algodue ELETTRONICA RS485 Modbus Communication Module User Manual

Contents

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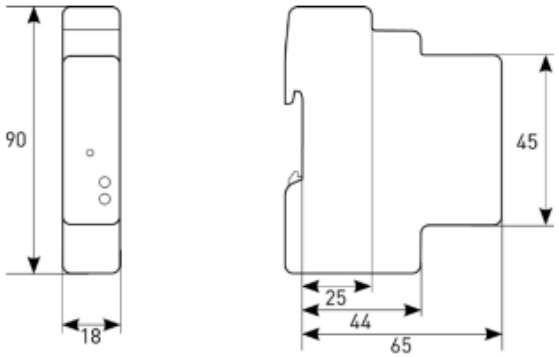
USER MANUAL

Subject to change without prior notice

PICTURE/ABBILDEN

A



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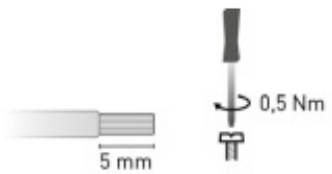

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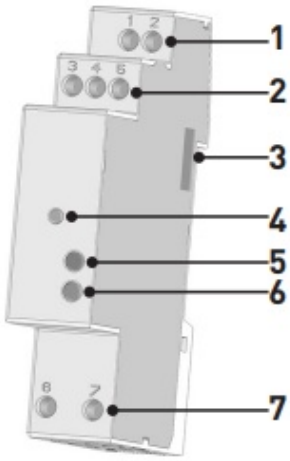

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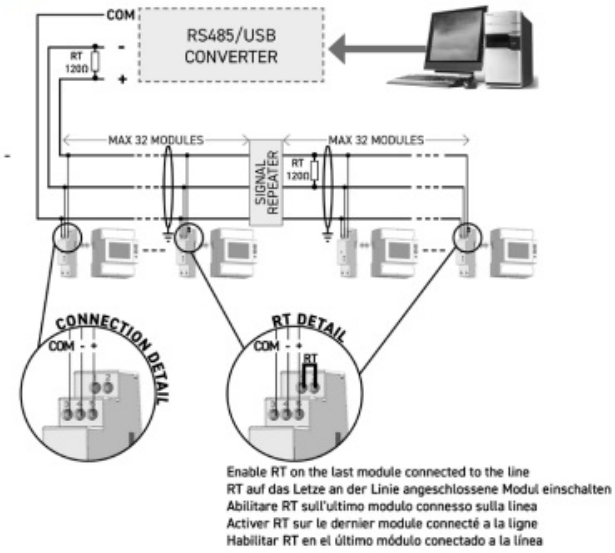

Enable RT on the last module connected to the line
RT auf das Letze an der Linie angeschlossene Modul einschalten
Abilitare RT sull'ultimo modulo connesso sulla linea
Activer RT sur le dernier module connecté a la ligne
Habilitar RT en el último módulo conectado a la línea

WARNING! Device installation and use must be carried out only by qualified professional staff. Switch off the voltage before device installation.

CABLE STRIPPING LENGTH

For the module terminal connection, cable stripping length must be 5 mm. Use a blade screwdriver with 0.8×3.5 mm size, fastening torque

- Refer to picture B.

OVERVIEW

Refer to picture C:

1. Terminals to be jumpered for termination resistor (RT) enabling
2. RS485 connection terminals
3. Optical COM port
4. SET DEFAULT key
5. Power supply LED
6. Communication LED

7. Power supply terminals

CONNECTIONS

A serial converter is required between PC and the RS485 network to adapt RS232/USB port to network. If there are more than 32 modules to be connected, insert a signal repeater. Each repeater can manage up to 32 modules. For the connection among the different modules, use a cable with a twisted pair and a third wire. The type of connection shown in picture D uses the third conductor to ensure that all the devices on the network have the same reference level and improve the reliability of communication. When there are strong electromagnetic disturbances, which may affect communication, a shielded cable should be used. The module is integrated with a termination resistor (**RT**) which can be enabled by jumpering the relevant terminals (1-2). The termination resistance must be installed on the PC and enabled on the last module connected along the line. Thanks to these resistances, the reflected signal along the line is reduced. The maximum recommended distance for a connection is 1200 m at 9600 bps. For longer distances, lower baud rates or low-attenuation cables or signal repeaters are needed. After making RS485 connections, combine each RS485 module with a single meter: place them side by side, perfectly lined up, with module optical port facing the meter optical port. RS485 parameters can be changed directly on the combined meter or by sending the proper MODBUS protocol commands to the module.

LEDS FUNCTIONALITY

Two LEDs are available on the module front panel to provide power supply and communication status:

LED COLOUR	**SIGNALLING**	**MEANING**
POWER SUPPLY LED		
–	Power OFF	The module is OFF
GREEN	Always ON	The module is ON
COMMUNICATION LED		
–	Power OFF	The module is OFF
G REEN	Slow blink (2 s OFF time)	RS485 communication=OK Meter communication=OK
R ED	Fast blink (1 s OFF time)	RS485 communication=fault/missing Meter communication=OK
R ED	A lways ON	M eter communication=fault/missing
GREEN/RED	Alternating colours for 5 s	SET DEFAULT procedure in progress

SET DEFAULT FUNCTION

SET DEFAULT function allows to restore on the module default settings (e.g. in case of MODBUS address forgotten).
To restore default settings, keep SET DEFAULT key pressed for at least 5 s, communication LED will blink green/red for 5 s. At the end of SET DEFAULT procedure, communication LED will be red continuously indicating to release the key.

Default settings:

RS485 communication speed = 19200 bps RS485 mode = 8N1 (RTU mode)
Modbus address = 01

TECHNICAL FEATURES

Data in compliance with EIA RS485 standard.

POWER SUPPLY	
Rated voltage	230 VAC ±20% / 50 Hz
Max repetitive voltage	300 VAC
Max non repetitive voltage peak	320 VAC (20 ms)
Consumption	max 5 VA
Fuse	Ttype, 100 mA (to be mounted externally)
RS485 COMMUNICATION	
Protocol	MODBUS RTU (8N1) and ASCII (7E2)
Port	RS485
Communication speed	300 ... 115200 bps
Termination resistor (RT) integrated in the module	120 Ohm
SERIAL COMMUNICATION	
Type	Optical port
Communication speed	38400 bps
STANDARDS COMPLIANCE	
EMC	EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11, EN 55011 Class A
Safety	EN 60950
WIRE SECTION FOR TERMINALS AND FASTENING TORQUE	
Terminals	0.14 ... 2.5 mm² / 0.5 Nm
ENVIRONMENTAL CONDITIONS	
Operating temperature	-15°C ... +60°C
Storage temperature	-25°C ... +75°C
Humidity	80% max without condensation
Protection degree	IP20

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References

- **Algodue Elettronica: sistemi di monitoraggio energia**