

# P11P, P13P, P13B - POWER TRANSDUCERS

INPUT:



- P11P - conversion of single-phase active power.
- P13P - conversion of active power in a 3-phase 3-wire balanced network.
- P13B - conversion of reactive power in a 3-phase 3-wire balanced network.
- Power measurement of distorted current and voltages (up to the 25 th harmonic).
- Measuring range as per order.
- Analog output (current or voltage).

## EXAMPLE OF APPLICATION

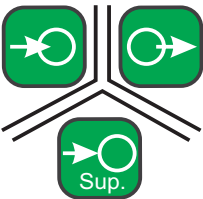


Power measurement of 3-phase motor.

OUTPUT:



GALVANIC ISOLATION:



## INPUTS

Input type	Range
Current	1 A (X/ 1 A) 5 A (X/ 1 A)
Voltage	100/√3 V, 100 V, 230 V, 400 V, 500 V, 690 V, X/ 100 V

## OUTPUTS

Output type	Properties	Remarks
Analog	<ul style="list-style-type: none"> <li>• 0 .. 20 mA, 4 .. 20 mA, -20 .. 0 .. 20 mA (<math>R_{load} = 0 .. 500 \Omega</math>)</li> <li>• 0 .. 5 mA, -5 .. 0 .. 5 mA (<math>R_{load} = 0 .. 2000 \Omega</math>)</li> <li>• 0 .. 10 V, -10 .. 0 .. 10 V (<math>R_{load} \geq 0 .. 500 \Omega</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• setting time of output (0/90%) <math>\leq 0,3</math> s</li> <li>• limitation of output current: 28 mA +/- 10%</li> </ul>

## EXTERNAL FEATURES

Overall dimensions	45 × 100 × 121 mm	
Weight	0,21 kg	
Protection grade	for casing: IP50	from terminal side: IP20
Fixing	on a 35 mm DIN rail	

## SAFETY AND COMPATIBILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 50082-2
	noise emissions	acc. to EN 50081-2
Isolation between circuits	basic	acc. to EN 61010-1
Pollution level	2	
Installation category	III	
Maximal phase-to-earth working voltage	600 V	

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**RATED OPERATING CONDITIONS**

Supply voltage	85 .. 253 V a.c. (40 .. 400 Hz) or d.c. or 18 .. 40 V a.c. (40 .. 400 Hz) or d.c.	power input ≤ 6 VA
Power input	in voltage circuit ≤ 0.6 VA	in current circuit ≤ 0.3 VA
Input signal	0 .. 0.01 .. 1.2 Un; 0 .. 0.01 .. 1.2 Un	input current (voltage) frequency 45 .. 65 .. 1250 Hz
Power factor	-1 .. 0 .. 1	
Temperature	ambient: -10...23...55°C	storage: -25...70°C
Humidity	0 .. 45 .. 75 .. 85%	inadmissible condensation
Accuracy class	0.5	
Additional error	<ul style="list-style-type: none"> <li>from input signal frequency: &lt; 0.05 k/100 Hz</li> <li>from ambient temperature changes: &lt; 0.5 k/ 10°C</li> <li>from external magnetic field: &lt; 0.1 k/100 A/m</li> </ul>	k - accuracy class index
Operating position	any	
Preheating time	15 min.	
External magnetic field	0 .. 40 .. 400 A/m	
Short duration overload	voltage input: 1.5 Un (10 s)	current input: 10 In (3 s)
Sustained overload	voltage input: 1.2 Un	current input: 1.2 In
Test voltage	3.25 kV	
Admissible peak factor	current intensity: 3	voltage: 2

**OVERALL DIMENSIONS AND FIXING WAY**

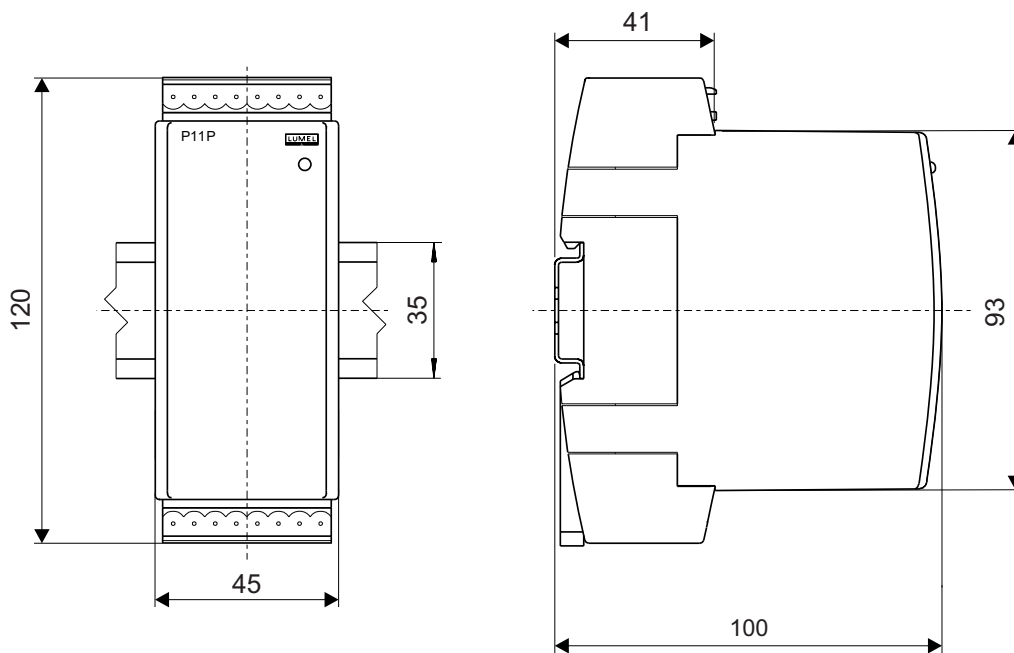


Fig.1. Overall dimensions and transducer fixing way.

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## CONNECTION DIAGRAMS

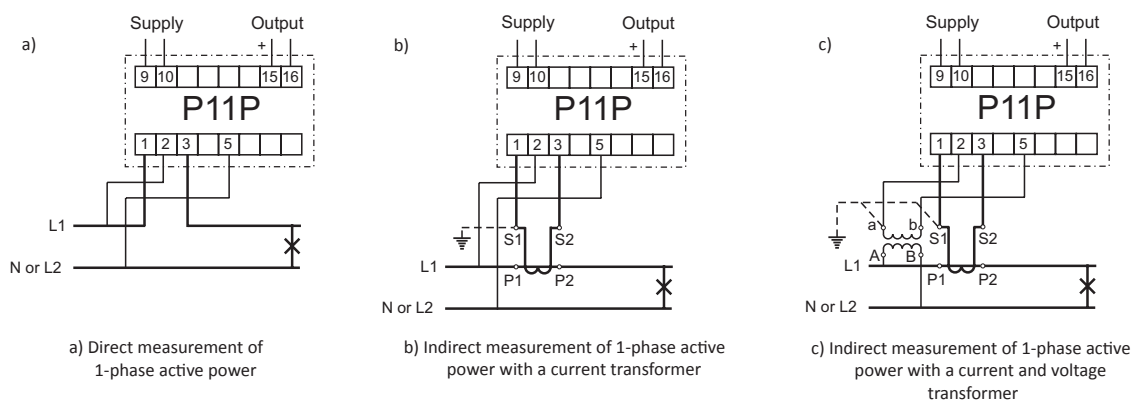


Fig.2. Electric connections of a P11P active power transducer in a 3-phase system.

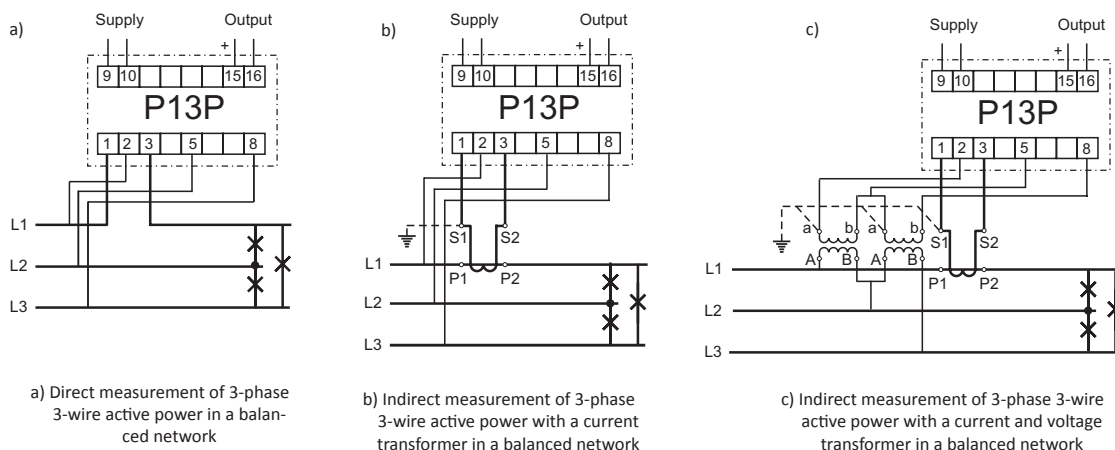


Fig.3. Electric connections of a P13P active power transducer in a 3-phase system.

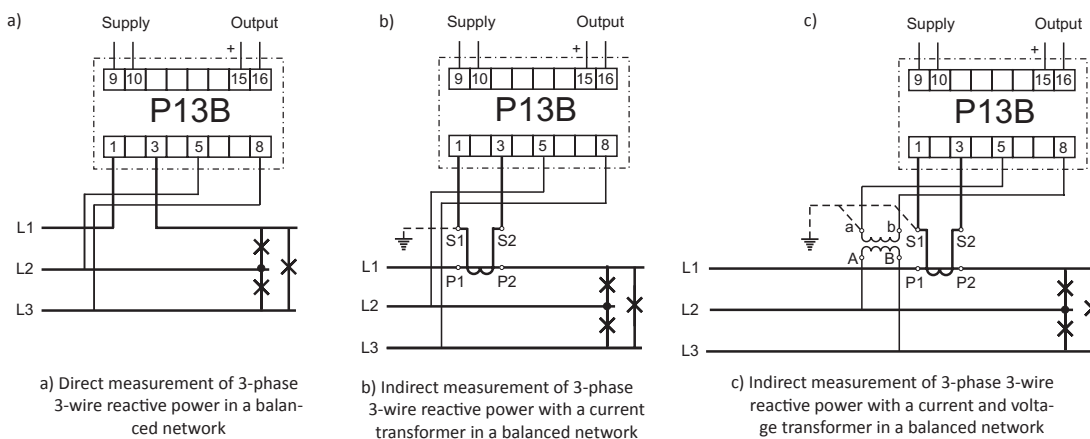


Fig.4. Electric connections of a P13B reactive power transducer in a 3-phase system.

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## ORDERING

P1 -	XX	XX	X	X	X	X	XX	X
<b>Kind of transducer:</b> for the measurement of active power in a 1-phase system	1P							
for the measurement of active power in a 3-phase 3-wire balanced system	3P							
for the measurement of reactive power in a 3-phase 3-wire balanced system	3B							
<b>Input current:</b> write the range code (from A1 to Z1 and B5 to Z5) from the table 1, eg: 1 A								
1 A	A1							
...	...							
20 000/ 1 A	Z1							
5 A	B5							
...	...							
20 000/ 5 A	Z5							
<b>Input voltage:</b> write the range code (from A to W) from the table 1:								
100/√3 V	A							
...	...							
400 000/ 100 V	W							
<b>Output range:</b> write the range code from the table 2							X	
<b>Supply voltage:</b> 85 .. 253 V d.c. or a.c. (40 .. 400 Hz)								1
18 .. 40 V d.c. or a.c. (40 .. 400 Hz)								2
<b>Kind of terminals:</b> inseparable screw terminals								1
socket - screwed pins								2
socket - self-locking pins								3
<b>Version:</b> standard								00
custom-made*								XX
<b>Acceptance tests:</b> without extra quality requirements								8
with an extra quality inspection certificate								7
acc. to customer's agreements*								X

### Order example:

The code: **P11P-A1-C-1-1-1-00-0** means:

- P11P** - transducer for the measurement of active power in a single-phase network,
- A1** - input current: 1 A,
- C** - Un: 230 V, Pn= 200 W,
- 1** - output range: 0 .. 5 mA,
- 1** - supply voltage: 85 .. 253 V d.c. or a.c. (40 .. 400 Hz),
- 1** - inseparable screw terminals,
- 00** - standard version,
- 8** - without extra quality requirements.

SEE ALSO:



Current transformers.



Network parameter transducer - P43.



Network parameter analyser - ND1.

Output range	Code
0...5 mA, R load = 0... 2000 Ω	1
0...20 mA, R load = 0... 500 Ω	2
4...20 mA, R load = 0... 500 Ω	3
0...10 V, R load ≥ 500 Ω	4
-5...0...5 mA, R load = 0... 2000 Ω	5
-20...0...20 mA, R load 0... 500 Ω	6
-10...0...10 V, R load ≥ 500 Ω	7

\* after agreeing with the manufacturer

Table 1

Un [V]	Measurement of single-phase active power	1P																			
		100/√3	100	230	400	500															
Un [V]	Measurement of 3-phase 3-wire active or reactive power in a symmetrically loaded network	3P																			
						400	500	690	3 000	6 000	10 000	15 000	20 000	30 000	40 000	60 000	110 000	220 000	400 000		
In/x	In code	Power unit	Un code																		
			A	B	C	D	E	G	H	I	K	L	M	N	P	R	S	T	U	V	W
1	-	A1	50	100	200	400	500	600	800	1	5	10	15	25	30	50	60	100	150	300	600
5; 5/x	B5	B1	250	500	1	2	2.5	3	4	5	25	50	80	120	150	250	300	500	800	1.5	3
10/x	C5	C1	500	1	2	4	5	6	8	10	50	100	150	250	300	500	600	1	1.5	3	6
15/x	D5	D1	800	1.5	3	6	7.5	10	12	15	75	150	250	300	500	750	1	1.5	2.5	5	10
20/x	E5	E1	1	2	4	7.5	10	12	15	20	100	200	300	500	600	1	1.2	2	3	7.5	12
30/x	F5	F1	1.5	3	6	12	15	20	25	30	150	300	500	750	1	1.5	2	3	5	10	20
50/x	G5	G1	2.5	5	10	20	25	30	40	50	250	500	800	1.2	1.5	2.5	3	5	8	15	30
75/x	H5	H1	4	7.5	15	30	30	50	60	80	300	750	1.2	1.5	2.5	3	5	7.5	12	25	50
100/x	I5	I1	5	10	20	40	50	60	80	100	500	1	1.5	2.5	3	5	6	10	15	30	60
150/x	J5	J1	8	15	30	60	75	100	120	150	750	1.5	2.5	3	5	7.5	10	15	25	50	100
200/x	K5	K1	10	20	40	80	100	120	150	200	1	2	3	5	6	10	12	20	30	75	120
300/x	L5	L1	15	30	60	120	150	200	250	300	1.5	3	5	7.5	10	15	20	30	50	100	200
400/x	M5	M1	20	40	80	150	200	250	300	400	2	4	6	10	12	20	25	40	75	150	250
600/x	N5	N1	30	60	120	200	300	400	500	600	3	6	10	12	20	25	40	60	100	200	400
800/x	P5	P1	40	80	150	300	400	500	600	800	4	8	12	20	25	40	50	80	150	300	500
1000/x	R5	R1	50	100	200	400	500	600	800	1	5	10	15	25	30	50	60	100	150	300	600
1200/x	S5	S1	60	120	250	400	800	800	1	1.2	6	12	20	30	40	60	80	120	200	400	800
1500/x	T5	T1	80	150	300	600	750	1	1.2	1.5	7.5	15	25	30	50	75	100	150	250	500	1000
2000/x	U5	U1	100	200	400	800	1	1.2	1.5	2	10	20	30	50	60	100	120	200	300	750	
3000/x	V5	V1	150	300	600	1.2	1.5	2	2.5	3	15	30	50	75	100	150	200	300	300	1000	
4000/x	W5	W1	200	400	800	1.5	2	2.5	3	4	20	40	60	100	120	200	250	400	750		
6000/x	X5	X1	300	600	1.2	2	3	4	5	6	30	60	100	150	200	300	400	600	1000		
10000/x	Y5	Y1	500	1	2	4	5	6	8	10	50	100	150	200	300	400	600	1000			
20000/x	Z5	Z1	MW; Mvar	1	2	4	8	10	12	15	20	100	200	300	500	600	1000	1200			

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