

# SDM120Modbus / CT-Modbus

Single Phase Multifunction Energy Meter



## 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.



#### 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

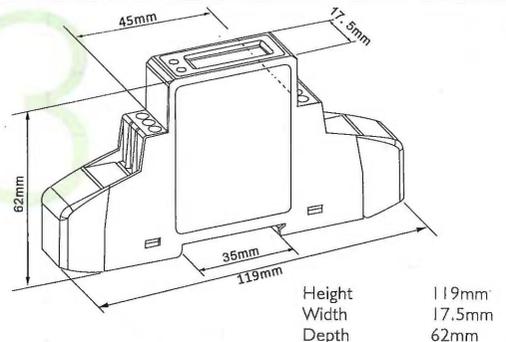
The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and assembly, as well as proper operation and maintenance. When operating electrical equipment, certain parts of this equipment automatically carry dangerous voltages. Improper handling 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 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.
- ◆ Do not drop, or allow physical impact to the meter as there are high precision components inside that may break.

## Technical Data

● <b>P</b>	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	IP51
	Mechanical Environment	M1
	Insulating encased meter of	
	Protective class	II
● <b>M</b>	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)
	Internal power consumption	50/60Hz
	Pulse Output	≤ 2W/10VA
		1000imp/kWh(default)
		100/10/1 imp/kWh/kVarh
		(configurable)
	Display	LCD with backlight
	Max. Reading	99999.9kWh
● <b>C M</b>	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/100mA
	Starting current	0.4% Ib
	Over current withstand	20Imax for 0.01s
	Operational frequency range	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



JIAXING EASTRON ELECTRONIC INSTRUMENTS CO., LTD.

Add: No.1369 Chengnan Road, Nanhu, Jiaxing, Zhejiang, 314001, China

Tel: +86-573-83698881 / 83698882

Fax: +86-573-83698883

Email: sales@eastrongroup.com

Web: www.eastrongroup.com

# EASTRON

## Output

### Pulse Output

SDM120Modbus and SDM120CT-Modbus 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 / kWh/kVarh.

(SDM120CT-Modbus) 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

Stop bits: 1 or 2

Parity: NONE/EVEN/ODD

Modbus Address: 1 to 247

## Operation

### Initialization Display

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

1	8888888	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	Total active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00
1-1	000245	Import active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00
1-2	000232	Export active energy(kWh) Display format:0000.00→9999.99 →10000.0→99999.9→0000.00
2	2198	Voltage (V)
3	20.18	Current (A)
4	22102	Active power (W)
5	F 50.00	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	CT1 (only SDM120CT-Modbus) Primary current 5A-9999A Default: 5

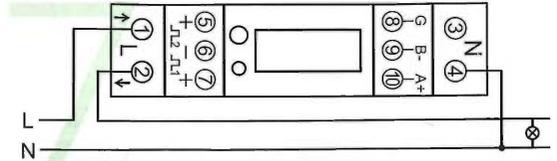
## Set-up Mode

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

-SET-

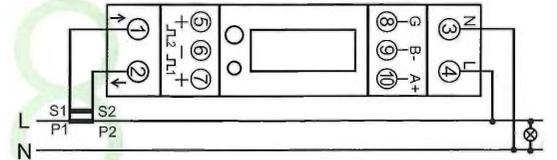
The user can program the meter parameters by sending correct command via RS485 port. Please contact with the supplier for "Eastron SDM120-Modbus protocol or Eastron SDM120CT-Modbus protocol".

## Wiring diagram (SDM120Modbus)



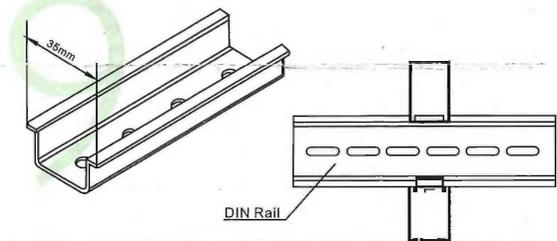
Terminal 1: L-in  
Terminal 2: L-out  
Terminals 3 & 4: Neutral wire  
Terminals 5 & 6 & 7: Pulse output  
Terminals 8 & 9 & 10: RS485 (G B- A+)

## Wiring diagram (SDM120CT-Modbus)



Terminal 1 & 2: Current inputs  
Terminals 3 & 4: Voltage inputs N and L  
Terminals 5 & 6 & 7: Pulse output  
Terminals 8 & 9 & 10: RS485 (G B- A+)

## Installation Diagram



## Conformity Declaration (for MID version meters only)

We Jiaxing Eastron Electronic Instruments Co.,ltd.

Declare under our sole responsibility as manufacturer that the single phase active import(kWh) indoor electricity meter SDM120Modbus correspond to the production model described in the EC-type examination certificate and to the requirements of the Directive 2014/32/EC type

Examination Certificate no.0120/SGS0141  
Identification Number of the NB0120

JIAXING EASTRON ELECTRONIC INSTRUMENTS CO., LTD.

Add: No.1369 Chengnan Road, Nanhui, Jiaxing, Zhejiang, 314001, China

Tel: +86-573-83698881 / 83698882

Fax: +86-573-83698883

Email: sales@eastrongroup.com

Web: www.eastrongroup.com

**EASTRON**