

**PROGRAMMABLE
TRANSDUCER OF 1-PHASE
POWER NETWORK
PARAMETERS
P41 TYPE**



**QUICK START
MANUAL**



Note! The full version of the user's manual is inserted in the www.lumel.com.pl/en/ web site.

1. TRANSDUCER SET



- 1. transducer 1 pc
- 2. plug with 4 screw terminals..... 2 pc
- 3. plug with 6 screw terminals..... 1 pc
- 4. quick start manual..... 1 pc
- 5. guarantee card..... 1 pc
- 6. CD (with driver for USB and user's manual)..... 1 pc

2. OPERATIONAL SAFETY

In the safety service scope, the transducer meets to requirements of the EN 61010-1 standard.



Observations concerning the operational safety:

- All operations concerning transport, installation and commissioning as well as maintenance must be carried out by qualified, skilled personnel, and national regulations for the prevention of accidents must be observed.
- Before switching the transducer on, one must check the correctness of connections to the network.
- The removal of the transducer casing during the guarantee contract period causes its cancellation.
- The device is destined to be installed and used in industrial electro-magnetic environment conditions.
- A switch or a circuit-breaker should be located near the device, easy accessible by the operator and suitably marked.

3. FIXING WAY

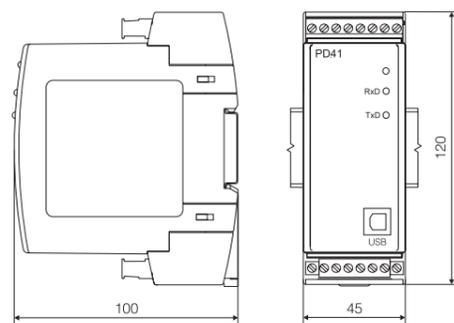


Fig.1 Transducer dimensions and fixing.

4. CONNECTION DIAGRAMS

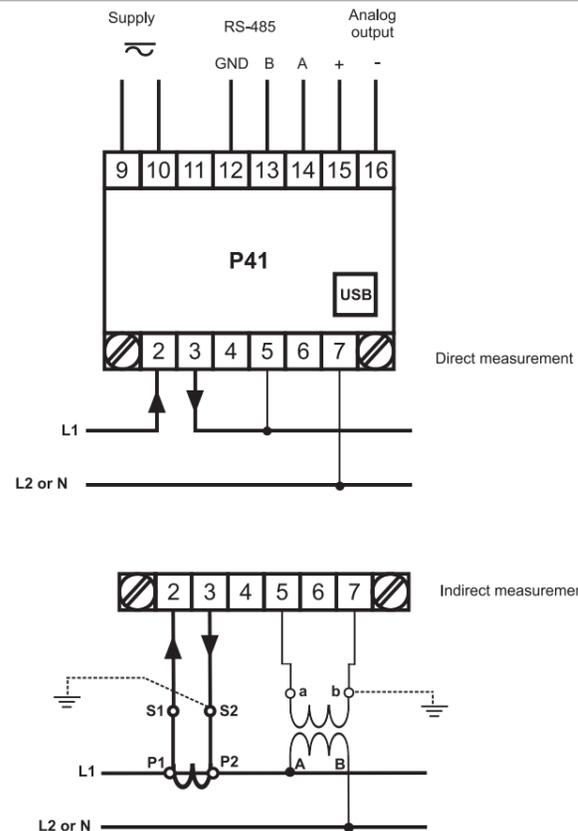
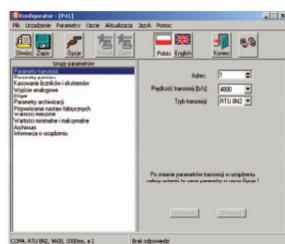


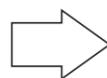
Fig.2. Transducer connection diagrams.

5. TRANSDUCER CONFIGURATION

The transducer configuration can be carried out by the free LPCon program available on our website www.lumel.com.pl/en/



Transmission of the configuration through the RS-485 interface or USB



6. STARTING TO WORK

After switching the supply on, the state diode should light up for a moment in red, and next should light up in green. The recording confirmation in registers is signaled by a short extinction of the state diode. The incorrect work is signaled by the state diode in the way described in the chapter 7. The data reception through the RS-485 interface is signaled by a pulsing of the RxD diode. The data transmission through the RS-485 interface is signaled by a pulsing of the TxD diode.

7. ERROR CODES

After connecting the transducer to the network, messages about errors can appear. Causes of errors are presented below:

- the state diode pulsates in red – lack of calibration or the non-volatile memory is damaged. One must return the transducer to the manufacturer
- the state diode lights in red – inappropriate work parameters; one must configure the transducer again.

8. TECHNICAL DATA

Measuring ranges and admissible basic errors.

Table 1

Measured value	Measuring range	Basic error
Current In 1 A 5 A	0.005...1.200 A~ 0.025...6.000 A~	± 0.2%
Voltage L-N 100 V 400 V	0,5...120 V 2...480 V	± 0.2%
Frequency	45.0...66.0...100 Hz	± 0.2%
Active power	-2.88 kW ...1.40 W...2.88 kW	± 0.5%
Reactive power	-2.88 kvar...1.40 var...2.88 kvar	± 0.5%
Apparent power	1.40 VA .. 2.88 kVA	± 0.5%
Coefficient PF	-1...0...1	± 0.5%
Tangens Φ_l	-1.2...0...1.2	± 1%
ϕ	0...359	± 1%
Active energy	0...9 999 999.9 kWh	± 0.5%
Reactive energy	0...9 999 999.9 kvarh	± 0.5%

Standard conversion time: 1,2 s

Maximal conversion time: 2,2 s

Power consumption:

- in supply circuit ≤ 6 VA
- in voltage circuit ≤ 0,05 VA
- in current circuit ≤ 0,05 VA

Analog outputs

programmable output:
current (max. range) -24...0...+24 mA
termination resistance of current output:
 R_{load} : 0...250 Ω
voltage: 15 V

Serial interface

RS485: address 1..247;
mode: 8N2, 8E1, 8O1,8N1;
baud rate: 4.8, 9.6, 19.2, 38.4 kbit/s
USB: 1.1 / 2.0, address 1; mode 8N2
baud rate: 9.6 kbit/s
transmission protocol: modbus RTU
response time: 1000 ms

Ratio of the Voltage Transformer Ku:

0.1...4000.0

Ratio of the Current Transformer Ki:

1...10000

Protection grade ensured by the casing:

from frontal side: IP40
from rear side: IP10

Weight

0.2 kg

Dimensions

40 x 120 x 100 mm

Fixing

on a DIN 35 mm

REFERENCE AND RATED OPERATING CONDITIONS:

- **supply voltage** 85...253 V a.c. 40...400 Hz; 90...300 V d.c.
20...40 V a.c. 40...400 Hz; 20...60 V d.c.
- **input signal** 0...0,005...1,2 In; 0,05...1,2 Un for current and voltage
0...0,1...1,2 In; 0...0,1...1,2 Un for power factors Pf_l , t_{ϕ}
frequency 45..66..100 Hz sinusoidal (THD ≤ 8%)
- **power factor** -1...0...1
- **analog output** -24...-20...0...+20...+24 mA
- **ambient temperature** -10 ...23...+55 °C
- **storage temperature** - 30 .. +70°C
- **relative humidity** < 95% (inadmissible condensation)
- **admissible peak factor of:**
- current 2
- voltage 2
- **external magnetic field** 0...40...400 A/m
- **short duration overload (5 s)**
- voltage inputs 2 Un (max.1000 V)
- current voltage 10 In
- **working position** any
- **preheating time** 5 min.

Additional errors in % of the basic error:

- from frequency of input signals < 50%
- from ambient temperature changes < 50 % / 10°C
- for THD > 8% < 100 %

Standards Fulfilled by the Meter
acc. to EN 60688:2004

Electromagnetic Compatibility:

- noise immunity acc. to EN 61000-6-2
- noise emission acc. to EN 61000-6-4

Safety Requirements acc. to EN 61010-1:

- isolation between circuits: basic
- installation category: III
- pollution level: 2
- maximal phase-to-earth voltage: 300 V,
- altitude above sea level < 2000 m

9. ORDERING CODES

The way of coding is given in the table 2.

Table 2

	P41 -	X	XX	X	X
Supply:					
85...253 V a.c. 40...400 Hz; 90...300 V d.c.		1			
20...40 V a.c. 40...400 Hz; 20...60 V d.c.			2		
Version:					
standard			00		
custom-made*			XX		
Language:					
Polish				P	
English				E	
other*					X
Acceptance tests:					
without extra quality requirements					0
with an extra quality inspection certificate					1
acc. to customer's requirements*					X

* the version code will be established by the manufacturer

ORDER EXAMPLE:

The code: **P41 - 1 00 E 0** means:
P41 - transducer P41 type
1 - supply 85...253 V a.c. / 90...300 V d.c.
00 - standard version
E - English language
0 - without extra quality requirements.