

Danger and Warning

The device may only be installed by professionals. Caused any malfunction due to not follow the instructions in this manual, Manufacturers will not bear any responsibility.

Electric shock, burning and explosion

- Devices can only be installed and maintained by qualified staff.
 - Before any operation, the device should be isolated from the voltage input and power supply, and short circuit the secondary winding of all current transformers.
 - Verify if the device is live before operation.
 - All mechanical parts and covers should be restored in place before the device is energized
 - Device in use should be provided with the correct voltage.
 - Not paying attention to these precautions may cause serious injury.
- Do not pay attention to these precautions may cause serious injury.*

1 Outline

1.1 Function introduction

KPM33 three-phase rail smart energy meter is designed with the most advanced microprocessor and digital signal processing technology. A comprehensive three-phase electrical parameter measurement, display, energy accumulation, and network communication are integrated. Strong anti-interference ability, and can work stably even in serious electromagnetic interference.

1.2 Application

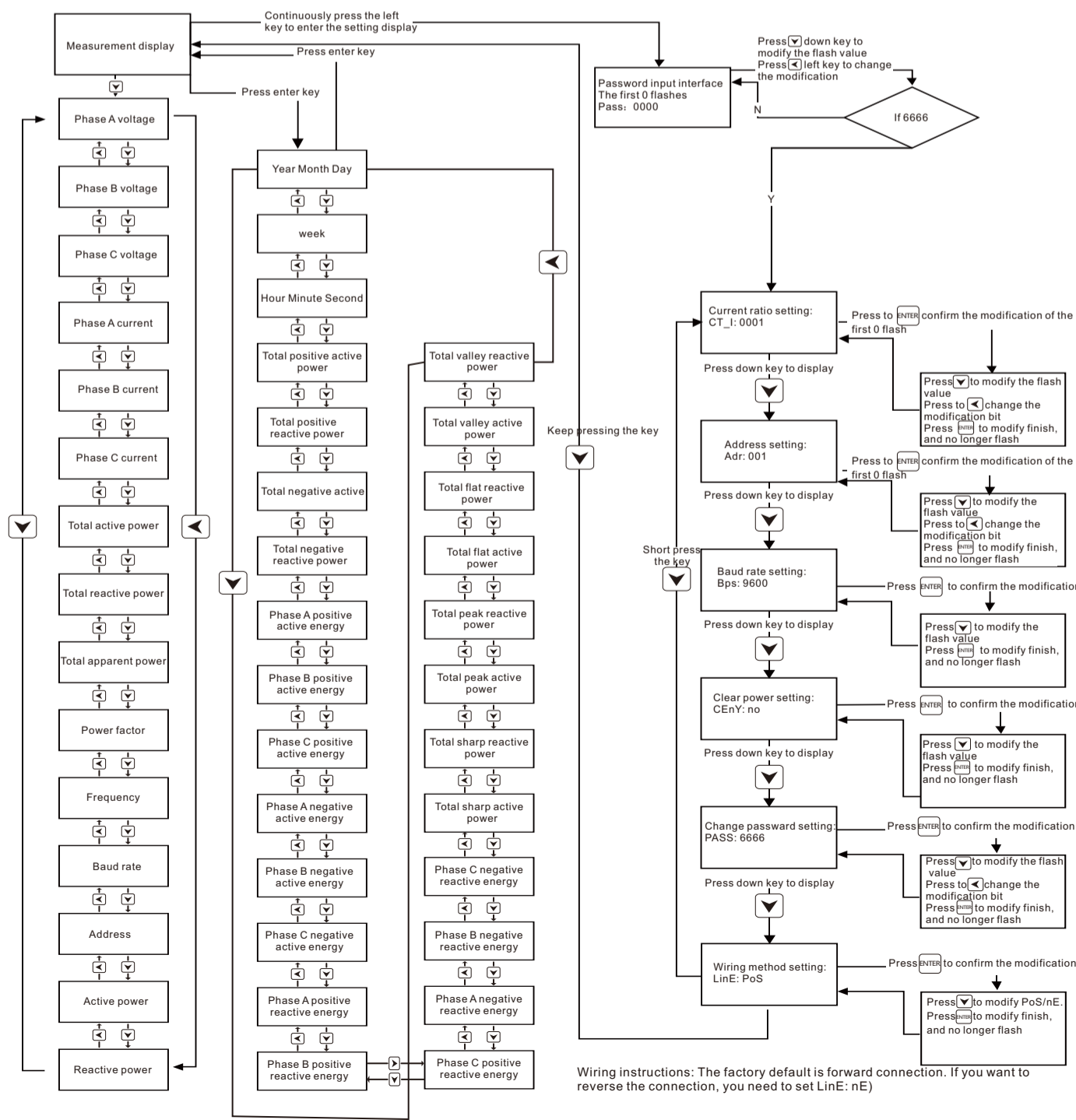
- Measuring and monitoring power parameters in distribution systems.
- Energy and Energy Efficiency Management System.
- Internal power consumption statistics analysis and charging statistics basis.
- Electric energy metering automatic meter reading system.
- Intelligent Distribution Management System.

1.1 Function features

- It can measure three-phase voltage, current, active power, reactive power, apparent power, power factor, frequency, active power, reactive power.
- Multi-rate electricity metering, up to 8 time period a day, 4 rates can be selected.
- 12-month history statistics function.
- Standard configuration 1-way RS485 communication interface, Modbus protocol, expandable DLT645-2007 protocol.
- Rated current available: 1.5(6)A, 10(60)A, 20(100)A.
- LED indicator pulse, missing phase display.
- 1-way passive optocoupler collector active pulse output.
- Front-end integrated DSP measurement chip, high measurement accuracy.
- Double-row display of power and electrical parameters at the same time.
- Built-in clock and maintenance-free battery, permanent data retention after power failure.
- 35mm standard rail installation, beautiful appearance, easy installation.

5.2 keys operation and display

Measurement and setting display flow chart



Wiring instructions: The factory default is forward connection. If you want to reverse the connection, you need to set LinE: nE)

2 Technical Parameters

2.1 Environmental conditions

Operating temperature: -25°C ~ +70°C
Storage temperature: -30°C ~ +75°C
Relative humidity: 5% ~ 95% No condensation
Altitude :3000 meters below

2.2 Rated parameters

Input voltage: AC 220/380V
Input current: 1.5(6)A, 10(60)A, 20(100)A
Power consumption: <2VA
Overload capacity:
AC voltage loop 1.2 times the rated voltage Continuous operation
2 times the rated voltage , Allow 10S
AC current loop 1.2 times the rated voltage, Continuous operation
20 times the rated voltage ,Allow 1S

2.3 Precision index

Parameter	Accuracy	Resolution	Parameter	Accuracy	Resolution
Voltage	±0.2%	0.01V	Power factor	±0.5%	0.001
Current	±0.2%	0.01A	Active energy	±1.0%	0.1kWh
Active power	±1.0%	0.1W	Reactive energy	±2%	0.1kvarh
Reactive power	±2%	0.1var	Frequency	±0.02	0.01Hz

2.4 Electrical insulation performance

Power frequency withstand voltage:
In line with GB /T13729-2002 provisions
Power frequency voltage 2KV, 1 minute
Insulation resistance:
In line with GB /T13729-2002 provisions
Insulation resistance of not less than 50MΩ
Impulse voltage:
In line with GB /T13729-2002 provisions
Bear the impact of 1.2 / 50US peak for 5KV standard lightning

2.5 Mechanical properties

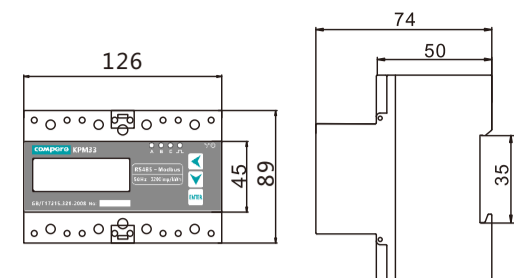
Vibration response:
IEC255-21-1:1998, level 1
Vibration durability:
IEC255-21-1:1998, level 1
Impact response:
IEC 255-21-2, level 1
Impact durability:
IEC 255-21-2, level 1
Collision:
IEC 255-21-2, level 1

2.6 EMC performance

Electrostatic discharge immunity:
IEC61000-4-4, level 4
Fast pulse group immunity:
IEC61000-4-5, level 4
Surge immunity:
IEC61000-4-2, level 4
Power frequency magnetic field immunity:
IEC61000-4-8, level 4

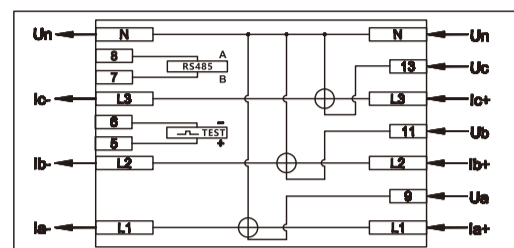
3 Installation and Wiring

3.1 Product size

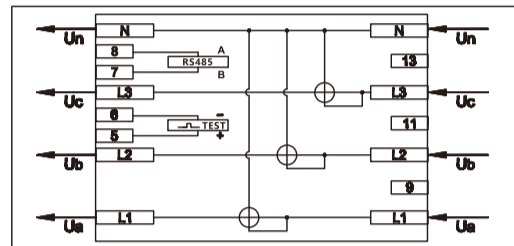


3.2 Installation and wiring

KPM33 Low voltage 3 phase 4 wire indirect access via CT/5A typical wiring diagram



KPM33 Low voltage 3 phase 4 wire direct access typical wiring diagram



Note: In the case of indirect access via CT/5A, the secondary side of the current transformer needs to be grounded.

4 Function Description

4.1 Energy Measurement

KPM33 records historical total active energy; total reactive energy; import/export active/reactive energy; active energy and reactive energy freeze on historical 12 settlement days (0:00 on the 1st of each month).

KPM33 also provides multi-rate electric energy, provides four rates for sharp, peak, flat and valley; and can set up to 8 time periods in 24 hours a day. It can record the total active/reactive energy for sharp, peaks, flats and valley, record four rates for 12 months active/reactive, and four-rate historical energy.

Note:

- If the current transformer is applied, the meter displays the primary energy value.
- If the current is directly connected, the meter displays the primary side energy value.
- When the power is more than 9999999.9, the meter always shows 9999999.9.
- The communication part reads all the actual values on the primary side.

4.2 Pulse

Pulse output: KPM31 provides active/reactive energy metering, 1 active energy pulse output function, using optocoupler open collector output. The method of energy accuracy inspection refers to the national measurement regulations

Measurement procedures: Pulse error comparison methods for standard meters

Electrical characteristics: Open collector voltage VCC ≤ 48V, current Iz ≤ 50mA

Pulse constant: 3200imp/kWh

Its significance is: When the meter accumulates 1kWh, the number of pulse outputs is 3200

It is necessary to emphasize that 1kWh is the secondary side energy data of the electric energy. In the case of CT, the relative N pulse data correspond to the primary side electric energy:

$$N \div 3200 \times \text{Current ratio (Kwh)}$$

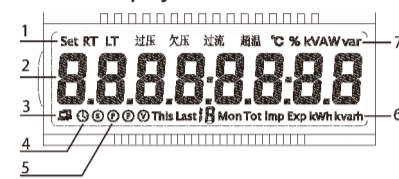
Application example: Assume that the external pulse counting device collects N pulses in a period of time, and the meter input is: 3*220V, 400A/5A, then the meter energy accumulation in the time period is: N*3200*80 kWh.

4.3 Missing phase indication

When A, B, C phase loss occurs on any of the three phases, the corresponding A, B, and C phase indicators are always on.

5 Application Operation Instructions

5.1 Interface display



NO.	Content displayed	Detailed description
1	Settings	Display when setting parameters
2	Display indication	Digital tube display UA (Phase A voltage), Ub (Phase B voltage), Uc (Phase C voltage), IA (Phase A current), Ib (Phase B current), Ic (Phase C current), P (total active power), q (total reactive power), S (total apparent power), PF (average power factor), F (frequency), bd (baud rate), Ad (address), active energy, reactive energy
3	Communication indication	Two small computers at the bottom left of the screen during communication
4	Time indication	When the enter key is pressed, the time and electrical parameters are switched and displayed
5	Sharp, peak, flat, valley display	Multi-rate power display
6	Power display	Display active power and reactive power
7	Electric parameter unit symbol	Voltage V, kV; Current: A, kA; Active power: W, kW; Reactive power var, kvar; apparent power: VA, kVA

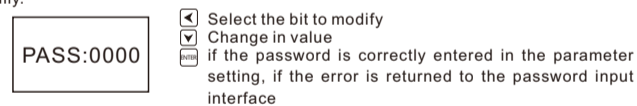
Three touch buttons on the front panel, they are labeled from left to right as key, key, key. The display of different measurement data and the setting of parameters can be realized through the operation of three buttons.

Name of key	Functional description
Left key	Press the left key or the down key to cycle through all the parameters of the function item; in the parameter setting state, long press the left key to enter the parameter setting state, short press the left key to switch the modification bit; press the key to change the value of the modification bit; Press the enter key to confirm the setting parameters, press the key to switch the setting item, and long press the key to return to the parameter display interface.
Down key	In the parameter setting state, it is used to enter the modification menu and confirm the programming parameters; in the parameter measurement interface, it is used to switch between the electric parameter and the multi-rate electricity.
Enter key	

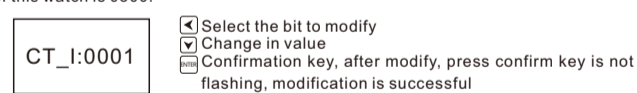
5.3 parameter setting menu is as follows

Before starting measurement, please set
If you want to enter the setting interface, you need to press and hold for 3 seconds to enter the password input interface. The default password is 6666. Enter the password. Press key to enter the parameter setting interface, then press key to select the item to be set. After pressing the key, the leftmost digit of the set value begins to flash. Press key to select the digit to be modified. Press to increase the size of the modified digit value. After each modification, press to confirm. In the setting interface, if there is no key in 30s, it will return to the measurement display.

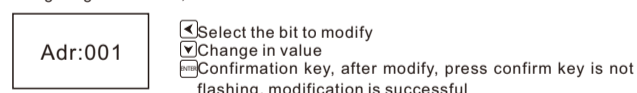
1. Password input interface
Before entering the setting screen, enter the password, the initial password: 6666, you can set the password after entering the setting screen
Note: When setting the password, please save the password in advance and set it carefully.



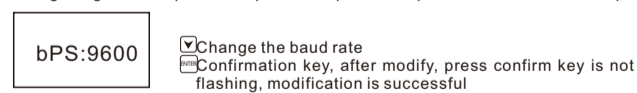
2. Current ratio setting
If the input current is too large and an additional transformer is required, then the current ratio needs to be set.
Note: The setting range is 0001~9999; the default value is 0001, the maximum change ratio of this watch is 0300.



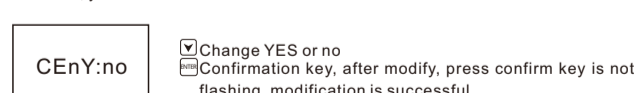
3. MODBUS address settings
The meter address is the standard Modbus-RTU address. On the same RS485 communication link, the addresses of all KPM33 power meters cannot have the same address. Before the operation, the address of the instrument must be set uniformly.
Note: Setting range: 001~247; Default value: 001



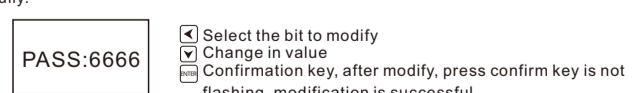
4. Baud rate setting
The baud rate of the RS485 interface can be set according to your own system, but pay attention to the parity of each byte of the communication data in the RS485 link.
Note: Setting range: 1200bps, 2400bps, 4800bps, 9600bps, default value: 9600bps



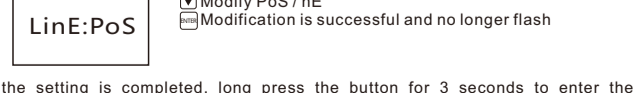
5. Clear power
Clearing the energy is to clear the current, historical records, and multi-rate active and reactive energy.
The default is no, you can switch to YES to clear.



6. Change Password
Initial password: 6666, users can set their own.
Note: When setting the password, please save the password in advance and set it carefully.



7. Modify wiring
Initial connection: PoS (forward), Users can set themselves
If the field wiring is inconvenient and it needs to be reversed, you need to set LinE:nE



After the setting is completed, long press the button for 3 seconds to enter the parameter measurement interface. If you do not press the button, you can automatically return to the display interface after a period of time.

