

P43 PROGRAMMABLE TRANSDUCER OF 3-PHASE POWER NETWORK PARAMETERS



- Measurement and conversion of power network parameters in 4-wire balanced or unbalanced systems.
- Tetraquadrantic energy measurement (Ep+, Ep-, EQL, EQc).
- Measurement of 15, 30 or 60 minutes' mean active power (synchronization by an internal clock or a walking window) with the archiving function of 1000 last samples.
- Programmable current and voltage transformer ratios.
- Programmable parameters through the RS-485 interface or USB when using the free eCon program.
- RS-485 communication interface with MODBUS protocol.
- Detection and signalling of incorrect phase sequence.
- THD measurement.



FEATURES



INPUTS



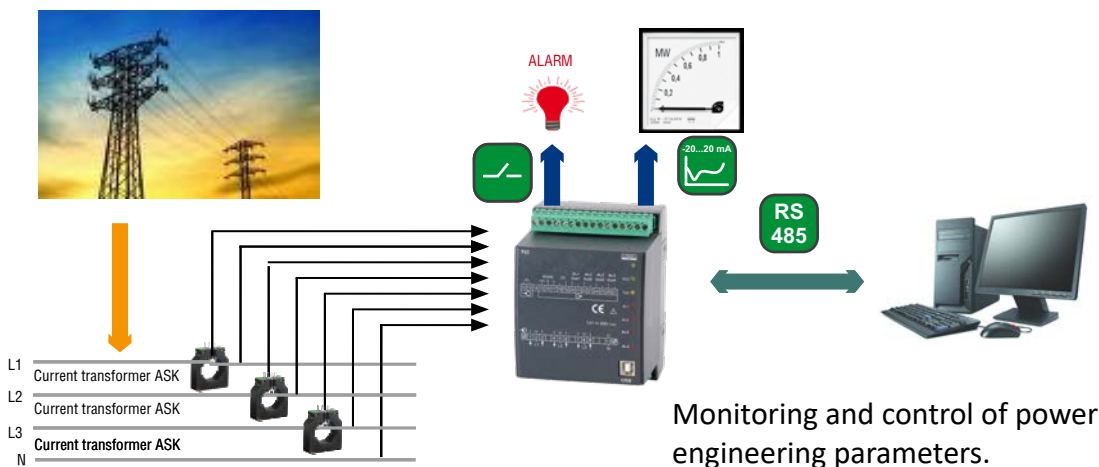
OUTPUTS



GALVANIC ISOLATION:



EXAMPLE OF APPLICATION



MEASURED QUANTITIES AND MEASURING RANGES

Measured value	Measuring range	L1	L2	L3	Σ	Basic error
Current 1/5A L1...L3	0.02...6 A a.c.*	●	●	●		±0.2%
Voltage L-N	2.9...276 V a.c.*	●	●	●		±0.2%
Voltage L-L	10...480 V a.c.*	●	●	●		±0.5%
Frequency	47.0...63.0 Hz	●	●	●		±0.2%
Active power	-1.65 kW...1.4 W...1.65 kW*	●	●	●	●	±0.5%
Reactive power	-1.65 kvar...1.4 var...1.65 kvar*	●	●	●	●	±0.5%
Apparent power	1.4 VA...1.65 kVA*	●	●	●	●	±0.5%
Tangens φ	-1.2...0...1.2	●	●	●	●	±1%
Power factor PF	-1...0...1	●	●	●	●	±0.5%
Input active energy	0 .. 99 999 999.9 kWh*				●	±0.5%
Output active energy	0 .. 99 999 999.9 kWh*				●	±0.5%
Inductive reactive energy	0...99 999 999.9 kvarh*				●	±0.5%
Capacitive reactive energy	0...99 999 999.9 kvarh*				●	±0.5%
THD	0...100%	●	●	●		5%

* - for ratio Ki=Ku=1. Current ratio Ki programmable in the range 1...1000. Voltage ratio Ku programmable in the range 1...4000

OUTPUTS

Type of output	Properties
Relay output	0, 2 or 4 relays, voltageless NO contacts, load: 250 V a.c./ 0.5 A a.c.
Impulse energy output	O/C passive, acc. to EN 62053-31, impuls constant: 5000..20000 imp/kWh programmable, independent on Ki, Ku ratio settings
Analog output	0, 2 or 4 programmable outputs: -20...0...20 mA, Rload = 0...250 Ω, accuracy 0.2%

DIGITAL INTERFACE

Type of interface	Transmission protocol	Mode	Rate
RS-485 Modbus	MODBUS RTU	8N2, 8E1, 8O1, 8N1	4.8; 9.6; 19.2; kbit/s
USB 1.1/ 2.0	MODBUS RTU	8N2	9.6 kbit/s

EXTERNAL FEATURES																																																																																																																																																																																										
Overall dimensions	96 × 120 × 100 mm	fixing on a 35mm DIN rail																																																																																																																																																																																								
Weight	0.3 kg																																																																																																																																																																																									
Protection grade	for casing: IP40	for terminals: IP10																																																																																																																																																																																								
RATED OPERATING CONDITIONS																																																																																																																																																																																										
Supply voltage	85 .. 253 V a.c. , 40 .. 400 Hz, 90 .. 320 V d.c. or 20 .. 40 V a.c., 40 .. 400 Hz, 20 .. 60 V d.c.	Power input ≤ 6 VA																																																																																																																																																																																								
Power input	in voltage circuit ≤ 0.05 VA	in current circuit ≤ 0.05 VA																																																																																																																																																																																								
Input signal	<ul style="list-style-type: none"> 0 .. 0.005 .. 1.2 In; 0.05 .. 1.2 Un for the measurement of current and voltage; 0 .. 0.1 .. 1.2 In; 0 .. 0.1 .. 1.2 Un or the measurement of coefficients Pf_i, $tg\phi_i$ 	<ul style="list-style-type: none"> signal frequency 47 .. 63 Hz sinusoidal signal (THD ≤ 8%) 																																																																																																																																																																																								
Power factor	-1 .. 0 .. 1																																																																																																																																																																																									
Analog outputs	-24 .. -20 .. 0 .. 20 .. 24 mA																																																																																																																																																																																									
Temperature	ambient: -10...23...55°C	storage: -30...70°C																																																																																																																																																																																								
Humidity	25 .. 95%	inadmissible condensation																																																																																																																																																																																								
Additional error (in % of the intrinsic error)	from output signals frequency < 50%	from ambient temperature changes < 50%/ 10%																																																																																																																																																																																								
Operating position	any																																																																																																																																																																																									
External magnetic field	0 .. 400 A/m																																																																																																																																																																																									
Short duration overload (5 s)	voltage input: 2 Un (max. 1000 V)	current input: 10 In																																																																																																																																																																																								
Admissible peak factor	current intensity: 2	voltage: 2																																																																																																																																																																																								
SAFETY AND COMPATIBILITY REQUIREMENTS																																																																																																																																																																																										
Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2																																																																																																																																																																																								
	noise emissions	acc. to EN 61000-6-4																																																																																																																																																																																								
Isolation between circuits	basic	acc. to EN 61010-1																																																																																																																																																																																								
Pollution level	2	acc. to EN 61010-1																																																																																																																																																																																								
Installation category	III																																																																																																																																																																																									
Maximal phase-to-earth voltage	300 V																																																																																																																																																																																									
Altitude a.s.l.	< 2000 m																																																																																																																																																																																									
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CONNECTION DIAGRAM		ORDERING																																																																																																																																																																																								
<p>The diagram shows a 4-wire network with phases L1, L2, L3 and neutral N. The P43 terminal block has 27 terminals. Connections are shown for RS 485 (terminals 12-14), GNDI B (15), A (16), and four analog outputs (Out1-4, terminals 18-21). Current inputs (P1, P2) and voltage inputs (S1, S2) are connected to the phase lines. Terminals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 22-27 are also shown.</p>		<table border="1"> <thead> <tr> <th>P43 -</th> <th>X</th> <th>X</th> <th>X</th> <th>X</th> <th>XX</th> <th>E</th> <th>X</th> </tr> </thead> <tbody> <tr> <td>Current input In:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1 A (X/1)</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5 A (X/5)</td> <td></td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Voltage input (phase/phase-to-phase) Un:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3 x 57.7/100 V</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3 x 230/400 V</td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Supply voltage:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>85..253 V a.c., 90..320 V d.c.</td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>20..40 V a.c., 20..60 V d.c.</td> <td></td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Output type:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>without analog outputs, 4 relays</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2 analog outputs, 2 relays</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>4 analog outputs, without relays</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td>Version:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>standard</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>00</td> </tr> <tr> <td>custom-made*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>XX</td> </tr> <tr> <td>Language:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>English</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>E</td> </tr> <tr> <td>Acceptance tests:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>without extra quality requirements</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td>with an extra quality inspection certificate</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> </tr> <tr> <td>acc. to customer's requirements*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table> <p>* version code will be established by the manufacturer</p> <p>Example of order: The code: P43 - 2 2 1 3 00 E 7 means: P43 - transducer of P43 type 2 - input current: 5 A 2 - input voltage: 3 x 230/400 V 1 - supply voltage: 85..253 V a.c., 90..320 V d.c. 3 - 4 analog outputs, without relays 00 - standard version E - English language 7 - with an extra quality inspection certificate.</p>	P43 -	X	X	X	X	XX	E	X	Current input In:								1 A (X/1)		1						5 A (X/5)		2						Voltage input (phase/phase-to-phase) Un:								3 x 57.7/100 V			1					3 x 230/400 V			2					Supply voltage:								85..253 V a.c., 90..320 V d.c.				1				20..40 V a.c., 20..60 V d.c.				2				Output type:								without analog outputs, 4 relays					1			2 analog outputs, 2 relays						2		4 analog outputs, without relays							3	Version:								standard							00	custom-made*							XX	Language:								English							E	Acceptance tests:								without extra quality requirements							0	with an extra quality inspection certificate							1	acc. to customer's requirements*							X
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Fig. 1 Exemplary connection diagram for 4-wire network.

SEE ALSO



Current transformers.



Analysers of network parameters ND1 .



Meter of network parameters N13.

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