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KPM33B
Three Phase Rail Prepaid Smart Energy Meter Manual V2.0

⚠ 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 must be installed and maintained by qualified technicians.
- ■Before any operation on the device, should be isolated from the voltage input and power supply, and the secondary windings of all current transformers are Short circuit.
- ■Before operation, you must use testing devices to verify that the voltage has been cut off..
- ■All mechanical parts and covers should be restored in place before the device is energized
- ■Please providing correct voltage during use.
- ■Ignore these precautions may cause serious injury.

Do not pay attention to these precautions may cause serious injury.

1 Outline

1.1 Function introduction

KPM33B three-phase rail prepaidsmart 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.

1.3 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.
- ➢Rated current available:10(100)A.
- ➢LED indicator pulse.
- ➢1-way passive optocoupler collector active pulse output.
- ➢Front-end integrated DSP measurement chip, data will be saved permanently after power failure.
- ➢Double-row display of power and electrical parameters at the same time.
- ➢Built-in magnetic latching relay, can realize prepayment function.
- ➢35mm standard rail installation, beautiful appearance, easy installation.

2 Technical Parameters

2.1 Environmental conditions

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

2.2 Rated parameters

Input voltage: AC 3*220/380V
Input current: 10(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 ,Allowed 1S

2.3 Precision index

Parameter	Accuracy	Parameter	Accuracy
Voltage	±0.2%	Power factor	±0.5%
Current	±0.2%	Active energy	0.5S
Active power	±1.0%	Reactive energy	class2%
Reactive power	±2%	Frequency	±0.02Hz

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

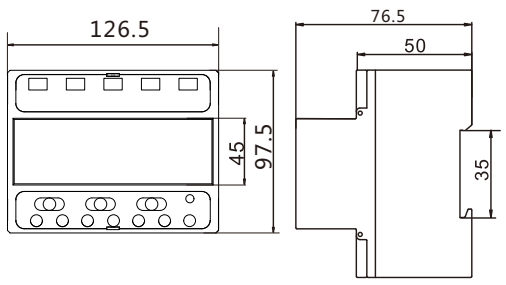
Vibration response:
IEC255-21-1:1998, level 1
Vibration durability:
IEC255-21-1:1998, level 1
Impact response:
IEC 255-21-2, level 1
Impact durability:
IEC 255-21-2, level 1
Collision:
IEC 255-21-2, level 1

2.6 EMC performance

Electrostatic discharge immunity:
GB/T17626.2-2006 , level 4
Fast pulse group immunity:
GB/T17626.4-2008 , level 4
Surge immunity:
GB/T17626.5-2008 , level 4
Power frequency magnetic field immunity:
GB/T17626.8-2008 , level 4

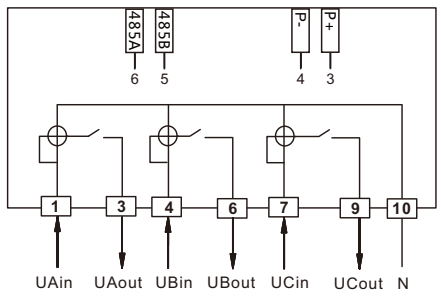
3 Installation and Wiring

3.1 Product size



3.2 Installation and wiring

KPM33B- typical wiring diagram



4 Function Description

4.1 Energy Measurement

KPM33B 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),
KPM33B 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.
Example: The daily electricity metering is calculated in 5 time periods. The details are as follows:

Period	Start time point	Tariff
1#Period	6	1
2#Period	10	2
3#Period	12	1
4#Period	15	3
5#Period	23	4

Description
1# Period: from 6 to 10, the tariff is 1;
2# Period: from 10 o'clock to 12 o'clock, the tariff is 2;
3# Period: from 12 o'clock to 15 o'clock, the tariff is 1;
4# Period: From 15:00 to 23:00, the tariff is 3;
5# Period: From 24 o'clock to 6 o'clock the next day, the tariff is 4.
Remark: The electricity kWh of the same tariff will be calculated together.

4.2 Pulse

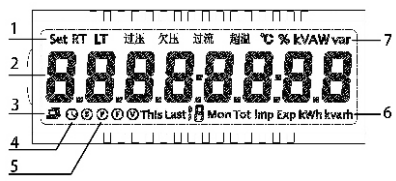
Pulse output: KPM31 provides active/reactive energy metering, 1 active energy pulse output function, using optocoupler open collector output. The method of energy accuracy inspection refers to the national measurement regulations
Measurement procedures: Pulse error comparison methods for standard meters
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

4.3 Relay description

The relay status can be set and read through Modbus-RTU communication.

5 Operation Instructions

5.1 Interface display



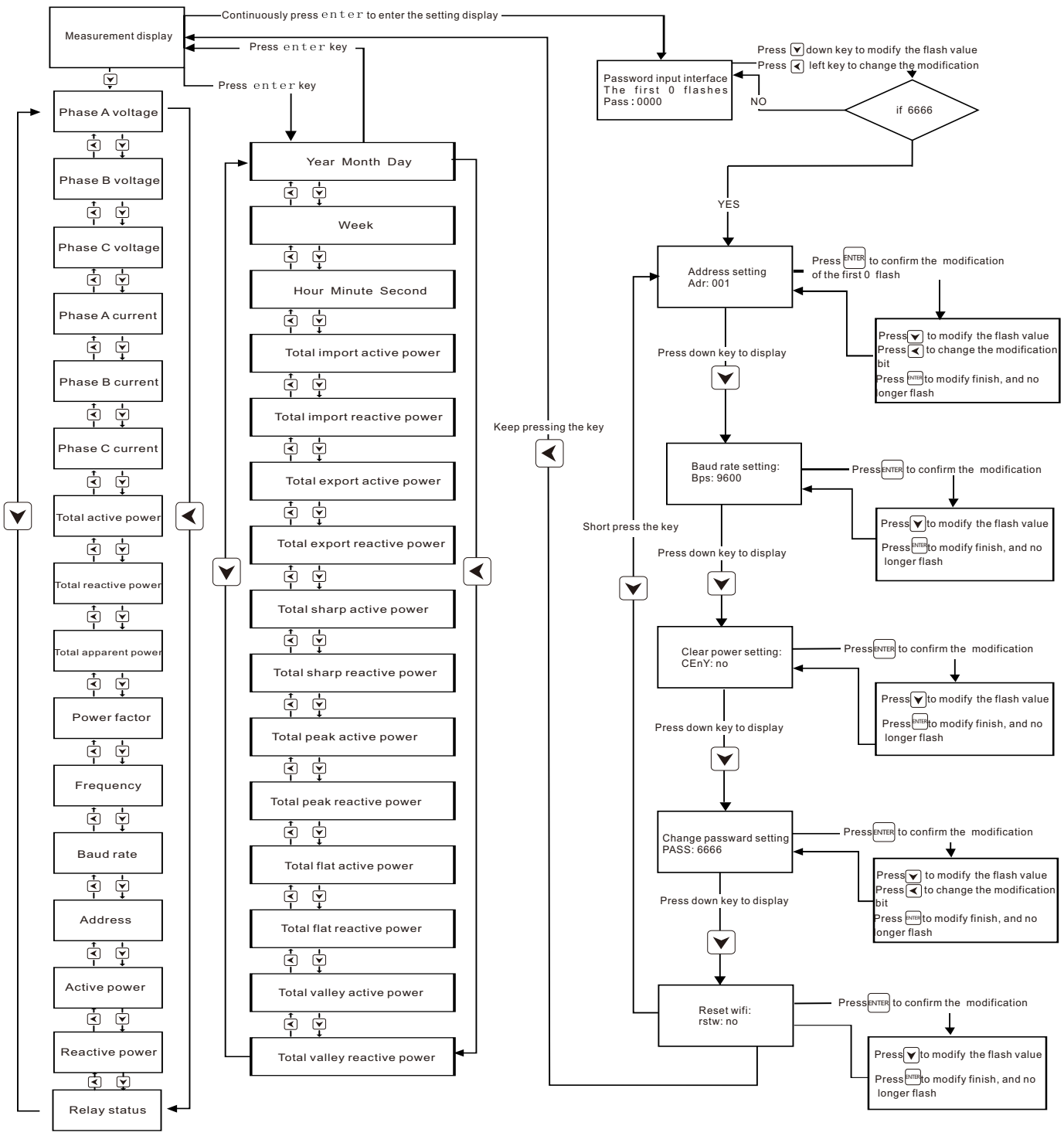
N0.	Content displayed	Detailed description
1	Settings	Display when setting parameters
2	Display indication	Digital tube display UA (Phase A voltage), Ub (Phase B voltage), Uc (Phase C voltage), IA (Phase A current), Ib (Phase B current), Ic (Phase C current), P (total active power), q (total reactive power), S (total apparent power), PF (average power factor), F (frequency), bd (baud rate), Ad (address), active energy, reactive energy, relay status
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

5.2 keys operation and display

Measurement and setting display flow chart

Three touch buttons on the front panel, they are labeled from left to right as ◀ key, ▼ key, ENTER 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
◀ Down key	Down key to switch the interface of basic parameters and switch the modification bit; press the key to change the value of the modification bit, and long press the key to return to the parameter display interface.
▼ Left key	Used to cycle through all the parameters of the function item in the parameter setting state. Used to increase the value of the modified bit in the parameter setting state
ENTER Enter key	In the parameter setting state, it is used to enter the modification menu and confirm the programming parameters; Long press to enter the setting interface



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 ENTER and hold for 3 seconds to enter the password input interface. The default password is 6666.Enter the password. Press ENTER key to enter the parameter setting interface, then press ▼ key to select the item to be set. After pressing the ENTER key, the leftmost digit of the set value begins to flash. Press ◀ to select the digit to be modified. Press ▼ to increase the size of the modified digit value. After each modification, press ENTER 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.

PASS:0000

◀ Select the bit to modify
▼ Change in value
ENTER if the password is correctly entered in the parameter setting, if the error is returned to the password input interface

2.MODBUS-RTU address settings
The meter address is the standard Modbus-RTU address. On the same RS485 communication link, the addresses of all KPM33B 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

Adr:001

◀ Select the bit to modify
▼ Change in value
ENTER Confirmation key, after modify, press confirm key is not flashing, modification is successful

3.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

bPS:9600

▼ Change the baud rate
ENTER Confirmation key, after modify, press confirm key is not flashing, modification is successful

4.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.

CEnY:no

▼ Change YES or no
ENTER Confirmation key, after modify, press confirm key is not flashing, modification is successful

5.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.

PASS:6666

◀ Select the bit to modify
▼ Change in value
ENTER Confirmation key, after modify, press confirm key is not flashing, modification is successful

6. Reset Wifi
Reset the wifi configuration, you can reconfigure the network
The default is no, you can switch to YES to clear.

rstw:no

▼ Change YES or no
ENTER Modification is successful and no longer flash

5.4 Parameter settings

Parameter setting menu structure menu is as follows
Factory default value:

Parameter	Display character	Defaults	Meaning
Password	PASS	6666	Used to protect it from non-staff personnel to modify instrument parameters
Communication address	Adr	1	Meter address for network communication 1~247
Baud rate	bPS	9600	Communication baud rate 1200~9600
Clear power	cEnY	no	Used to clear power data

6 Communication

KPM33B supports MODBUS-RTU communication protocol, one start bit, 8-bit data bits, parity bit, 1 stop bits, each byte length is 11 bits.
Supported baud rates: 2400bps, 4800bps, 9600bps,19200bps
Factory default communication parameters: 9600bps, Even parity bit
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

Supported function codes			
DEC	HEX	Definition	Operation description
01	0x01	Read relay output	Read status of one switch or more switch
03	0x03	Read register data	Read the value of one or more registers
05	0x05	Write single relay output	Control 1way relay close or break
16	0x10	Write Multiple Registers	Write multiple register data at once

6.1 System parameters read and write

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

Address	Parameter	Numerical range	Data type	Read/Write attribute
0001H	Relay1 (DO1)	1=ON , 0=OFF	Bit	R/W

6. 1. 1Read relay output status(Function code 01H)

Request data frame: Read status of relay 1

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

Response data frame: The slave responds to the data frame of the host. Including slave address, function data, number of bytes, relay status and CRC error check. The status of each relay in the data packet occupies one bit (1=ON, 0=OFF), the first bit of the first byte (The lowest bit) is the state value of the load control relay of phase A, the second bit of the first byte is the state value of the load control relay of phase B, and the third bit of the first byte is the state of the load control relay of phase C.

Addr	Fun	Bytecount	Data	CRC16hi	CRC16lo
01H	01H	01H	01H	90H	48H

Data byte content (three-phase load control relay closed)

Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	0	0	0	1	1	1

6.1.2 Relay control(Function code 051H)

Note: the data 0x0000 in the relay control message is for the lord control relay break.
The data 0xFF00 is the load control relay closed.

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

Relay control
0x0000, lord control relay break
0xFF00, load control relay closed.

6.2 System parameters read and write

This area stores system parameters related to equipment operation, including communication parameters, current ratio, etc., which can be read by using the Modbus protocol 03H function code or using the 10H function code setting.

Address	Parameter	Numerical range	Data type
0000H	Protection password	0~9999	Word
0001H	Modbus-RTU address	Modbus-RTU address：1~247	Word
0002H	baud rates and check method	bps (BIT0~7):0:2400, 1:4800 2:9600 3:19200, Data frame (BIT8~15): 0: 8,1,n 1: 8,1,O 2: 8,1,e	Word
000CH	Clear power	Enter 0x5578 command to clear the power immediately	Word

6.3 Basic Measurement Parameters Area

Basic measurement area, mainly measuring basic voltage, current, power, power factor, etc.;
All parameters in this area are real-time measurement parameters and are read using the Modbus protocol 03H function code, It is read-only data. The data format is floating-point data, and the data in this area is a real-time data on the primary side because it has been multiplied by the transformation ratio.

Address	Parameter	Data type	Unit
0030H	Phase A voltage	Floating point	V
0032H	Phase B voltage	Floating point	V
0034H	Phase C voltage	Floating point	V
0036H	Phase A current	Floating point	A
0038H	Phase B current	Floating point	A
003AH	Phase C current	Floating point	A
003CH	AB Line voltage	Floating point	V
003EH	BC Line voltage	Floating point	V
0040H	CA Line voltage	Floating point	V
0042H	Phase A active power	Floating point	W
0044H	Phase B active power	Floating point	W
0046H	Phase C active power	Floating point	W
0048H	Three phase active power	Floating point	W
004AH	Phase A reactive power	Floating point	var
004CH	Phase B reactive power	Floating point	var
004EH	Phase C reactive power	Floating point	var
0050H	Three phase reactive power	Floating point	var
0052H	Phase A apparent power	Floating point	VA
0054H	Phase B apparent power	Floating point	VA
0056H	Phase C apparent power	Floating point	VA
0058H	Three phase apparent power	Floating point	VA
005AH	Phase A power factor	Floating point	
005CH	Phase B power factor	Floating point	
005EH	Phase C power factor	Floating point	
0060H	Three phase power meter	Floating point	
0062H	Frequency	Floating point	Hz

6.3 Ulti rate area

All data in this area are cumulative amount of energy and they all belong to the primary side, which can be read using the Modbus protocol 03H function code.

Address	Parameter	Data type	Unit
0068H	Phase A positive active energy	Floating point	kWh
006AH	Phase B positive active energy	Floating point	kWh
006CH	Phase C positive active energy	Floating point	kWh
006EH	Phase A negative active energy	Floating point	kWh
0070H	Phase B negative active energy	Floating point	kWh
0072H	Phase C negative active energy	Floating point	kWh
0074H	Phase A positive reactive energy	Floating point	kvarh
0076H	Phase B positive reactive energy	Floating point	kvarh
0078H	Phase C positive reactive energy	Floating point	kvarh
007AH	Phase A negative reactive energy	Floating point	kvarh
007CH	Phase B negative reactive energy	Floating point	kvarh
007EH	Phase C negative reactive energy	Floating point	kvarh
0080H	Total active energy	Floating point	kWh
0082H	Forward active energy	Floating point	kWh
0084H	Reverse active energy	Floating point	kWh
0086H	Total reactive energy	Floating point	kvarh
0088H	Forward total reactive energy	Floating point	kvarh
008AH	Reverse total 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 energy	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 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 reactive energy for this month	Floating point	kvarh
00B8H	Total combined reactive energy of the previous 1 settlement day	Floating point	kvarh
00BAH	Total combined reactive energy of the previous 2 settlement day	Floating point	kvarh
00BCH	Total combined reactive energy of the previous 3 settlement day	Floating point	kvarh
00BEH	Total combined reactive energy of the previous 4 settlement day	Floating point	kvarh
00C0H	Total combined reactive energy of the previous 5 settlement day	Floating point	kvarh
00C2H	Total combined reactive energy of the previous 6 settlement day	Floating point	kvarh
00C4H	Total combined reactive energy of the previous 7 settlement day	Floating point	kvarh
00C6H	Total combined reactive energy of the previous 8 settlement day	Floating point	kvarh
00C8H	Total combined reactive energy of the previous 9 settlement day	Floating point	kvarh
00CAH	Total combined reactive energy of the previous 10 settlement day	Floating point	kvarh
00CCH	Total combined reactive energy of the previous 11 settlement day	Floating point	kvarh
00CEH	Total combined reactive 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

7 Common malfunction Analysis

- Nothing is displayed after the unit is powered on
  - Check that the supply voltage and other wiring are correct and that the supply voltage should be within the operating range
  - Turn off the device and the host computer, and then reboot
- The device is not working properly after power on
  - Turn off the device and the host computer, and then reboot
- Voltage or current readings incorrect
  - Check if the wiring mode setting matches the actual wiring mode
  - Check whether the voltage transformer (PT), current transformer (CT) ratio is set correctly
  - Check that GND is properly grounded
  - Check that GND is properly grounded
  - Check that the shield is grounded
  - Check the voltage transformer (PT), current transformer (CT) is intact
- The power or power factor reading is incorrect, but the voltage and current readings are correct
  - Comparison of the actual input voltage and current wiring and wiring diagram, to check whether the correct phase relationship
- RS-485 communication is not normal
  - Check whether the communication baud rate, ID and communication protocol settings of the host computer are consistent with the meter
  - Please check the data bits, stop bits, parity settings and the host computer is consistent
  - Check that the RS-232 / RS-485 converter is working properly
  - Check whether the problem entire communications network lines (short circuit, open circuit, grounding, shielding in a single properly grounded, etc.)
  - Turn off the device and the host computer, and then reboot
  - The communication line length is recommended to connect approximately 100 to 200 ohm matching resistors at the end of the communication line

  Note: If there are some unsolved problems, please contact our company's after-sales service department

8 Product quality

8.1 Quality Assurance

For all new devices sold to users, within a certain number of years from the date of sale to users, free quality assurance will be implemented 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.

8.2 Quality assurance limited

Remarks: Damage caused by incorrect installation, use, and storage is not covered by the warranty.

9 Contact details

Henan Compere Smart Technology CO. LTD.
Telephone:+86-371-86181681
Fax:+86-371-67890037
Web:http://www.compere-power.com/en/home/
Address:No.41, Dongming Road, Zhengzhou, Henan Province, China