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IKEYMU-1_F SMART KEY
USER MANUAL

Total 43 Pages

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Contents

1 Overview

The iKeyMU-1_F midsize smart key is a new type of OLED color-screen smart key based on the “Double-less” technology of the company, which can be operated in conjunction with JOYO series of microcomputer safety interlock systems. The “Double-less” technology is a new acquiring and coding technique developed by the company under huge investments, which has gained many patents and is especially applicable to the microcomputer anti-maloperation field, characterized by limitless coding and wireless acquiring.

The iKeyMU-1_F smart key has an essential improvement, no matter in technology, performance, and manufacture process, compared with the previous type of smart key, and it is capable of meeting the customer’s new requirements on five-prevention devices such as the applications in centralized control station.

Note: CDMA module will be unavailable about this product.

2 Appearance and Component Functions

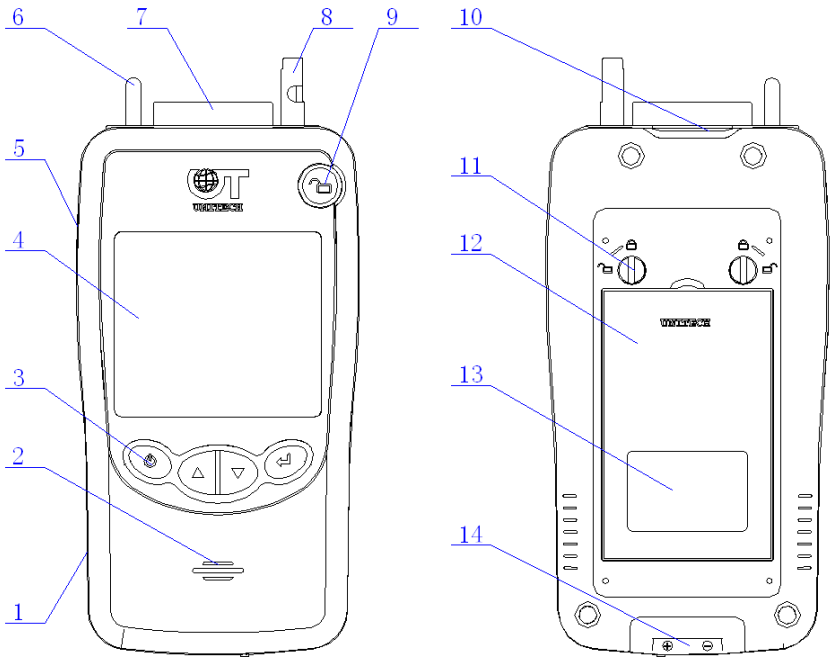


Figure 1：Appearance Diagram of iKeyMU-1_F Smart Key

1 ------- Smart key housing;

2 ------- Speaker hole;

3 ------- Keys, including the Return key (the Switch on/off key), the Up key, the Down key, and the Enter key represented by On / Off, Up, Down, and Enter.

4 ------- 60,000-dot OLED color screen: displaying the operation information by Chinese characters and graphics information;

5 ------- High-speed IRDA transmission link for data exchange with host;

6 ------- Transmission locating key: conductive electrode for circuit lock;

7 ------- Wireless sensor: detecting the lock code;

8 -------Release rod: release the mechanical coding lock, or used as conductive electrode for circuit lock;

9 ------- Unlocking button: press the key to rotate the release rod clockwise, to unlock mechanical coding lock;

10 ------ Infrared photoelectric detector;

11 ------ Battery locking knob;

12 -------High-capacity poly-lithium rechargeable battery;

13 ------ Battery cover label;

14 ------ Charger electrode;

3 Functions and Performances

- ✓ Limitless coding; and the coding system adopts the GUID;
- ✓ Wireless code acquiring; the smart key adopts the non-contact acquisition mode.
- ✓ Receiving several operation orders available;
- ✓ “Black Box” function: Recording and browsing the operation orders and the operation information; the data can be well saved within 10 years after power-off;
- ✓ The smart key functions as order clearance, self-learning, memory, lock code checking, termination of the current operation order, step-skipping, real-time clock, battery electric quantity detection, self-diagnosis, etc.
- ✓ It can release and detect various locks as follows:
  - ◆ Mechanical coding lock
  - ◆ circuit lock
  - ◆ Feedback circuit lock
  - ◆ Electric control lock
  - ◆ Fixed lock
  - ◆ Super smart anti-empty application lock
  - ◆ Electroscope
  - ◆ State detector
- ✓ The system is provided with various advanced data transmission modules such as high-speed infrared IRDA module, wireless UT-NET communication module, CDMA module, etc., which can be matched according to the customized requirements.
- ✓ Voice prompt in mandarin;
- ✓ Sixty thousand dots OLED color screen to enhance the visual effects.
- ✓ Friendly man-machine interface and on-line help system for your convenient and simple operation.
- ✓ Automatic power control (APC) and automatic detection of battery fault for a low power consumption of system to prolong the service life of battery;

- ✓ Ultra-low temperature poly-lithium battery with independent encapsulation design;
- ✓ Supporting all the Chinese character databases stipulated by GB2312;
- ✓ Strong resistance to ultra low temperature (-40℃); high contrast, and multi-line Chinese character displayer.
- ✓ Brightness adjustable in OLED displayer for different demands from users;
- ✓ Super capacity memory; expandable as needed;
- ✓ Flexible switchover between manual operation mode and automatic operation mode;
- ✓ Developed based on the Real-Time Operating System (RTOS); high stability; convenient extension;
- ✓ Integrated mechanism and overall metal frame design to enhance its fall resistance and impact resistance;
- ✓ Brand new structure integrating functions such as code acquisition, detection and releasing mechanical lock, for a simple and convenient operation and the improvement on the stability, reliability and producibility.

4 Technical Parameters

- ✓ Ambient Temperature: -40℃～+70℃
- ✓ Environment Relative Humidity: Daily Mean≤95%, Monthly Mean≤90%
- ✓ Power Source: 4.2V High Capacity Rechargeable Lithium Ion Battery
- ✓ Static Working Current: ≤25mA
- ✓ Unlocking Maximum Current: ≤300mA
- ✓ Numbers of Identification Code Lock: ≥65535
- ✓ Allowable Current Through Operating Circuit: 1mA～5A
- ✓ Antistatic Strength: ≥8000V
- ✓ Radio Frequency Interference Resistance Strength: ≤50db（uV/m）
- ✓ Power Terminal Transmission Interference Resistance Strength: ≤70db（uV）
- ✓ Impact Strength: ≥6g
- ✓ Operating Circuit Rated Voltage: ≤220Ⅴ AC, DC
- ✓ Environment Infrared Resistance Strength: No Less Than 0.8mW/cm^2 When Wave Length is 850～980nm
- ✓ ZIGBEE Operating Frequency Range: 2420~2460 MHz
- ✓ ZIGBEE Antenna Gain: 3dbi
- ✓ ZIGBEE Output Power: 18±3dBm
- ✓ Receiving Operation Content at One Time: ≤3000 Frames
- ✓ Operation Order Storage Capacity: ≤4MB
- ✓ Outline Dimensions: 132×72×31mm
- ✓ Mean Time between Failures (MTBF): 50000h
- ✓ Grade of Rainproof and Dustproof Can Reach Requirements of IP65 Specified in GB 4208-84

5 Operation

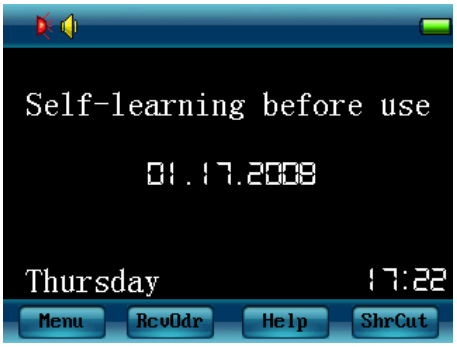
5.1 Elementary Operation

5.1.1 Start

① Ensure that the smart key is available to be powered. If the battery runs low, the smart key can't start, please operate in accordance with the second step.

② Place the smart key on the charger and check if it is properly placed and is stably connected to the charger.

③ Press the on / off key on the panel, and then release it, the smart key produces "Beep" sound and displays the dynamic LOGO on the interface, and shows the following standby interface later:



Thereinto:

- "▭" is a symbol of battery, indicating the current running level of the battery, the full-green color indicates that the battery runs in full level; the full-white color indicates that the battery runs out. When the battery symbol is full-white, namely the battery runs out, please charge the battery immediately.

5.1.2Close

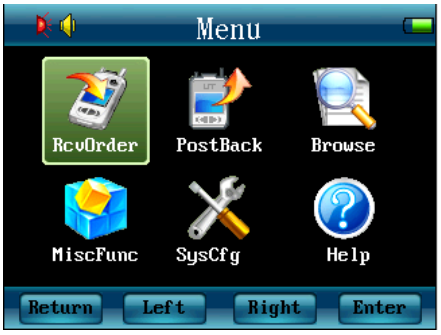
It is available to close the smart key at any state after starting. A user can press and hold down the On / Off key on the panel for about 3 seconds, the smart key produces the sound "beep…beep…", then the user can release the key, the key can switch off the power supply automatically. In addition, the key can also be closed by shortcuts: press the Enter key on the standby interface, select the Close option on the shortcut menu, and press the Enter key to close the key quickly.

5.1.3 Preparation before Operation

The iKeyMU-1_F smart key is a general-purpose smart key, which can be applied to any station, and it is required to enable the “self-learning” function before operation, thus to transmit the station's device information to the smart key. If the device information is not modified in a station, the smart key can be used forever as long as enabled “self-learning”.

5.1.4 Menu Operation

In the standby interface, press the “Main Menu” option to enter main menu as shown below:

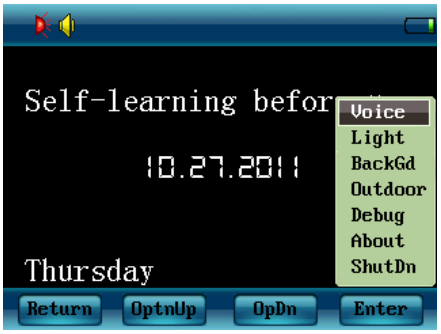


Thereinto:

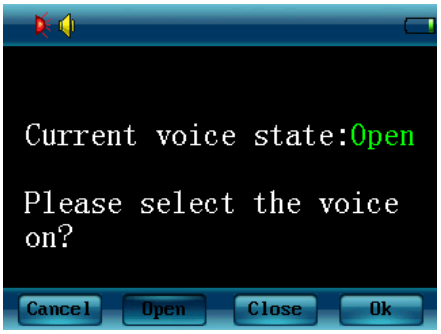
- The “Receive Order” is the default option on the menu, indicating the option is selected. Now a user presses the Down key to select the next option on the menu, similarly, it is available to press the Up key to select the previous option.
- When selecting an option on the menu, press the Enter key to enter the function menu interface or the submenu interface; press the Cancel key to the standby interface or the option's parent menu.
- When a user operates on a submenu, it can display the scroll bar icon on the right side of the screen, to show the current position of the selected submenu. There is a help prompt box on the lower right side of each submenu, to give a brief introduction to the contents or functions of the menu.

5.1.5 Shortcut Menu

1) In the standby mode, press the Enter key to the shortcut menu as shown below:



Now, take the “Voice” menu as an example, select and press the Enter key to display the following interface:



In this page, a user can enable or disenable voice quickly and easily.

5.2 Self-Learn

The smart key features good interchangeability and versatility, it can be applicable to different substations or power plants once successfully self-learned before the first operation.

Under the IRDA communication mode, it is available to receive self-learning data directly in the standby interface, or select “Accessibility” on the main menu, and then select the “self-learning” option to directly enter the self-learning interface; the key can receive the transmitted self-learning data atomically. Under the UT-NET communication mode, the key prompts the information such as “connecting to the wireless network, GET MAC ...,” when the UT-NET initialization is completed, it can enter the self-learning interface.

Thereinto:

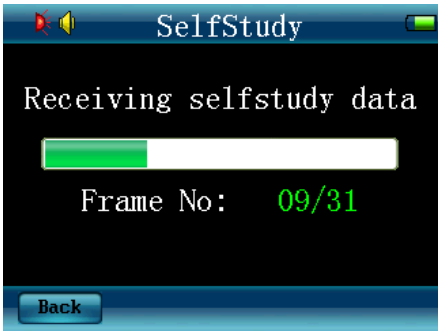
- Press the Return key to the previous menu。

1) Under the UT-NET communication mode, a user can just set the master station to the self-learning state to enable the key to receive self-learning data.

2) Under the IRDA communication mode, a user needs to set mimic panel (or synthetic operation interface and other devices) to self-learning state, and then aim the smart key at transmission port of transmission adapter, and keep a distance within 1.2 meters, the key can receive self-learning data.

3) When the key is being charged on the transmission adapter, regardless of UT-NET mode or IRDA mode, the key can receive self-learning data if the user sets Model IV host or mimic panel to (or synthetic operation interface and other devices) to the self-learning state, and the smart key enters the self-learning interface.

When the key starts receiving self-learning data, it can display the following interface, the progress bar shows the receiving progress of self-learning data.

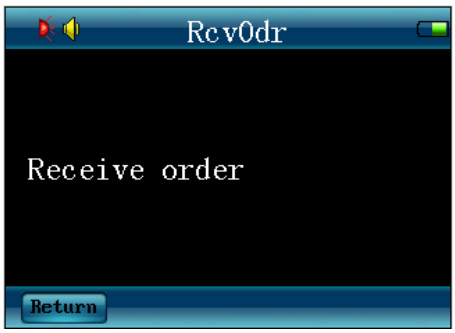


When the self-learning data have been received, the smart key is capable of processing and saving the received data.

5.3 Receive Operation Orders

A user can press the Up or Down key to select the option “Receive Orders” on the main menu, and press the Enter key, if the communication mode is UT-NET, the key

prompts the information such as “connecting to the wireless network, GET MAC ...,” when the UT-NET initialization is completed, it can enter the order-receiving interface. If the communication mode is IRDA, the key can enter order-receiving interface directly.

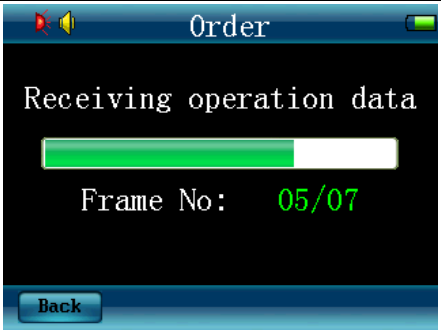


Thereinto:

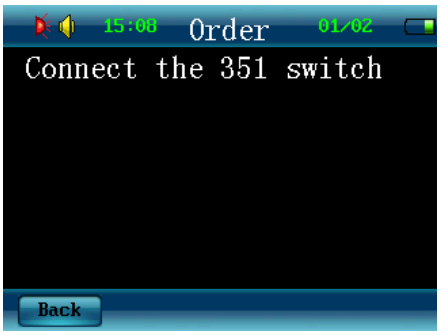
- If the key hasn’t self-learned, it can not enter the order-receiving interface, the screen displays the information “the key hasn’t self-learned”, and a user must conduct self-learning before receiving orders.
- Press the On / Off key to the main menu.

1) Under the UT-NET communication mode, a user can just set the master station to the order-sending state to enable the key to receive orders.
2) Under the IRDA communication mode, a user needs to set mimic panel (or synthetic operation interface and other devices) to order-sending state, and then aim the smart key at transmission port of transmission adapter, and keep a distance within 1.2 meters, the key can receive orders.

3) When the key is being charged on the transmission adapter, regardless of UT-NET mode or IRDA mode, the key can receive orders if the user sets Model IV host or mimic panel to (or synthetic operation interface and other devices) to the order-sending state, and the smart key enters the order-receiving interface.
When the key starts receiving order data, it can display the following interface, the progress bar shows the receiving progress of order data.



When the smart key has processed and saved the received data, the key can switch to the following operating interface automatically.

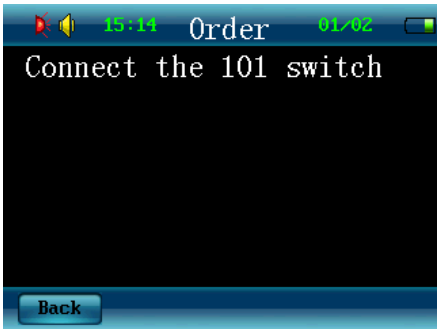


A user can operate on site now in accordance with the displayed content.

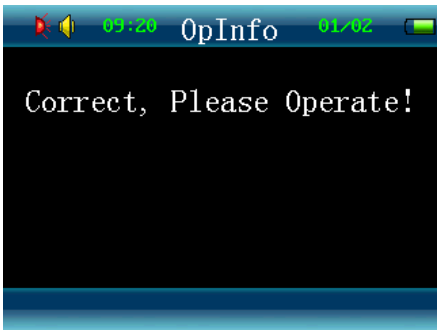
5.4 Unlock

5.4.1 Unlock the Devices Locked by Mechanical Coding Locks Such as Manual Disconnector, Grounding-switch, and Temporary Grounding Connector

The smart key can display the specific device information under operating while unlocking the mechanical coding locks such as manual disconnector, grounding-switch, and temporary grounding connector, web door, etc. For example, if a user wants to “close the No. 101 switch”, the key can display the following information at this moment:

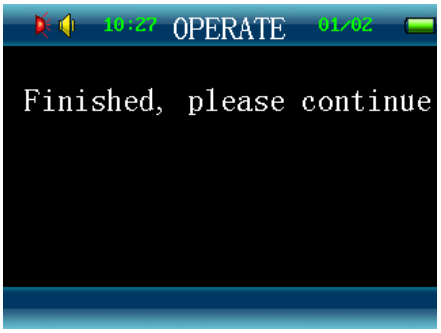


Find the corresponding device matched with the displayed by the key on site, and insert the smart key into the keyhole, if the code is correct, the smart key can ring “beep” or make a voice prompt “Correct, Please Operate!” (Available to set in the system) and display as follows:



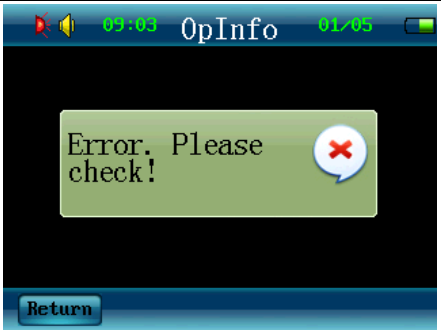
Press the Unlocking button to open the mechanical coding lock at this moment and then switch.

When the correct operation is completed, the smart key can ring “beep” and prompt as follows:



Then the operator can continue the next operation.

Note: If the inserted lock’ code is not consistent with the displayed in the key, the key can ring “beep” three times or make a voice prompt “Wrong Code, Please Check!” (Available to set in the system) and display below, the above is the same to other types of locks.

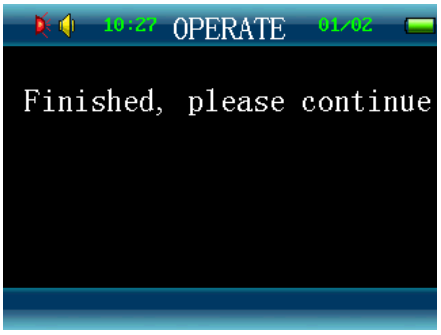


At this moment, the operator can't unlock because the interlocking gear is locked.

5.4.2 Unlock the Devices Interlocked by Circuit Locks Such as Circuit Breaker , Electric Disconnector, etc.

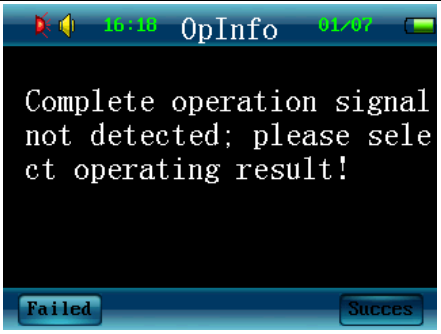
When the smart key displays the device information of circuit breaker or electric disconnector, please insert the smart key into the circuit lock of corresponding device, it can ring "beep " or prompt by voice "Correct, Please Operate!" (Available to set in the system) and display "Correct Code, Please Operate!"

Switch the breaker at this moment, the key rings "Beep" and displays "the operation is completed, please continue!" indicating that the key has detected the completion signal, as shown as below:



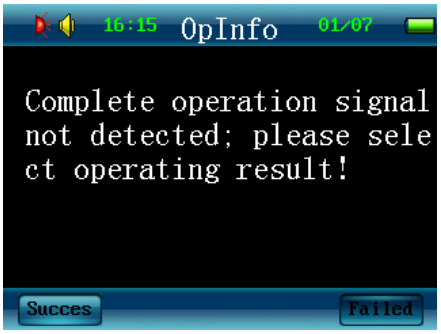
It is available to unplug the smart key and continue.

If the key is unplugged when it has not detected the complete operation signal within 2 seconds under the operation of circuit lock, it can show that the default key "failure" is white, and the other key is "success" as shown as below:



Press and hold down the “success” or “failure” key (for 2 seconds) to select the operating results, “success” indicates that this step is complete, the key can enter the next step; “failure” indicates that this step is not completed and will be restarted.

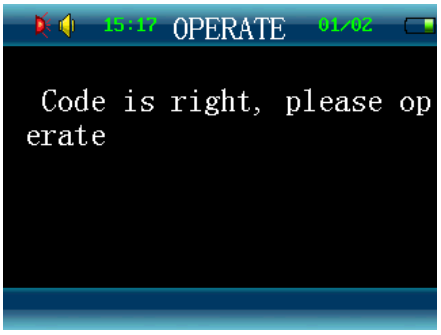
If the key is unplugged when it has not detected the complete operation signal over 2 seconds under the operation of circuit lock, it can show that the default key “success” is white, and the other key is “failure” as shown as below:



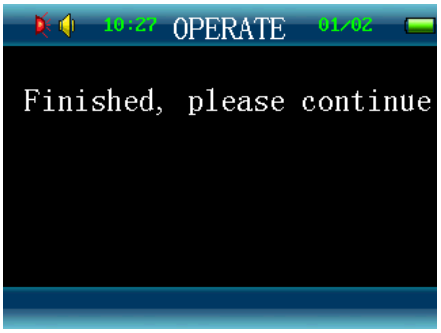
Press and hold down the “success” or “failure” key (for 2 seconds) to select the operating results, “success” indicates that this step is complete, the key can enter the next step; “failure” indicates that this step is not completed and will be restarted .

5.4.3 Unlock the Devices Interlocked by Circuit Lock and Mechanical Coding Lock Such as Electric Disconnector.

When the smart key displays the information of the devices to be operated, please insert the smart key into the circuit lock or mechanical coding lock of corresponding device, it can ring “beep…” or prompt by voice “Correct, Please Operate!” (Available to set in the system) and display “Correct Code, Please Operate!”



A user can operate circuit lock or mechanical lock as needed, then the user should insert the corresponding locks and press the Unlocking button to unlock, the smart key rings “beep” and displays the following information:

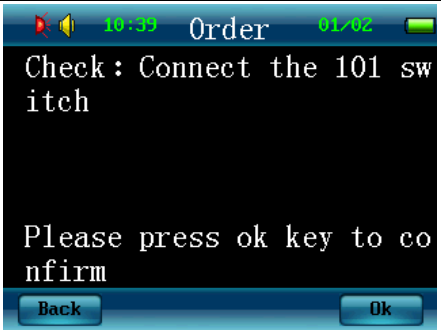


It indicates that the smart key has completed its working; the user can remove the smart key and continue the next operation.

While inserting the corresponding circuit lock, it is available to operate in accordance with the steps described in “5.4.2 Unlock the Devices Interlocked by Circuit Locks Such as Circuit Breaker, Electric Disconnector, etc.”

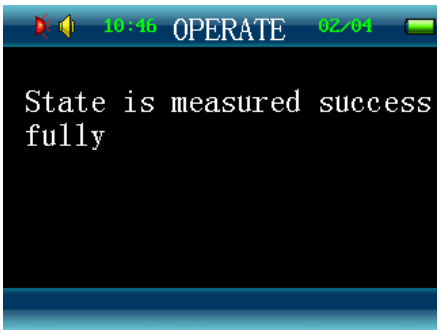
5.4.4 Unlock the Non-mandatorily Locked Devices

When the smart key displays “prompt”, “check”, “second operation” and other information require operating a device, indicating the device number represents a non-mandatory locked device, it is available to directly enter switching operation, after the operation is completed , press the Enter key to check the prompt, and then release it, as shown as follows:



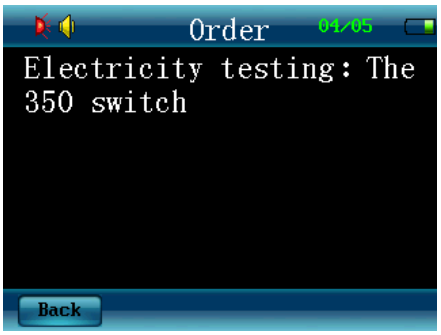
5.4.5 State Detection

The smart key shows the state of the device to be detected, please find the corresponding connection or disconnection state detectors, electrical switching state detectors in accordance with the device number shown on the smart key, and insert the smart key; the smart key can continue its working only after detecting the correct state.

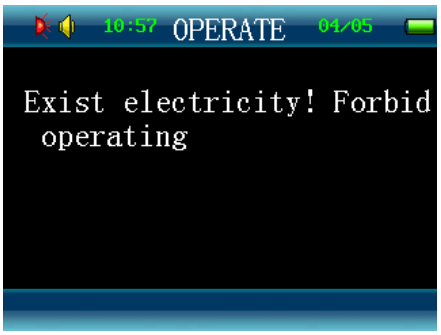


5.4.6 Electriferous Detection

Insert the smart key into the corresponding electroscope for further electriferous detection, when the smart key displays electriferous detection and the next option, then enter mechanical lock operation after the electriferous detection is successful, if the mechanical lock code is correct, and the operation is successful, it is available to enter the next step.

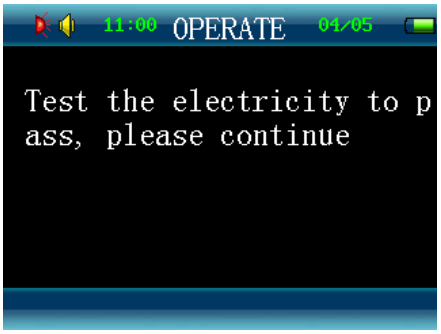


When the smart key displays the following information in the detecting process:



And produces rapid alarm sound “Beep…Beep…Beep…”indicating the circuits are electriferous, and can’t enter the next operation.

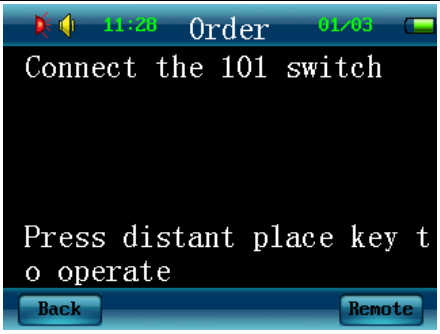
When the smart key displays the following information, and rings “Beep”, it indicates that the circuits aren’t electriferous, remove the smart key from the electroscope and enter the next operation.



5.4.7 Unlock the Devices Simultaneously Locked by the Control Systems (Such as KBQ) Except Smart Key and Mimic Panel.

Except smart key and mimic panel, (or synthetic operation panel), the control systems (such as KBQ, monitoring system, etc.) are not the prior locking devices.

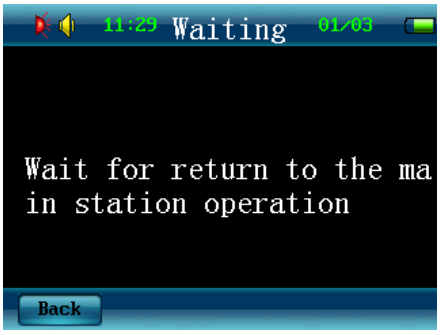
When the smart key is used in conjunctions with such the devices, the smart key can display:



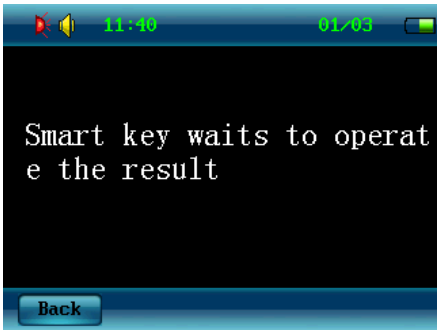
At this moment, It is available to insert the smart key back into the adapter (or integrated operation interface, transmission port, etc.) to control unlocking and other operations by such the devices, or use the smart key to unlock.

① Use mimic panel (or integrated operation panel) in conjunctions with other devices.

Press Enter key to display:



Aim the smart key to the transmission port, and it shows later:



Send the operating results back to the smart key after the operation by other devices, if the unlocking is successful, the smart key can produce “Beep” twice, automatically load and display the related operating information; if the above devices fail to unlock, the key returns to the starting state automatically, then please unplug the smart key and use it to

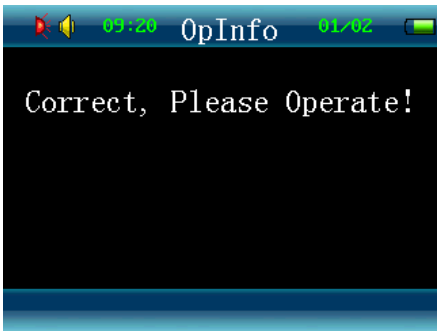
unlock, see details in the section "② Unlock with the smart key."

② Unlock with the smart key

If use the smart key to unlock the device, please refer to the operation methods for circuit or mechanical coding lock.

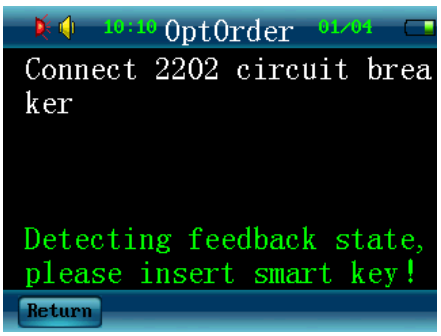
5.4.8 Unlock the Devices Locked by Feedback Circuit Locks

When the smart key shows the number for the device to be operated, please insert the smart key into the device's feedback circuit lock; at first, the smart key can check if the current state of the device is correct, if incorrect, the smart key can display the related information, the smart key must be unplugged at this time, please do not continue any operation until the current device is in the correct position.

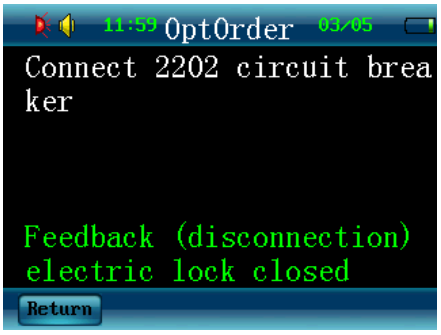


The operation steps of Circuit Locks can be performed in accordance with the operating procedures described in "5.4.2 Unlock the Devices Locked by the Circuit Locks Such as Circuit Breaker, Electric Disconnector, etc.

When the operation is completed, the smart key can check if the position is correct, the key can prompt "detecting feedback, please insert the key well!" The display interface is shown as follows:



If the key detects that the device is correctly switched, the smart key can display the following information, the operator can pull out the smart key, then the operation is completed, the smart key continues to display the content of the next operation.



If the smart key doesn't check the correct connection, the smart key displays the following image to inform the operator that the current device is not switched, please check it, then the operator must check if the current device is in the correct position, if the device is not in the required position, please find the reason, and switch the device to the correct position, then press the Unlocking button on the smart key, the smart key can continue to show the next operation, then the operator may continue the next operation.

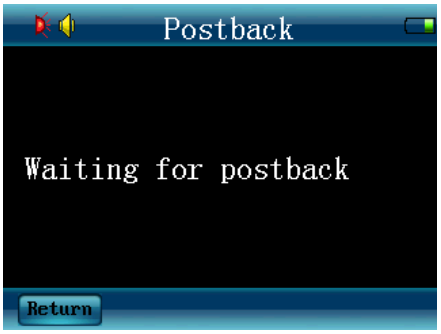
5.5 Post Back

The data postback is a transmission process of the operation processes and results and other information from the smart key to the mimic panel, (or integrated operating panel, etc.) which is mainly divided into three types: the normal postback at the end of an operation, suspension postback during operation process, recalling information postback.

5.5.1 Normal Postback

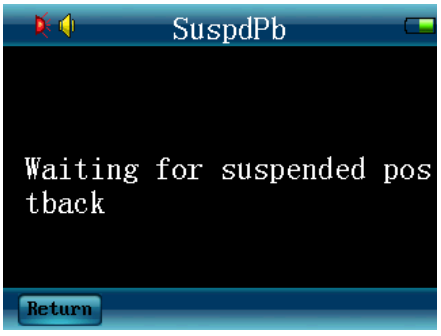
When the key completes the current operation order, it will automatically prompt the postback information on the completion of operation, Under the UT-NET communication mode, the key prompts the information such as "connecting to the wireless network, GET MAC ...," when the UT-NET initialization is completed, it can directly prompt the message "waiting for the postback data." If the key is closed before postback, it can prompt such information again automatically when it restarts; the normal postback interface is shown

as follows:



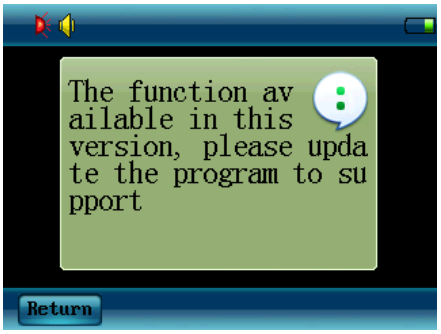
5.5.2 Suspension Postback

Suspension postback refers to a postback when the operation order has not been completely executed. Select the **Main Menu**- **Postback** - **Suspension Postback** to enter the option. If the operation orders are fully executed, it can prompt that “all operation orders have been operated, it is unavailable to post back now”. after entering the option, if the communication mode is UT-NET, the key can prompt the information such as “connecting to the wireless network, GET MAC ...,” when the UT-NET initialization is completed, it can directly prompt the message “waiting for the suspension postback.” if the communication mode is IRDA, it can directly prompt “waiting for the suspension postback.” It is available to execute the postback if the mimic panel (or the integrated operation panel) is being in the postback state. it can return to the main menu automatically; the suspension postback interface is shown as follows:



5.5.3 Recalling Postback

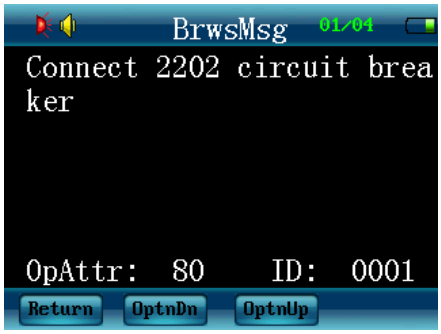
Recalling postback is a postback of recalling information saved in the smart key. Select the **Main Menu**- **Postback** - **Recalling Postback** to enter the option. The version of software does not support this feature currently; the corresponding interface is shown as follows:



5.6 Browse Orders

5.6.1 Browse Order Contents

The order browsing functions as browsing and checking the content of the current operating order in the smart key. Select the **Main Menu**- **Browse Orders** - **Browse Order Contents** to enter the option. If the smart key has not any operating order, it will prompt “no order now, unavailable to browse”, if the smart key has received the operating order, press the Enter key to show the contents on the first item of the current operation order. Press the Down key to show the contents of the next item, press the Up key to select the content of previous item, as shown below. Press the Return key to the previous menu.



5.6.2 Browse Recall

The option is to browse and check the content of the recalling data in the smart key. Select the **Main Menu**- **Browse Orders** – **Browse Recall** to enter the option. If the smart key has not received any operating order, it will prompt “no recall data now, unavailable to browse”, if the smart key has received the recalling data, press the Enter key to show the content on the first page of the recall records. Press the Down key to select the contents of the next page, press the Up key to select the content of previous page, and press the Enter key to browse the currently-selected page, as shown below.

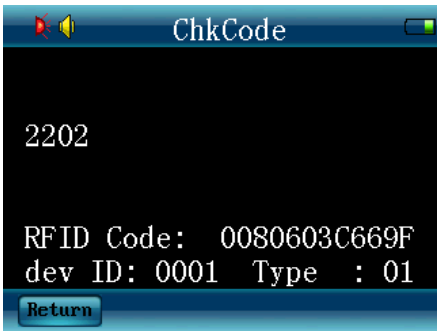
5.7 Accessibilities

5.7.1 Self-Learning

See details in the section *5.2 Self-Learning*.

5.7.2 Check Code

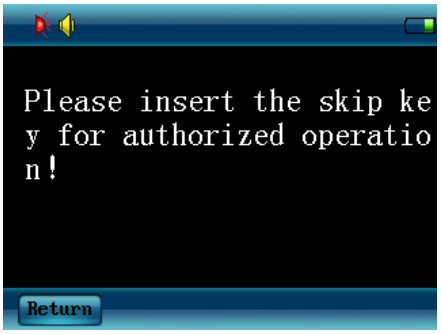
The option is to check the code value or RFID value of the current lock. And it is also capable of showing the corresponding device name. Select the **Main Menu-Accessibilities –Check Code** to enter the option, press the Enter key to read the lock code or RFID code value. The code's equipment name can be shown if exists. If the device name doesn't exist, it can show "no the character code for the device". Press the Return key to the previous menu. The interface is shown as follows:



5.7.3 Special Operations

5.7.3.1 Smart Unlock

Select **Special Operations**-**Smart Unlock,** the smart key shows as follows:



At this moment, insert the skipping key to enter skipping verification process, if validated, it is available to continue smart unlocking operation.

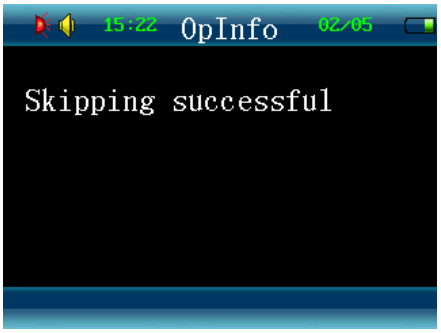
5.7.3.2 Skip

Skip operation can be defined as to skip the option (that has been forcedly operated) currently displayed on the smart key when the lock is abnormal and is unavailable to be unlocked by the smart key, and requires forced unlocking by approval of the director in charge, thus continuing the next operation.

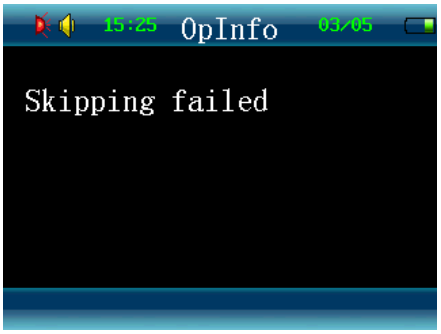
Enter **Special Operation** - **Skipping**, the smart key displays as follows:

At this moment, insert the smart key step into the skipping key, the smart key begins

to identify the skipping key, 5 seconds later, the smart key displays as follows:



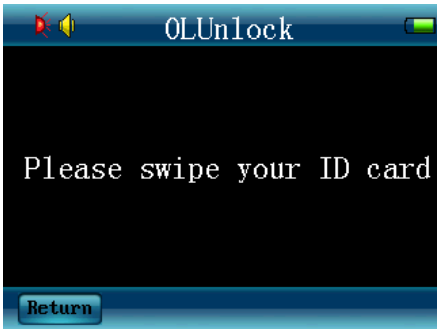
If fails, the key displays:



Please remove the smart key from the skipping key when the skipping operation is successful, the smart key loads the next operation automatically, and continues its operations.

5.7.3.3 Online Unlocking

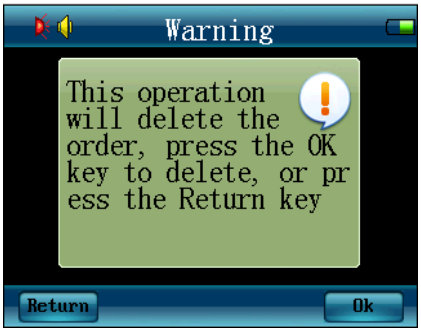
Enter **Special Operation** – **Online Unlocking**, the smart key displays as follows:



Please verify your ID card，and it is available to continue if your ID is passed.

5.7.3.4 Delete Orders

If doesn't want to operate an received operating order or post the result back, a user can press the Up or Down key to select -Special Operation-Delete Orders, and press Enter key, the key will show the following interface:

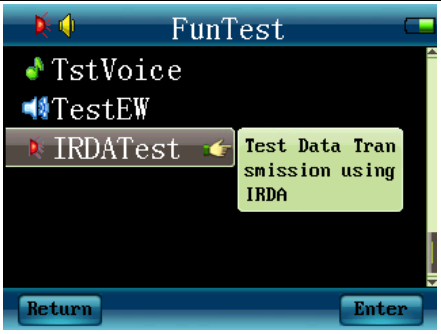


Thereinto:

- Press the Enter key to delete the order, the smart key will automatically return to the main menu; or press the Return key to directly return to the main menu, rather than to delete the operation order.

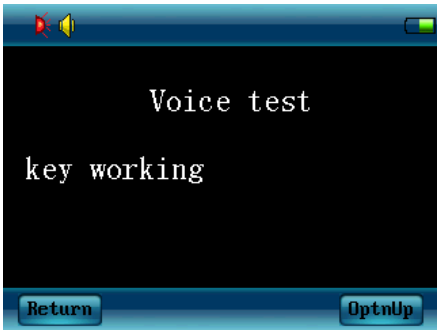
5.7.4 Functional Test

On the main menu, the option "Functional Test" provides a series of tests for the functional parts, and aims to check the normality of each function. The "Functional Test" menu consists of there options, called the sub-menus of "functional test". In the function test, the smart key displays the interface below, a user can operate it as same as operating the main menu to select the functional part to be tested. On the interface, a user can press the Return key to the previous menu.



5.7.4.1 Voice Test

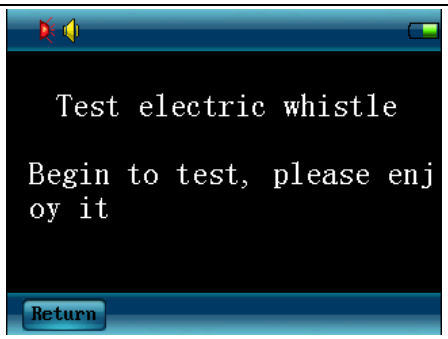
A user can press the Up or Down key to select the “Voice Test” option on the menu “Functional Test”, the option is mainly used to test the voice system of the smart key, press the Enter key to enter the voice test state, the smart key displays as follows:



Press the “Enter” key to continue other voice tests. Press the “On / Off” key to the previous menu.

5.7.4.2 Buzzer Test

A user can press the Up or Down key to select the “Buzzer Test” option on the menu “Functional Test”, the option is mainly used to test the normality of built-in buzzer, press the Enter key to enter the buzzer test state, the smart key displays as follows:



On this state, the smart key can automatically produce beep sound from high to low tone every other 600 milliseconds, and repeat such14 tones. A user may press the Enter key or the Return key to the sub-menu at any time.

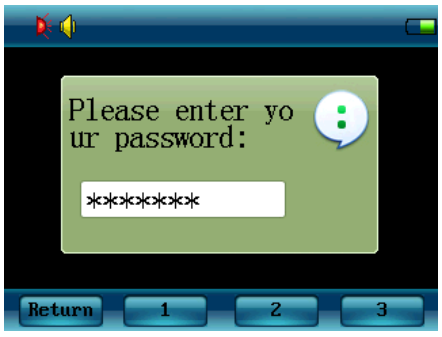
5.7.4.3 IRDA Communication

Press the Down or Up key to select the “IRDA Communication” option on the menu “Functional Test”; this option is mainly used to test the normality of IRDA, press the Enter key to enter the test state.

5.7.5 Debugging

This menu provides a series of debugging programs special for professional test personal, and such test options are unavailable to final users for further safe and reliable operations.

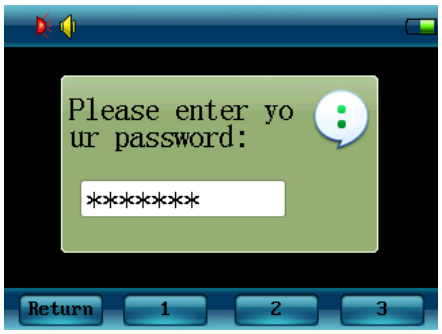
If a user enters the menu, the key will display an interface for inputting password, the user can ignore it, or press the Cancel key to the previous menu, the operating interface is as shown as below:



5.7.6 Test for Production

The menu provides a series of testing programs special for production, and such test options are unavailable to the final users for further safe and reliable operations.

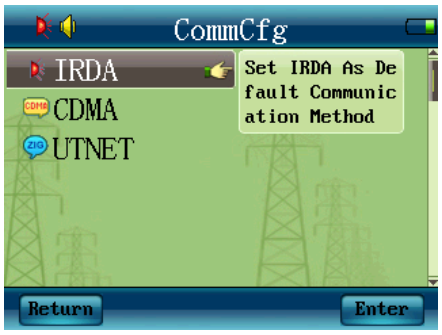
If a user enters the menu, the screen will display an interface for inputting password, the user can ignore it, or press the Cancel key to the previous menu, the operating interface is as shown as below:



5.8 System Settings

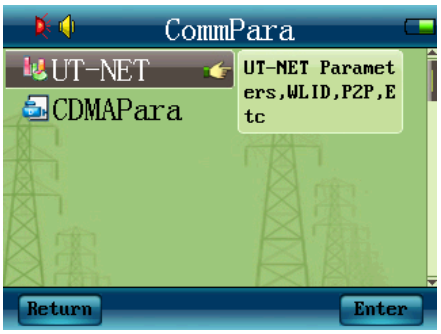
5.8.1 Communication Mode

Communication mode can be defined as the approach (such as self-learning, receiving orders, data postback, etc.) for communication between the smart key and other devices requiring data transmission, including IRDA, CDMA, and UT-NET. This menu functions as changing its communication modes; Select the **System Settings-Communication Mode** to enter the menu, and then input your password. After entering this menu, press the arrow keys to select the communication mode, press the Enter key to save the selected communication mode. Press the Return key to the previous menu.

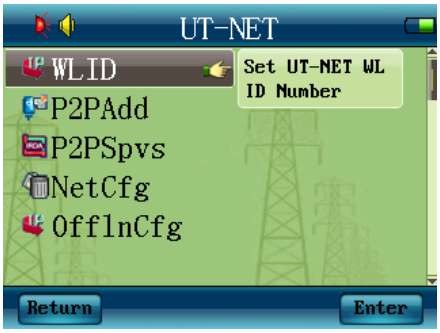


5.8.2 Communication Parameters

The communication parameters include CDMA and UT-NET parameters.

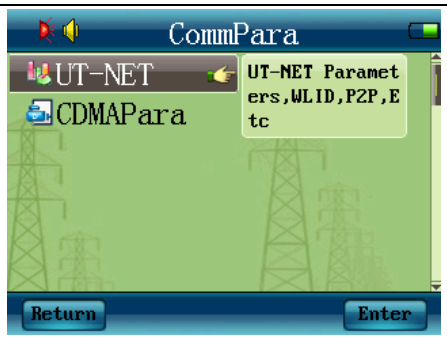


Select the UT-NET, press the Enter key to the corresponding parameter settings, including wireless ID, P2P Address, P2P monitoring, network settings and offline settings.

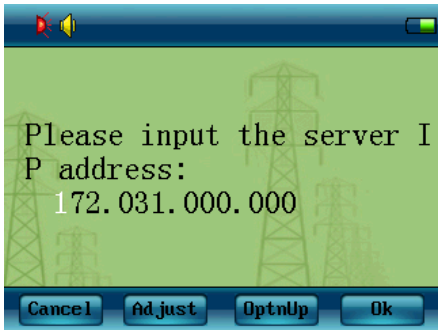


The wireless ID is the unique parameter indicating the identity of the key, including 16-bit numbers. P2P address functions as communicating with the monitoring key under the monitoring mode of midsized key. P2P monitoring functions as enabling and disenabling monitoring function. Network settings can set UT-NET modes including non-network mode, network mode, and gateway mode. Offline settings function as set the current operation mode including online or offline mode.

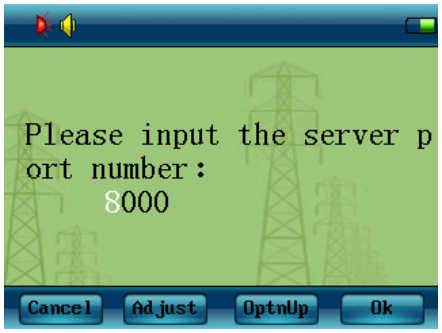
CDMA parameter settings include server IP, server port, login user, login password, international ID, PPP connection, authentication, Permissions settings, and operation mode.



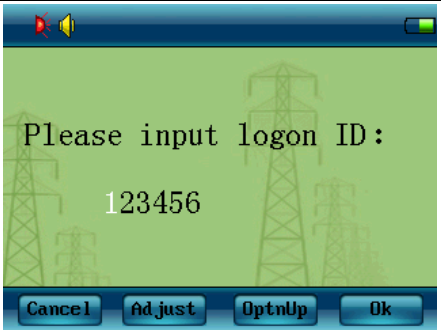
Server IP: Set the IP address of the server.



Server port: Set the server's port number in communication.



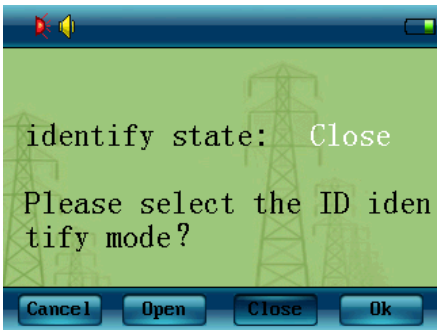
Login user: identify the ID of a user.



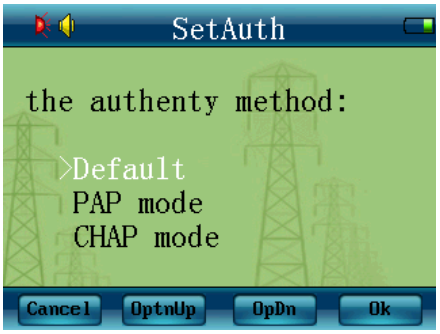
Password: set the user's password.

International ID: set IMSI number of CDMA card. PPP connection: Set PPP connection address in test of CDMA mode.

Authentication: enable and disenable the identification function of user name.



Permission Settings: set the permissions under CDMA mode, including default, PAP and CHAP a.

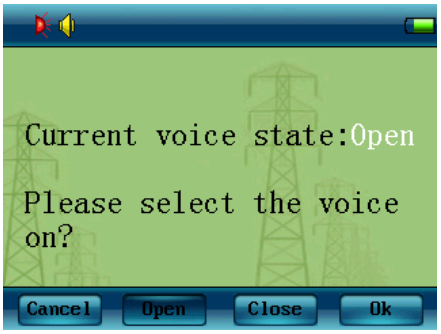


Operation Mode: set the continuous and discontinuous modes under the CDMA communication mode.

5.8.3 Voice Settings

The menu functions as modifying voice-related parameters, including voice settings, volume settings, recording module, enable recording, and Electroscope voice.

Voice Settings: enable or disenable voice; when the voice is enabled, the key can make voice prompts, and the buzzer doesn't work; when the voice is disenabled, the buzzer can make prompts, and the key can't make any voice prompt. After entering this menu, press the arrow keys to enable or disenable voice, press the Enter key to save the current voice state. Press the Return key to the previous menu. The interface is as shown as follows:



The key doesn't support the Volume Settings now. The Enable Recording and Recording Module are only available to the recording key, and used for enabling or disenabling recording function. Electroscope Voice functions as enabling or disenabling the voice prompts including "charged, prohibited to operate" and

"uncharged, available to operate", when the electroscope runs.

5.8.4 Backlight Brightness

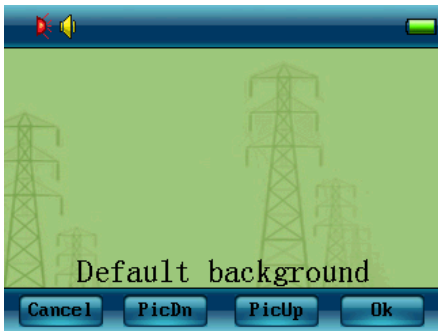
The menu functions as setting backlight brightness, Select **System Settings** - **Backlight Brightness** on the main menu, to enter the menu. Press the arrow keys to increase or decrease the backlight brightness; press the Enter key to save the current backlight brightness level. Press the Return key to the previous menu.

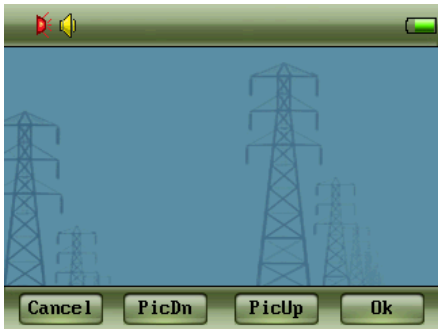
5.8.5 Time Settings

The menu functions as setting time and date, Select **System Settings** –**Time Settings** on the main menu, to enter the menu, as shown as below. Press the Down key to select the items to be adjusted; press the Up key to adjust the current option, press the Enter key to save the current state. Press the On / Off key to cancel the operation and directly return to the previous menu.

5.8.6Background Settings

The menu functions as setting the background pattern of the user interface, Select System Settings –Background Settings to enter the menu, as shown as below. Press the Up or Down key to select the background image, press the Enter key to set, press the On / Off key to cancel the operation. The currently available backgrounds are three options as follows:

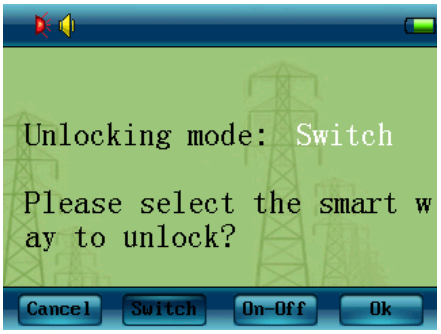




Note: it is recommended to use the black background in consideration of the visibility of information for the operation and power saving.

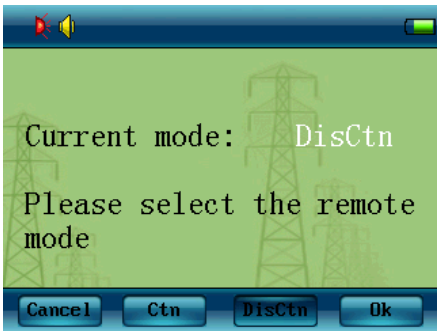
5.8.7 Smart Unlocking

The menu functions as setting the smart unlocking options, Select **System Settings** –**Smart Unlocking** to enter the menu. After entering this menu item, press the Up or Down key to select the options, press the Enter key to enter the submenu, press the Enter key to save the current option, and then return to the previous menu. Press the Cancel key to cancel the modification and directly return to the previous menu.



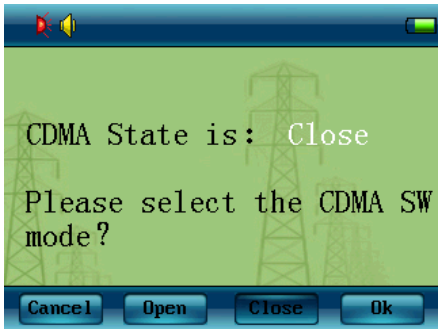
5.8.8 Remote Operation

The menu functions as setting the continuous or discontinuous mode of remote operation. Select **System Settings** –**Remote Operation** to enter the menu.



5.8.9 Network Settings

The network settings consist of CDMA switching and postback settings. CDMA switching functions as enabling or disenabling CDMA switching. Select **System Settings** –**CDMA Switching** to enter the menu. In the interface, a user can select “Enabled” or “Disenabled”, the interface is shown as follows:



The postback settings are only available in the case of the distribution network key, including continuous mode and discontinuous mode.

5.9 Help

Operate the menu to check the system information of smart key, and press the Up or Down key to select the various functional options on the menu, press the Enter key to display the related information, as shown as follows:

Thereinto:

- Press the Return key to directly return to the main menu.

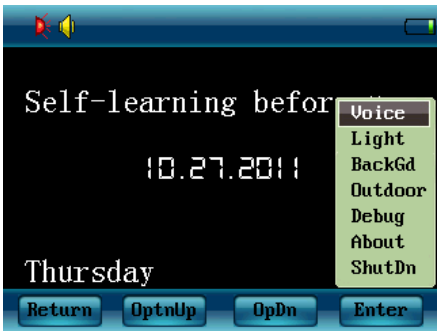
6 Special Functions

6.1 Auto Power-off

The smart key will automatically power off if continues its standby state for 6 minutes, If it is being charged or fully-charged state, or being under cycle unlocking test for electric-controlled lock or discharging test, the key will cancel the auto power-off, till the above state is canceled.

6.2 Shortcut Menu

On the standby interface, press the shortcut key to show shortcut menu; under order-operating mode, and it's also available to press and hold the Enter key for three seconds to show the shortcut menu as follows:



Press the Up or Down key to select options, then press the Enter key to set corresponding parameters or operate.

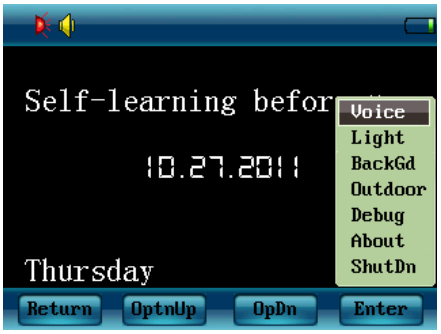
6.3 Screensaver in Charging

Under charging mode, the smart key beeps and displays "Enabling Screensaver" to automatically enter screensaver a minute later if no key is pressed or the key doesn't receive any operation order or self-learning data. The screen becomes black. Under this mode, press any key or receive any operation order or self-learning data, the key will exit the screensaver to enter the normal state.

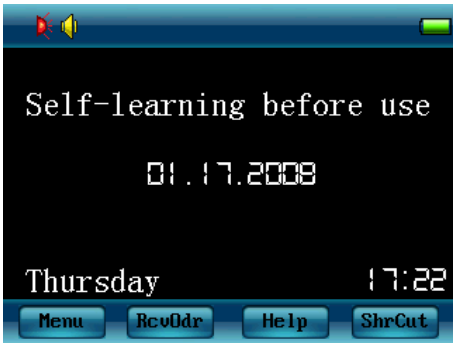
6.4 Outdoor/Indoor Mode

In outdoor operating, the key is exposed under sunlight and cause that users can't see the content on screen clearly, please switch to the outdoor display mode.

In the standby interface, press the Shortcut key to pop the shortcut menu as follows:



Press the Up / Down key to select the menu, select the "Outdoor" option, then press the Enter key to enter the outdoor display mode as shown below:



Similarly, press the Shortcut menu under the outdoor mode, select the "Indoor" mode to switch back to the indoor display mode. It is also available to enable the outdoor mode as follows: hold down the On / Off key for 3 seconds after starting, the system can automatically enable the outdoor display mode. After restart, the key can reset to the default indoor mode.

Note: The battery runs out faster under the outdoor mode, thus it's recommended to use the system-default indoor mode in the case of a good visual effect.

7 Precautions in Operating

Please note the following issues to ensure your safe and reliable use:

a. Placement: when the smart key is not in service, please place the smart key in a fixed place, rather than random places.

b. Do not place the smart key in any specially wet environment in a long term, to extend the service life of the smart key.

c. The smart key is product integrating machinery, optic, and electric technologies, with a complex internal structure, except as authorized by its manufacturer, please do not disassemble to avoid any damage to internal components.

d. Please keep its data transmission ports clean, to avoid any damage to data transmission performance.

8 Troubleshooting

Troubles	Causes	Solutions
The smart key cannot self-learn, or is abnormal in self-learning.	1. Battery voltage is low. 2. Self-learning program is incorrectly operated. 3. Transmission port of the main control equipment is damaged.	1. Charge the smart key. 2. Operate the Self-learning program correctly. 3. Renew the transmission port of the main control equipment.
Mechanical coding lock is opened, but unlocking program cannot continue.	1. The internal IRDA device of the smart key is damaged. 2. Unlocking stem is offset.	1. Send the smart key back to Zhuhai Unitech Power Technology Co., Ltd. for repairing. 2. Re-adjust the horizontal position or send it back to our company.
The smart key cannot receive the operation order sent from the transmission port	1. The smart key has an operation order that is out of receiving state. 2. Internal IRDA device of the smart key is damaged. 3. IR transmission cover is blocked badly by dirt. 4. The transmission port of main control equipment is damaged.	1. Clear the smart key, and then insert the transmission port to receive the operation order. 2. Send the smart key back to Zhuhai Unitech Power Technology Co., Ltd. 3. Sweep the dirt and clear the IR transmission cover. 4. Renew the transmission port of operation order.
The smart key shows “Code correctly, please unlock the mechanical lock.” But the mechanical coding lock still cannot be opened.	1. The internal components of the lock are unsmooth. 2. The ring is blocked by external components. 3. Battery voltage is low. 4. Internal unlocking components of the smart key do not work. 5. The mechanical coding lock is damaged.	1. Renew the mechanical coding lock. 2. When unlocking, press the “Unlock” key, and then pull the lock lightly manually. 3. Ensure charge adequate power before operating the smart key. 4. Send the smart key back to Zhuhai Unitech Power Technology Co., Ltd. 5. Renew the mechanical coding lock.
When operating the breaker, the breaker can not be connected; though the smart key shows “Electric coding lock can be opened.”	1. Internal relay of the smart key is damaged. 2. The battery voltage is low. 3. The smart key is in an improper connection to the electric coding lock.	1. Send the smart key back to Zhuhai Unitech Power Technology Co., Ltd. 2. Ensure charge adequate power before operating the smart key. 3. Clear the conductivity pole of the electric coding lock, and renew the electric coding lock if necessary.

The smart key says “The key has not self-learned, not prepared for normal operation.”	The smart key did not self-learned before operating normally.	Please self-learn.
Fully charged in a charger, but the battery runs out in a very short time.	1. The charger is damaged. 2. The battery has been used for such a long time that it causes the battery aging. 3. The detection circuit for power within the battery is damaged.	1. Repair or renew the charger. 2. Renew the battery. 3. Send the smart key back to Zhuhai Unitech Power Technology Co., Ltd.
Place the key into the battery charger, the interface says: “Low power or battery failure, please check”	1. The battery is installed incorrectly. 2. Battery failure.	1. Reinstall the battery and set the screws. 2. Renew the battery.
The battery cannot be fully charged though it has been charged for a long time.	1. Rechargeable battery is aged. 2. The smart key or the charger exist failures.	1. Renew the battery. 2. Send the smart key or the charger back to Zhuhai Unitech Power Technology Co., Ltd.

9 Warning

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this

device must accept any interference received, including interference that may cause undesired operation.、

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.