SDM630MCT-DI

Smart Three 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	2025-09-17	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

SDM630MCT-DI are Eastron's new-greneration three-phase smart energy meters.
The meter measures and displays the characteristics of single phase two wire (1p2w), single phase three wire (1p3w), three phase three wire (3p3w) and three phase four wire (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. The requisite current input(s) are obtained via current transformers(CT).

The meter can be configured to work with a wide range of CTs with 1A/5A output, giving the unit a wide range of operation. An RS485 communication port is available on the meter for remote data transmission.

This unit can be powered from a separate auxiliary AC power supply. Alternatively it can be powered from the monitored supply, where appropriate.

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, IN
- Active power: P1, P2, P3, P_total (total active power)
- Reactive power: Q1, Q2, Q3, Q_total (total reactive power)
- Apparent power: S1, S2, S3, S_Total (total apparent 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)
- THD-I and THD-U
- Maximum demand: MD

Setup:

- RS485 Modbus RTU
- Demand interval time
- Backlit time
- Supply system 1p2w, 1p3w,3p3w,3p4w
- Reset
- Password modification
- DI information
- CO2 rate

Chapter 2. Technical Parameters

2.1 Technical Parameters

Aux. Power Supply	100-480V AC/140-680V DC
Voltage AC (Un)	3*230/400V AC
Voltage Range	100 - 277V AC (L-N)
Voltage Between Phase	100 - 480V AC (L-L)
Current Input	0.05-5(6)A
Starting Current (Ist)	0.005A
Transition Current (Itr)	0.25A
Over Current Withstand	20Imax for 0.5S
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	999999.99 kWh/kVArh

2.2 Mechanical Characteristics

Net Weight	≈255g
IP Degree of Protection (IEC 60529)	IP51 Front Display IP20 Whole Meter
Dimensions (DxHxW)	65*94.5*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
Current Inputs	Require External Current Transformer for Insulation
Insulating Encased Meter of Protective Class	II

2.6 Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.1V
Current	±0.5%	0.1A
Frequency	±0.2%	0.01Hz
Power Factor	±0.01	0.001
Active Power	±1%	0.01kW
Reactive Power	±1%	0.01kVAr
Apparent Power	±1%	0.01kVA
Active Energy	Class 1 or 0.5S IEC62053-22 Class B or C EN50470-3:2022	0.01kWh
Reactive Energy	Class 2 IEC 62053-23	0.01kVArh

2.7 Digital input

SDM630MCT-DI equips with two digital inputs.

Contact type	Wet Contact
Input resistance	10k Ω
Max.frequency	1kHz
Response time	10ms
Isolation	2.5KV ac for 1min

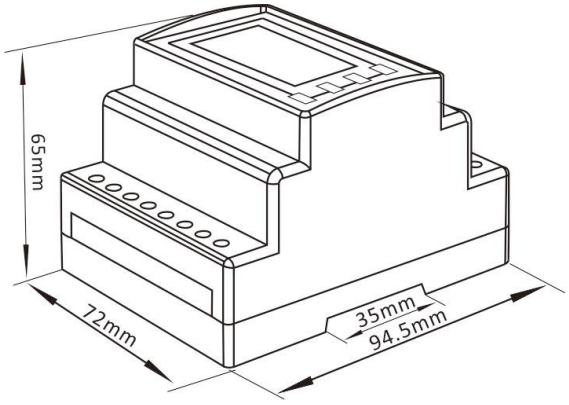
2.8 Communication

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	2400/4800/9600(default)/19200 /38400 bps
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

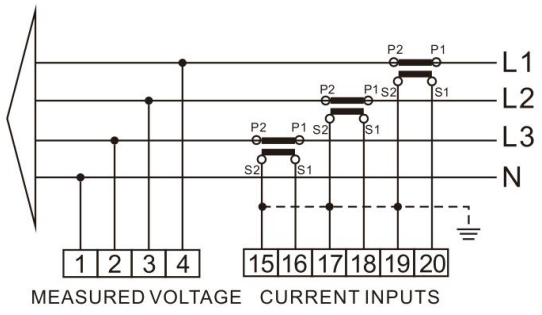
2.9 Dimensions



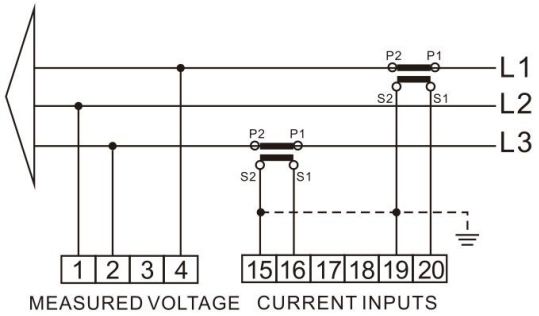
Height: 94.5 mm
Width: 72mm
Depth: 65mm

2.10 Wiring Diagram

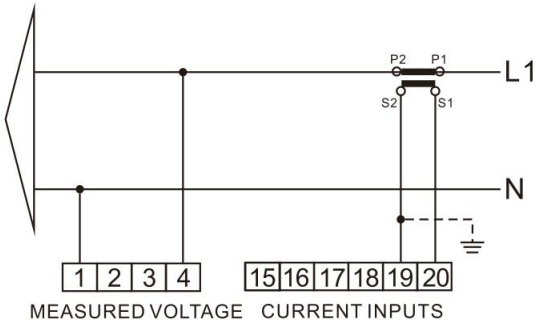
Current and Voltage Inputs



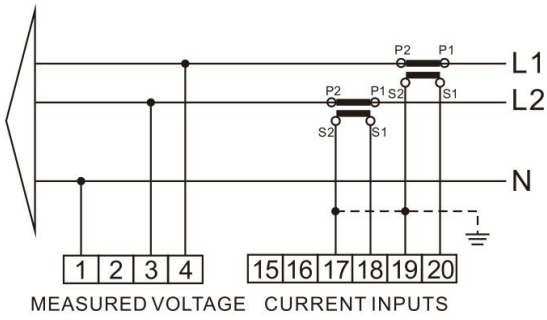
3P4W 3CT 3PT



3P3W 2CT 2PT

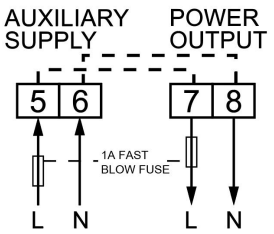


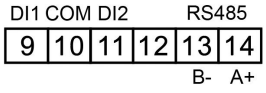
1P2W(L+N) 1CT 1PT



1P3W 2CT 2PT

Definitions of Other Terminals





Wiring Guide

Terminal ①~⑧	Measurement Connection	Screw Connection
	Strip Length	6-7mm
	Screw	M2.5
	Rigid/Supple	0.5-2.5mm² (22~12AWG)
	Tightening Torque	0.4Nm
	Model	PH0
Terminal ⑨~⑳	Measurement Connection	Screw Connection
	Strip Length	6-7mm
	Screw	M3
	Rigid/Supple	0.5-2.5mm² (30 ~ 14AWG)
	Tightening Torque	0.4Nm
	Model	PH0

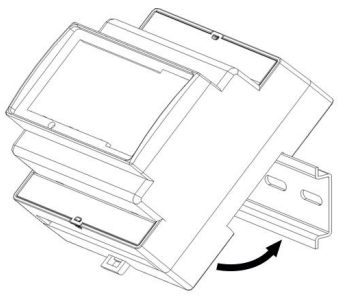
Installation

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).



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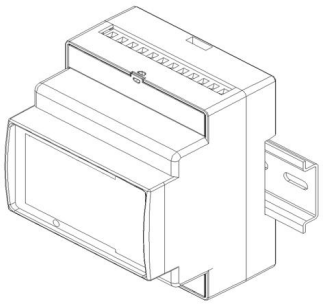

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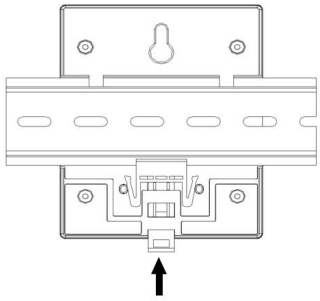
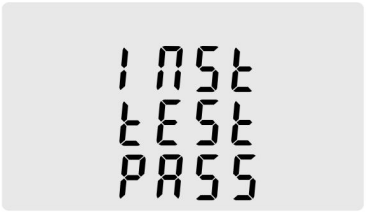


③

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 and the third screen indicates the firmware installed in the unit. Note：the actual display might be different with the left on here.
	
	The interface performs a self-test and indicates the result if the test passes.
	Total Active Energy

3.2 Button Functions

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	Address Baud Rate Parity Bit Stop Bit CT1, CT2 PT1, PT2 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 DI1 counts DI2 counts DI1 State DI2 State CO2	Move to right side	Enter Setup mode	Confirm setting

3.3 Measurements

3.3.1 Voltage and current

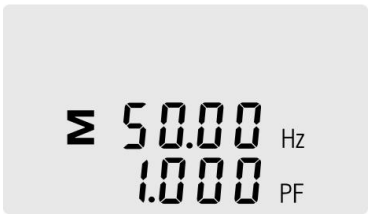
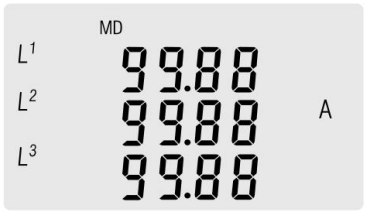
Each successive pressing of the  button selects a new range:

	Phase to neutral voltage (Not available under 3P3W)
	Phase to phase voltage (Not available under 1P2W)
	Current of each phase

	Neutral current (Not available under 3P3W &1P2W)
	Phase to neutral voltage THD% (Phase to phase voltage THD% under 3P3W)
	Phase current THD%

3.3.2 Frequency, Power factor and Demand

Each successive pressing of the  button selects a new range:

	Frequency and Power Factor (total)
	Power Factor of each phase (Not available under 3P3W &1P2W)
	Maximum current demand of each phase

	Maximum total power demand

3.3.3 Power

Each successive pressing of the  button select a new range:

	Instantaneous Active Power in kW (Not available under 3P3W &1P2W)
	Instantaneous Reactive Power in kVAr (Not available under 3P3W &1P2W)
	Instantaneous Volt-amps in kVA (Not available under 3P3W &1P2W)
	Total kW, kVAr, kVA

3.3.4 Energy

Each successive pressing of the  button shows following measurements:

	Total active energy in kWh
	Total reactive energy in kVArh
	Imported active energy in kWh
	Exported active energy in kWh
	Imported reactive energy in kVArh
	Exported reactive energy in kVArh
	DI1 Counts

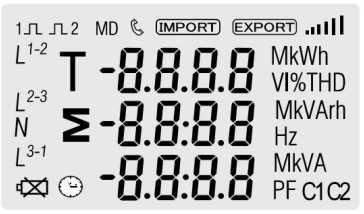
	DI2 Counts
	DI1 State
	DI2 State
	Carbon Emission (kg)

3.4 Auxiliary Mode

Each successive Long pressing of the M button enter the auxiliary and each successive pressing of the P button select a new range:

	Address
	Baud Rate

	Parity Bit
	Stop Bit
	CT2
	CT1
	PT2
	PT1
	Software Version

	CRC Check
	Display Check All display segments

3.5 Setup Mode

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

3.5.1 Menu Option Selection

1.Use the M and P buttons to scroll through the different options of the set up menu.

2.Long press E to confirm your selection.

3.If an item flashes, then it can be adjusted by the M and P buttons.

4.Having selected an option from the current layer, long press E to confirm your selection.

5.Having completed a parameter setting, press U/I to return to a higher menu level.

You will be able to use the M and P buttons for further menu selection.

6.On completion of all setting-up, press U/I repeatedly until the measurement screen is restored.

3.5.2 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 M and P buttons.

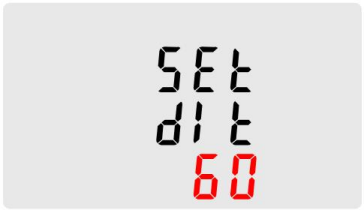
2.Short press E to confirm the digit setting and remove to the next.

3.After setting the last digit, long press E to confirm the setting.

4.Press U/I to return to a higher menu level.

Settings interface	Set status	Optional configuration

		**Password** Default: 1000
		**ModBus address setting** Address range: 001~247 Default: 001
		**Baud rate setting** Option: 2.4k, 4.8k, 9.6k, 19.2k, 38.4k bps Default: 9.6k bps
		**Parity bit setting** Option: EVEN, ODD, NONE Default: NONE
		**Stop bit setting** Option: 1, 2 Default: 1
		**CT2 setting** Option: 1, 5A Default: 5A
		**CT rate setting** Range: 1. 0005~9999(CT2 = 5) 2. 0001~1999(CT2 = 1) Default: 0005

		**PT2 setting** Range: 100~500V Default: 400V for 3P3W 230V for others
		**PT1 setting** Range: PT2-500000V Default: 400V for 3P3W 230V for others
		**Demand interval time setting** Option: 0, 5, 8, 10, 15, 20, 30, 60min Default: 60min
		**Backlit time setting** Option: ON, 5, 10, 30, 60, 120, OFF Default: 60
		**System type setting** Option: 3P4W, 3P3W, 1P3W, 1P2W Default: 3P4W
		**Carbon Emission Rate setting** Range: 00.0000~60.0000kg/kWh Default: 0.5703kg/kWh
		**CLR max demand setting**

		**Password setting** Range: 0000~9999 Default: 1000
		**IA current direction setting** Option: Frd, Rev Default: Frd *Frd = Forward; Rev = Reverse *And so on for IB & IC operation.
		**DI filter time setting** Range:0-255 Default: 100 mS
		**DI count** Option: DI1 counts,DI2 counts
		**DI state** Option: DI1 state, DI2 state *state: ON or OFF Default: OFF

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 SDM630MCT-DI 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 0598/MID/B/24/036(0120/SGS0703).
Identification number of the Notified Body: 0598.

Chapter 5. Communication Protocol

5.1 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

5.2 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. Eastron uses 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).

5.3 Input Register

Function code	Description
04	Read Input Register

Address (Register)	Input Register Parameter				Modbus Protocol Start Address Hex		3 Ø	3 Ø	1 Ø	1 Ø
	Description	Length (bytes)	Data Format	Units	Hi Byte	Lo Byte	4 W	3W 2CT	3 W	2 W
30001	Phase 1 line to neutral volts.	4	Float	V	00	00	√	X	√	√
30003	Phase 2 line to neutral volts.	4	Float	V	00	02	√	X	√	X
30005	Phase 3 line to neutral volts.	4	Float	V	00	04	√	X	X	X
30007	Phase 1 current.	4	Float	A	00	06	√	√	√	√
30009	Phase 2 current.	4	Float	A	00	08	√	√	√	X
30011	Phase 3 current.	4	Float	A	00	0A	√	√	X	X
30013	Phase 1 active power.	4	Float	W	00	0C	√	X	√	√
30015	Phase 2 active power.	4	Float	W	00	0E	√	X	√	X
30017	Phase 3 active power.	4	Float	W	00	10	√	X	X	X
30019	Phase 1 apparent power.	4	Float	VA	00	12	√	X	√	√
30021	Phase 2 apparent power.	4	Float	VA	00	14	√	X	√	X
30023	Phase 3 apparent power.	4	Float	VA	00	16	√	X	X	X

30025	Phase 1 reactive power.	4	Float	VAr	00	18	√	X	√	√
30027	Phase 2 reactive power.	4	Float	VAr	00	1A	√	X	√	X
30029	Phase 3 reactive power.	4	Float	VAr	00	1C	√	X	X	X
30031	Phase 1 power factor (1).	4	Float	None	00	1E	√	X	√	√
30033	Phase 2 power factor (1).	4	Float	None	00	20	√	X	√	X
30035	Phase 3 power factor (1).	4	Float	None	00	22	√	X	X	X
30037	Phase 1 phase angle.	4	Float	Degrees	00	24	√	X	√	√
30039	Phase 2 phase angle.	4	Float	Degrees	00	26	√	X	√	X
30041	Phase 3 phase angle.	4	Float	Degrees	00	28	√	X	X	X
30043	Average line to neutral volts.	4	Float	V	00	2A	√	X	√	√
30047	Average line current.	4	Float	A	00	2E	√	√	√	√
30049	Sum of line currents.	4	Float	A	00	30	√	√	√	√
30053	Total system power.	4	Float	W	00	34	√	√	√	√
30057	Total system volt amps.	4	Float	VA	00	38	√	√	√	√
30061	Total system VAr.	4	Float	VAr	00	3C	√	√	√	√
30063	Total system power factor (1).	4	Float	None	00	3E	√	√	√	√
30067	Total system phase angle.	4	Float	Degrees	00	42	√	√	√	√
30071	Frequency of supply voltages.	4	Float	Hz	00	46	√	√	√	√
30073	Total import active energy .	4	Float	kWh	00	48	√	√	√	√
30075	Total export active energy .	4	Float	kWH	00	4A	√	√	√	√
30077	Total import reactive energy .	4	Float	kVArh	00	4C	√	√	√	√
30079	Total export reactive energy .	4	Float	kVArh	00	4E	√	√	√	√
30081	Total apparent energy.	4	Float	kVAh	00	50	√	√	√	√
30083	Ah.	4	Float	Ah	00	52	√	√	√	√
30085	Total system power demand (2) .	4	Float	W	00	54	√	√	√	√
30087	Maximum total system power demand (2).	4	Float	W	00	56	√	√	√	√
30101	Total system VA demand.	4	Float	VA	00	64	√	√	√	√
30103	Maximum total system VA demand.	4	Float	VA	00	66	√	√	√	√
30105	Neutral current demand.	4	Float	Amps	00	68	√	X	√	X
30107	Maximum neutral current demand.	4	Float	Amps	00	6A	√	X	√	X
30109	Total system reactive power demand. (2)	4	Float	VAr	00	6C	√	√	√	√
30111	Maximum total system reactive power demand(2)	4	Float	VAr	00	6E	√	√	√	√
30201	Line 1 to Line 2 volts.	4	Float	V	00	C8	√	√	√	X
30203	Line 2 to Line 3 volts.	4	Float	V	00	CA	√	√	X	X
30205	Line 3 to Line 1 volts.	4	Float	V	00	CC	√	√	X	X
30207	Average line to line volts.	4	Float	V	00	CE	√	√	√	X
30225	Neutral current.	4	Float	A	00	E0	√	X	√	X
30235	Phase 1 L/N volts THD	4	Float	%	00	EA	√	X	√	√
30237	Phase 2 L/N volts THD	4	Float	%	00	EC	√	X	√	X
30239	Phase 3 L/N volts THD	4	Float	%	00	EE	√	X	X	X
30241	Phase 1 Current THD	4	Float	%	00	F0	√	√	√	√
30243	Phase 2 Current THD	4	Float	%	00	F2	√	X	√	X
30245	Phase 3 Current THD	4	Float	%	00	F4	√	√	X	X
30249	Average line to neutral volts THD.	4	Float	%	00	F8	√	X	√	√
30251	Average line current THD.	4	Float	%	00	FA	√	√	√	√
30259	Phase 1 current demand.	4	Float	A	01	02	√	√	√	√
30261	Phase 2 current demand.	4	Float	A	01	4	√	√	√	X
30263	Phase 3 current demand.	4	Float	A	01	06	√	√	X	X

30265	Maximum phase 1 current demand.	4	Float	A	01	08	√	√	√	√
30267	Maximum phase 2 current demand.	4	Float	A	01	0A	√	√	√	X
30269	Maximum phase 3 current demand.	4	Float	A	01	0C	√	√	X	X
30335	L1 to L2 volts THD.	4	Float	%	01	4E	X	√	X	X
30337	L2 to L3 volts THD.	4	Float	%	01	50	X	√	X	X
30339	L3 to L1 volts THD.	4	Float	%	01	52	X	X	X	X
30341	Average line to line volts THD.	4	Float	%	01	54	X	√	X	X
30343	Total active Energy (3)	4	Float	kWh	01	56	√	√	√	√
30345	Total reactive Energy (3)	4	Float	kVArh	01	58	√	√	√	√
30347	L1 import active Energy	4	Float	kWh	01	5A	√	X	√	√
30349	L2 import active Energy	4	Float	kWh	01	5C	√	X	√	X
30351	L3 import active Energy	4	Float	kWh	01	5E	√	X	X	X
30353	L1 export active Energy	4	Float	kWh	01	60	√	X	√	√
30355	L2 export active Energy	4	Float	kWh	01	62	√	X	√	X
30357	L3 export active Energy	4	Float	kWh	01	64	√	X	X	X
30359	L1 total active Energy	4	Float	kWh	01	66	√	X	√	√
30361	L2 total active Energy	4	Float	kWh	01	68	√	X	√	X
30363	L3 total active Energy	4	Float	kWh	01	6A	√	X	X	X
30365	L1 import reactive energy	4	Float	kVArh	01	6C	√	X	√	√
30367	L2 import reactive energy	4	Float	kVArh	01	6E	√	X	√	X
30369	L3 import reactive energy	4	Float	kVArh	01	70	√	X	X	X
30371	L1 export reactive energy	4	Float	kVArh	01	72	√	X	√	√
30373	L2 export reactive energy	4	Float	kVArh	01	74	√	X	√	X
30375	L3 export reactive energy	4	Float	kVArh	01	76	√	X	X	X
30377	L1 total reactive energy	4	Float	kVArh	01	78	√	X	√	√
30379	L2 total reactive energy	4	Float	kVArh	01	7A	√	X	√	X
30381	L3 total reactive energy	4	Float	kVArh	01	7C	√	X	X	X
310001	Total import active energy	8	Int64	Wh	27	10	√	√	√	√
310005	Total export active energy	8	Int64	Wh	27	14	√	√	√	√
310009	Total import reactive energy	8	Int64	VArh	27	18	√	√	√	√
310013	Total export reactive energy	8	Int64	VArh	27	1C	√	√	√	√
310017	Total apparent energy.	8	Int64	VAh	27	20	√	√	√	√
310021	Total active Energy	8	Int64	Wh	27	24	√	√	√	√
310025	Total reactive Energy	8	Int64	VArh	27	28	√	√	√	√
310029	L1 import active Energy	8	Int64	Wh	27	2C	√	X	√	√
310033	L2 import active Energy	8	Int64	Wh	27	30	√	X	√	X
310037	L3 import active Energy	8	Int64	Wh	27	34	√	X	X	X
310041	L1 export active Energy	8	Int64	Wh	27	38	√	X	√	√
310045	L2 export active Energy	8	Int64	Wh	27	3C	√	X	√	X
310049	L3 export active Energy	8	Int64	Wh	27	40	√	X	X	X
310053	L1 total active Energy	8	Int64	Wh	27	44	√	X	√	√
310057	L2 total active Energy	8	Int64	Wh	27	48	√	X	√	X
310061	L3 total active Energy	8	Int64	Wh	27	4C	√	X	X	X
310065	L1 import reactive energy	8	Int64	VArh	27	50	√	X	√	√
310069	L2 import reactive energy	8	Int64	VArh	27	54	√	X	√	X
310073	L3 import reactive energy	8	Int64	VArh	27	58	√	X	X	X
310077	L1 export reactive energy	8	Int64	VArh	27	5C	√	X	√	√
310081	L2 export reactive energy	8	Int64	VArh	27	60	√	X	√	X
310085	L3 export reactive energy	8	Int64	VArh	27	64	√	X	X	X
310089	L1 total reactive energy	8	Int64	VArh	27	68	√	X	√	√

310093	L2 total reactive energy	8	Int64	VArh	27	6C	√	X	√	X
310097	L3 total reactive energy	8	Int64	VArh	27	70	√	X	X	X
310251	L1 line to neutral volts	4	Int32	0.1V	28	0A	√	X	√	√
310253	L2 line to neutral volts	4	Int32	0.1V	28	0C	√	X	√	X
310255	L3 line to neutral volts	4	Int32	0.1V	28	0E	√	X	X	X
310257	L1 current	4	Int32	0.001A	28	10	√	√	√	√
310259	L2 current	4	Int32	0.001A	28	12	√	√	√	X
310261	L3 current	4	Int32	0.001A	28	14	√	√	X	X
310263	L1 active power	4	Int32	0.1W	28	16	√	X	√	√
310265	L2 active power	4	Int32	0.1W	28	18	√	X	√	X
310267	L3 active power	4	Int32	0.1W	28	1A	√	X	X	X
310269	L1 apparent power	4	Int32	0.1VA	28	1C	√	X	√	√
310271	L2 apparent power	4	Int32	0.1VA	28	1E	√	X	√	X
310273	L3 apparent power	4	Int32	0.1VA	28	20	√	X	X	X
310275	L1 reactive power	4	Int32	0.1VAr	28	22	√	X	√	√
310277	L2 reactive power	4	Int32	0.1VAr	28	24	√	X	√	X
310279	L3 reactive power	4	Int32	0.1VAr	28	26	√	X	X	X
310281	L1 power factor	4	Int32	0.01	28	28	√	X	√	√
310283	L2 power factor	4	Int32	0.01	28	2A	√	X	√	X
310285	L3 power factor	4	Int32	0.01	28	2C	√	X	X	X
310287	L1 phase angle.	4	Int32	0.01Degrees	28	2E	√	X	√	√
310289	L2 phase angle.	4	Int32	0.01Degrees	28	30	√	X	√	X
310291	L3 phase angle.	4	Int32	0.01Degrees	28	32	√	X	X	X
310293	Average line to neutral volts.	4	Int32	0.1V	28	34	√	X	√	√
310295	Average line current.	4	Int32	0.1A	28	36	√	√	√	√
310297	Sum of line currents.	4	Int32	0.1A	28	38	√	√	√	√
310299	Total system power.	4	Int32	0.1W	28	3A	√	√	√	√
310301	Total system volt amps.	4	Int32	0.1VA	28	3C	√	√	√	√
310303	Total system VAr.	4	Int32	0.1VAr	28	3E	√	√	√	√
310305	Total system power factor .	4	Int32	0.01	28	40	√	√	√	√
310307	Total system phase angle.	4	Int32	0.01Degrees	28	42	√	√	√	√
310309	Frequency of supply voltages.	4	Int32	0.01Hz	28	44	√	√	√	√
310311	CO2	8	Int64	0.001Kg	28	46	√	√	√	√
320131	CO2	4	Float	Kg	4E	A2	√	√	√	√

Notes:

1. The power factor has its sign adjusted to indicate the direction of the current. Positive refers to forward current, negative refers to reverse current.
2. The power sum demand calculation is for import – export.
3. Total kWh / kVarh equals to Import + export.

5.4 Holding Register

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

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode (ro: read only wo: write only r/w: read/write)
		High bytes	Low bytes		
40001	Demand Time	00	00	Read minutes into first demand calculation. When the Demand Time reaches the Demand Period then the demand values are valid. Length : 4 byte. Data Format : Float.	ro
40003	Demand Period	00	02	Write demand period: 0~60 minutes. Range: 0~60, 0 represents real-time update (demand updated every 1 second) Default: 60. Length : 4 byte. Data Format : Float.	r/w
40005	Slide time	00	04	Range: 1 ~ (Demand Period -1). Default: 1 min. Length : 4 byte. Data Format : Float.	r/w
40011	System Type	00	0A	Write system type: 1 = 1P2W; 2 = 3P3W 2CT; 3 = 3P4W; 4 = 1P3W. Default: 3. Length : 4 byte. Data Format : Float (KPPA is asked).	r/w
40015	Key Parameter Programming Authorization (KPPA)	00	0E	Read: to get the status of the KPPA. 0 = not authorized; 1 = authorized. Write the correct password to get KPPA, enable to program key parameters. Length : 4 byte. Data Format : Float.	r/w
40019	Parity and stop bit	00	12	Write the network port parity/stop bits for MODBUS Protocol, where: 0 = One stop bit and no parity; 1 = One stop bit and even parity; 2 = One stop bit and odd parity; 3 = Two stop bits and no parity. Default: 0. Length : 4 byte. Data Format : Float.	r/w

40021	Modbus address	00	14	Write the network port node. Address: 1 to 247 for MODBUS Protocol. Default: 1. Length : 4 byte. Data Format : Float.	r/w
40025	Password	00	18	Read: to get the password of the meter. Write: to program the new password of the meter. Default: 1000. Length : 4 byte. Data Format : Float.	r/w
40029	Network Baud Rate	00	1C	Write the network port baud rate for MODBUS Protocol, where: 0 = 2400 baud; 1 = 4800 baud; 2 = 9600 baud; 3 = 19200 baud; 4 = 38400 baud. Default: 2 = 9600 baud. Length : 4 byte. Data Format : Float.	r/w
40047	PT1	00	2E	PT1 range PT2-500000V. Default: 400V for 3P3W; Default: 230V for others. Length : 4 byte. Data Format : Float (KPPA is asked).	r/w
40049	PT2	00	30	PT2 range 100-500V. Default: 400V for 3P3W; Default: 230V for others. Length : 4 byte. Data Format : Float (KPPA is asked).	r/w
40051	CT1	00	32	CT2=5: CT1 range: 5-9999A. Default: 5A., CT2=1： CT1 range: 1—1999A. Length : 4 byte. Data Format : Float (KPPA is asked).	r/w
40053	CT2	00	34	CT2 range: 1A or 5A. Default: 5A. Length : 4 byte. Data Format : Float (KPPA is asked).	r/w

40057	Current Direction correction（when the external CT is connected reversely）	00	38	0 = A import, B import, C import; 1 = A export, B import, C import; 2 = A import, B export, C import; 3 = A export, B export, C import; 4 = A import, B import, C export; 5 = A export, B import, C export; 6 = A import, B export, C export; 7 = A export, B export, C export. 3P4W support 0~7; 3P3W support 0, 7; 1P2W support 0, 1; 1P3W support 0, 1, 2, 3. Default: 0. Length : 4 byte. Data Format :Float (KPPA is asked). Switch the wire system current direction and restore it to the 0 state.	r/w
40061	Backlit time	00	3C	Range 0~121, 0 means backlit always on, 121 means backlit always off. Default: 60 min. Length : 4byte. Data Format : Float.	r/w
40071	CO2 RATE	00	46	Carbon emissions per kWh of electricity 00.0000~60.0000 kg. Example: 0x01 = 0.0001. Default: 0.5703(0X00001647). Length: 4 byte. Data Format : hex.	r/w
40769	DI filter time	03	00	DI filter time (0ms: 0~255). Default: 100ms. Length: 2 byte. Data Format: unsigned int16.	r/w
40770	DI-1 count	03	01	DI-1 count. Length: 4 byte. Data Format: unsigned int32. Write 0 to reset the count. No response if write other value.	r/w
40772	DI-2 count	03	03	DI-2 count. Length : 4 byte. Data Format: unsigned int32. Write 0 to reset the count. No response if write other value.	r/w
461457	Reset historical data	F0	10	00 00 = reset demand info. 00 06 = reset DI counts. Length: 2byte. Data Format: Hex.	wo

463779	Display mode	F9	22	00 01：Normal mode; 00 02：Swiss mode. Length: 2byte. Data Format: Hex.	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. Length: 2 byte. Data Format: hex. Note: Only read.	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

5.5 Read Input Status,function code 02

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode (ro: read only wo: write only r/w: read/write)
		High Byte	Low Byte		
10001	1	00	00	DI1 status. 1=ON; 0=OFF. Length : 1 bit Data Format :Binary	ro
10002	2	00	01	DI2 status. 1=ON; 0=OFF. Length : 1 bit Data Format :Binary	ro

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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