

- 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.

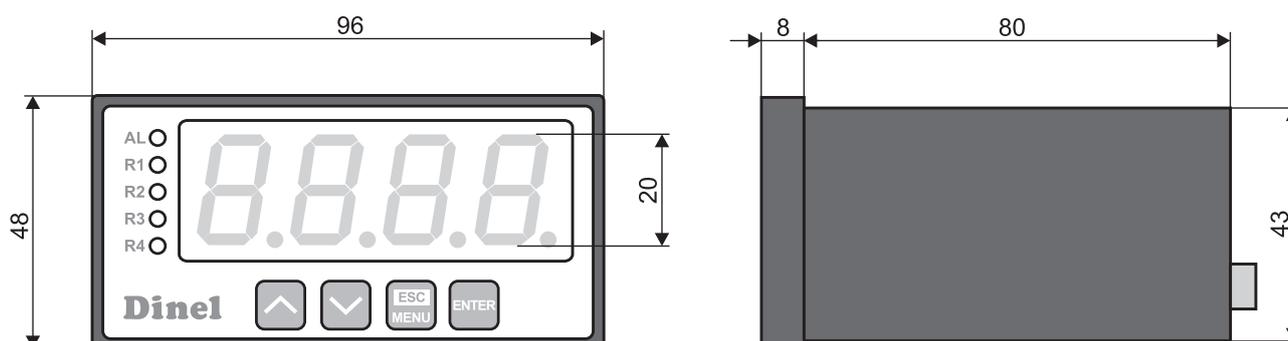
RANGE OF APPLICATION

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

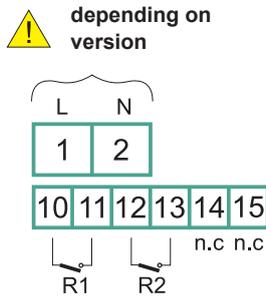
- PDU-420-P **2 independent relay outputs (2 limits)**, panel version. Power supply 230 V or 24 V, interface RS-485 / Modbus RTU.
- PDU-421-P **2 independent relay outputs (2 limits)**, panel version. Power supply 230 V or 24 V, interface RS-485 / Modbus RTU, analogue current output.
- PDU-440-P **4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

DIMENSIONAL DRAWINGS



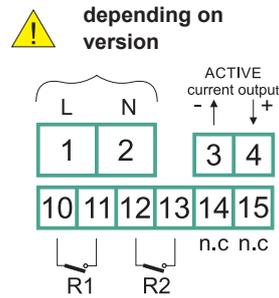
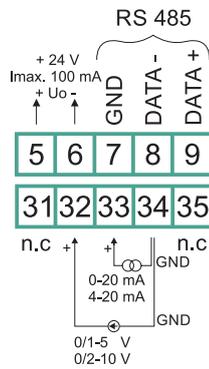
TERMINAL DESCRIPTION

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			



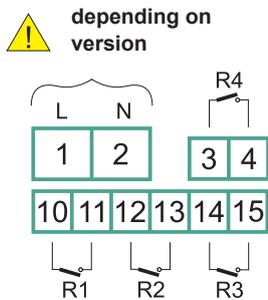
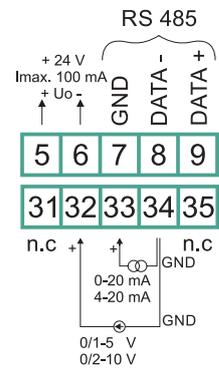
PDU-420-P

Terminal description PDU-420-P



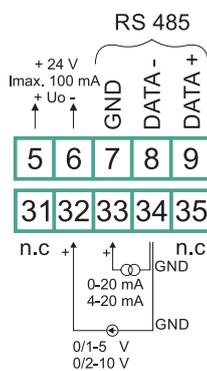
PDU-421-P

Terminal description PDU-421-P



PDU-440-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 230 V version 24 V	85 ... 260 V AC/DC 19 ... 50 V DC; 16 ... 35 V AC
Power consumption	version 230 V version 24 V	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 230 V version 24 V	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

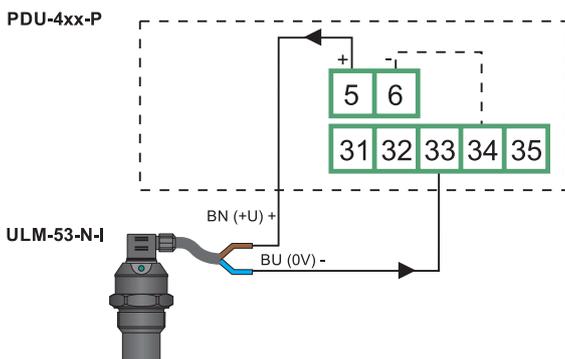
ELECTRICAL CONNECTION

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.

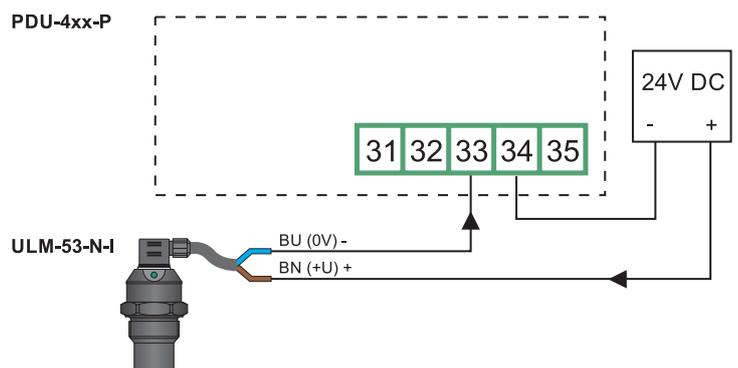
Note: In case of measurement (evaluation) of the values from the level meter located in areas with explosion hazard, it is necessary to install an isolating repeater between the PDU display unit and the level meter.

Non-explosive areas

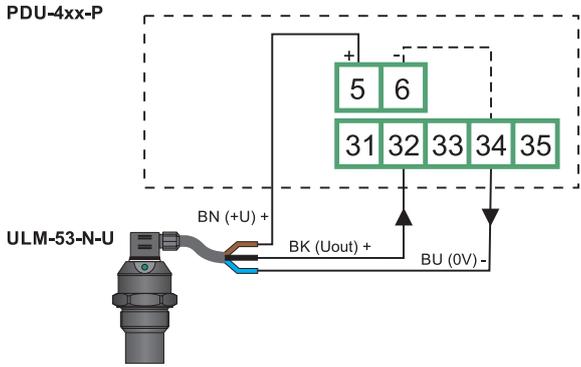
Connection of the sensors without shielded cable



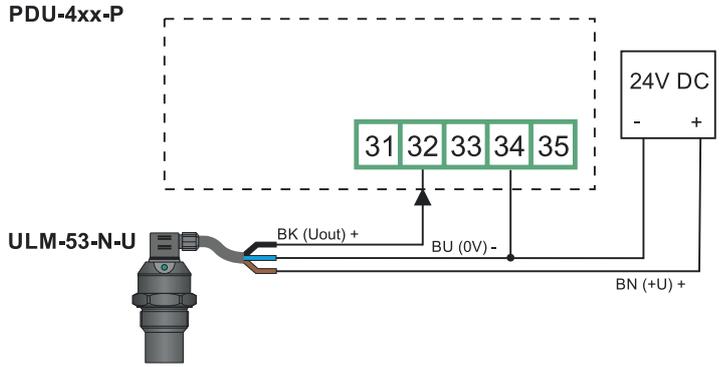
Connection diagram - level meter with current output to PDU unit, using internal power source



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.

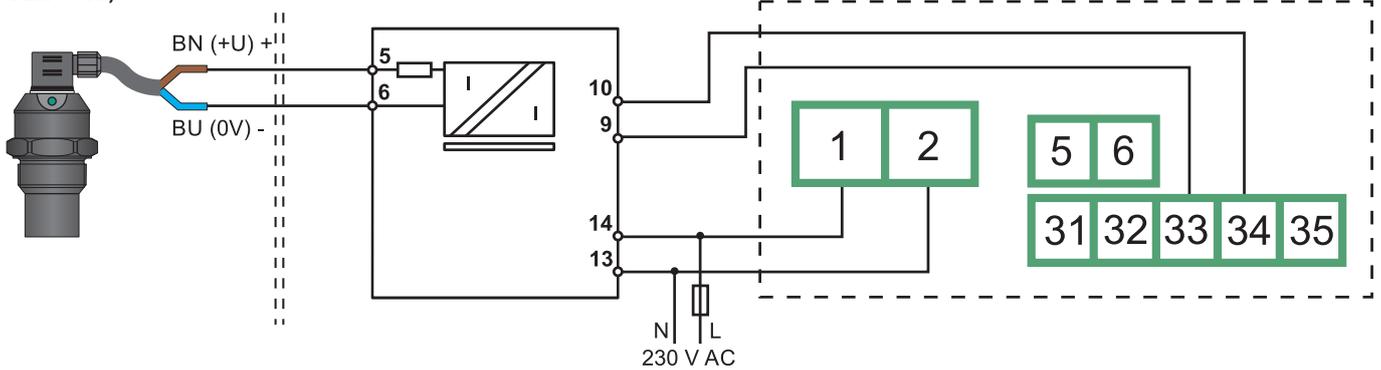
Explosive areas

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

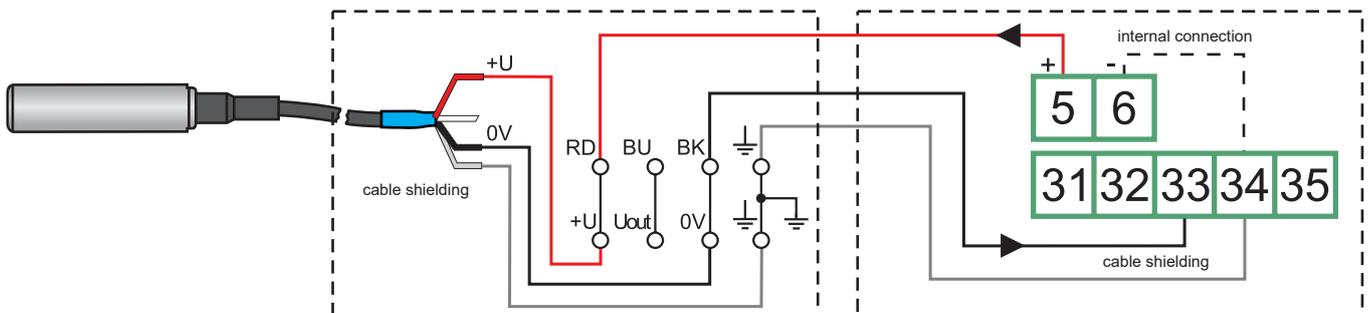
Non-explosive areas

Connection of the sensors with shielded cable

HLM-25C-I

NB

PDU-4xx-P

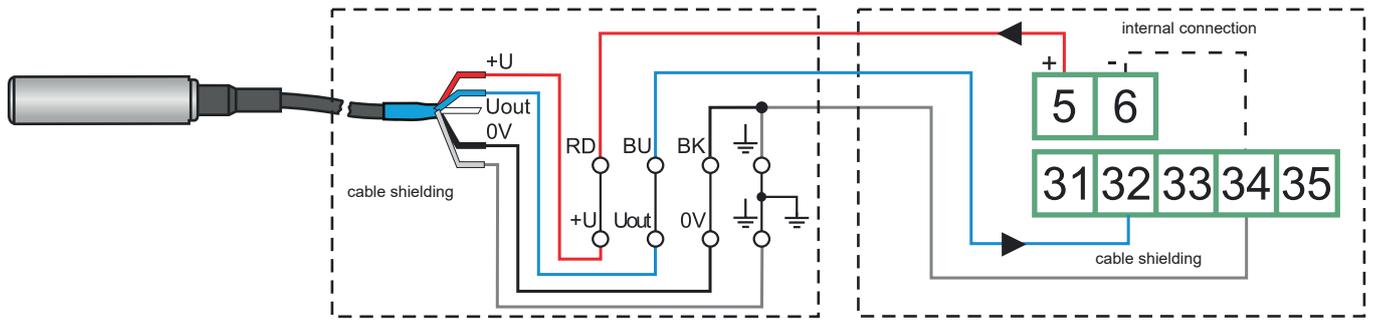


Connection diagram - level meter with current output to PDU unit, using internal power source

HLM-25C-U

NB

PDU-4xx-P



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

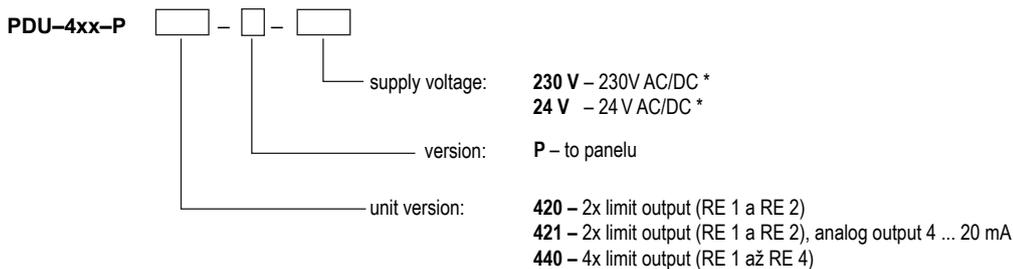
Legend:
 RD – red BK – brown
 BU – blue BN – black

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 ... 50 V 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.

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PDU-4xx-P-dat-6.3



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