

TRANSDUCER OF NETWORK PARAMETERS

P43 type



All quantities and configuration parameters are accessible through the RS-485 interface and the USB interface.

Transducer output signals are galvanically isolated from the input signal and the supply.

The transducer housing is made of a self-extinguishing plastic. Outside the transducer, there are socket-plug screw terminal strips.

TECHNICAL DATA

Measuring Ranges and Admissible Basic Errors

Table 1

| Measured quantity | Measuring range | L1 | L2 | L3 | Σ | Intrinsic error |
|----------------------|----------------------------------|----|----|----|----------|-----------------|
| Current 1/5A L1...L3 | 0.02...6 A~ | • | • | • | | $\pm 0.2\%$ |
| Voltage L-N | 2.9...276 V~ | • | • | • | | $\pm 0.2\%$ |
| Voltage L-L | 10...480 V~ | • | • | • | | $\pm 0.5\%$ |
| Frequency | 45.0...66.0 Hz | • | • | • | | $\pm 0.2\%$ |
| Active power | -1.65 kW...1.4 W...1.65 kW | • | • | • | • | $\pm 0.5\%$ |
| Reactive power | -1.65 kvar...1.4 var...1.65 kvar | • | • | • | • | $\pm 0.5\%$ |
| Apparent power | 1.4 VA...1.65 kVA | • | • | • | • | $\pm 0.5\%$ |
| Tangens φ | -1.2...0...1.2 | • | • | • | • | $\pm 1\%$ |
| PF factor | -1...0...1 | • | • | • | • | $\pm 0.5\%$ |
| Active energy | 0...99 999 999.9 kWh | | | | • | $\pm 0.5\%$ |
| Reactive energy | 0...99 999 999.9 kvarh | | | | • | $\pm 0.5\%$ |

APPLICATION

The P43 transducer is a programmable digital instrument destined for measurement and parameter conversion of 3 or 4-wires power networks, in balanced and unbalanced systems.

It ensures the measurement and conversion of measured values into 2 standard analog current signals. The value of each measured quantity can be transmitted to the master system by the RS-485 or USB interface. Two relay outputs signal the overflow of selected quantities, and the pulse output can be used for the consumption monitoring of the 3-phase active energy.

Quantities measured and calculated by the transducer:

- phase voltages U_1, U_2, U_3
- phase-to-phase voltages U_{12}, U_{23}, U_{31}
- 3-phase mean voltage U
- phase-to-phase mean voltage UPP
- three-phase mean current I
- phase currents I_1, I_2, I_3
- phase active powers P_1, P_2, P_3
- phase reactive powers Q_1, Q_2, Q_3
- phase apparent powers S_1, S_2, S_3
- phase active power factors Pf_1, Pf_2, Pf_3
- reactive/active ratio of power factors $tg\varphi_1, tg\varphi_2, tg\varphi_3$
- three-phase mean power factors $Pf, tg\varphi$
- three-phase active, reactive and apparent powers P, Q, S
- active mean power (e.g. 15 min.) P_{av}
- three-phase active and reactive energy E_{pt}, E_{qt}, f
- frequency

Maximal and minimal values are measured for all quantities. Additionally, there is the possibility to accommodate the transducer to external measuring transformers. The actualization time of all available quantities does not exceed 1 second.

Power consumption:

- in supply circuit $\leq 6 VA$
- in voltage circuit $\leq 0.05 VA$
- in current circuit $\leq 0.05 VA$

Analog outputs

2 programmable outputs:
-20...0...+20 mA,
accuracy 0.2%

Relay outputs

2 relays,
voltageless NOC contacts
load capacity 250 V~/ 0.5 A~

Serial interface

RS-485, USB

Transmission protocol

Modbus RTU

Energy pulse output

output of OC type, passive
acc. to EN 62053-31

Pulse constant of OC type output

5000 imp./kWh, independently
on set ratios K_u, K_i

Ratio of the voltage transformer K_u

1.0...4000

Ratio of the current transformer K_i

1...10000

Protection degree:

- for the housing IP 40
- from terminals (rear side) IP 20

Weight

0.3 kg

Overall dimensions

90 × 120 × 100 mm

Fixing way

on a 35 mm DIN rail

Reference and rated operating conditions:

| | |
|----------------------------------|--|
| - supply voltage | 85...253 V d.c./a.c., 40...400 Hz or 20...40 V d.c./a.c., 40...400 Hz |
| - input signal | 0...0.005...1.2I _n ; 0.05...1.2U _n for current, voltage 0...0.1...1.2I _n ; 0...0.1...1.2U _n ; for power factors P _f , 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 | -25...23...+55°C |
| - storage temperature | -30...+70°C |
| - humidity | 25...95% (inadmissible condensation) |
| - admissible peak factor: | |
| - current | 2 |
| - voltage | 2 |
| - external magnetic field | 0...400 A/m |
| - short duration overload (5 s): | |
| - voltage inputs | 2U _n (max.1000 V) |
| - current inputs | 10 I _n |
| - working position | any |
| - preheating time | 5 min. |

Additional errors:

| | |
|---------------------------------------|------------|
| In percentage of the intrinsic error: | |
| - from frequency of input signals | < 50% |
| - from ambient temperature changes | < 50%/10°C |

Standards fulfilled by the meter

Electromagnetic compatibility:

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

Safety requirements:

According to EN 61010-1 standard

- isolation between circuits: basic,
- installation category: III,
- pollution level: 2,
- maximal phase-to-earth voltage: 600 V,
- altitude above sea level: < 2000 m.

EXECUTION CODES

| TRANSDUCER | P43 | X | X | X | XX | X |
|---|-----|---|---|---|----|----|
| Current input In: | | | | | | |
| 1 A (X/1) | | 1 | | | | |
| 5 A (X/5) | | 2 | | | | |
| Voltage input (phase/phase-to-phase) Un: | | | | | | |
| 3 × 57.7/100 V | | | 1 | | | |
| 3 × 230/400 V | | | 2 | | | |
| Supply voltage: | | | | | | |
| 85...253 V a.c./d.c. | | | | 1 | | |
| 20...40 V a.c./d.c. | | | | 2 | | |
| Kind of execution: | | | | | | |
| standard | | | | | | 00 |
| custom-made* | | | | | | XX |
| Acceptance tests: | | | | | | |
| without extra quality requirements | | | | | | 8 |
| with an extra quality inspection certificat | | | | | | 7 |
| acc. to customer's requirements* | | | | | | X |

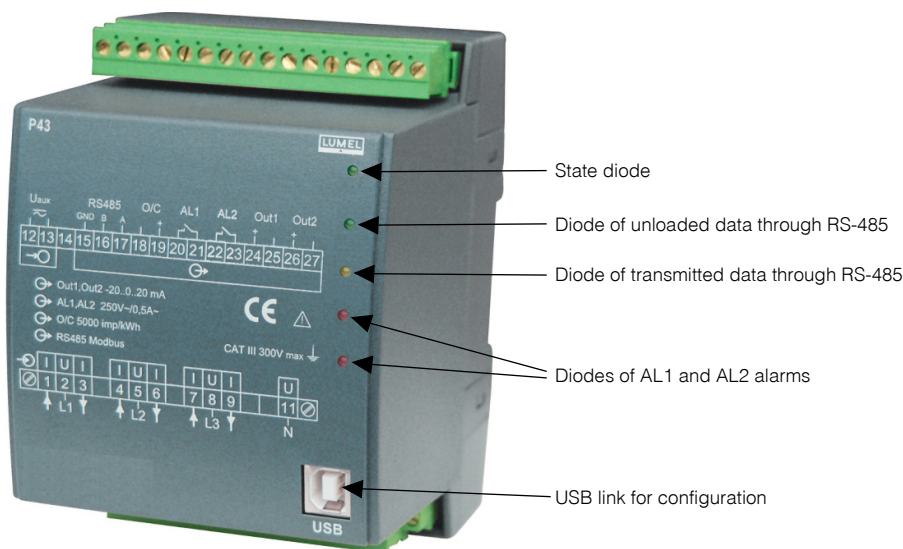
* The number code establishes the manufacturer.

EXAMPLE OF ORDER:

When ordering please respect successive code numbers.

The code: **P43-2.2.1.00.8** means:

- P43** - transducer of network parameters of P43 type
- 2** - current input In: 5 A (x/5),
- 2** - input voltage (phase/phase-to-phase) Un = 3 × 230/400 V,
- 1** - supply voltage: 85...253 V a.c./d.c.
- 00** - standard execution,
- 8** - execution without extra quality requirements.



Frontal view of the P43 transducer