BSECO Three Phase Smart Prepayment Keyboard Meter

Short code

Short code	Function	Short code	Function
Any code	Cancel audible alarm	00	Active emergency overdraft
800	Total positive active energy	801	Meter remaining balance
802	Current date	803	Current time
804	Meter serial No.	805	SGC No.
806	Reason of relay operation	807	Meter status words
808	Total instantaneous power	809	Tariff index number
810	Emergency Overdraft limit	811	Active emergency overdraft
		813	Total forward active energy for yesterday
814	Total forward active energy for current month	815	Recharge date for last time

Short code

Short code	Function	Short code	Function
816	Recharge time for last time	817	Recharge amount for last time
818	Log out return code	819	Power failure times
820	Total forward active energy for last month	821	Total forward active energy for last 2nd month
822	Total forward active energy for last 3rd month	823	Total forward active energy for last 4th month
824	Total forward active energy for last 5th month	825	Total forward active energy for last 6th month
830	TOKEN code for last time recharging	831	TOKEN codes for last 2nd time recharging
832	TOKEN codes for last 3rd time recharging	833	TOKEN codes for last 4th time recharging
834	TOKEN codes for last 5th time recharging	835	TOKEN codes for last 6th time recharging
836	TOKEN codes for last 7th time recharging	837	TOKEN codes for last 8th time recharging

Short code

838	TOKEN codes for last 9th time recharging	839	TOKEN codes for last 10th time recharging
865	Meter entering normal working mode	866	Measuring accuracy displays 3 decimals, automatically exit after 1 minute
		868	Relay testing
869	Maximum power	870	A phase voltage
871	B phase voltage (not support in single phase meter)	872	C phase voltage (not support in single phase meter)
873	Key version No.	874	A phase current
875	B phase current	876	C phase current (not support in single phase meter)
877	A phase power	878	B phase power
879	C phase power (not support in single phase meter)	886	The price of current TOU Tariff

Short code

Short code	Function	Short code	Function
887	Current step tariff	888	Recharging return code
889	Current TOKEN sequence No.	890	TOKEN rejected times
891	TOKEN accepted times	892	Relay connection times
893	Relay disconnection times		
895	Allowed using days under friendly mode	896	Already used days under friendly mode
897	Start time of friendly hour	898	End time of friendly hour

Short code

899	Weekend	900	The status of friendly mode 1：uuworkday: No-friendly mode or friendly times is run out 2：F-Hour: Friendly hour 3：uueekend: weekend 4：holiday: holiday 5：EnnErg: emergency mode 6：SpEciAL: weekend or friendly day finish but does not arrival 10 o’ clock
901	kWh of Step 1	902	kWh of Step 2
903	kWh of Step 3	904	kWh of Step 4
905	kWh of Step 5	906	kWh of Step 6
907	kWh of Step 7	908	Price of Step 1/ price of Tariff 1

Short code

901	kWh of Step 1	902	kWh of Step 2
903	kWh of Step 3	904	kWh of Step 4
905	kWh of Step 5	906	kWh of Step 6
907	kWh of Step 7	908	Price of Step 1/ price of Tariff 1
909	Price of Step 2/ price of Tariff 2	910	Price of Step 3/ price of Tariff 3
911	Price of Step 4/ price of Tariff 4	912	Price of Step 5/ price of Tariff 5
913	Price of Step 6/ price of Tariff 6	914	Price of Step 7/ price of Tariff 7

Short code

Short code	Function	Short code	Function
915	Price of Step 8/ price of Tariff 8	916	The average PF of last month
917	Level 1 alarm of balance low	918	Level 2 alarm of balance low
919	Level 3 alarm of balance low	920	Special step status word
921	Already used times of weekend	922	Consumption amount of current month
923	Consumption amount of last month	924	Consumption amount of last 2nd month
925	Consumption amount of last 3rd month	926	Consumption amount of last 4th month
927	Consumption amount of last 5th month	928	Consumption amount of last 6th month
930	PFC of last [illegible] support in single phase meter)	931	PFC of last 2nd month (not support in single phase meter)
932	PFC of last 3rd month (not support in single phase meter)	933	PFC of last 4th month (not support in single phase meter)

Short code

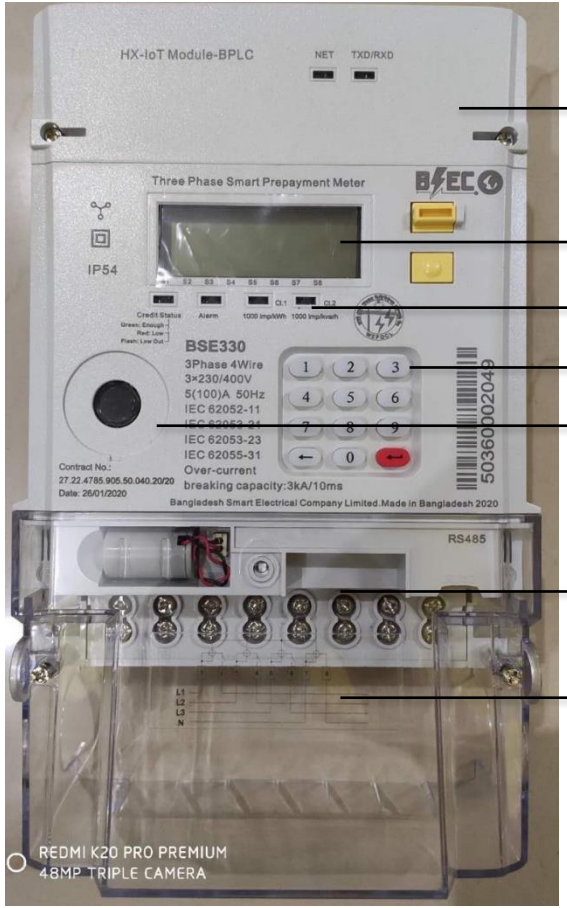
934	PFC of last 5th month (not support in single phase meter)	935	PFC of last 6th month (not support in single phase meter)
940	Reactive energy of last month	941	Reactive energy of last 2nd month
942	Reactive energy of last 3rd month	943	Reactive energy of last 4th month
944	Reactive energy of last 5th month	945	Reactive energy of last 6th month
952	Prepay Mode or Post-pay mode indication	953	Neutral Current
954	Total tariff 1active energy	955	Total tariff 2 active energy
956	Total tariff 3active energy	957	Total tariff 4 active energy

Short code

Short code	Function	Short code	Function
958	Total tariff 5active energy	959	Total tariff 6 active energy
960	Total tariff 7active energy	961	Total tariff 8 active energy
962	Positive tariff 1 reactive energy	963	Positive tariff 2reactive energy
964	Positive tariff 3 reactive energy	965	Positive tariff 4 reactive energy
966	Total positive reactive energy	970	Negative tariff 1 reactive energy
971	Negative tariff 2 reactive energy	972	Negative tariff 3 reactive energy
973	Negative tariff 4 reactive energy	974	Total negative reactive energy
981	Emergency overdraft balance	985	Total consumption credit
986	Remaining energy (estimated value)	998	Average power factor of current month
420	The opening terminal cover time for last time	421	The opening terminal cover date for last time

Appearance BSE330

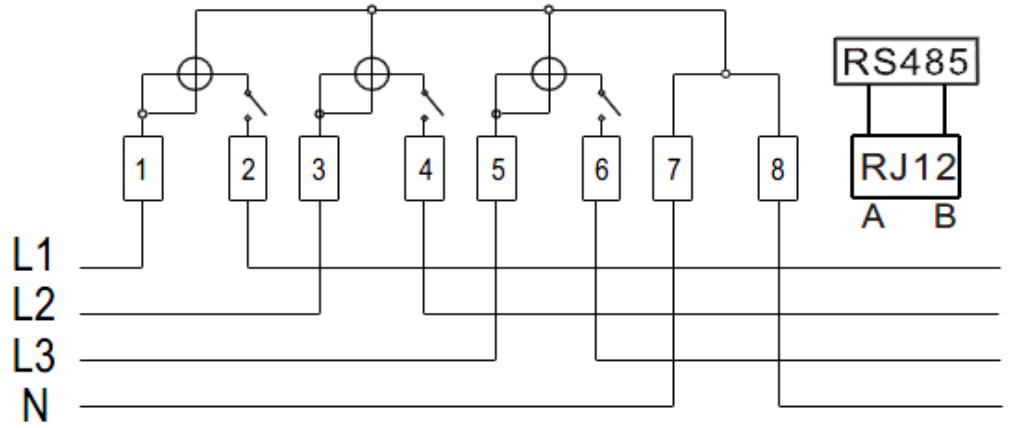
The BSE330 three phase keyboard prepayment meter is an energy measurement meter with clear LCD display, multiple communication options, prepayment functionality, built-in disconnect relay, and inherent anti-tamper features.



1
2
3
4
5
6
7

S/N	Description
1	PLC Module
2	LCD Display
3	LED Status
4	Keyboard
5	Optical communication
6	Terminal cover
7	Wiring diagram

IC card operate indication

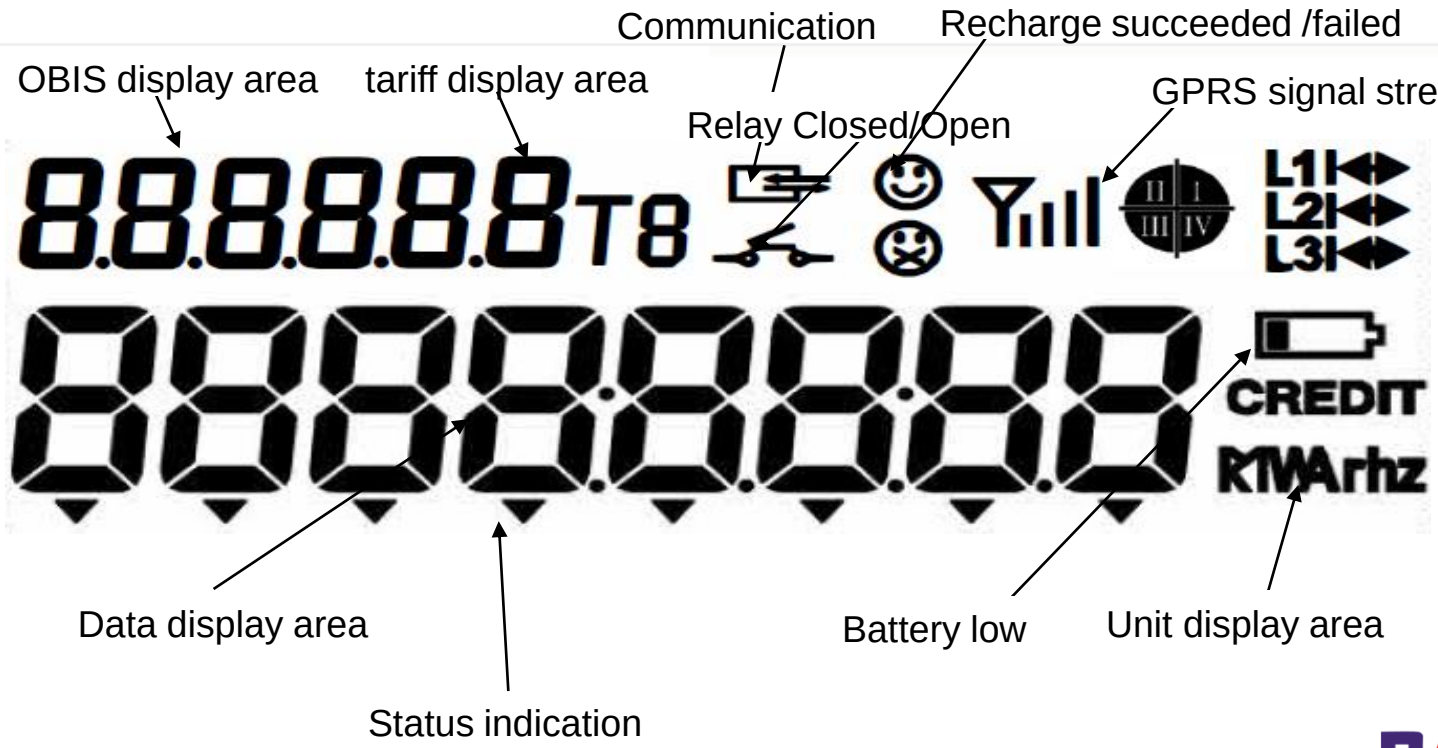


Three phase

Optical port

The utility is able to read meter information and configure the meters parameters via PC software or a Hand Held Unit (HHU)

1.2.2 LCD Display



LCD illustration

LCD Illustration	Description
	Data display area
	OBIS display area
	Unit display area
	Communication

LCD illustration

L1 L2 L3	Phase indication
	Import indication
	Export indication
	Battery low
	Relay status

LCD illustration

	Recharge succeeded
	Recharge failed
	GPRS signal strength
	Tariff indication
▼（S1~S8）	Status indication
	Four quadrant instructions

1.2.3 LCD display mode

- There are 4 modes of LCD display:
- Auto-scrolling display
- The meters default display mode is the Auto-scrolling display. This will normally cycle to the next screen automatically every 3 seconds by default.

- Auto-scrolling display

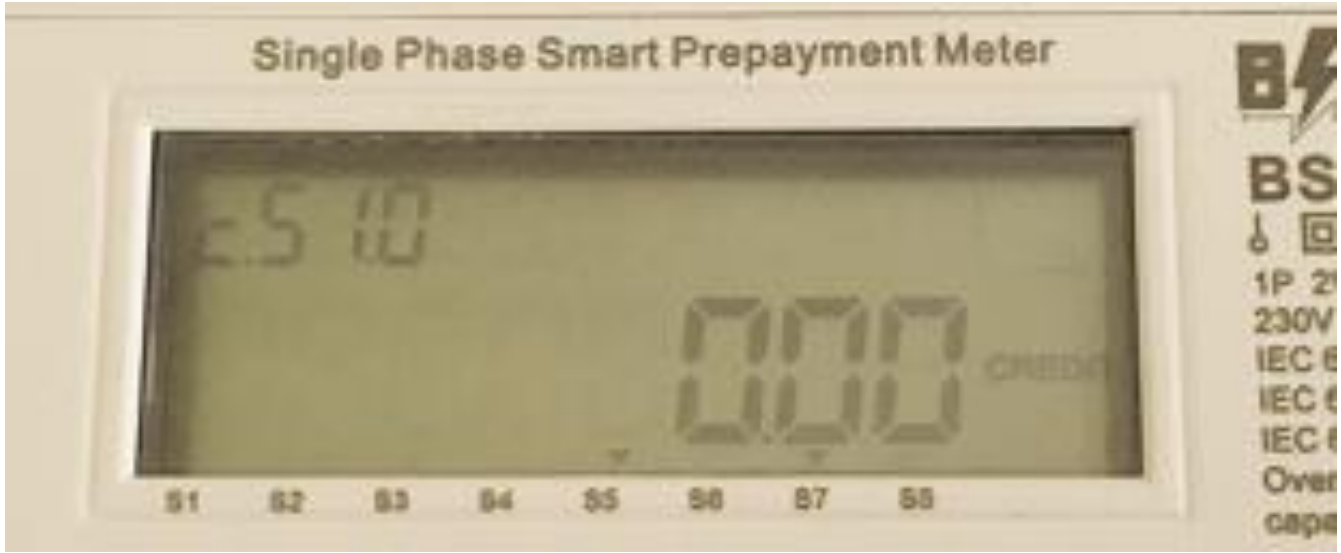
For example

NO	Auto-scrolling display	NO	Auto-scrolling display
1		2	
3		4	

Auto-scrolling display

For example

NO	Auto-scrolling display		Auto-scrolling display
5		6	
7		8	
9		10	
11		12	



Power off display

- Power off display
- The back-up battery supports the power off display. To save energy, the display is configured to remain off as default and wake up the display via button.

LCD display mode

- Meter error display

  When the meter detects memory error or some other damage it would stop auto-scrolling and display the word ‘Error’.

- Meter lock display

  When relay of meter is disconnected ,meter will into lock display mode .display relay open reason .

1.2.4 Status indication

▼（S1~S8）

Triangle symbol	Indication content for single phase meter
S1	Friendly hour ,weekend holiday indication
S2	Open meter module cover
S3	Open terminal cover
S4	Over load
S5	Factory use
S6	Overdraft indication
S7	Factory mode
S8	Bypass indication

LCD display mode

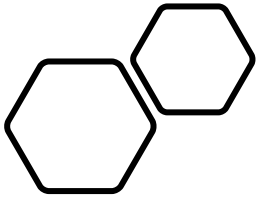
- Meter error display

  When the meter detects memory error or some other damage it would stop auto-scrolling and display the word ‘Error’.

- Meter lock display

  When relay of meter is disconnected ,meter will into lock display mode .display relay open reason .

Relay disconnect reason indication in Lock display mode	Indication information
Balance low, emergency credit available	LoCrEd it
Balance low, emergency credit used	LoEnnEr9
Overload	ouErLoAd
Module cover open	nn-CouEr
Terminal cover open	t-CouEr
Battery low open	Lo-bAt
Before installation , relay is disconnect by default .	FACtorY
Magnetic disturbance	nnAGnEt



- Meter lock display

1.2.5 Backlight

A backlight is provided on the meter display to enable clear and concise reading regardless of the conditions.

The backlight is activated when any key is pressed and turns off automatically after a set time.

Back Light

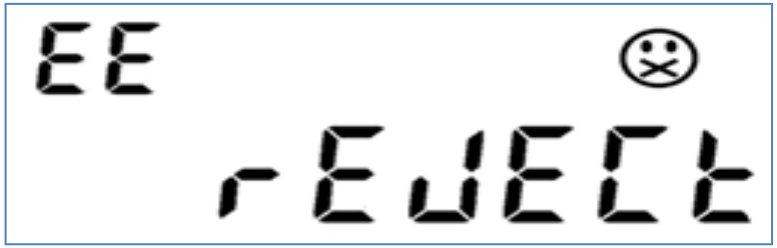
Backlight

1.2.6 Charge Function

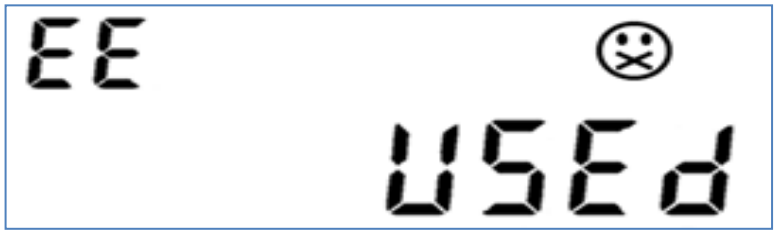
- 1.The user go to the existing vending point and buy electricity; he will be issued a standard 20-digit token.
- 2.The user enters the token using the keypad and press enter.
- A successful recharge is indicated as follows:

Charge

- TOKEN decipher error



- TOKEN used



Charge

- Recharge amount exceeds the maximum credit

1.2.7 Alarm indication

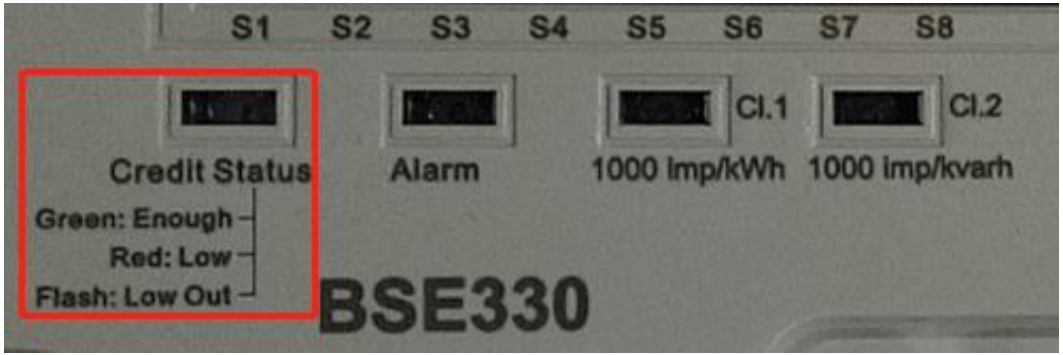
When the credit of meter is enough ,the meter will be working normally ,the credit status LED will show Green. 

If the credit of meter is low , the meter will show customer a voice alarm and a red blink LED indicate ,the customer should recharge more credit as soon as possible 

If the credit of meter is finished , the relay of meter will open , the power supply will be cut .

Alarm indication

Customers are allowed to cancel the audible alarm through pressing any button again.



Alarm indication

Balance Enough:

Alarm indication

Balance Low:

Led flash and audible alarm

Alarm indication

Balance Low out:

Led flash and audible alarm

1.2.8 Emergency overdraft

- After the credit balance is finished, the internal relay will be disconnected automatically. If the customer requires electricity in the case of an emergency, he can activate the emergency overdraft function by short “00”
- Emergency overdraft:

Optical port

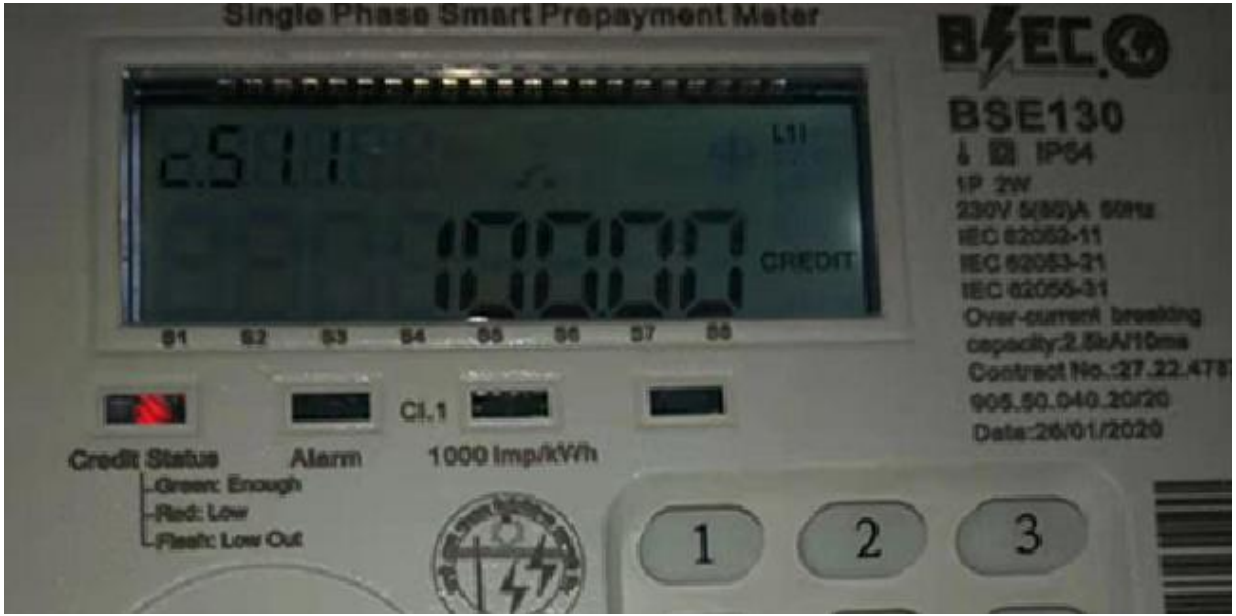
- No balance situation:

Emergency overdraft

- 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

Optical port

- Overdraft



1.2.9 Friendly overdraft

- In the case of some public holidays or some special predefined times, such as midnight, it is not convenient for customers to purchase credit. In this situation, the utility might offer the friendly overdraft facility to customers.
- During these predefined holidays or special time periods the meter will not disconnect even if credit balance reaches zero.
- In addition , the friendly hour overdraft has a limit count. If the limit is over,user also cannot enjoy the friendly hour overdraft .

1.2.10 Event record

The meter records 4 event types:

The meter records the total times, duration and the starting time and end time of the latest 10 events of this type.

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

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

Event record

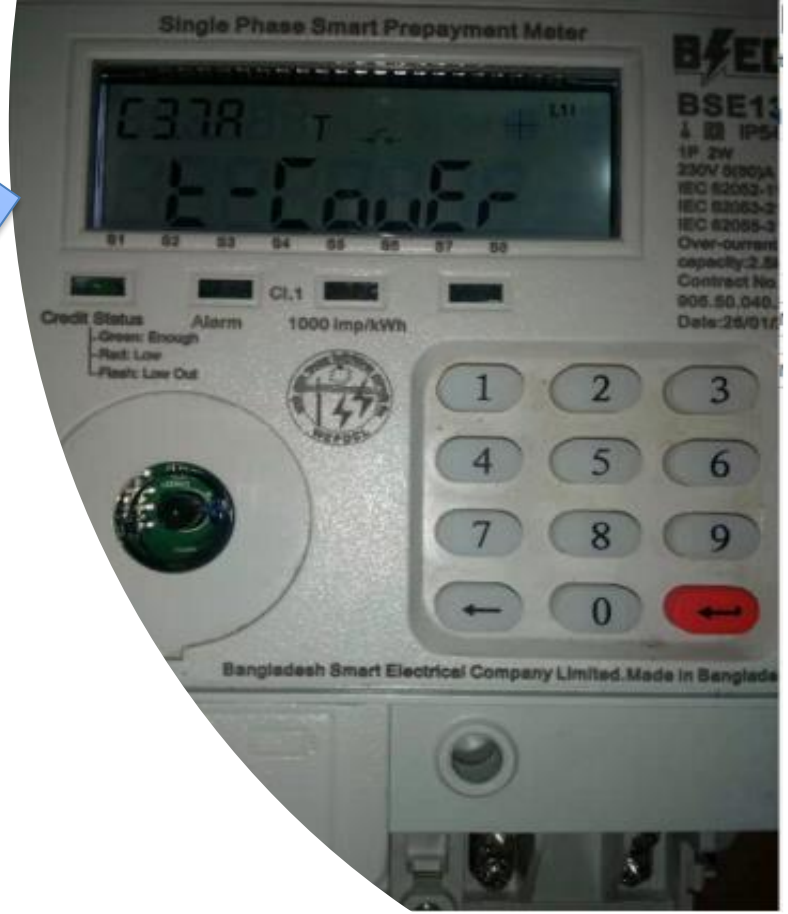
- Second type event: Credit. The meter records the total times and the time, value and credit TOKEN of latest 10 recharge events.
- Third type event: Relay on/off. The meter records the total times and the time and reason for latest 10 relay operation events.
- Fourth type event: Time synchronization. The meter records the total times and the exact time before synchronization and after synchronization.

1.1.11 Event record

- **Open module cover**

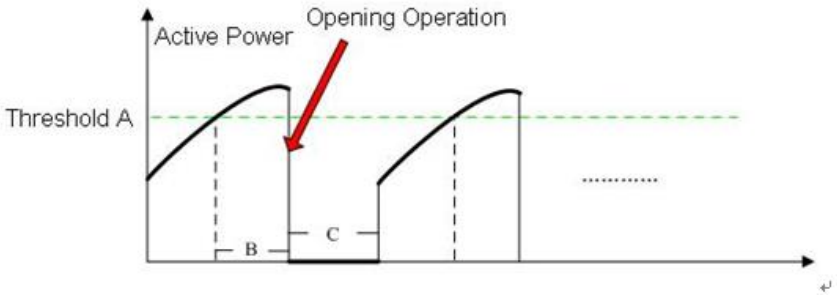
1.1.12 Event record

- **Open terminal cover**



1.2.13 Power limit

- The Meter have two power limit threshold in two periods, one can be set in the peak time and other can be set in the off-peak time . For example ,If the power load over the threshold A and continue B ,the relay will disconnect after C , in the same time the triangle symbol S4 will display. and then connect again, 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 ,finally the load control detection function is again repeated.



Power limit

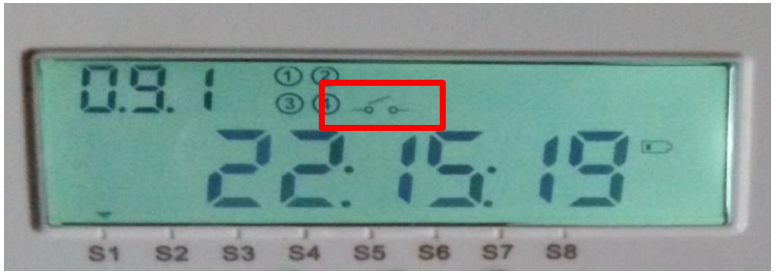
- Power limit configuration can through mange token , and it has a choice can select active immediately or active at the right time.

1.2.14 Relay

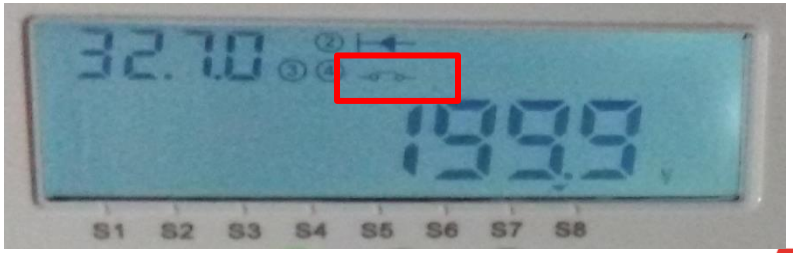
- Magnetic latching relay
- Imax = 100A
- In order to operate the relay properly and not to cause a nuisance reset of the meter, the meter only operates the relay when the supply voltage is higher than 70%Vn.

Relay

- Relay Open



- Relay Close



Relay operation priority

- When meter relay is disconnected ,the LCD display will turn to lock display mode and show the information of relay disconnect reason until the relay reconnect again, the following table will show the indication information and relay disconnect reason

Relay operation priority

Relay disconnect reason indication in Lock display mode	Indication information
Balance low, emergency credit available	
Balance low, emergency credit used	
Overload	
Module cover open	
Terminal cover open	
Battery low open	
Before installation , relay is disconnect by default .	
Magnetic disturbance	

1.2.15 Battery

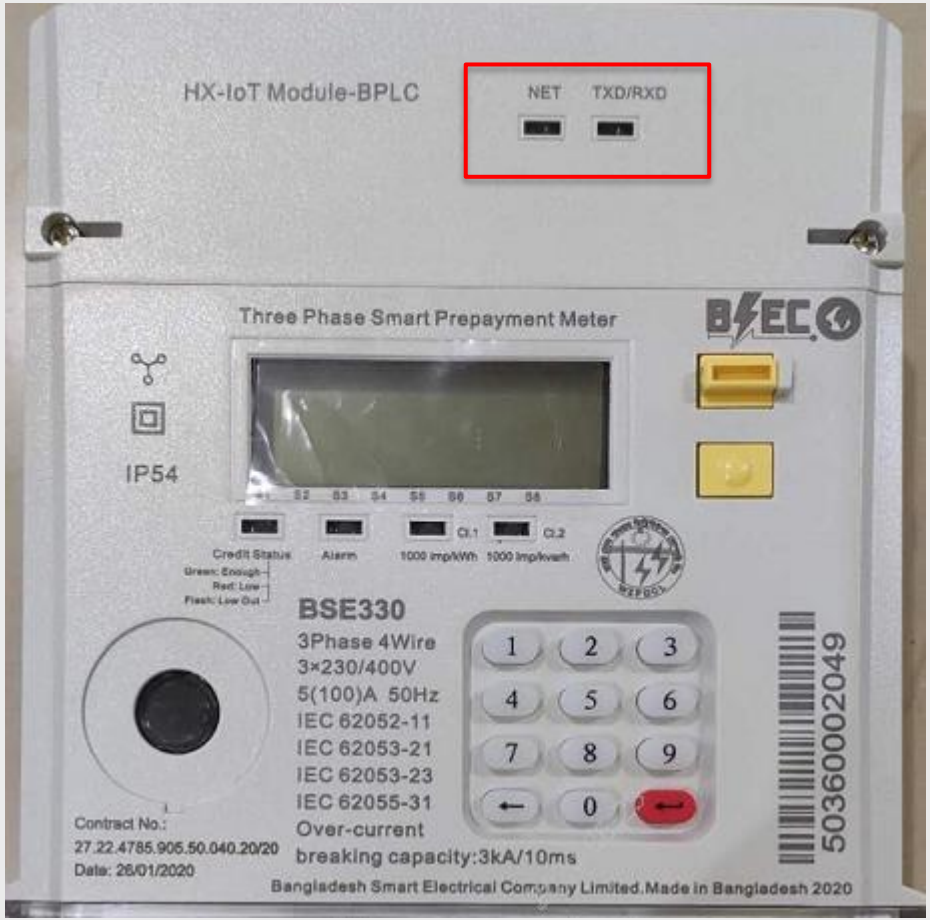
- A Lithium battery of 1200mAh is fitted to the meter.
- When the meter is powered off, the battery supplies the RTC, LCD display, button circuits and event recording mechanism.
- When the battery voltage is less then 3.4V, the LCD displays low voltage symbol. 
- The battery is replaceable and should only be replaced when the meter power is off to avoid electrocution.

1.2.16 Online function

- Three phase meter has PLC online function .
- Through online function ,Vending system can get Demand ,energy consumption, grid parameters of meter ,meanwhile can send credit TOKEN or any other manage to meter, realize remote charge or remote set.

Online function

- Module of meter has two LED to indicate module status.
- NET indicate the status of meter and module ,if the LED is off ,it means the module has some problem ,it is not good connect with meter.



Network & Data TXD/RXD

Online function

- Network LED is two color LED ,It has a green and a red color , the green LED is a network status, if green LED is off , maybe it have a kind of the following problem or more.
  - 1.Not connect with ECG
  - 2.The module is broken
- If the green is on , it means PLC log in successfully.
- The right LED is a data communication LED ,When the PLC communicate with ECG, the LED will blink at a 10HZ frequency .

Agenda

1.3 Common Faults

Which kind of situation will cause the relay to disconnect?

Which kind of situation will cause the relay to disconnect ?

- If a customer feedbacks that the power is cut, maybe he has the following reason.
  ① The power supply is off.
  ② The balance of meter is finished ,it can cause the credit status LED indication.
  ③ It has a tamper event , from the display OBIS “C3.7A” page. if show “ nn-CouEr ” or “t-CouEr” it means the module cover or terminal cover has been opened .
  ④ The load over power limit , from the display OBIS “C3.7A” page. if it shows “ouErLoAd” ,it means the power is over the power limit .

Voice alarm (How to close the voice alarm ?)

Voice alarm (How to close the voice alarm ?)

- It means the balance is low , with any key we can disable the voice alarm ,but the customer should recharge more credit to meter as soon as possible .

Meter has no balance but the relay of meter is still connected ?

Why there is no balance but the relay of meter is still connected ?

① May be the meter in friendly hour , holiday or weekend, triangle symbol S1 indicates the friendly mode.

② Emergency overdraft has been activated.