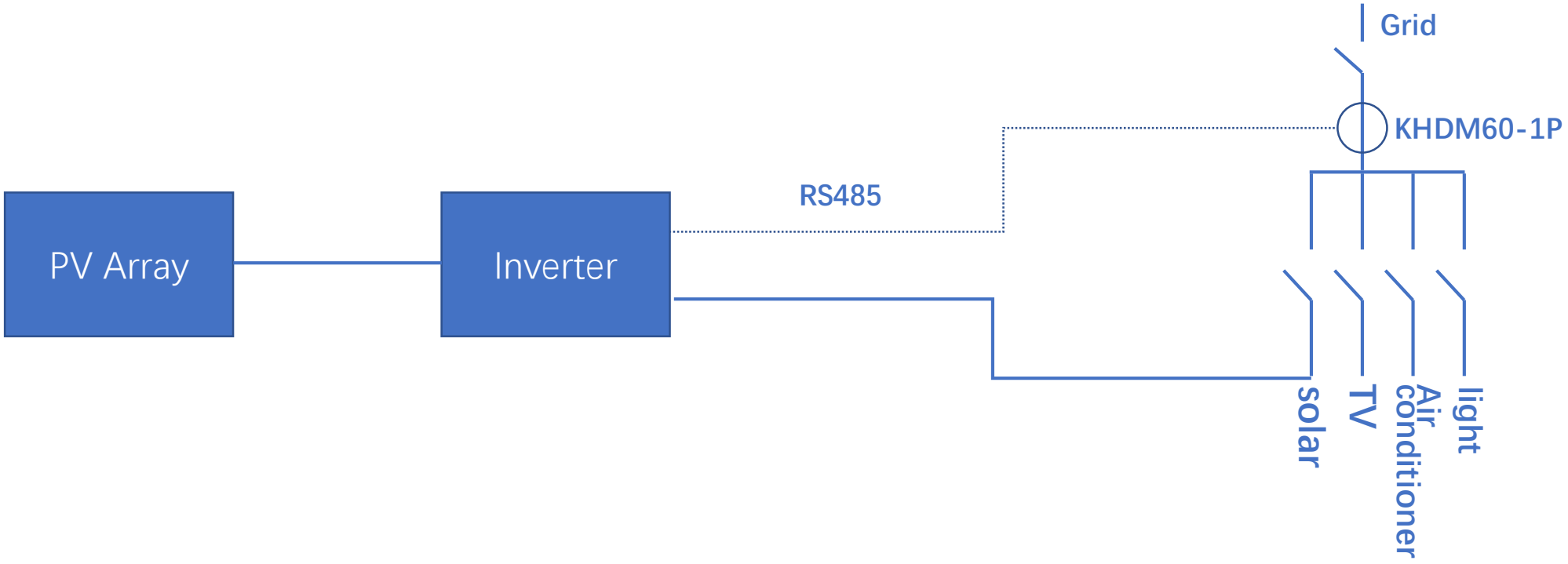
System Overview

PV Array

Inverter

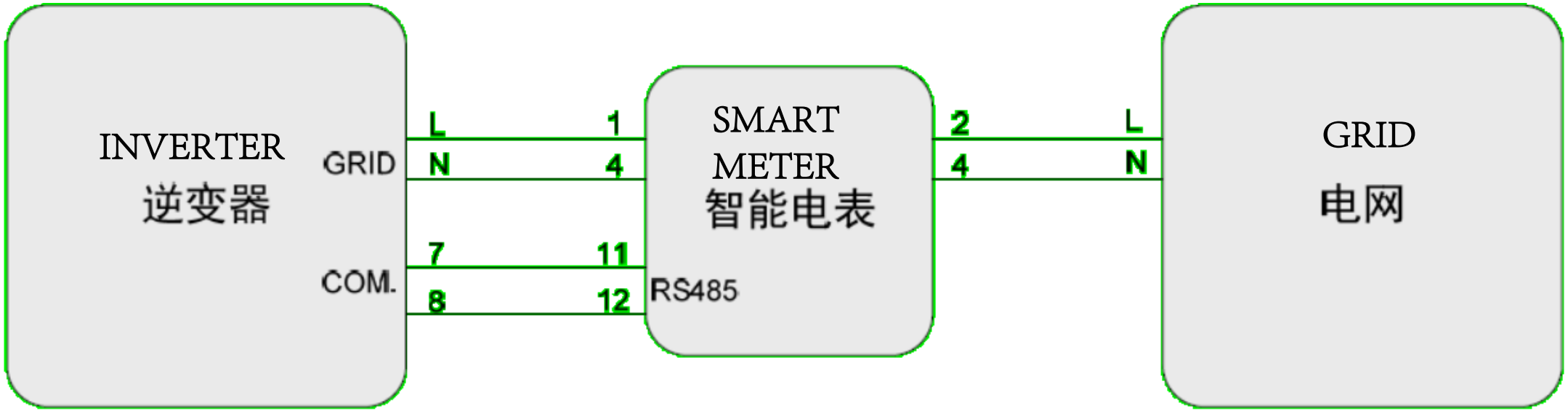
Single phase electronic watt-hour meter

Grid



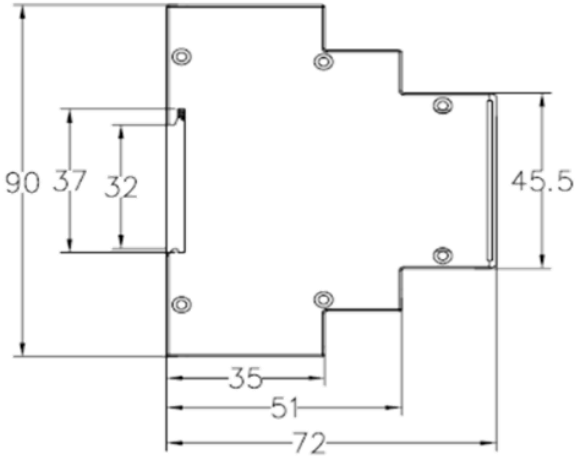
System Overview

The RS485 interface of the meter is mainly used to communicate with the smart meter to realize the anti-backflow function.



Meter Overview

Front view

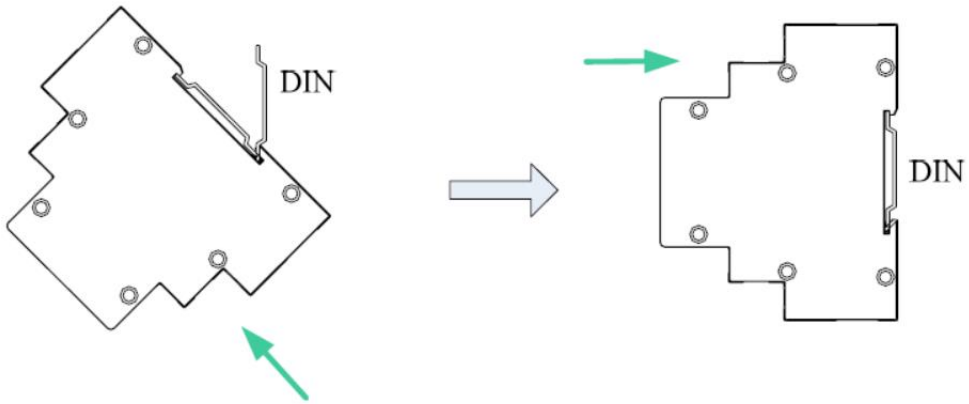


Side view

Rear view

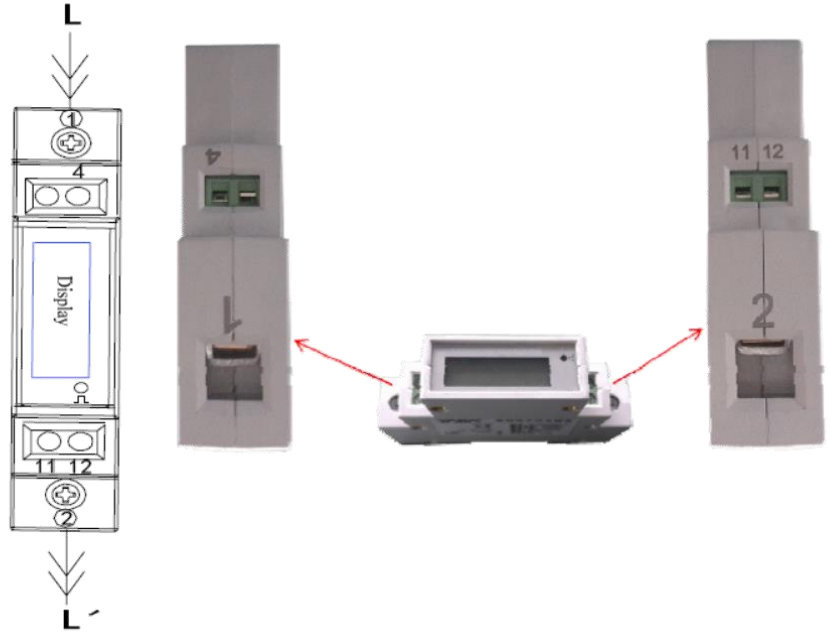
Installation and wiring

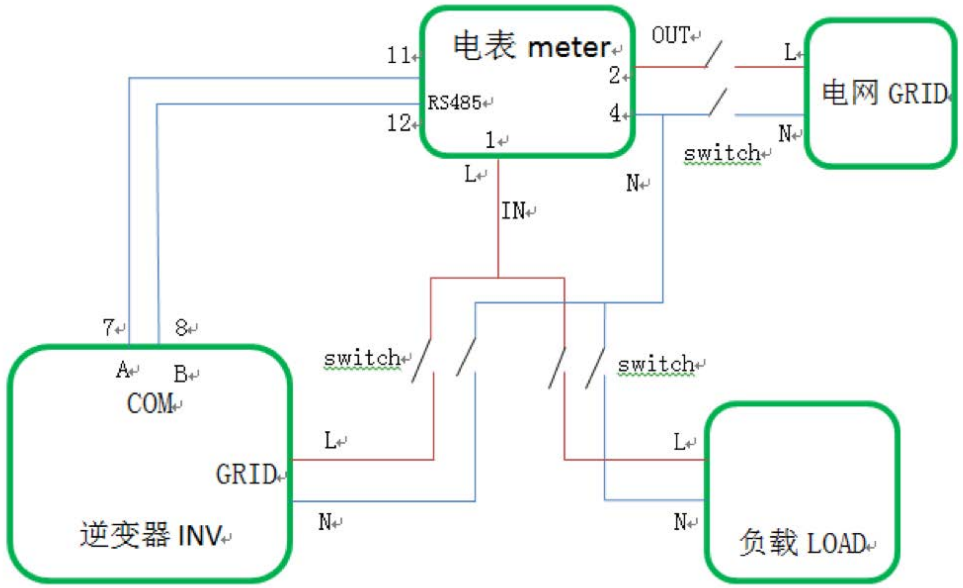
Using DIN 35mm standard rails installation, the installation is indicated as follows：

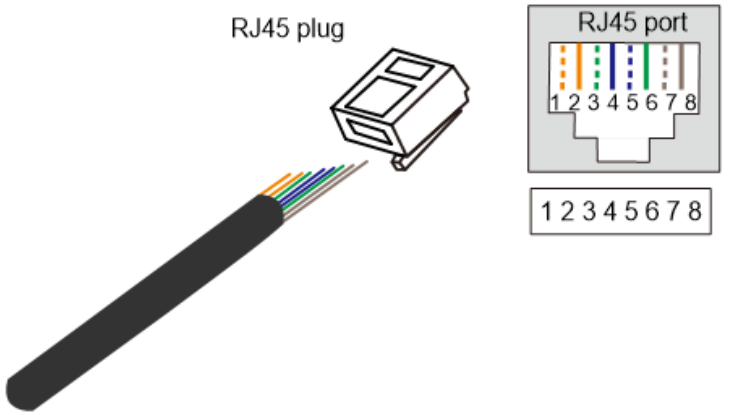


Installation and wiring

Terminal definitions as below







The RJ45 plug is connect to Inverter's meter port, and the pin definition as below:

Pin 1 : White orange - DRM 5

Pin 2 :Orange – DRM 6

Pin 3 : White green – DRM 7

Pin 4 :Blue – DRM 8

Pin 5 : White blue – Refgen

Pin 6 : Green – DRM 0

Pin 7 : White brown - METER:A

Pin 8 : Brown - METER:B

So the Pin 7 is connect to meter's 11 terminal, and Pin 8 is connect to meter's 12 terminal.

➢ Anti-countercurrent setting

In main menu page, select **System Setting**, it will enter user login page. Select user and enter password, it will enter the page of corresponding user authority.

```
> User
  Admin
```

Button	Function
▲ ESC	• Short press: move the cursor upward • Long press: back to main menu page
▼ ENT	• Short press: move the cursor downward • Long press: enter the cursor pointed user authority page

The initial password of general user is **000111**

```
Password:
0 0 0 1 1 1
```

Button	Function
▲ ESC	• Short press: add number value • Long press: clear enter value, and back to user authority page
▼ ENT	• Short press: reduce number value • Long press: confirm the current entering, and the cursor move to right

Anti-countercurrent setting

I/O set includes anti-island enable, anti-countercurrent enable, DRM mode, enter the I/O set, enable the anti-countercurrent and then back to Engineer set.

Button	Function
ESC	● Short press: move the cursor upward ● Long press: back to main menu page
ENT	● Short press: move the cursor downward ● Long press: enter the cursor pointed user authority page

Engineer setting includes active power, reactive power, power factor, ISO protect, PV parallel mode, soft start, anti-countercurrent power,10min voltage, overvoltage protection point, overvoltage recover point, under-voltage protection point, under-voltage recover point, over-frequency protection point, over-frequency recover point, under-frequency protection point, under-frequency recover point, PV mode setting, etc.

Button	Function
ESC	● Short press: add number value ● Long press: clear enter value, and back to user authority page
ENT	● Short press: reduce number value ● Long press: confirm the current entering, and the cursor move to right

Enter the engineer set, and setting the anti-countercurrent power rate. It is the percentange of rated apparent power, for example, the 90% anti-countercurrent of SPI 5000 are 5500W * 90% = 4950W.

KHDM60-1P Single-phase electronic watt-hour meter （guide rail）Instructions

1、 Overview

KHD60-1P Single-phase electronic watt-hour meter is a highly compact measuring meter. Set measurement, measurement, LCD display, communication in one. Electric energy metering and electrical parameters measurement such as voltage, current, power and power factor. It has RS-485 communication interface and supports DL/T645-2007 and Modbus-rtu dual communication protocol.

Product performance indicators in line with GB/t17215.321-2008 national standards and the power industry standard dl/t614-2007 on the energy meter of the technical performance indicators.

High precision metering chip and high speed MCU data Processing Unit are adopted to realize accurate measurement of wide range. LCD display, its reliability and high power overload, high stability, low-power, power outage data automatic preservation and so on, RS485 communication interface and host computer to achieve data exchange, small size, high precision, good reliability, easy to install and other advantages.

35mm rail type installation can be installed in the distribution cabinet and small distribution box. Applicable to individual equipment, campus dormitories, home rental and large-scale of electrical energy metering, can also be used in enterprises and institutions for power management assessment.

2 、 Specifications and main technical parameters

2.1 Specifications

Reference voltage：220V (Un)

Current specification：5(40)A、10(60)A

Pulse constant：1600 imp/kWh ， 800 imp/kWh

Frequency：50Hz

Accuracy level：Level 1

(The above parameters are subject to nameplate labeling)

2.2 Main technical parameter

2.2.1 The accuracy error conforms to the table requirements

Current value	Power Factor	Basic error
0.05Ib≤I＜0.1Ib	1.0	±1.5
0.1Ib≤I＜Imax	1.0	±1.0
0.1Ib≤I＜0.2Ib	0.5(Perceptual)	±1.5
0.2Ib≤I＜Imax	0.5(Perceptual)	±1.0

2.2.2 Electrical parameters

Voltage Line Power Consumption：＜2W，10VA

Current line consumption：≤1VA

Voltage work Range：Normal range：0.9～1.1Un；

Limit Range：0.7～1.2Un

2.2.3 Shunning

When the energy meter exerts a reference voltage of 115% and the current line has no current, the output of the watt-hour meter should not produce more than one pulse in the specified time.

2.2.4 Starting

Under the condition of rated voltage, the load current is up to 0.004Ib, the energy meter should have pulse output or light flashing on behalf of power output in the specified time.

2.2.5 Environmental conditions

Operating temperature：-25℃～+55℃

Extreme operating Temperature：-20℃～+60℃

Storage and transport temperature：-40℃～+70℃

Relative humidity：＜75%（Average annual）。

2.2.6 Communication interface

Communication interface：RS485

Baud Rate: Communication baud rate can be set, the standard rate is 1200bps, 2400bps, 4800bps, 9600bps, the default baud rate of 2400bps

Communication Data format: I/odd/No check can be set, factory defaults to E-8-1

Communication Address: dl/t645-2007 Communication address defaults to Ammeter code (12 is BCD code), Modbus protocol address defaults to 01

2.2.7 Mechanical parameters

Overall Size：90±0.5mm×18±0.5mm×72±0.5mm

Weight：0.25kg

3、Main function and operation

3.1 Energy metering

The measurement and storage of the total active power. Current combined active total Power = positive active total energy + reverse active total power.

3.2 Display Features

LCD display, using 6+1-bit LCD display. Display project has combined active power, voltage, current, power, power factor, display as automatic cycle display, power failure does not show.

3.3 Measuring function

Measurement of voltage, current, power, frequency and power factor

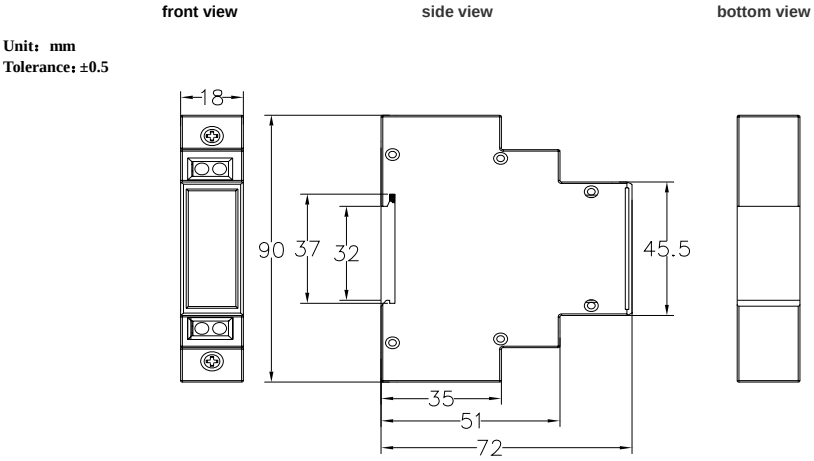
3.4 Communication function

With a RS485 communication interface and host computer for data exchange. The communication rate of the RS485 communication interface can be set in 1200bps, 2400bps, 4800bps, 9600bps, and the default rate is 2400bps. The communication protocol satisfies the dl/t645-2007 and Modbus-rtu protocols.

3.5 Pulse Indication

With an active pulse indicator, red, active energy metering when flashing.

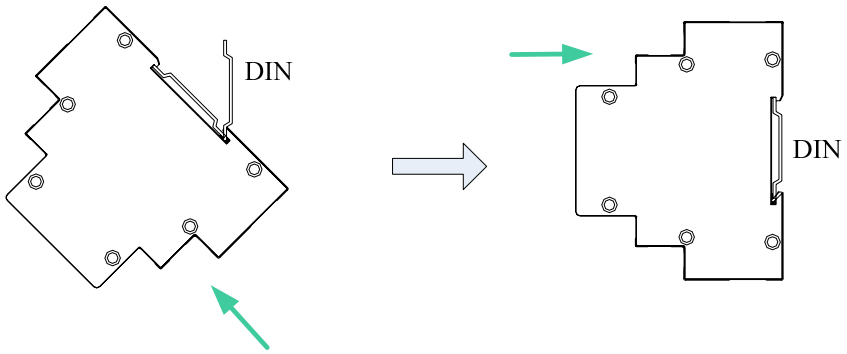
4、Overall Size Chart



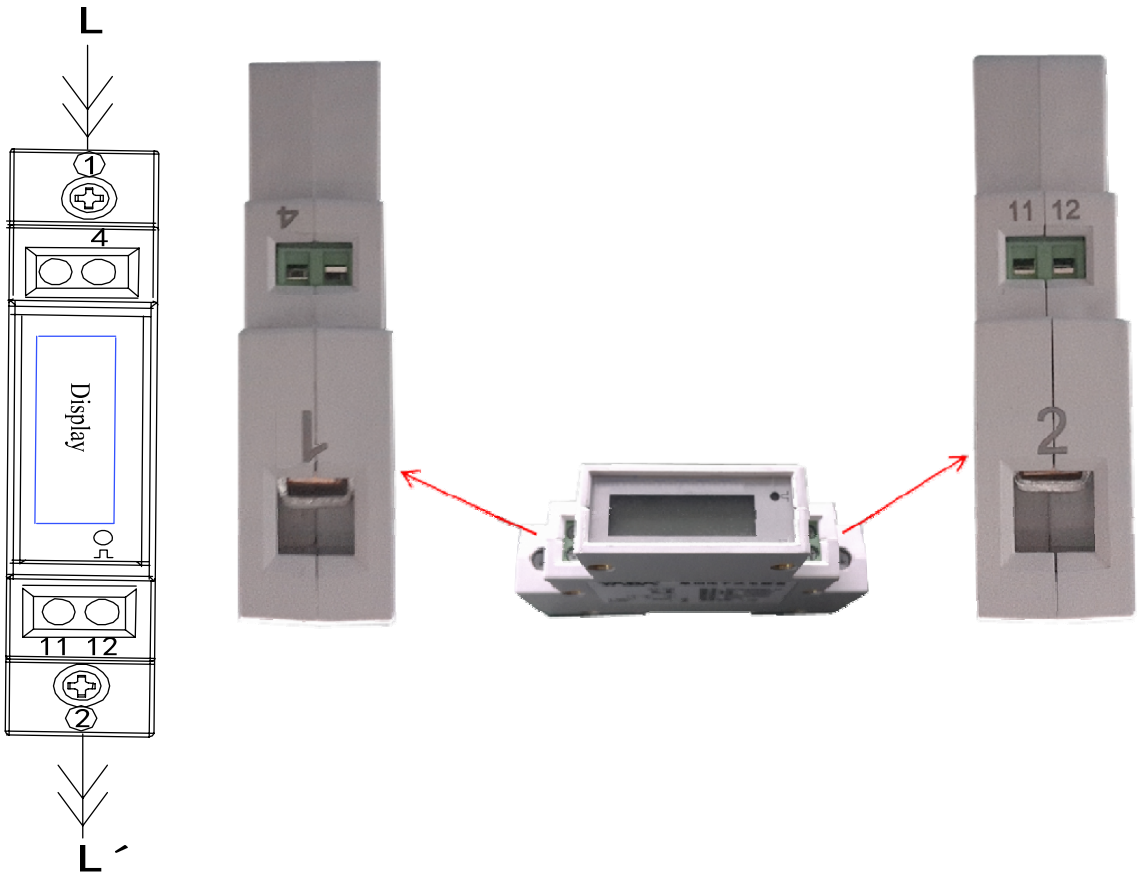
5、Installation and wiring

5.1 Installation schematic

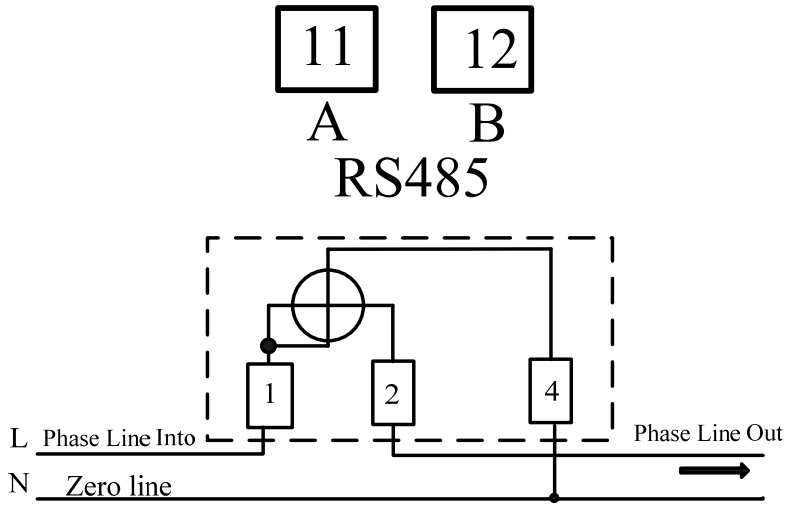
Using DIN 35mm standard rails installation, the installation is indicated as follows



5.2 Terminal



5.3 Wiring



5.4 Attention matters

The electric meter should be installed in a firm, refractory, no vibration-prone place. Do not install electricity meter, according to the end wiring diagram correct wiring, otherwise may because the voltage is too high to burn out the meter. Wiring should be noted due to poor contact and access line too thin to cause the ignition and burning. Pay attention to the meter range, do not exceed its range, or may be due to the load current too large to burn out the meter.

6、Storage and transportation matters needing attention

6.1 Products in the transport and unpacking should not be subjected to severe impact, and in accordance with national standards GB/t13384-2008 "mechanical and electrical products packaging general technical conditions," The provisions of transport and storage.

6.2 This product is electronic devices, so handling, taking and putting should be avoided as far as possible to avoid heavy impact and bump.

6.3 Storage location Ambient temperature -40～+70℃,Relative humidity not exceeding 85%.

6.4 The Watt-hour meter shall be stored in the warehouse under the condition of the original packing, and not more than 5 cases in the stacking height. After unpacking the meter, if the appearance of damage found, please do not install the meter, stacking height of not more than 5 pieces, unpacking the meter is not suitable for storage.

7、Guarantee Period

Instrument from the factory date within 18 months, if the user found that does not meet the above characteristics and technical requirements, and in the relevant electric power measurement departments to prove in full accordance with the requirements of this manual operation, my company is responsible for free maintenance.

Attention：The above picture is for reference only, take the actual shipment as the standard,