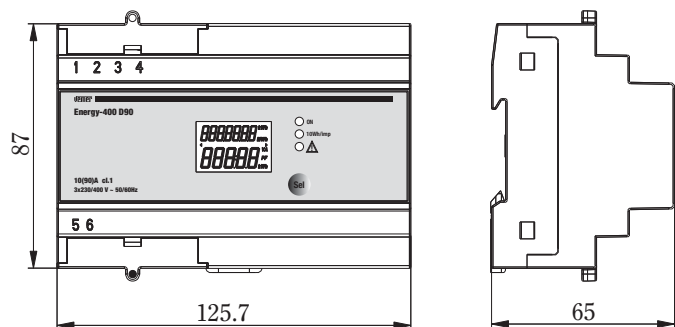
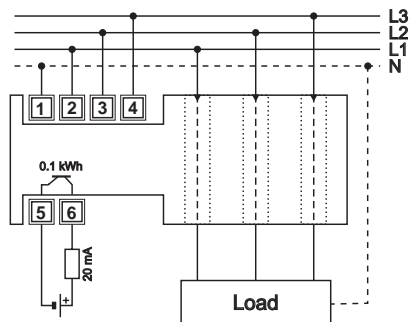


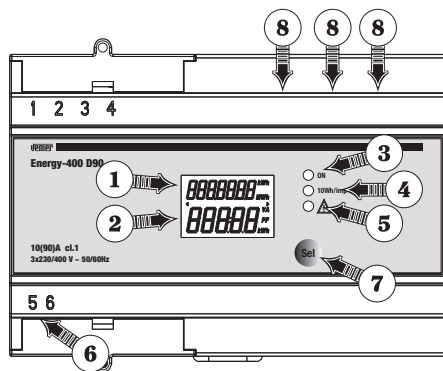
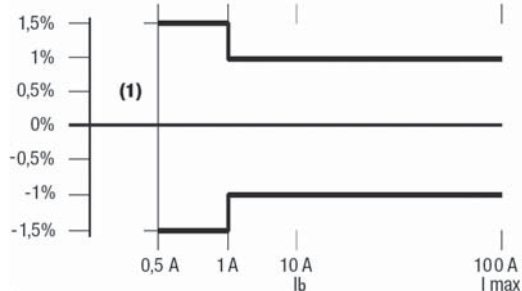
Mod. **ENERGY-400 D90**

Vemer S.p.A.

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**DIMENSIONS****WIRING DIAGRAMS**

4-wire (3 phases plus neutral)  
or 3-wire (without neutral)

**DESCRIPTION****MAXIMUM MEASUREMENT ERROR**

(1) Indetermined error zone

## User Manual

### DIRECT CONNECTION ENERGY METER

Read all instructions carefully

- Static meter with direct insertion to measure the the consumption of active energy in three-phase systems with precision class 1 (EN 62053-21).

**SAFETY INSTRUCTIONS**

To guarantee correct installation, observe the following instructions:

- The appliance must be installed by a qualified operator
- The appliance must be installed in an electrical panel which, after installation, leaves terminals inaccessible
- A protection device against over-currents must be installed in the electrical system upstream of the energy meter
- Connect the instruments as shown in the diagrams opposite
- Before making contact with terminals, ensure that conductors to be connected to the appliance are not live
- Do not power or connect the appliance if any part of it is damaged.

Code	Model	Description
VN984100	Energy-400 D90	Three-phase energy meter

**TECHNICAL SPECIFICATIONS**

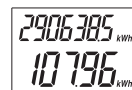
- Power supply voltage: **3x230 (400) V** (-15%/+10%)
- Operating frequency: 50/60 Hz
- Basic current:  $I_b = 10A$
- Maximum current:  $I_{MAX} = 90A$
- Maximum overload in continuous use maintaining class 1: 100A
- Minimum start-up current: 40mA
- Consumption: < 2,5 VA
- Operating temperature:  $-10 \div +45 \text{ }^\circ\text{C}$
- Relative humidity: 10% ÷ 90% non-condensing
- Connection type: direct for current conductors with galvanic isolation between voltage and current terminals. By direct insertion of the current conductor vertically into the case maximum diameter of lead 25 sqmm maximum diameter of through cable 12.5 mm optoinsulated, open-collector type
- Pulse output: pulse duration 100 ms ± 15% pulse voltage 9÷24 VDC ± 10% switchable output current 20 mA max.
- Signaling leds: green = power on red = flashing at 10Wh frequency yellow = wrong connection class 1 (EN 62053-21)
- Accuracy: LCD 7 + 5 digit
- Display: 10 Wh from 000.00 kWh to 999.99 kWh 100Wh from 1000.0 kWh to 9999.9 kWh 0.1 kWh from 000000.0 kWh to 999999.9 kWh 1 kWh from 1000000 kWh to 9999999 kWh
- Partial energy resolution: 4kV between output pulse and all other terminals 4kV between accessible parts (front) and all other terminals
- Total energy resolution: 7 DIN, RAL 7035 gray
- Insulation voltage: IP20/IP51 on the front.
- Housing: 7 DIN, RAL 7035 gray
- Protection degree: IP20/IP51 on the front.

**DEVICE DESCRIPTION**

- Display box of total energy
- Display box of partial energy
- Green LED:** when lit it indicates power is on
- Red LED:** every flash corresponds to an energy count of 10Wh
- Yellow LED:** when lit it indicates wrong connection
- Optoinsulated pulse output
- Page/backlight selection key
- Perforations for direct connection of wires to be metered.

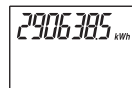
**OPERATION**

- When the energy meter is turned on the main page is displayed, representing the total energy count on the 7-digit upper block and the partial energy count on the 5-digit lower block. The resolution of each meter is automatically updated as soon as the scale-end is reached. If the YELLOW LED stays on after the implement was powered, check the installation for connection errors (cfr. "Connection errors") section.



Main page

- To display the **total** energy reading only, press the "**Sel**" key: this meter **cannot** be set to zero
- To display the **partial** energy reading, press the "**Sel**" key again: this meter is zeroed automatically as soon as the end of the scale is reached (9999.9 kWh); it can also be set to zero manually anytime by holding the "**Sel**" key pressed for more than 4 seconds
- To return to the main page reading both meters (total and partial), press the "**Sel**" key again.



Total reading



Partial reading

- Backlighting is enabled by default: it is switched on each time a key is pressed and stays on for 30 seconds after the last key was pressed. In order to enable/disable backlight while on the **main page**, hold "**Sel**" key pressed for at least 4 seconds: ON/OFF backlight status will be displayed for a couple of seconds, after which the main page will return.



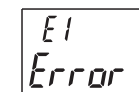
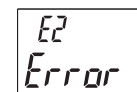
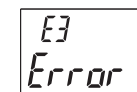
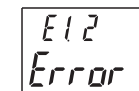
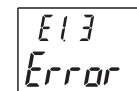
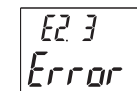
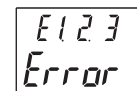
Backlight status

**CONNECTION ERRORS**

During the first 3 minutes after power-up, a connection check-up is automatically carried out to detect any connection errors: the implement will light up the YELLOW LED if the error at one or more phases appears to be negative.

In this case, for further details on the actual error type go to the **total** energy page and hold the "**Sel**" key down for longer than 4 seconds, until the "**TEST**" reading appears. Wrong connection is indicated by a negative energy reading (E1 and/or E2 and/or E3) followed by the "**Error**" message.

TEST

PHASE 1 error  
E1 is negativePHASE 2 error  
E2 is negativePHASE 3 error  
E3 is negativePHASE 1 and 2 error  
E1 and E2 are negativePHASE 1 and 3 error  
E1 and E3 are negativePHASE 2 and 3 error  
E2 and E3 are negativePHASE 1, 2 and 3 error  
E1, E2 and E3 are negative

The test can be performed anytime by simply repeating the above steps.

**Warning: to restore correct meter operation after an error reading has been displayed, switch the meter off, check connection of phases (sequence of phases R, S, T) and current; then power the meter up.**

**REFERENCE STANDARDS**

Conformity to European Community directives:  
2006/95/EC (Low Voltage)  
2004/108/EC (E.M.C.)

is declared according to the following standards:

■ **Safety:** EN 61010-1

■ **Electromagnetic compatibility:** EN 62052-11 and EN62053-12