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AIoT Electric

PEM series

three-phase multifunctional power meter

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Product model

Model	Functions	Current Port Type	Auxiliary Power Supply
PEM3353–A	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication, DI/DO	Screw terminals	220V AC auxiliary power supply (95–265V AC)
PEM3553–A	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication	RJ12 port	220V AC auxiliary power supply (95–265V AC)
PEM3353–D	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication, DI/DO	Screw terminals	24V DC auxiliary power supply (18–36V DC)
PEM3553–D	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication	RJ12 port	24V DC auxiliary power supply (18–36V DC)
PEM3353–H	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication, DI/DO	Screw terminals	480V AC auxiliary power supply (90–528V AC)
PEM3553–H	Three–phase multi–function energy energy meter, multi–tariff (6Tariff), multi–parameter measurement, Modbus communication	RJ12 port	480V AC auxiliary power supply (90–528V AC)

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.

PEM series three-phase multifunctional power meter

PEM3000 is a high-performance DIN-rail power 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 single-phase, three-phase three-wire, three-phase four-wire systems:
- Three-phase four-wire (3P4W): 4CT / 3CT
- Three-phase three-wire (3P3W): 3CT / 2CT
- Single-phase three-wire (1P3W): 2CT
- Single-phase two-wire (1P2W): 1CT
- 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: ±0.2% (60V~600V AC)
- Power grid frequency measurement accuracy: ±0.01% (45~65Hz)
- Power factor measurement accuracy: ±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

Smart relays and digital inputs

- 1 electromagnetic relay output:
  Contact capacity: 3A 30V DC / 3A 250V AC
- 1 optocoupler isolated digital input:
  Dry contact input
  5kVrms isolation voltage for enhanced safety

Comply with international measurement standards

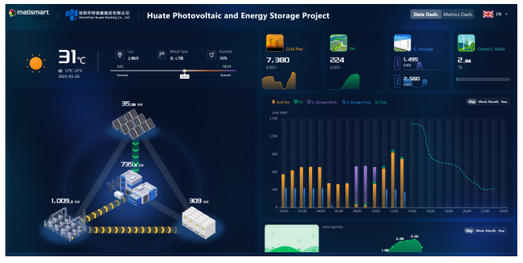
- It complies with international standards such as EN 62052-11, EN 61557-12, EN 62053-21, EN 62053-22, EN 62053-23, EN 50470-1, EN 50470-3, EN 61010-1, EN 61010-2, EN 61010-031, etc., ensuring measurement accuracy and safety

Strong environmental adaptability, suitable for harsh working conditions

- Operating temperature range: -20℃ ~ +70℃
- Storage temperature range: -40℃ ~ +85℃
- Humidity range: 5~95% RH (50℃ , 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: ≤3000m (in accordance with IEC 61010-1)
- Protection class: IP20 (according to IEC 60529)

Powerful communication capabilities, supporting industry standard protocols

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

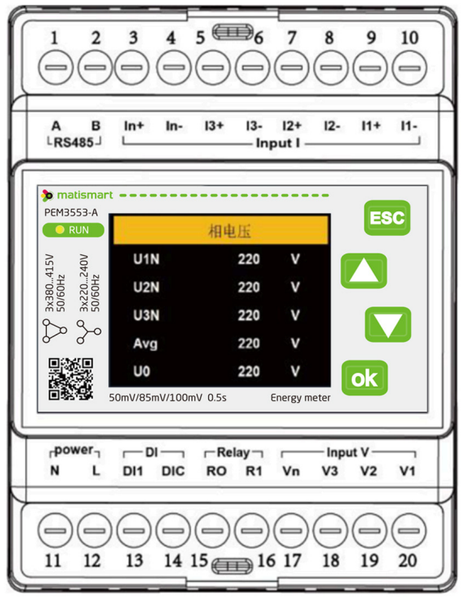


Compact structure, easy installation

- Dimensions: 94.5mm (length) × 72mm (width) × 65mm (height)
- Suitable for DIN rail or flush mounting, it is easy to integrate into power distribution cabinets and energy management systems.

Interface Introduction

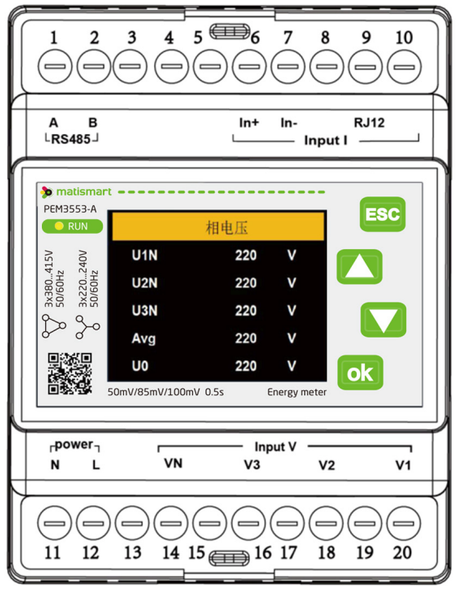
Suitable for: PEM3353–A、PEM3353–D、PEM3353–H



Port No.	Name	Definition	Remark
1	A	RS485 communication A	Data communication
2	B	RS485 communication B	Data communication
3	–	Reserved	Backup port
4	–	Reserved	Backup port
5	–	Reserved	Backup port
6	In+	Phase N current input (+)	Current measurement
7	In–	Phase N current input (–)	Current measurement
8	RJ12	Phase A current input	Current measurement
9	–	Phase B current input	Current measurement
10	–	Phase C current input	Current measurement
11	N	AC power supply (neutral line N)	PEM2553_Input 95–265V AC110~260VDC
12	L	AC power supply (phase line L)	
11	–	DC power supply (negative pole)	PEM3553_Input 18–36VDC
12	–	DC power supply (positive)	
11	N	AC power supply (neutral line N)	PEM8553_Input 90–528VAC
12	L	AC power supply (phase line L)	
13	–	Reserved	Backup port
14	Vn	Phase N voltage input	Voltage measurement
15	–	Reserved	Backup port
16	V3	Phase C voltage input	Voltage measurement
17	–	Reserved	Backup port
18	V2	Phase B voltage input	Voltage measurement
19	–	Reserved	Backup port
20	V1	Phase A voltage input	Voltage measurement

Suitable for:PEM3553–A、PEM3553–D、PEM3553–H

Port No.	Name	Definition	Remark
1	A	RS485 communication A	Data communication
2	B	RS485 communication B	Data communication
3	In+	Phase N current input (+)	Current measurement
4	In–	Phase N current input (–)	Current measurement
5	I3+	Phase C current input (+)	Current measurement
6	I3–	Phase C current input (–)	Current measurement
7	I2+	Phase B current input (+)	Current measurement
8	I2–	Phase B current input (–)	Current measurement
9	I1+	Phase A current input (+)	Current measurement
10	I1–	Phase A current input (–)	Current measurement
11	N	AC power supply (neutral line N)	PEM2353_Input 95–265V AC110~260VDC
12	L	AC power supply (phase line L)	
11	–	DC power supply (negative)	PEM3353_Input 18–36VDC
12	–	DC power supply (positive)	
11	N	AC power supply (neutral line N)	PEM8353_Input 90–528VAC
12	L	AC power supply (phase line L)	
13	DI1	DI1 Digital input	Digital input
14	DIC	Digital input common port	Digital input
15	R0	Relay common port	Relay output
16	R1	Relay NO port	Relay output
17	Vn	Phase N voltage input	Voltage measurement
18	V3	Phase C voltage input	Voltage measurement
19	V2	Phase B voltage input	Voltage measurement
20	V1	Phase A voltage input	Voltage measurement



Model Selection

	PEM3353–A	PEM3553–A	PEM3353–D	PEM3553–D	PEM3353–H	PEM3553–H
CT connection	Screw terminals	RJ12 port	Screw terminals	RJ12 port	Screw terminals	RJ12 port
Auxiliary power supply	95–265V AC 110~370V DC	95–265V AC 110~370V DC	18~36V DC	18~36V DC	90–528V AC	90–528V AC
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, Σ (comprehensive) Power factor:PF PF1, PF2, PF3, Σ (comprehensive) Fundamental power factor:DPF DPF1, DPF2,DPF3, Σ (comprehensive) Active power:P1, P2, P3, Σ (total) Reactive power:Q1, Q2, Q3, Σ (total) Apparent power:S1, S2, S3, Σ (total)					
Energy Measurement	Positive active energy:EP1, EP2, EP3, Σ (total) Negative active energy:EP1, EP2, EP3, Σ (total) Positive reactive energy:EQ1, EQ2, EQ3, Σ (total) Negative reactive energy:EQ1, EQ2, EQ3, Σ (total) Apparent energy:ES1, ES2, ES3, Σ (total) Tariff energy:ET1, ET2, ET3, ET4, ET5, ET6 When the energy reaches 1.0 x109 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:UI1,UI2,UI3					
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	■					
DI/DO	■		■		■	
Modbus communication	■					

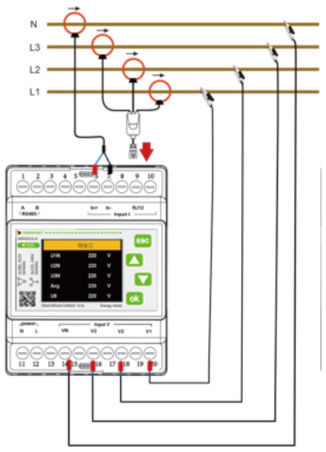
Technical Parameter

		PEM3353–A	PEM3553–A	PEM3353–D	PEM3553–D	PEM3353–H	PEM3553–H
CT connection		Screw terminals	Rogowski Coil 0–900mVAC peak,636 mV RMS	Screw terminals	Rogowski Coil 0–900mVAC peak,636 mV RMS	Screw terminals	Rogowski Coil 0–900mVAC peak,636 mV RMS
Rogowski Coil		–	50mVkA@50Hz(0–12000A),@60Hz(0–10000A) 85mVkA@50Hz(0–7000A),@60Hz(0–6000A) 100mVkA@50Hz(0–6000A),@60Hz(0–5000A)	–	50mVkA@50Hz(0–12000A),@60Hz(0–10000A) 85mVkA@50Hz(0–7000A),@60Hz(0–6000A) 100mVkA@50Hz(0–6000A),@60Hz(0–5000A)	–	50mVkA@50Hz(0–12000A),@60Hz(0–10000A) 85mVkA@50Hz(0–7000A),@60Hz(0–6000A) 100mVkA@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℃ ~ +70℃					
	Storage temperature range	–40℃ ~ +85℃					
	Humidity	5~95% RH, 50℃ (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	
	Digital input	1 dry contact input, optocoupler isolation (5kVrms)		1 dry contact input, optocoupler isolation (5kVrms)		1 dry contact input, optocoupler isolation (5kVrms)	
Communication		Modbus; Communication rate: 2400bps~38400bps; Protocol: Modbus–RTU					
Mechanical characteristic	Dimensions	94.5mm(length)*72mm(width)*65mm(height)					
	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					

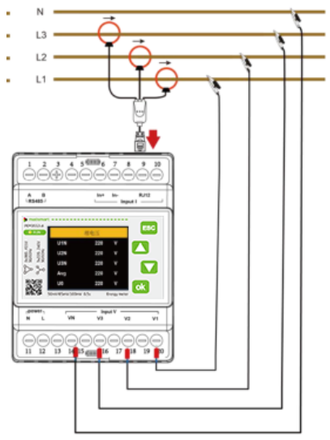
Wiring diagram

Suitable for: PEM3353–A、PEM3353–D、PEM3353–H

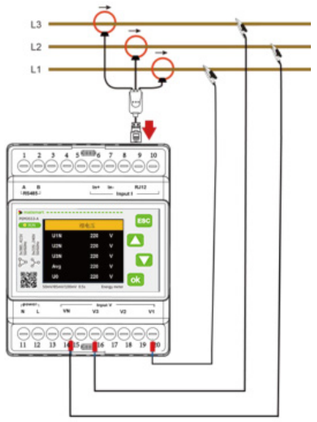
3P4W 4CT



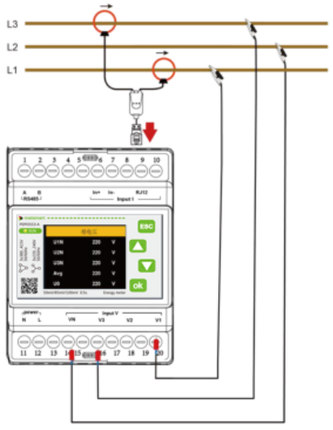
3P4W 3CT



3P3W 3CT



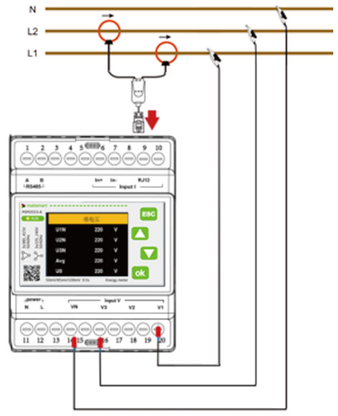
3P3W 2CT



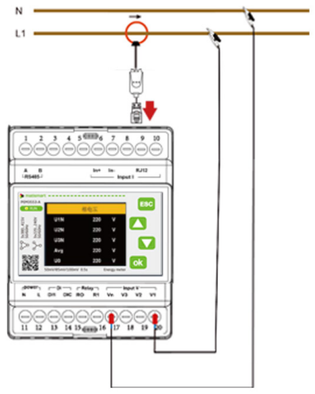
Wiring diagram

Suitable for: PEM3353–A、PEM3353–D、PEM3353–H

1P3W 2CT

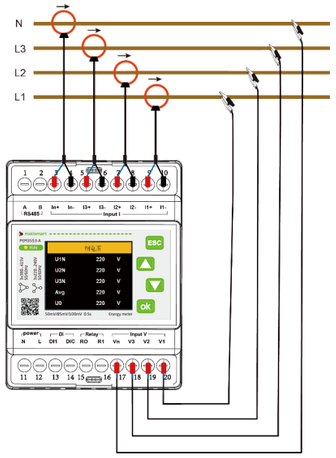


1P2W 1CT

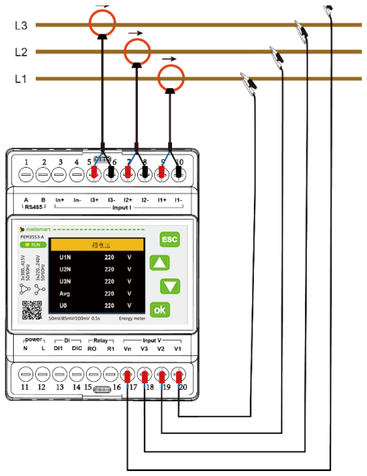


Suitable for:PEM3553–A、PEM3553–D、PEM3553–H

3P4W 4CT



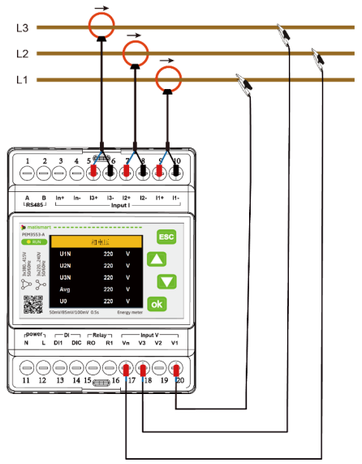
3P4W 3CT



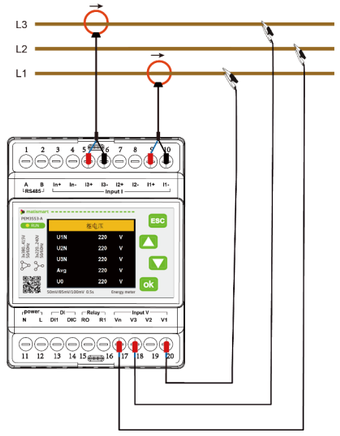
Wiring diagram

Suitable for:PEM3553-A、PEM3553-D、PEM3553-H

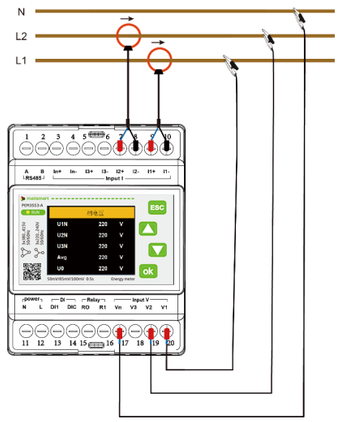
3P3W 3CT



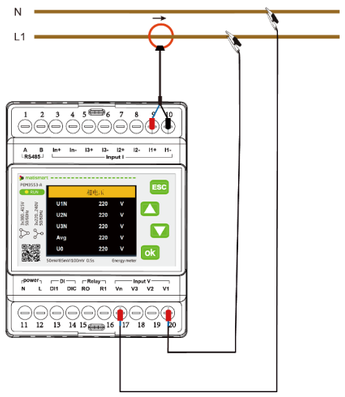
3P3W 2CT



1P3W 2CT



1P2W 1CT

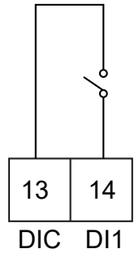


Wiring diagram

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 2CT	Single-phase three-wire	2	American power supply system, suitable for residential and small commercial users in North America, Japan and other regions
1P2W 1CT	Single-phase two-wire	1	Normal household power supply (such as 220V), suitable for residential and commercial single-phase power metering

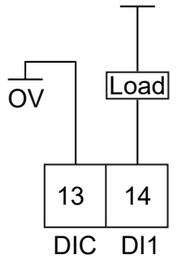
RS485 Wiring

Digital input

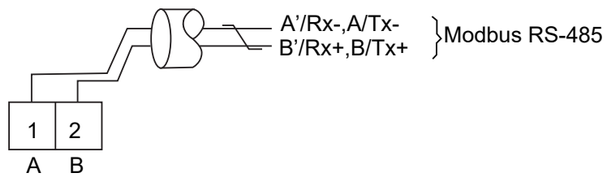


Digital output

11...30 Vdc/250Vac

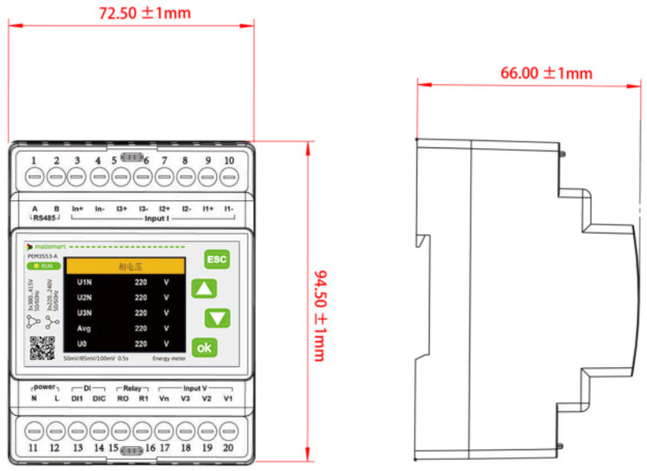


Digital Input&Output



Dimensions

Suitable for: PEM3353-A、PEM3353-D、PEM3353-H



Suitable for: PEM3553-A、PEM3553-D、PEM3553-H