SDM630-M

DIN Rail Smart Meter for Single and Three Phase Electrical Systems

USER MANUAL

2024 V1.0

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
1.0	2024-11-10	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 SDM630-M measures and displays the characteristics of single phase two wires (1p2w), three phase three wires (3p3w,) and three phase four wires(3p4w) supplies, 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. In order to measure energy, the unit requires voltage and current inputs in addition to the supply required to power the product.
SDM630-M supports Max. 100A direct connection, saves the cost and avoid the trouble to connect external CTs, giving the unit a cost-effective and easy operation. Built-in interfaces provides pulse and RS485 Modbus RTU outputs. Configuration is password protected.

1.2 Product Characteristics

- Measures kWh Kvarh, KW, Kvar, KVA, P, F, PF, Hz, dmd, V, A, etc.
- Bi-directional measurement IMP & EXP
- Two pulse outputs
- RS485 Modbus
- Din rail mounting 35mm
- 100A direct connection
- Class 0.5/C or Class 1 / B accuracy

Measurements

- Line voltage and THD% (total harmonic distortion) of all phases
- Line Frequency
- Currents, Current demands and current THD% of all phases
- Power, maximum power demand and power factor
- Active energy in total, imported and exported
- Reactive energy in total, imported and exported
- Carbon Emission

Setup:

- Changing password
- RS485 setting
- Supply system selection 1p2w, 3p3w,3p4w
- Demand Interval Time(DIT)
- Backlit interval
- CO2 rate
- Reset for demand measurements
- Pulse setting

Chapter 2. Technical Parameters

2.1 Technical parameters

Voltage AC (Un)	3*230/400VAC
Voltage range	100 - 276V a.c. (not for 3p3w supplies)
Voltage between phase	172 to 480V a.c (3p supplies only)
Current input	0.3-10(100)A
Over current withstand	30Imax for 0.01S
Frequency rating value	50/60Hz
Frequency range	45 - 65Hz
AC voltage withstand	4KV/1min
Impulse voltage withstand	6kV – 1.2μS waveform
Power consumption	≤ 2W/10VA
Display	LCD with white backlit
Max. reading	9999999.9 kWh/kVArh

2.2 Accuracy

Voltage	0.5% of range maximum
Current	0.5% of normal
Frequency	0.2% of mid frequency
Power factor	1% of unity(0.01)
Active Power	±1% of range maximum
Reactive power	±1% of range maximum
Apparent power	±1% of range maximum
Active energy	Class 1/0.5 IEC 62053-21, Class B/C EN50470-3:2022
Reactive energy	Class 2 IEC 62053-23

2.3 Communication

RS485Modbus RTU

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

Baud Rate	2400,4800,9600,19200,38400bps
Parity	NONE(default)/ ODD / EVEN
Stop bits	1 or 2
RS485 network address	nnn 3-digit number, 001 to 247

Pulse Outputs

The unit provides two pulse outputs. Both pulse outputs are passive type.

Pulse output 2 is fixed at 400imp/kWh, Pulse width at 100mS

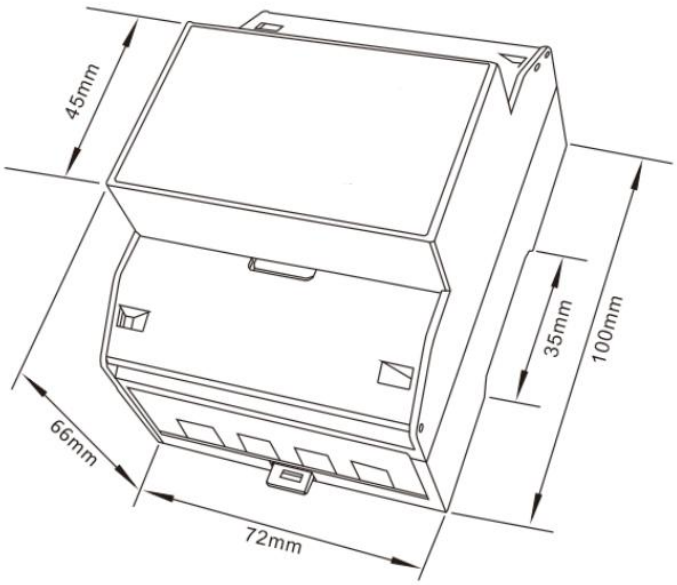
Pulse output 1 is configurable, parameters are as follows:

Pulse Output Energy Type	Total / Import/ Export kWh or kVarh (6 parameters)
Pulse Constant (Per Pulse)	dFt/0.01/0.1/1/10/100kWh/kVArh (dFt =2.5Wh/VArh)
Pulse Width	60/100/200mS

2.4 Performance criteria

Operation humidity	≤90% non-condensing
Storage humidity	≤95% non-condensing
Operating temperature	-40℃~+70℃
Storage temperature	-40℃~+80℃
International standard	EN50470-3: 2022 and IEC/EN62053-11: 2021 +A11: 2022
Installation category	CAT III
Protection against penetration of dust and water	front panel IP51 (indoor) Installed in a proper enclosure
Insulating encased meter of protective class	II
Altitude	≤ 2000m

2.5 Dimensions

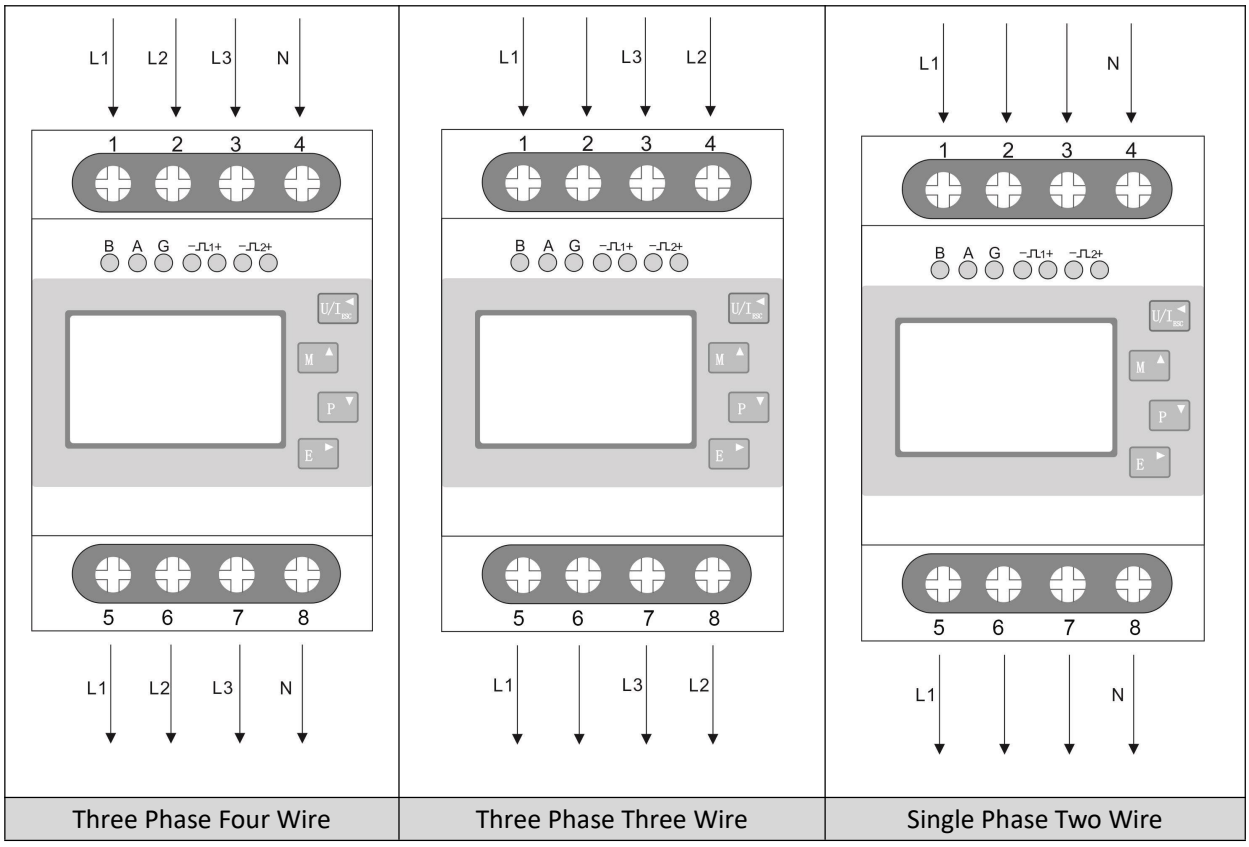


Height: 100 mm
Width: 72mm
Depth: 66mm

2.6 Wiring diagram

Input and Output

* reverse flow available



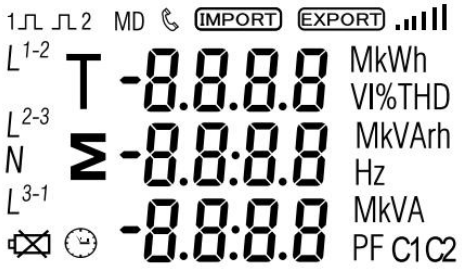
Three Phase Four Wire	Three Phase Three Wire	Single Phase Two Wire

Wiring Guide

Terminal ①②③④ ⑤⑥⑦⑧	Measurement Connection	Screw Connection	Diameter 3.0mm*PH1 
	Strip Length	14-15mm	
	Screw	M5	
	Rigid/supple	4-25mm²	
	Tightening torque	2.5 Nm	
	Model	PZ2	
Terminal 	Measurement Connection	Screw Connection	Diameter 3mm*PH1 
	Strip Length	6-7mm	
	Screw	M3	
	Fixed/flexible(Wire Range)	0.5-1.5mm² (22~ 14AWG)	
	Tightening torque	0.2 Nm	
	Model	PZ0	

Chapter 3. Operation

3.1 Start-up display

1		The first screen lights up all display segments and can be used as a display check.
2		The second screen indicates the firmware installed in the unit and its build number. *The build number(20 01.04) is for reference only. The actual build number changes according to product requirements.
3		The interface performs a self-test and indicates the result if the test passes.

After a short delay, the screen will display active energy measurements.

3.2 Button Functions:

The buttons operate as follows:

Button	Short click		Long press (3s)	
	Display mode	Setup mode	Display mode	Setup mode
	V1 V2 V3 V1-2 V2-3 V3-1 I1 I2 I3 IN V %THD I %THD	Return to previous menu		
	Hz PF PF1 PF2 PF3 MD of I1 I2 I3 MD of Power	Previous page or increase value	Addr Baud rate Parity Stop bit Software Version	

			CRC	
	P1 P2 P3 Q1 Q2 Q3 S1 S2 S3 P-t Q-t S-t	Next page or decrease value		
	Active E-t Reactive E-t Imp Active E Exp Active E Imp Reactive E Exp Reactive E CO2	Move to right side	Enter Setup mode	Confirm setting

3.3 Measurements

3.3.1 Voltage and current

Each successive pressing of the  button selects a new range:

1-1		Phase to neutral voltages * not available under 3p3w
1-2		Phase to neutral voltages * not available under 1p2w
2		Current on each phase

3		Neutral Current *not available under 3p3w, 1p2w
4		Phase to neutral voltage THD% * under 3P3W, it shows phase to phase voltage THD%
5		Current THD% for each phase

3.3.2 Frequency, Power factor and Demand

Each successive pressing of the  button selects a new range:

1		Frequency and Power Factor (total)
2		Power Factor of each phase *not available under 3p3w, 1p2w

3		Maximum Current Demand
4		Maximum Power Demand

3.3.3 Power

Each successive pressing of the  **button select a new range:**

1		Instantaneous Active Power in kW *not available under 3p3w, 1p2w
2		Instantaneous Reactive Power in kVAr *not available under 3p3w, 1p2w
3		Instantaneous Volt-amps in KVA *not available under 3p3w, 1p2w

4		Total kW, kVAr, kVA

3.3.4 Energy

Each successive pressing of the  button selects a new range:

1		Total active energy in kWh
2		Total reactive energy in kVArh
3		Imported active energy in kWh
4		Exported active energy in kWh

5		Imported reactive energy in kVArh
6		Exported reactive energy in kVArh
7		Carbon emission (unit: kg)

3.4 Setup Mode

To enter set-up mode, pressing the  button for 3 seconds, until the password screen appears.

Setting up is password-protected so you must enter the correct password (default ‘1000’) before processing.
If an incorrect password is entered, the display will show: PASS Err

To exit setting-up mode, press  repeatedly until the measurement screen is restored.

3.4.1 Set-up Entry Methods

Some menu items, such as password, require a four-digit number entry while others, such as supply system, require selection from a number of menu options.

3.4.1.1 Menu Option Selection

1) Use the 

and 

buttons to select the required item from the menu. Selection does not roll over between bottom and top of list.

2) Press 

to confirm your selection.

3) If an item flashes, then it can be adjusted by the 

and 

buttons. If not, there maybe a further layer.

4) Having selected an option from the current layer, press 

to confirm your selection.

5) Having completed a parameter setting, press 

to return to a higher menu level. You will be able to use the 

and 

buttons for further menu selection.

6) On completion of all set-up, press 

repeatedly until the measurement screen is restored.

3.4.1.2 Number Entry Procedure

When setting up the unit, some screens require the entering of a number. In particular, on entry to the setting up section, a password must be entered. Digits are set individually, from left to right.
The procedure is as follows:

1) The current digit to be set flashes and is set using the 

and 

buttons.

2) Press 

to confirm each digit setting.

3) After setting the last digit, press 

to exit the number setting routine.

3.4.2 RS485 Modbus ID

1		From the Set-up menu, use M and P buttons to select the Address ID. Range: 001-247 Default: 001
2-1		Long press E button to enter the selection routine. The current setting will be flashing.
2-2		Use M and P buttons to choose Modbus Address. On completion of the entry procedure, long press E button to confirm the setting
Press U/I ESC button to return the main set-up menu.		

3.4.3 Baud Rate

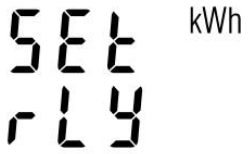
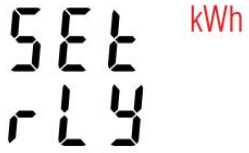
1		From the Set-up menu, use M and P buttons to select the Baud Rate option. Range: 2.4k. 4.8k, 9.6k, 19.2k, 38.4k Default: 9.6k
2-1		Long press E to enter the selection routine. The current setting will flash.

2-2		Use M and P buttons to choose Baud rate On completion of the entry procedure, long press E to confirm the setting
Press U/I ESC to return to the main set-up menu.		

3.4.4 Parity		
1		From the Set-up menu, use M and P buttons to select the Parity option. Range: EVEN, ODD, NONE Default: NONE
2-1		Long press E to enter the selection routine. The current setting will flash.
2-2		Use M and P buttons to choose Parity. On Completion of the entry procedure, long press E to confirm the setting
Press U/I ESC to return to the main set-up menu.		

3.4.5 Stop Bit		
1		From the Set-up menu, use M and P buttons to select the Stop Bit option. Range: 1 or 2 Default: 1

2-1		Long press E to enter the selection routine. The current setting will flash.
2-2		Use M and P buttons to choose Stop Bit On completion of the entry procedure, press E to confirm the setting. * when parity is NONE, the stop bit can be changed to 2
Press U/I BSC to return to the main set up menu.		

3.4.6 Pulse output energy type		
1		From the Set-up menu, use M and P buttons to select the Pulse output option. Range: Total kWh/ Total kVArh Import kWh/Export kWh Import KVArh/Export KVArh
2-1		Long press E to enter the selection routine. The unit symbol will flash.
2-2		Use M and P buttons to choose the selection . Long press E to confirm the setting

Press U/I ESC to return to the main set up menu.

3.4.7 Pulse Rate

1		From the Set-up menu, use M and P buttons to select the Pulse Rate option. Range: dFt/0.01/0.1/1/10/100kWh/kVArh. * Left picture shows 1 pulse = 10kWh/kVArh
2		Long press E to enter the selection routine. The current setting will flash. Use M and P buttons to choose pulse rate. On completion of the entry procedure, long press E to confirm the setting Note: dFt means 2.5Wh/VArh

Press U/I ESC to return to the main set up menu.

3.4.8 Pulse Width

1-1		From the Set-up menu, use M and P buttons to select the Pulse width option. Range:200, 100(default) or 60ms. *Left picture shows pulse width of 100mS
1-2		Long press E to enter the selection routine. The current setting will flash. Use M and P buttons to choose pulse width. On Completion of the entry procedure, long press E to confirm the setting and

Press U/I ESC to return to the main set -up menu.

3.4.9 Demand Integration Time		
1		From the set-up menu, use M and P buttons to select the DIT option. The screen will show the currently selected integration time. Range:0, 5, 8, 10, 15, 20, 30, 60 minutes
2-1		Long press E to enter the selection routine. The current time interval will flash.
2-2		Use M and P buttons to select the time required. Long press E to confirm the selection.
Press U/I ESC to exit the DIT selection routine and return to the menu.		

3.4.10 Backlit lasting time		
1		For example, if it's set as 5, the backlit will be off in 5minutes from the last time operation on the meter. Range: 0(always on),5,10,30,60,120 minutes Default: 60 minutes
2		Long press E to enter the selection routine. The current time interval will flash Use M and P buttons to select the time interval. Long press E to confirm the set-up.

Press U/I ESC to exit the LP selection routine and return to the menu.

3.4.11 Supply System

1		From the Set-up menu, use M and P buttons to select the System option. The screen will show the currently selected system type. Range: 1P2(W),3P3(W) ,3P4(W)
2-1		Long press E to enter the selection routine. The current selection will flash
2-2		Use M and P buttons to select the required system. Long press E to confirm the selection.

Press U/I ESC to exit the system selection routine and return to the menu.

3.4.12 CO2 Rate

1		From the Set-up menu, use M and P buttons to select the CO2 rate option.
2		Long press the E to enter the CO2 rate setting routine. The first digit will flash. Use M and P to set the first digit and press E to confirm your selection. The next digit

		will flash.
3		Repeat the procedure for the remaining three digits. After setting, long press E to confirm the setting
Press U/I ESC to return to the main set up menu.		

3.4.13 CLR		
1		From the Set-up menu, use M and P buttons to select the reset option.
2		Long press E to enter the selection routine. The MD will flash. Press E to confirm the clear setting.
Press U/I ESC to return to the main set up menu.		

3.4.14 Password Modification		
1		Use the M and P to choose the change password option.

2-1		Long press the E button to enter the change password routine. The new password screen will appear with the first digit flashing.
2-2		Use M and P to set the first digit and press E to confirm your selection. The next digit will flash.
3		Repeat the procedure for the remaining three digits After setting the last digit, press the E button for more than 3s to confirm the final setting.
Press U/I ESC to exit the number setting routine and return to the Set-up menu.		

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 multifunction electrical energy meter SDM630 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 T12801.
Identification number of the Notified Body: 0122.

Contact Us:

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

Eastron Electronic Co., Ltd.

No. 52, Dongjin Road, Nanhu, Jiaxing, Zhejiang, China
Tel: +86-573-83698881 Fax: +86-573-83698883
Email: sales@eastrongroup.com
www.eastrongroup.com

