

MOVING-IRON VOLTMETERS

with a change-over switch

EP27 and EP29 TYPES



APPLICATION

The EP27 and EP29 moving-iron panel voltmeter with a change-over switch is adapted for measuring line-to-line and phase-to-phase RMS voltages in 3-phase 4-wire power networks.

A six-positional switch installed on the meter frontal side enables the choice of the measured voltage in six different points of the network system.

BASIC REQUIREMENTS, USER'S SAFETY

These moving-iron voltmeters are destined to be installed on panels or switchboards. They are in conformity with EN 61010-1 standard requirements.

TECHNICAL DATA

Frontal frame	narrow, acc. DIN 43718 EP27 - 72 x 72 mm, EP29 - 96 x 96 mm
Accuracy class	1.5
Measuring range:	
- for direct interfacial connection	500 V
- at the position of the switch on L1-N, L2-N or L3-N	max. 300 V
- through a voltage transformer	x/100 V or x/110 V
Working position	given on the meter $\pm 5^\circ$ (see table 1)
Panel material	any
Power consumption	≤ 4.5 VA ($U_n = 500$ V)
Working temperature range	These meters are working satisfactorily without damage in the temperature range from -25°C up to $+40^\circ\text{C}$, acc. standards being in force. In this range, additional errors are not defined if they are not differently.

Rated operating conditions:	acc. EN-61010-1
- ambient temperature	5... <u>23</u> ... 40°C
- working position	acc. order $\pm 5^\circ$ (given on the scale)
Additional errors in the limits of rated operating conditions	acc. EN 60051-1
Safety requirements:	acc. EN 60010-1
- installation category	III
- level of pollution	2
- maximal working voltage in relation to the earth	300 V a.c.
Protection grade:	
- case	IP 50
- terminals	IP20 (with the terminal cover)
Electromagnetic compatibility:	
The EP27 and EP29 voltmeters fulfils CE mark requirements:	
- emission	acc. EN 61000-6-4
- immunity	acc. EN 61000-6-2
External dimensions:	
- EP27	72 x 72 x 78 mm (without a terminal cover)
- EP29	96 x 96 x 87 mm (with a terminal cover)
Panel cut-out:	
- EP27	$68^{+0.7} \times 68^{+0.7}$ mm
- EP29	$92^{+0.8} \times 92^{+0.8}$ mm
Case material	ABS thermoplastics
Weight:	
- EP27	200 g (without a terminal cover)
- EP29	290 g (with a terminal cover)

Category of climate versions

If it is not stipulated in another way, these meters are destined to be applied in closed rooms, without air conditioning systems and in conditions of a moderate climate, acc. EN 60068-1 standard.

On customers' request, these meters can be adapted to be applied in dry or wet tropical climate conditions, and also in closed rooms without air conditioning.

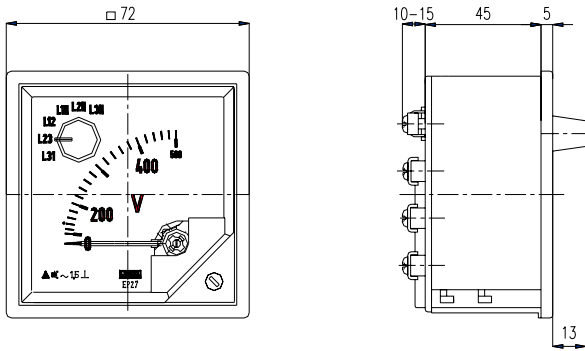
Then, they are marked with the TIII symbol.

ACCESSORIES

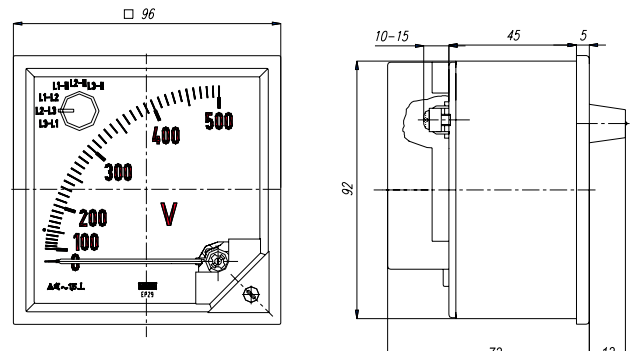
We deliver together with the meter

- two screw holders to fix the meter on the panel,
- a terminal cover (only for EP29 voltmeter),
- a voltage transformer (on request, if ordered),
- a service manual,
- a guarantee certificate.

OVERALL DIMENSIONS



EP27

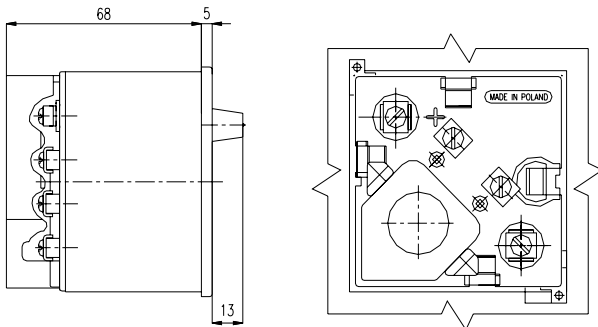


EP29

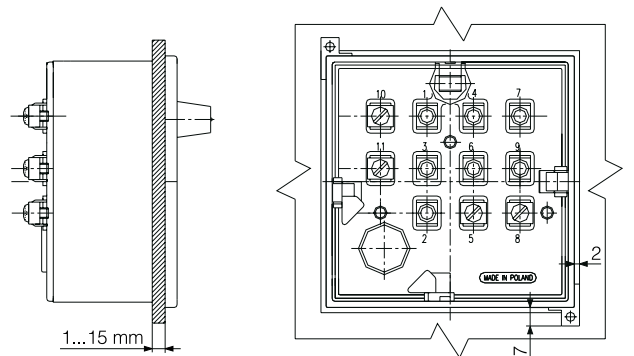
INSTALLATION

Panel cut-out for EP27 : $68^{+0.7} \times 68^{+0.7}$ mm

Panel cut-out for EP29 : $92^{+0.8} \times 92^{+0.8}$ mm



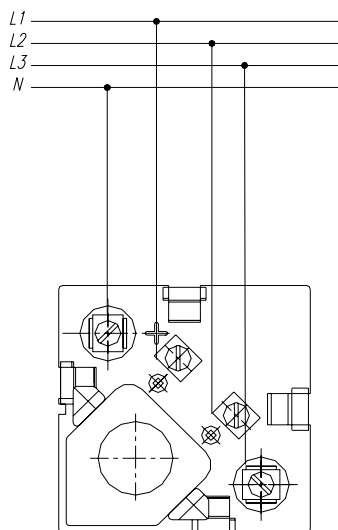
EP27



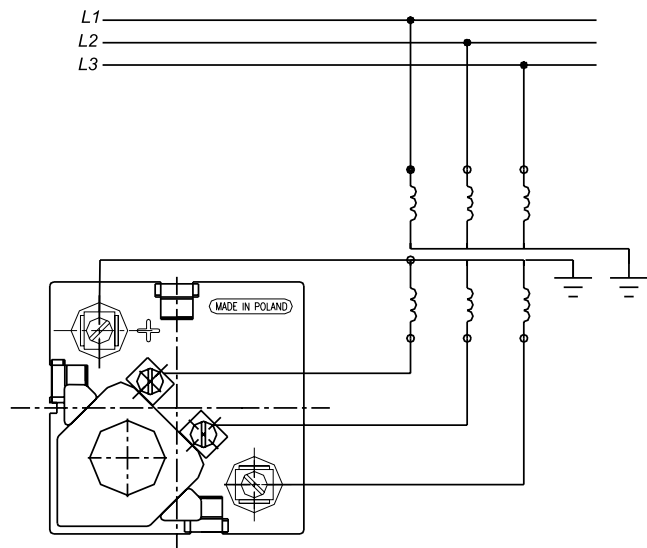
EP29

CONNECTION DIAGRAM OF EXTERNAL CIRCUITS

Connections of EP27 voltmeters:

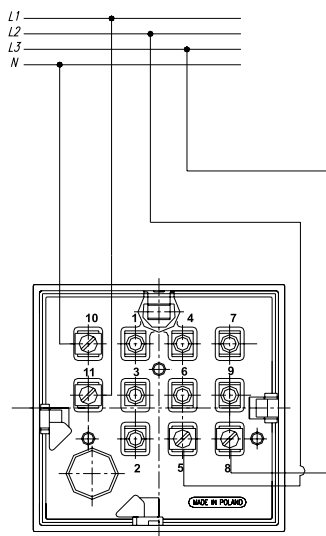


a) Direct connection

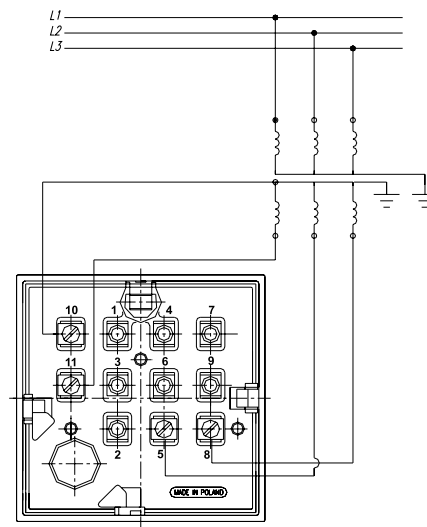


b) Connection through a voltage transformer

Connections of EP29 voltmeters:



a) Direct connection



b) Connection through a voltage transformer

CODING OF THE WORKING POSITION

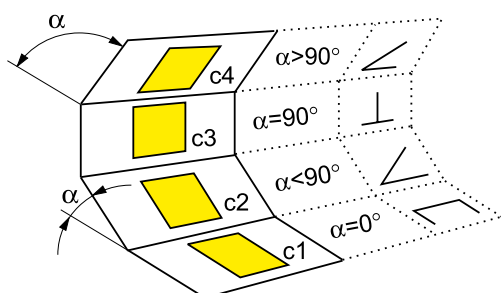


Table 1

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

ORDERING PROCEDURE

MOVING-IRON PANEL VOLTMETERS EP27 and EP29 TYPES	X	X	XX	X
Voltage range:				
500 V	1			
150 V (with a measuring transformer)*	2			
133.3 V (with a measuring transformer)**	3			
X/110 V (with a measuring transformer)	4			
X/100 V (with a measuring transformer)	5			
Working position: (see table 1)	X			
Version:				
Standard			00	
Custom-built ¹⁾			XX	
Acceptance test:				
Without additional requirements				8
With a quality inspection certificate				7
Other requirements ²⁾				X

¹⁾ The number code is established by the producer.

²⁾ Additional requirements must be agreed with the producer.

* 150 V - Widened input signal range, adapted to measuring transformers, e.g. 10,000/100 V when the 15 kV range printed on the scale

** 133.3 V - Widened input signal range, adapted to measuring transformers, e.g. 600/100 V when the 8 kV range printed on the scale.

When ordering, one must specify: the name and type of the voltmeter, the voltage measuring range, the working position according to the table 1, the kind of the version and the acceptance test mode.

Ordering example: code EP29-5-D-00-7 that means: an EP29 voltmeter to co-operate with a X/100 V measuring voltage transformer, working position: $\alpha=45^\circ$ from the horizontal position, standard version and delivered with a quality inspection certificate.