2.2 Accuracy
- Voltage: 0.5% of range maximum
- Current: 0.5% of nominal
- Frequency: 0.2% of mid-frequency
- Power factor: 1% of Unity
- Active power: 1% of range maximum
- Reactive power: 1% of range maximum
- Apparent power: 1% of range maximum
- Active energy: Class 1 IEC62053-21
- Class B EN50470-3 (MID product only)
- Reactive energy: 1% of range maximum

2.3 Environment
- Operating temperature: -25℃ to +55℃
- Storage and transportation temperature: -40℃ to +70℃
- Reference temperature: 23℃ ±2℃
- Relative humidity: 0 to 95%, non-condensing
- Altitude: up to 2000m
- Warm up time: 3s
- Mechanical environment: M1
- Electromagnetic environment: E2
- Degree of pollution: 2

2.4 Mechanics
- Din rail dimensions: 18x119x62 (WxHxD) DIN 43880
- Mounting: DIN rail 35mm
- Sealing: IP51 (indoor)
- Material: self-extinguishing UL94V-0

3 Display

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

| 1 | 88888888 | Full screen 
| 2 | 020 0:05 | Software version 
| 3 | Cl 100 | CT1 (SDM120CT* only) Primary current 1A-9999A Default: 5 
| 4 | 000478** | Total active energy (kWh) 

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

*Note: For the MID version of SDM120CTM, SDM120CTMB and SDM120CTP, the CT ratio can be set only once. Before you set the CT ratio, please check the ratio of the CT connected to the meter. For example, if the CT is 100/5A, please set CT1 to be 100.

Scroll Display by button
There is a button on the front of the meter. After initialization and self-checking program, the meter displays 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 enter set-up mode.
4. Communication

4.1 Pulse Output

The meter is equipped with 2 pulse outputs, which are fully isolated from the inside circuit. That generates pulses in proportion to the measured energy. The pulse outputs are polarity dependent, passive transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage shall be 5-27V DC, and the maximum input current shall be 27mA DC.

ATTENTION: Pulse output must be fed as shown in the wiring diagram below. Scrutinize all connections and the connection mode. Opto-coupler with potential-free SPST-NO Contact.

Contact range: 5 – 27VDC Max. current input: 27mA DC

4.2 Pulse Output 1 (SDM120M/MB/CTM/CT-MV only)

Pulse output 1 is configurable. The pulse output 1 can be set to generate pulses to represent total / import/export kWh or kVarh. The pulse constant can be set to generate 1 pulse per: 0.001 (default) / 0.01 / 0.1 / 1 kWh/kVarh.

Pulse width: 200 / 100/ 60ms (default)

4.3 Pulse Output 1 (SDM120P and SDM120CTP only)

Pulse output 1 is non-configurable. It is fixed up with Export kWh. The constant is 1000imp/kWh.

4.4 Pulse Output 2

Pulse output 2 is non-configurable. It is fixed up with Import kWh. The constant is 1000imp/kWh.

The Pulse width is: 60ms

4.5 RS485 output for Modbus RTU (SDM120M and SDM120CTM/CT-MV only)

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

4.6 M-Bus communication EN13757-3 (SDM120MB and SDM120CTMB only)

The meter provides an M-Bus port for remote communication. The protocol fully comply with EN13757-3. The following communication parameters can be configured via M-Bus communication. Baud rate: 300, 600, 2400, 4800, 9600

Parity: NONE/EVEN/ODD
Stop bits: 1 or 2
M-Bus network primary address: nnn – 3 digits number from 001 to 250
M-Bus network secondary address: 00 00 00 00 to 99 99 99 99

Please contact us for the detailed Modbus/M-Bus communication protocol.
sales@eastrongroup.com

ATTENTION: The pulse output must be fed as shown in the wiring diagram below. Scrutinize all connections and the connection mode. Opto-coupler with potential-free SPST-NO Contact.

Contact range: 5 – 27VDC Max. current input: 27mA DC

6. Installation

6.1 Safety instruction

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.

Proper handling

The equipment (module, device) 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 EAETRON.

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 meter.
Do not connect while circuit is live (hot).
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 reparation 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.

We Zhejiang Eastron Electronic Co., Ltd. declares under our sole responsibility as the manufacturer that the single phase multifunction electrical energy meter SDM120 series correspond to the production model described in the EU-type examination certificate and the requirements of the Directive 2014/32/EU. Type examination certificate number 0120/SG/0141. Identification number of the Notified Body: 0120.

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