

ENGLISH

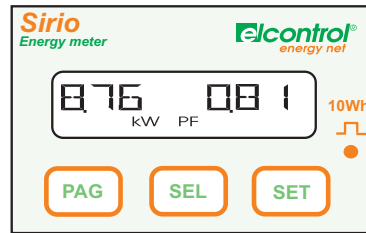
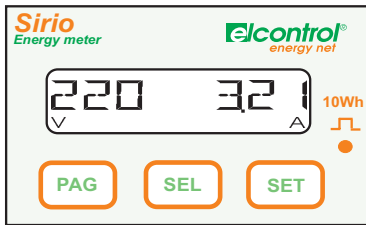
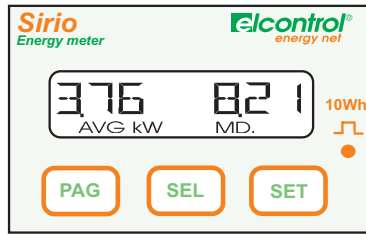
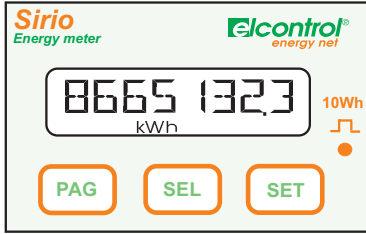
SIRIO 485 ALM



Energy Meter

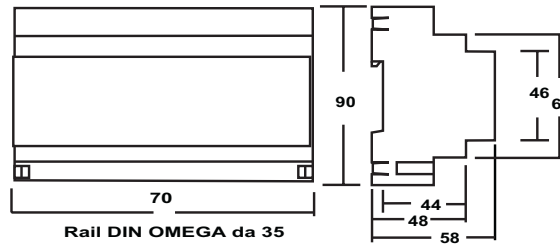
USER MANUAL

WARNING – Elcontrol Energy Net S.p.a. declines all liability for any damage to people or property caused by unsuitable or incorrect use of its products. Elcontrol Energy Net reserves the right to change product specifications without prior notice.



DIMENSIONS

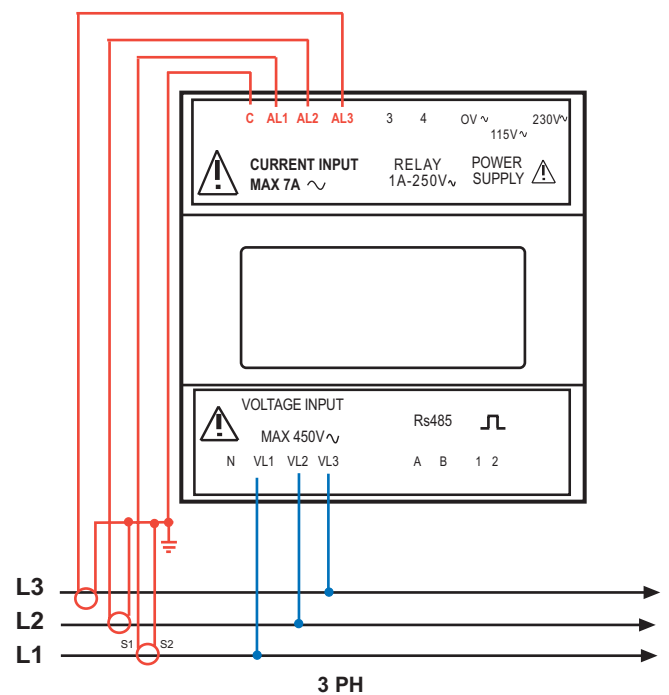
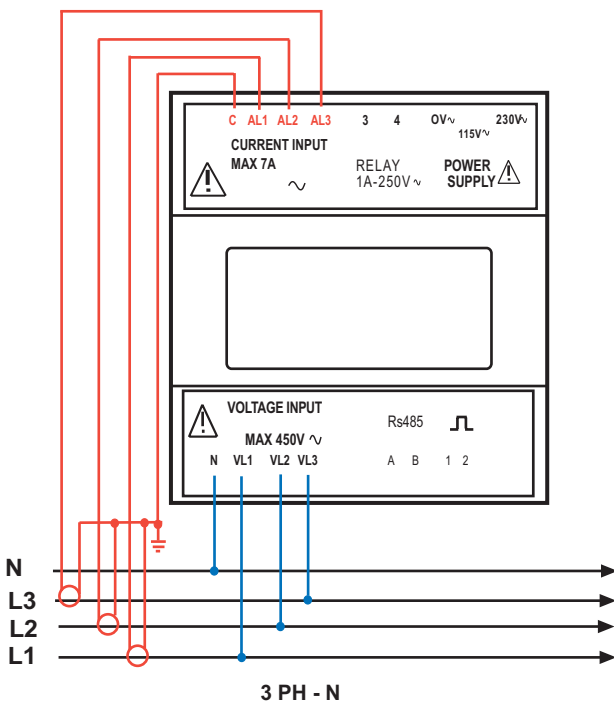
MEASUREMENT CONNECTION CABLES max 2,5 mm²

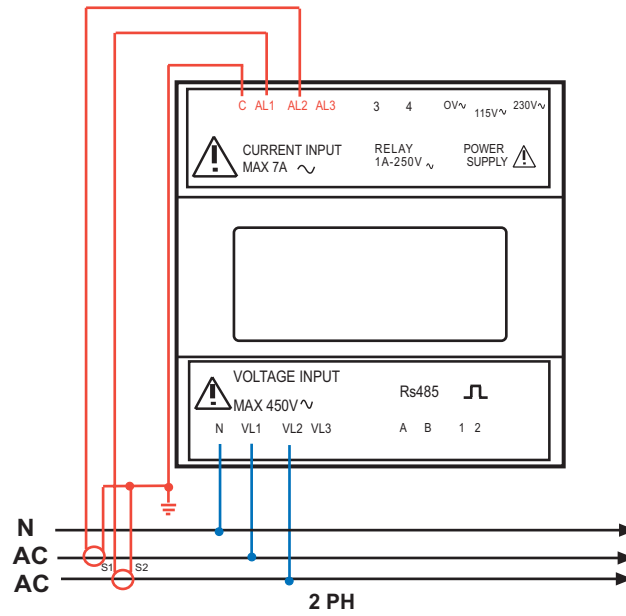
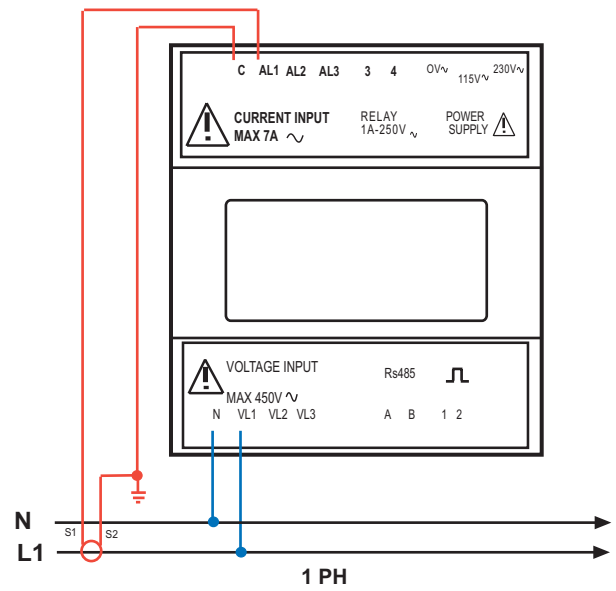
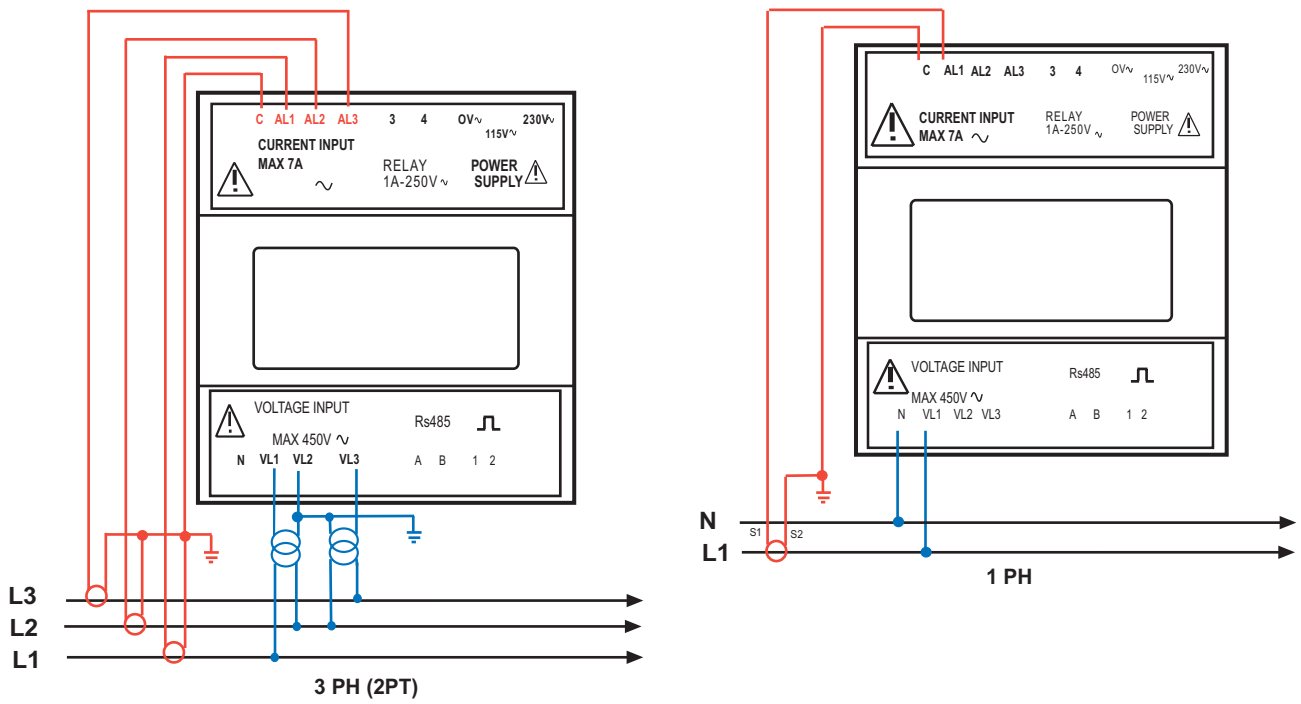


Rail DIN OMEGA da 35

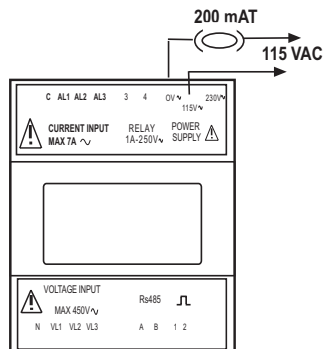
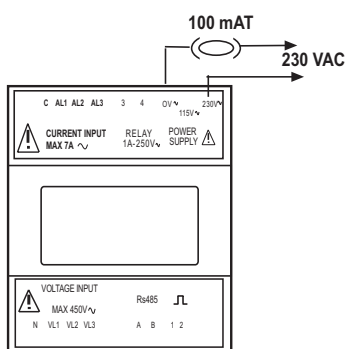
4 Modules DIN (68 x 58 x 90)

WIRING DIAGRAMS MEASURES INPUTS






POWER SUPPLY CONNECTION



PARAMETERS	TOT	L1	L2	L3
V	•			
A	•			
kW	•			
P.F.	•			
kW-Avg	•			
kW-md	•			
kWh	•			

1 - INTRODUCTION

 Please read carefully the instructions with this symbol before installing and using the instrument.

1.1 - STANDARDS and REGULATIONS

SIRIO conforms to Directive 73/23/CEE (LVD) and 2004/108/CE (EMC).

It has been designed with reference to EN 61010-1, EN 61326 including append. A1/A2/A3, EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 61000-3-3/A1, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-5/A1, EN 61000-4-6, EN 61000-4-6/A1, EN 61000-4-8, EN 61000-4-8/A1, EN 61000-4-11, EN 61000-4-11/A1.

1.2 - USER SAFETY

In order to preserve these safety conditions and ensure safe operation, the user must observe all instructions and marks specified in this user manual. All maintenance and repair operations requiring the opening of the instrument must be carried out only by suitably qualified and authorised personnel. The instrument was shipped from the manufacturing plant in perfect technical safety conditions.

1.3 - PRELIMINARY INSPECTIONS

Before installation, check that the instrument is in good conditions and was not damaged during transport. Check that the network voltage and the rated voltage coincide. This instrument does not require an earth connection.

1.4 - PRECAUTIONS IN THE EVENTS OF MALFUNCTIONS

When safe operation is no longer possible, put the instrument out of service and ensure that it cannot be operated accidentally. Safe operation cannot be guaranteed in the following circumstances:

- When the instrument appears clearly damaged.
- When the instrument no longer works.
- After long storage in unsuitable conditions.
- After being damaged in transit.

2 - CONNECTION OF THE INSTRUMENT

2.1 - POWER SUPPLY

The power supply connections terminals are located on the rear side and are clearly indicated with the label POWER SUPPLY. Use cables having a maximum section of 4 mm². Earth connection is not required. Follow the connection diagram at the begin of the manual.

2.2 - CONNECTING VOLTAGE MEASUREMENT CABLES

These cables, having a maximum section of 4 mm², are to be connected to the terminals labelled VOLTAGE INPUT as indicated in the diagrams at the beging of the manual.

2.3 - CONNECTING CURRENT MEASUREMENT CABLE

The instrument is able to measure up to 5A only through external C.T. The cables having maximum section of 4mm² must be connected to the terminals labelled CURRENT INPUT as shown in the diagrams at beging of the manual.

Use Use 3 CT's with 5A secondary. Use cables having a section appropriate to the length of the connection and the rated power of the CT's used.

Note 1: For safety reasons, never leave the CT secondary open.

Note 2: Important direct connections, without C.T. will damage the inputs.

3 - MEASUREMENTS PAGES:

At startup SIRIO displays the last selected page before shutdown.

The PAG key is used to browse trough the measurements pages as described in the following.

Page 1: Voltage / Current

Page 2: W / P.F.

Page 3: kWh

Pressing the SEL key while in page 2, the average (AVG) values and the peak (MD) values of power will be displayed.

4 - SETUP PAGE PROTECTION CODE

By default, the access code to set-up pages is not enabled. To enable it, keep the PAG + SEL keys pressed at the same time for 30 sec. The display will show the page on which the access code must be entered.

By means of the SEL + SET keys, every digit can be changed and the code can be entered. The initial factory code, that must be entered the first time is 000000. Confirm and exit from this page by pressing the PAG key.

Now a second page (with "COD" blinking), identical to the first one, is displayed:

From this page, the access code can be permanently changed, if wished.

In this case remember or make a safe note of the new code somewhere you can find it later on.

To exit from the second page press the PAG key.

IMPORTANT: After the first access to the password page, the request of the code will become permanent. From that moment on the code must be always entered to access the set-up page.

Avoid to recall the password page, for test purposes, if the code request is not permanently desired.

SIRIO PASSWORD SETUP MEMO	
Serial Number Installed At	
Factory Password	000000
Date New Password	
Date New Password	
Date New Password	

5 - PROGRAMMING THE INSTRUMENT

The instrument can be fully programmed by means of the SETUP menu. Press at the same time the PAG and the SEL keys to enter the SETUP.

If the setup protection code has been enabled, the instrument will request the access password.

6 - SETUP PAGES:

Pag. 1 - C.T. page

On this page it is possible to set up the current ratio of the amperometric transformers used.

Press the SEL key to select the digit to be edited.

Press the SET key to modify the selected digit.

Press PAG:

Pag. 2 - Connection page

On this page the connection type of the instrument can be selected.

By pressing the SET key the connection type cycles through

STAR (three phases with neutral 4 wires),

2PH (two phases),

1 PH (single phases),

DELTA (three phases 3 wires).

Press PAG:

Pag. 3 - Average and peak power values reset page (RESMED).

Selecting Y, by pressing the SET key, will reset the peak and average values of the power measure.

Press PAG:

Pag. 4 - Counter reset page (RESCNT)

Selecting Y, by pressing the SET key, will reset the kWh counter.

Press PAG:

Pag. 5 - RS-485 communication parameters setup page

Press the SEL key to select the parameter to be edited.

Press the SET key to modify the selected parameter.

The first digits from left are the Baud rate (transmission speed). Possible values are: 9.6, 19.2, 2.4, 4.8 (kbaud).

The central digit is the parity check and can have the following values: N (None), O (Odd), E (Even).

The digits to the right represent the type of Modbus communication protocol.

Possible values are:

- IEE (Modbus IEEE standard INTEL format);
- ASC (Modbus ASCII with emulation of Vip Energy data format);
- BCD (Modbus BCD MODICON protocol).

Press PAG:

Pag. 6 - Address setup page.

On this page the RS-485 network address of the SIRIO instrument can be set.
Press the SEL key to select the digit to be edited.
Press the SET key to modify the selected digit.

Press PAG:

Pag. 7 - Digital outputs selection page.

Press the SET key to select one of the following 3 options:

- 0.10 SEC (Pulse type output with 100 ms pulse width). Press PAG to continue to point 8.;
- 0.02 SEC (Pulse type output with 20 ms pulse width). Press PAG to continue to point 8.;
- OUT RLY (relays type output). Press PAG to continue to point 12.

Pag. 8 - Power measurement to be associated to output 1 page.

Press the SET key to choose between kWh and kVAh. The selected power measure will be associated to output 1.

Press PAG:

Pag. 9 - Power measurement to be associated to output 2 page.

Press the SET key to choose between kWh and kVAh. The selected power measure will be associated to output 2.

Press PAG:

Pag. 10 - Pulse value to be associated to output 1 page.

On this page the value associated to each pulse from output 1 can be selected.
Press the SEL key to select the digit to be edited. («K» for editing the exponent)
Press the SET key to modify the selected digit.

Press PAG:

Pag. 11 - Pulse value to be associated to output 2 page.

On this page the value associated to each pulse from output 2 can be selected.
Press the SEL key to select the digit to be edited. («K» for editing the exponent)
Press the SET key to modify the selected digit.

Pag. 12 - Selection page of the measurement to be associated to relays output 1.

Press the SET key to select the measurement to be associated to relays output 1 out of the following:

- V (voltage)
- A (current)
- W (power)
- PF (power factor)
- RLY (relays remote control via Rs485).

Press PAG:

Pag. 13 - Selection page of the operating mode for relays output 1.

Press the SET key to choose one of the following 2 operation modes:

- LEVEL (the relays closes and remains closed until the alarm condition terminates);
- PULSE (the relays generates a pulse with fixed 100ms width upon start of the alarm condition).

Press PAG:

Pag. 14 - Set up of the upper alarm threshold for digital output 1.

Press the SEL key to select the digit to be edited.
Press the SET key to modify the selected digit.

Press PAG:

Pag. 15 - Set up of the lower alarm threshold for digital output 1.

Press the SEL key to select the digit to be edited.
Press the SET key to modify the selected digit.

Press PAG:

Pag. 16 - Set up of the alarm hysteresis for digital output 1.

This value is expressed as (%) percentage of the alarm threshold. Possible values are between 00 and 99.

Press the SEL key to select the digit to be edited.
Press the SET key to modify the selected digit.

Press PAG:

Pag. 17 - Set up of the alarm delay for digital output 1.

The delay time is expressed in seconds. Possible values are between 000 and 999.
Press the SEL key to select the digit to be edited.
Press the SET key to modify the selected digit.

Press PAG:

Pag. 18 - Selection page of the measurement to be associated to relays output 2.

Press the SET key to select the measurement to be associated to relays output 2 out of the following:

- V (voltage)
- A (current)
- W (power)
- PF (power factor)
- RLY (relays remote control via Rs485).

Press PAG:

Pag. 19 - Selection page of the operating mode for relays output 2.

Press the SET key to choose one of the following 2 operation modes:

- LEVEL (the relays closes and remains closed until the alarm condition terminates);
- PULSE (the relays generates a pulse with fixed 100ms width upon start of the alarm condition).

Press PAG:

Pag. 20 - Setup of the upper alarm threshold for digital output 2.

Press the SEL key to select the digit to be edited.

Press the SET key to modify the selected digit.

Press PAG:

Pag. 21 - Setup of the lower alarm threshold for digital output 2.

Press the SEL key to select the digit to be edited.

Press the SET key to modify the selected digit.

Press PAG:

Pag. 22 - Setup of the alarm hysteresis for digital output 2.

This value is expressed as (%) percentage of the alarm threshold. Possible values are between 00 and 99.

Press the SEL key to select the digit to be edited.

Press the SET key to modify the selected digit.

Press PAG:

Pag. 23 - Setup of the alarm delay for digital output 2.

The delay time is expressed in seconds. Possible values are between 000 and 999.

Press the SEL key to select the digit to be edited.

Press the SET key to modify the selected digit.

Press PAG: exits the setup menu

7 - TECHNICAL CHARACTERISTICS

Measures	70 x 58 x 90 mm
Power supply	230 or 115 Vac 10%; 35 400 Hz
Consumption	3 VA
Display	LCD 128 segments
Voltmeter inputs	250 Vac phase-neutral; 450 Vac phase-phase
Voltmeter input impedance	2 Mohm
Number of scales	1 scale for voltage; 2 scales for current
Current inputs	5 A (external C.T.s required); 1 VA
Current inputs overload	7 A permanent; 15 A for 1 second
Measurements	T.R.M.S. (true R.M.S.) up to the 25 th harmonic.
Accuracy	1% for V and I; 2% for power (Class 2 IEC 1036)
Connection	Single-phase; three-phase STAR(4 wires); three-phase DELTA(3 wires); two-phase+neutral
Weight	0.3 kg
Protection level	Instrument IP20; front panel IP60
Temperature range	-10 +60 °C
Relative humidity range	20% 80%
Condensation	non condensing
Digital outputs	1 electronic relays 120mA/100Vac + 1 electromechanical relay 1A/250Vac