

OPERATORS' SAFETY

All users should carefully read these operating instructions carefully and thoroughly, before installing the instrument and placing it into operation.

This instrument may only be used by properly trained personnel. Opening the device or repairs may only be carried out by Elcotronic customer service personnel or by duly authorized repair services. This instrument is manufactured and tested in accordance with regulations IEC 348 and VDE 411 and is shipped ready for safety operation.

If it may be assumed that the device cannot be safely operated as a result of visible damage occurred during transit or operation, it must be removed from service and carefully inspected by duly authorized personnel.

Before switching on the instrument, make sure that its operating voltage corresponds to the mains voltage.

When it is necessary to open the instrument for servicing, repair or replacement of parts, it must be first disconnected from all power sources.

Make sure the spare parts used are of the type required and meet the technical specifications indicated.

WARNING: Elcotronic srl assumes no liability which may result from malfunctions or accidents caused by improper use or when the instrument is not used for its intended purpose.

INSTALLATION

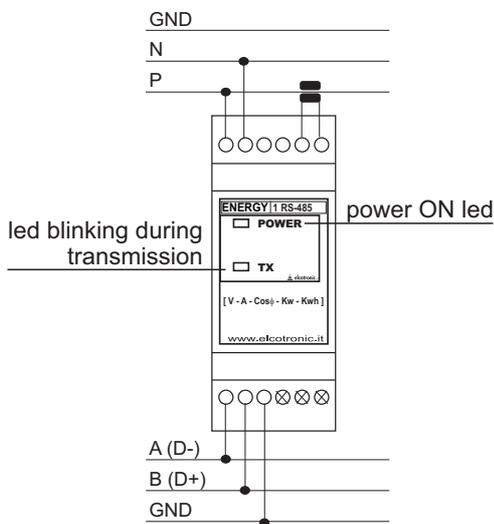
To connect the instrument wires, proceed as follows:

- 1) switch OFF the board where the instrument will be installed;
- 2) position the instrument on the DIN guide;
- 3) connect the power leads to the mains (V230/50Hz);
- 4) insert the current transformer in either cable and turn the power ON again;
- 5) connect the RS-485;
- 6) install software and converter;
- 7) place a known load for testing;
- 8) check reading on the display.

ENERGY1 RS485

Energy1 RS485 36Amps

Energy1 RS485 72Amps



MODBUS Protocol

Energy1 RS485 uses the MODBUS protocol, RTU mode. Each 8-bit byte in the message contains two 4-bit hexadecimal characters.

The format for each byte in RTU mode is:

Code **8-bit binary**, hexadecimal 0-9, A-F
Two hexadecimal characters contained in each 8-bit field of the message.

Bits per byte 8 data bits

Error check field Cyclical Redundancy Check (**CRC**)

MODBUS FUNCTIONS :

FUNCTION 3 Reads the n words (16 bits - 2 bytes). Use this function to read the values reported in the table below, max 4 words. Energy reading must be performed separately (2 words). (32 bits - 4 bytes - 2 words XX XX XX XX).

FUNCTION 6 Writes the n words. In this case, enter 2 words to reset energy, enter 1 word to modify an address. (32 bits - 4 bytes - 2 words XX XX XX XX).

NOTE: When activated, the command "Broadcast" (address 255) will be executed by all the instruments connected in the network; therefore, special care should be taken when modifying the addresses.

Address	Register	Read/Write
00 00	Volt (XXX) [V]	R
00 01	Power (XXXX) [W]	R
00 02	Current (XXX,XX) [A]	R
00 03	Cos Y (X,XX) []	R
00 04	KWh (High)	R/W (only reset)
00 05	KWh (Low)	R/W (only reset)
00 06	Mod Bus Index (255 Broadcast)	W