



User Manual

Three Phase Smart DC Meter HXE310

Focus on creating value for clients

Revision history

Index	Date	Name	Remarks
1.0	Nov. 20th. 2020	HXEING	First Release
1.1	Apr. 13th. 2021	HXEING	Update
1.2	Apr. 21th. 2021	HXEING	Update
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1.5	Dec. 9th. 2021	HXEING	Update

Document description

Effective coverage:

This user manual only applies to Hexing meter type as mentioned in the document title.

Objective:

This user manual includes the relevant technical information of meter. It is available for the use and maintenance of the meter. The manual includes:

- Introduction of meter's work mechanism, performance and functions.
- Malfunction that may happen during its lifetime and the corresponding precaution.
- Detailed description of the meter functioning during its whole lifetime.

User Object:

- This user manual aims at guiding the personnel responsible for the meter design, testing, operation etc.
- This user manual is also helpful for personnel from the electricity company such as the meter lectotype engineers and the technicians responsible for the meter installation, operation and maintenance from the electricity company as well.

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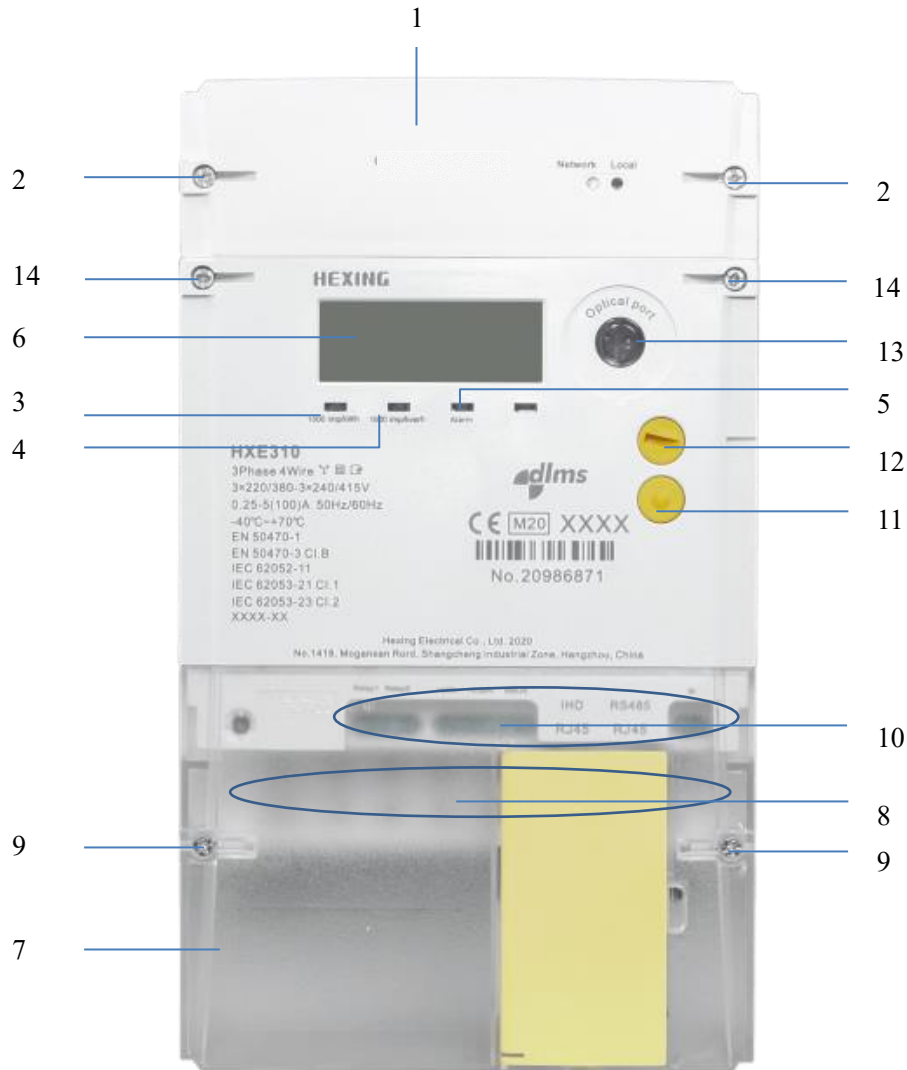
1 Overview

The HXE310 three-phase smart meter is design for measuring the import and export active energy, import and export reactive energy, maximum demand and instantaneous parameters. It supports contract management, multi-tariff, monthly billing, daily billing, load profile, event detection, neutral measurement (optional) and supply control etc. A modular-designed communication module can be GPRS/4G module, or PLC module, which supports plug and play, no need to power off the meter.

Main Features

- Support wide scope of operate voltage
- LCD display with large 8 digits.
- Lithium battery or/and super-capacitor used as back-up power supply, so can support display available in case of power failure.
- Display button allows checking the LCD display items and changing the LCD display mode.
- Support multiple input/output interface and hot plug in/out interface.
- Communication protocol: DLMS/COSEM.
- Communication encryption ensures data transmission safety.
- Support local and remote firmware upgrade.
- Support relay on/off remotely.
- Support Degree Protection IP54
- Real-time clock
- Various events detection and record including under voltage, over voltage, programming, password setting and time setting
- Bypass, magnetic, phase reverse, etc. detection for tampering-proof

2 Appearance



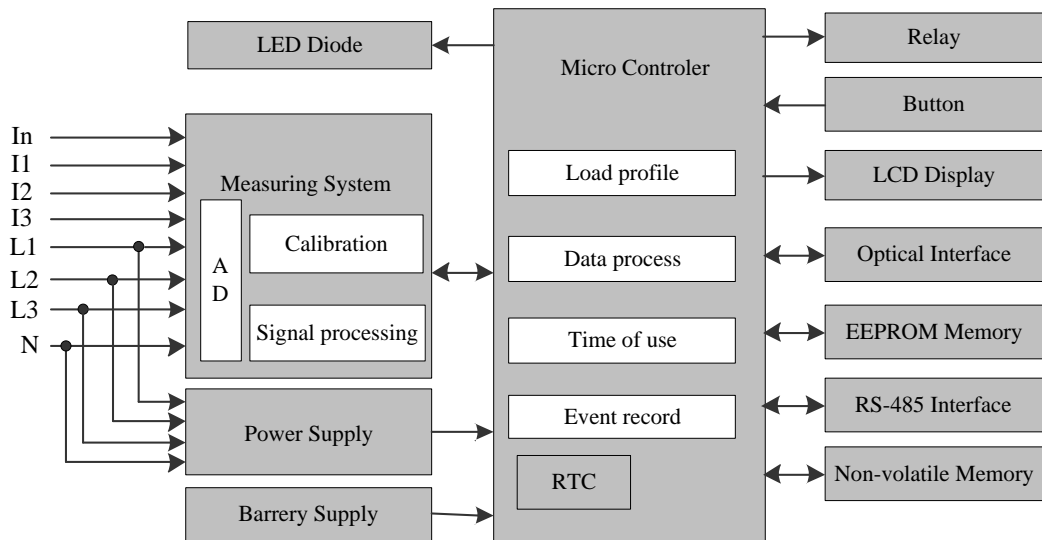
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|------------------------------|-------------------------|--------------------------|
| 1. Communication module | 6. LCD window | 11. Display button |
| 2. Communication module seal | 7. Terminal cover | 12. Sealable button |
| 3. Active pulse LED | 8. Terminal Block | 13. Optical port |
| 4. Reactive pulse LED | 9. Terminal cover seal | 14. Terminal cover seals |
| 5. Alarm LED (optional) | 10. Auxiliary interface | |

3 Standards compliance

Standard	Description
IEC 62052-11	Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 11: Metering equipment
IEC 62053-21	Electricity metering equipment (AC) –Particular requirements –Part 21:Static meters for active energy(classes 1 and 2)
IEC 62053-23	Electricity metering equipment (AC) – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)
EN50470-1	Electricity metering equipment (AC) – Part 1: General requirements, tests and test conditions – Metering equipment(class indexes A, B and C)
EN50470-3	Electricity metering equipment (AC.) – Part 3: Particular requirements – Static meters for active energy (class indexes A, B and C)
IEC 62052-21	Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 21: Tariff and load control equipment
IEC 62056-21	Electricity metering - Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange
IEC62056-42	Electricity metering – Data exchange for meter reading, tariff and load control – Part 42:Physical layer services and procedures for connection-oriented asynchronous data exchange
IEC62056-46	Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC protocol
IEC62056-47	Electricity metering – Data exchange for meter reading, tariff and load control – Part 47:COSEM transport layer for IP networks
IEC62056-53	Electricity metering – Data exchange for meter reading, tariff and load control – Part 53:COSEM Application layer
IEC62056-61	Electricity metering – Data exchange for meter reading, tariff and load control – Part 61:OBIS Object identification system
IEC62056-62	Electricity metering – Data exchange for meter reading, tariff and load control

	– Part 62:Interface classes
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4 Working Principle



5 Measurement

5.1 Active energy Measurement

- Total Import active energy per tariff
- Total Export active energy per tariff
- Total Sum active energy per tariff
- Total Net active energy per tariff
- Import active energy in L1
- Export active energy in L1
- Import active energy in L2
- Export active energy in L2
- Import active energy in L3
- Export active energy in L3

5.2 Reactive energy Measurement

$$+R=R_I+R_{II}; -R=R_{III}+R_{IV}$$

- Total Import reactive energy per tariff
- Total Export reactive energy per tariff
- Total Reactive energy per tariff in QI
- Total Reactive energy per tariff in QII
- Total Reactive energy per tariff in QIII
- Total Reactive energy per tariff in QIV
- Import reactive energy in L1
- Export reactive energy in L1
- Import reactive energy in L2
- Export reactive energy in L2
- Import reactive energy in L3
- Export reactive energy in L3

5.3 Apparent energy Measurement

- Import apparent energy
- Export apparent energy
- Import apparent energy in L1

- Export apparent energy in L1
- Import apparent energy in L2
- Export apparent energy in L2
- Import apparent energy in L3
- Export apparent energy in L3

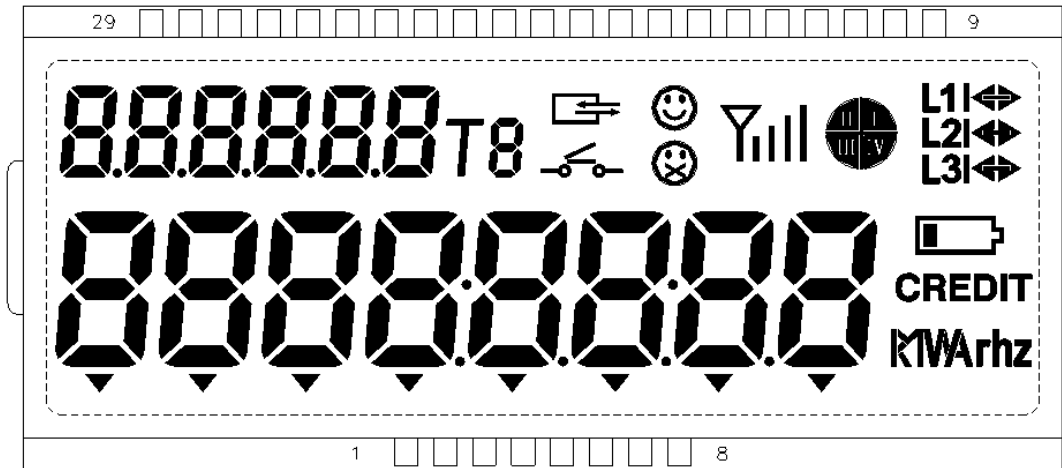
5.4 Instantaneous Measurement

- Voltage
- Current
- Active power
- Reactive power
- Apparent power
- V&I Phase Angles
- BA voltage angle, CA voltage angle
- Power factor
- Frequency

6 LCD display




6.1 LCD with full segments










LCD with full-segment display is as following.



- LCD material is HTN type, and its working temperature range is $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$.
- LCD shall be high contrast ratio.
- LCD shall be wide viewing angle.
- LCD polarizer shall be anti-ultraviolet function.

6.2 Display segments

LCD display information	Description
	Data display
	OBIS display
	Indicates current voltage: 1) On: The voltage is normal 2) Off: Power failure 2) Flashing: Under voltage, Overvoltage, Loss voltage

	Unit
	The meter is in communication
	Four-quadrant indicator
	Indicate the direction of the power 1) Right arrow: Import 2) Left arrow: Export 3) No displayed or displayed as input power: grid power on but no import 4) Not display: when voltage indicator has no display
	Battery status
	Relay connection/disconnection
	Strength of signal status
	Tariff indicator
	S1~S8 Event status indicator

6.3 Display mode

This meter is design with three display modes:

- Auto mode display

Meter default display mode is auto-scrolling display, the default auto scrolling time cycle is 10 seconds. The time in each cycle is configurable between (1s-60s) time interval. It will switch to the next screen display automatically. Auto-scrolling display item list is also configurable with 60 items, detailed display information please check display list.

- Manual mode display

Manual display mode can be activated by pressing and holding display button, a short and repeated press of display button will change the screen display. Meter will

return to auto-scrolling display mode automatically in a certain time without operating (default time is 120s). The display item list under manual mode display I display list is configurable, and 60 items can be configured at minimum, detailed display information please check the display list.

- Power off display

The LCD will be off as default status. The meter will show power off display by pressing the button, the item list of power off is the same as that under auto mode, No push button is pressed for 30~60s, the meter will turn off the LCD.

- Test mode

Meter can enter or exit test mode by receiving command. The meter can display energy in 3-4 decimals in test mode. When power off happens, the meter will exit test mode automatically.

7 Demand

7.1 Calculation method of MD

Support two types of MD calculation methods: sliding window time and block. MD sliding time can be set between from 1 to 60 minutes, and MD sliding number can be set between 1~15, and the sliding time and number should not be more than 60 by multiplication.

7.2 MD recorded content

- Import active demand
- Export active demand
- Import reactive demand
- Export reactive demand
- Reactive demand in QI
- Reactive demand in QII
- Reactive demand in QIII
- Reactive demand in QIV
- Import apparent demand
- Export apparent demand
- Active demand ($|QI+QIV|+|QII+QIII|$)
- Import active MD with time stamp total and per tariff
- Export active MD with time stamp total and per tariff
- Import reactive MD with time stamp total and per tariff
- Export reactive MD with time stamp total and per tariff
- Reactive MD with time stamp total and per tariff in QI
- Reactive MD with time stamp total and per tariff in QII
- Reactive MD with time stamp total and per tariff in QIII
- Reactive MD with time stamp total and per tariff in QIV
- Import apparent MD with time stamp total and per tariff
- Export apparent MD with time stamp total and per tariff
- Active MD ($|QI+QIV|+|QII+QIII|$) with time stamp total and per tariff

7.3 MD reset

There are two kinds of reset:

Auto reset: reset according to the time preset, usually the same with billing time.

Manual reset:

1. Push the seal button and hold for preset time.
2. Send command for MD reset.

8 Load profile

8.1 Load profile capacity

Load Profile	Default application	Max. capture items
Load Profile 1	Hourly Data(energy)	60
Load Profile 2	Hourly Data(Instantaneous)	60
Load Profile 9	Daily Billing Data	60

- The period can be 0,60,300,600,900,1800,3600,86400s, when you choose 0, means no need for this profile.
- Each profile capacity can be set in factory.
- When you change the objects or period in profile, the data will be erase.
- The average, minimum and maximum value of the instantaneous data can only be configured in Load profile 1 or Load profile 2.

8.2 Capture object list

Object	Number of bytes
Clock	14
Load profile status word	2
Import active energy	5
Export active energy	5
Combined active energy	5
Import active energy in L1	5
Export active energy in L1	5
Import active energy in L2	5
Export active energy in L2	5
Import active energy in L3	5
Export active energy in L3	5
Reactive energy in QI	5
Reactive energy in QII	5
Reactive energy in QIII	5
Reactive energy in QIV	5
Reactive energy in QI in L1	5

Reactive energy in QII in L1	5
Reactive energy in QIII in L1	5
Reactive energy in QIV in L1	5
Reactive energy in QI in L2	5
Reactive energy in QII in L2	5
Reactive energy in QIII in L2	5
Reactive energy in QIV in L2	5
Reactive energy in QI in L3	5
Reactive energy in QII in L3	5
Reactive energy in QIII in L3	5
Reactive energy in QIV in L3	5
Import reactive energy	5
Export reactive energy	5
Import reactive energy in L1	5
Export reactive energy in L1	5
Import reactive energy in L2	5
Export reactive energy in L2	5
Import reactive energy in L3	5
Export reactive energy in L3	5
Import apparent energy	5
Export apparent energy	5
Import apparent energy in L1	5
Export apparent energy in L1	5
Import apparent energy in L2	5
Export apparent energy in L2	5
Import apparent energy in L3	5
Export apparent energy in L3	5
Import active energy (interval)	5
Export active energy (interval)	5
Import reactive energy (interval)	5
Export reactive energy (interval)	5
Phase instantaneous voltage	5
Phase instantaneous current	5
Instantaneous network frequency	5
Total instantaneous active power	5
Instantaneous import active power	5
Instantaneous export active power	5

Instantaneous import reactive power	5
Instantaneous export reactive power	5
Instantaneous import apparent power	5
Instantaneous export apparent power	5
Instantaneous import active power in L1	5
Instantaneous export active power in L1	5
Instantaneous import active power in L2	5
Instantaneous export active power in L2	5
Instantaneous import active power in L3	5
Instantaneous export active power in L3	5
Instantaneous import reactive power in L1	5
Instantaneous export reactive power in L1	5
Instantaneous import reactive power in L2	5
Instantaneous export reactive power in L2	5
Instantaneous import reactive power in L3	5
Instantaneous export reactive power in L3	5
Instantaneous power factor in L1	5
Instantaneous power factor in L2	5
Instantaneous power factor in L3	5
Instantaneous power factor	5
Last average value of voltage L1	5
Last average value of voltage L2	5
Last average value of voltage L3	5
Last average value of current L1	5
Last average value of current L2	5
Last average value of current L3	5
Last average value of power factor L1	5
Last average value of power factor L2	5
Last average value of power factor L3	5
Last average value of power factor	5
Last average value of import active power	5
Last average value of export active power	5
Last average value of import reactive power	5
Last average value of export reactive power	5
Last Maximum value of voltage L1	5
Last Maximum value of voltage L2	5
Last Maximum value of voltage L3	5

Last Maximum value of current L1	5
Last Maximum value of voltage L2	5
Last Maximum value of voltage L3	5
Last Maximum value of power factor L1	5
Last Maximum value of power factor L2	5
Last Maximum value of power factor L3	5
Last Maximum value of power factor	5
Last Maximum value of import active power	5
Last Maximum value of export active power	5
Last Maximum value of import reactive power	5
Last Maximum value of export reactive power	5
Last Minimum value of voltage L1	5
Last Minimum value of voltage L2	5
Last Minimum value of voltage L3	5
Last Minimum value of current L1	5
Last Minimum value of current L2	5
Last Minimum value of current L3	5
Last Minimum value of power factor L1	5
Last Minimum value of power factor L2	5
Last Minimum value of power factor L3	5
Last Minimum value of power factor	5
Last Minimum value of import active power	5
Last Minimum value of export active power	5
Last Minimum value of import reactive power	5
Last Minimum value of export reactive power	5

9 Billing

9.1 Daily frozen

- At least store 62 days data
- Freezing time: 00:00 at midnight everyday
- Freezing content: Can be configurable, same as load profile list(item 8.2)
- Daily freezing profile is the load profile whose period is set as 1440min.

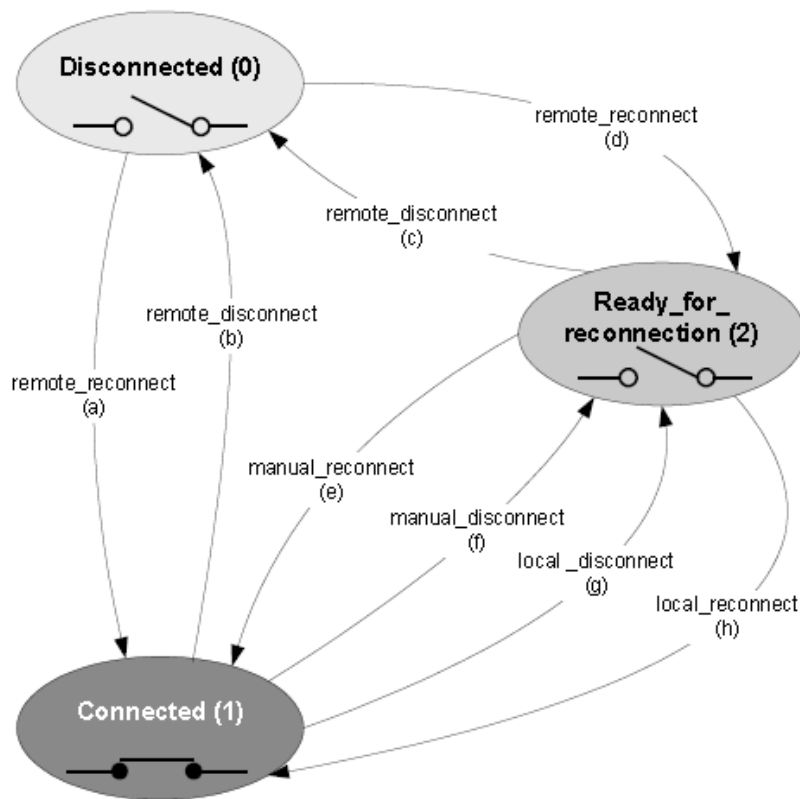
9.2 Monthly billing

- Capacity: At least store 13 items of monthly billing data
- Automatic billing: When meter passes the preset billing time, the meter will freeze the monthly billing data automatically. The format is XX day XX hour, and the default is 00 clock on the first day of each month.
- Manual billing: Support sending command or press-button billing. When meter under scroll button display mode, press the seal button for 10 seconds, and then s-PrESS-bL shows on display, then press any button and the LCD will display donE, which means press-button billing has finished. This function support configuring as enable mode or disable mode. There are delay times between manual billing to reduce illegal repeat operation in short time.
- Support supplement latest one billing data when meter power off or clock adjust.
- Support configuring maximum 60 objects one time, the list is as follows:
 - Clock
 - Meter serial number
 - Import active energy
 - Export active energy
 - Import active energy in L1
 - Export active energy in L1
 - Import active energy in L2
 - Export active energy in L2
 - Import active energy in L3
 - Export active energy in L3
 - Combined active energy
 - Reactive energy in QI
 - Reactive energy in QII
 - Reactive energy in QIII
 - Reactive energy in QIV
 - Reactive energy in QI in L1

- Reactive energy in QII in L1
- Reactive energy in QIII in L1
- Reactive energy in QIV in L1
- Reactive energy in QI in L2
- Reactive energy in QII in L2
- Reactive energy in QIII in L2
- Reactive energy in QIV in L2
- Reactive energy in QI in L3
- Reactive energy in QII in L3
- Reactive energy in QIII in L3
- Reactive energy in QIV in L3
- Import reactive energy
- Export reactive energy
- Import reactive energy in L1
- Export reactive energy in L1
- Import reactive energy in L2
- Export reactive energy in L2
- Import reactive energy in L3
- Export reactive energy in L3
- Import apparent energy
- Export apparent energy
- Import apparent energy in L1
- Export apparent energy in L1
- Import apparent energy in L2
- Export apparent energy in L2
- Import apparent energy in L3
- Export apparent energy in L3
- Import active energy tariff [x]
- Export active energy tariff [x]
- Import reactive energy tariff [x]
- Export reactive energy tariff [x]
- Reactive energy tariff [x] in QI
- Reactive energy tariff [x] in QII
- Reactive energy tariff [x] in QIII
- Reactive energy tariff [x] in QIV
- Import apparent energy tariff [x]
- Export apparent energy tariff [x]
- Combined active energy tariff [x]

- Import active energy (interval)
- Export active energy (interval)
- Import reactive energy (interval)
- Export reactive energy (interval)
- Import active MD with time stamp
- Import active MD with time stamp tariff[X]
- Export active MD with time stamp
- Export active MD with time stamp tariff[X]
- Import reactive MD with time stamp
- Import reactive MD with time stamp tariff[X]
- Export reactive MD with time stamp
- Export reactive MD with time stamp tariff[X]
- Active MD ($|QI+QIV|+|QII+QIII|$) with time stamp
- Active MD ($|QI+QIV|+|QII+QIII|$) with time stamp tariff[X]
- Reactive MD with time stamp in QI
- Reactive MD with time stamp tariff[X] in QI
- Reactive MD with time stamp in QII
- Reactive MD with time stamp tariff[X] in QII
- Reactive MD with time stamp in QIII
- Reactive MD with time stamp tariff[X] in QIII
- Reactive MD with time stamp in QIV
- Reactive MD with time stamp tariff[X] in QIV
- Import Apparent MD with time stamp
- Import Apparent MD with time stamp tariff[X]
- Export Apparent MD with time stamp
- Export Apparent MD with time stamp tariff[X]

10 Relay control



Relay control logic figure

Remote control: means send command to disconnect/connect.

Manual control: means press button to disconnect/connect. The relay symbol on the LCD will flash when the relay status is "Ready for Connection", then long press the display button 6S to reconnect the relay. After reconnect the relay, the relay symbol will return to normal display. When the mode is supported, press the sealable button and the display button 6S to manually break the switch.

Local control: means make use of the meter own function to realize power/current control, etc.

10.1 Relay status

No.	Status	Description
0	Disconnected(0)	In this status, relay is off, Any other operation

		is not allowed except that via system or PC software sending cancel relay off command
1	Connected(1)	In this status, relay is on
2	Ready for connected(2)	In this status, relay is off

10.2 Relay control command

Transform No.	Transfer Name	Transform explain
a	Remote_reconnect	Remote reconnect, From Disconnected(0) to Connected(1), no need manual control
b	Remote_disconnect	Remote disconnect, From Connected(1) to Disconnected(0)
c	Remote_disconnect	Remote disconnect, From Ready for connected(2) to Disconnected(0)
d	Remote_reconnect	Remote reconnect, From Disconnected(0) to Ready for connected(2) From Ready for connected(2) to Connected(1) need local or manual command
e	Manual_reconnect	Manual reconnect, From Ready for connected(2) to connected(1)
f	Manual_disconnect	Manual disconnect, From Connected(1) to Ready for connected(2) From Ready for connected(2) to Connected(1) need local or manual command
g	Local_disconnect	Local disconnect, From Connected(1) to Ready for connected(2) From Ready for connected(2) to Connected(1) need local or manual command
h	Local_reconnect	Local reconnect, From Ready for connected(2) to Connected(1)

10.3 Relay control mode

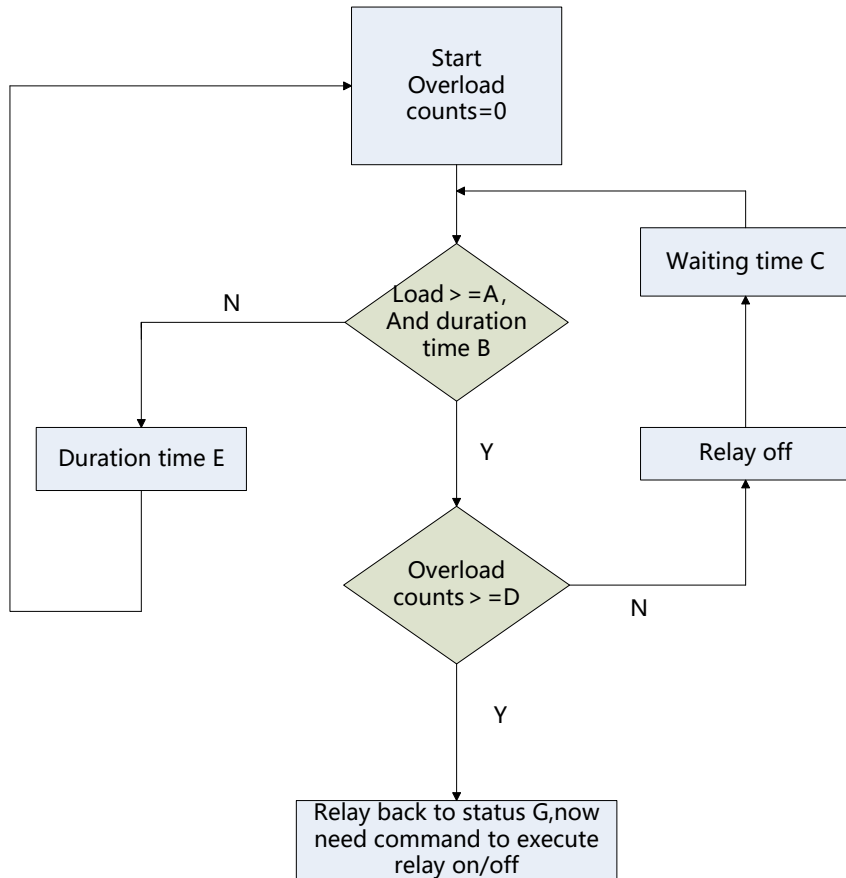
Control mode	Disconnection				Reconnection			
	Remote		Manual	Local	Remote		Manual	Local
	b	c	f	g	a	d	e	h
0	×	×	×	×	×	×	×	×
1	√	√	×	√	×	√	√	×
2	√	√	×	√	√	×	√	×
3	√	√	×	√	×	√	√	×
4	√	√	×	√	√	×	√	×
5	√	√	×	√	×	√	√	√
6	√	√	×	√	×	√	√	√

11 Load control

Load control monitor object can be total instantaneous active power(import + export), total instantaneous import active power, total instantaneous export active power, Maximum current in three phase, Maximum active power in three phase.

Overload disconnect logic:

- When load is higher than the preset threshold A and duration the preset delay time B, relay will disconnect, relay status turns from connected to ready for reconnection
- After relay is disconnect, it will keep this status for a preset time C, relay will turn connected and detect the load again
- If overload counts more than D times, relay will not execute off/on again, relay will keep the initial status(consumer can decide to turn off or on by himself), this initial status called G.
- If overload does not happen in E minutes, the meter will restart the overload counts.



11.1 Relay disconnect/connect at fixed time

Relay supports disconnection and connection within fixed time.

12 Firmware Upgrade

Meter and communication module firmware can be upgraded remotely and/or locally. Firmware upgrade will not work in meter and module until the new version of firmware is uploaded into the meter completely. The meter records the event log as the firmware upgrade.

The meter is fully compliant with the upgrade process defined in the DLMS standard:

- Step 1: Get Image Block Size
- Step 2: Client initiates Image transfer
- Step 3: Client transfers ImageBlocks
- Step 4: Client checks completeness of the Image
- Step 5: Server verifies the Image (Initiated by the client or on its own)
- Step 6: Client checks the information on the images to activate
- Step 7: Server activates the Image(s) (Initiated by the client or on its own)

After writing the firmware into meter, meter should check all steps right or not, if the CRC of the firmware is correct, then can update new firmware.

If result of checking for authenticity is negative, the meter will reject to upgrade.

13 Event record

13.1 Event classification

- Standard event
- Tamper event
- Relay control event
- Power quality event
- Communication event

13.2 Event list

Standard Event
Switch to summer
Clock adjusted(old date/time)
Clock adjusted(new date/time)
RTC error
Low Battery Voltage
Error register cleared
Alarm register cleared
Program flash failure
Watchdog error/Exception Reset
Measuring unit fault
Firmware ready for activation
Firmware activated
Firmware failure
Parameter Program
Manual demand reset
TOU activated
TOU modified
Password Program
Reset all
Load Profile Reset
Checksum of energy data error
EEPROM hardware error start
Crystal oscillator error
EEPROM hardware error end

Tamper Event
Terminal Cover Open
Terminal cover close
Magnetic Influence Detection start
Magnetic Influence Detection end
Meter Cover Open
Meter Cover close
Association authentication failure (n time failed authentication)
Module Cover Open
Module cover close
Current reversal(any phase current reversal happen)

Relay Control Event
Manual disconnection
Manual connection
Remote disconnection
Remote connection
Local disconnection
Limiter threshold exceeded
Limiter threshold ok
Limiter threshold changed
Local reconnection
Disconnect/Reconnect failure

Power Quality Event
Power down (short power failure)
Power up (short power failure)
Low power factor start
Low power factor end
Frequency abnormal start
Frequency abnormal end
Power down(long power failure)
Power up(long power failure)
Phase Failure L1 start
Phase Failure L1 end
Phase Failure L2 start
Phase Failure L2 end
Phase Failure L3 start
Phase Failure L3 end
Missing voltage L1 start
Missing voltage L1 end

Power Quality Event
Missing voltage L2 start
Missing voltage L2 end
Missing voltage L3 start
Missing voltage L3 end
Voltage unbalance start
Voltage unbalance end
Reverse Phase sequence of Voltage start
Reverse Phase sequence of Voltage end
Under voltage L1 start
Under voltage L1 end
Under voltage L2 start
Under voltage L2 end
Under voltage L3 start
Under voltage L3 end
Over voltage L1 start
Over voltage L1 end
Over voltage L2 start
Over voltage L2 end
Over voltage L3 start
Over voltage L3 end
Reverse Energy L1 start
Reverse Energy L1 end
Reverse Energy L2 start
Reverse Energy L2 end
Reverse Energy L3 start
Reverse Energy L3 end

Communication Event
Modem initialization failure
SIM card failure
SIM card Ok
GPRS registration failure
Modem SW reset
Modem HW reset
Diagnostic failure
User initialization failure
Signal quality low
Auto answer number of calls exceeded
Local communication attempt

14 Back-up power

14.1 Battery

The meter has a 1200mA external changeable lithium battery (optional). When the meter is power off, the battery supplies for RTC, LCD display.

14.1.1 Low battery detection

- When the meter is power on, the voltage will be measured by AD sampling per second.
- The accuracy of voltage measuring is $\pm 0.1V$.
- When the battery has been detected under low voltage (less than 3.0V) for 10 continual seconds, a low battery sign can be displayed on LCD, to remind customer to change the battery.

14.1.2 Battery working lifetime

- Average working current
 - Meter power on $I < 1\mu A$
 - Meter power off $15\mu A < I < 30\mu A$
- Working lifetime
 - The battery can be used at least 10 years.
 - When the meter powers off, the lifetime of battery can be at least 2 years.

14.1.3 External battery replacement

1) Power off the meter.

Customer should replace battery after powering off the meter. If it is inevitable to replace battery when powering on, please be even more careful for replacement operation to avoid electrical shock accidentally!



WARNING

Before battery replacement, must power off the meter first, otherwise it may threat life. Make sure in replacement process, power grid will not power on by mis-operation.

- 2) Open communication module cover.
- 3) Remove the battery to be replaced.



- 4) Plug in the new battery.



- 5) If the display of meter works, it means new battery installation is correct.
- 6) Close communication module cover.
- 7) Power on the meter.



NOTE

To ensure battery replacement will not make any influence to RTC of the meter, please try to finish battery replacement in a short period (within 20s is recommended), or after battery replacement, use PC software or HHU to write RTC of the meter.

15 RTC

- Supports calendar, time and leap year automatic when changing function.
- The accuracy is less than 0.5s/day at 23 °C, totally comply with IEC 62054-21
- Content of clock and range
 - year (2000~2099)
 - month (01~12)
 - day (01~31)
 - week (01~07) from Monday to Sunday
 - hour (00~23)
 - minute (00~59)
 - second (00~59)

It is not suggested to synchronize clock around 0:00 o'clock to avoid the repetition or missing of frozen data.

15.1 DST

DST (Daylight Saving Time): DST is a system which regulates the local time for energy conservation the unified time is called “DST”. Generally, during the summer time, people will set the clock one hour ahead, in order to make people get up and go to bed earlier, reduce the amount of lighting, and make full use of light resources and save lighting electricity.

15.1.1 DST configurable

Once set DST and activated, it keeps working until reset the program. Available to set start time in any month any week any day and end time can be set in the same way. For example start on Monday in the last week of March and end on Friday in second week of September. Or set to start on 10th March, end on 8th September directly.

After entering DST, meter's time will be adjusted in 1 hour ahead. When exiting

DST, meter time shall be adjusted in 1 hour later.

When set the DST parameters or change the meter's clock, the meter starts to work hourly under DST setted.

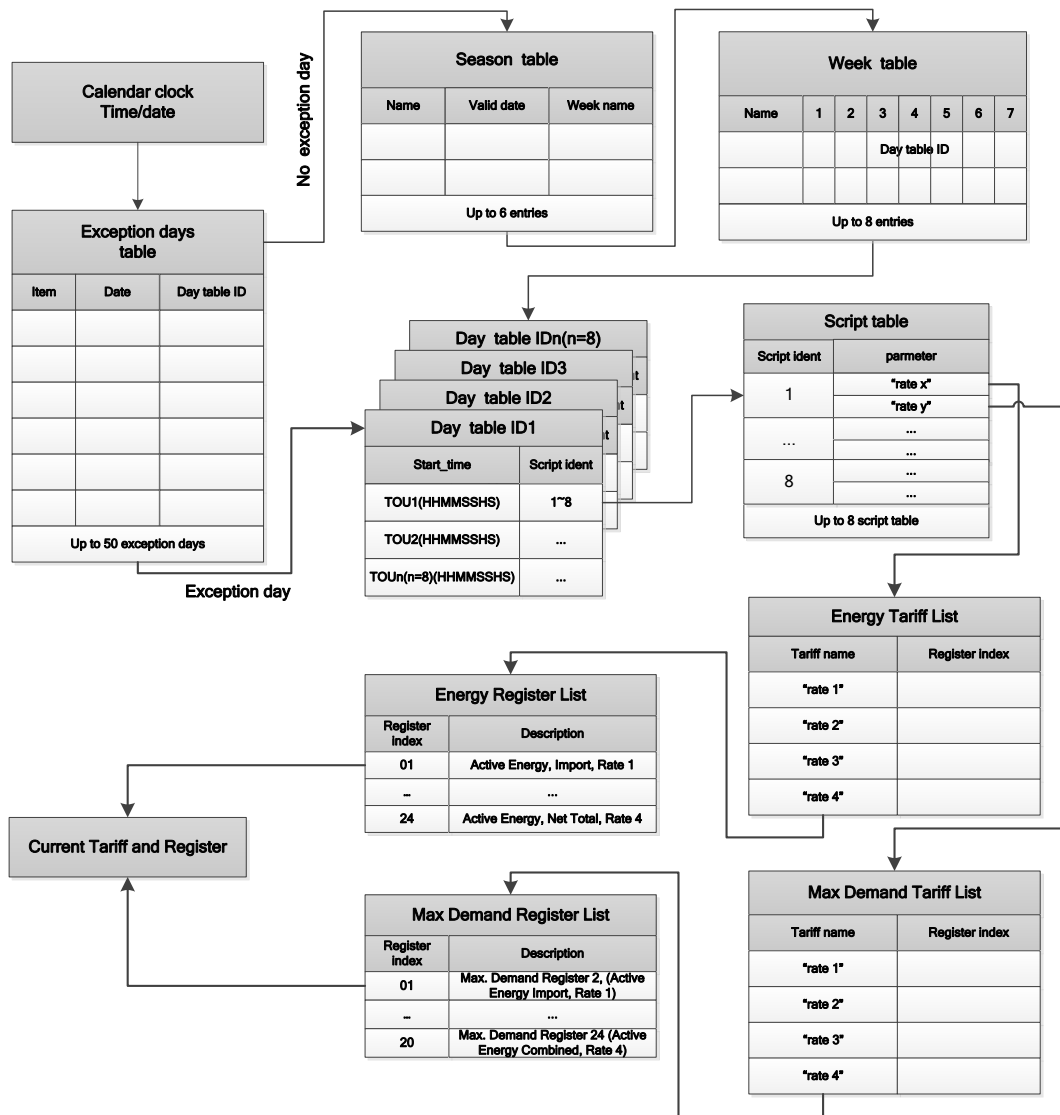
15.2 TOU

Support 4 tariff rates.

Support maximum 50 holidays.

Holidays can be divided into two types: special yearly holiday and public yearly holiday. Special yearly holidays work only in specific years, while public yearly holidays work through the current and future years.

- ☐ Maximally 6 season tables can be configured for each year, and each season corresponds to a weekly time table.
- ☐ Maximally 8 weekly time tables can be configured, and each weekly time table supports separate configuration of daily time table from Monday to Sunday.
- ☐ Maximally 8 daily time tables can be configured, and each daily time table supports configuration of up to 8 time periods. Configuration of crossing zero is also available.



Flow chart of TOU tariff table judgment process

15.2.1 Active and passive tariff

- Support active and passive tariff
- The way to activate Passive tariff:
 - Set passive tariff active time and when meter clock goes across the set time, the passive tariff will be activated and overwrite the old active tariff
 - Set clock into past time(earlier than meter now time), the passive tariff will activate immediately.

16 LED Indication

16.1 Active LED indication

When LED flashes, it means active energy consumption. When meter powers on, the LED is available to configure under the status always on or off, default is always off.

16.2 Reactive LED indication

When LED flash, it means reactive energy consumption. When meter power on, the LED is available to configure under the status always on or off, default is always off.

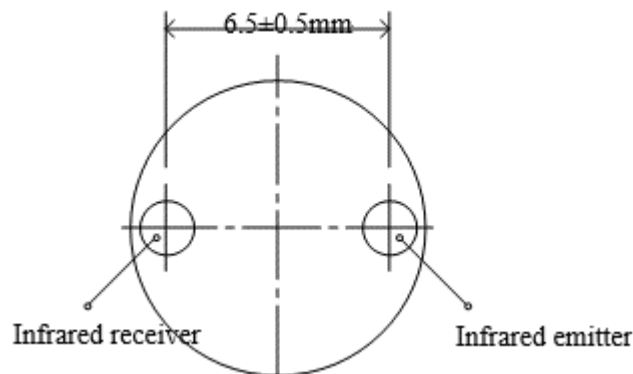
16.3 Alarm LED indication

When tamper events occur, alarm LED will light on all the time. When tamper events are cleared, alarm LED will light off.

17 Communication interface

17.1 Optical communication

Comply with IEC62056-21 optical communication physical interface standard.



Front view of optical port

Signal wavelengths: 900nm~1000nm(infrared).

The optical port of the meter has an iron absorbing plate in order to get the optical port(with magnetic)fixed better, to ensure the communication accuracy and to avoid the drop of optical port by force.



Optical port

Communication standards: IEC62056-21 E mode or DLMS HDLC, default is E mode. 300bps standby, 9600 bps for communication(4800~19200bps configurable)

17.2 RS485 interface(optional)

Communication protocol: DLMS HDLC or IEC62056-21 E mode, default is

DLMS HDLC.

Baud rate: 300~9600 bps (configurable), default is 9600bps. Data bits is 8, none parity

17.3 P1 port interface(optional)

Communication standards: DSMR P1 5.0.2

17.4 GPRS communication

Communication standards: DLMS/COSEM, TCP/IP

GPRS module online mode:

- Always online mode: module will be online all time
- Time period online mode: module will be online at preset period
- Passive activation online mode: module will be online just under SMS or call active message
- On demand online mode: module supports both time period online and passive activation mode

GPRS module supports client mode and server mode.

18 Client management

The meter shall fully support DLMS Security as described in the 8th DLMS/COSEM Green Book and it can transmit the data with/without encryption and authentication.

Several authentication mechanisms are used to authenticate communication entities during AA establishment. Data transportation security is based on a role-based security. Each role has its own access privileges. And all these authentication and encryption algorithms are limited to security policy. Here as following is the list with all the roles, their privileges and authentication mechanism:

Role	Client ID	Privileges	Description
Public client	16	Read limited meter information, like the meter serial number, clock, etc.	Accessible via remote communication and local interface without any security
Reading client	2	Read meter data and parameters	Established with authentication HLS (LLS backup) Data transmission with none security, or authentication and encryption
Management client	1	Read meter data, configure meter parameters and control meter	Established with authentication HLS (LLS backup) Data transmission with none security, or authentication and encryption
Pre-established client	102	Receive broadcast commands, and push data	Accessible only via remote communication Always Established Data transmission with none security, or authentication and encryption

19 Overall dimensions and installation

19.1 Meter Connection

Please follow the instruction to arrange the wire connection:

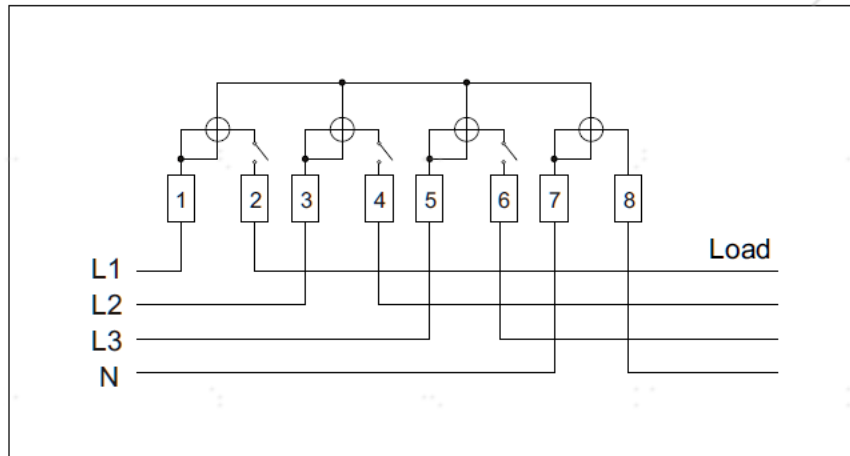
- a) Use copper cable to connect terminal block.
- b) Screw out the wire-fasten screw so that the connection wires can be inserted into.
- c) Remove the plastic cover of the connection wire and make sure that the exposed wire is long enough, the recommended length is no less than 22cm..
- d) Tighten the screws to fix the connection wires.
- e) Check whether the connection is tight or not.



NOTE

The screws in the terminal block should be screwed down tightly to avoid burnt.

● Connection Diagram:



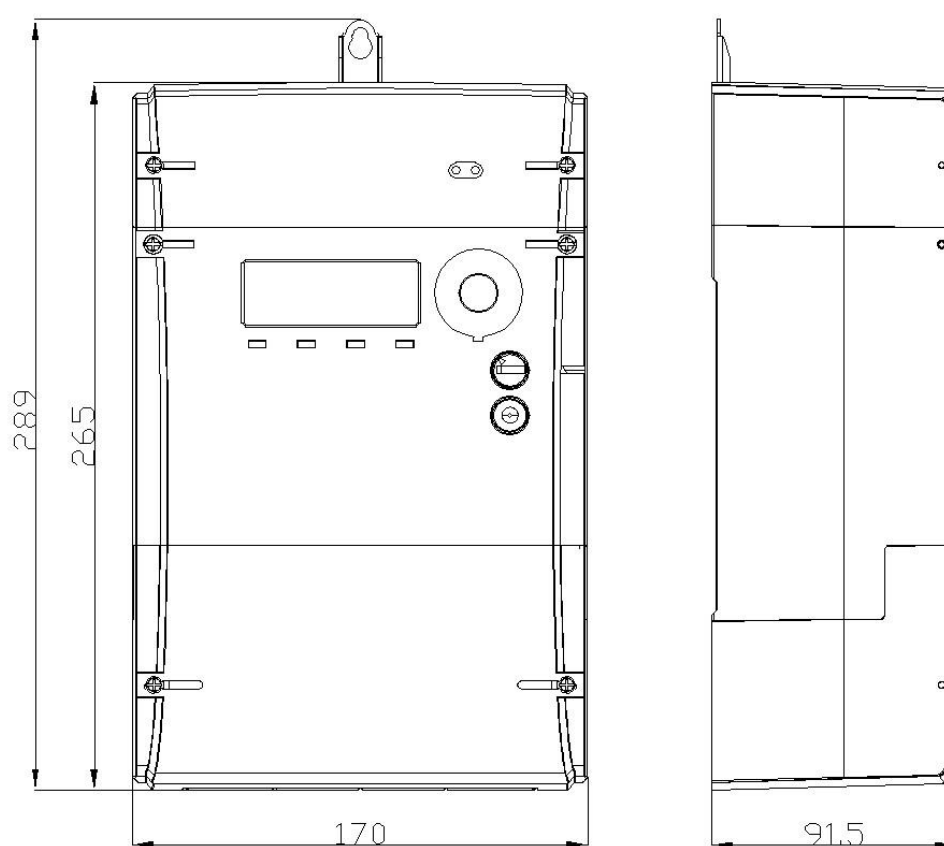
3P4W Asymmetric Connection

● Auxiliary terminal wiring diagram

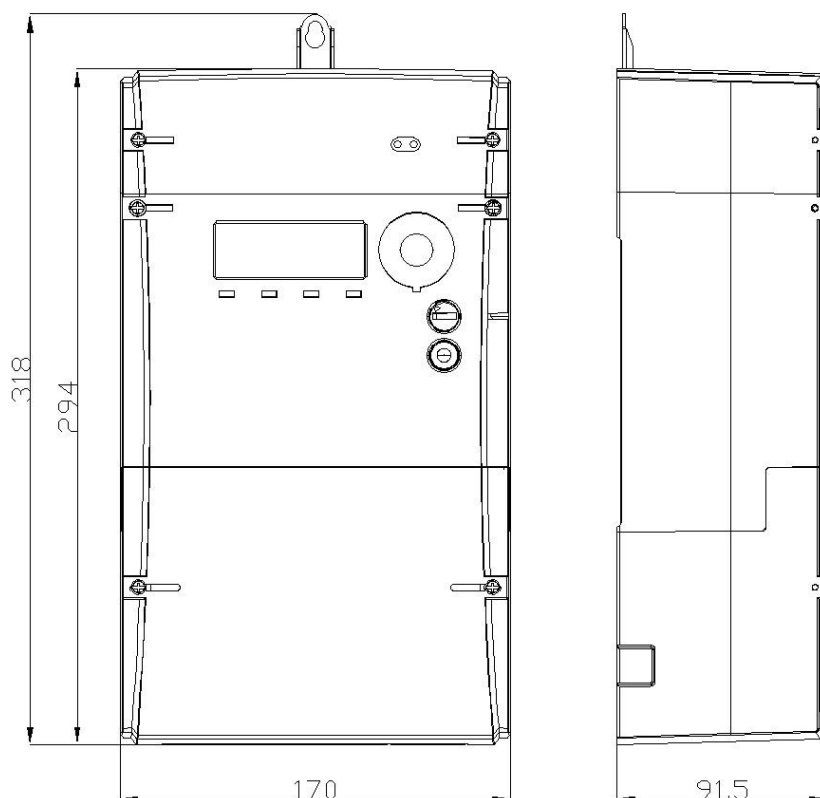
- 20-21: Auxiliary relay/ null
- 22-23 : Auxiliary relay/ null
- 24-25 : Active Energy pulse output/ null
- 26-27 : Reactive Energy pulse output/ null
- 28-29 : M-bus/ null
- PORT1:P1/ null
- PORT2:RS485/ null
- 30-31:SI/ null



19.2 Meter Dimension



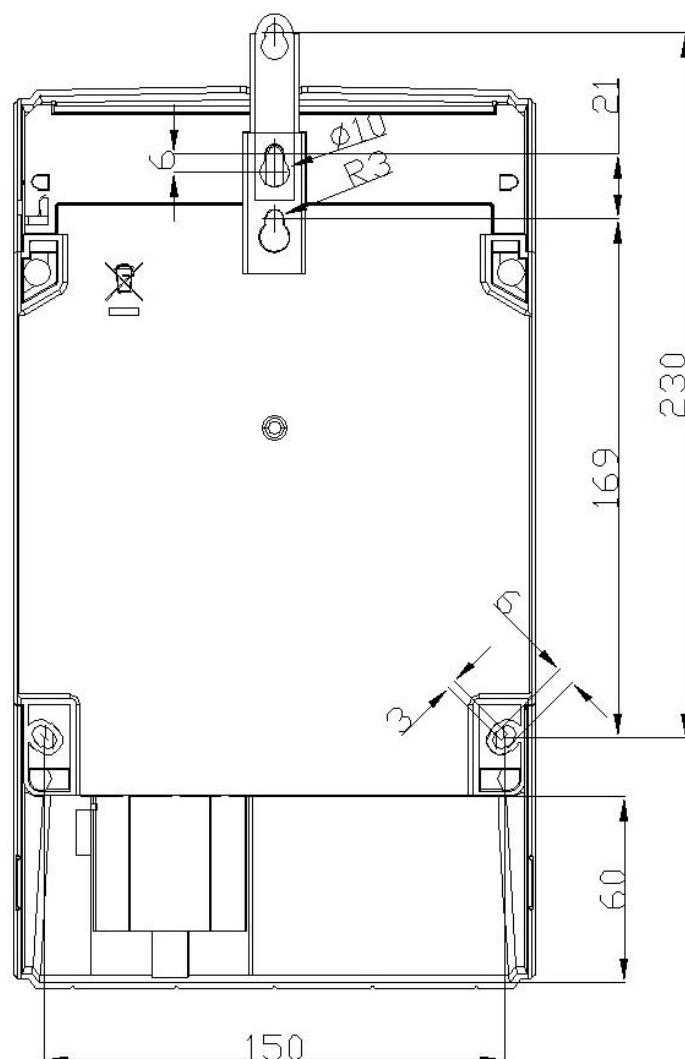
Dimension of smart meter (long terminal cover 31mm)



Dimension of smart meter (long terminal cover 60mm)

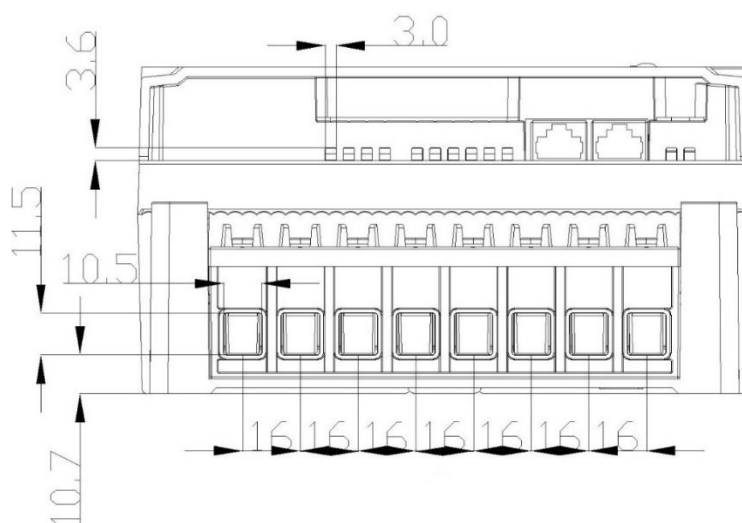
- Length——318mm or 289mm (DIN with metal hanging), 294mm or 265mm (BS)
- Width——170mm
- Height——91.5mm
- Terminal space——60mm or 31mm

- **Installation dimension drawing**



Installation Dimension




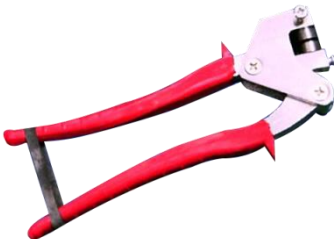


- **Terminal drawing**



Dimension of Terminal Block

20 Installation and un-installation

20.1 Installation tools

Cross screwdriver	
Electric drill	
Wire stripper	
Lead sealing pliers	
Hair springs	
Screw	

20.2 Preparation before installation

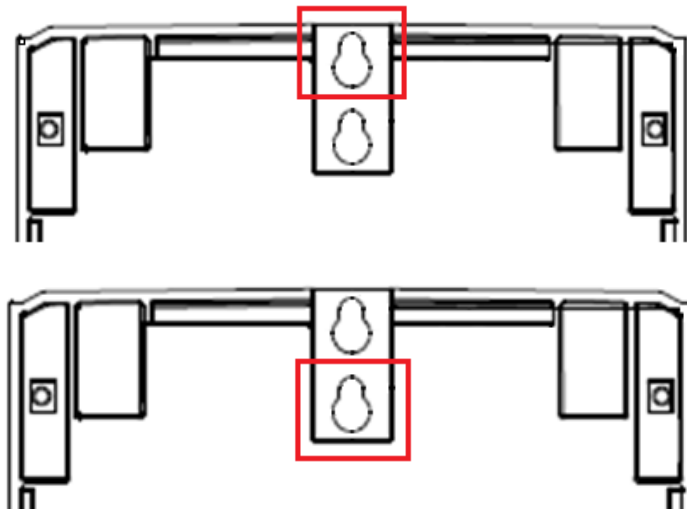
- ◆ The meter should be installed in ventilated and dry place to ensure the meter's safety and reliability. In the dirty or risky area, the meter should be installed in a protection box.
- ◆ Meter should be fixed on a firm, fire-resistant and stable support.
- ◆ Before installation, please check if the meter has been damaged during the transportation(damage of meter cover, hanger, seal, and LCD display, etc)
- ◆ As the internal part of the electrical meter is composed by the delicate electronic components, the meter should be carefully protected during the installation in order to avoid any damage.

**WARNING**

Make sure that the power is cut off before the meter installation, otherwise it will cause a threat to life. The fuse should be disconnected and put it in a safe place to avoid the accidental power-on.

20.3 Installation procedure

- 1、 Select the proper position according to the meter dimensions, and indicate fixing points of the meter on the installation panel.
- 2、 Drill down holes on previously marked positions. (make sure that there's no cable behind before punching, avoid ruining the cable and threatening personal safety)



- 3、 Open the meter terminal cover, and adjust the height of hanger.
- 4、 Using the vertical installation method, the meter hangs on the hanger screw, and fixed on the bottom by two screws. Need to make sure that the 3 screws are

completely banned, and the meter is installed firmly, without shaking.

**NOTE**

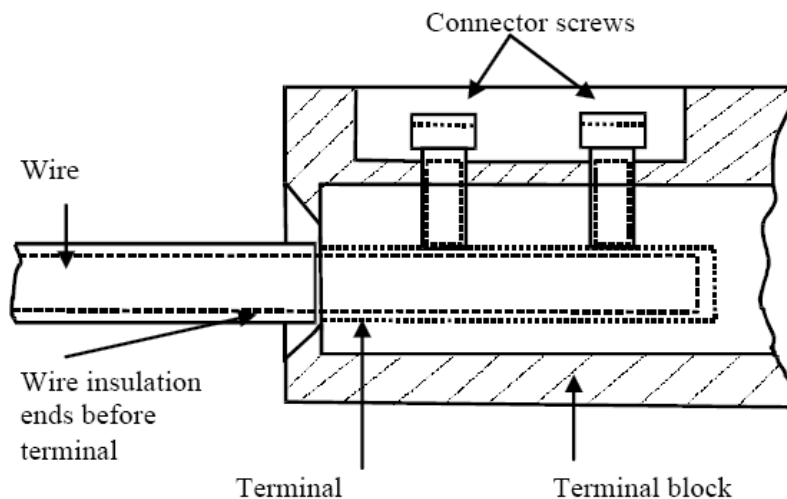
To ensure the installation stability, the diameter of hanger screw must be longer than 11mm, and the diameter of bottom fixed screws must be wider than 7mm.

- 5、Cut the cable to the required length and use the wire stripper to uncover the cable. The recommended bare metal length after stripping is at least 20mm for this series of products.

**WARNING**

We insist on the recommended length of the stripped wire to make sure that the bare metal part is long enough and can be fixed by two connection screws at the same time. However the bare part should not exceed the terminal box wiring holes, ensure the safety and insulation effect.

- 6、When using a small sectional cable, such as 4mm squared, the cable must be placed in the medium to ensure that the screw is well tightened without deviation.



- 7、The cables should be connected correctly according to the wiring diagram and the terminals should be tightened during the installation in order to avoid any damage caused by bad connection.

**NOTE**

The bad fixing of connection screws will lead to the raise of resistance, which can lead to electrical energy loss and heating of terminals. The heating of component is risky. Besides, 1mΩ contact resistance in a

circuit of 80A will result in 6.4 W power losses.

- 8、 The cables should be connected correctly according to the definition of the auxiliary terminal (such as pulse output, signal input or RS485 communication).

**WARNING**

Please be careful and donnot connect the auxiliary terminal with the voltage or current line by mistake to avoid damage to meter.

- 9、 Check connecting wire carefully and avoid any error (such as the reverse wiring for the incoming and outgoing lines, the wrong connection of live and neutral, the bad fixing of screws).

**NOTE**


To ensure the correct wiring, it is recommended to use the appropriate testing tools (such as multi-meters) for input/output test.

- 10、 Close the terminal cover, and sealed it.

**NOTE**

Please make sure that the terminal cover is closed tightly, otherwise it will cause the meter relay cut off due to terminal cover open.

20.4 Testing after installation

- Switch on the breaker
- Check the meter display, if there is any malfunction indication, phase inverse, cover open, or strong magnetic field, no current indictor.
- Press button to display voltage value, check the voltage twice.
- Check the relay is on the right position (if the symbol ‘’ is shown on the LCD).

20.5 Remove

- 1、 Switch off the breaker and power off the meter.



WARNING

Make sure that the power is cut off before the meter un-installation, otherwise it will cause a threat to life. The fuse should be disconnected and put it in a safe place to avoid the accidental power-on.

- 2、 Cut off the terminal cover seal, and remove the terminal cover.
- 3、 Use the voltage test equipment (such as multi-meter) to test meter connecting wire and confirm power-off before go to the next operation.
- 4、 Use the appropriate screwdriver to unscrew the meter auxiliary terminal screws and remove the connecting wires.
- 5、 Use the appropriate screwdriver to unscrew the current connection screws and remove the connecting wires.
- 6、 Use the appropriate screwdriver to unscrew the meter fixing screws.
- 7、 Remove the meter.



CAUTION

The meter un-installation should be done according to the above -mentioned steps. Be attention to prevent meter from dropping down, which will cause injuries and damage to the meter itself.

- 8、 If necessary, please replace a new meter.



WARNING

If a new meter cannot be installed at the moment, please envelop the voltage and current connection cables in insulating material and avoid exposing any bare metal part, otherwise it will pose a threat to life.

21 Service

21.1 Fault Operation

If the LCD cannot display correctly, or data communication does not work, please check as follows:

1. Whether the environment temperature is over the limit working temperature range of the meter
2. Whether the optical communication interface or LCD display window is clean (no scratches, no paint, no fog, or any other kinds of pollution)

If it's not the above-mentioned reasons which leads to failure, meters should be unloaded and sent to Hexing service center.

21.2 Meter Repair

If the meter repair is necessary, please operate in accordance with the following process:

1. If the METER has been installed, then uninstall the METER (see section 19.5 "uninstall"), and reinstall another METER.
2. Describe the fault phenomenon as much as possible (if you can, please provide with METER fault code), the name, phone number of the responsible person for the follow-up maintenance. Please indicate the serial number and complete METER model (METER model can be obtained from the METER nameplate)
3. Package the METER, ensure the METER will not be damaged during the transport. Try to use the original package. Don't put in a METER with missing part
4. Send the electric METER to a certified Hexing service center

22 Maintenance

There is no need to change the METER within the life cycle. METER maintenance can be executed based on local regulations. Recommended every 5~10 years.

22.1 Clean

Use dry cloth to clean the surface of the METER and wipe the stains and insects.

**WARNING**

Warning: Flowing water and high-pressure water equipment is not allowed to clean the METER, which may lead to short circuit.

22.2 Error and function check

The following process can be performed to recognize error and check function

1. Insert the METER to the corresponding terminal of error test bench. (electric METER wiring hole number detailed in chapter 19.1 "Meter Connection"), tighten the connection screws(maximum torque is 3Nm)
2. Put the pulse testing part of the error testing bench align to the LED on the METER.(Actual auxiliary terminal definition can be found on installation manual or on the wiring diagram on the nameplate.)
3. Start the error test bench. Put on rate voltage but no current. Confirm no current indicator display on LED. Check whether the electric METER is displayed correctly (trouble-free code instructions).
4. After the METER is power on, set the METER to test mode through communication. The test mode is with the highest level of security. Both communication key and administrator password are needed to enter the test mode.

**NOTE**

Attention: In order to not affect the actual accumulated power when doing the test, each time METER is off from the electricity, the METER need to set into the test mode again.

5. Start the error testing bench
6. Execute relay control operation through PC software(if the relay is applied), check whether the relay is working properly.

7. Take away the METER from the test bench after test finished.

22.3 Reinstall

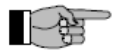
In order to avoid the change of asset management, it's recommended to reinstall the METER in the former position.

The installation process detailed refer to chapter 20 "install and uninstall".

23 Scrap Processing

This chapter describes the right method of meter scrap processing.

Comply with the ISO 14001 environmental certification specification, the components of the meter is separable to maximum extent , therefore you can send the corresponding abandoned to recycling station after disassembled.

**NOTE**

Attention: meter scrap processing should comply with local waste and environmental protection laws and regulations.

Meter can be disassembled into different parts, the recommended waste treatment methods are as follows:

Parts	Recommend scrap processing method
PCB board	Electronic waste, scrap according to local regulations
Metal parts, including iron part of optical communication, terminal connection copper bar, internal current cables etc.	Provided to the metal material recycling
Plastic	Recycle bin for plastic materials, otherwise can burn

24 Transportation and Storage

The meters should be placed on pallet and the height should not exceed 5 layers. The storage condition should be clean, with an environmental temperature of between -40°C and $+70^{\circ}\text{C}$, relative humidity of less than 98% and with an absence of rusty matter in the air.

25 Parameters

Electrical	
Reference Voltage	3P4W: 3×220/380V, 3×230/400V, 3×240/415V
Basic current	5A
Maximum current	80A,100A
Starting current	$\leq 0.4\%I_b(\text{active})$ $\leq 0.5\%I_b(\text{reactive})$
Frequency	50Hz±2%
Consumption in current circuit	$\leq 2\text{VA}$
Consumption in voltage circuit	$\leq 2\text{W}/10\text{VA}$ without communication $\leq 5\text{W}/25\text{VA}$ with communication
Battery life	15years
Data retention	>15years
Meter life	15years
Impulse constant	1000imp/kWh, 2000imp/kWh 1000imp/kvarh, 2000imp/kvarh

External influence	
Protection	IP54(indoor)
Material for meter case compliance	ISO 75
Operating temperature	-40℃~+70℃
Storage temperature	-40℃~+70℃
Relative humidity	$\leq 95\%$
Atmospheric pressure	63kPa-106kPa

Electromagnetic compliance	
Fast transient burst	4kV
Surge voltage	4kV

Electrical insulation	
impulse voltage	6kV
AC voltage	4kV

Accuracy	
Class (IEC) active	1
Class (EN) active	B
Class (IEC) reactive	2
Standard Compliance	IEC62052-11, IEC62053-21, IEC62053-23,

	EN50470-1, EN50470-3,
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Mechanical parameters	
Connection type	Direct connection
Network type	3P4W
Terminal configuration	L1L1L2L2L3L3NN (3P4W)
Weight of Meter	2.28 kg
Dimension(H x W x D)	Long terminal cover: 294/265mm×170.0mm×91.5mm
Mounting	Front projection mounting
Sealing	Sealing provisions for terminal with sealing screw cover
Terminal hole diameter	9.5mm
Terminal cover	Long terminal cover
Meter Cover material	PC+10%GF
Meter Base material	PC+10%GF
Terminal Cover material	PC

Display parameters	
Default display range	0~999999.99 kWh
Display mode	LCD

Annex A Communication and Display OBIS

Display items	Display OBIS code	Display format
Energy		
Active energy import (+A)	1.8.0	xxxxxx.xx kWh
Active energy import (+A) rate X	1.8.X	xxxxxx.xx kWh
Active energy export (-A)	2.8.0	xxxxxx.xx kWh
Active energy export (-A) rate X	2.8.X	xxxxxx.xx kWh
Reactive energy import (+R)	3.8.0	xxxxxx.xx kWh
Reactive energy import (+R) rate X	3.8.X	xxxxxx.xx kWh
Reactive energy export (-R)	4.8.0	xxxxxx.xx kvarh
Reactive energy export (-R) rate X	4.8.X	xxxxxx.xx kvarh
Reactive energy of QI	5.8.0	xxxxxx.xx kvarh
Reactive energy of QI rate X	5.8.X	xxxxxx.xx kvarh
Reactive energy of QII	6.8.0	xxxxxx.xx kvarh
Reactive energy of QII rate X	6.8.X	xxxxxx.xx kvarh
Reactive energy of QIII	7.8.0	xxxxxx.xx kvarh
Reactive energy of QIII rate X	7.8.X	xxxxxx.xx kvarh
Reactive energy of QIV	8.8.0	xxxxxx.xx kvarh
Reactive energy of QIV rate X	8.8.X	xxxxxx.xx kvarh
Apparent energy import	9.8.0	xxxxxx.xx kVAh
Apparent energy import rate X	9.8.X	xxxxxx.xx kVAh
Apparent energy export	10.8.0	xxxxxx.xx kVAh
Apparent energy export rate X	10.8.X	xxxxxx.xx kVAh
Combined active energy	15.8.0	xxxxxx.xx kWh
Combined active energy rate X	15.8.X	xxxxxx.xx kWh
Instantaneous		
Instantaneous voltage on phase A	32.7.0	xxx.xx V
Instantaneous current on phase A	31.7.0	xxx.xx A
Instantaneous voltage on phase B	52.7.0	xxx.xx V
Instantaneous current on phase B	51.7.0	xxx.xx A
Instantaneous voltage on phase C	72.7.0	xxx.xx V
Instantaneous current on phase C	71.7.0	xxx.xx A
Instantaneous net frequency	14.7.0	xx.xx Hz
Instantaneous active import power (+A)	1.7.0	xx.xx kW

Display items	Display OBIS code	Display format
Instantaneous active export power (-A)	2.7.0	xx.xx kW
Instantaneous reactive import power (+R)	3.7.0	xx.xx kvar
Instantaneous reactive export power (-R)	4.7.0	xx.xx kvar
Instantaneous active import power (+A) in L1	21.7.0	xx.xx kW
Instantaneous active export power (-A) in L1	22.7.0	xx.xx kW
Instantaneous reactive import power (+R) in L1	23.7.0	xx.xx kvar
Instantaneous reactive export power (-R) in L1	24.7.0	xx.xx kvar
Instantaneous active import power (+A) in L2	41.7.0	xx.xx kW
Instantaneous active export power (-A) in L2	42.7.0	xx.xx kW
Instantaneous reactive import power (+R) in L2	43.7.0	xx.xx kvar
Instantaneous reactive export power (-R) in L2	44.7.0	xx.xx kvar
Instantaneous active import power (+A) in L3	61.7.0	xx.xx kW
Instantaneous active export power (-A) in L3	62.7.0	xx.xx kW
Instantaneous reactive import power (+R) in L3	63.7.0	xx.xx kvar
Instantaneous reactive export power (-R) in L3	64.7.0	xx.xx kvar
Instantaneous power factor (PF)	13.7.0	x.xxx
Instantaneous power factor (PF) in L1	33.7.0	x.xxx
Instantaneous power factor (PF) in L2	53.7.0	x.xxx
Instantaneous power factor (PF) in L3	73.7.0	x.xxx
Demand		
Import active MD	1.6.0	xxxxx.xxx kW
Import active MD occurrence date	1.6.0	yy-mm-dd
Import active MD occurrence time	1.6.0	hh:mm:ss
Import active MD rate X	1.6.X	xxxxx.xxx kW
Import active MD rate X occurrence date	1.6.X	yy-mm-dd
Import active MD rate X occurrence time	1.6.X	hh:mm:ss
Export active M.D	2.6.0	xxxxx.xxx kW
Export active MD occurrence date	2.6.0	yy-mm-dd
Export active MD occurrence time	2.6.0	hh:mm:ss
Export active MD rate X	2.6.X	xxxxx.xxx kW
Export active MD rate X occurrence date	2.6.X	yy-mm-dd
Export active MD rate X occurrence date	2.6.X	hh:mm:ss
Import reactive MD	3.6.0	xxxxx.xxx kvar
Import reactive MD occurrence date	3.6.0	yy-mm-dd

Display items	Display OBIS code	Display format
Import reactive MD occurrence time	3.6.0	hh:mm:ss
Import reactive MD	3.6.X	xxxxxx.xxx kvar
Import reactive MD rate X occurrence date	3.6.X	yy-mm-dd
Import reactive MD rate X occurrence time	3.6.X	hh:mm:ss
Export reactive MD	4.6.0	xxxxxx.xxx kvar
Export reactive MD occurrence date	4.6.0	yy-mm-dd
Export reactive MD occurrence time	4.6.0	hh:mm:ss
Export reactive MD	4.6.X	xxxxxx.xxx kvar
Export reactive MD rate X occurrence date	4.6.X	yy-mm-dd
Export reactive MD rate X occurrence time	4.6.X	hh:mm:ss
Import apparent MD	3.6.0	xxxxxx.xxx kvar
Export apparent MD rate X occurrence date	4.6.X	yy-mm-dd
Export apparent MD rate X occurrence time	4.6.X	hh:mm:ss
Combined active MD	15.6.0	xxxxxx.xxx kW
Combined active MD occurrence date	15.6.0	yy-mm-dd
Combined active MD occurrence time	15.6.0	hh:mm:ss
Combined active MD rate X	15.6.X	xxxxxx.xxx kW
Combined active MD rate X occurrence date	15.6.X	yy-mm-dd
Combined active MD rate X occurrence date	15.6.X	hh:mm:ss
Others		
Local time	0.9.1	hh:mm:ss
Local date	0.9.2	mm-dd-yy
Error register	F.F.0	xxxxxxxx
Meter serial number	0.C.1.0	xxxxxxxx
Number of power failures on all phase	C.7.0	xxxxxxxx
Number of long power failures on all phase	C.7.5	xxxxxxxx
Reason of disconnected	146.A.18	
Calendar name	13.0.0	xxxxxxxx
Limiter 1 threshold	17.0.0	xxxxxx.xxx kW
Display all on LCD	C.2.221	
Battery voltage	C.6.3	

Annex B Demand content OBIS list

Description	OBIS
Active import demand	1.0.1.4.0.255
Reactive import demand	1.0.2.4.0.255
Active export demand	1.0.3.4.0.255
Reactive export demand	1.0.4.4.0.255
Reactive demand in QI	1.0.5.4.0.255
Reactive demand in QII	1.0.6.4.0.255
Reactive demand in QIII	1.0.7.4.0.255
Reactive demand in QIV	1.0.8.4.0.255
Import apparent demand	1.0.9.4.0.255
Export apparent demand	1.0.10.4.0.255
Active demand ($ QI+QIV + QII+QIII $)	1.0.15.4.0.255
Active import MD total and per tariff	1.0.1.6.x.255 (x=0~4)
Active export MD total and per tariff	1.0.2.6.x.255 (x=0~4)
Reactive import MD total and per tariff	1.0.3.6.x.255 (x=0~4)
Reactive export MD total and per tariff	1.0.4.6.x.255 (x=0~4)
Reactive MD total and per tariff in QI	1.0.5.6.x.255 (x=0~4)
Reactive MD total and per tariff in QII	1.0.6.6.x.255 (x=0~4)
Reactive MD total and per tariff in QIII	1.0.7.6.x.255 (x=0~4)
Reactive MD total and per tariff in QIV	1.0.8.6.x.255 (x=0~4)
Import apparent MD total and per tariff	1.0.9.6.x.255 (x=0~4)
Export apparent MD total and per tariff	1.0.10.6.x.255 (x=0~4)
Active accumulated MD ($ QI+QIV + QII+QIII $)	1.0.15.6.x.255 (x=0~4)
Import active accumulated MD total and per tariff	1.0.1.2.x.255 (x=0~4)
Export active accumulated MD total and per tariff	1.0.2.2.x.255 (x=0~4)
Import reactive accumulated MD total and per tariff	1.0.3.2.x.255 (x=0~4)
Export reactive accumulated MD total and per tariff	1.0.4.2.x.255 (x=0~4)
Reactive accumulated MD total and per tariff in QI	1.0.5.2.x.255 (x=0~4)
Reactive accumulated MD total and per tariff in QII	1.0.6.2.x.255 (x=0~4)
Reactive accumulated MD total and per tariff in QIII	1.0.7.2.x.255 (x=0~4)
Reactive accumulated MD total and per tariff in QIV	1.0.8.2.x.255 (x=0~4)
Import Apparent accumulated MD total and per tariff	1.0.9.2.x.255 (x=0~4)
Export Apparent accumulated MD total and per tariff	1.0.10.2.x.255 (x=0~4)

Active accumulated MD ($ QI+QIV + QII+QIII $) total and per tariff	1.0.15.2.x.255 (x=0~4)
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