

# PANEL POWER FACTOR METERS WITH BUILT-IN TRANSDUCCERS

**FA39 TYPE** - 96 × 96 mm

**FA32 TYPE** - 144 × 144 mm



## APPLICATION

FA39 and FA32 panel power factor meters are destined for measurements of the phase angle between the voltage and current in single-phase or three-phase AC power networks.

These meters are calibrated to correspond to the cosine of the angle, i.e. the power factor.

These meters can be mounted on panels of any kind of materials.

## TECHNICAL DATA

**Measuring ranges:**

0.5 cap ...1...0.5 ind
0.8 cap ...1...0.2 ind
0.85 cap ...1...0.85 ind
0 ind...1

### Input voltage (one of the series):

- for single-phase meters	60, 100, 110, 230, 400 V
- for meters working in symmetrically loaded three-phase networks	100, 110, 230, 400, 415, 440, 500 V

<b>Input current</b>	1 A or 5 A
<b>Accuracy class</b>	1.5
<b>Rated operating conditions:</b>	
- ambient temperature	5...23...40°C 5...35...55°C (on request for tropical execution)
- air relative humidity	25...85%
- input voltage	Un ±15%
- input current	20 ...40 ...100 ...120% In
- frequency of the input voltage	45 ...50 ...60 ...65 Hz
- external magnetic field	≤ 400 A/m
- working position	acc. order ±5° (table 1)
<b>Additional errors</b>	acc. EN 60051-1 standard

### Power consumption

- in voltage circuit	≤ 8 VA
- in current circuit	≤ 0.2 VA

### Protection Grade acc. to EN60529

- front protection grade:
  - IP50 for FA39 and FA32 meters
  - IP54 for FA32 meters
  - **IP65 for F39 meters** (on request)
- IP20 terminal protection (with a terminal protective cover)

### Electromagnetic compatibility:

The meter fulfils CE mark requirements:

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

### Safety requirements

- installation category	III
- level of pollution	2
- maximal working voltage in relation to the earth	600 V a.c.

### Housing material

thermoplastics

### Weight

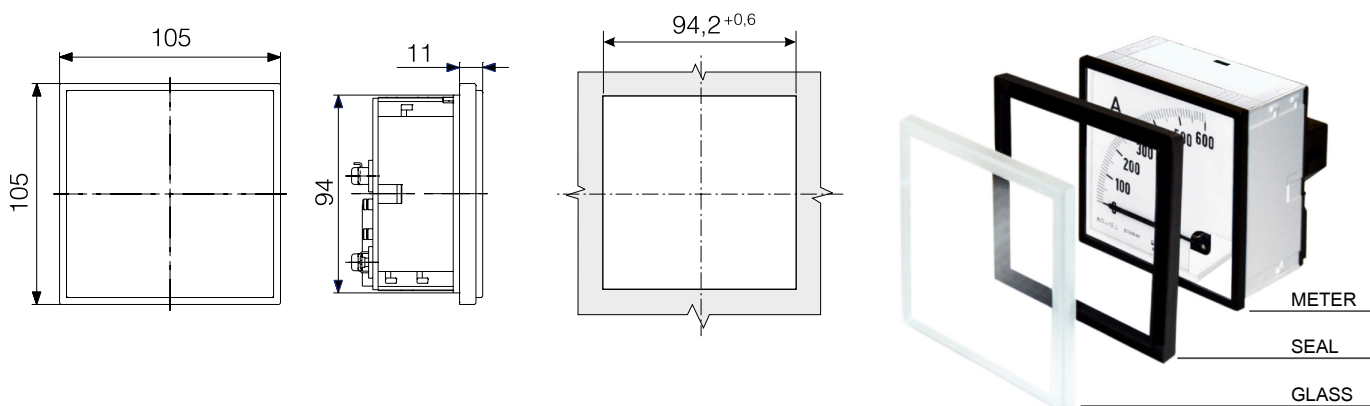
- FA39	230 g
- FA32	400 g

### ACCESSORIES

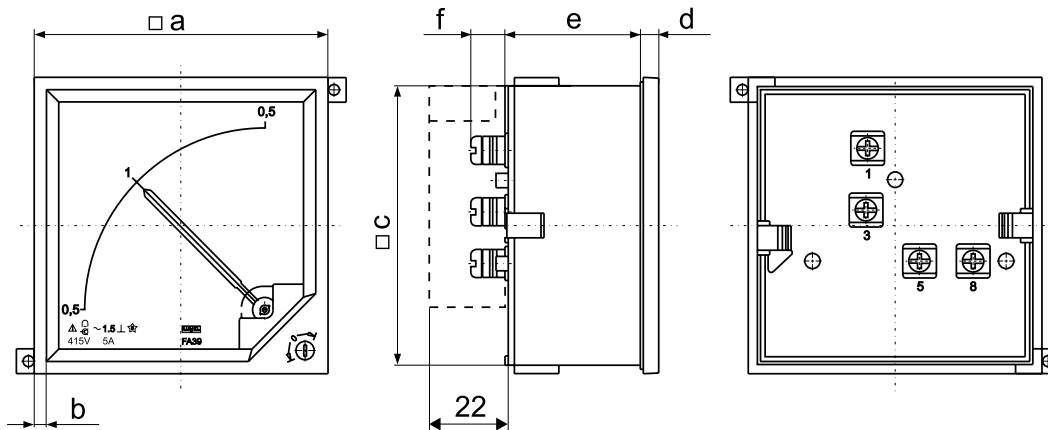
We deliver with the meter:

- screw holders to fix FA39 and FA32 meters (IP50 or IP54 option) .....2 pcs
- screw holders to fix FA32 meters (IP65 option)....4 pcs
- terminal protection cover.....1 pc
- user's manual.....1 pc

## EXTERNAL DIMENSIONS OF FA39 FOR IP 65 PROTECTION GRADE



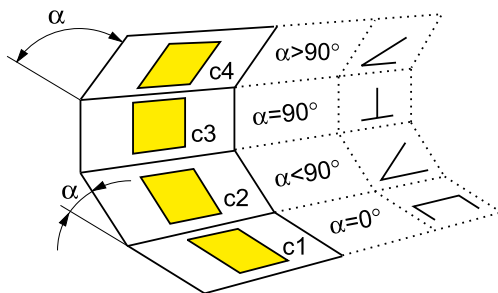
**EXTERNAL DIMENSIONS OF F32 AND FA39 FOR IP 50 OR IP 54 PROTECTION GRADE**



Type	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	Panel cut-out dimensions
FA39	96	4	92	6	45	10...20	92 <sup>+0.8</sup> × 92 <sup>+0.8</sup> mm
FA32	144	4.5	137	6	48	10...20	138 <sup>+1</sup> × 138 <sup>+1</sup> mm

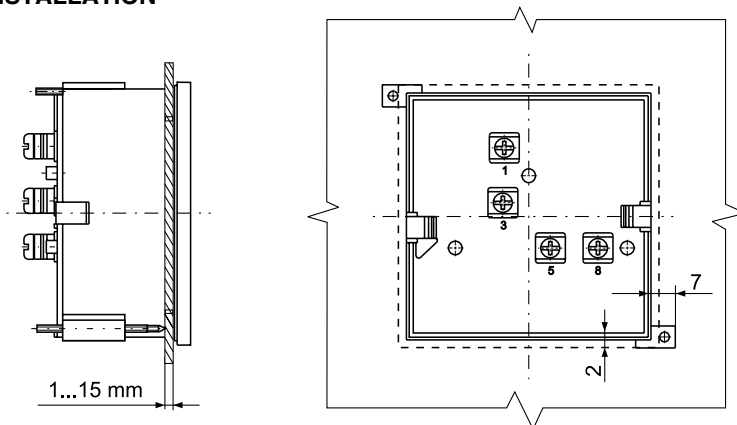
**WORKING POSITIONS**

Table 1



Code	Working position
<b>O</b>	c3
<b>A</b>	c1
<b>B</b>	c2, $\alpha = 15^\circ$
<b>C</b>	c2, $\alpha = 30^\circ$
<b>D</b>	c2, $\alpha = 45^\circ$
<b>E</b>	c2, $\alpha = 60^\circ$
<b>F</b>	c2, $\alpha = 75^\circ$
<b>H</b>	c4, $\alpha = 105^\circ$
<b>I</b>	c4, $\alpha = 120^\circ$

**INSTALLATION**



FA39 (3-phase execution)

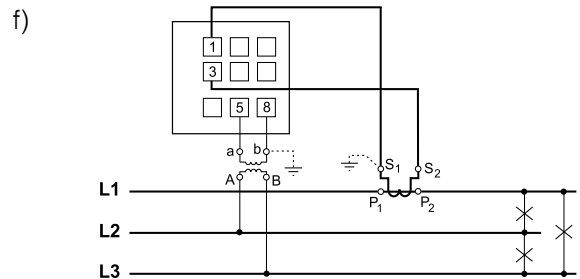
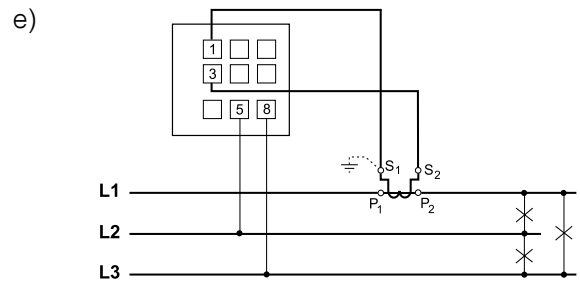
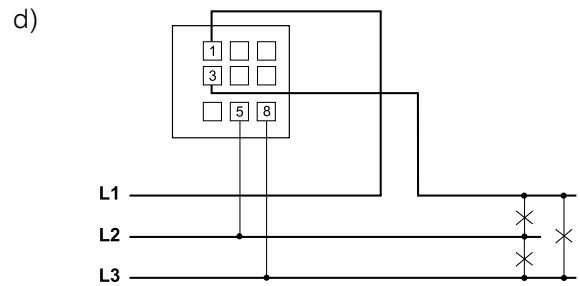
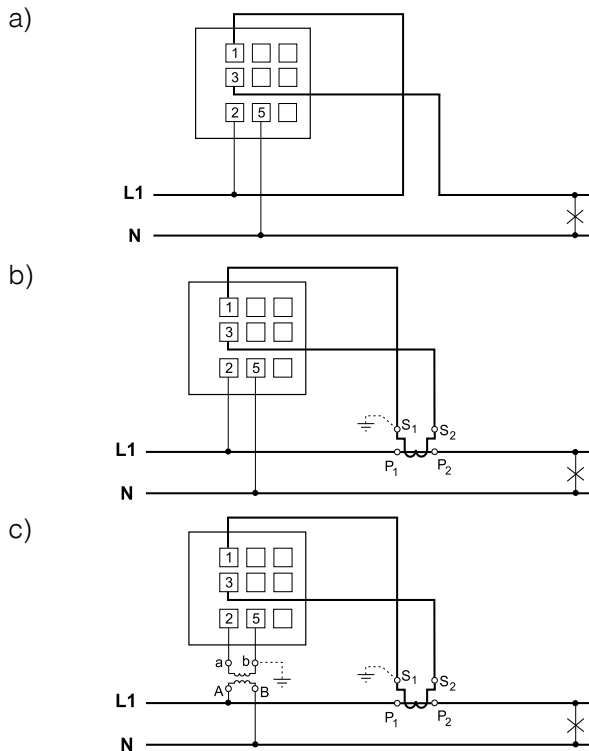
FA32 (3-phase execution)

One should prepare in the panel an appropriate hole at dimensions depended on the meter type.

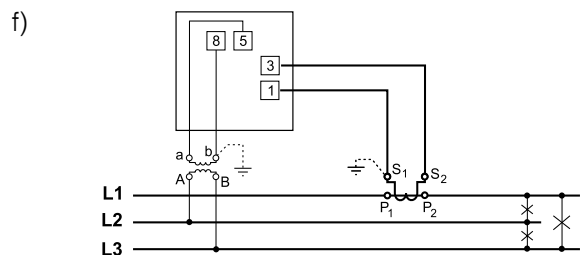
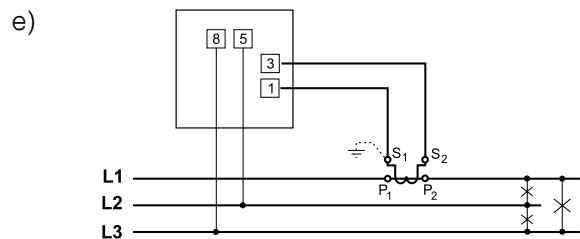
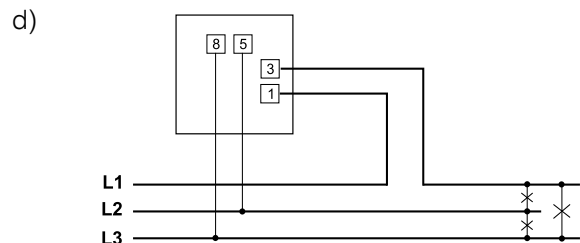
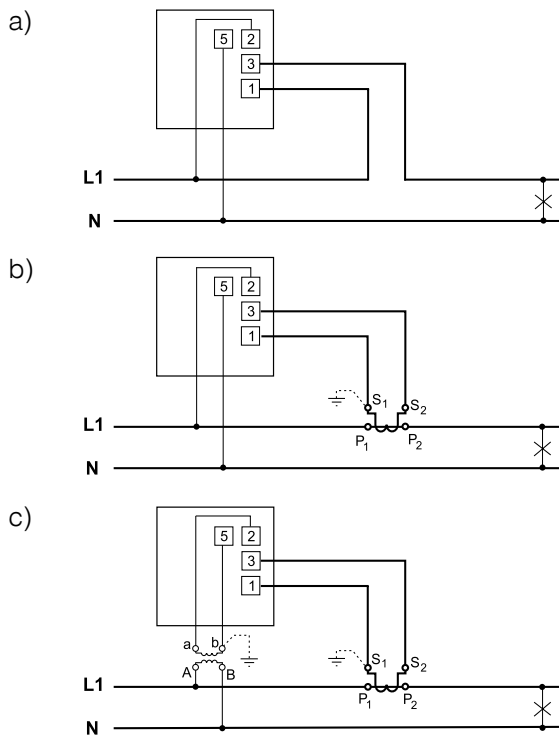
The thickness of the material of which the panel is made, cannot exceed 15 mm. The meter is fixed to the panel by two screw holders situated on freely opposite corners of the case.

## ELECTRICAL CONNECTIONS OF EXTERNAL CIRCUITS

### FA39 POWER FACTOR METER



### FA32 POWER FACTOR METER



a/ Power factor meter connected directly to a single-phase network.

b/ Power factor meter connected through a current transformer to a single-phase network.

c/ Power factor meter connected through a current and voltage transformers to a single-phase network.

d/ Power factor meter connected directly to a three-phase symmetrically loaded network.

e/ Power factor meter connected through a current transformer to a three-phase symmetrically loaded network.

f/ Power factor meter connected through a current and voltage transformers to a three-phase symmetrically loaded network.

## ORDERING PROCEDURE

POWER FACTOR METERS FA39, FA32	X	X	X	XX	X	XX	X
<b>Measurement of power factor in:</b>							
Single phase networks.....	1						
Three-phase, three-wire symmetrically loaded networks .....	3						
<b>Measuring range:</b>							
0.5 cap ...1 ...0.5 ind .....	A						
0.8 cap ...1 ...0.2 ind .....	B						
0.85 cap ...1 ...0.85 ind .....	C						
0 ind ...1 .....	D						
<b>Input current:</b>							
1 A.....	1						
5 A.....	5						
<b>Input voltage:</b>							
60V (only for measurement in a single-phase network) .....	01						
100 V .....	02						
110 V.....	03						
230 V .....	04						
400 V .....	05						
415 V (only for measurement in a three-phase network) .....	06						
440 V (only for measurement in a three-phase network) .....	07						
500 V (only for measurement in a three-phase network) .....	08						
On request after agreement.....	XX						
<b>Working position</b>							
Write in the code acc. table 1 .....	X						
<b>Version:</b>							
Standard .....	00						
Custom-made. The code must be agreed with the manufacturer.....	XX						
<b>Acceptance tests:</b>							
Without additional requirements .....	8						
With a quality inspection certificate .....	7						
Other requirements.....	X						

## EXAMPLE OF ORDER

### Code: FA39-1-A-5-04-O-00-8, means:

The version of a power factor meter FA39 type, for measurement in a single-phase network, range: 0.5cap ...1 ...0.5ind, input current: 5 A, input voltage: 230 V, working position: c3 (90° - vertical), standard version, without additional test requirements.

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