SDM72D-M

Smart Three Phase Four Wire 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	2025-4-21	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 SDM72D-M is a 3 phase energy meter with white back-lighted LCD screen for perfect reading. The unit measures and displays voltage, current, frequency, power factor, active power, reactive power, active energy and reactive energy, etc. A resettable partial energy is provided, the user can easily check the active energy imported and active energy exported during a certain period. SDM72D-M supports max.100A direct connection, saving the cost and avoiding the trouble to connect external CTs, giving the unit a cost-effective and easy operation. Built-in interfaces provide pulse and RS485 Modbus RTU outputs. Configuration is password protected.

1.2 Product Characteristics

- Bi-directional measurement IMP & EXP
- RS485 Modbus RTU
- Multi-parameters measurement
- LCD with white backlit, adjustable backlit time

Measurements:

- Phase voltage: V1, V2, V3
- Line voltage: V1-2, V2-3, V3-1
- Current: I1, I2, I3
- Active power: P1, P2, P3, P_total (total active power)
- Reactive power: Q1, Q2, Q3, Q_total (total reactive power)
- 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)

Setup:

- Modbus parameters
- Pulse parameters
- Backlit time
- Supply system 1p2w, 3p4w
- Password modification
- Clear resettable energy info

Chapter 2. Technical Parameters

2.1 Technical Parameters

Voltage AC (Un)	3*230/400V AC
Voltage Range	100 - 277V AC (L-N)
Voltage Between Phase	100 to 480V AC (L-L)
Current Input	0.5-10(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	≤2VA
Display	LCD with white backlit
Max. reading	999999.9 kWh/kVArh

2.2 Mechanical Characteristics

Weight	≈325g
IP Degree of Protection (IEC 60529)	IP51 front display IP20 whole meter
Dimensions (DxHxW)	66*100*72mm
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%	0.01W
Reactive Power	±1%	0.01VAr
Apparent Power	±1%	NA
Active Energy	Class 1 IEC62053-21 Class B EN50470-3:2022	0.01kWh
Reactive Energy	Class 2 IEC 62053-23	0.01kVArh

2.7 Outputs

2.7.1 RS485 Modbus RTU

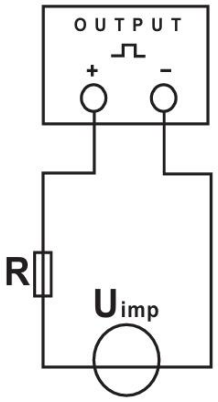
For Modbus RTU, the following RS485 communication parameters can be configured from the Set-up menu:

Bus Type	RS485
Communication Protocol	Modbus RTU
Baud Rate	2.4k/4.8k/9.6k(default)/19.2k /38.4k bps
Address Range	001 to 247
Max. Bus Load	64 PCS
Communication Distance	1000m
Parity Bit	none(default)/ odd / even
Stop Bit	1 or 2
Data Bits	8

2.7.2 Pulse output

The meter is equipped with a pulse output, which are fully isolated from the inside circuit. It 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.

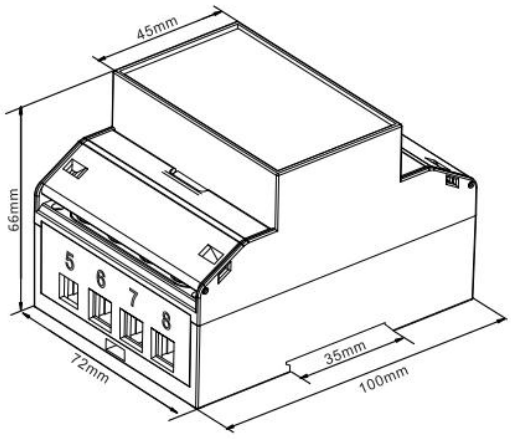
:



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

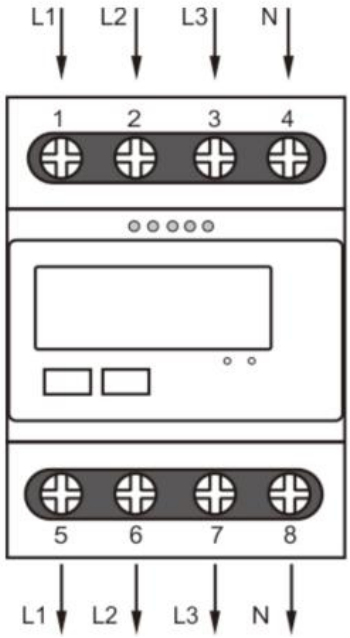
Pulse outputs type	Optocoupler passive pulse outputs	
Pulse output 1 (configurable)	Type	kWh(total, imported, exported) Default: total kWh
	Constant	1, 10, 100, 1000 imp/kWh Default: 1000 imp/kWh
	Width	200, 100, 60mS Default: 35mS
Pulse LED (fixed)	Type	imported kWh & exported kWh
	Constant	1000imp/kWh
	Width	100mS

2.8 Dimensions

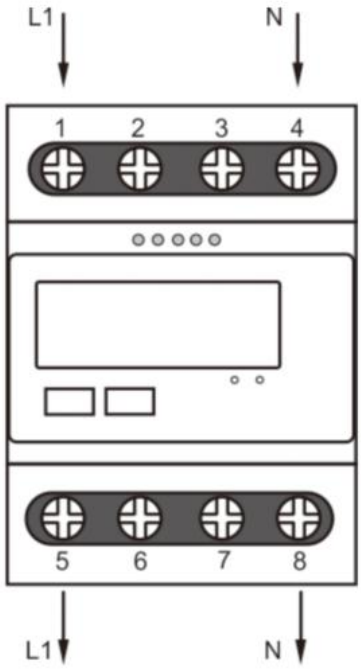


Height: 100mm
Width: 72mm
Depth: 66mm

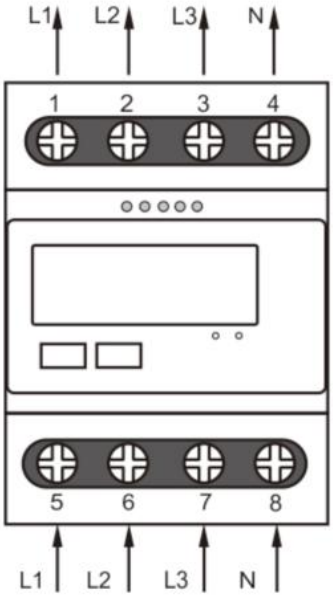
2.9 Wiring Diagram



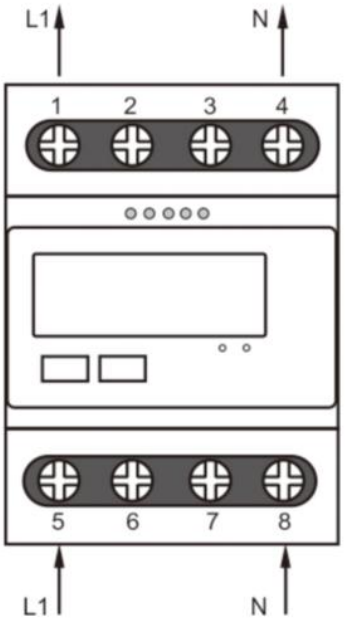
3P4W(default)



1P2W(default)



3P4W(reverse)



1P2W(reverse)

*Default current direction: Top-in, Bottom-out.If reverse wiring required (Bottom-in, Top-out), please specify bef ore ordering.

Wiring Guide

Terminal ①~⑧	Measurement Connection	Screw Connection
	Strip Length	12-13mm
	Screw	M5
	Rigid/Supple	4-25mm² (11~4AWG)
	Tightening Torque	3.5Nm
	Model	PH2
Terminal 	Measurement Connection	Screw Connection
	Strip Length	6-7mm
	Rigid/Supple	0.5-1.5mm² (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
	The forth screen show Pulse constant

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

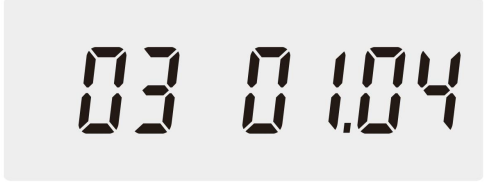
Each successive pressing of the  button selects a new range:

Can be viewed by pressing the button：
Total active energy → Resettable total active energy → Imported active energy in kWh → Exported active energy in kWh → Total reactive energy in kVArh → Resettable total reactive energy → L1-N voltage → L2-N voltage → L3-N voltage → L1 current → L2 current → L3 current → L1 active power → L2 active power → L3 active power → Total active power → L1 reactive power → L2 reactive power → L3 reactive power → Total reactive power → L1 power factor → L2 power factor → L3 power factor → Total power factor → Frequency → Pulse output type & Pulse constant → Modbus address → Baud rate → Parity bit → Software version

	Total active energy
	Resettable total active energy
	Imported active energy in kWh
	Exported active energy in kWh
	Total reactive energy in kVArh
	Resettable total reactive energy

	L1-N voltage
	L2-N voltage
	L3-N voltage
	L1 current
	L2 current
	L3 current
	L1 active power
	L2 active power

	L3 active power
	Total active power
	L1 reactive power
	L2 reactive power
	L3 reactive power
	Total reactive power
	L1 power factor
	L2 power factor

	L3 power factor
	Total power factor
	Frequency
	Pulse output type & Pulse constant •
	Modbus address
	Baud rate
	Parity bit
	Software version

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 setting 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 the higher menu level.

Settings interface	Set status	Optional configuration
		**Password** Default: 1000
		**Modbus address setting** Range: 001~247 Default: 001

		**Baud rate setting** Option: 2.4k, 4.8k, 9.6k, 19.2k, 38.4kbps default：9.6kbps
		**Parity bit setting** Option: EVEN, ODD, NONE Default: NONE
		Stop bit settomg Option: 1, 2 Default: 1
		**Pulse output setting** Option: kWh (import, export or Total) Default: Total kWh
		**Pulse const setting** Option: 1, 10, 100, 1000 imp/kWh Default: 1000 imp/kWh
		**Pulse duration setting** Option: 200, 100, 60mS Default: 35mS Note:When pulse constant is 1000imp/kWh, pulse width is fixed at 35mS and can not be adjusted.
		**Wheel display time setting** Range: 00~60S Default: 0
		**Backlit time setting** Option: ON, OFF, 5, 10, 20, 30, 60, 120min Default: 60min
		**System type setting** Option: 3P4W, 1P2W Default: 3P4W

		**Password** Range: 0000~9999 Default: 1000
		**CLR resettable energy**

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 SDM72D-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 T12831.
Identification number of the Notified Body: 0122.

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

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