

PA39

PANEL POWER METER



APPLICATION

The PA39 power meter is a moving-coil meter with a built-in measuring transducer. It is destined to measure active or reactive power in a.c. power networks. The measured power is indicated by a magnetoelectric (moving-coil) measuring system.

These meters are delivered in following versions:

- for measuring the active power in single-phase systems,
- for measuring the active or reactive power in three-phase three-wire or four-wire symmetrically or asymmetrically loaded systems,
- with the zero graduation on the left side of the scale for measuring the unidirectional power flow,
- with the zero graduation in the middle of the scale for measuring the bidirectional power flow.

TECHNICAL DATA

Measuring ranges acc. the series	1, 1.2, 1.5, 2, 2.5, 3, 4, 5, 6, 7.5, 8, or the decimal multiplication of one of these numbers
Input voltage	100 $\sqrt{3}$ (x/100/ $\sqrt{3}$), 100 (x/100), 133, 230, 280, 400, 500, 690 V
Input current	1 A (x/1 A) or 5 A (x/5 A)
Active power factor	$\cos\varphi: 1 \dots 0.5_{ind}$
Reactive power factor	$\sin\varphi: 1 \dots 0.5_{ind}$
Accuracy class	1.5
Rated operating conditions:	
- ambient temperature	-10...23...55°C
- relative humidity	≤ 75%
- frequency of the input quantities	acc. order (table 2)
- working position	acc. order ± 5° (table 3)
- external magnetic field	≤ 400 A/m
Additional errors	acc. EN 60051-1 standard
Power consumption:	
- voltage circuit	≤ 4.3 VA
- current circuit	≤ 0.2 VA

Protection Grade acc. to EN60529

- front protection grade: IP 52
- terminal protection: IP00

Housing material thermoplastic, self-extinguishing plastic (UL 94V-O)

Glass material glass (in standard)
anti-reflective glass on request

Electromagnetic compatibility:

- emission acc. EN 61000-6-4 standard
- immunity acc. EN 61000-6-2 standard

The meter fulfils CE mark requirements.

Safety requirements acc. EN 61010-1:

- installation category III
- level of pollution 2
- working voltage in relation to the earth 660 V a.c.

Weight 650-750 g

ACCESSORIES

We deliver with the meter:

- screw holders 2 pcs

CHOICE OF MEASURING RANGE

1. Calculate the power from the formulas:

$P = U_n \times I_n$ for single-phase networks

$P = \sqrt{3} \times U_n \times I_n$ for three-phase networks

where:

U_n - network rated voltage:

- for three-phase networks - phase-to-phase voltage,
- when connected through transformers-primary rated voltage.

I_n - rated current:

- 5 A or 1 A,
- when connected through transformers-primary rated voltage.

2. Round the calculated power value to the nearest value from the given sequence of numbers for the measuring range.

3. Example of measuring range choice.

Three-phase network; rated values of transformers:
15 000/100 V and 400/5 A

$P = \sqrt{3} \times 15\,000\text{ V} \times 400\text{ A} = 10,39\text{ MW (Mvar)}$

Selected measuring range: 10 MW (Mvar)

EXTERNAL DIMENSIONS

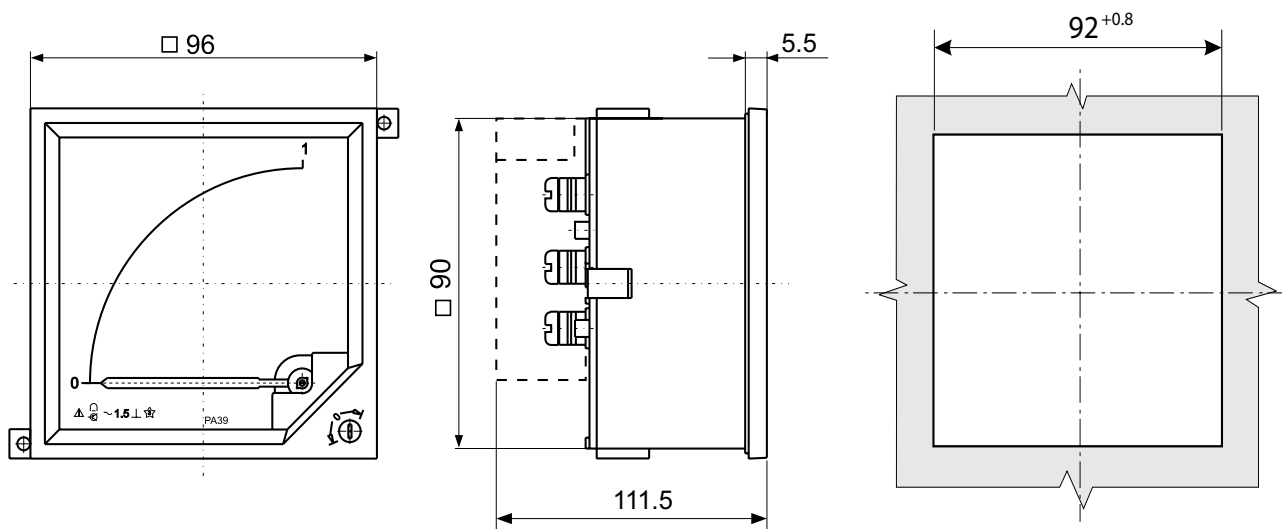


Fig 1. External dimensions of PA39 meter.

WAY OF THE METER FIXATION ON THE PANEL

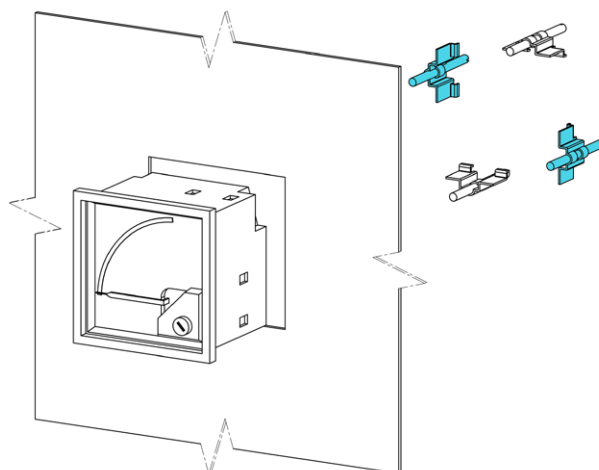
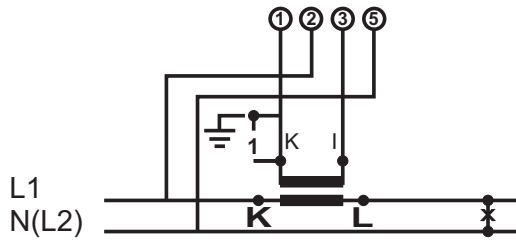


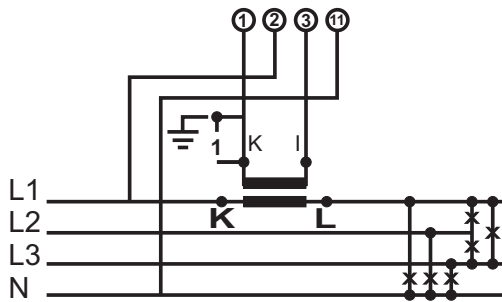
Fig. 2. Fixing of meters PA39 in the panel.

Included are two screw holders which should be fixed on arbitrary, opposite case corners

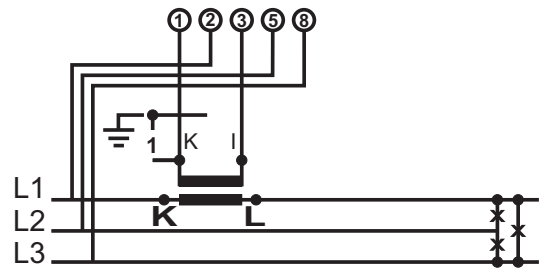
ELECTRICAL CONNECTIONS



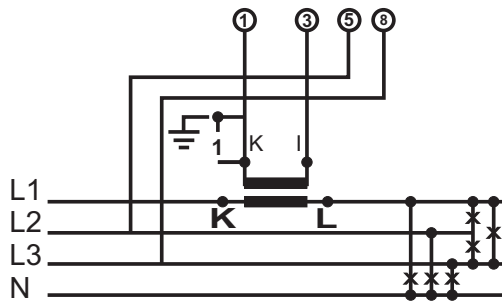
Active/reactive power measurement
in single phase AC network



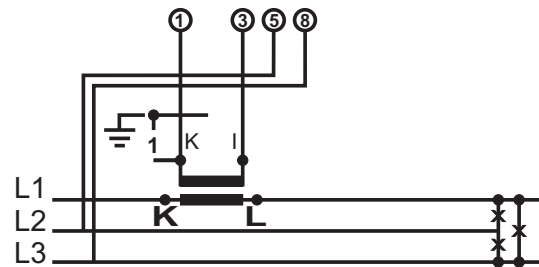
Active power measurement
in 3-phase, 4-wire network
balanced load



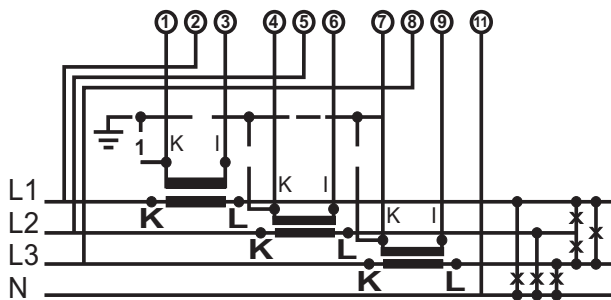
Active power measurement
in 3-phase, 3-wire network
balanced load



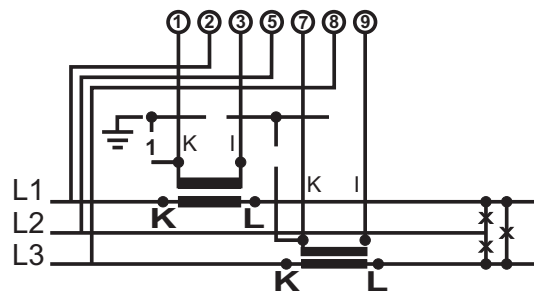
Reactive power measurement
in 3-phase, 4-wire network
balanced load



Reactive power measurement
in 3-phase, 3-wire network
balanced load



Active/reactive power measurement
in 3-phase, 4-wire network
unbalanced load



Active/reactive power measurement
in 3-phase, 3-wire network
unbalanced load

ORDERING CODES

Table 4

PANEL POWER METER - PA39	X	X	X	XX	X	X	XX	X
Kind of measured power and measuring system:								
Measurement of active power in a single-phase network.....	A							
Measurement of active power in a 3-phase 3-wire symmetrically loaded network	B							
Measurement of active power in a 3-phase 3-wire asymmetrically loaded network	C							
Measurement of active power in a 3-phase 4-wire symmetrically loaded network	D							
Measurement of active power in a 3-phase 4-wire asymmetrically loaded network	E							
Measurement of reactive power in a 3-phase 3-wire symmetrically loaded network	F							
Measurement of reactive power in a 3-phase 3-wire asymmetrically loaded network	G							
Measurement of reactive power in a 3-phase 4-wire symmetrically loaded network	H							
Measurement of reactive power in a 3-phase 4-wire asymmetrically loaded network	K							
Input voltage								
write in the Un range code from the table 3.....	X							
Frequency of the input voltage								
write in the frequency code from the table 1	X							
Input current								
write in the In range code from the table 3				XX				
Flow direction of the power								
- unidirectional, zero on the left side of the scale								0
- bidirectional, zero in the middle of the scale								1
Working position								
write in the working position from the table 2								X
Versions:								
catalogue								00
custom-made ¹⁾								XX
Acceptance tests:								
without additional requirements.....								8
with a quality inspection certificate								7
other requirements ²⁾								X

¹⁾ The ordering code is given by the manufacturer after agreement.

²⁾ The number code is given acc. customer's agreement.

ORDERING WAY

In any order one must specify the name and the ordering code of the power meter using the tables: 1, 2, 3, and 4.

Order example: PA39 - H - F - 0 - L5 - 0 - 0 - 00 - 8, means:

H - Reactive PA39 power meter adapted to a three-phase four-wire symmetrically loaded network.

F - Network rated voltage: 3000 V (from table 3).

0 - Frequency of the input voltage: 50 Hz (from table 1).

L5 - Network rated current: 300 A (from table 3).

0 - Unidirectional power flow.

0 - Working position: C3, vertical (from table 2).

00 - Catalogue version.

8 - without additional requirements concerning acceptance tests.

This power meter is destined to co-operate with **300 A/5 A** transformers and a **3000 V/100/√3 V** voltage transformers.

Note: concerning casing protection grade IP. When ordering, please precise the required grade option: **IP50** or **IP65**



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