



## MPM 4000 series

Multi Circuit Multi-Functional Smart Meter

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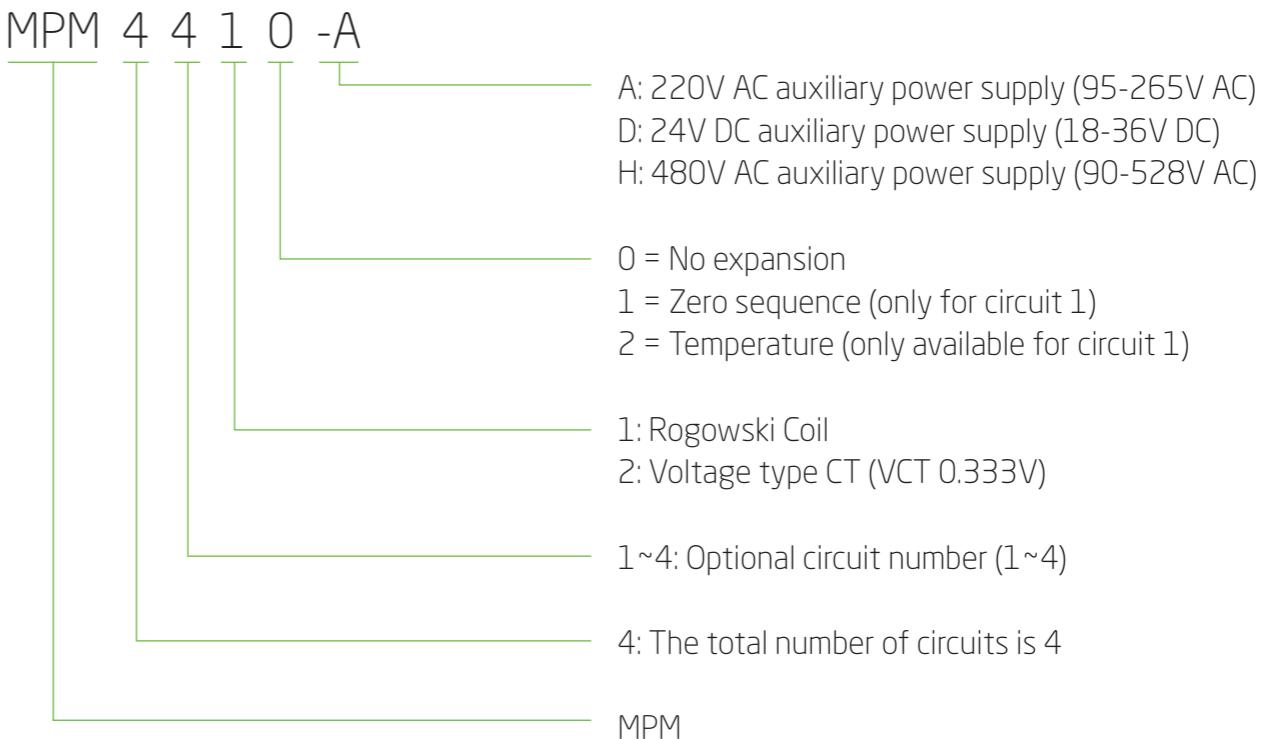
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## Model Definition



## Applicable Scenarios



### Industrial power distribution system:

Provide accurate energy consumption monitoring, improve energy quality and equipment stability.



### Smart building management:

Optimize electricity usage structure, reduce energy consumption, and improve energy management efficiency.



### Data center power monitoring:

Accurately measure power demand and improve power supply reliability.



### New energy grid connection monitoring:

Support renewable energy systems such as solar energy and wind energy, and monitor power parameters in real time.



# MPM series Multi-Circuit Multi-Functional Smart Meter



MPM4000 is a high-performance DIN-rail Smart Meter that supports multiparameter measurement and time-of-use (TOU) energy metering.

It features quick installation, flexible communication, and multiple power supply options, making it suitable for various power distribution scenarios.

## Multiple metering wiring modes, strong compatibility

- Supports 1 to 4 loops (configurable).
- Supports single-phase, three-phase three-wire, three-phase four-wire systems:
- Three-phase four-wire 4CT:3P4W\_4CT
- Three-phase four-wire 3CT:3P4W\_3CT
- Three-phase three-wire 3CT:3P3W\_3CT
- Three-phase three-wire 2CT:3P3W\_2CT
- Single-phase three-wire:1P3W
- Single-phase two-wire:1P2W
- Applicable to various industrial and commercial power systems to meet the needs of different users.

## High-precision power parameter measurement

- Measuring voltage range: L-N 0~600V AC
- Current measurement accuracy: 0.1% + sensor accuracy
- Voltage measurement accuracy:  $\pm 0.2\%$  (60V~600V AC)
- Power grid frequency measurement accuracy:  $\pm 0.01\%$  (45~65Hz)
- Power factor measurement accuracy:  $\pm 0.005$
- Comply with international metering standards:  
Active and apparent power: IEC 62053-22 Class 0.5S  
Reactive power: IEC 62053-21 Class 1S  
Active energy: IEC 62053-22 Class 0.5S  
Reactive energy: IEC 62053-21 Class 1S
- Frequency range 45-65Hz, supports 1P+N, 3P, 3P+N systems

## Digital Signal Output Function

- 1 electromagnetic relay output:  
Contact capacity: 3A 30V DC / 3A 250V AC

## Detection of Zero-Sequence Current and Temperature

- Supports one expansion slot for optional zero-sequence or temperature detection (limited to Circuit 1).

## Comply with international measurement standards

- It complies with international standards such as EN 62052-11, EN 61557-12, EN 62053-21, EN 62053-22, EN 62053-23, EN 50470-1, EN 50470-3, EN 61010-1, EN 61010-2, EN 61010-031, etc., ensuring measurement accuracy and safety



## Parameter Storage Function

Key measurement data, such as configuration parameters, energy values, maximum/minimum values, demand, zero-sequence current/voltage, etc., will be retained upon power loss.

## History Recording Function

Includes energy records, demand changes, alarm event logs, configuration file changes, etc.

Recording interval is adjustable from 5 to 9999 seconds.

## Data Export Function

Data can be exported via the built-in FTP server.  
If Ethernet mode is enabled, files can also be exported remotely through the Web page.



## Powerful communication capabilities, supporting industry standard protocols

- Modbus-RTU communication protocol
- Communication rate: 2400bps~38400bps
- LAN, Modbus-TCP/IP, Web Server, FTP Server
- Compatible with a variety of SCADA, PLC, and smart power distribution systems, it can be seamlessly connected to the industrial automation monitoring platform.

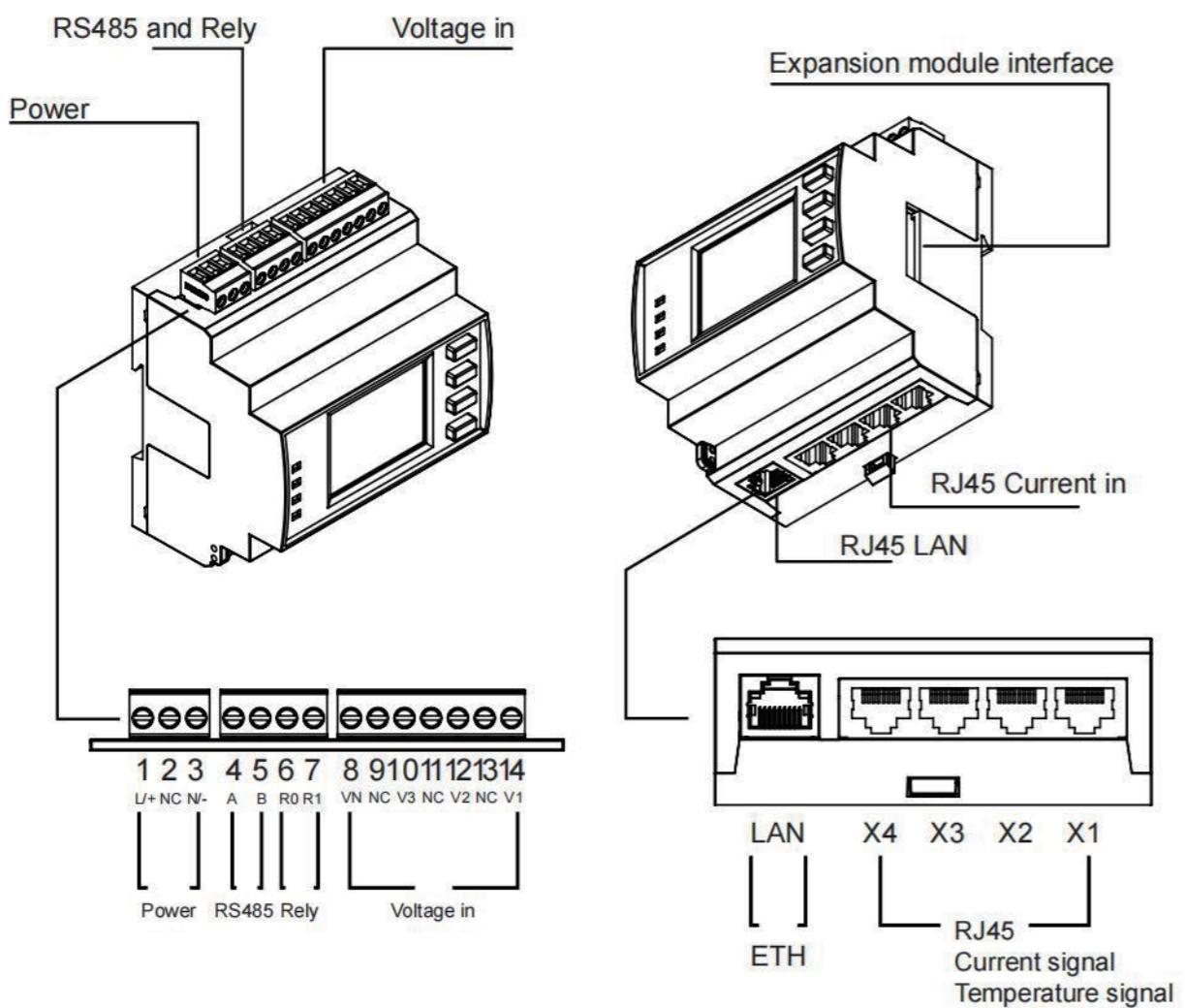


## Strong environmental adaptability, suitable for harsh working conditions

- Operating temperature range:  $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
- Storage temperature range:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Humidity range: 5~95% RH (50°C, non-condensing)
- Pollution degree: Pollution degree 2 (in accordance with IEC 60664-1)
- Overvoltage capability: Overvoltage category III, applicable to 277/480V AC or 400/690V AC distribution system (compliant with IEC 60664-1)
- Dielectric strength: compliant with IEC 61010-1, withstand voltage AC 4kV / 1min
- Altitude:  $\leq 3300\text{m}$  (in accordance with IEC 61010-1)
- Protection class: IP20 (according to IEC 60529)



## Interface Introduction



## Model Selection

	MPM4410-A	MPM4411-A	MPM4412-A	MPM4420-A	MPM4421-A	MPM4422-A
Scalability	-	Zero sequence	Temperature	-	Zero sequence	Temperature
CT connection	Rogowski Coil			Voltage type CT (VCT 0.333V)		
Auxiliary power supply	220V AC (95–265V)					
Instantaneous value measurement	Phase voltage:U1, U2, U3, AVG, U0 (zero sequence voltage) Line voltage:U12, U23, U31, AVG Current :I1, I2, I3, AVG, In Frequency :F1, F2, F3, $\Sigma$ (comprehensive) Power factor:PF PF1, PF2, PF3, $\Sigma$ (comprehensive) Fundamental power factor:DPF DPF1, DPF2, DPF3, $\Sigma$ (comprehensive) Active power:P1, P2, P3, $\Sigma$ (total) Reactive power:Q1, Q2, Q3, $\Sigma$ (total) Apparent power:S1, S2, S3, $\Sigma$ (total)					
Energy Measurement	Positive active energy:EP1, EP2, EP3, $\Sigma$ (total) Negative active energy:EP1, EP2, EP3, $\Sigma$ (total) Positive reactive energy:EQ1, EQ2, EQ3, $\Sigma$ (total) Negative reactive energy:EQ1, EQ2, EQ3, $\Sigma$ (total) Apparent energy:ES1, ES2, ES3, $\Sigma$ (total) Tariff energy:ET1, ET2, ET3, ET4, ET5, ET6 When the energy reaches $1.0 \times 10^9$ kWh, the energy will automatically reset					
Harmonic	Voltage harmonic percentage:Total harmonics (U1, U2, U3), total odd harmonics (U1, U2, U3), total even harmonics (U1, U2, U3), sub-harmonics 1–50 (U1, U2, U3) Current harmonic percentage:Total harmonics (I1, I2, I3), total odd harmonics (I1, I2, I3), total even harmonics (I1, I2, I3), K factor (I1, I2, I3), sub-harmonics 1–50 (I1, I2, I3) Voltage harmonic value :Total harmonics (U1, U2, U3), sub-harmonics 1–50 (U1, U2, U3) Current harmonic value :Total harmonics (I1, I2, I3), sub-harmonics 1–50 (I1, I2, I3)					
Phase diagram	Phase diagram:Phase diagram display between voltage and current Phase sequence:Voltage, current Voltage angle:U1, U2, U3 Current angle:I1, I2, I3 Voltage and current angle:U1, U2, U3					
Demand	Demand:Total active power, total reactive power, total apparent power Maximum total active power maximum demand:Maximum demand and time Total reactive power maximum demand:Maximum demand and time Total apparent power maximum demand:Maximum demand and time					
Imbalance	Voltage imbalance:Negative sequence, zero sequence Current imbalance:Negative sequence, zero sequence					
Max. & min. value	Phase voltage:Each phase and average Line voltage:Each phase and average Current:Each phase and average Active power:Each phase and average Reactive power:Each phase and average Apparent power:Each phase and average					
kWh overload alarm	■					
Modbus communication	■					

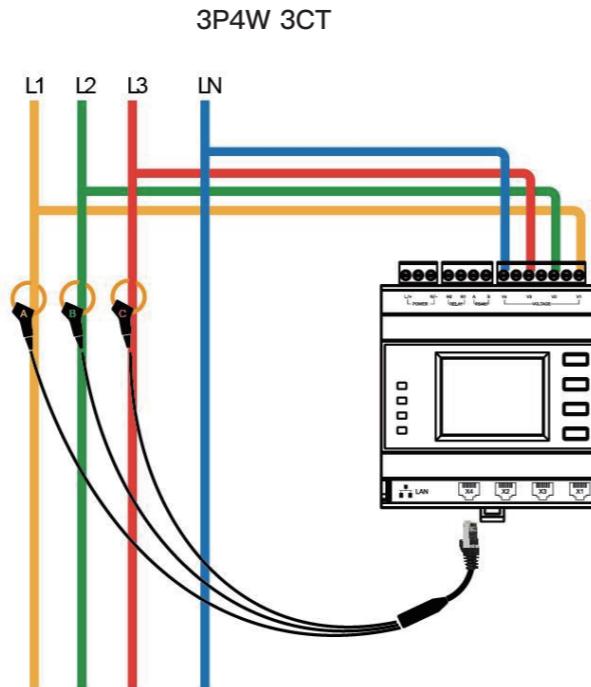
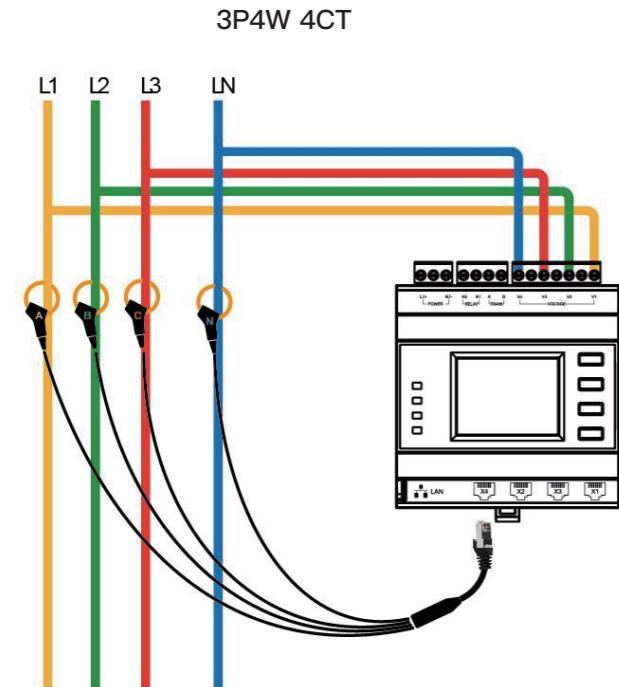


## Technical Parameter

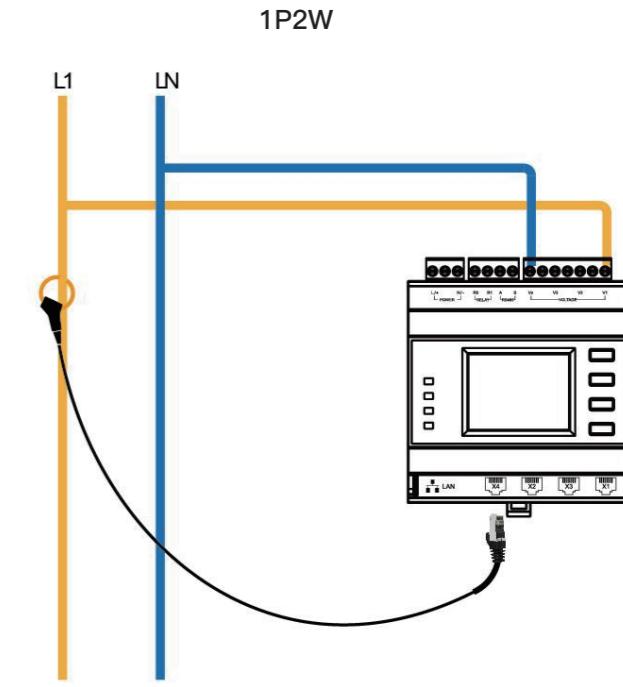
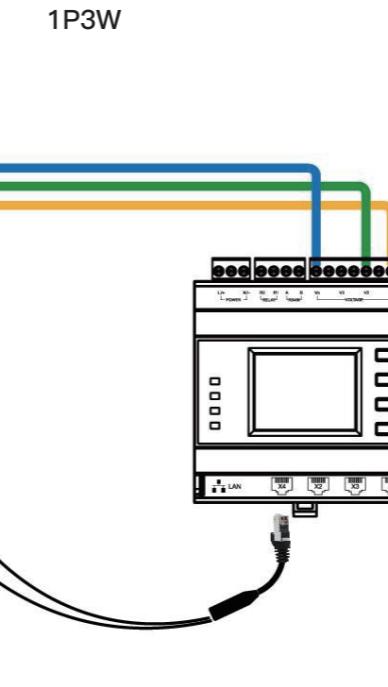
	MPM4410-A	MPM4411-A	MPM4412-A	MPM4420-A	MPM4421-A	MPM4422-A
CT connection		Rogowski Coil 0~900mVAC peak, 636 mV RMS			Screw terminals	
Rogowski Coil		50mV/kA@50Hz(0~12000A),@60Hz(0~10000A) 85mV/kA@50Hz(0~7000A),@60Hz(0~6000A) 100mV/kA@50Hz(0~6000A),@60Hz(0~5000A)			-	
Metering wiring mode			3P4W-4CT / 3P4W-3CT / 3P3W-3CT / 3P3W-2CT/1P3W-2CT / 1P2W-1CT			
Measurement voltage				L-N: 0 ~ 600VAC		
Frequency range				45~65 Hz 1P+N, 3P,3P+N		
Measurement accuracy	Current measurement accuracy			0.1%+ current sensor accuracy		
	Voltage measurement accuracy			±0.2%(60V~600V AC)		
	Grid frequency			±0.01% (45~65Hz) power factor ±0.005		
	Active and apparent power			IEC62053-22 class 0.5S		
	Reactive power			IEC62053-21 class 1S		
	Active energy			IEC62053-22 class 0.5S		
	Reactive energy			IEC62053-21 class 1S		
Environmental conditions	Operating temperature range			-20°C ~ +70°C		
	Storage temperature range			-40°C ~ +85°C		
	Humidity			5~95% RH, 50°C (non-condensing)		
	Pollution degree			Pollution degree 2 (in accordance with IEC 60664-1)		
	Overvoltage capability			Overvoltage category III for power distribution systems up to 277/480VAC or 400/690VAC (in accordance with IEC 60664-1)		
	Dielectric strength			Complies with IEC 61010-1, withstand voltage AC 4kV / 1min		
	Altitude			≤ 3000m (in accordance with IEC 61010-1)		
	Protection class			IP20 (in accordance with IEC 60529)		
Digital signal	Relay output	1 electromagnetic relay output, contact capacity: 3A 30V DC, 3A 250V AC		1 electromagnetic relay output, contact capacity: 3A 30V DC, 3A 250V AC	1 electromagnetic relay output, contact capacity: 3A 30V DC, 3A 250V AC	
Communication				RS485 (Modbus RTU) 、LAN、Modbus-TCP/IP、Web Server、FTP Server		
Mechanical characteristic	Dimensions			90mm × 89mm × 66mm		
	Measurement standards			EN 62052-11, EN61557-12, EN 62053-21, EN 62053-22, EN 62053-23, EN 50470-1, EN 50470-3, EN 61010-1, EN61010-2, EN 61010-031		



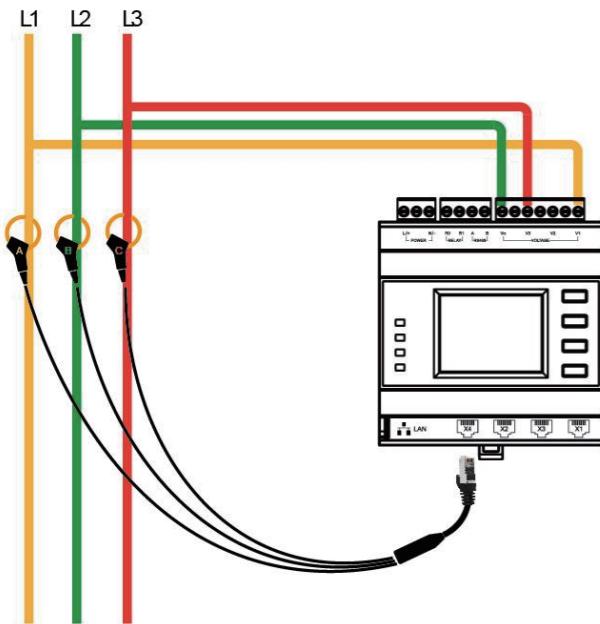
## Wiring diagram



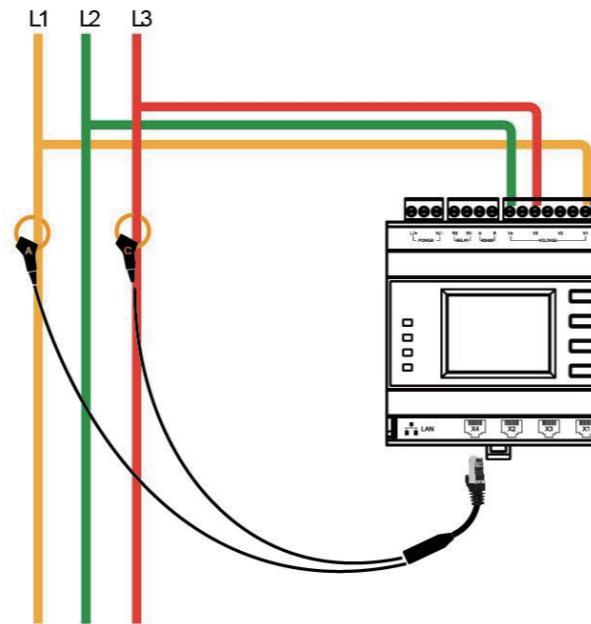
## Wiring diagram



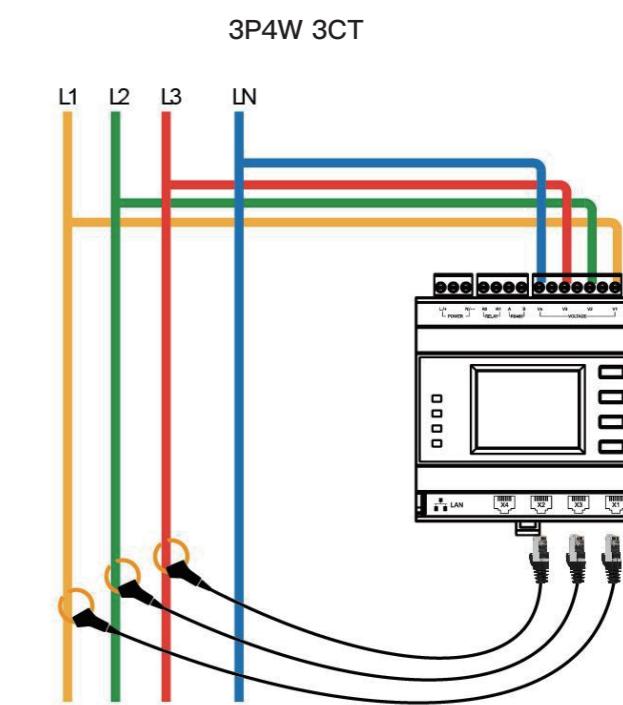
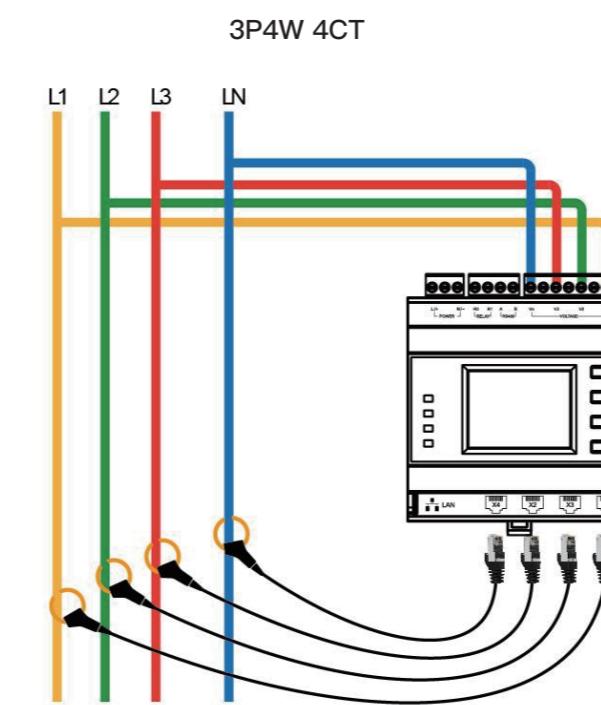
3P3W 3CT



3P3W 2CT



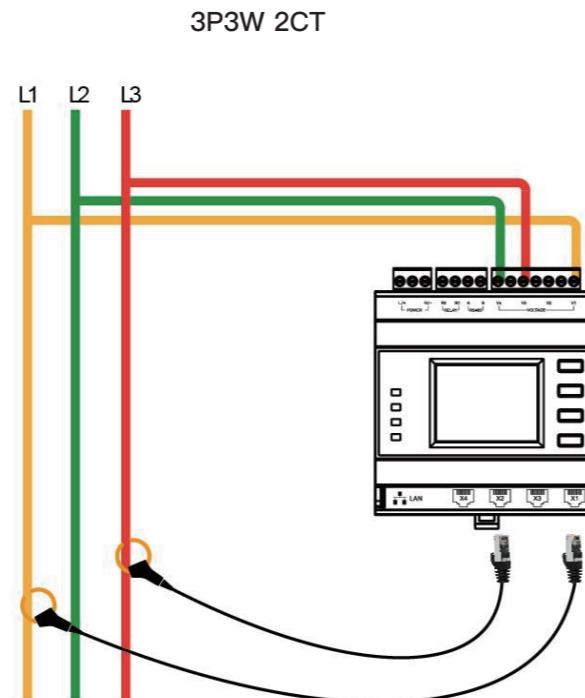
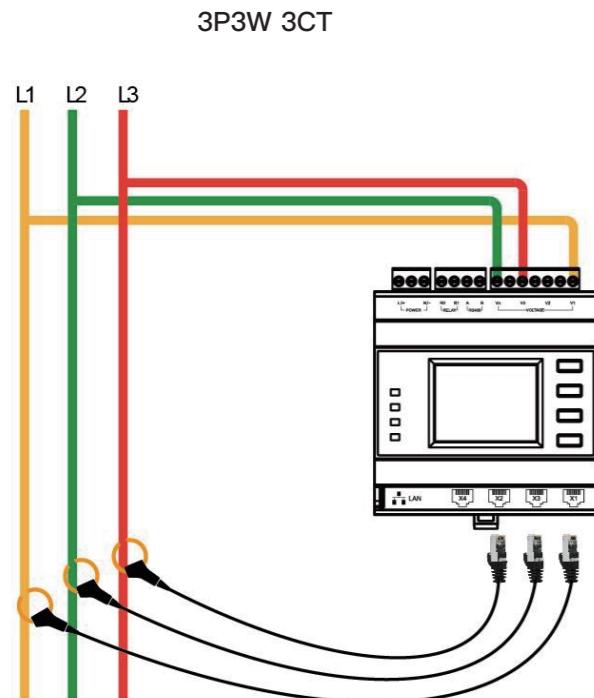
## Wiring Instructions for Versions with Zero Sequence or Temperature Detection



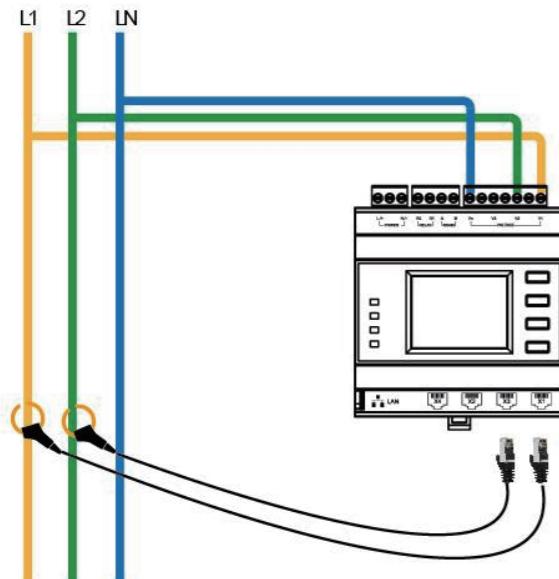


## Wiring diagram

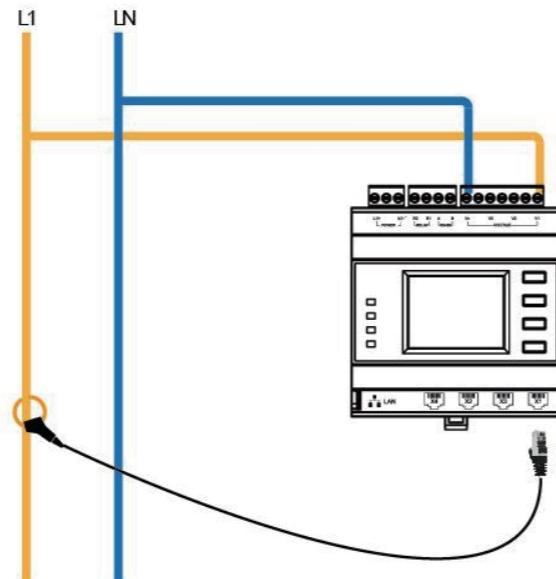
### Wiring Instructions for Versions with Zero Sequence or Temperature Detection



**1P3W**



**1P2W**

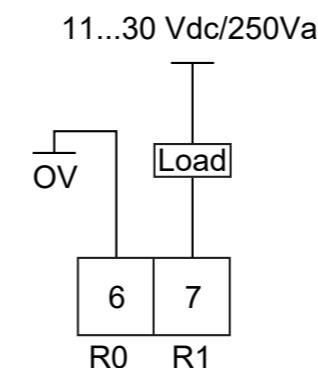


## Wiring diagram

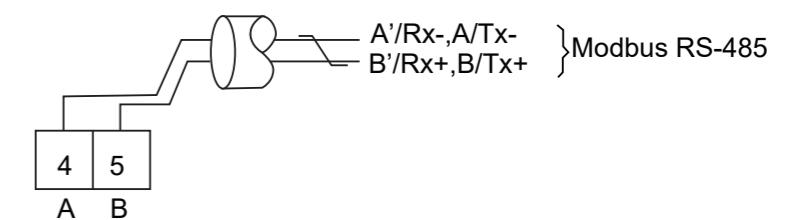
Solution	Wiring Type	CT Quantity	Scope of Application
3P4W 4CT	Three-phase four-wire	4	Accurate metering, supports neutral current measurement, suitable for high-precision applications such as industrial facilities, large commercial buildings, data centers, etc.
3P4W 3CT		3	Conventional low-voltage system (such as 380V/220V), suitable for standard three-phase four-wire power distribution scenarios
3P3W 3CT	Three-phase three-wire	3	High voltage three-phase three-wire system (such as 10kV), suitable for industrial and power transmission and distribution applications
3P3W 2CT		2	Economical solution, suitable for three-phase three-wire systems with relatively balanced loads, such as some industrial equipment
1P3W	Single-phase three-wire	2	American power supply system, suitable for residential and small commercial users in North America, Japan and other regions
1P2W	Single-phase two-wire	1	Normal household power supply (such as 220V), suitable for residential and commercial single-phase power metering

### Communication and control interface

Relay output



RS485 Wiring



### Dimensions

