

SDM120-MODBUS/CT-MV

Smart Mini Power, One Module



Safety Instructions

Information for your own safety

This manual does not contain all of the safety measures for operation of the equipment (module, device), because special operating conditions, and local code requirements or regulations may necessitate further measures. However, it does contain information which must be read for your personal safety and to avoid material damages. This information is highlighted by a warning triangle and is represented as follows, depending on the degree of potential danger.



Warning

This means that failure to observe the instruction can result in death, serious injury or considerable material damage.



Caution

This means hazard of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

Qualified personnel

Operation of the equipment (module, device) described in this manual may only be performed by qualified personnel. Qualified personnel in this manual means person who are authorized to commission, start up, ground and label devices, systems and circuits according to safety and Regulatory standards.

Use for the intended purpose

The equipment (device, module) may only be used for the application specified in the catalogue and the user manual, and only be connected with devices and components recommended and approved by EASTRON.

Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and assembly, as well as proper operation and maintenance. When operating electrical equipment, certain parts of this equipment automatically carry dangerous voltages. Improper handling can therefore result in serious injuries or material damage.

- ◆ Use only insulating tools.
- ◆ Do not connect while circuit is live (hot).
- ◆ Place the meter only in dry surroundings.
- ◆ Do not mount the meter in an explosive area or expose the meter to dust, mildew and insects.
- ◆ Make sure the used wires are suitable for the maximum current of this meter.
- ◆ Make sure the AC wires are connected correctly before activating the current/voltage to the meter.
- ◆ Do not connect the meter to a 3 phase - 400VAC - network.
- ◆ Do not touch the meter connecting clamps directly with your bare hands, with metal, blank wire or other material as you may get an electrical shock.
- ◆ Make sure the protection cover is placed after installation. Installation, maintenance and repair should only be done by qualified personnel.
- ◆ Never break the seals and open the front cover as this might influence the functionality of the meter, and will avoid any warranty.
- ◆ Do not drop, or allow physical impact to the meter as there are high precision components inside that may break.

Technical Data

Performance criteria

| | |
|--|---------------------------|
| Operating humidity | ≤ 90% |
| Storage humidity | ≤ 95% |
| Operating temperature | -25°C - +55°C |
| Storage temperature | -40°C - +70°C |
| Reference temperature | 23°C±2°C |
| Warm up time | 3s |
| International standard | IEC 62053-21/EN 50470-1/3 |
| Accuracy | Class I / Class B |
| Protection against penetration of dust and water | Ip5I |
| Mechanical Environment | M1 |
| Insulating encased meter of | |
| Protective class | II |

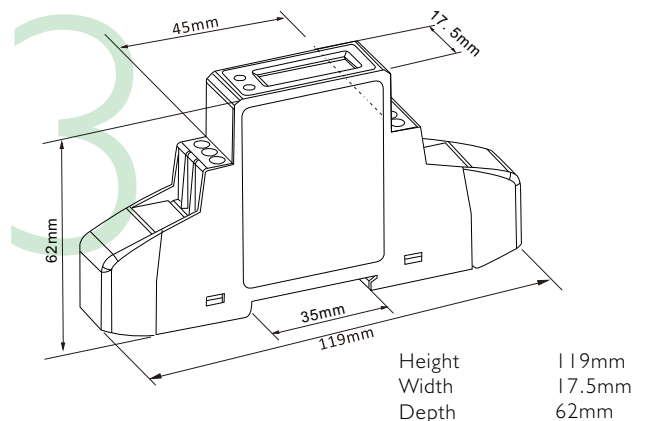
Specifications (120Modbus)

| | |
|------------------------------|--|
| Nominal voltage (Un) | 230V |
| Operational voltage | 176/276V |
| Insulation capabilities | |
| - AC voltage withstand | 4KV for 1 minute |
| - Impulse voltage withstand | 6KV-1.2μS |
| Basic current (Ib) | 5A |
| Maximum rated current (Imax) | 45A |
| Starting current | 0.4% Ib |
| Over current withstand | 30Imax for 0.01s |
| Operational frequency range | 50Hz(MID) 50/60Hz |
| Internal power consumption | ≤ 2W/10VA |
| Pulse Output | 1000imp/kWh(default) 100/10/1 imp/kWh/kVarh (configurable) |
| Display | LCD with backlight |
| Max. Reading | 99999.9kWh |

Specifications (120CT-MV)

| | |
|-----------------------------|--|
| Nominal voltage (Un) | 230V |
| Operational voltage | 176/276V |
| Insulation capabilities | |
| - AC voltage withstand | 4KV for 1 minute |
| - Impulse voltage withstand | 6KV-1.2μS |
| Primary Current | 5-9999A (depend on the CTs) |
| Secondary current input | 100MV |
| Starting current | 0.4% Ib |
| Over current withstand | 30Imax for 0.01s |
| Operational frequency range | 50Hz(MID) 50/60Hz |
| Internal power consumption | ≤ 2W/10VA |
| Pulse Output | 1000imp/kWh(default) 0.001 (default) / 0.01 / 0.1 / 1 / 10 / 100 / 1000 kWh/kVarh (configurable) |
| Display | LCD with backlight |
| Max. Reading | 99999.9kWh |

Dimensions



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Output

Pulse Output

SDM120Modbus and SDM120CT-MV have two pulse outputs. Both pulse outputs are passive type.
Pulse output 1 is configurable. The pulse output can be set to generate pulses to represent total / import/export kWh or kVarh.
(SDM120Modbus) The pulse constant can be set to generate 1 pulse per: 0.001 (default) / 0.01 / 0.1 / 1 kWh/kVarh.
(SDM120CT-MV) The pulse constant can be set to generate 1 pulse per: 0.001 (default) / 0.01 / 0.1 / 1 / 10 / 100 / 1000 kWh/kVarh (configurable).
Pulse width: 200 / 100 / 60ms
Pulse output 2 is non-configurable. It is fixed up with total kWh. The constant is 1000imp/kWh.

RS485 output for Modbus RTU

The meter provides a RS485 port for remote communication. Modbus RTU is the protocol applied. For Modbus RTU, the following RS485 communication parameters can be configured from the Set-up menu.
Baud rate: 1200, 2400, 4800, 9600
Parity: NONE/EVEN/ODD
Stop bits: 1 or 2
Modbus Address: 1 to 247

Operation

Initialization Display


When it is powered on, the meter will initialize and do self-checking.

| | | |
|---|------------|---|
| 1 | 888888 kWh | Full Screen It will last for 3 seconds. |
| 2 | 020 105 | Software version It will last for 3 seconds. |

After the self-checking program, the meter display will show the total active energy (kWh)

Scroll Display by button

There is a button on the front of the meter. After initialization and self-checking program, the meter display the measured values. The default page is total kWh. If the user wants to check other information, he needs to press the scroll button on the front panel.

| | |
|---|--|
|  | Click the button, the LCD display will scroll the measurements. |
| | Keep pressing the button for 3 seconds, the meter will get into set-up mode. |

| | | |
|-----|------------|---|
| 1 | 000478 kWh | Total active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00 |
| 1-1 | 000245 kWh | Import active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00 |
| 1-2 | 000232 kWh | Export active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00 |
| 2 | 2198 V | Voltage (V) |
| 3 | 20.18 A | Current (A) |
| 4 | 22102 W | Active power (W) |
| 5 | F 5000 | Frequency (F) |
| 6 | PF 100 | Power factor (PF) |
| 7 | 18 001 | Modbus Address (ID) Default: 001 |
| 8 | b 2400 | Baudrate Default: 2400bps |
| 9 | None | Parity None/Even/Odd are optional Default: none |
| 10 | ct0005 | Ct I (only SDM120CT-MV have) Primary current 5A (Default) |

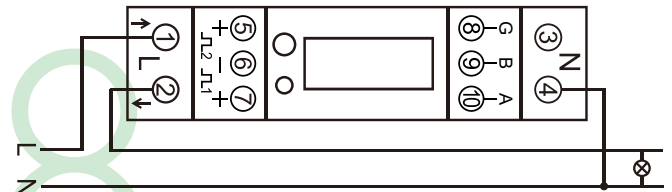
Set-up Mode

To get into Set-up Mode, the user need keep pressing the button for 3 seconds, the meter LCD will shows "-SET-".

-SET-

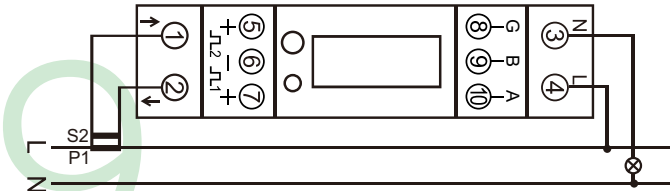
The user can program the meter parameters by sending correct command via RS485 port. Please contact with the supplier for "Eastron SDM120-Modbus protocol or Eastron SDM120CT-MV protocol".

Wiring diagram (SDM120Modbus)



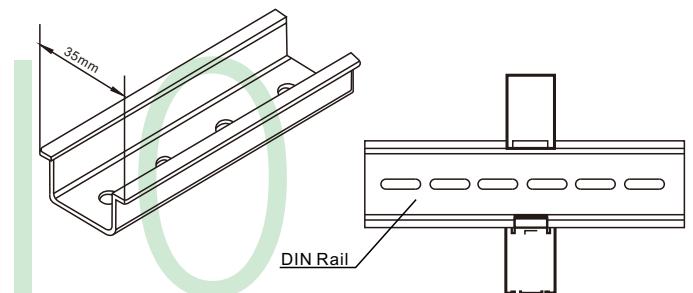
Terminal 1: L-in
Terminal 2: L-out
Terminals 3 & 4: Neutral wire
Terminals 5 & 6 & 7: Pulse output
Terminals 8 & 9 & 10: RS485 (G & B A)

Wiring diagram (SDM120CT-MV)



Terminal 1: L-in
Terminal 2: L-out
Terminals 3 & 4: Neutral wire
Terminals 5 & 6 & 7: Pulse output
Terminals 8 & 9 & 10: RS485 (G & B A)

Installation Diagram



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