

# SDM18-M

*Smart Single Phase Energy Meter*



***USER MANUAL***

***2025 V1.00***

## Statements

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Eastron reserves all legal rights.

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.

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## Version History

Version	Date	Changes
1.00	2025-4-23	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

The SDM18-M is used to measure single-phase applications like residential, utility and Industrial. The unit measures and displays various important electrical parameters. It equips with a white back-lighted LCD screen for perfect reading. As well as an RS485 communication port for remote reading and monitoring. Bi-directional energy measurement makes it a good choice for solar PV energy metering. The compact design and din rail installation provides an easy and economical solution for your metering demand.

### 1.2 Product Characteristics

- Bi-directional measurement IMP & EXP
- RS485 Modbus RTU
- Multi-parameters measurement

#### **Measurements:**

- Phase voltage: V
- Current: A
- Active power: W
- Frequency: Hz
- Power factor: PF
- Active energy: Ep\_imp (import active energy), Ep\_exp (export active energy), Ep\_total (total active energy)

#### **Setup:**

- RS485 Modbus RTU

## Chapter 2. Technical Parameters

### 2.1 Technical Parameters

Voltage AC (Un)	230V AC
Voltage Range	176 - 276V AC
Current Input	0.5-10(100)A
Starting Current (Ist)	0.04A
Transition Current (Itr)	1A
Over Current Withstand	30I <sub>max</sub> 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	≤2.5VA
Display	LCD with white backlit
Max. reading	99999.9 kWh/kVARh

### 2.2 Mechanical Characteristics

Net Weight	≈94g
IP Degree of Protection (IEC 60529)	IP51 front display IP20 whole meter
Dimensions (DxHxW)	66*90*18mm
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
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## 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%	0.01A
Frequency	±0.2%	0.01Hz
Power Factor	±0.01	0.01
Active Power	±1%	0.1W
Reactive Power	±1%	NA
Apparent Power	±1%	NA
Active Energy	Class 1 IEC62053-21 Class B EN50470-1/3	0.01kWh
Reactive Energy	Class 2 IEC 62053-23	NA

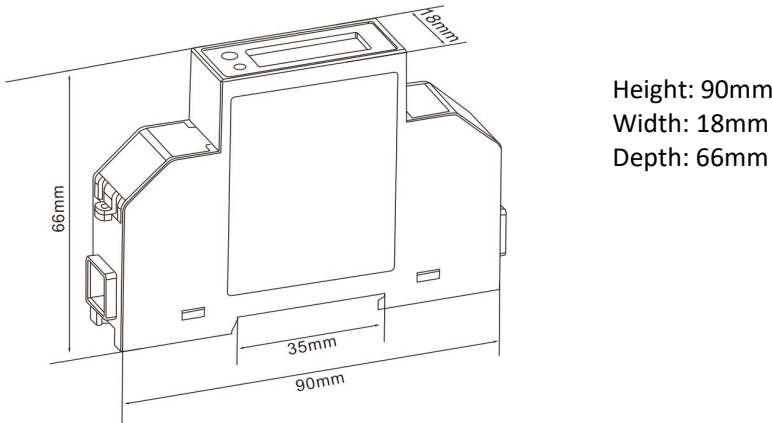
## 2.7 Outputs

### 2.7.1 RS485 Communication

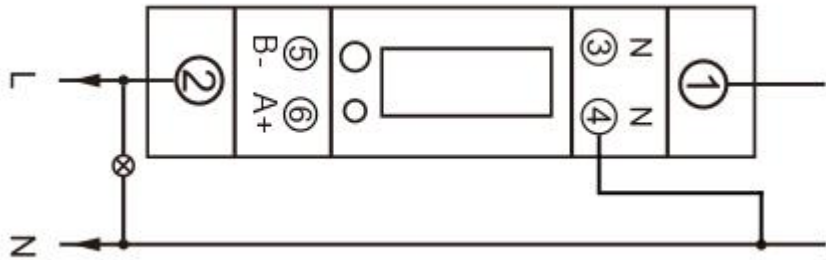
The following RS485 communication parameters can be configured from the Set-up menu:

Bus Type	RS485
Communication Protocol	Modbus RTU
Baud Rate	1200, 2400, 4800, 9600(default)
Address Range	001 to 247
Bus Load	64 PCS
Communication Distance	1000m
Parity Bit	none(default)/ odd / even
Stop Bit	1 or 2
Data Bits	8

2.8 Dimensions



2.9 Wiring Diagram






Wiring Guide


Terminal ①~②	Measurement Connection	Screw Connection
	Strip Length	11-12mm
	Screw	M7
	Rigid/Supple	4-35mm <sup>2</sup> (11~2AWG)
	Tightening Torque	3Nm
	Model	PH3
Terminal ③~⑥	Measurement Connection	Screw Connection
	Strip Length	5-6mm
	Rigid/Supple	0.5-1.5mm <sup>2</sup> (26 ~ 14AWG)
	Tightening Torque	0.4Nm
	Model	PH0

## 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.

### 3.2 Button Functions








	<ul style="list-style-type: none"> <li>◆ In measurement mode: Short press: switch display screen Long press: enter setup mode</li> <li>◆ In setup mode: Short press: next page or increase value Long press: setup parameters</li> </ul>
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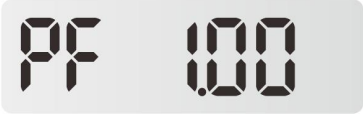






### 3.3 Measurements

Each successive pressing of the  button selects a new range:


Can be viewed by pressing the button:

Total active energy in kWh → Imported active energy in kWh → Exported active energy in kWh → Phase to neutral voltage → Current of phase → Instantaneous active power W → Frequency → Power factor → Modbus address → Baud rate → Parity bit → Software version → CRC-high bytes → CRC-low bytes







	Total active energy in kWh
	Imported active energy in kWh
	Exported active energy in kWh
	Phase to neutral voltage
	Current of phase
	Instantaneous active power W
	Frequency

	Power factor
	Modbus address
	Baud rate
	Parity bit
	Software version
	CRC-high bytes
	CRC-low bytes

### 3.4 Setup Mode

The user need keep pressing the button  for 3 seconds to enter into the Set-up Mode. Some menu items, such as address, require to input the digit numbers for setting while the others, such as baud rate, require selection from a number of menu options.

1. Long press button to enter into the setup mode;
2. Short press the button to select the setting menu;
3. Long press the button again to access to the edit interface. Short press button to select the required digit or selection from the menu options. After setting, please remember to wait 3 seconds to confirm the setting;
4. If it is the digit number setting, after setting the first digit and waiting 3 seconds, the next digit will flash and repeat the 3<sup>rd</sup> step until all the settings are done;
5. Short press the button to move to the next setting page. If without any operation, waiting for 10 seconds to return to the display menu.

Settings interface	Set status	Optional configuration
		<b>Address setting</b> Range: 001~247 Default: 001
		<b>Baud rate setting</b> Option: 1200, 2400, 4800, 9600bps Default: 9600bps
		<b>Parity bit setting</b> Option: EVEN, ODD, NONE Default: NONE

## 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 SDM18-M 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 SGS 0701.

Identification number of the Notified Body: 0120.

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

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