



Professional wireless communication system solution supplier

## INSTRUCTION MANUAL

# FP520S

dPMR446 Digital Two-way Radio



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# **Instruction Manual**

## **FP520S**

### **dPMR446 Digital Two-way 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 function of KIRISUN two-way radio can meet your demands for 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 Information

#### Compliance with RF Exposure Standards

Your radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% transmitting. In terms of measuring RF energy for compliance with the IEEE and ICNIRP exposure limits, your radio radiates measurable RF energy only while it is transmitting (during talking),

not when it is receiving (listening) or in standby mode.

Your radio complies with the following of RF energy exposure standards and guidelines

Institute of Electrical and Electronic Engineers (IEEE) C95.1-1992

Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition

International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998

### ◆ Operating Instructions to Control RF Exposure

To decrease your exposure and ensure compliance with the occupational/controlled environment exposure limits, please always adhere to the following procedures.

1. Transmit no more than the rated duty factor of 50% of the time. To transmit, press the PTT button, and to receive the call, release the PTT button.
2. Keep your radio in a vertical position in front of the face with the microphone 5cm away from your mouth while transmit.
3. When worn on your body, keep the antenna 2.5cm away from your body while transmit.
4. Do not transmit when the radio is not equipped with an antenna. Transmitting without an antenna may damage the product and result RF discomfort.

### ◆ Using the Designated Accessories

Use the antenna, battery, adapter or charger supplied or sold by Kirisun only, otherwise it will causes damage to the product.

If you want to purchase or replace the accessories, please contact your local dealer or Kirisun.

### ◆Area Restrictions

1. To avoid of the problems caused by electromagnetic interference or electromagnetic compatibility, turn off the radio in any facilities where posted notices instruct you to do so, such as hospital and other health care facilities. Turn off the radio when on board an aircraft, if instructed to do so.

2. In the vehicle with an air bag, do not place the radio in the area over an air bag or in the air bag deployment area.

3. Turn off the radio before entering any area with a potentially explosive atmosphere or blasting caps.

4. Do not operate the radio, disassemble or charge the battery in the potentially flammable and explosive atmosphere (such as gas station, coal gas station, etc.).

5. Do not place the radio under the direct sunlight or near the area with heating devices.

6. Do not place the radio in the area with great dust, moisture or drips, or on the unstable surface.

### ◆Operating Attentions

#### Antenna

Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your

skin, a minor burn can result.

### **Batteries**

All batteries can cause property damage and/or bodily injury, such as burns, if a conductive material such as jewelry, keys, or beaded chains touches exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become quite hot. Excessive care in handling any charged battery, particular when placing it inside a pocket, purse, or other container with metal objects. To reduce the potentially damage, do not expose the battery in the fire, or disassemble and extrude the battery.

To realize the best performance of the battery, change the battery once a year.

### **Maintenance**

Do not disassemble the radio by yourself. This product can only be maintained by the professional technicians. Contact us or your local dealer for help if you want to re-develop or modify the radio.



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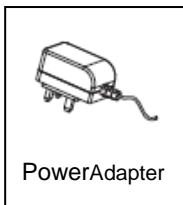
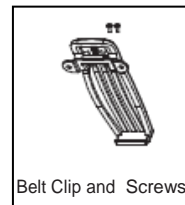
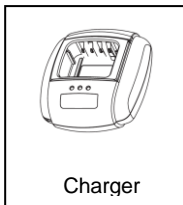
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## 1. Unpacking and Checking

Unpack the radio carefully. We recommend that you check the radio 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 deliveryman or the dealer without delay.

ITEM	QUANTITY
Two-way radio	1
Battery	1
Belt Clip	1
Charger	1
Power Adapter	1
Hand Strap	1
Instruction Manual	1



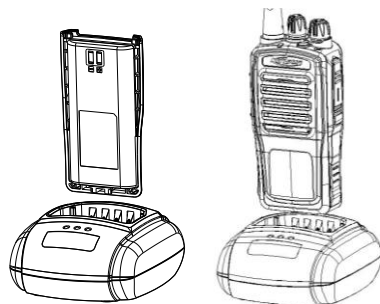
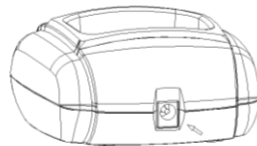
## 2. Preparing Your Radio for Use

### 2.1 Charging the Battery

Plug the power adapter into the suitable AC socket and connect the power adapter to the charger base. Three LED lights flash about one second. And then green LED will light on while charging normally.

Insert the battery or the radio with battery into the charger. Make sure that the radio is off and the battery is well connected with the charger. Then the red LED lights on and starts charging the battery. After about five hours, the green LED lights on, and it indicates the battery has been full charged.

When the LED turns green, staying the battery be charged for more 1 to 2 hours, the performance of the battery will up to the best. Then take off the power adapter from the AC socket.



While the yellow LED flashing, it means that the charging temperature or circuit is abnormal, the charger enters the protect mode. In this status, do not force to charge the battery, please remove the battery and cut off the power.

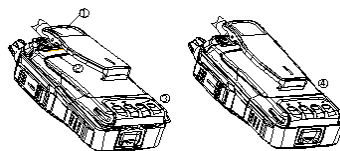
**Note:**

- The battery is not fully charged in the factory. Please ensure complete fill before initial use
- KB-515L Li-ion battery of Kirisun is applicable to this radio.
- When charging the battery for the first time after purchase or long-time storage (over 2 months), please repeat charging several times for the battery to achieve normal capacity. Make sure that the battery is charged at least once every 3 months.
- Do not recharge the battery if it has been fully charged or the radio is not in the low battery alarm state; otherwise, it will affect the battery's life time and performance. Remove the battery from the charger after complete the charge.
- Please recharge the battery and do not force to turn on the radio when the radio is in the low battery alarm state; otherwise it will shorten the battery's life time and performance.
- The battery of KB-515L has a protection circuit inside. Power supply will be cut off when the power is too low. The red LED will not light immediately while put the battery into the charger, the LED indicator will be normal after 1~5minutes later.

## 2.2 Installing/Removing the Battery

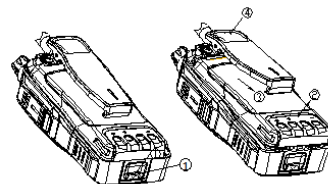
### Installing the Battery

If the radio have a belt clip, press down the belt clip first as figure① shows; match the two bumps of the battery to the two slots of the radio and put inside as figure② shows. Then press down the bottom of the battery as figure③ shows. Until the battery locked and the push fastener is eject completely as figure④ shows.



### Removing the Battery

While removing the battery, press down the push fastener of the radio as figure① shows and the bottom of the battery will eject automatically as figure② shows. Then separate the battery as the figure③ shows. If the radio have belt clip, press the belt chip as figure④ shows and pull out the battery downwards.

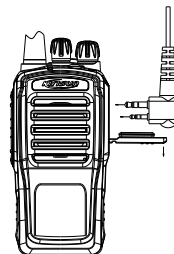


#### Note:

- Do not short-circuit the battery or discard in the fire.
- Do not disassemble the battery by yourself.

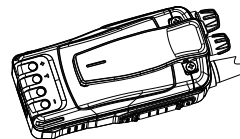
### 2.3 Installing the External Speaker/Microphone

Open the cover for external speaker/MIC jacks, and then insert the external speaker/MIC plug into the jacks on the radio.



### 2.4 Installing the Belt Clip

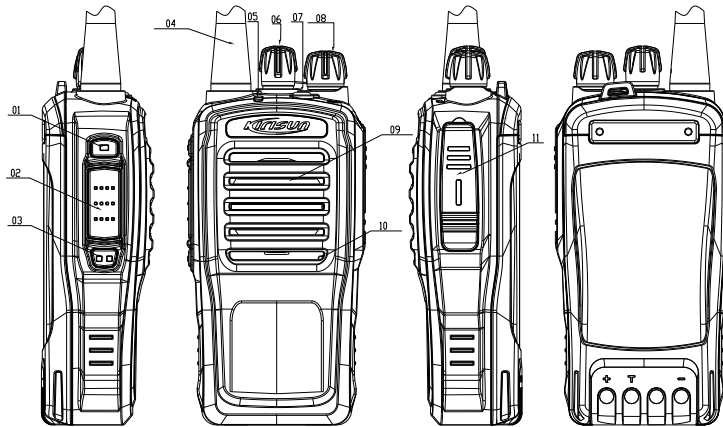
Align the screw holes on the belt clip, which is located on the back of the radio, and fasten them with the screwdriver. To remove the belt clip, loosen the screws.





### 3. Product Overview

#### 3.1 Radio Controls



1. Side button 1 (programmable button)
2. PTT (push to talk) button

To make a call, press and hold the PTT button, then speak to the microphone and send the

voice to other radio. Release the PTT button to receive signals.

3. Side button 2 (programmable button)
4. Fixed Antenna
5. LED indicator  
Red LED lights on while transmitting signal; Green LED lights on while receiving signal. Red LED flashing while the battery voltage is low.
6. Channel knob  
Rotate it to select channel 1-16.
7. Top button (programmable button)
8. On/Off/ Volume Control Knob  
Rotate the knob clockwise to turn on the radio, rotate counter-clockwise until you hear a click to turn it off.  
After the radio power on, rotate the volume knob to adjust the volume of the radio.
9. Speaker
10. MIC
11. Speaker/MIC connector  
Open the cover and connect the external speaker and MIC.

### 3.2 Programmable Buttons

For the convenience of users to operate the radio according to their own habits, the following buttons

can be programmed as short cuts to radio functions by dealer.

Side button 1, side button 2 and top button can be programmed to “long press” and short press.

Short Press: Pressing and releasing rapidly.

Long Press: Pressing and holding for the programmed duration.

No.	Programmable Functions	Application
1	None	No function. The error alert will be heard when the key pressed.
2	Zone Up	Toggles zone between zone1 and zone2
3	Zone Down	Toggles zone between zone1 and zone2
4	High/Low Power	Toggles power level between high and low.
5	Squelch Level	Adjust the signal strength required for the radio to unmute.
6	Scan	Turn on /off scanning function.
7	Nuisance Delete	To temporarily ignore unwanted channel activity.
8	Digital Encryption	Turn on/off the voice encryption function on digital

	On/Off	channel.
9	Voice Annunciation	When pressed, the current channel number will be heard.
10	Talk Around	Toggle between using a repeater and communicating directly with another radio.
11	Squelch Off	To always unmute the speaker no matter whether carrier is present or not. (Analog mode).
12	Emergency Call	Initiating emergency call.
13	Cancel Emergency Call	Exit emergency call mode.

### 3.3 LED Indicator

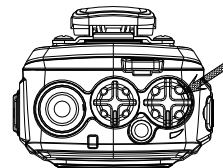
Indicator State	Radio State
Red LED lights on	The radio is transmitting
Green LED lights on	Radio is receiving (voice, short message, or data) or there is an activity on the channel.
Red and green LED flashes alternately.	In the mixed mode channel, the red and green LED will flash alternately after the nor-priority call which is different from transmit mode received.
Orange LED flashes.	The radio is in the call hang time period; you can press

	PTT to talk back while the orange LED flashes.
Red LED flashes	Radio is in emergency status, or the battery is low.
Orange LED on.	No programmed Channel
Green LED flashes.	Radio is scanning.

## 4. Basic Operation

### 4.1 Powering On

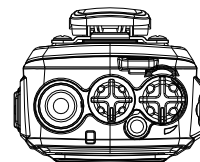
Clockwise rotate the volume control knob until a click is heard to turn on the radio. The radio will make a sound of “Di...” if programmed, and the current channel number will be announced.



### 4.2 Selecting a Group

A Zone is a group of channels exhibiting the same property, allowing users quickly switch from a channel group to a different channel group. The radio can be set to have up to 2 zones, each with a maximum of 16 channels.

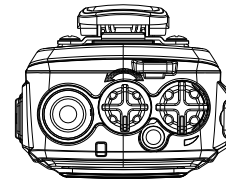
You can select one channel group according to the following steps.



You can set any of the programmable buttons as “zone up” or “zone down”. Under standby mode, pressing the button to switch zone number. The current zone number will be heard if voice annunciation has been enabled.

### 4.3 Adjusting the Volume

Rotate the volume control knob to adjust the volume.

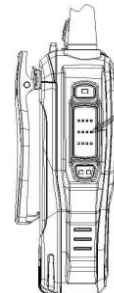


### 4.4 Selecting a Channel

Rotate the channel knob to select the channel which you need to use. If voice annunciation has been enabled, the current channel number will be heard while rotating the channel knob. While receiving signal, you will hear voice.

### 4.5 Initiating the Digital Calling

On a digital channel, hold down the PTT key to initiate a call to the default contact which has been set for the current channel in programming software. The contact can be set to private call, group call, or all call by programming software. If the default contact is not set, the ban prompt tone will sound. (The ban prompt tone can be enabled or disabled in programming software)



While transmitting, the red LED light. Speak to the MIC with normal voice and keep your mouth from the MIC 3-8cm away.

## 4.6 Receiving a Call

When the radio receives signal on the current channel, the green LED lights on. If it is the digital channel, the radio output the voice when receiving a call with your own Radio ID, your Group Call or All Call ID on this channel;

### **Note:**

To receive a group call, your radio must be configured as part of that group. (Dealer set it via programming software).

If it is the analog channel, the radio will output voice when receiving the call with CTCSS/CDCSS that is the same with CTCSS/CDCSS set up on your selected channel, or there is no CTCSS on the current channel.

## 4.7 Answering a Call

On a digital channel, when the radio receives a call, you can answer the call by pressing the PTT button within “Call Hold Time”. If the time expires, you need to redial. The “Call Hold Time” can be

set by your dealer.

On an analog channel, when the radio receives a call, press the PTT button to answer the call directly.

## 5. Advanced Functions

### 5.1 Time-out Timer

This function forbids you from occupying the channel for a long time. If the continuous transmitting time exceeds the setting time by dealer, the radio sends out a warning tone and stops transmitting. Release the PTT button to stop the warning tone. After a period of time, which is set by dealer, you can transmit again. And if the radio is programmed with pre-alert function by the dealer, the radio will send out an alert before the time of Time-out Timer expires.

### 5.2 Scan

Scan function helps you to receive calls from other channels, so as to supervise the activities of the personnel.

During scanning, the radio checks every channel in the scan list and stops on the channel which a signal is detected.

#### **Scan revert channel**

While scanning, press the PTT Button to make the radio transmit on a default channel. This channel



can be programmed by your dealer.

### **5.3 Radio Kill/Revive**

This function allows one radio to be killed or revived. The radio to be killed cannot make or receive calls. The radio can only revive through CPS sends a revive order or be reprogrammed. After revived, the radio can work normally again. This function is used to manage the unauthorized usage of the radio, prevent misappropriating the radio which is lost.

### **5.4 Emergency Alarm**

If you are in danger and this function is enabled, you can press Emergency Alarm On shortcut key to send an emergency alarm.

The means of sending emergency alarm are decided by the following parameters: Alarm Type, which defines the audio and visual reaction when the radio sends an alarm; Alarm Mode, which defines the content sent to the other members when the radio sends an alarm. The above parameters can be programmed by dealer.

To turn off the Emergency Alarm, press the programmed Emergency Alarm Off shortcut key.

#### **Alarm Type:**

- ◆None: No alarm function (Default setting); you cannot send an emergency alarm;
- ◆Siren Only: The radio only emits siren locally;

- ◆Regular: The radio provides audio and visual indication that it is in Emergency mode and can receive the signal from others;
- ◆Secret: No audio and visual indication. And the radio cannot receive the signal from others;
- ◆Secret with voice to follow: No audio and visual indication. But the radio can receive the signal from others.

**Alarm Mode:**

- ◆Emergency Alarm: The radio sends out an emergency alarm, and then exits the emergency alarm status automatically.
- ◆Emergency Alarm w/ Call: An emergency alarm is sent, after while an emergency call can be transmitted by pressing the PTT Button.
- ◆Emergency Alarm w/ Voice to Follow: The radio sends out an emergency alarm, and then sends out background tone periodically and automatically through emergency call.

**Note:**

Emergency Alarm: The radio sends out a signal to alert other member.

Emergency Call: A priority call on channel, so as to make sure the successful communication under emergency condition.

## 6. Troubleshooting

No.	Problem	Causes and Solutions
1	The radio cannot be powered on.	<p>A. The battery may be used up. Recharge it or change the battery to try again.</p> <p>B. The power switch is in failure. Please change it.</p>
2	You cannot communicate with other members	<p>A. The frequency settings may be different from others. Set your TX/RX frequencies to be the same as others.</p> <p>B. The CTCSS/CDCSS signaling may be different from others. Set your CTCSS/CDCSS signaling to be the same as others.</p> <p>C. Your place may be too far away from the others, beyond the radio's coverage area.</p>

3	The radio cannot receive signals	<p>A. The antenna may get looser or may be improperly installed. Re-install the antenna.</p> <p>B. The frequency settings may be different from others. Set your TX/RX frequencies to be the same as others.</p> <p>C. Your place may be too far away from the others, beyond the radio's coverage area.</p>
4	During receiving, LED is green but no voice.	<p>A. Check whether the volume is smallest or not. If so, increase the volume.</p> <p>B. Check whether the speaker is broken or not. If so, change the speaker.</p> <p>c. You may be interrupted by radios using the same frequency.</p>
5	CPS programming failed.	<p>A. Connection between the radio and PC is not good enough. Check and try again.</p> <p>B. Earphone interface board has poor contact with external programming cable. If so, change the Earphone interface board.</p>



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