# compere

## KPM31
## Single phase DIN rail energy Meter user instructions V2.1

### ⚠ 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 qualified by the staff to install and maintain.

■ Before any operation on the Devices, should be isolated from the voltage input and power supply, and the

■ secondary windings of all current transformers are Short circuit.

■ Verify that the device is live before operation.

■ All mechanical parts and covers should be restored in

*Not pay attention to these precautions may cause serious injury.*

## 1.Overview
### 1.1.Function introduction
KPM31 is designed with advanced microprocessor and digital signal processing technology. It integrates comprehensive single phase power measurement, display, energy accumulation, and network communication. It has strong anti-interference ability and can still work stably in situations with severe electromagnetic interference.

### 1.2 Applications
➢ Measure and monitor electric energy parameters in the distribution system
➢ Energy efficiency management system
➢ Statistical analysis of internal power consumption and basis for charging statistics
➢ Automatic meter reading system for electric energy measurement
➢ Intelligent power distribution management system

### 1.3 Features
➢ Measure single-phase voltage, current, active power, reactive power, apparent power, power factor, frequency, frequency, etc..
➢ 12-month historical electricity statistics function
➢ Standard configuration 1 RS485 communication interface, Mod bus protocol, expandable DLT645-2007 protocol
➢ Rated current 5(60)A
➢ 1 pulse passive optocoupler collector output
➢ Front-end integrated DSP measurement chip, high measurement accuracy
➢ Built-in clock and maintenance-free battery, data is permanently saved after power failure
➢ The internal expandable large-capacity magnetic latching relay realizes load on-off control
➢ 35mm standard guide rail installation, beautiful appearance, easy installation
➢ Multi rate electric energy statistics: 4 kinds of rates, 2 sets of time zone tables, 2 sets of time interval tables.

## 1.4. Electrical insulation performance
Power frequency withstand voltage: In line with GB /T13729-2002 provisions, Power frequency voltage 2KV,Insulation resistance 1 minute.Insulation resistance: In line with GB / T13729-2002 provisions, Insulation resistance ≥50MΩ Impulse voltage: In line withGB / T13729-2002 provisions, can bear the impact of 1.2 / 50US, 5KV peak standard lightning.

### 1.5. 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

### 1.6. 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

## 2 Technical Parameters
### 2.1 Environmental Conditions
Working temperature: -10℃+55℃
Relative humidity: 5%~95% non-condensing
Storage temperature: -20℃+75℃
Altitude: Below 3000 meters

### 2.2 Rated Parameters
Input voltage: Rated 220V
Input current: 5-60A
Power consumption: Whole set power consumption < 0.5VA
Overload capacity:
　　AC voltage loop: 1.2 times rated voltage, continuous work
　　　　　　　　2 times rated voltage, allow 10s
　　AC current loop: 1.2 times rated current, continuous work
　　　　　　　　20 times rated current, allow 1s

### 2.3 Measurement Accuracy Index

| Parameters | Accuracy | Parameters | Accuracy |
|---|---|---|---|
| U | 0.2% | PF | ±0.5% |
| I | 0.2% | kWh | 0.5s(Class B) |
| P | 0.5% | kVar | Class 2 |
| Q | 0.5% | F | ±0.02 |

### 2.4 Electrical insulation Performance
Medium strength:
　　Comply with GB/T13729-2002 regulations,
　　Power frequency voltage 2KV, time 1 minute
Insulation resistance:
　　Comply with GB/T13729-2002 regulations,
　　500V megger test, insulation resistance not
　　less than 50MΩ
Impulse voltage:
　　Comply with GB/T13729-2002 regulations,
　　Withstand the impact of 1.2/50US peak 5KV
　　standard lightning wave
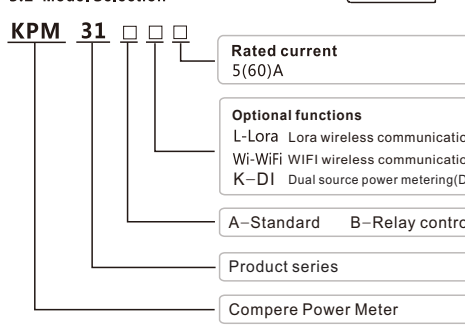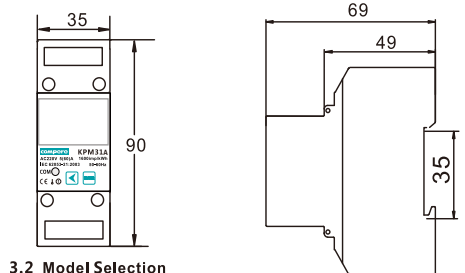
### 2.5. Mechanical properties
Vibration: Vibration response: GB/T11287-2000, level 1
Vibration durability: GB/T11287-2000, level 1
Impact: Impact response: GB/T14537-1993, level 1
Impact durability: GB/T14537-1993, level 1
Collision: GB/T14537-1993, level 1

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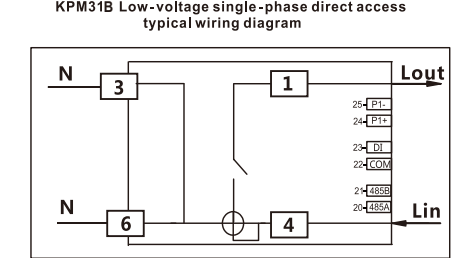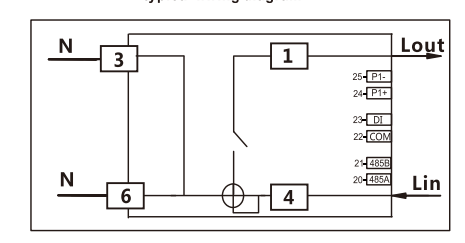　　　　　　　　IEC61000-4-8, level 4

## 3 Selection And Installation
### 3.1 Product Size



### 3.2 Model Selection



KPM 31 □ □ □
　Rated current 5(60)A
　Optional functions
　　L-Lora Lora wireless communication
　　Wi-WiFi WIFI wireless communication
　　K-DI Dual source power metering(DI)
　A-Standard　　B-Relay control
　Product series
　Compere Power Meter

For example, KPM31-A-5(60): Rated 220V, 5(60)A, Standard model, multi-rate energy statistics, historical electric energy statistics, single-phase rail smart energy meter.

### 3.3 Installation Wiring

**KPM31A Low-voltage single-phase direct access typical wiring diagram**



**KPM31B Low-voltage single-phase direct access typical wiring diagram**



## 4 Function Description

### 4.1 Electric energy measurement
KPM31 records the historical total active power, total reactive power, forward and reverse power of active and reactive power, and freezes of active and reactive power in the historical 12 settlement days (restore power at 0 o'clock on the 1st of each month).KPM31 also provides Multi-rate electric energy, providing four rates of peak, flat and valley, up to 14 periods can be set 24 hours a day, can record total active/reactive energy at four rates of peak,flat and valley, and record four rates of active/reactive power for 12 months And four-rate historical power.
For example, the daily electricity measurement is divided into 5 time periods:

1# segment start time is 6 o' clock, end time 10 o' clock, billing segment is 1; 2# segment start time is 10 o'clock, end time 12 o'clock,billing segment is 2; and so on, 5# period start time is 24 o'clock and ends at 6 o'clock the next day, and the billing segment is 4. The electricity kWh of the same rate is calculated in combination. city measurement is divided into 5

| Time slot | Time Slot Tart time | Rate |
|---|---|---|
| 1# | 6 | 1 |
| 2# | 10 | 2 |
| 3# | 12 | 1 |
| 4# | 15 | 3 |
| 5# | 23 | 4 |

### 4.2 Input Signal
◆The input voltage should not be higher than 120% of the rated input voltage.

◆ Current input: In actual engineering applications, it can be directly connected within 0-60A.

### 4.3 Output Signal
◆ Pulse output: KPM31A&B provides active/reactive energy measurement, active energy pulse output function, adopts the output of the optocoupler open collector, the method of energy accuracy inspection refers to the national measurement regulation: the pulse error comparison method of the standard meter.
◆ Electrical characteristics: open collector voltage VCC≤48V, Current Iz≤50mA;
◆ Pulse constant: 1600 imp/kWh

### 4.4 RS485 communication
The meter provides RS485 communication, adopts the standard MODBUS-RUT protocol , and can query various power parameters.

### 4.5 Magnetic latching Relay Control
KPM31B provides relay action mode, users can communicate remotely to control the close or trip of the relay.

### 4.6 Dual source power metering
KPM31BK is equipped with one DI input, which is connected to the dry contact of the switch device. When the dry contact is open, measure the electric energy data of the basic circuit; when the dry contact is closed,measure the electric energy data of the extended circuit.

## 5. Operating Instructions
### 5.1 Interface display

Real-1
U:　　　　　220.3V
V:　　　　　000.0A
F:　　　50　Hz

### 5.2 Key Operation And Display



### 5.3 Parameter Setting Menu

Please make settings before starting measurement. When entering the setting screen, you need to press 【◄】 and hold for 3 seconds to enter the password input interface. The default password is 6666. the password correctly. Long press【ENTER】key to enter the parameter setting interface, and then press【◄】key to select the item to be set, after long press【ENTER】key, the first number from left of the set value will start to flash, short press【◄】key to select the digit to be modified, short【ENTER】press the key to increase modified bit value. After finish the modification, long press【ENTER】key to confirm. In the setting interface, if there is no operation for 30s, it will return to the measurement display screen, or short press the 【◄】and【ENTER】 keys at the same time to return directly to the

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

PASS:0000
【◄】:Select digit to be modified
【ENTER】:Short press this key to modify the value, long press it, if the password is correct, enter the parameter setting, otherwise return to the password input interface.

2.Password modification
: Initial password: 6666, which can be set by users.
Note: When setting a password, please save the password in advance and set it carefully.

PASS:6666
【◄】:Select digit to be modified
【ENTER】: long press this key to save and no longer flash means operation success

3. Address setting
The address of the meter is the standard Modbus-RTU address, On the same RS485 communication cable, the addresses of all KPM31 meters can't be the same, The address of the meter must be set uniformly before putting it into operation.
Note: Setting range: 001~247; default value: 001

Adr:001
【◄】:Select digit to be modified
【ENTER】:Short press this key to modify, long press it to save and no longer flash means operation success

4. Baud rate setting
The baud rate of the RS485 interface can be set according to your own system, but it must be consistent with the parity of each byte of the communication data in the RS485 link.
Settable range:1200 2400 4800 9600, Default 9600

Baud : 9600
【◄】:Change Baud
【ENTER】:Short press this key to modify, long press it to save and no longer flash means operation success

5. Parity bit setting

Parity : None
【◄】:Switch between NONE, EVEN and ODD
【ENTER】:Short press this key to modify, long press it to save and no longer flash means operation success

6. Energy clear

ClrE:NO
【◄】:Switch between YES and NO
【ENTER】:Short press this key to modify, long press it to save and no longer flash means operation success

### 5.2 Key Operation And Display



Real-1
U:　　　　　220.0V
I:　　　　　004.9A
F:　　　50　HZ

Real-1
P:　　　　　000.0W
Q:　　　　　000.0var
S:　　　　　000.0VA

Real:18:54:26
PF:　　　　　+0.00
DO:　　　　　NO

EP1(KWh)
+:　　00000000.0
-:　　00000000.0
C:　　00000000.0

EP2(KWh)
+:　　00000000.0
-:　　00000000.0
C:　　00000000.0

EQ1(Kvarh)
+:　　00000000.2
-:　　00000000.2
C:　　00000000.2

EQ2(Kvarh)
+:　　00000000.2
-:　　00000000.0
C:　　00000000.2

Date : 2000-00-00
Time : 00-00-00
Adr: 001
V2.0-20210106

Long press 【◄】 for setting

PASS:6666
YES/NO6666
NO　YES

Modify the flashing value
Change the modified bit
Long press modify to complete
No flashing

Set : 01
PASS : 6666
Adr : 001
Baud : 9600
【◄】Modify the flashing value
【ENTER】Change the modified bit
【ENTER】Long press modify to complete No flashing

Display settings

Set : 02
Parity : NONE
ClrE : NO
RSTW : NO
【◄】Modify the flashing value
【ENTER】Change the modified bit
【ENTER】Long press modify to complete No flashing

Display settings

Set : 03
Date : 2000-00-00
Time : 00-00-00
V2.0-20210106
【◄】Modify the flashing value
【ENTER】Change the modified bit
【ENTER】Long press modify to complete No flashing

Press two keys simultaneously

There are two operation buttons on the front panel. These two buttons are marked as 【◄】 button and 【ENTER】 button respectively from left to right. The display of different measurement data and parameter setting can be realized through the operation of two keys.

| Key name | Function details |
|---|---|
| 【◄】 Left key | Switch the display interface of the basic measurement parameters, long press to enter the parameter setting interface, in the parameter setting state to increase the value of the modified bit |
| 【ENTER】 Confirmation key | In the display state, it is used to cyclically display various electrical parameters; in the parameter setting state, short press is used to select positions, and long press is used to enter the modification menu and confirm programming parameters. |

### 7.Reset WIFI module

RSTW:NO
【◄】: Switch between YES and NO
【ENTER】: Short press this key to modify, long press it to save and no longer flash means operation success

### 8.WiFi mode setting

Wifi-M:MQTT
【◄】: MQTT:Data upload; Debug: Configwifig
【ENTER】: Short press the "Enter" key to modify, and then long press the "Enter"key to stop flashing. The modification is successful.Default:MQTT.
Note:In the debug mode, the instrument configures the WiFi module networking parameters. After the configuration is completed, it needs to switch to the mqtt mode before the instrument can normally connect to the mqtt server.

### 9.Clear residual electric energy

ClrS-EP:NO
【◄】: Switch between YES and NO
【ENTER】: Short press the "Enter"key to modify, long press the "Enter" key does not flash, and the modification is successful.

### 10.Frequency setting

F-Set:50Hz
【◄】: Can be switched to 50Hz or 60Hz
【ENTER】: Short press the "Enter" key to modify, and then long press the "Enter" key to stop flashing. The modification is successful.Default: 50Hz

### 11.Relay control mode setting

CTR-M:Remote
【◄】: Can be switched to remote mode or local mode
【ENTER】: Short press the "Enter" key to modify, and then long press the "Enter" key to stop flashing. The modification is successful.Default:Remote.

### 12.Relay control

Relay: ON
【◄】: Control the opening or closing of relay
【ENTER】: Short press this key to modify, long press it to save and no longer flash means operation success

### 5.4 Parameter setting
The parameter setting menu structure menu is as follows: Default value list

| Item | Symbol | Default | Description |
|---|---|---|---|
| Password | PASS | 6666 | Used to protect non-workers to modify instrument parameters |
| Communication address | Adr | 1 | Meter address 1~247 during network communication |
| Baud rate | baud | 9600 | Baud rate 1200~9600 |
| Parity bit | Parity | Parity checking | Used to set the communication parity bit |
| Clear energy | Clr-E | NO | Used to clear energy data |
| Reset WIFI | RSTW | NO | Used to reset WIFI and configure WIFI module |
| WiFi mode | Wifi-M | MQTT | Switch WiFi mode: MQTT or Debug |
| Clear residual electric energy | ClrS-EP | NO | Used to clear residual energy |
| Frequency setting | F-Set | 50Hz | Switching frequency to 50Hz or 60Hz |
| Relay control mode | CTR-M | Remote | Switch the control mode to local or remote |
| Relay control | Relay | ON | Control the opening or closing of relay |

# 6 Communication

## 6.1 Communication parameters

KPM31 single-phase DIN rail meter provides MODBUS-RTU communication protocol, 1 start bit, 8 data bits, 1 parity bit, 1 stop bit, each byte length is 11 bits.

◆ Supported baud rate: 1200, 2400, 4800, 9600 (bps).
◆ Factory default communication parameters: 9600bps, even parity
◆ The format of each byte in RTU mode:
◆ 1 start bit + 8 data bits + 1 parity bit + 1 stop bit
◆ The format of the data frame is as follows:
◆ Address field + command field + data field + CRC check field

| Function code | | | |
|---|---|---|---|
| DEC | HEX | Definition | Description |
| 01 | 0×01 | Read relay output | Read one or more relay output status |
| 03 | 0×03 | Real register data | Read the value of one or more registers |
| 05 | 0×05 | Write single loop relay output | Control one loop relay to close or open |
| 16 | 0×10 | Write multiple registers | Write multiple register data in one time |

### 6.1.1 Relay Output Control And Status Reading

This area stores the status of the relay. The user can use the Modbus protocol 01H function code to read the current status, and use the 05H function code to control the output.

| Addr | Parameter | Data range | Data type | Read/Write |
|---|---|---|---|---|
| 0001H | Relay ( DO1 ) | 1=ON 0=OFF | Bit | R/W |

### 6.1.2 Read Relay Output Status (Function code 01H)
Request data frame: read the status of Relay1.

| Addr | Fun | StartReg hi | StartReg lo | RegNum hi | Reg Num lo | CRC16 hi | CRC16 lo |
|---|---|---|---|---|---|---|---|
| 01H | 01H | 00H | 01H | 00H | 01H | xxH | xxH |

This area stores the status of the relay. The user can use the Modbus protocol 01H function code to read the current status, and use the 05H function code to control the output.

The example of read digital output status response

| Addr | Fun | Bytecount | Data | CRC16hi | CRC16lo |
|---|---|---|---|---|---|
| 01H | 01H | 01H | 01H | xxH | xxH |

Data byte content (Relay 1 closed)

| Addr | Fun | StartReg hi | StartReg lo | RegNum hi | Reg Num lo | CRC16 hi | CRC16 lo |
|---|---|---|---|---|---|---|---|
| 01H | 01H | 00H | 01H | 00H | 01H | xxH | xxH |

### 6.1.3 Relay control ( Function code 05H)
Note that the control relay 0xFF00 is the relay closed, and the 0x0000 relay is open
Request data frame:

| Addr | Fun | DOaddr hi | DO addr lo | Value hi | Value lo | CRC16 hi | CRC16 lo |
|---|---|---|---|---|---|---|---|
| 01H | 05H | xx | xx | FFH | 00H | xxH | xxH |

Response data frame:

| Addr | Fun | DOaddr hi | DO addr lo | Value hi | Value lo | CRC16 hi | CRC16 lo |
|---|---|---|---|---|---|---|---|
| 01H | 05H | xx | xx | FFH | 00H | xxH | xxH |

### 6.1.4 System Parameter Reading And Writing
This area stores system parameters related to equipment work, including communication, password and other parameters, , which can be read using Modbus protocol 03H function code, or set using 10H function code.

| Addr | Parameter | Data range | Format |
|---|---|---|---|
| 0000H | Protection password | 0~9999 | Word |
| 0001H | Communication address | Modbus communication address: 1~247 | Word |
| 0002H | Baud rate | 1 : 1200 , 2 : 2400 , 3 : 4800 , 4 : 9600 , | Word |
| 000CH | Clear energy | Command word 0x55AA, immediately clear the electric energy data | Word |

### 6.1.5 Basic Measuring Parameters

Basic measurement area, mainly measuring basic voltage, current, power, power factor, etc.;
The parameters in this area are all real-time measurement parameters, which are read using Modbus-RTU protocol 03H function code and are read-only data. The data format is floating point data. The data in this area is real-time data for primary side.

| Addr | Parameter | Data format | Unit |
|---|---|---|---|
| 0030H | U | Floating point | V |
| 0032H | I | Floating point | A |
| 0034H | P | Floating point | W |
| 0036H | Q | Floating point | var |
| 0038H | S | Floating point | VA |
| 003AH | PF | Floating point | |
| 003CH | F | Floating point | Hz |
| 0070H | Apparent demand | Floating point | VA |

### 6.1.6 Multi-rate Parameter area
The parameters in this area are all real-time measurement parameters, which are read using Modbus protocol 03H function code and are read-only data.

| Addr | Parameter | Data format | Unit |
|---|---|---|---|
| 0080H | Total active energy | Floating point | kWh |
| 0082H | Import active energy | Floating point | kWh |
| 0084H | Export active energy | Floating point | kWh |
| 0086H | Total reactive energy | Floating point | kvarh |
| 0088H | Import reactive energy | Floating point | kvarh |
| 008AH | Export reactive energy | Floating point | kvarh |
| 008CH | Total sharp active energy | Floating point | kWh |
| 008EH | Total peak active energy | Floating point | kWh |
| 0090H | Total flat active energy | Floating point | kWh |
| 0092H | Total valley active energ | Floating point | kWh |
| 0094H | Total sharp reactive energy | Floating point | kvarh |
| 0096H | Total peak reactive energy | Floating point | kvarh |
| 0098H | Total flat reactive energy | Floating point | kvarh |
| 009AH | Total valley reactive energy | Floating point | kvarh |
| 009CH | Total combined active energy y for this month | Floating point | kWh |
| 009EH | Total combined active energy of the previous 1 settlement day | Floating point | kWh |
| 00A0H | Total combined active energy of the previous 2 settlement day | Floating point | kWh |
| 00A2H | Total combined active energy of the previous 3 settlement day | Floating point | kWh |
| 00A4H | Total combined active energy of the previous 4 settlement day | Floating point | kWh |
| 00A6H | Total combined active energy of the previous 5 settlement day | Floating point | kWh |
| 00A8H | Total combined active energy of the previous 6 settlement day | Floating point | kWh |
| 00AAH | Total combined active energy of the previous 7 settlement day | Floating point | kWh |
| 00ACH | Total combined active energy of the previous 8 settlement day | Floating point | kWh |
| 00AEH | Total combined active energy of the previous 9 settlement day | Floating point | kWh |
| 00B0H | Total combined active energy of the previous 10 settlement day | Floating point | kWh |
| 00B2H | Total combined active energy of the previous 11 settlement day | Floating point | kWh |
| 00B4H | Total combined active energy of the previous 12 settlement day | Floating point | kWh |
| 00B6H | Total combined active energ y for this month | Floating point | kvarh |
| 00B8H | Total combined active energy of the previous 1 settlement day | Floating point | kvarh |
| 00BAH | Total combined active energy of the previous 2 settlement day | Floating point | kvarh |
| 00BCH | Total combined active energy of the previous 3 settlement day | Floating point | kvarh |
| 00BEH | Total combined active energy of the previous 4 settlement day | Floating point | kvarh |
| 00C0H | Total combined active energy of the previous 5 settlement day | Floating point | kvarh |
| 00C2H | Total combined active energy of the previous 6 settlement day | Floating point | kvarh |
| 00C4H | Total combined active energy of the previous 7 settlement day | Floating point | kvarh |
| 00C6H | Total combined active energy of the previous 8 settlement day | Floating point | kvarh |
| 00C8H | Total combined active energy of the previous 9 settlement day | Floating point | kvarh |
| 00CAH | Total combined active energy of the previous 10 settlement day | Floating point | kvarh |
| 00CCH | Total combined active energy of the previous 11 settlement day | Floating point | kvarh |
| 00CEH | Total combined active energy of the previous 12 settlement day | Floating point | kvarh |
| 00D0H | Sharp active energy for this month | Floating point | kWh |
| 00D2H | Sharp active energy of the previous 1 settlement day | Floating point | kWh |
| 00D4H | Sharp active energy of the previous 2 settlement day | Floating point | kWh |
| 00D6H | Sharp active energy of the previous 3 settlement day | Floating point | kWh |
| 00D8H | Sharp active energy of the previous 4 settlement day | Floating point | kWh |
| 00DAH | Sharp active energy of the previous 5 settlement day | Floating point | kWh |
| 00DCH | Sharp active energy of the previous 6 settlement day | Floating point | kWh |
| 00DEH | Sharp active energy of the previous 7 settlement day | Floating point | kWh |
| 00E0H | Sharp active energy of the previous 8 settlement day | Floating point | kWh |
| 00E2H | Sharp active energy of the previous 9 settlement day | Floating point | kWh |
| 00E4H | Sharp active energy of the previous 10 settlement day | Floating point | kWh |
| 00E6H | Sharp active energy of the previous 11 settlement day | Floating point | kWh |
| 00E8H | Sharp active energy of the previous 12 settlement day | Floating point | kWh |
| 00EAH | Sharp reactive energy for this month | Floating point | kvarh |
| 00ECH | Sharp reactive energy of the previous 1 settlement day | Floating point | kvarh |
| 00EEH | Sharp reactive energy of the previous 2 settlement day | Floating point | kvarh |
| 00F0H | Sharp reactive energy of the previous 3 settlement day | Floating point | kvarh |
| 00F2H | Sharp reactive energy of the previous 4 settlement day | Floating point | kvarh |
| 00F4H | Sharp reactive energy of the previous 5 settlement day | Floating point | kvarh |
| 00F6H | Sharp reactive energy of the previous 6 settlement day | Floating point | kvarh |
| 00F8H | Sharp reactive energy of the previous 7 settlement day | Floating point | kvarh |
| 00FAH | Sharp reactive energy of the previous 8 settlement day | Floating point | kvarh |
| 00FCH | Sharp reactive energy of the previous 9 settlement day | Floating point | kvarh |
| 00FEH | Sharp reactive energy of the previous 10 settlement day | Floating point | kvarh |
| 0100H | Sharp reactive energy of the previous 11 settlement day | Floating point | kvarh |
| 0102H | Sharp reactive energy of the previous 12 settlement day | Floating point | kvarh |
| 0104H | Peak active energy for this month | Floating point | kWh |
| 0106H | Peak active energy of the previous 1 settlement day | Floating point | kWh |
| 0108H | Peak active energy of the previous 2 settlement day | Floating point | kWh |
| 010AH | Peak active energy of the previous 3 settlement day | Floating point | kWh |
| 010CH | Peak active energy of the previous 4 settlement day | Floating point | kWh |
| 010EH | Peak active energy of the previous 5 settlement day | Floating point | kWh |
| 0110H | Peak active energy of the previous 6 settlement day | Floating point | kWh |
| 0112H | Peak active energy of the previous 7 settlement day | Floating point | kWh |
| 0114H | Peak active energy of the previous 8 settlement day | Floating point | kWh |
| 0116H | Peak active energy of the previous 9 settlement day | Floating point | kWh |
| 0118H | Peak active energy of the previous 10 settlement day | Floating point | kWh |
| 011AH | Peak active energy of the previous 11 settlement day | Floating point | kWh |
| 011CH | Peak active energy of the previous 12 settlement day | Floating point | kWh |
| 011EH | Peak reactive energy of this month | Floating point | kvarh |
| 0120H | Peak reactive energy of the previous 1 settlement day | Floating point | kvarh |
| 0122H | Peak reactive energy of the previous 2 settlement day | Floating point | kvarh |
| 0124H | Peak reactive energy of the previous 3 settlement day | Floating point | kvarh |
| 0126H | Peak reactive energy of the previous 4 settlement day | Floating point | kvarh |
| 0128H | Peak reactive energy of the previous 5 settlement day | Floating point | kvarh |
| 012AH | Peak reactive energy of the previous 6 settlement day | Floating point | kvarh |
| 012CH | Peak reactive energy of the previous 7 settlement day | Floating point | kvarh |
| 012EH | Peak reactive energy of the previous 8 settlement day | Floating point | kvarh |
| 0130H | Peak reactive energy of the previous 9 settlement day | Floating point | kvarh |
| 0132H | Peak reactive energy of the previous 10 settlement day | Floating point | kvarh |
| 0134H | Peak reactive energy of the previous 11 settlement day | Floating point | kvarh |
| 0136H | Peak reactive energy of the previous 12 settlement day | Floating point | kvarh |
| 0138H | Flat active energy for this month | Floating point | kWh |
| 013AH | Flat active energy of the previous 1 settlement day | Floating point | kWh |
| 013CH | Flat active energy of the previous 2 settlement day | Floating point | kWh |
| 013EH | Flat active energy of the previous 3 settlement day | Floating point | kWh |
| 0140H | Flat active energy of the previous 4 settlement day | Floating point | kWh |
| 0142H | Flat active energy of the previous 5 settlement day | Floating point | kWh |
| 0144H | Flat active energy of the previous 6 settlement day | Floating point | kWh |
| 0146H | Flat active energy of the previous 7 settlement day | Floating point | kWh |
| 0148H | Flat active energy of the previous 8 settlement day | Floating point | kWh |
| 014AH | Flat active energy of the previous 9 settlement day | Floating point | kWh |
| 014CH | Flat active energy of the previous 10 settlement day | Floating point | kWh |
| 014EH | Flat active energy of the previous 11 settlement day | Floating point | kWh |
| 0150H | Flat active energy of the previous 12 settlement day | Floating point | kWh |
| 0152H | Flat reactive energy for this month | Floating point | kvarh |
| 0154H | Flat reactive energy of the previous 1 settlement day | Floating point | kvarh |
| 0156H | Flat reactive energy of the previous 2 settlement day | Floating point | kvarh |
| 0158H | Flat reactive energy of the previous 3 settlement day | Floating point | kvarh |
| 015AH | Flat reactive energy of the previous 4 settlement day | Floating point | kvarh |
| 015CH | Flat reactive energy of the previous 5 settlement day | Floating point | kvarh |
| 015EH | Flat reactive energy of the previous 6 settlement day | Floating point | kvarh |
| 0160H | Flat reactive energy of the previous 7 settlement day | Floating point | kvarh |
| 0162H | Flat reactive energy of the previous 8 settlement day | Floating point | kvarh |
| 0164H | Flat reactive energy of the previous 9 settlement day | Floating point | kvarh |
| 0166H | Flat reactive energy of the previous 10 settlement day | Floating point | kvarh |
| 0168H | Flat reactive energy of the previous 11 settlement day | Floating point | kvarh |
| 016AH | Flat reactive energy of the previous 12 settlement day | Floating point | kvarh |
| 016CH | Volley active energy for this month | Floating point | kWh |
| 016EH | Volley active energy of the previous 1 settlement day | Floating point | kWh |
| 0170H | Volley active energy of the previous 2 settlement day | Floating point | kWh |
| 0172H | Volley active energy of the previous 3 settlement day | Floating point | kWh |
| 0174H | Volley active energy of the previous 4 settlement day | Floating point | kWh |
| 0176H | Volley active energy of the previous 5 settlement day | Floating point | kWh |
| 0178H | Volley active energy of the previous 6 settlement day | Floating point | kWh |
| 017AH | Volley active energy of the previous 7 settlement day | Floating point | kWh |
| 017CH | Volley active energy of the previous 8 settlement day | Floating point | kWh |
| 017EH | Volley active energy of the previous 9 settlement day | Floating point | kWh |
| 0180H | Volley active energy of the previous 10 settlement day | Floating point | kWh |
| 0182H | Volley active energy of the previous 11 settlement day | Floating point | kWh |
| 0184H | Volley active energy of the previous 12 settlement day | Floating point | kWh |
| 0186H | Volley reactive energy for this month | Floating point | kvarh |
| 0188H | Volley reactive energy of the previous 1 settlement day | Floating point | kvarh |
| 018AH | Volley reactive energy of the previous 2 settlement day | Floating point | kvarh |
| 018CH | Volley reactive energy of the previous 3 settlement day | Floating point | kvarh |
| 018EH | Volley reactive energy of the previous 4 settlement day | Floating point | kvarh |
| 0190H | Volley reactive energy of the previous 5 settlement day | Floating point | kvarh |
| 0192H | Volley reactive energy of the previous 6 settlement day | Floating point | kvarh |
| 0194H | Volley reactive energy of the previous 7 settlement day | Floating point | kvarh |
| 0196H | Volley reactive energy of the previous 8 settlement day | Floating point | kvarh |
| 0198H | Volley reactive energy of the previous 9 settlement day | Floating point | kvarh |
| 019AH | Volley reactive energy of the previous 10 settlement day | Floating point | kvarh |
| 019CH | Volley reactive energy of the previous 11 settlement day | Floating point | kvarh |
| 019EH | Volley reactive energy of the previous 12 settlement day | Floating point | kvarh |

## 6.2 Wireless communication

KPM31 supports WiFi wireless communication mode and can be connected to enterprise wireless AP. The uplink adopts mqtt protocol for data communication with the master station. The specific configuration steps are as follows:
Step 1: Set mobile hotspot
Set the WiFi hotspot account to compere-debug and the password to kpm-debug for the meter to connect. Then start the settings on Touch Energy APP.
Step 2: Set the meter to debug mode
Enter the setting interface of the meter, find the "Recfg-W:no" option and set it to the "yes" mode.

### Recfg-W:yes

Then the meter will initialize the network configuration.
**Note: The system only stays in yes status for a few seconds then it will go back to no. Once u changed to yes status and pressed** [ ] **key, the reconfigure step is finished.**

The server configuration of both modes needs to use Touch Energy APP-meter setting function. The configuration steps are as follows:

Step 3: 'Touch Energy' APP meter setting
1. Download 'Touch Energy' from Google play or Apple store. As Fig 1.
2. Click 'Meter setting' to enter the code search page. As shown in Fig 2.
3. Search for devices: Input the production number to search If the number is wrong, the search button will be grayed and cannot be clicked.If the number is correct, click the "code search" button to identify the device.
4. Input the configuration parameters and submit:
4.1 Private server settingsThis page is for the meters sendingdata to the customers' private server.



Fig1　　Fig2　　Fig 3

Input private server address (support domain name and IP address), server port, MQTT account, MQTT password, etc. If using WIFI meter, the local WIFI name and Password are required. WPA2 for enterprise level WIFI can be set too.If using 4G meter, the WIFI name and Password is not required.
4.2 4G communication setting
Input server address (support domain name and IP address), port, MQTT account, MQTT password and submit.The default information is for sending data to T@ENERGY cloud platform.
4.3 WIFI communication setting
Input server address (support domain name and IP address), port, MQTT account, MQTT password, local WiFi name and password (WPA2 for enterprise level WIFI can be set too)and submit.
The default inform-ation is for sending data to T@ENERGY cloud platform.
5. Wait for about 20 seconds for the meter to return status information.
If the configuration is successful, it will display "Successfully issued, please continue ", click 'exist' to return to the device ID search interface.

Click "next" for bulk quantity meters settings. It will enter the last setting page and retain the data set last time. Users only need to change the meter number and submit.

FAQ for network connection

1. Issuing timeout: data communication timeout.It means the settings are not successfully or setting is succeeded but data return is failed.
Solution: Click 'OK' to stay on the device information page and wait for 30 seconds to see if the device is showing offline. If yes (offline), that means the setting issucceeded. If not (online), pls submit again.

2. Parameter lost: Data lost during communication.
Solution: Click 'OK' to stay on the device information page and wait for 30 seconds to see if the device is showing offline. If yes (offline), that means the setting is succeeded. If not (online), pls submit again.

## 7 Common Failure Analysis
**No display after device is powered on**
• Check whether the power supply voltage and other wiring are correct, and the power supply voltage should be within the working range;
• Turn off the device and host computer, and then restart.
**The device does not work properly after power-on**
• Turn off the device and host computer, and then restart.
**Incorrect voltage or current reading**
• Check whether the wiring mode setting is consistent with the actual wiring method
**The power or power factor is incorrect, but the voltage and current is correct**
• Compare the voltage and current input of the actual wiring and the wiring diagram, and check whether the phase relationship is correct

**RS-485 communication is abnormal**
• Check whether the communication baud rate, ID and communication protocol settings of the host computer are consistent with the device;Please check whether the data bit, stop bit, check bit settings are consistent with the host computer

## 8 Product Quality Assurance
### 8.1 Quality Assurance
All new devices sold to users, within a certain number of years from the date of sale to users, are subject to free quality assurance for failures caused by defects in design, materials and workmanship, If the product is determined to meet the above warranty conditions, the supplier will repair and replace it free of charge.
The supplier may require the user to send the device back to the manufacturer to confirm whether the device is covered by the free warranty and repair the device.
### 8.2 Warranty Restrictions
The following devices are not covered by the free warranty:
•Damage caused by incorrect installation, use, and storage.
•Abnormal operation and application conditions beyond the product specifications.
• Devices repaired by organizations or persons not authorized by the company.
•Devices that have exceeded the free warranty period.

## 9 Contact Details