HXE310-KP

Three-Phase Keypad Prepaid Meter

User Manual

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Revision History

Revision	Date	Name	Comment
1.0	2015-12-19	Zhou Jianbo	Document creation
1.1	2017-08-28	Zhao Junqiang	Revise for As.

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Contents

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1. Overview

The HXE310-KP three phase prepayment meter with keypad is developed based on the previous generation of Hexing prepayment meters to meet the requirements of market. The main functions include measurement, display, communication, prepaid, relay control, keypad input, and anti-tampering, etc. Its major strengths are:

- Prepayment functionality that enables secure revenue collection;
- Open, secure and reliable STS prepayment standard that allows all existing vending channels to be used and provides a safe, reliable and secure method for the end user to enter credit tokens regardless of the state of the external communications infrastructure.
- DLMS/COSEM protocol, good interactivity and operation;
- Secure external mechanical structure to prevent external tampering;
- Convenient end user operation via keypad and LCD display;
- Multiple recharge methods based on standard STS token based recharge system allowing the utilities existing STS compliant vending system to operate with this meter is a seamless manner;
- Equips internal relay and supports multi and flexible controlling methods;
- Simple and basic short key codes designed to allow the end user or installer to access some basic functions without complex software or special training;
- Multiple event records;
- Cancel registration feature and close-out allowing the meters balance to be refunded.

1.1 Standards

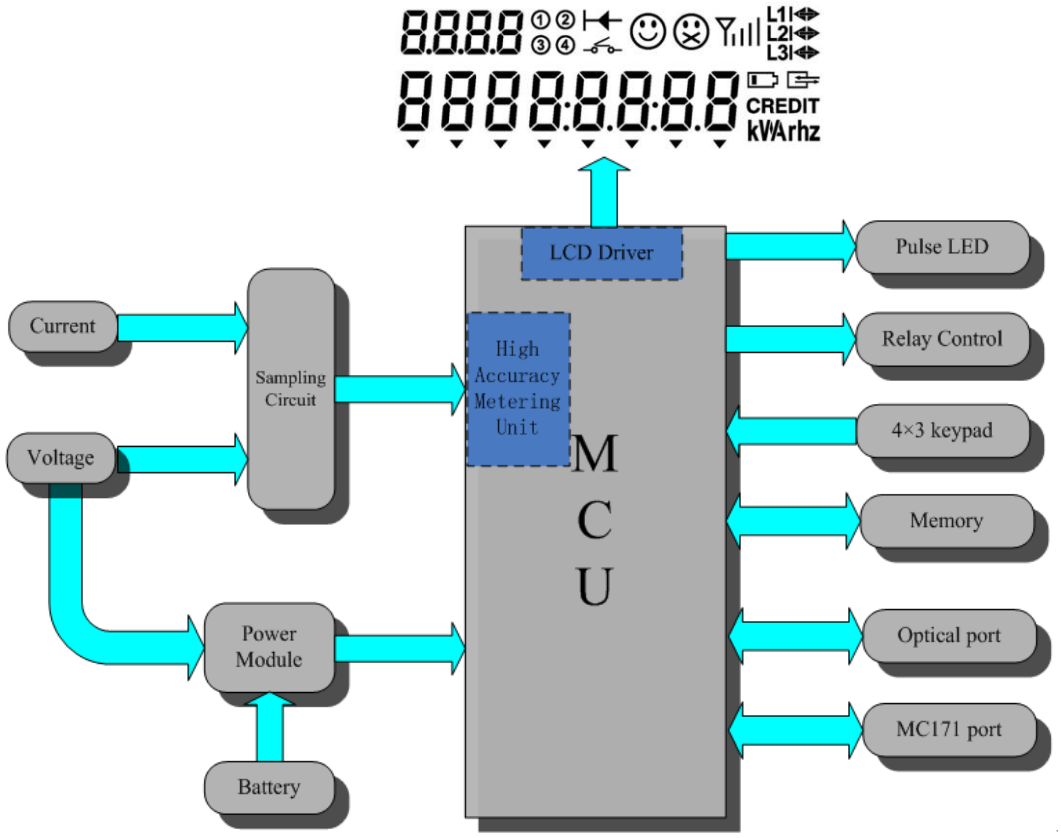
IEC Standard	Description
IEC62053-21	Static meters for active energy (classes 1 and 2)
IEC62053-31	Pulse output devices for electromechanical and electronic meters
IEC62055-41	STS application layer agreement
IEC62055-51	STS physics layer agreement
IEC61334-5-1	Compliant smart meter system for AMI

	application
IEC62056-61	Electricity measurement – meter reading, tariff control and load control data exchange : OBIS
IEC62056-62	Electricity measurement – meter reading, tariff control and load control data exchange : Interface
IEC62056-46	Electricity measurement – meter reading, tariff control and load control data exchange : HDLC protocol data link layer
IEC62056-53	Electricity measurement – meter reading, tariff control and load control data exchange : COSEM application layer

1.2 Working principle

The HXE310-KP three phase keypad prepayment meter consists of six major parts:

1) The Measuring Unit that includes the voltage sampling circuit, the current sampling circuit and the measurement IC.
2) The Data Processing Unit that includes the micro controller unit and the memory chip.
3) The Power Supply Unit, that includes the alternating current power supply and the battery supply.
4) The Display Unit, that includes the LCD display.
5) The Communication Unit that includes optical communication, PLC communication.
6) The Load Control Unit, that includes the relay control circuit.



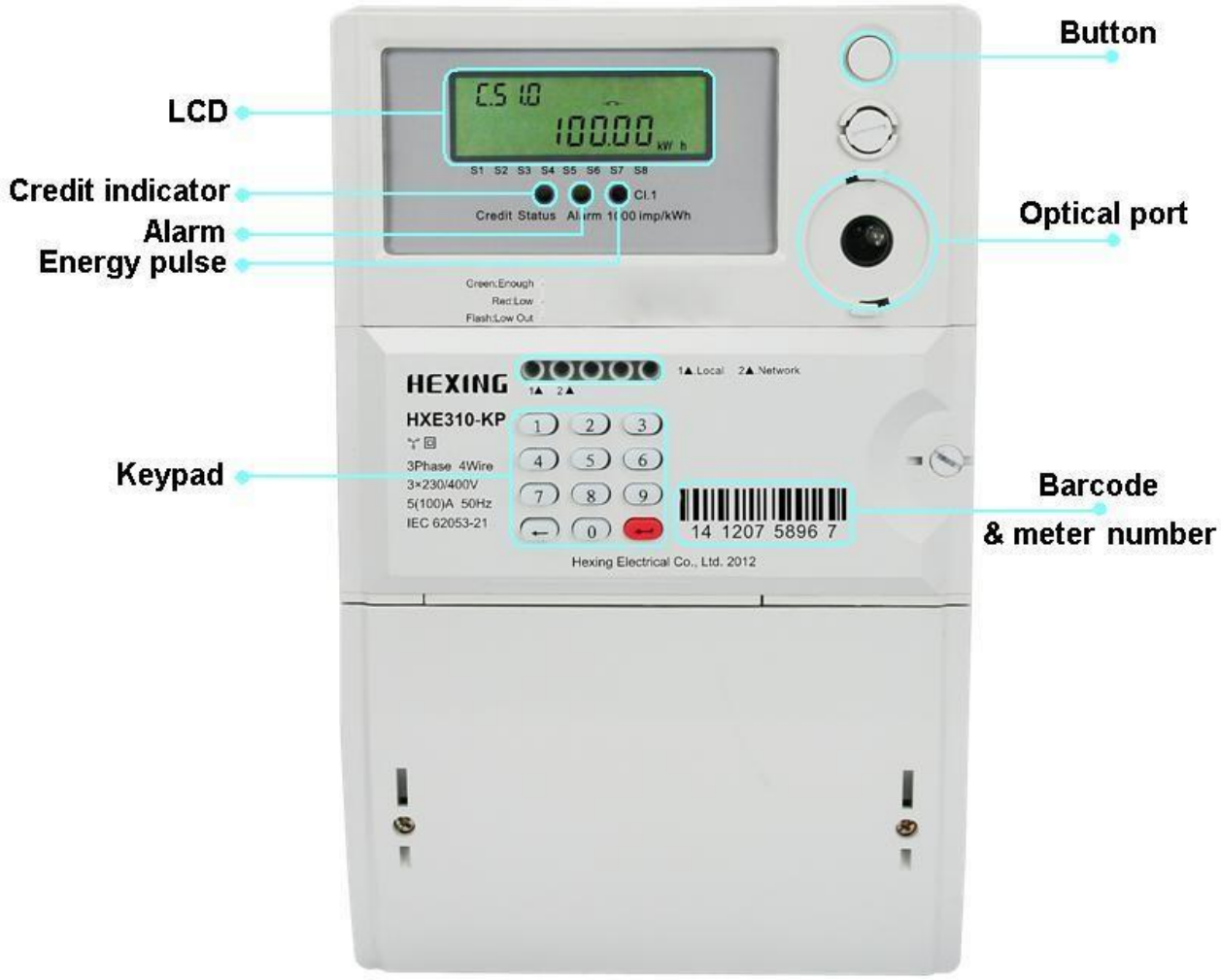
Working principle diagram

1.3 Technical parameters

Parameter	Specification
Reference voltage	3x230/400V
Working voltage	70％Un～120％Un
Reference current	5A
Maximum current	100A
Accuracy class	Class 1 (Active)
Pulse constant	Active： 1000 imp/kWh
Frequency	(50±5)Hz
Temperature	Working temperature range： -25℃～+60℃ Store temperature： -40℃～+70℃
Humidity	≤95%
Voltage circuit consumption	≤2W、10VA
Current circuit consumption	≤1VA
Starting current	4‰Ib
Protection class	IP54
Fast transient burst	4kV

Electrostatic discharge (ESD)	Contact discharge: ±8 kV. Air-gap discharge: ±15 kV
Insulation	4kV, 50Hz, 1min.
Impulse voltage	6kV
Surge	4kV
Over voltage	440VAC, 48hrs

1.4 Appearance



2. Main functions

2.1 Measuring functions

2.1.1 Energy measurement

- Measure Import & Export active energy, range: 000000.00～999999.99kWh
- Active energy measuring mode (Optional before leaving the factory)
  - Mode 1: Consumption = Import + Export, Export = Export
  - Mode 2: Consumption = Import, Export = Export

2.1.2 Instantaneous values

- Active power of Phase A, B and C
- Voltage of Phase A, B and C
- Current of Phase A, B and C
- Power factor of Phase A, B and C
- Grid frequency
- Phase angle of phase A and B, phase angle of phase A and C

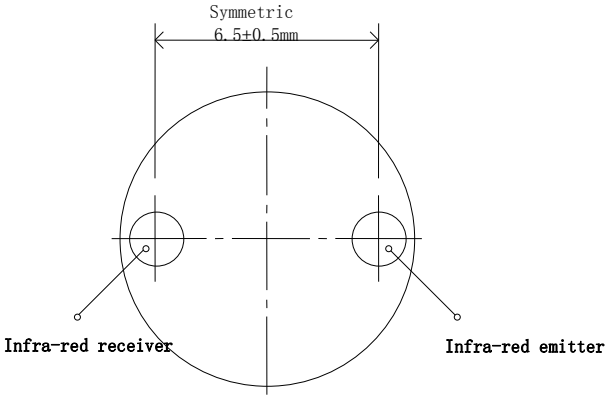
2.1.3 Billing

When RTC of the meter pass the billing time, it will execute one billing record but not support time-missing billing record.

- Monthly billing: records the last 12 months' billing time, import active energy and export active energy.
- Daily billing: records the last 62 days' billing time, import active energy and export active energy.
- Monthly billing (Prepayment): records the last 12 months' billing time and credit balance.
- Daily billing (Prepayment): records the last 62 days' billing time and credit balance.
- The monthly billing time is configurable as o'clock from the 1st to the 28th of every month, with a format as XX day and YY hour (default 0:00 am of 1st). Daily billing time is configurable with format as XX hour YY minute (default 0:00).

2.2 Communication port

2.2.1 Optical communication



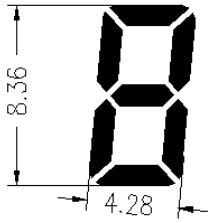
Optical port drawing

- The Optical port is in accordance with the IEC62056-21 standard
- In addition it complies with the DLMS standard (Mode E)
- The initiate baud rate is 300bps, 7 data bits, and 1 parity bit; once successful handshake is completed the meter will then communicate at the baud rate of 9600bps, 8 data bits and one parity bit.
- The utility is able to read meter information and configure the meters parameters via PC software or a Hand Held Unit (HHU)

2.3 LCD display

2.3.1 Physical feature

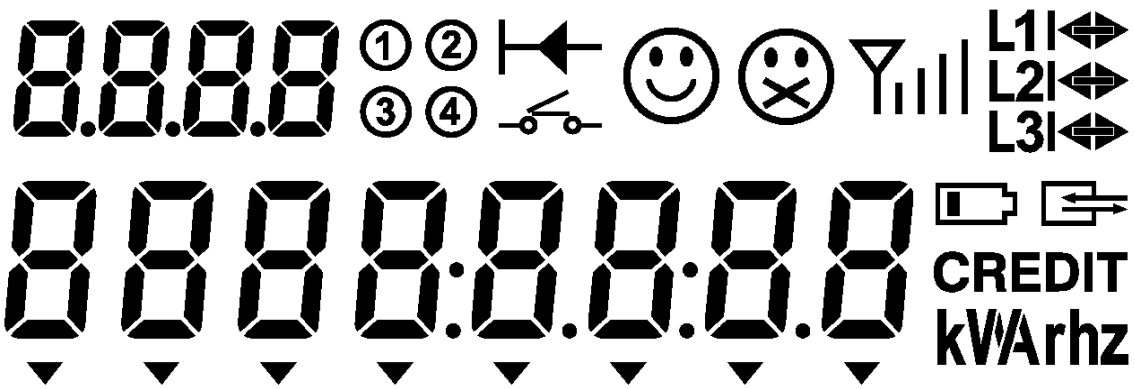
- Size of the screen: 67.5mm x 21mm; Size of the characters: 4.3mm x8.4mm



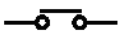
- The LCD display consists of HTN material and provides a usable working temperature range of between -30℃to + 80℃
- High contrast display
- Wide view angle

- Anti-UV function

2.3.2 LCD icon graph



2.3.3 LCD illustration

LCD Illustration	Description
	Data display area
	OBIS display area
CREDIT kWArhz	Unit display area
	Communication
L1 L2 L3	Phase indication (for three phase only)
	Import indication
	Export indication
	Battery low
	Relay Closed
	Relay Open

	Recharge succeeded
	Recharge failed
	Balance credit indication
① ② ③ ④	Tariff indication
▼（S1~S8）	Status indication

2.3.4 LCD display mode

There are 5 modes of LCD display:

- Auto-scrolling display

  Meters' default display mode is the Auto-scrolling display. This will cycle to the next screen automatically every certain second (configurable). The auto-scroll display table is configurable with up to a maximum of 32 display items; refer to the table in item 2.3.7.

- On request display via push button

  During the Auto-scrolling display mode, the meter will switch to the on-request display mode after push the enquiry button. Under the on-request display, the button may be used to cycle through to the various display screens. Should the button not be pressed after duration of 30 seconds, the meter will resume the Auto-scrolling display mode. The on-request display table is configurable with up to a maximum of 32 display items; refer to the table in item 2.3.7.

- Key-in display mode

  When the user presses any key, the LCD will display the key value. The display will switch back automatically if there is no further key operation in a given reasonable time. If a short code or active token is entered correctly and followed by the Enter key the LCD will display the corresponding information and will switch back to previous display after 10 seconds.

- Power off display

  When powered off the meter will display the credit balance remaining.

- Meter error display

  Should the meter detect memory error or some other damage it would stop auto-scrolling and display the word 'Error'.

2.3.5 Status indication

- Should the meter cover be opened, S2 ▼ will be indicated.
- Should the terminal cover be opened, S3 ▼ will be indicated.
- Should the meter have been overloaded, S4 ▼ will be indicated.
- Should the meter cover and terminal cover open detection be deactivated, S5▼ will be indicated.
- Should the meter be in factory mode, S7 ▼ will be indicated.

2.3.6 Display contents

Display item	OBIS code	Data display format
Total energy consumption	1.8.0	XXXXXX.XX
Reverse energy consumption	2.8.0	XXXXXX.XX
Date	0.9.2	DD-MM-YY
Time	0.9.1	hh:mm:ss
Voltage of phase A	32.7.0	XXX.X
Voltage of phase B	52.7.0	XXX.X
Voltage of phase C	72.7.0	XXX.X
Current of phase A	31.7.0	XXX.XXX
Current of phase B	51.7.0	XXX.XXX
Current of phase C	71.7.0	XXX.XXX
Active power of phase A	21.7.0	XX.XXXX
Active power of phase B	41.7.0	XX.XXXX
Active power of phase C	61.7.0	XX.XXXX
Power factor of phase A	33.7.0	X.XXX
Power factor of phase B	53.7.0	X.XXX
Power factor of phase C	73.7.0	X.XXX
Power grid frequency	14.7.0	XX.XX
Phase A and B angle	81.7.1	XXX.X
Phase A and C angle	81.7.2	XXX.X
Credit Balance	c.51.0	XXXXXX.XX
Maximum power	1.35.0	XX.XXXX

Meter number	c.1.0	NNNNNNNN
SGC number	c.51.3	NNNNNN
Emergency credit	c.51.1	XXXXXX.XX
Low credit warning 1	c.51.6	XXXXXX.XX
Low credit warning 2	c.51.7	XXXXXX.XX
Low credit warning 3	c.51.8	XXXXXX.XX
Total positive active energy in last month.	98.1.1	XXXXXX.XX
Total positive active energy in last 2nd month.	98.1.2	XXXXXX.XX
Total positive active energy in last 3rd month.	98.1.3	XXXXXX.XX
Total positive active energy in last 4th month.	98.1.4	XXXXXX.XX
Total positive active energy in last 5th month.	98.1.5	XXXXXX.XX
Total positive active energy in last 6th month.	98.1.6	XXXXXX.XX
Total positive energy consumption in last day	98.2.1	XXXXXX.XX
Total positive active energy of current month	1.9.0	XXXXXX.XX
Date of last recharge	99.3.1	DD-MM-YY
Time of last recharge	99.3.2	hh:mm:ss
Amount of last recharge	99.3.3	XXXXXX.XX
Times of power loss	99.4.1	NNNN
Total recharged credit	c.51.9	XXXXXX.XX

2.4 STS function

2.4.1 Recharging

- When the user goes to the existing vending point and buys electricity, he will get a standard 20-digit token.
- The user enters the 20-dight token using the keypad and presses enter. Should the user have keyed in an incorrect digit he/she could correct it by using the backspace key.
- A successful recharge is indicated as follows:

(Due to the credit is transferred in 'scientific notation' way according to STS standard, the error happens. When the credit is over 1638.4kWh, the error between 0~0.061% is acceptable.

Credit range	Maximum error
0~16383	0
16383~180214	0.061%
180224～1818524	0.055%
1818624～18201624	0.055%

- TOKEN decipher error
  - The token input is wrong
  - The token does not match the meter due to mistake meter number
  - Meter key is wrong

- TOKEN used.
  - The user input a token that has been used.

- TOKEN expired

- Key expired

- Recharge amount exceeds the maximum credit.

- Key type is wrong and recharge is not allowed

2.4.2 Management

This type of token is encrypted by STA and can be used by relevant meter:

- Setting the maximum power.

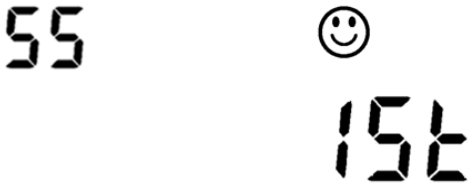
- Clear the credit balance.

- Clear event status

- Changing the meter key.

  In terms of the STS standard the meter requires 2 token codes to change the key. There is no sequence between two tokens but the user must enter the second token within 2 minutes after entering the first token otherwise the first token entered will be disregarded.

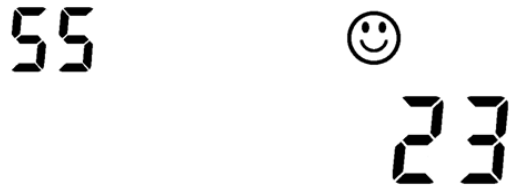
  - Should the first entered token be correctly deciphered：



  - Should the Key changing be successful.

  - Or, Should the second entered token be correctly accepted

  - Then the first token entered correctly



- After input the first key change token, then input the 2rd one with wrong token,

- If the existing key type is not initiation key, then cannot change to initiation key.

- Key type cannot be changed to 3

2.4.3 Test token

This type of token is not encrypted according to STA, i.e. any prepayment meter that follows the STS standard can be tested.

- Full test

  5649-3153-7254-5031-3471

  This would test the relay, the LCD display, display the positive active energy, display the key version and the tariff index. Each item will cycle for a period of 10 seconds.

- Relay test

  0000-0000-0001-5099-7584

  If the relay is closed, then this token would open the latch. If it is open, then this token

would close the relay. Two minutes later, the meter will revert back to the previous relay state.

Note: If the credit balance is no more than 0, then the relay cannot be closed.

- LCD test

0000-0000-0001-6777-4880

- Display positive active energy.

  0000-0000-0002-0132-8896

- Display the key version.

  1844-6744-0738-4377-2416

- Display tariff index

  3689-3488-1475-5332-2496

- Display maximum power.

  0000-0000-0012-0797-4400

- Display meter status.

  0000-0000-0022-8172-8512

- Display power

  0000-0000-0044-2920-8064

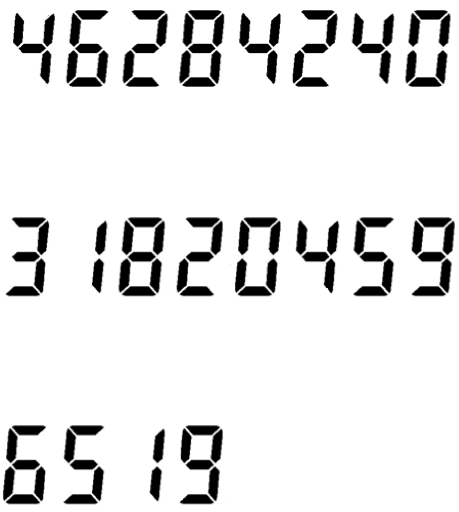
- Display meter version

  0000-0000-0087-2419-5840

2.4.4 Cancellation of registration

Should the Utility or the end user have a requirement to remove the meter or change the meter, the registration of the meter could be canceled in the following manners:

- When a cancellation is processed on the Engineering token generation (or Vending) System a 20 digit cancellation token is generated.
- The User would enter this 20-digit token and press the enter button.
- Should this token be successfully accepted the meter will return a 20-digit refund token and this will be displayed over 3 scrolling screens. Each screen will be displayed for 10 seconds to allow the user sufficient time to record it in writing. For example:



- The user would then return this token to the Utility Vending Station or Engineering Station. If it is accepted the system will write off the meter and refund the balance.
- The cancellation token can be inquired by stroking 818.

2.5 Short Codes

There are series of short codes available for customer to easily retrieve information from the meter.

The Customer can input three codes as a short cut key as follows

800	Positive active power	801	Credit balance

802	Current date	803	Current time
804	Meter number	805	SGC number
806	Reason for Relay operation	807	Meter status
808	Total power	809	Tariff index
810	Over draft value	811	Emergency credit
812	Cancel audible alarm	813	Positive active energy consumption in last day.
814	Positive active energy consumption of current month.	815	Date of last recharge
816	Time of last recharge	817	Amount of last recharge
818	Cancel returned code	819	Times of power off
820	Total active energy consumed in last month.	821	Total active energy consumed in 2nd last month.
822	Total active energy consumed in 3rd last month	823	Total active energy consumed in 4th last month.
824	Total active energy consumed in 5th last month.	825	Total active energy consumed in 6th last month.
830	Last recharge token	831	2nd Last recharge token
832	3rd Last recharge token	833	4th Last recharge token
834	5th Last recharge token	835	6th Last recharge token
836	7th Last recharge token	837	8th Last recharge token
838	9th Last recharge token	839	10th Last recharge token
840	11th Last recharge token with date and time	841	12th Last recharge token with date and time
842	13h Last recharge token with date and time	843	14th Last recharge token with date and time
844	15th Last recharge token with date and time	845	16th Last recharge token with date and time
846	17th Last recharge token with date and time	847	18th Last recharge token with date and time
848	19th Last recharge token with date and time	849	20th Last recharge token with date and time
865	Allow meter cover opening test. Return to normal operation mode.		
869	Maximum power	870	Voltage
873	Key version	874	Current
877	Active power	888	Frequency

Note:

- 800 - Total import active energy: 0.00 kWh

- 801 – Balance credit: 100.00kWh

- 802 – Current date: 18/Aug/2012

- 803 – Current time: 20:35:35

- 804 – Meter number:

In terms of STS standard, there are 11 digits in meter number. It is displayed in two screens, for example, should the meter number is 14203528142.

  - The first screen：

  - The second screen：

- 805 – SGC number: 999910

- 806 – The reason of relay operation: the codes definition please check the appendix

- 807 – Meter status, (the following means meter cover open and terminal cover open)

  - BIT0: Meter cover open
  - BIT1: Terminal cover open
  - BIT2: Over voltage of phase A
  - BIT 3: Over voltage of phase B
  - BIT 4: Over voltage of phase C
  - BIT5: Under voltage of phase A
  - BIT6: Under voltage of phase B
  - BIT7: Under voltage of phase C
  - BIT8: Reverse of phase A
  - BIT9: Reverse of phase B
  - BIT10: Reverse of phase C

- BIT12: Three phase unbalance
- BIT13: Overload
- BIT14: Strong magnetic filed

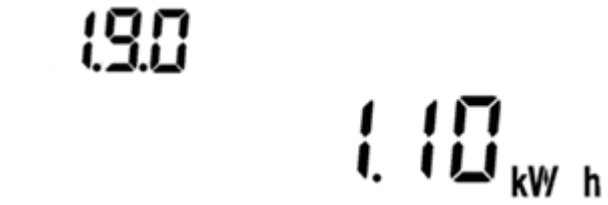
- 808 – Total instant power: 3.5280kW

- 809 – Tariff index: 01

- 810 – Overdraft limit: 10kWh

- 811 – Emergent overdraft: please refer to the detailed depict
- 812 – Cancel audible alarm: please refer to the detailed depict
- 813 – Total import active power of last day: 0.71kWh

- 814 – Total import active power of current month: 1.10kWh



- 815 – The date of last recharging: 19/July/2012

- 816 – The time of last recharging: 21:35:15

- 817 – The credit of last recharging: 100.00kWh

- 818 – The return code of cancelation: please refer to the detailed depict
- 819 – The times of power off: 7 times

- 820 ~ 825 – Total import active energy of last 1 to 6 months: please refer to the detailed list
- 830 ~ 839 – Last 1 to 6 recharging tokens
- 865 – Enter to the working mode
- 866 – Measurement accuracy test: the meter always shows the tested energy, the

accuracy increase 1 position up to Wh and calculated from 0. Re-stroke 866 or re-power, the meter will exit the test mode

- 869 – Maximum power: 25.0000kWh

- 870 – Voltage: 220.8V

- 873 – Key version: 01

- The short code does not exist

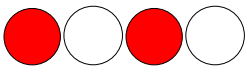
- The inquiry record does not exist

  E.g. the user wants to check the last 5 recharging tokens but the meter only has 4 recharging records then it will indicate the inquiry record does not exist

2.6 Low balance alarm

To remind customers to recharge the meter in time, the meter provides a credit balance alarming that functions as both a visual alarm and audible alarm.

2.6.1 Credit status indicator

- Normal credit balance: LED in green 
- Credit Balance less than alarm value level 1: LED in red 
- Credit Balance less than alarm value level 2: LED in red and flashing 

Note：this indicator is also power on indicator

2.6.2 Audible alarm

When the credit balance is less than alarm value level 3, the meter would buzz to indicate that the customer urgently needs to recharge the meter. Customers are allowed to cancel the audible alarm by keying in the short code 812. By default to avoid disturbance of customers during evening hours this audible alarm is suppressed during the hours of 20h00～08h00.

- Cancel the audible alarm.

- Audible alarm already canceled or cannot be canceled

2.7 Emergency overdraft (optional)

After the credit balance is finished, the internal relay will be disconnected automatically. Should the customer require electricity in the case of an emergency, he can activate the emergency overdraft function by inputting 811 on the keypad.

With emergency overdraft facility, meter will still register in a negative way until it reaches the overdraft limit at which point the meter will be disconnected once more. The Emergency overdraft facility can only be used once and is only re-enabled after the meter is recharged nonce more. The overdraft limit will be deducted from credit balance automatically upon the next recharge event

- Emergency overdraft:

- Overdraft function has been used:

- No needs for overdraft function:

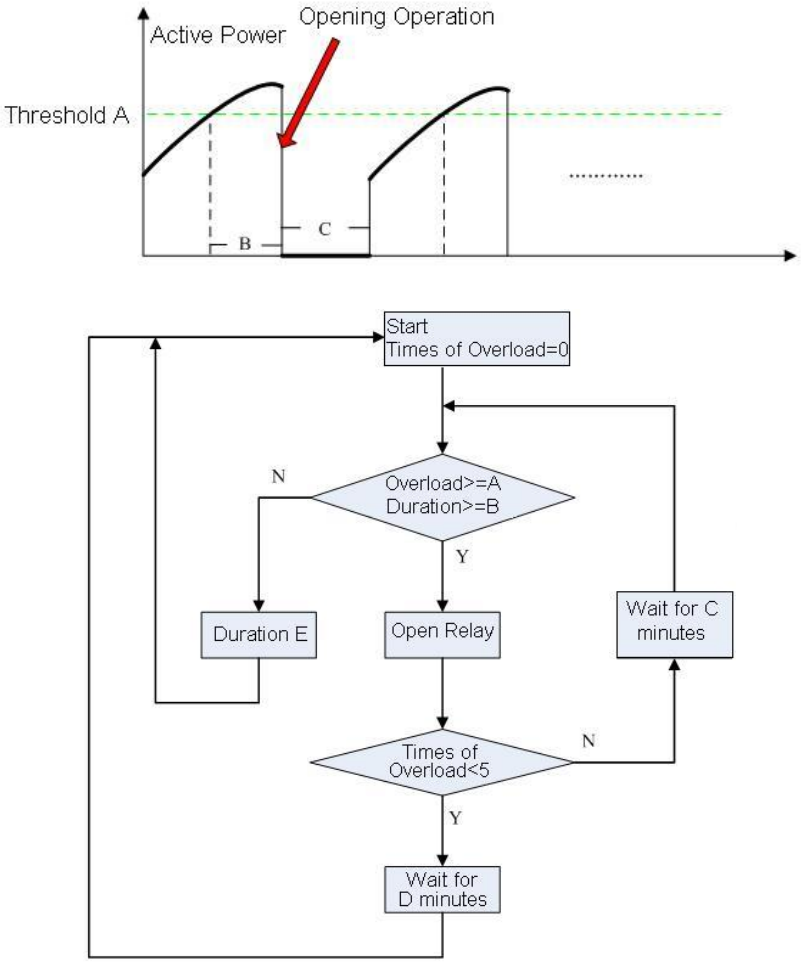
- Deficit situation:

- Can’t withdraw after cancellation registration:

2.8 Load control

- When the loaded active power exceeds value A (Maxim power) and the duration of this load exceeds the entered delay time B, the relay is disconnected.
- The relay will remain disconnected until a period of time C, upon which the relay is again reconnected, and then the load control detection function is again repeated.
- If overload event occurs 5 times, a waiting time of period D is enacted and then the number of overload events is reset and the relay is reconnected and the load control detection function is again repeated.
- If no overload occurs during time E, the number of overload events is reset.

Note: Should power on/off, set Max power or clear event record while in the controlling process, the status of load control will be reset.



Relay control mechanism

2.9 Event record

In order to provide the important reference records for the utilities as well as monitor the specific events during the operation of meters, it records the occurrence time and related important information.

2.9.1 Channel type events

2.9.1.1 The first type events

Records the total occurred times, total lasting time and the occurrence and ending time of last 10 times of events.

- Power off
- Open meter cover
- Open terminal cover
- Over voltage of phase A, B and C

- Under voltage of phase A, B and C
- Reverse of phase A, B and C
- Unbalance of three phases
- Strong magnetic field

2.9.1.2 The second type events

Records the total occurred times of events and recharging time, recharging credit and recharging TOKEN of last 10 times

- Recharging

2.9.1.3 The third type events

Records the total occurred times and occurrence time and reason of last 10 times of events

- Relay on
- Relay off

2.9.1.4 The forth type events

Records the total occurred times of events and the time before and after timing of last 10 times

- Timing

2.9.1.5 The fifth type events

Records the total occurred times of events and occurrence time of last 10 times

- Overload

2.9.1.6 The sixth type events

Records the total occurred times of events and occurrence time, managing TOKEN subclass and managing TOKEN of last 10 times

- Timing

2.9.2 Journal events

Includes standard events, tampering events, relay events and grid events. The record format: occurrence time + events ID

- Standard events: timing, recharging
- Tampering events: meter cover open, terminal cover open, strong magnetic field
- Relay events: relay on, relay off
- Grid events: power off, over voltage, under voltage, reverse, over load

2.10 Relay

2.10.1 Physical features

- Single core magnetic latching relay
- Imax = 100A
- Operation life is a minimum of 5,000 times under rated current
- Operation life is a minimum of 10,000 times under no load condition.
- Pulse driven: In order to make sure that the relay can work properly, the voltage exerted on the coil must reach rated voltage and the width of the pulse must be 3 times longer than the operation time.
- Short time over current: 30Imax
- In order to operate the relay properly and not to cause a nuisance reset of the meter, the meter only operates the relay when the supply voltage is higher than 70%Un.

2.10.2 Priority

	Operation code	Priority level
Open Relay		
Balance low, emergency credit available	01	8
Balance low, emergency credit used	02	9
Overload	03	5
STS opening test	04	4
Meter cover open	05	6
Terminal cover open	06	7
Remote relay open	07	2
Factory default relay open	0B	10
Close Relay		

Normal operation	00	11
STS closing test	10	3
Remote closing	20	1

Note: Smaller number means higher priority level.

2.10.3 Status checking

- If the meter has executed the closing command, then it is deemed that the relay is under a closed status. If the meter has executed an opening command, then the meter tests if there is current flowing. If there is current flowing then it is deemed that the opening command has failed, if not, the relay is regarded as having an open status.
- Due to the limitations of using current as a means of determining the status under closed conditions the meter executes the closing command twice to assure the successful closing execution.
- In order to keep the relay status the same as that already expected and commanded previously the meter executes the latest relay command to keep the relay status correct when the meter is energized.

2.10.4 Malfunction definition

If the current command is relay open, but due to some reasons the meter failed to open the relay, the meter will try up to 5 times to repeat the command. If the relay still can't be opened, then it is deemed to have malfunctioned. The meter will then continue to try an hour later and also every time at which the meter is energized.

2.11 Real Time Clock

- Supports calendar, time and leap year automatic switch function.
- The meter is equipped with a clock module that runs the time from a 32768HZ crystal oscillator
- The error is less than 2s/day at 25℃
- Should the customer request higher precision, the crystal oscillator will be calibrated in factory and the error could be less than 0.5s/day at 25℃

2.12 Battery

- A Lithium battery of 1200mAh is fitted to the meter.
- When the meter is powered off, the battery supplies the RTC, LCD display, button circuits and event recording mechanism.
- When the battery voltage is less then 3.4V, the LCD displays this symbol.
- The battery life can last 3~5 years under long-time use
- The battery is changeable. Recommend the clients to change the battery under power off. If this must be happened under power on situation, please be cautious of electrical shock
- In order to prevent the meter from being affected by the battery replacement, this operation needs to be completed in 30 seconds. The Real Time Clock (RTC) should also be set thereafter immediately.

2.13 Normal operation mode

When the meters are being installed on site, the terminal cover will be open for wire connection. Hence, the meters work at the installation mode when meters left factory in which the meters do not detect the meter cover open and terminal cover open.

S5 indication

After the meters are installed, close the terminal cover then switch the meter modes back to Normal working via stroking '865' when the detection of meter cover open and terminal cover open will be activated (▼S5 indication disappears). This function cannot be reversed.

Switch to normal working mode

Already at the normal working mode

Note: When the meter is under installation mode, the relay is close as default. Some clients will require setting the relay open as default. In this situation, when the meter switches to normal working mode, the relay will close automatically.

2.14 Fault alarm LED

When the meter is in fault, the alarm LED will turn on. The customer can configure the alarm events in terms of specific requirements, e.g. the configuration word set as 0x00000003, then the LED will turn on when the meter cover or terminal cover open; The default configuration word sets is 0x10000000, the alarm LED indicate the Relay fault event. This function can be configurable.

3. Overall dimension and installation

3.1 Overall dimension

Length × Width × Height ＝ 277mm×175mm×89mm

Add: 1418Moganshan Road, Shangcheng Industrial Zone,310011, Hangzhou City, China
Europe: +86 571 28020775
Africa: +86 571 28020773
Fax: +86 571 28029263
Middle East: +86 571 28020769
Latin America: +86 571 28020776
Email: market@hxgroup.co
Asia: +86 571 28020671
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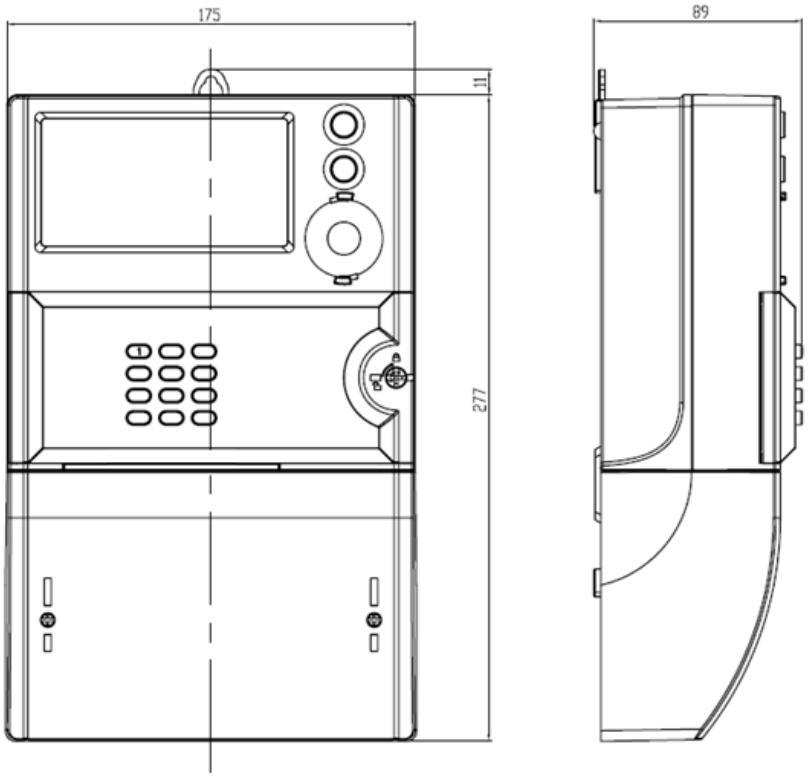

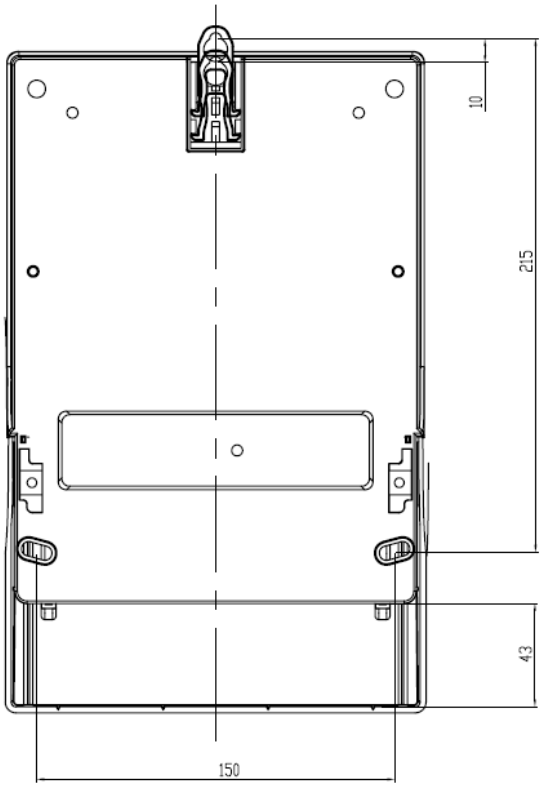

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Latin America: +86 571 28020776
Email: market@hxgroup.co
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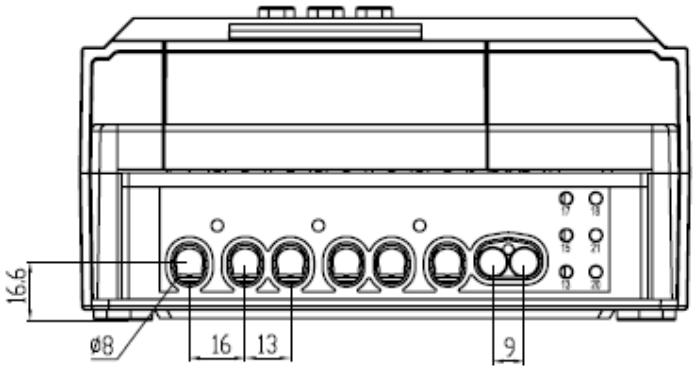
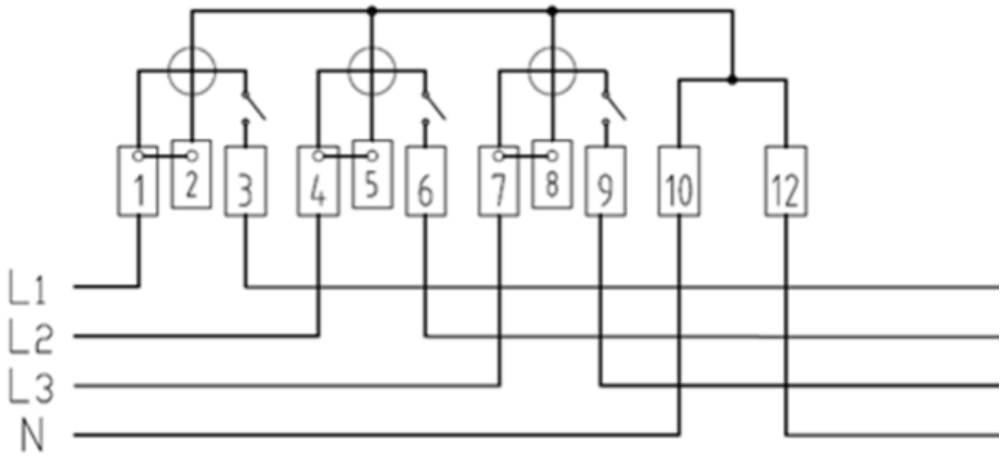
3.2 Terminal block



3.3 Connection diagram



3.4 Meter installation

- The meter should be connected correctly according to connection diagram and the terminal screws should be tightened correctly to avoid poor connections that might otherwise damage the meter.
- The Meter must be installed in a dry and secure location. It is suggested that the meter be installed inside of an enclosure.
- The meter should be installed as per the installation dimension drawing and should be

attached to a solid, fire-resistant chassis plate.

4. Storage and transportation

The meter shall be stored under the temperature of -25℃~+60℃,humidity less than 85% and original package, the layers of which should be less than 5. During the transportation and storage, fierce impact should be avoided.