



(GB)

Code	Model	Format
261241	Modbus RTU Interface	Little-Endian format
261161	Modbus RTU Interface	Big-Endian format

Lateral communication module, suitable to read Energy values and Electrical Measurements from a 1Phase or a 3Phase Energy Meter and to make them available via RS-485 interface using Modbus RTU protocol.

Safety instructions



Read this manual carefully BEFORE installing the instrument.

This device must be installed indoor only by a professional electrician fitter according to local applicable installation standards.

Do not plug in or unplug this product when the power supplying is ON. Its use is only permitted within the limits shown and stated in the installation instructions. The device and the equipment connected can be destroyed by loads exceeding the values stated.

Any type of intervention on the products, including cases in which they cease to function or present defects, can be dangerous for the operator's safety and relieves the Manufacturer from all civil and criminal liability.

Hazard resulting from application

The instrument must be installed and operated exclusively by skilled. It is strictly forbidden to use by instructed and ordinary persons or children. Furthermore, the installation and use of the instrument must comply with all the following requirements:

- Indoor installation
- Overvoltage Category III
- Pollution degree 2 or lower
- DIN-rail mounted (35 mm). (The DIN rail must be at a height not exceeding 2 meters)
- Mounted inside a cabinet with IP51 degree of protection or better
- Under the environmental conditions specified in this manual .

Failure to comply with even one of the listed requirements can cause injuries and/or property damages and relieves the Manufacturer from all civil and criminal liability.

Maintenance and Repair



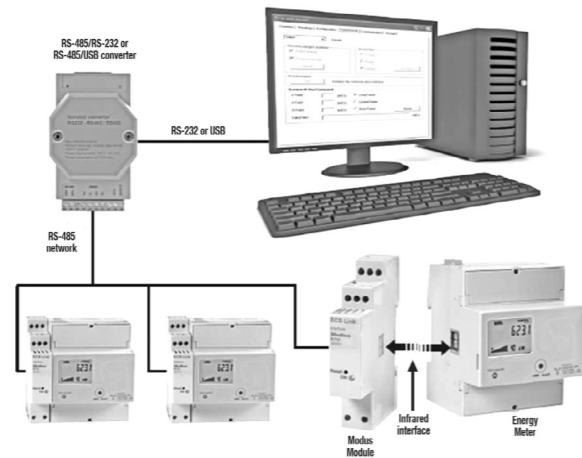
For this instrument, no maintenance, repair, or replacement of parts is foreseen. Such interventions are to be considered forbidden. In case of malfunction, it must be replaced.

Shorthand Guide

1) System Architecture

- The Module has 2 communication interfaces:
- An Infrared Interface, receiving data from an Energy Meter
 - Modbus RTU interface (EIA/TIA-485) with internal resistor for optional termination, that transmits data to a Modbus Master

Typical application:



2) Power Supply

The device is normally powered by mains supply: 230 Vac +/- 20%, 50/60 Hz Power consumption: normal operation <= 0.5VA, during communication <= 0.75VA The Modbus interface is isolated from mains supply (reinforced insulation). The lateral infrared interface is optically isolated.

3) Default settings

Baud Rate: 19200 Number of di Stop Bits: 1 Parity: None
Modbus Address: 1 Number format: Float

4) Front of the Module

On the front of the Module there are a green LED and a miniature push button. In normal operation, the LED can be in one of the following condition:

- blinking 1 second ON and 1 second OFF. This happens when the is no communication with any Energy Meter through the lateral infrared interface
- permanently ON, meaning that the Modbus interface is correctly receiving data from a 1phase or from a 3phase Energy Meter through the lateral infrared interface.

The push button is used to restore the default parameters (see previous paragraph). To do that, you have to keep the button pushed. You'll see the LED operate as follows:

- OFF for 1 second
- ON for 1 second
- OFF for 2 seconds
- back to the normal behaviour the parameters have been reset to their default values

5) Configuration

- By using Modbus protocol itself, it is possible to configure some parameters:
- The Baud rate is configurable with one of the following values: 1200, 2400, 4800, 9600, 19200, 38400 and 57600 baud.
 - The Parity is configurable as None, Even or Odd.
 - The Number of Stop bit can be configured as 1 or 2.
 - The Modbus address can be configured with any value between 1 and 247.
 - The numerical values format is configurable as Integer or Floating Point.

See the Modbus Protocol Technical Description on Herholdt Controls website for further details.

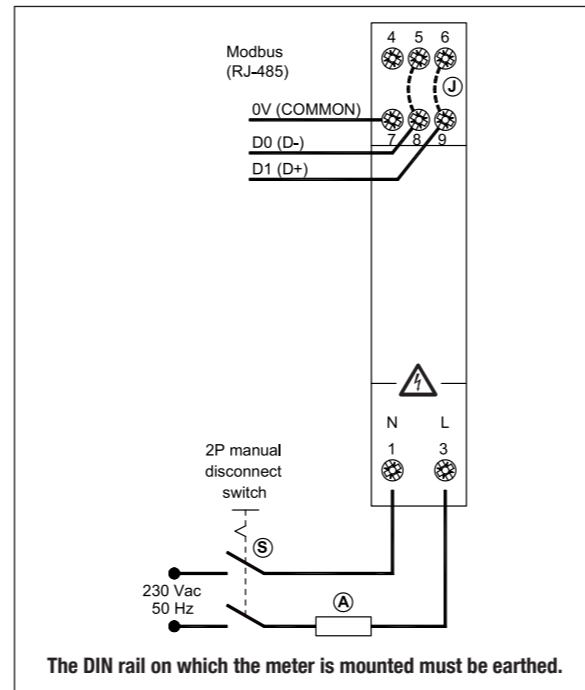
Wiring Diagram



- Ⓢ Two poles disconnect device with a contact separation of at least 3 mm.
- Ⓐ Cartridge Fuse 5X20mm, Certified according to IEC 60127-2. Medium Acting Operating current 125 mA. Voltage rating 250 Vac. For example: Littelfuse 0128.125.

Both fuse and fuse holder must have a minimum creepage distance of 4mm and minimum clearance distance of 3 mm between poles. The fuse breaks the Phase wire current. The fuse holder is DIN-rail mounting and must be mounted closely to the device.

- Ⓝ Apply the two jumpers if you want to insert the (internal) termination resistance between D1 and D0. In an RS-485 network, termination is normally applied to the first and last device on the network.

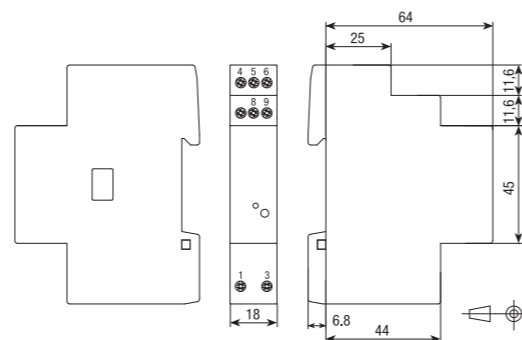


Simple Installation



- Mount the Module on a 35 mm DIN rail, on the left side of an Energy Meter, so that the side infrared interfaces face each other. The DIN rail must be earthed.
- Make sure that the slide clicks, for a stable installation.
- Connect the 3 wires of RS-485 cable to the 3 Modbus terminals of the Module and connect the same wires to the corresponding terminals of the RS-485/RS-232 convertor
- Connect the RS-232 cable (DB9 cable) between the RS-485/RS-232 convertor and a COM port of a Windows PC
- Connect the 230 VAC supply to the terminals on the lower side of the interface.
- Switch ON the Module, the Energy Meter and the RS-485/RS-232 convertor
- Run the Modbus Master tool (available on the Herholdt Controls website) to read the data from the Module and, if the case, to configure the Modbus parameters of the Module.

Dimensions



Technical data

(ref. EN 62368-1:2018, EN 55032 CISPR 32, EN 61000-4)

Modbus Interface	Hardware connection SW protocol	3 wires RS-485 (EIA/TIA-485) Modbus RTU, from 1200 to 57600 baud
DIN-rail mounting (acc. to DIN 43380 and EN60715)	Housing DIN-rail Module depth	1 module (18 mm) 35 mm 70 mm
Power supply	Operating Voltage Power consumption Operating Frequency	230 V~ +/- 20% < 1.5 W 45-65 Hz
Wiring Connection	screw head Z +/- Solid wire min (max) section Stranded wire min (max) section	POZIDRIV PZ0 0.15 (2.5) mm ² 0.15 (4) mm ²
<small>Wires acc. to IEC 60332-1-2 if section >= 0.5 mm², acc. to IEC 60332-2-2 for smaller sections</small>		
EMC Disturbances	Compliant with Conducted emissions and Radio interferences EN 55032 CISPR 32 Class B	
EMC Immunity	EN 61000-4-2 - Electrostatic discharge immunity 8kV EN 61000-4-3 - Immunity to radiated RF electromagnetic field EN 61000-4-4 - Electrical fast transient/burst immunity - 4 kV on mains circuit 2kV (capacitive clamped) on Modbus RS/485 circuit EN 61000-4-5 - Immunity to surges - 4 kV surge pulses	
Electric Safety (acc. to EN 62368-1:2018)	Pollution degree Overvoltage category Working Voltage Flammability (acc. to UL 94)	2 III 300 V class V0
Insulation (acc. to IEC 61140)	II (symbol IEC 60417-5172 (2003-02)) Reinforced Insulation between Mains supply circuit (HLV circuit) and communication circuit (SELV circuit) - a.c. Required Transient Voltage = 4 kV peak - Impulse withstand voltage test (1.2/50 µsec pulse) = 7.68 kV peak - AC withstand voltage test (for 5 seconds) = 4.18 Vrms - routine AC withstand voltage test = 3,4 kV rms on each single equipment for 1 second	
Environmental conditions	Operating Temperature Storage Temperature Relative Humidity not condensing yearly average on 30 days per year Installation Altitude Degree of Protection	-10°C — +55°C -10°C — +70°C =< 75% =< 95% Indoor =< 2000 m. IP20 (*)

(*) The device must be installed inside a cabinet with IP rating IP51 or better. Any exposed parts (outside the cabinet) must have a minimum degree of protection IP51. Furthermore, the cabinet must have a Flammability degree V1 (according to UL-94) or better.

Notes