SDM230-MB-2T

Smart Single Phase Energy Meter

USER MANUAL

2025 V1.00

Statements

Eastron reserves the right to amend the product specifications in this manual without prior notice. Before placing an order, please contact our company or local agent to get the latest specifications.

CONTENT

Version History

Version	Date	Changes
1.00	2025-2-28	Initial issue

Risk Information

Information for Your Own Safety

This manual does not contain all of the safety measures operating the equipment (module, device) for different conditions and requirements. However, it does contain information which you must know for your own safety and to avoid damages. These information are highlighted by a warning triangle indicating 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 prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and proper operation and maintenance. When operating electrical equipment, 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 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 touch the meter connecting clamps directly with metal, blank wire and your bare hands as you may get 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 function of the meter, and will cause no warranty.
- ✧ Do not drop, or allow strong physical impact on the meter as the high precisely components inside may be damaged.
- ✧ Designed to be mounted inside of switchboards or cabinet on DIN rail.
- ✧ This device must have a suitable sized Circuit Breaker feeding the Multi Function Energy Meter so it

does not exceed the maximum rated current.

- ✧ The supply wiring of this device shall be suitable sized cable to match the installed circuit breaker.
- ✧ A Disconnection Device (Circuit Breaker) should be installed close to the Multi Function Energy Meter.
- ✧ The Disconnection Device shall be marked as the Disconnection Device for the Multi Function Energy Meter.

Disclaimer

We have checked the contents of this publication and every effort has been made to ensure that the descriptions are as accurate as possible.

However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors contained in the information given. The data in this manual is checked regularly and the necessary corrections are included in subsequent editions. We are grateful for any improvements that you suggest.

Chapter 1. Introduction

1.1 Product Introduction

SDM230-MB-2T is Eastron's new-greneration single phase smart energy meter.
The meter measures and displays the characteristics of single phase two wire (1p2w), including voltage, frequency, current, power, active and reactive energy, imported or exported. Energy is measured in terms of kWh, kVArh. Maximum demand current can be measured over preset periods of up to 60 minutes.

The meter is Max. 100A direct connected and do not need to connect with external current transformers(CT).
An M-Bus communication port is available on the meter for remote data transmission. SDM230-MB-2T also offers a 2 tariff port for dual power source measurement.

1.2 Product Characteristics

- Bi-directional measurement IMP & EXP
- M-bus parameters
- Multi-parameters measurement
- LCD with white backlit, adjustable backlit time

Measurements:

- Phase voltage: V
- Current: A
- Active power: W
- Reactive power: VAr
- Apparent power: VA
- Frequency: Hz
- Power factor: PF
- Active energy: Ep_imp (import active energy), Ep_exp (export active energy), Ep_total (total active energy)
- Reactive energy: Eq_imp (import reactive energy), Eq_exp (export reactive energy), Eq_total (total reactive energy)
- Maximum demand: MD

Setup:

- M-bus parameters
- Demand interval time
- Backlit time
- Clear Max. demand info & resettable energy
- Password modification

Chapter 2. Technical Parameters

2.1 Technical Parameters

Voltage AC (Un)	230V AC
Voltage Range	100 - 277V AC(L-N)
Current Input	0.15-10(100)A
Starting Current (Ist)	0.04A
Transition Current (Itr)	1A
Over Current Withstand	30Imax for 0.01S
Frequency Rating Value	50/60Hz
AC Voltage Withstand	4KV/1min
Impulse Voltage Withstand	6kV – 1.2/50μS waveform
Voltage Circuit Power Consumption	≤ 2W/10VA
Current Circuit Power Consumption	≤0.05VA
Display	LCD with white backlit
Max. reading	99999.99 kWh/kVArh

2.2 Mechanical Characteristics

Net Weight	≈166g
IP Degree of Protection (IEC 60529)	IP51 front display IP20 whole meter
Dimensions (DxHxW)	63*100*36mm
Mounting	DIN Rail 35mm
Material of Meter Case	Self-extinguishing UL 94 V-0
Mechanical Environment	M1

2.3 Performance Criteria

Operation Humidity	≤90% Non-condensing
Storage Humidity	≤95% Non-condensing
Operating Temperature	-40℃~+70℃
Storage Temperature	-40℃~+80℃
Pollution Degree	2
Altitude	≤2000m
Vibration	10Hz to 50Hz, IEC 60068-2-6

2.4 Electromagnetic Compatibility

Electrostatic Discharge	IEC 61000-4-2
Immunity to Radiated Fields	IEC 61000-4-3
Immunity to Fast Transients	IEC 61000-4-4
Immunity to Impulse Waves	IEC 61000-4-5
Conducted Immunity	IEC 61000-4-6
Immunity to Magnetic Fields	IEC 61000-4-8
Immunity to Voltage Dips	IEC 61000-4-11
Radiated Emissions	EN55032 Class B

Conducted Emissions	EN55032 Class B

2.5 Safety

Over-voltage Category	CAT III
Installation Category	CAT III
Insulating Encased Meter of Protective Class	II

2.6 Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.1V
Current	±0.5%	0.001A
Frequency	±0.2%	0.01Hz
Power Factor	±0.01	0.001
Active Power	±1%	0.001kW
Reactive Power	±1%	0.001kVAr
Apparent Power	±1%	0.001kVA
Active Energy	Class 1 or 0.5 IEC62053-21 Class B or C EN50470-3:2022	0.01kWh
Reactive Energy	Class 2 IEC 62053-23	0.01kVArh

2.7 Outputs

2.7.1 M-bus Communication

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:

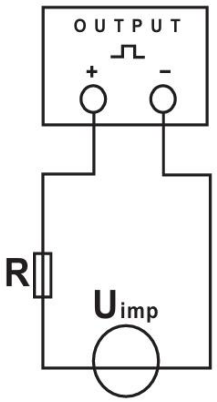
Baud rate	600, 1200, 2400(default), 4800, 9600bps
Parity	NONE/ ODD / EVEN(default)
Stop bits	1 or 2
M-Bus network primary address	001 to 250
M-Bus network secondary address	00 00 00 00 to 99 99 99 99 (default: the last 8 digits of SN)

2.7.2 Dual Source Measurement - 2 Tariffs

SDM230-MB-2T can measures energy from two different power supplies upon detection of a 230V voltage signal. For example, when public grid is power off and electric generator is on, the meter switches to tariff 2 measurement automatically.
The meter can also be used as a tariff meter. The tariff is controlled by an external time relay.

2.7.3 Pulse Output

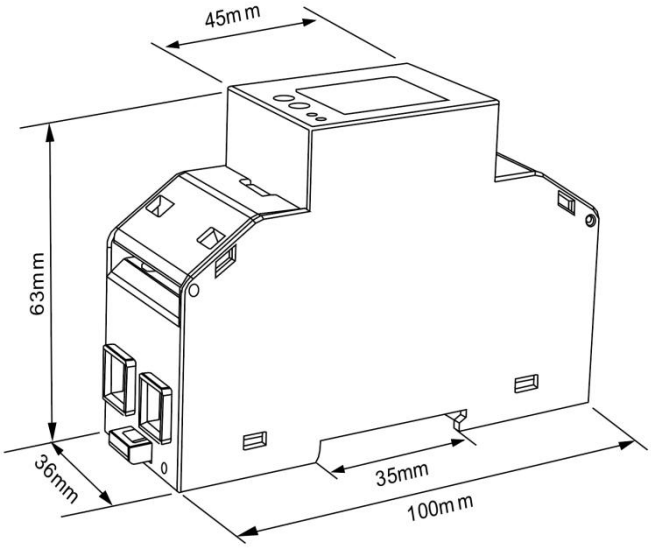
The meter is equipped with pulse output, which is fully isolated from the inside circuit. That generates pulses in proportion to the measured energy. The pulse output is polarity dependent, passive transistor output requiring an external voltage source for correct operation. For this external voltage 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 on the left.
Scrupulously respect polarities and the connection mode.
Opto-coupler with potential-free SPST-NO Contact.
Contact range: 5~27VDC
Max. current Input: 27mA DC

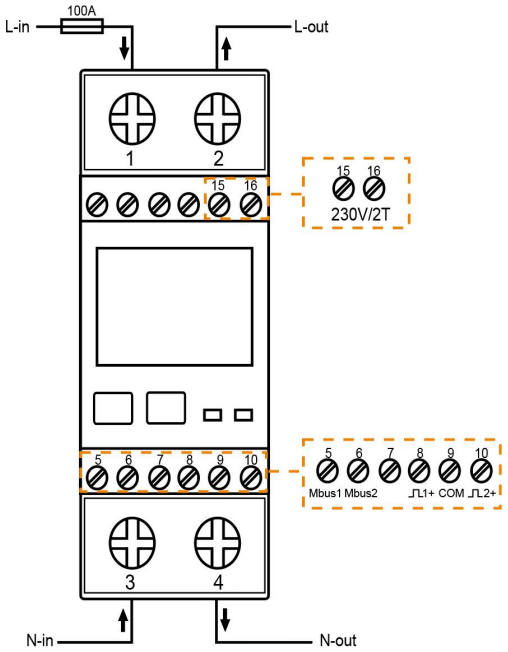
Pulse outputs type	Two independent channels of optocoupler passive pulse outputs	
Pulse output 1 (configurable)	Type	kWh/kVArh (total, imported, exported) Default: export kWh
	Constant	1, 10, 100, 1000 imp/kWh or kVArh Default: 1000 imp/kWh or kVArh
	Width	200, 100, 60mS Default: 100mS
Pulse output 2 (fixed)	Type	imported kWh
	Constant	1000imp/kWh
	Width	100mS

2.8 Dimensions



Height: 100mm
Width: 36mm
Depth: 63mm

2.9 Wiring Diagram



Wiring Guide

Terminal ①~④	Measurement Connection	Screw Connection
	Strip Length	17-18mm
	Screw	M7
	Rigid/Supple	4-35mm² (11~2AWG)
	Tightening Torque	3Nm
	Model	PH3
Terminal ⑤~⑩ ⑮⑯	Measurement Connection	Screw Connection
	Strip Length	6-7mm
	Rigid/Supple	0.5-1.5mm² (22 ~ 14AWG)
	Tightening Torque	0.4Nm
	Model	PH0

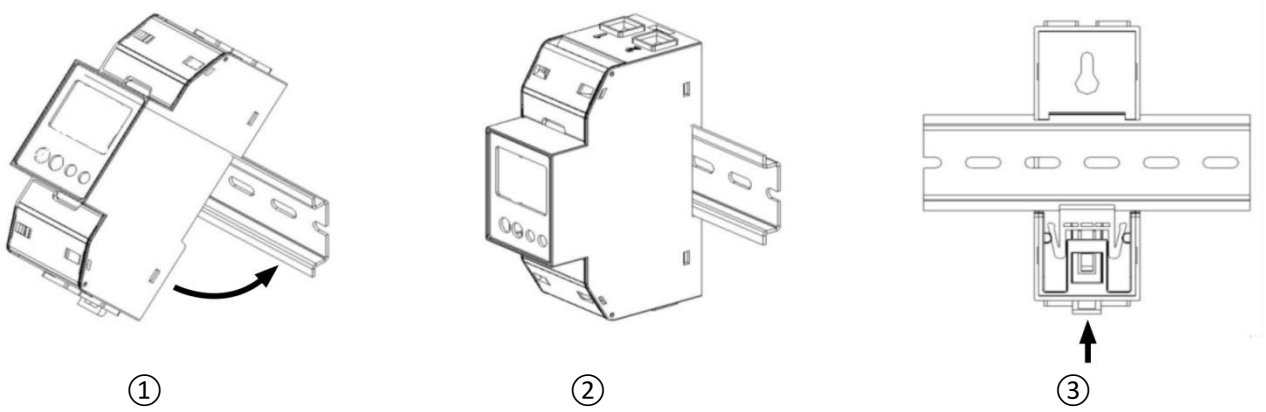
Installation

Step 1: Select a 35mm-wide DIN rail, Pull down the back-end clip on the meter to unlock the mounting mechanism.

Step 2: Align Upper Slot with DIN Rail. Position the upper slot of the meter's DIN rail groove onto the DIN rail, ensuring full contact (see Figure 1).

Step 3: Following the direction indicated in Figure 1, engage the lower slot of the DIN rail groove onto the DIN rail until audibly seated (see Figure 2).

Step 4: Push up the back-end clip to lock the meter firmly onto the DIN rail (see Figure 3).



Chapter 3. Operation

3.1 Installation Display

	The first screen lights up all display segments and can be used as a display check.
	The second screen show software version.
	The third screen show program number.
	Primary address
	Baud rate

	The interface performs a self-test and indicates the result if the test passes.

3.2 Button Functions

	◆ In measurement mode: Short press: switch display screen Long press: cyclic redundancy check code ◆ In setup mode: Short press: next page or increase value Long press: back to previous menu
	◆ In measurement mode: Long press: enter setup mode ◆ In setup mode: Short press: move the cursor Long press: confirm setting

3.3 Measurements

Each successive pressing of the  button selects a new range:

Can be viewed by pressing the button：
Total active energy in kWh → T1 active energy in kWh → T2 active energy in kWh → Imported active energy in kWh → Exported active energy in kWh → Resettable total active energy → Total reactive energy in kVArh→ T1 reactive energy in kVArh→ T2 reactive energy in kVArh → Imported reactive energy in kVArh → Exported reactive energy in kVArh → Resettable total reactive energy → Maximum total power demand → Phase to neutral voltage → Current of phase → Instantaneous active power in W → Instantaneous reactive power in VAr → Instantaneous volt-amps in VA → Power factor → Frequency → Pulse constant → Primary address → Secondary address-high address → Secondary address-low address → Baud rate → Total running time

	Total active energy in kWh

	T1 active energy in kWh (T1 blinking means under T1 calculation)
	T2 active energy in kWh
	Imported active energy in kWh
	Exported active energy in kWh
	Resettable total active energy

	Total reactive energy in kVArh
	T1 reactive energy in kVArh (T1 blinking means under T1 calculation)
	T2 reactive energy in kVArh
	Imported reactive energy in kVArh
	Exported reactive energy in kVArh

	Resettable total reactive energy
	Maximum total power demand
	Phase to neutral voltage
	Current of phase
	Instantaneous active power W

	Instantaneous reactive power in VAr
	Instantaneous volt-amps in VA
	Power factor
	Frequency
	Pulse constant

	Primary address
	Secondary address-high address
	Secondary address-low address
	Baud rate
	Total running time

3.4 Auxiliary Mode

Each successive Long pressing of the  button enter the auxiliary mode:

	CRC-high bytes
	CRC-low bytes

3.5 Setup Mode

The meter's settable parameters are password protected. Each successive long pressing on the button to enter setup mode. Some menu items, such as password, require a four-digit number entry while others, such as baud rate, require selection from a number of menu options.

1.Long press button, after entering the password, long-press again to enter setup mode;

2.Short press button, select the settings menu;

3.Long press button to access the edit interface, short press button to select the required settings, long-press again to confirm the setting;

4.Long press button to return to a higher menu level.

Settings interface	Set status	Optional configuration
		**Password** Default: 1000

		**Primary address setting** Range: 001~250 Default: 001
		**Secondary address setting** Range: 00000000 to 99999999 Default: the last 8 digits of SN **-High address**
		**Secondary address setting** **-Low address**
		**Baud rate setting** Option: 600, 1200, 2400, 4800, 9600bps Default: 2400bps
		**Parity bit setting** Option: EVEN, ODD, NONE Default: EVEN
		**Pulse output setting** Option: kWh or kVArh, import, export or total. Default: export kWh

		**Pulse const setting** Option: 1, 10, 100, 1000 imp/kWh or kVArh Default: 1000 imp/kWh or kVArh
		**Pulse duration setting** Option: 200, 100, 60mS Default: 100mS
		**Demand interval time setting** Option: 0, 5, 10, 15, 30, 60min Default: 60min
		**Wheel display time setting** Range: 000~255S Default: 0S
		**Backlit time setting** Range: 0~121min Default: 0 0 means always on 121 means always off
		**CLr** Option: Max. demand, resettable energy

		**Password setting** Range: 0000~9999 Default: 1000

Chapter 4. Declaration of Conformity (For MID meter only)

We, Zhejiang Eastron Electronic Co., Ltd. declares under our sole responsibility as the manufacturer that the three phase multi-function electrical energy meter SDM230-MB-2T 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 T 12800.
Identification number of the Notified Body: 0122.

If you have any question, please feel free to contact our sales team.

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