THREE-PHASE LCD MULTIMETER

OVERVIEW

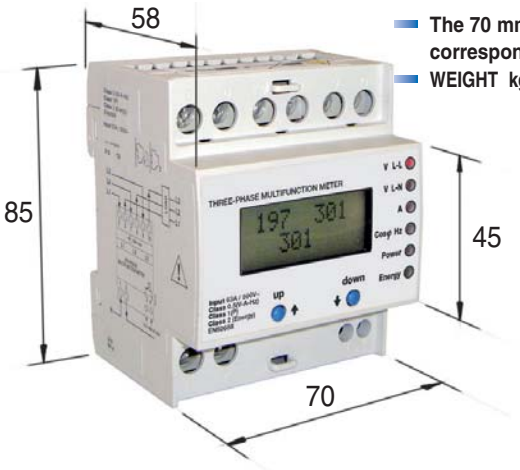
- The high-tech LCD viewer has visibility and luminosity comparable to the conventional red displays of the previous generation.
- All the electrical measurements are shown in their natural format, without making use of multipliers or other devices for changing the scale or the unit of measurement.
- The readout is easy and immediate without leading to misunderstanding or subsequent further elaborations.
- Using buttons makes it possible to scroll through the measurement pages in a natural way.
- During programming, the instrument itself proposes the various setting possibilities present in the model in question, so it is not necessary to have the instruction manual always at hand.
- The page to be shown at first switch-on can be selected during programming. The "power supply" page can be used in those cases in which **information regarding loss of power supply is crucial** (e.g.: refrigeration and/or preservation plants).
- Resetting the energy accumulation and contemporaneously the same possibility with partial hours/minutes makes it possible to highlight the consumption related to a specific period of time in a simple way.
- **THE INSTRUMENT CAN ALSO BE USED AS A PRIORITY RELAY.**

TECHNICAL CHARACTERISTICS

	REFERENCES
PARAMETERS DISPLAYED	
- Phase-phase voltage	L1,L2,L3
- Phase-neutral voltage	L1-N,L2-N,L3-N
- Current	I1,I2,I3,In (neutral)
- Total equivalent power factor	total ind/cap
- Total active power (+/-)	PW
- Total reactive power	Pvar
- Total apparent power	PVA
- Frequency	Hz
- Total active energy (import) *	+kWh
- Total active energy (export) *	-kWh
- Total reactive energy *	kvarh
- Total working time *	hh:mm
- Partial working time *	hh:mm
- Phase sequence	(square lighted=NO sequence)

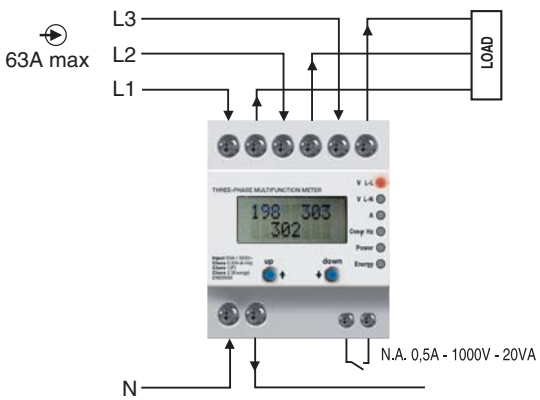
- **REED RELAY IN OUTPUT** N.O. contact 1000V-0.5A-20VA
- *** resettable parameters**
- **Sealable terminal covers included**

DIMENSIONS in mm



- **The 70 mm dimension corresponds to 4 DIN modules**
- **WEIGHT kg 0,70**

CONNECTION DIAGRAM



CARATTERISTICHE TECNICHE

Voltmetric input — Line-line voltage:
- direct connection — max. 500 V
- permanent overload — 120%
- thermal overload (1 s) — 150%
- input impedance voltmetric circuits — 2MΩ L-N / L-L

Amperometric input
- rated current — 63 A
- permanent overload — 120%
- thermal overload (1 s) — 200%

Voltage measurement
- range of measurement VLN (phase voltage with direct connection) 0...290 V
- precision — 0.5% f.s ± 2 digit

Current measurement
- range of measurement — 0.6 ... 63.0 A
- precision in the range of measurement 0.6 ... 63.0 A — 0.5% f.s ± 2 digit

Frequency measurement
- rated value — 50/60 Hz
- range of measurement — 45...80 Hz
- precision — 0.3% vm ± 1 digit
- response time — < 300mS

Active power measurement
- range of measurement — 50 kW
- precision — 1% f.s ± 2 digit

Reactive power measurement
- range of measurement — 50 kvar
- precision — 1% f.s ± 2 digit

Apparent power measurement
- range of measurement — 50 kVA
- precision — 1% f.s ± 2 digit

Active energy measurement (Wh)
- resettable import / export hour meters — Two separate
- calculating period — 15 minutes
- energy count — 999999.9 kWh
- precision with current 0.05...1.0 In — 2% fs ± 2 digit

Reactive energy measurement (varh)
- resettable energy count — 999999.9 kVarh
- calculating period — 15 minutes
- precision with current 0.05...1.0 In — 2% fs ± 2 digit

Power factor measurement
- range of measurement cosφ — -1...0...+1
- precision with current 0.1...1.0 In and voltage 0.8...1.2 Un — 2% fs ± 2 digit

Working time
- Total working time — hh:mm with presence of power supply
- Partial working time — hh:mm from previous reset

Display
- display type — LCD
- no. of characters — 8+8 on two lines

Electrical characteristics options — Galvanic insulation
- coil-contact alarm relay — 3kV

Mechanical characteristics
- mounting type — guide DIN50022/ flush DIN43700
- protection rating — complete device IP20/ front panel IP30

Relay contact characteristics
- N.O. contact maxV..maxI..maxP — 1000V 0.5A 20VA

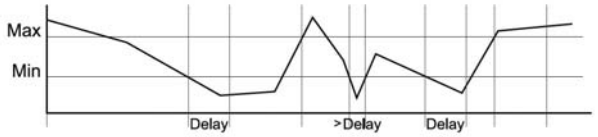
Ambient conditions
- ambient temperature — 0...+45 °C
- outer range — -5...+55 °C
- storage temperature — -10...+70 °C
- relative humidity — 10...95 %
- atmospheric pressure — 70...110 kPa

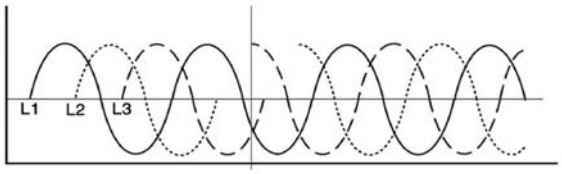
Reference standards — CEI standards:
- Safety CEI EN 61010-1 300V CAT III
- Precision CEI EN 60688
- Electromagnetic compatibility (immunity) CEI EN 61000-6-2 (ex EN 50082-2)
- Electromagnetic compatibility (emission) CEI EN 61000-6-4 (ex EN 50081-2)
- Protection rating of enclosures (IP Code) CEI EN 60529

ALARM RELAY

One relay with normally open contact.
Possibility to programme the tripping threshold:
- with "Hi" mode for greater than .... (>) and "Lo" for less than ... (<)
- delayed on energising "Off-On" or de-energising "On-Off"

CHANNEL OF MEASUREMENT TO WHICH THE THRESHOLD REFERS:
- minimum or maximum of the voltage between phase-phase L1-L2
- minimum or maximum of the voltage between phase-phase L2-L3
- minimum or maximum of the voltage between phase-phase L3-L1
- minimum or maximum of the voltage between phase-neutral L1-N
- minimum or maximum of the voltage between phase-neutral L2-N
- minimum or maximum of the voltage between phase-neutral L3-N
- minimum or maximum of the current of phase 1
- minimum or maximum of the current of phase 2
- minimum or maximum of the current of phase 3
- minimum or maximum of the three voltages between phase-phase
- minimum or maximum of the three voltages between phase neutral
- minimum or maximum of the three phase currents
- minimum or maximum of the Total Active Power acquired (absorbed) or transferred (generated – uninterrupted power supply)
- minimum or maximum of the frequency

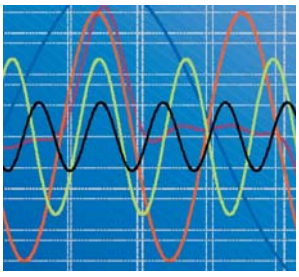




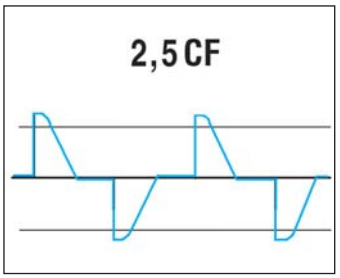
- The tripping of the alarm threshold set is indicated by the flashing of the front panel LED that corresponds to the measurement quantity selected on the page Th Sel for the measurement association.

USEABLE AS:
- load release
- overload
- low consumption
- lack of phase
- motor protection
- priority relay
- frequency anomaly
- high consumption
- minimum voltage
- energy inversion

TYPE OF MEASUREMENT:



True RMS measurements up to the 20th harmonic wave



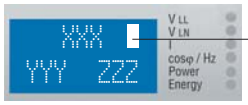
Crest factor up to 2.5 (Voltage and Current)

OPERATION

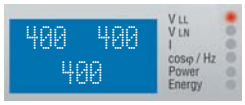
When the instrument is switched on, the following page is displayed:

Model

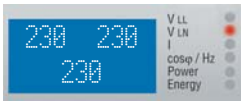
Software version and revision



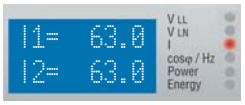
Sequence of phases



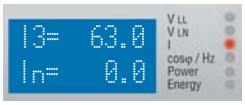
Pressing the front panel button (down↓), the **FIRST LED AT THE TOP** lights up, indicating the values of the Phase-Phase Voltage *(V L-L)*



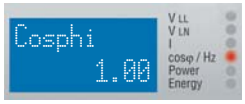
Pressing the front panel button (down↓) again, the **SECOND LED** lights up, indicating the values of the Phase-Neutral Voltage *(V L-N)*



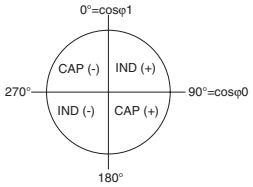
Pressing the front panel button (down↓) again, the **THIRD LED** lights up, indicating the values of the Current of Phases L1 and L2 *(A)*

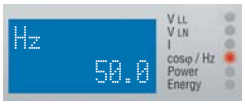


Pressing the front panel button (down↓) again, the display shows the value of the Current of Phase L3 and In (neutral) *(A)*

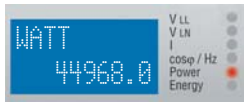


Pressing the front panel button (down↓) again, the **FOURTH LED** lights up, indicating the value of the Inductive or Capacitive Cosφ (indication on 4 quadrants) *(Cosφ Hz)*





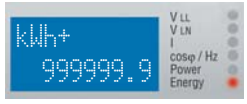
Pressing the front panel button (down↓) again, the Frequency value is displayed*(Cosφ Hz)*



Pressing the front panel button (down↓) again, the **FIFTH LED** lights up, indicating the value of the Active Power *(Power)*

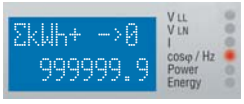
Pressing the front panel button (down↓) again, the value of the Reactive Power is displayed *(Power)*

Pressing the front panel button (down↓) again, the value of the Apparent Power is displayed *(Power)*

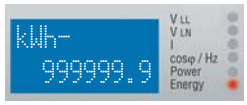


Pressing the front panel button (down↓) again, the **SIXTH LED** lights up, indicating the value of the Active Energy (import)*(Energy)*

Pressing the front panel button (down↓)
Resettable page

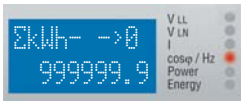


If you keep the button pressed, the text lashes and the number goes to zero.

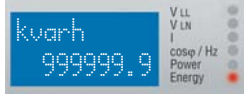


Pressing the front panel button (down↓) again, the value of the Active Energy (export) is displayed *(Energy)*

Pressing the front panel button (down↓)
Resettable page

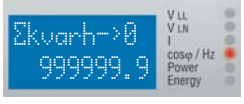


If you keep the button pressed, the text lashes and the number goes to zero.

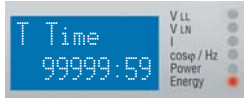


Pressing the front panel button (down↓) again, the value of the Reactive Energy is displayed*(Energy)*

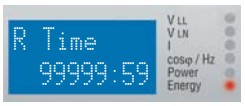
Pressing the front panel button (down↓)
Resettable page



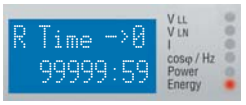
If you keep the button pressed, the text lashes and the number goes to zero.



Pressing the front panel button (down↓) again, the display shows the Working Time function (T Time = Total Time) with power supply present at the instrument.



Pressing the front panel button (down↓), the display shows the time elapsed (in hours and minutes) with power supply present at the instrument from the last reset operation. Count of an interval of time between one reset and the next.



Page for working time reset. If you press and hold the button, the text "R time" (Relative Time) flashes and the number goes to zero.

Status of the output. The display shows in parentheses the name of the quantity on which the behaviour of the threshold, i.e. of the ON-OFF output, is set. The names that can be shown are: V12 - V23 - V31 - V1 - V2 - V3 - I1 - I2 - I3 - 3Vff - 3Vn - 3I - Fre - Plm+ - PEx - **LEDs OFF**

PROGRAMMING

To access, press the LEFT key and hold for more than 4 seconds.
When the first page is displayed, right key = next page.
When you reach the desired page, left button = enter setting mode.
When in setting mode, the right key is used for changing the value and the left key for exiting the programming of that page if pressed briefly.
Pressing the left key for more than 4 seconds takes you back to normal mode.

Resetting the factory parameters.
When the left key is pressed, the display shows 0. If you press the right key, the product is reconfigured with the factory setting, but without affecting the counts for the energy and the working time. Exit from programming mode is instantaneous (no other operations required). LEDs off.

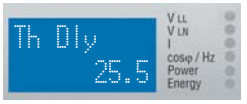
Maximum threshold Hi. The output will be activated when the chosen quantity exceeds the threshold value set.

Maximum threshold Lo. The output will be activated when the chosen quantity goes below the threshold value set.

Threshold not handled Off. The output remains at rest. The following pages "Th" will not be visible.

Output activation delay. The delay time set on the next page "Th Dly" will be carried out for the energising (delay from rest to work) ONLY if "Th Sel" is DIFFERENT from Off.

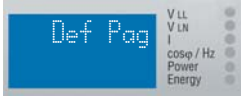
Output reset delay. The delay time set on the next page "Th Dly" will be carried out for the de-energising (delay from work to rest) ONLY if "Th Sel" is DIFFERENT from Off.



Relay energising or de-energising delay time. From 0 to 25.5 sec.
(only if ThSel is different from Off)

Assignment of threshold to one of the measurements. The possible measurements are: V12 – V23 – V31 – V1 – V2 – V3 – I1 – I2 – I3 – 3Vff – 3Vn – 3I – Fre – Plm+ - PEx- (only if ThSel is different from Off)

Percentage threshold value.
The first line shows the equivalent value with respect to the measurement chosen. The second line shows the percentage value to be adjusted.
(only if ThSel is different from Off)



Measurement page at switch-on.
The choice is made between all the measurement pages present, the "covers" of which appear by scrolling with the right key.