 / 2-10V. Current input has additionally overcurrent protection circuit, which protects standard resistor. The selection of active input is realised by software, and selected input can be changed at any time. Additionally the PDU-420-W allows user to select a conversion characteristic of several kinds: linear, square, square root, user defined (max.20 points length) and volume characteristics of a cylindrical tank in the vertical and horizontal position. Result is showed on 4-digit LED display.

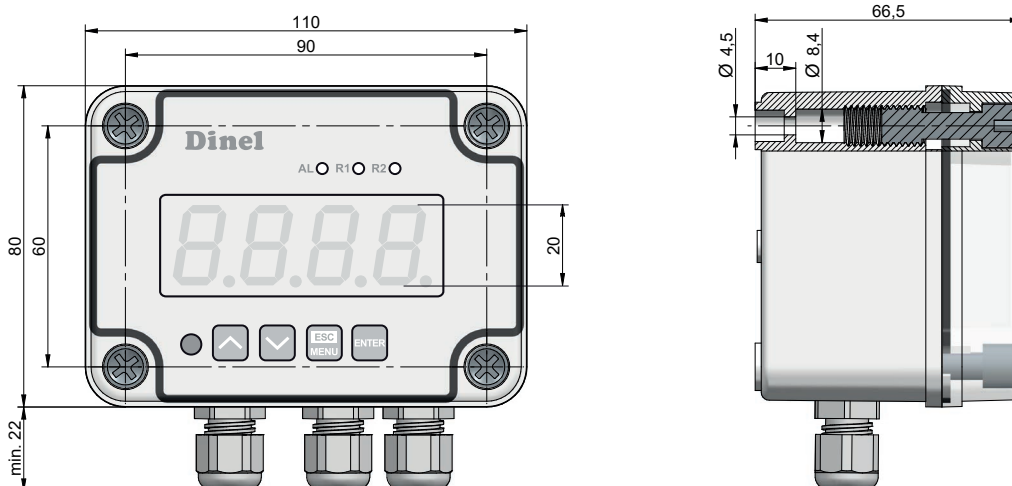
RANGE OF APPLICATION

The unit is designed to be coupled with the level meter, which is connected via current or voltage output. The unit continually displays level in any physically units, according to selected limits, it can control switching of connected equipment (pumps, valves etc.) and it can be used as power supply for level meters too.

VARIANTS OF UNITS

- **PDU-420-W** 2 independent relay outputs (2 limits), wall-mounted. Power supply 230 V or 24 V, RS-485 / Modbus RTU interface. Option to add the RCW-1 infrared remote controller.
- **RCW-1** Infrared remote control for changing parameter settings without removing the front cover of the PDU-420-W. For more detailed information, see the Accessories datasheet.

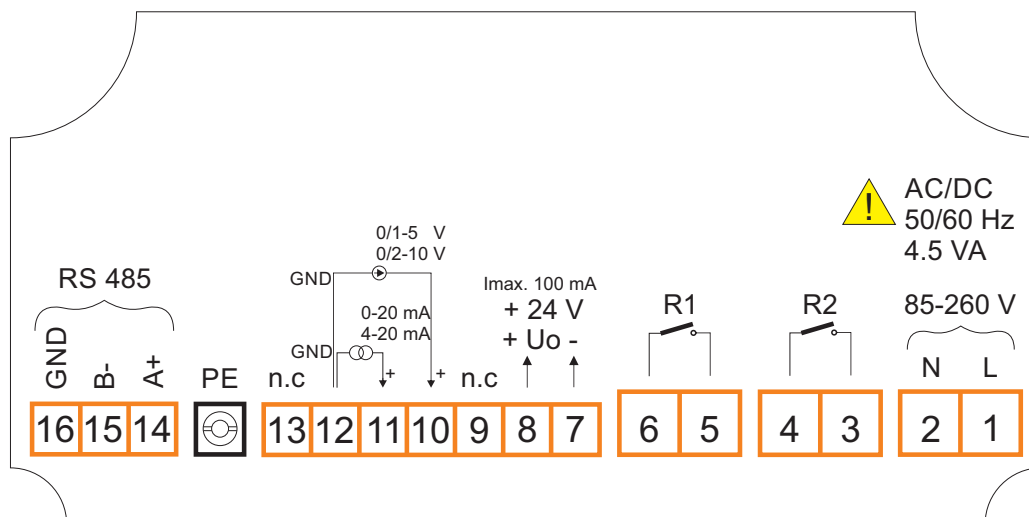
DIMENSIONAL DRAWINGS



TERMINAL DESCRIPTION

UNIT TERMINAL BLOCK

terminal No.	PDU-420-W	terminal No.	PDU-420-W
1	L / + (230 / 24V)	9	
2	N / - (230 / 24V)	10	+ IN (voltage)
3	RE 2	11	+ IN (current)
4	RE 2	12	GND
5	RE 1	13	
6	RE 1	14	A + (RS 485)
7	+ Uo	15	B - (RS 485)
8	+ Uo	16	GND (RS 485)



TECHNICAL SPECIFICATIONS

BASIC TECHNICAL DATA

Location		panel version
Power supply voltage	version 230 V version 24 V	230 V AC $\pm 10\%$ 24 V DC $\pm 15\%$
Power consumption	version 230 V version 24 V	2,6 VA 4,5 W
Voltage input		current 0/4 ... 20 mA (limited input current to 40 mA) voltage 0/1 ... 5 V; 0/2 ... 10 V
Voltage input resistance		< 65 Ω (current input) > 50 k Ω (voltage input)
Display range		-999 - 9999, plus decimal point
Voltage measurement accuracy		$\pm 0,25\%$ (\pm one digit over the entire measuring range)
Display		4-digit, seven-segment, LED, red
Outputs relay		2 (relay 1 A / 250 V AC)
Sensor power supply outputs	version 230 V version 24 V	24 V DC $\pm 3\%$, max. 25 mA 24 V DC $\pm 15\%$, max. 100 mA
Outputs		–
Communication interface		RS-485, 8N1 and 8N2, Modbus RTU, no galvanic separation
Baud rate		1 200 ... 115 200 bit/s
Operating temperature		0 ... +50°C; (-20 ... +50°C)*
Storage temperature		-10 ... +70°C; (-20 ... +70°C)*
Protection		IP65
Housing material		ABS + fiberglass
Weight		cca 340 g

* special design for an extra charge

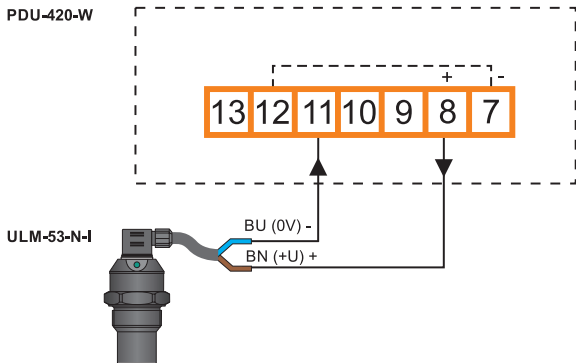
ELECTRICAL CONNECTION

The unit is not equipped with an internal fuse or power supply circuit breaker. Because of this an external time-delay cut-out fuse with a small nominal current value must be used (recommended bipolar, max. 2A) and a power supply circuitbreaker located near the unit. In the case of using a monopolar fuse it must be mounted on the phase cable (L). The power supply network cable diameter must be selected in such a way that in the case of a short circuit of the cable from the side of the unit the cable shall be protected against destruction with an electrical installation fuse.

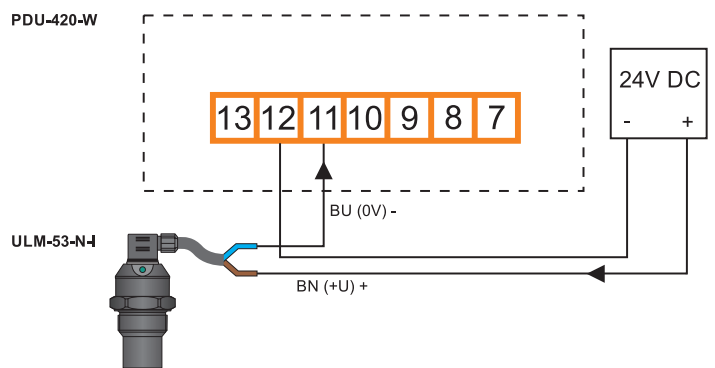
Note: In case of measurement (evaluation) of the values from the level meter located in areas with explosion hazard, it is necessary to install an isolating repeater between the PDU display unit and the level meter.

Explosive areas

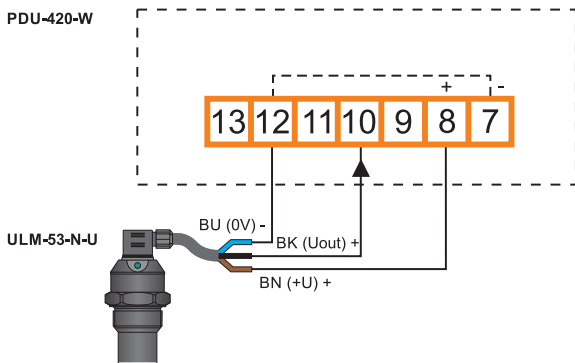
Connection of the sensors with shielded cable



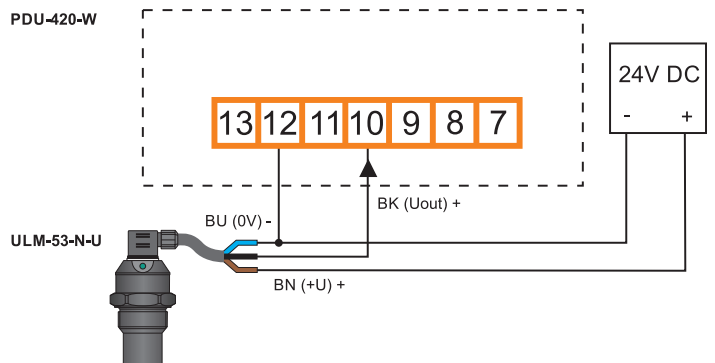
Connection diagram - level meter with current output to PDU unit, using internal power source



Connection diagram - level meter with current output to PDU unit, using external power source



Connection diagram - level meter with voltage output to PDU unit, using internal power source



Connection diagram - level meter with voltage output to PDU unit, using external power source



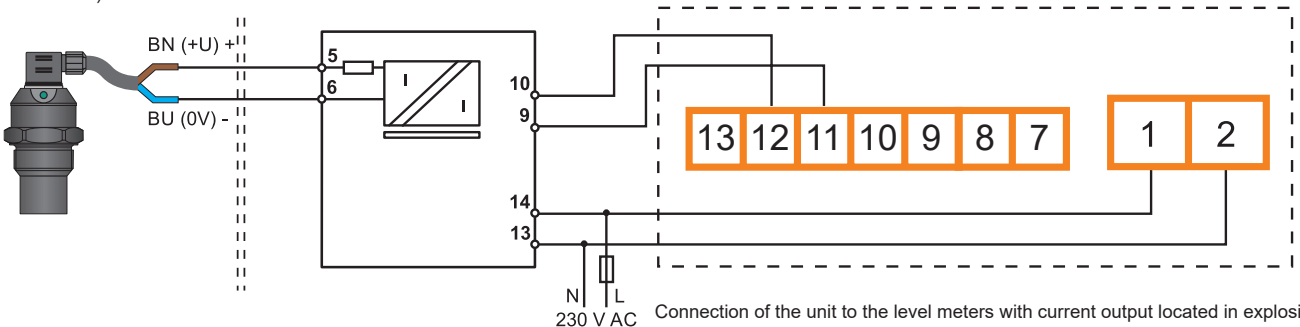
Connection diagram is the same for all types of level meters with current or voltage outputs.

Explosive areas

Connection of the sensors without shielded cable

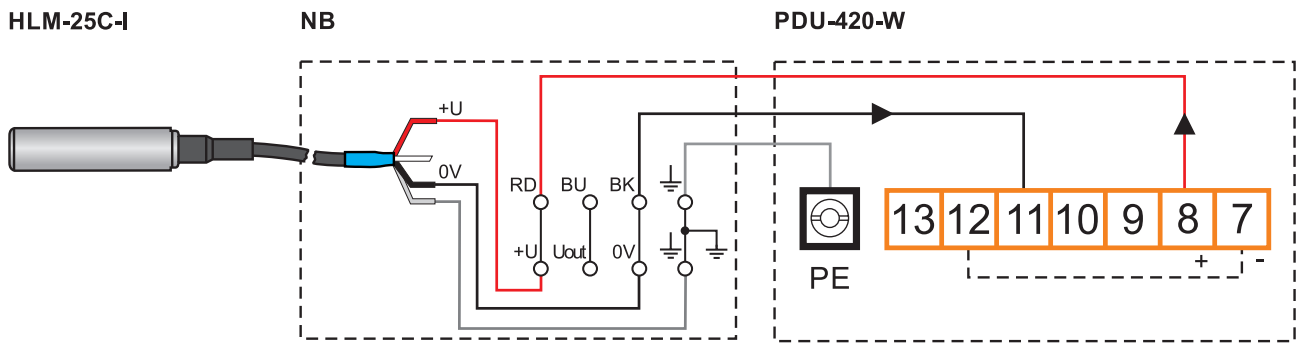
Level meter with current output (e.g. ULM-53Xi, CLM-36Xi)

Isolating repeater (IRU-420-I)

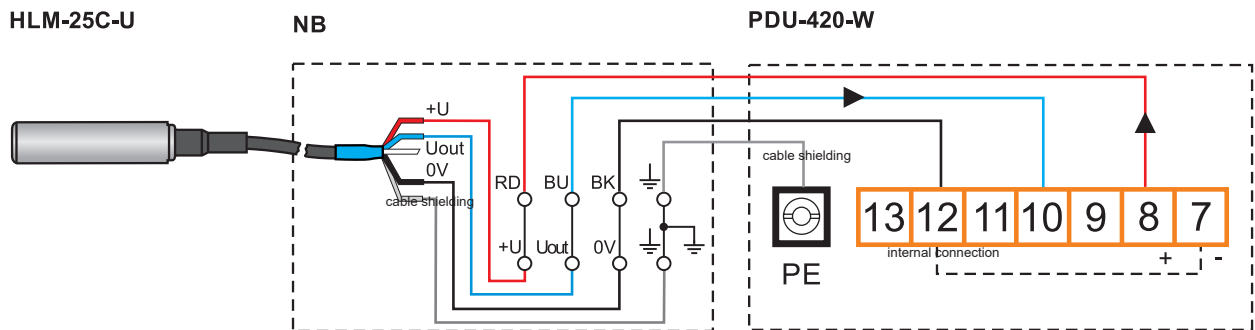


Connection of the unit to the level meters with current output located in explosive areas

Non-explosive areas
Connection of the sensors with shielded cable



Connection diagram - level meter with current output to PDU unit, using internal power source



Connection diagram - level meter with voltage output to PDU unit, using internal power source

Legend:
RD – red BK – brown
BU – blue BN – black

i If junction box with integrated overvoltage protection is used, the sensor must be connected to the bottom contacts of the terminal block. These contacts are identified with SENSOR label.

FUNCTION AND STATUS INDICATION

LED control	colour	function
„AL“	red	lit – input current (voltage) on the terminals "+ IN" is outside of the allowed range (adjustable) dark – correct function
„R 1“	red	lit – relay RE 1 is energized (threshold status value exceeded) dark – relay RE 1 de-energized (threshold status value not reached)
„R 2“	red	lit – relay RE 2 is energized (threshold status value exceeded) dark – relay RE 2 de-energized (threshold status value not reached)

ORDER CODE

VÝROBEK	
PDU	
VARIANTA JEDNOTKY	
420	2x limitní výstup (RE 1 a RE 2)
PROVEDENÍ	
W	nástěnné provedení
NAPÁJECÍ NAPĚTÍ	
230 V	230 V AC ± 10 %
24 V	24 V DC ± 15 %
PDU - 420 - W - 230V	
MOŽNÁ VARIANTA VÝROBKU	

CORRECT SPECIFICATION EXAMPLES

PDU-420-W-230V

(420) 2x limited output (RE 1 and RE 2); (W) wall-mounted version; (230V) supply voltage 230 V AC ± 10 %; (RWC-1)

PDU-420-W-24V

(420) 2x limited output (RE 1 and RE 2); (W) wall-mounted version; (230V) supply voltage 24 V DC ± 15%

ACCESSORIES

optional – for an extra charge

(see the Accessories Catalogue List)

- Infrared remote controller RCW-1 (for PDU-420-W type only)

SAFETY, PROTECTIONS, COMPATIBILITY AND EXPLOSION PROOF

PDU-4xx-P display unit is equipped with power supply voltage polarity reversal, protection against overcurrent and protection against short-term overvoltage.

Protection against hazardous contact is provided through small safe voltage, according to EN 33 2000-4-41. The electrical equipment of the protection class II. Connected to 230 V power supply only through fuse or breaker (max. 2A).

The electrical equipment of the protection class II. Electrical safety according to EN 61010-1.

The electromagnetic compatibility is ensured by compliance with standards EN 61326.

The manufacturer reserves the right to change the specifications and appearance of the product without prior notice.

ACCESSORIES

optional – for an extra charge

(see the Accessories Catalogue List)

- Infrared remote controller RCW-1 (for PDU-420-W type only)

SAFETY, PROTECTIONS, COMPATIBILITY AND EXPLOSION PROOF

PDU-4xx-P display unit is equipped with power supply voltage polarity reversal, protection against overcurrent and protection against short-term overvoltage.

Protection against hazardous contact is provided through small safe voltage, according to EN 33 2000-4-41. The electrical equipment of the protection class II. Connected to 230 V power supply only through fuse or breaker (max. 2 A).

The electrical equipment of the protection class II. Electrical safety according to EN 61010-1.

The electromagnetic compatibility is ensured by compliance with standards EN 61326.