SDM230-Lora

Smart Single Phase Energy Meter

USER MANUAL

2026 V1.1

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.

CONTENTS

Version History

Version	Date	Changes
1.0	2026-07-30	Initial issue
1.1	2026-8-07	Modify the parameter units in the manual.

Risk Information

Information for Your Own Safety

This manual is intended to provide key information for the safe operation of the equipment, and foreseeable risks have been assessed and identified. However, the manual cannot cover all potential hazards that may arise under all operating conditions. Operators should exercise caution based on actual site conditions and comply with all applicable safety regulations.

DANGER

Indicates an imminent hazardous situation. If the necessary safety measures are not taken, death or serious injury will result.

WARNING

Indicates a potentially hazardous situation. If the operating instructions are not followed, death or serious injury could result.

CAUTION

Indicates a low-level hazardous situation. If the operating instructions are not followed, minor or moderate injury may result, or property damage and meter damage may occur.

NOTICE

Indicates information that is not directly related to personal safety, but is important for proper operation, performance maintenance, or long-term reliability of the equipment.

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-Lora is a smart single-phase energy meter that adopts Point-to-Point (P2P) LoRa wireless communication technology. The meter measures and displays the characteristics of single-phase two-wire (1P2W) systems, including voltage, frequency, current, power, active energy, and reactive energy (imported or exported). Energy is measured in kWh and kvarh. Maximum demand current can be measured over preset periods of up to 60 minutes.

This product consists of two parts: the SDM230-Lora meter and the ES-LR1 receiver module. The meter supports direct connection up to 100A without external current transformers (CTs). Through LoRa point-to-point communication, the meter connects directly with the receiver module, enabling remote data collection without the need for gateways or network servers.

1.2 Product Composition

This product includes the following two parts:

1.2.1 SDM230-Lora Meter

Used to measure and display single-phase electrical parameters, with a built-in LoRa communication module.

1.2.2 ES-LR1 Receiver Module

Used to receive data sent from the meter via LoRa and output it through the RS485 interface. The module features an independent enclosure, antenna, indicator lights, and a pairing button.

1.3 Product Characteristics

- Multi-parameter measurement
- Communicative access to AMR and SCADA systems
- RS485 Modbus RTU communication interface
- LoRa Point-to-Point (P2P) wireless communication, no gateway required
- Direct pairing with ES-LR1 receiver module
- Bidirectional energy measurement
- Standard DIN-rail mounting
- White backlit LCD for easy data reading

1.4 Application Scenarios

SDM230-Lora is a single-phase multi-function energy meter suitable for scenarios such as residential complexes, commercial buildings, industrial facilities, and IoT-based energy management platforms. It adopts LoRa wireless communication technology, supporting remote meter reading and data monitoring, delivering a flexible, efficient, and low-power intelligent power management solution for users.

Chapter 2. Technical Parameters

2.1 Specifications

2.1.1 Meter Parameters

Electrical Characteristics		
Type of Measurement		RMS
Measurement Accuracy	Voltage	± 0.5%/± 0.2%
	Current	± 0.5%/± 0.2%
	Frequency	± 0.1%/± 0.05%
	Power Factor	± 0.01/± 0.005
	Active Power	± 1%/± 0.5%
	Reactive Power	± 2%
	Apparent Power	± 1%/± 0.5%
	Active Energy	Class 1/0.5 IEC62053-21 Class B/C EN50470-3:2022
	Reactive Energy	Class 2 IEC 62053-23
Data Update Rate		100ms
Technical parameters	Voltage AC (Un)	230V
	Voltage Range	100-277V AC(L-N)
	Frequency	50/60Hz
	Current Input	10A
	Maximum Current	100A
	Minimum Current	0.15A
	Starting Current (Ist)	0.04A
	Transition Current (Itr)	1A
	Over Current Withstand	30Imax for 0.01s
	AC Voltage Withstand	4KV/1min
	Impulse Voltage Withstand	6kV – 1.2/50μS waveform
	Voltage Circuit Power Consumption	≤ 2W/10VA
	Current Circuit Power Consumption	≤3VA
	Display	LCD with white backlit
Mechanical Characteristics		
Net Weight		≈162g
IP Degree of Protection (IEC 60529)		IP51 Front Display IP20 Whole Meter
Dimensions (WxHxD)		36* 100* 63mm
Mounting		DIN Rail 35mm
Material of Meter Case		Self-extinguishing UL 94 V-0
Mechanical Environment		M1
Environmental Characteristics		
Operating Temperature		-40℃ ~ +70℃
Storage Temperature		-40℃ ~ +80℃
Operation humidity		≤90% Non-condensing
Storage humidity		≤95% Non-condensing
Pollution Degree		II
Altitude		≤2000m
Vibration		10Hz ~ 150Hz, IEC 60068-2-6
Electromagnetic Compatibility		

Electrostatic Discharge	IEC 61000-4-2
Immunity to Radiated Fields	IEC 61000-4-3
Immunity to Fast Transients	IEC 61000-4-4
Surge (Impulse) Immunity	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	CISPR 32
Conducted Emissions	CISPR 32
Safety	
Installation Category	CAT III
Over-voltage Category	CAT III
Protective Class	II
Interface 1	LoRa
Protocol Standard	Four-Faith Private Protocol
Operating Mode	Transparent Mode
Operating Frequency Band	868MHz
Bandwidth	125KHz
Transmit Power	Max 22dBm
Air Data Rate	977bps（supports Spreading Factor SF10）
Pulse output 1 (configurable)	
Type	kWh/kvarh (total, imported, exported) Default: exported kWh
Constant	1, 10, 100, 1000 imp/kWh or kvarh Default: 1000 imp/kWh or kvarh
Width	200, 100, 60 ms Default:100ms
Pulse output 2 (fixed)	
Type	imported kWh
Constant	1000imp/kWh
Width	100ms

Technical Standards:

[1] EN IEC61326-1: 2021 Electromagnetic Compatibility Directive - Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

[2] EN IEC 61326-2-3: 2021 Electromagnetic Compatibility Directive

[3] EN61010-1:2010+A1:2019 Low Voltage Directive 2014/35/EU - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements

[4] EN61010-2-030:2010 Low Voltage Directive 2014/35/EU - Particular requirements for testing and measuring circuits

[5] EN 50470-3:2022 Electricity metering equipment - Part 3: Particular requirements - Static meters for AC active energy (class indexes A, B and C)

[6] EN IEC 62052-11:2021/A11:2022,Electricity metering equipment - General requirements, tests and test conditions - Part 11: Metering equipment

[7] IEC 62052-31:2015 Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests

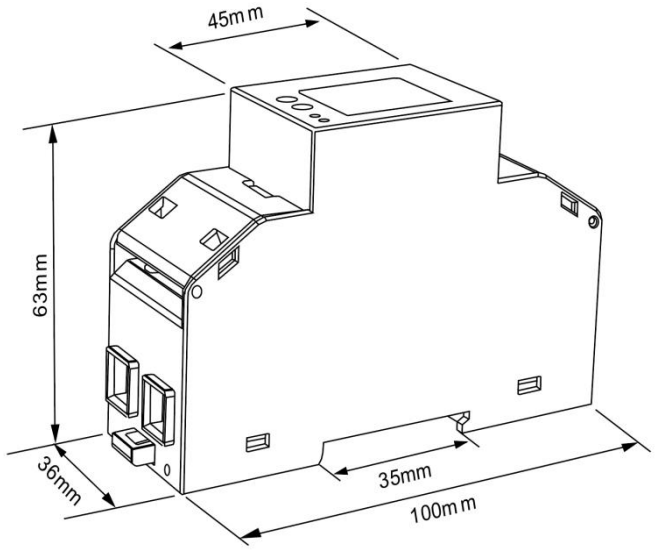
2.1.2 ES-LR1 Parameters

Technical Parameters	
Power Supply	9-15V DC
Mechanical Characteristics	
Net Weight	30g
IP Degree of Protection (IEC 60529)	IP20 (Indoor)
Dimensions (WxHxD)	43.8*58.8*16.5mm
Material of Meter Case	Self-extinguishing UL 94 V-0
Mechanical Environment	M1
Environmental Characteristics	
Operating Temperature	-25℃ ~ to +55℃
Storage Temperature	-25℃ to +80℃
Operation humidity	≤85%RH Non-condensing
Storage humidity	40%~85% RH Non-condensing
Electromagnetic Compatibility	
EMC	ETSI EN 301 489-1 V2.2.3
	ETSI EN 301 489-17 V3.3.1
	EN 55032:2015/A11:2020
	EN 55035:2017/A11:2020
	EN IEC 61000-3-2:2019/A1:2021
	EN 61000-3-3:2013/A2:2021
LVD	EN 62368-1:2014+A11:2017
RED	ETSI EN 300 328 V2.2.2
Interface 1	**RS485**
Interface 1 Protocol	Modbus-RTU
Communication Address	253
Transmission Mode	Half Duplex
Data Type	Floating Point
Transmission Distance	1000m Maximum
Transmission Speed	2400/4800/9600(Default)/19200bps
Parity	NONE(Default)/ODD/EVEN
Stop Bits	1/2
Response Time	<100 ms
LoRa	
Protocol Standard	Four-Faith Private Protocol
Operating Mode	Transparent Mode
Operating Frequency Band	868MHz
Bandwidth	125KHz
Transmit Power	Max 22dBm
Air Data Rate	977bps（supports Spreading Factor SF10）
Antenna Specifications	
Frequency Range (MHz)	868
Impedance (Ω)	50
Peak Gain (dBi)	-6.72

VSWR	≤3.5
Max Power (W)	10
Antenna Type	Omnidirectional
Polarization	Vertical
Operating Current (mA)	<20
Withstand Voltage (V)	<20
Antenna Efficiency	＞20%
Horizontal Coverage Angle	360°
Antenna Technical Parameters	
Operating Temperature	-40℃ ~ +80℃
Storage Temperature	-40℃ ~ +80℃
Material	TPE+CU
Antenna Dimensions	See drawing (Section 2.3.2 Receiver Module Dimensions)
Output Connector	MCX
Cable Length	55±2mm

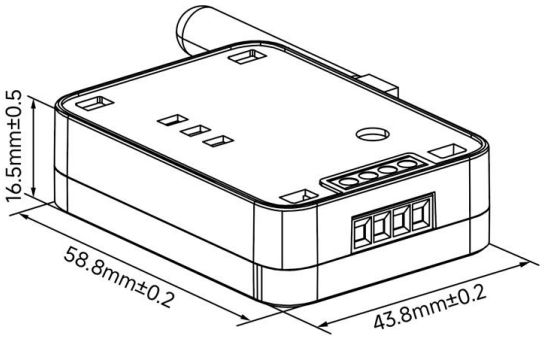
2.2 Dimensions

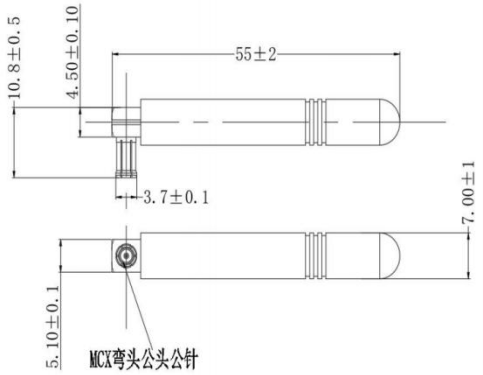
2.2.1 Meter Dimensions



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

2.2.2 Receiver Module Dimensions





Module Dimensions Antenna Dimensions

Note: The module is installed using adhesive backing. Before installation, ensure the mounting surface is flat, clean, dry, and free of oil. After applying, press firmly for more than 10 seconds to ensure secure adhesion.

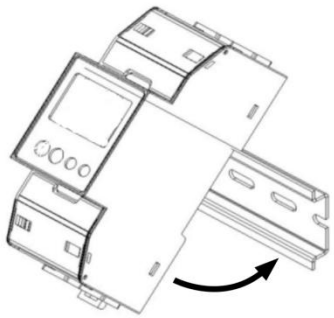
2.3 Mounting

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).



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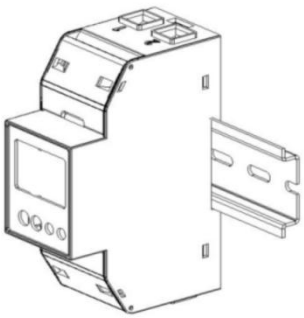

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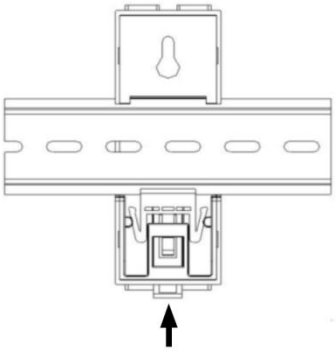

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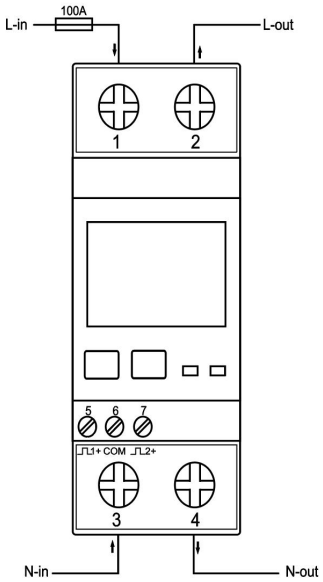
2.4 Wiring Diagram

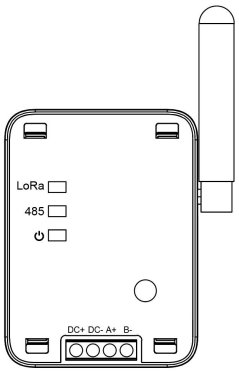
2.4.1 Meter Wiring Diagram



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 ⑤~⑦	Measurement Connection	Screw Connection
	Strip Length	5-6mm
	Rigid/Supple	0.5-1.5mm² (22 ~ 14AWG)
	Tightening Torque	0.4Nm
	Model	PH0

2.4.2 Receiver Module Wiring Diagram



Wiring Guide

Terminal (DC+、DC+、A+、B-)	Measurement Connection	Screw Connection
	Strip Length	5-6mm
	Rigid/Supple	0.5-1.5mm² (22 ~ 14AWG)
	Tightening Torque	0.4Nm
	Model	PH0

Chapter 3. Operation

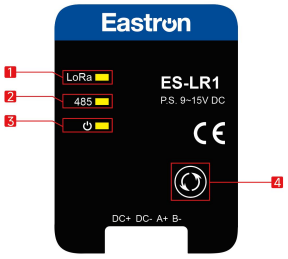
3.1 Button Function

3.1.1 Meter Button

There are two keys on the panel, and the key operations are divided into two types: long press and short press:
Long press: Press and hold the key for more than 3 seconds.
Short press: Release the key within 1 second after pressing.

Button	Short click		Long press (3s)	
	Display mode	Setup mode	Display mode	Setup mode
	Switch display screens	Next page or decrease value		Return to the previous menu
		Move to right side	Enter Setup mode	Confirm setting

3.1.2 Receiver Module Button and LED Indicators

Interface	Definition	Description
	1. LoRa LED (Yellow)	1. Solid: LoRa communication normal, device paired. 2. Flashing: Pairing in progress. 3. Off: Not paired or communication abnormal.
	2. RS485 LED (Green)	1. Flashing: RS485 data transmitting/receiving (flashes once per data transmission). 2. Off: No RS485 communication.
	3. Power LED (Red)	1. Solid: Module powered on, power supply normal.
	4. Pairing Button	Press button (3s): Module enters broadcast pairing mode, LoRa LED starts flashing.

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

3.3 Basic information display

Each successive pressing of the  button selects a new range:

	Total active energy in kWh
	Imported active energy in kWh

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

	Resettable total reactive energy
	power demand
	voltage
	Current
	Instantaneous active power in W

	Instantaneous reactive power in VAr
	Instantaneous volt-amps in VA
	Power factor
	Total running time

3.4 Setup Mode

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

1.Long press button, entering the password "1000", 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 the higher menu level.

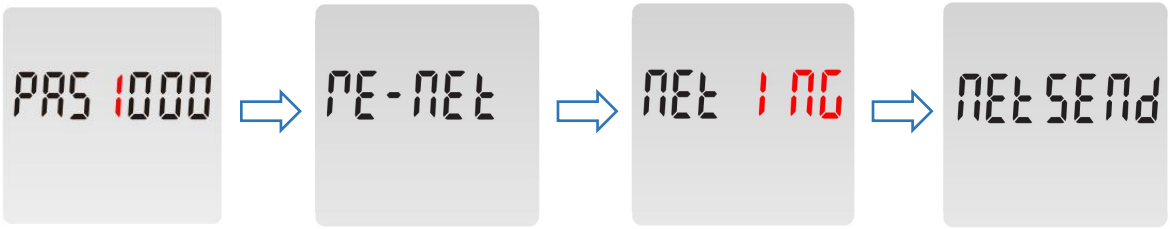
Settings interface	Set status	Optional configuration
		Password Default: 1000
		Meter ID Setting (Transparent Mode) Range: 0001~9999
		LR1 Address Setting (Transparent Mode) Range: 0001~9999
		Meter and ES-LR1 Pairing Connection
		

		Pulse output setting Option: kWh or kvarh, imported, exported or total. Default: exported 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: 15min
		Auto-Cycle display time setting Range: 0~255S Default: 005S
		Backlit time setting Option: OFF, ON,5, 10, 20, 30, 60,80,100,120min Default: 60min

		CLR Option: Max. demand, resettable energy
		Password setting Range: 0000~9999 Default: 1000

3.5 Pairing

1. Long press the button on the LR1 module to enter broadcast reception mode. The LoRa LED (yellow) will start flashing.
2. On the meter, enter the password to access the setup menu. Navigate to the Re-net menu, long press to confirm and enter flashing mode, then long press again to start broadcasting.



a. Wait 10~20 seconds. After the broadcast pairing process is complete, the pairing status LED will remain solid, indicating successful pairing.

b. Communication is now ready for normal operation.

Chapter 4. Communication Protocol

4.1 Summary

Modbus RTU is a protocol based on serial communication, its frame structure is compact and efficient. A complete Modbus RTU frame includes the following parts:

Field	Length	Explain
Device address	One byte	The address of the machine is 1 to 247, with 0 reserved for broadcast addresses.
Function code (1)	One byte	Indicates the type of operation requested by the master device (such as reading registers, writing coils, etc.).
Data fields	Variable	Contains specific data such as register addresses and register values that are requested or responded to.
CRC check	Two bytes	Used to verify the integrity of frames and ensure the reliability of data transmission.

(1): Common function codes:
01: Read Coils
02: Read Discrete Inputs
03: Read the Holding register
04: Read the Input register
05: Write to Single Coil
16: Write to Multiple register

4.2 Modbus Frame Format

(1) Request frame

First byte Last byte

From the machine device address	Function code	The starting address of the register (high byte)	The starting address of the register (lower byte)	Number of registers (high byte)	Number of registers (lower byte)	CRC check (low byte)	CRC check (high byte)

The meaning of each byte is as follows:
1. Device address (byte 1): The host device specifies which slave device to communicate with through this address.
2. Function code (byte 2): Defines the type of operation requested by the host device.
3. Register starting address (bytes 3 and 4): indicates the starting address of the register to be operated. Byte 3 is the high byte, and byte 4 is the low byte. For example, 00 01 indicates that the register address is 0x00 01 .
4. Register number (byte 5 and byte 6): indicates the number of registers to be read or written. Byte 5 is the high byte and byte 6 is the low byte. For example, 00 02 indicates that two registers are read.
5. CRC check (bytes 7 and 8): Used to verify the integrity of a frame. CRC check is based on all bytes in the frame (from the device address to the data field). Byte 7 is the low byte (the lowest valid bit), and byte 8 is the high byte (the highest valid bit).

(2) Normal response frame

First byte Last byte

From the machine device address	Function code	Number of bytes	First register data (high byte)	First register data (low byte)	Second register data (high byte)	Second register data (low byte)	CRC check (low byte)	CRC check (high byte)

The meaning of each byte is as follows:

1. Device address (byte 1): Consistent with the device address in the request frame, indicating the slave device address of the response.
2. Function code (byte 2): Consistent with the function code in the request frame, indicating the operation type.
3. Number of bytes (bytes 3): indicates the number of bytes returned by the data. For example, if two registers are read and each register is 2 bytes, then the number of bytes is 4.
4. Data Fields (Bytes 4 to 7): These contain the register data returned by the slave device. Floating-point numbers (Float) are split into two 16-bit registers (4 bytes), with each register occupying 2 bytes. Use big-endian (Big-Endian) format, where Register 1 represents the high 16 bits (Bytes 1 and 2), and Register 2 represents the low 16 bits (Bytes 3 and 4). For example: the return data is 12 345678, where 12 34 indicates the value of the first register is 0x12 34 , and 56 78 indicates the value of the second register is 0x56 78 .
5. CRC check (bytes 8 and 9): Used to verify the integrity of the response frame. The CRC check is based on all bytes in the frame (from the device address to the data field).

(3) Abnormal response frame

First byte Last byte

From the machine device address	Abnormal function code (Feature code + 0x80)	Exception code	CRC check (low byte)	CRC check (high byte)

The meaning of each byte is as follows:
1. Device address (byte 1): Confirm whether the slave device address is consistent with the request frame.
2. Abnormal function code (byte 2): Check whether the highest bit of the function code is 1. Abnormal function code = normal function code + 0x80.
3. Exception code (byte 3): Illegal request.
4. CRC check (bytes 4 and 5): Used to verify the integrity of the response frame. CRC check is based on all bytes in the frame (from the device address to the data field).

4.3 Input Registers

Function code	Description
04	Read Input Register

Address (Register)	**Input Register Parameter**				**Modbus Protocol Start Address Hex**	
	Description	**Length (bytes)**	**Data Format**	**Unit**	**H Byte**	**Lo Byte**
30001	Line to neutral volts.	4	Float	V	00	00
30007	Current.	4	Float	A	00	06
30013	Active power.	4	Float	W	00	0C
30019	Apparent power	4	Float	VA	00	12
30025	Reactive power	4	Float	VAr	00	18
30031	Power factor	4	Float	None	00	1E
30037	Phase angle.	4	Float	Degree	00	24
30071	Frequency	4	Float	Hz	00	46

30073	Import active energy	4	Float	kWh	00	48
30075	Export active energy	4	Float	kWh	00	4A
30077	Import reactive energy	4	Float	kvarh	00	4C
30079	Export reactive energy	4	Float	kvarh	00	4E
30081	Total VAh	4	Float	kVAh	00	50
30083	Ah	4	Float	Ah	00	52
30085	Total system power demand	4	Float	W	00	54
30087	Maximum total system power demand	4	Float	W	00	56
30089	Current system positive power demand	4	Float	W	00	58
30091	Maximum system positive power demand	4	Float	W	00	5A
30093	Current system reverse power demand	4	Float	W	00	5C
30095	Maximum system reverse power demand	4	Float	W	00	5E
30259	Current demand.	4	Float	A	01	02
30265	Maximum current demand.	4	Float	A	01	08
30343	Total active energy	4	Float	kWh	01	56
30345	Total reactive energy	4	Float	kvarh	01	58
30347	L1 import kWh	4	Float	kWh	01	5A
30353	L1 export kWh	4	Float	kWh	01	60
30359	L1 total kWh	4	Float	kWh	01	66
30365	L1 import kvarh	4	Float	kvarh	01	6C
30371	L1 export kvarh	4	Float	kvarh	01	72
30377	L1 total kvarh	4	Float	kvarh	01	78
30385	Current resettable total active energy	4	Float	kWh	01	80
30387	Current resettable total reactive energy	4	Float	kvarh	01	82

Example:
1. Special parameter description plus mark, here is the description.

Example:
The host sends a request frame to read the L1 phase voltage (register: 30001):

field	Value (hexadecimal)	explain
Device address	0x01	The address of the meter is 1
Function code	0x04	Read the input register
Start address high byte	0x00	The high byte of the starting address of the register
Low byte of starting address	0x00	The low byte of the starting address of the register
Register count high byte	0x00	Read the high byte of the register count
Register count low byte	0x02	Read the low byte of the register count
The CRC check the low byte	0x71	The CRC check the low byte

The CRC check the high byte	0xCB	The CRC check the high byte

After receiving the request, the meter device returns the data in the register. Assuming that the L1 phase voltage stored in the register is 230V:

field	Value (hexadecimal)	explain
Device address	0x01	The address of the meter is 1
Function code	0x04	Read the input register
Number of bytes	0x04	Number of bytes of data returned (2 registers x 2 bytes)
Data byte 1	0x43	The high byte of the first register
Data low byte 1	0x66	The low byte of the first register
Data high byte 2	0x00	The high byte of the second register
Data low byte 2	0x00	The low byte of the second register
The CRC check the low byte	0x0E	The CRC check the low byte
The CRC check the high byte	0x1F	The CRC check the high byte

* The hexadecimal 0X43660000 is converted to decimal as 230.

4.4 Holding Registers

Function code	Description
10	Write parameter holding register
03	Read parameter holding register

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
		High Byte	Low Byte		
40003	Demand Period	00	02	Write demand period: 0 ~ 60 minutes, default 15. Setting the period to 0 will cause the demand to show the current parameter value, and demand max to show the maximum parameter value since last demand reset. **Length : 4 byte** **Data Format : Float**	r/w
40013	Pulse output 1 Width	00	0C	Write relay on period in Milliseconds: 60, 100 or 200, default 100. **Length : 4 byte** **Data Format : Float**	r/w
40025	Password	00	18	Write password for access to protected registers. Default password is 1000. **Length : 4 byte** **Data Format : Float**	r/w

40033	SDM230-Lora ID	00	20	ID of SDM230-LR, can not be same as ES-LR1 Range:1~9999 **Length : 2 byte** **Data Format : HEX**	r/w
40034	ES-LR1 ID	00	21	ID of ES-LR1, can not be same as SDM230-LR Range:1~9999 **Length : 2 byte** **Data Format : HEX**	r/w
40059	Scroll	00	3A	default 5, unit s Set the range from 0 to 255, where 0 represents no wheel display **Length : 4 byte** **Data Format : Float**	r/w
40061	Backlight on time	00	3C	default 60, unit min Set the range from 0 to 121, where 0 represents the backlight always on. 121 represents turning off the LCD **Length : 4byte** **Data Format : Float**	r/w
40087	Pulse1 Energy Type	00	56	Write MODBUS Protocol input parameter for pulse relay 1: 1=Import Wh; 2=Import and ExportWh; 4=Export Wh; (default) 5=Import VArh; 6=Import and Export VArh; 8=Export VArh. **Length : 4byte** **Data Format : Float**	r/w
461457	Reset	F0	10	00 00 ： reset the Maximum demand 00 03：reset the resettable energy **Length : 2 byte** **Data Format: Hex**	wo
463761	Pulse 1 constant	F9	10	0000: 0.001kWh（kvarh）/imp（default） 0001: 0.01kWh（kvarh）/imp 0002: 0.1kWh（kvarh）/imp 0003: 1kWh（kvarh）/imp **Length : 2 byte** **Data Format: Hex**	r/w
463777	Measurement mode	F9	20	0001: mode 1(total = import) 0002: mode 2(total = import + export)（default） 0003: mode 3 (total = import - export) **Length : 2 byte**	r/w

				Data Format: Hex	
463793	Running time	F9	30	Continuous working period--hour **Length : 4byte** **Data Format : Float**	r/w
464513	Serial Number	FC	00	Serial Number **Length : 4 byte** **Data Format : unsigned int32** **Note: only read**	ro
464515	Meter code	FC	02	Meter code = 11 04 Length: 2 bytes **Data Format: Hex** **Note: read only**	ro
464645	Firmware version	FC	84	Firmware version XX.YY first byte: XX， second byte: YY **Length : 2 byte** **Data Format : Hex** **Note: Only read**	ro
464647	Firmware number	FC	86	Firmware number: XXXX **Length : 2 byte** **Data Format : Hex** **Note: Only read**	ro
464649	CRC check	FC	88	CRC check **Length : 4 byte** **Data Format : Hex** **Note: Only read**	ro

pay attention to:
1. Special parameter description plus mark, here is the description.

Example:
The host sends a request frame and reads the demand cycle (register: 40003):

Field	Value (hexadecimal)	Explain
Device address	0x01	The address of the meter is 1
Function code	0x03	Read the hold register
Start address high byte	0x00	The high byte of the starting address of the register
Start address low byte	0x02	The low byte of the starting address of the register
Register count high byte	0x00	Read the high byte of the register count
Register count low byte	0x02	Read the low byte of the register count
The CRC check the low byte	0x65	The CRC check the low byte
The CRC check the high byte	0xCB	The CRC check the high byte

After receiving the request, the meter returns the data in the register. Suppose the demand cycle stored in the

register is 60 minutes:

Field	Value (hexadecimal)	Explain
Device address	0x01	The address of the meter is 1
Function code	0x03	Read the hold register
Number of bytes	0x04	Number of bytes of data returned (2 registers x 2 bytes)
Data high byte 1	0x42	The high byte of the first register
Data low byte 1	0x70	The low byte of the first register
Data high byte 2	0x00	The high byte of the second register
Data low byte 2	0x00	The low byte of the second register
The CRC check the low byte	0xEF	The CRC check the low byte
The CRC check the high byte	0x90	The CRC check the high byte

The host sends out a request frame and sets the demand cycle to 15 minutes (register: 40003):

Field	Value (hexadecimal)	Explain
Device address	0x01	The address of the meter is 1
Function code	0x10	Write to multiple registers
Start address high byte	0x00	The high byte of the starting address of the register
Start address low byte	0x02	The low byte of the starting address of the register
Register count high byte	0x00	Write the high byte of the number of registers
Register count low byte	0x02	Write the low byte of the number of registers
Number of bytes	0x04	Number of bytes written into data (2 registers x 2 bytes)
Data high byte 1	0x41	The high byte of the first register
Data low byte 1	0x70	The low byte of the first register
Data high byte 2	0x00	The high byte of the second register
Data low byte 2	0x00	The low byte of the second register
The CRC check the low byte	0x67	The CRC check the low byte
The CRC check the high byte	0x91	The CRC check the high byte

After receiving the request, the meter sets the demand cycle to 15 minutes and returns a response frame:

Field	Value (hexadecimal)	Explain
Device address	0x01	The address of the meter is 1
Function code	0x10	Write to multiple registers
Start address high byte	0x00	The high byte of the starting address of the register
Low byte of starting address	0x02	The low byte of the starting address of the register
Register count high byte	0x00	Write the high byte of the number of registers
Register count low byte	0x02	Write the low byte of the number of registers
The CRC check the low byte	0xE0	The CRC check the low byte
The CRC check the high byte	0x08	The CRC check the high byte

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

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