KIRISUN

Professional wireless communication system solution supplier

INSTRUCTION MANUAL

FM540
Mobile Radio

DIGITAL

http://en.kirisun.com

Instruction Manual
FM540
Mobile Radio

We are very grateful for your purchasing KIRISUN brand two-way radios produced
by Kirisun Communications Co., Ltd.
We believe KIRISUN two-way radio, which always incorporates the latest
technology, can bring great convenience to your life and work.
We also believe that the quality and functions of KIRISUN two-way radio can meet your
demands on reliable communication.

Important Information

◆Copyright

Kirisun and our authorized partners own the intellectual property of all the parts of this product (include accessories). Any design and materials may not be modified, copied, extracted or translated without the authorization of Kirisun or its authorized parities.

Due to the update or modification of the product, Kirisun owns the right to change the specifications of software and hardware described in this manual without further notice. Specifications and information contained in this manual are for reference only.

◆Safety Notice

The unauthorized operation of wireless transmitting radios is prohibited by local government regulations. Unauthorized operating will be fined and captured by local government. The maintenance can only be operated by professional technicians.

Safety: The acknowledge of general dangers is very important for user to operate radio

Warning:
Please turn off the radios when you are in explosive environment (flammable gas, dust and particles etc.).

Notice for User

To avoid fire accidents, personal injury and radio damage, please comply with the following notice:

◆ 1 minute for transmitting and 4 minutes for receiving is recommended. Long period of transmitting and operating in high power mode will cause high temperature in the bottom of the radio.

◆ Please do not disassemble and assemble the radio in any situation.

◆ Keep the radio away from long period of sunlight radiation and heating device.

◆ Keep the radio away from dusty, damp and splashy environment. Make sure the radio is not placed on uneven surface.

◆ The power supply should be cut off once abnormal smell and smoke occur from the radio. And then please contact the local distributor of KIRISUN.

◆ As the radio is designed to use 13.8V DC, do not connect it to 24V battery.

Contents

1   Unpacking and Checking

Unpack the mobile carefully. We recommend that you check the mobile and the supplied accessories listed in the following table before discarding the packing material. If any damage or loss has occurred during shipment, please contact the delivery man or the dealer without delay.

ITEM	QUANTITY
Mobile	1
Microphone (hand-held)	1
Mounting Bracket	1
Micphone Hanger	1
Fuse	5
DC Power Cable	1
Wing Screws	4
Self-tapping Screws （ST5*16）	4
Spring Gasket, Flat Gasket	4+4
Instruction Manual	1

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|		
Mobile	Hand-held mic	Mounting bracket
Microphone Hanger	Fuse	DC Power Cable
Wing Screws	ST5X16 Self-tapping Screw	spring gasket, flat gasket
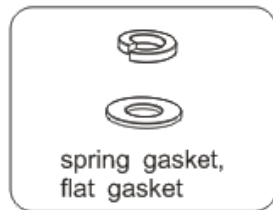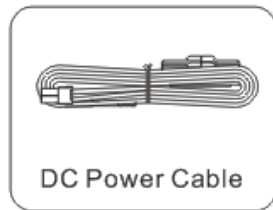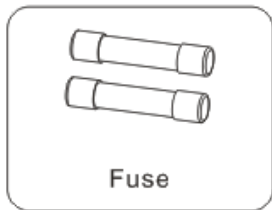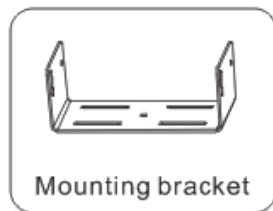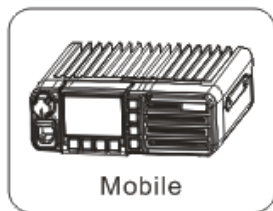
2   Preparation

2.1   Mobile Radio Installation

When installing, please choose a safe and convenient place and try to avoid the danger which may occur during driving. When selecting the installation location, please take into consideration that the knee or leg may hit the mobile during an emergency brake. The best location choice is a well-ventilated place where sunshine can't reach.

1. Use the supplied self-tapping screws to install the mounting bracket in the car.
2. Insert and tighten the screws and washers supplied with the mobile. Carefully check and make sure all screws are tightened to avoid the loose bracket or loose mobile caused by the vibrations of vehicles.
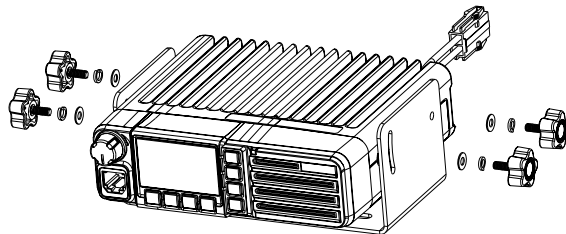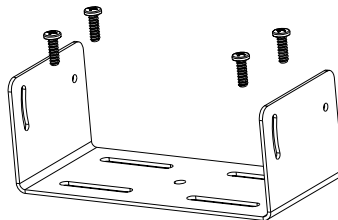
2.2   Attaching the DC Power Cable

◆Vehicle Power Supply Connection

The rated voltage of the vehicle battery must be 12V, and do not connect the mobile to a 24V battery. Make sure that the 12V vehicle battery of sufficient current capacity is used, otherwise the display may darken during transmission or TX output power dropped significantly.
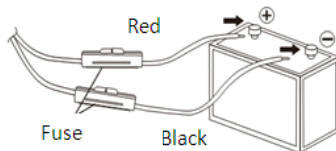
1. Confirm the polarity and connect the power cable to the vehicle battery terminals. Red: positive (+), Black: negative (-).

●Use the whole cable, even if the cable is longer than it is required, do not cut off the excess. In particular, be careful not to remove the fuse box from the cable.

●It is recommended not to use the cigarette lighter socket so as to prevent possible voltage drop.
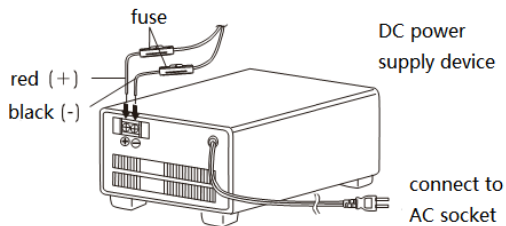
2. Connecting the mobile to the power supply.

● Pressing two connectors until the locking tab clicks .

Note: If you use the mobile for a long time in the case of the vehicle battery is not fully charged, the engine flameout may consume battery power net, and the remainder of the charge is insufficient to start the vehicle. So please avoid using mobile in the above case.

◆**Connecting the Mobile to the Power Supply**

The machine can be installed as a mobile radio or as a base station.

To install the mobile as a base station, the voltage regulated DC power supply of 13.8V voltage and 15A current is required.

1．Connect the DC power cable to the voltage regulated DC power supply, and check if the polarity is correct (red: positive, Black: negative).

● Do not directly connect the mobile to an AC socket.

● Use the supplied DC power cable to connect the mobile to the voltage regulated DC power supply.

● Do not use a smaller gauge electric wire to replace the cable.

2．Connect the mobile radio DC power connector to the DC power cable connector. Press two joints until the lock click is heard.

● Before connecting the DC power supply with the mobile radio, turn off the power of the mobile and the DC power supply

● Please connect all the wires before connecting the DC power supply to an AC socket.

◆**Replacing the fuse**

If the fuse is broken, first identify the cause, and then solve the problem. Replace the fuse after the problem is solved. If the new fuse is continuously broken, disconnect the power cable and contact your dealer or service center for help.

● Use only the specified type and rating of fuse , otherwise the mobile radio may be damaged.

● fuse rating : 15A/32V.
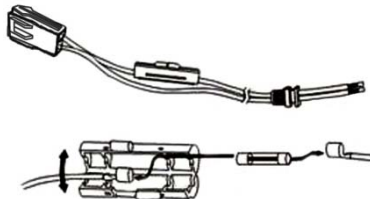
2.3   Attaching the Antenna

Before the operation, please attach the antenna with high efficiency which is precisely tuned. The successful attaching depends on the antenna type and the correct method of attaching it. If the antenna is carefully chosen and attached, the mobile radio can achieve its optimum performance.

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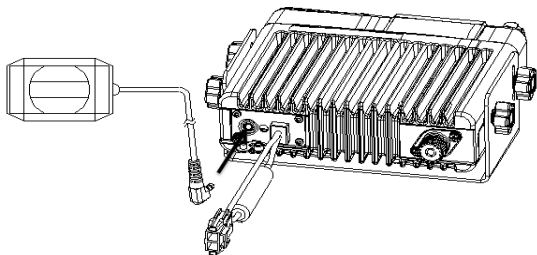
Please use the antenna of 50Ω impedance and the low-loss coaxial feeder of 50Ω impedance to match the input impedance of the mobile radio.

Note: Make sure that the mobile radio is attached with the proper antenna or it may damage the mobile. All the base stations shall be equipped with lightning protector to reduce the possibility of fire, electric shock, and radio damage.

2.4   Attaching the Accessories

◆External Speaker

Please select the speaker with impedance of 8Ω and connect it to the speaker jack. The external speaker jack accommodates 3.5mm mono (double wire) plug.

◆Microphone (Hand-held Mic)

For voice communication, please plug the mic with standard 8-pin crystal head to the mic / programming connector of the mobile front panel. Press the plug

until a click is heard. Use screws to fix the hand-held mic hanger to the proper place.

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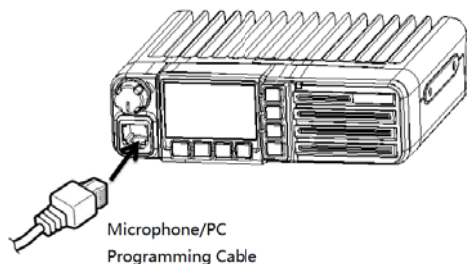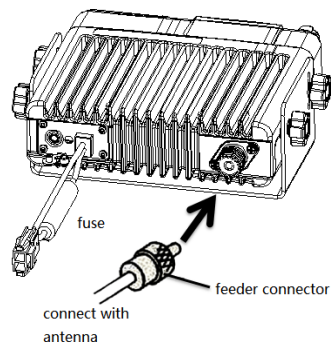
◆PC Connection

Please use a specialized programming cable to connect the mobile radio to your PC computer (through speaker/programming connector)

3   Product Overview

3.1   Front Panel
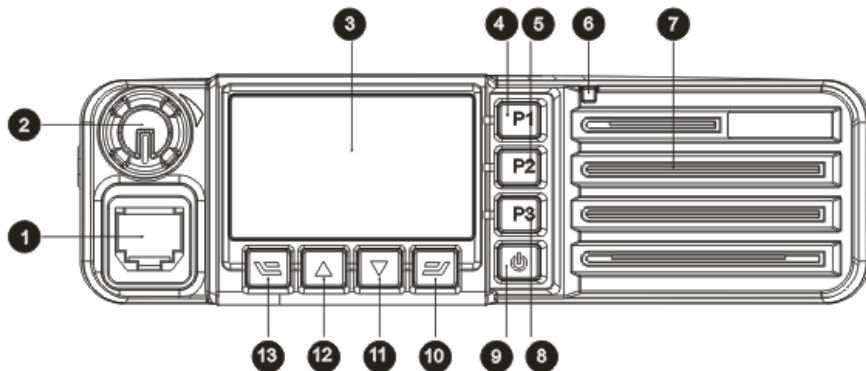
① Microphone/Programming Interface

② Volume Control Knob

   *Adjusting the volume.

③ LCD Screen

   *See "LCD display" section for details

④ P1 key (programmable key)

⑤ P2 key (programmable key)

⑥ LED Indicator

*Glows red when transmitting and glows green when receiving carrier wave.

⑦ Speaker

⑧ P3 key (programmable key)

⑨ **⏻** Power Switch Key

   *Long press (at least 1.5 seconds) power switch key to turn on/off the mobile.

⑩ [BACK/CANCEL] Key

⑾ Down Key

⑿ Up Key

⒀ [MENU/OK] Key

3.2   ICON

Icon	Indication
📶	Signal strength indication. The signal gets stronger with more bars.
⊠	Unread message.
⊗	Full inbox
↻	Scanning
H	High power on the current channel
M	Middle power on the current channel
L	Low power on the current channel
🔒	Keypad is locked.
🔊	Speaker is on
⚠	Indicates emergency alarm and it appears when receiving emergency alarm.
⛊	Private call contact
⛊⛊	Group call contact
⛊⛊⛊	All call contact

☎	Transmitting signal
☎	Receiving signal
☎	Call holding
401.12500	Channel frequency
CH 8	Channel number or channel alias

3.3   Rear Panel
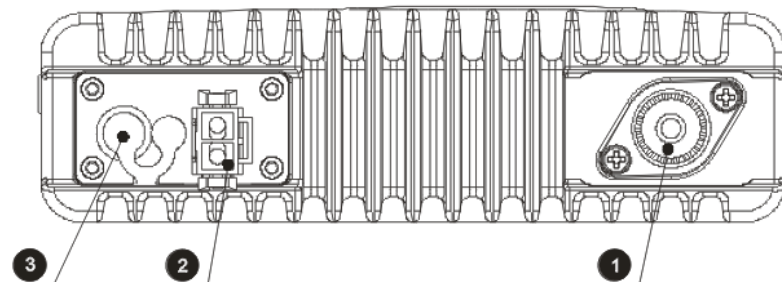
① Antenna Connector

② Power Connector

③ External Speaker Connector

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3.4   Microphone(Hand-held)
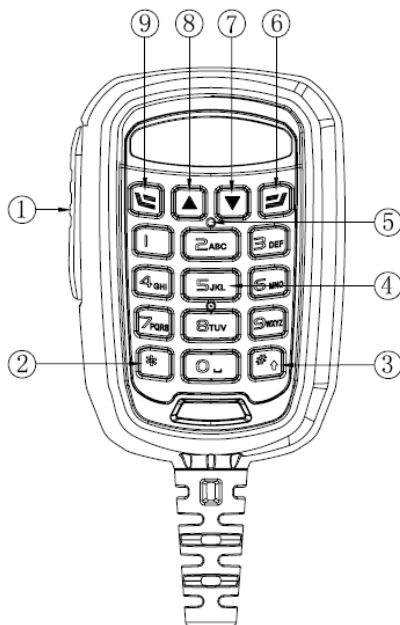
1. [PTT] Key

Press the key to transmit signal and release it to receive.

2. [*] Key

Switch between English upper case and lower case in the edit interface.

3. [#] Key

Switch typewriting in the edit interface

4. Numeric Keypad（1,2,3,～9,0）：

10 Keys in total. Enter the dialing number or edit messages/new contacts with pressing these keys.

5. Mic Hole

Press the PTT key and speaker to the mic hole.

6. [BACK/CANCEL] Key

7. [DOWN] Key

Press the key to change the channel downwards.

8. [UP] Key

Press the key to change the channel upwards.

9. [MENU/OK] Key

Press this key during the stand-by status to enter the menu, and press this key to confirm the current selection in the menu.

4   Basic Operation

4.1   Switch Power

During the power-off status, long press the Power Switch Key to turn on the mobile, and the LCD screen will be enabled with automatic back light on and alert tone ringing.

During the power-off status, long press the Power Switch Key and power off the mobile.

4.2   Adjusting the Volume

Rotate the volume knob clockwise to increase mobile volume or counter-clockwise to decrease the volume.

4.3   Selecting a Channel

Press [▲]or [▼] key on the radio to select channel, or go to the menu to select a channel you need.

4.4   Making a call

◆Selecting the TX power：

1．Enter "Menu", and select "Power Select".

2. Press [OK] key，and enter "Power Select". You can select high power (H), Middle power (M) and Low power (L).

3. Select high power for long communication distance; select low power for short communication distance in order to save battery power.

◆ Analog Channel

1. Press [PTT] key to transmit signal and speak to the microphone.

2. Press [PTT] key and go back to the RX status.

◆ Digital Channel

Use one of the following ways to select a contact and initiate a call,

1. Enter the "Contact" menu to select a contact, then press [PTT] key and speak to the microphone.

2. Enter the "Call Log" and select the contact, then press [PTT] key and speak to the microphone.

3. On the home screen, press [PTT] and speak to the microphone, and the calling number is the default contact. The contact number can be programmed by dealer.

4.5   Receiving

When the mobile receives the RF signal, LCD will show the signal strength.

When using digital channel, the mobile will output all the individual calls, group calls and all calls' audio.

When using analog channel, the received signal's CTCSS/DCS matches with the CTCSS/DCS setting in the mobile, or mobile does not set any CTCSS/DCS, the mobile will output the audio on the channel.

5   Menu Operation

The menu will be different between analog channel and digital channel. Besides, users can decide whether some partial menu should be displayed in the menu through programming the CPS software.

Menu Operation：

1．Press [MENU] key to enter menu item.

2．Press [▲]/ [▼] key in the front panel or [UP]/ [DWN] key in the handheld speaker to select menu item.

3．Press [OK] key in the front panel or handheld speaker to enter the menu item.

4．Press [BACK] key in the front panel or handheld speaker and go back to the last menu.

6．Repeat 1-5 step to enter different menu operation.

Note：During the menu operation, press [PTT] key to transmit and go back to the home screen.

5.1   Digital Mode Menu

If using digital channel, the following items are available in the main menu,
Main Menu

> |---Contact
> |---Call log

|---Message
|---Zone
|---Scan
|---Power Select
|---Digital Signaling
|---Encryption
|---Setting

◆ Contact：

Press [MENU] key to enter the main menu, and select "Contact", the sub-menu of which includes: "Contact List", "Add Contact"," Make a Call".

1．You can press [OK] key to enter "Contact List", "Add Contact" and "Make a Call". Contact can be added through programming by dealer or added manually, but only private contact can be added by manual operation.

2．Enter the "Contact List" to select a certain contact and operate as follows:

*Press [PTT] key to call the contact (mobile radio).

*Press [OK] key to enter "Contact List" menu, then press [▲]/ [▼] key in the front panel or the [UP]/ [DWN] key in the handheld speaker to select the menu.

◆Call Log

Press [MENU] key to enter the main menu, and select "Call Log". The sub-menu includes, "Dialed

Calls" and "Delete All". The mobile can record the dialed calls and answered calls. While the call log is full, and a new call occurs, the earliest record will be covered automatically.

Call Logs

     |---1 Dialed Calls

     |---2 Delete All

1. Enter "Dialed Calls" to select a call record, and press [PTT] key to transmit and call the contact.

2. Select "Delete All' to delete all the call records, including dialed calls and received calls.

3．Enter "Dialed Calls" to select a record. Press [OK] key could delete the record.

◆ Short Message

In this menu, you can edit, send, receive message and send out a quick message. Press [MENU] key to select "Short Message". The sub-menus are as follows:

Short Message

     |---1 New Message

     |---2 Inbox

     |---3 Quick Message

New Message：

* Edit a new message through the keypad on the hand-held microphone.

* Press [BACK] key to re-type.

2．Inbox：

If a new message is received, the icon $\boxtimes$ will be displayed. If the inbox is full, the icon $\boxtimes$ will be displayed, and in this condition, the earliest message will be covered by the new message.

3．Quick Message：

There are some pre-saved quick messages set by the dealer in this menu, and you can select any of them and send it to any contact in your individual call, group call and all call contacts.

◆Zone Setting

A zone can be composed of several channels. You can select any zone you need in this menu.

◆Scan

Press [MENU] key to enter the main menu and select "Scan". The sub-menus are as follows:
Scan

        |---1 Scan on/off

        |---2 Delete Channel

        |---3 Scan List

* Scan on/off

The scan feature searches for signals from other channels. You can turn on/off scan through this menu.

* Scan List

Enter "Scan List" and press [OK] key, and then the channels available for scanning can be displayed.

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* Delete Channels：

During scanning, when the mobile stops on an unwanted channel, such as interference channel, "Nuisance Del" can be selected to delete the unwanted channel, and the scanning continues.

◆Power select

You can set the power through the Menu. High power setting enables a long distance communication and it requires stronger power supply. "H" indicates high power, "M" indicates middle power, and "L" indicates low power. The power level of each channel can be set separately.

◆Digital Signaling

*Kill：

You can send "Kill" command to a certain contact to disable the mobile radio.

*Revive：

You can send "Revive" command to a certain contact to re-enable the mobile radio.

*Radio Check：

You can send "Radio Check" command to check a certain mobile without interference to check whether the mobile is powered-on or whether it is active on the current channel.

*Call Alert

You can send "Call Alert" command to a certain contact (only private contact) to alert the user to call back.

*Remote Monitor

You can send "Remote Monitor" command to a certain contact (only private contact) and monitor the mobile.

◆Encryption

You can enable/disable the encryption feature.

◆Setting

The operation parameters can be set according to the habits and requirement of users, which includes back light, keypad lock, LED indication, language and other information.

Setting

       |---1 Back Light

       |---2 Keypad Lock

       |---3 LED Indication

       |---4 Key Tone

       |---5 Language

       |---6 Mobile Radio Information

* Back Light：

Always on ：The back light is on at all time.

Always off：The back light is off at all time.

Delay powered-off: Delay the Powering-off the back light according to the selected time.

* Keypad Lock

No lock: The keypad will not be locked at all time.

Delay lock: Delay the lock according to the predefined time.

* LED Indication

On：LED indication is enabled.

Off：No LED indication

* Key Tone

On：Key tone is enabled.

Off：No key tone

* Language

The specified language can be selected.

* Mobile Radio Information

The basic mobile information will be displayed, including mobile radio ID, hardware version, firmware version, data version and serial number.

5.2   Analog Mode Menu

If the analog channel is used, the available menus are as follows:

Main Menu

> |---Zone
> |---Scan

                    |---Power
                    |---Squelch Level
                    |---Setting

The zone, scan, power and setting is the same with the digital menu.

* Squelch Level

The squelch level of the current channel can be set.

6   Feature and Operation

6.1   Time Out Timer

This feature prevents the user from occupying the channel for a long time. If the TX time exceeds the predefined time set by the dealer, the mobile will stop transmitting with a sound alert. Please release PTT key in this condition. For a second transmitting, please press PTT key after a certain period(set by the dealer). If the dealer programs a pre-alert feature, then there will be an alert when it is near the time out time to indicate that the transmitting will be interrupted soon.

6.2   Emergency Alarm

During emergency, press the emergency key (pre-programmed programmable key) to call for help. To disable the emergency alarm, please press the emergency key or restart the mobile.

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The alarm method is made of two parts as follows:

*Alarm type: Specifies the acousto-optic reaction for emergency alarm.

* Alarm mode：Specifies the TX information sent to other mobiles during the alarm. The parameters can be set by the dealer to meet your requirement.

◆Alarm Type：

*None：No alarm feature (by default). The alarm cannot be enabled by pressing the key.

*Only siren：Only siren is available.

*Conventional：The acousto-optic alert is available and the mobile can receive replies from other mobiles.

*Secret：No alarm acousto-optic alert and the mobile will not receive replies from other mobiles.

*Secret with voice: No acousto-optic reaction and the mobile can receive replies from other mobiles.

◆Alarm Mode：

*Emergency alarm：After the alarm is enabled, the mobile will send out emergency alarm and exit the alarm status afterwards.

* Emergency alarm +emergency call：The mobile sends out the emergency alarm and press [PTT] key to send out emergency call.

* Emergency alarm +Auto background tone sending: The mobile will send out emergency alarm and then send out auto background tone regularly in the way of emergency call.

6.3   Voice Encryption

This mobile has voice encryption feature to ensure the privacy of the communication.

◆Password Setting

1. Select "Voice Encryption" in "Menu Setting" menu of PC programming software.

2. To add encryption key at "Voice Encryption Key List" in "Voice Encryption" of PC programming software, it is secure with more bits. Several encryption key lists can be set.

3. The encryption lists can be selected to use in different channel through PC programming software. Write the encryption data into the mobile.

◆ Encryption Switch

1. Select "Encryption" in the menu.

2. After pressing [OK] key to enter the encryption interface, you can enable or disable the feature. The voice will be encrypted when the feature is enabled or not encrypted when disabled.

7   Trouble shooting

The following table shows some FAQ of operations. These problems are caused by improper operation instead of circuit failure. Before identifying the mobile problems, please check the following table or contact your local distributor.

Trouble	Analysis	Solution
After connecting to 13.8V power supply and when the power-on button is pressed, the mobile cannot be switched on or no screen display.	The power cable is reversely connected.	Connect the DC power supply cables properly: Red is positive polarity(+),black is negative polarity(-). 。
	One or more fuse of the power cable is/are blown off.	Figure out the reason of the blowout. After checking and solving the problem, replace a new fuse of the same rating for the cable.
After selecting high brightness, the screen is still dim.	Power supply voltage is too low.	Power supply voltage is required to be 13.8V DC (from 11.7V to 15.8V),If the input voltage exceeds this range, adjust the regulated power supply device and make sure all the power supply cables are well connected.

Most of the keys of hand-held microphone does not work.	the keypad of the hand-held microphone is locked	Unlock the keypad.
No signal sent after pressing the PTT button.	The microphone plug is not completely connected to the jack of the front panel.	Switch off the mobile and connect the microphone plug into the jack till a "Click" is heard.
	Channel parameter setting is incorrect.	Re-set the parameters.
	Incorrect ID	Re-enter the correct user ID

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Declare on our sole responsibility that this equipment complies with the Directive 1999/5/EC of European Parliament and the Council on radio equipment and the telecommunications terminal equipment , and that any applicable Essential Test Suits measurement have been performed.

Description of equipment: Digital Mobile Radio

Model No.: Kirisun/ FM540, FM541,FM542,FM543,FM544,FM545,DM780,DM680S

This compliances is based on conformity with the following harmonised standards or documents:

(1).EN60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	
(2).EN62311:2008	
(3).EN301489-1V1.9.2	EN301489-5V1.3.1
(4).EN300086-1V1.4.1	EN300086-2V1.3.1
(5).EN301166-1V1.3.2	EN301166-2V1.2.3

WenLiang, Fu
General Manager

Shenzhen, 04 Feb 2015

Place and date of issue

Signature

Kirisun Communications Co.,Ltd.