



S820

Microminiature
professional transceiver

USER'S MANUAL

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Welcome to use SFE transceiver.

Thank you for using **SFE** transceiver! **SFE** transceiver supply the reliable, clear and high quality communication service. To obtain optimum performance, be sure to read this manual carefully.



SAFETY TRAINING INFORMATION



WARNING

Your Icom radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as "Occupational Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment.

This radio has been tested and complies with the FCC RF exposure limits for "Occupational Use Only". In addition, your Icom radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields—RF and Microwave.
- The following accessories are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC requirements for wireless RF exposure.; Belt Clip (MB-115), Rechargeable Li-Ion Battery Pack (BP-254), Alkaline Battery Case (BP-237) and Speaker-microphone (HM-184).



CAUTION

To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines:

- **DO NOT** operate the radio without a proper antenna attached, as this may damage the radio and may also exceed FCC RF exposure limits. A proper antenna is the antenna supplied with this radio by Icom Inc. or antenna specifically authorized by Icom Inc. for use with this radio.
- **DO NOT** transmit for more than 50% of total radio use time ("50% duty cycle"). "50% duty cycle" is also applicable to PSTN (Public Switched Telephone Network) mode and VOX Mode. Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the TX indicator lights red. You can cause the radio to transmit by pressing the "PTT" switch.
- **ALWAYS keep** the antenna at least 2.5 cm (1 in.) away from the body when transmitting and only use the Icom belt-clips listed on p. 24 when attaching the radio to your belt, etc., to ensure FCC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 in.) from your mouth, and slightly off to one side.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates with the FCC RF exposure limits of this radio.

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To obtain optimum performance, be sure to read the following information:

- ◆ If you have difficulty operating on your transceiver, please contact with the specially service. Don't remove it by yourself.
- ◆ For avoid the problem of Electromagnetic Interference, please shut off the transceiver in the area of remark "please shut off your transceiver". Example hospital, plane etc.
- ◆ Don't use transceiver near the safe gasbag in the car.
- ◆ Please shut off transceiver near the local of flammability and exploder.
- ◆ Please shut off transceiver near the local of exploder and detonator.
- ◆ Don't use transceiver with the bad antenna. The bad antenna may bring small burns on skin.
- ◆ Don't long time place transceiver below the sun and near the heater.
- ◆ When transceiver is transmitting, make the transceiver is perpendicular and the distance between of mike and the lip is 5-10cm.
- ◆ When transceiver is transmitting, please the distance between of antenna and you is over 2.5cm.
- ◆ Don't place transceiver near water, don't place transceiver on an unstable plane.

User Check

Please open the package and sure the following accessories.
If you find any difficult in it, please contact with direct sales.

Accessories Table

Accessories	Number
lithium Battery	1
AC adaptor	1
Intellective charger	1
Antenna	1
Leather pouch	1
Hand rope	1
Manual	1
Conformity certificate	1
Maintenance certificate	1

Battery information

⚠ Attention

- ◆ For avoid some harm to battery, Please use the Special Charger which is the accessories of transceiver. The Special Charger is with functions of automatic charge, discharge and auto-protect for full charge. Don't short the positive pole and negative pole of battery and don't throw it in fire.
- ◆ The better environment temperature is 10°C to 35°C when the battery is charging.
- ◆ When the environment Temperature is less than 10°C, electrolyte will be leaked out when charging and turned into trouble battery finally. When the environment Temperature is more than 35°C , discharge qty of battery will be decreased when charging, and further affect the use.

Transceiver charge

Insert supply sources of AC adaptor, the red led lights, then put the battery or the transceiver with battery on it for charging, and sure the contact is good between of battery and charger, then the red led is flashing. It means it is begins the charge. (If the green led is flashing it means it is discharge state and after the discharge is complete, it will auto change to the charge state.)

Battery information

After the charge is complete, the led is change to green led for long time. (See figure 1)

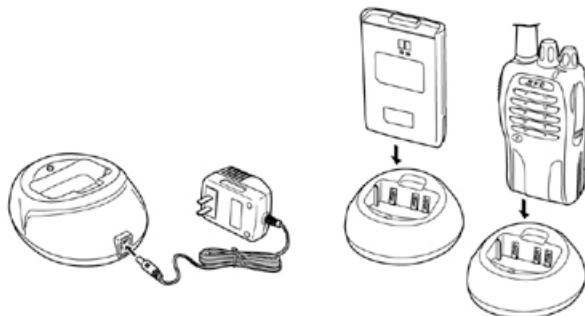


Figure 1

Accessories install

Install/Unlade battery

Plug the bottom project of battery connector into the jack properly of transceiver, then press the top of battery to the transceiver and the "kaDa" is sounds. The connector between transceiver and battery is ok. (See figure 2)

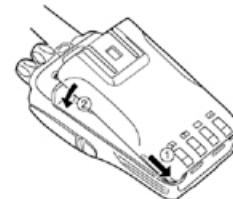


Figure 2

For unlade battery, please sure the transceiver is shut, and then press the catch of battery cover top and Take it. (See figure 3)



Figure 3

Accessories install

Install/Unlade antenna

Use the screw thread of antenna to screw antenna fight of the top of transceiver. (See figure 4)

Circurgrate according the clockwise till the screw down is complete. (See figure 5)



Figure 4



Figure 5

Accessories install

Install Earphone

Open the cover of rubber and plug the Earphone / Microphone to socket. (See figure 6)

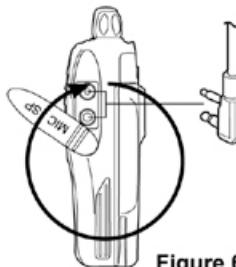


Figure 6

Install/Unlade Leather pouch

Plug the slot of leather pouch into the track of battery, then pull down leather pouch till fixure. (See figure 7)

Open the button of leather pouch with hand, then pull up the leather pouch. (See figure 8)

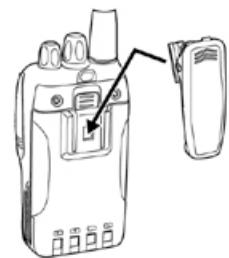


Figure 7

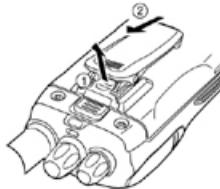
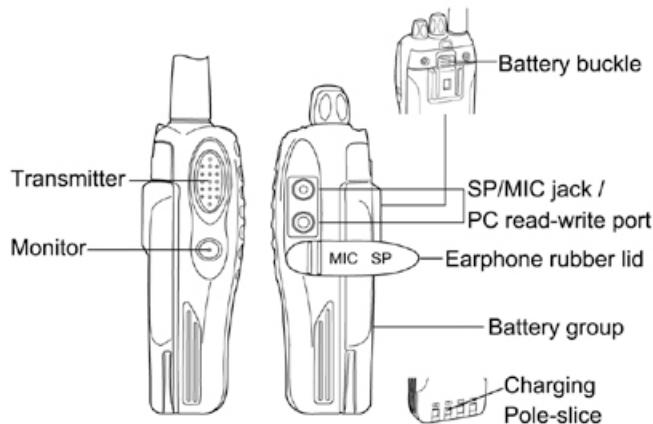
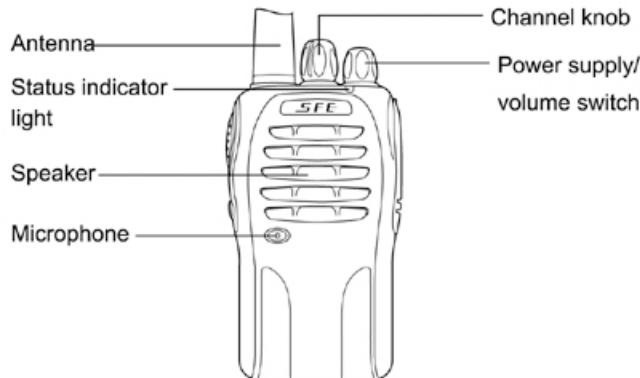


Figure 8

Understand this set



Function and operation

Basic operation

Turn on transceiver

When the transceiver is power off, turn the power supply and volume controlling shaft according to the clockwise to turn it on, the "Di" sounds.



Adjustment Volume

Press and hold the monitor key, circumrotate the power supply and volume controlling shaft to the required volume.



Select channel

Rotate the channel knob to the required channel. Or select scan, CH16 is the scan channel.



Transmitting

Press and hold the PTT key, talking in normal voice and keep the distance between the microphone and lip is about 5-10cm.



Receiving

Release PTT key is receiving mode.

Scan function

When the channel switch is adjusted to CH16, the transceiver begins to scan, stop scan when receiving the signal; Continue scanning after signal disappears for 5 seconds, close scan when the channel switch is adjusted to CH1-CH15.

Two kinds of scans: ordinary scan and prior scan (programmable setting)

1: Ordinary scan

CH1 → CH2 → CH3 → ... → CH16

2: Prior scan: provided that prior scan channel is setted to CH10, scan sequence as follows

Overtime timer

It is used in prevent the single channel use some channel long time, and avoid transceiver error because of the continuum transmitting long time. If the time of continuum transmitting is over the time of overtime timer, the transceiver will stop the transmitting and "Du" sounds. If you will stop the "Du" sounds, please release the PTT key, the transceiver is enter the receiving state. (The time of overtime timer is setup by dealer or turn-off this function)

Battery Power Saving

If the transceiver is not receive the signal or it is not operation keep 10 seconds, the power saving function is auto- startup. When the transceiver is receive the signal or it is during the operate, the power saving function is auto- stop.

Alert of low battery

When the battery is lower than the initialization, red led is flash and alert is sounds. If use it continuously, the transceiver will stop transmitting. Please change the new battery or charger for battery.

Cable copy

Connect the two transceiver with the special copy line, turn on the power supply of the received transceiver. Press and hold the monitor key and turn on the power supply, the orange lamp is lit. When it enters the copy state, press the PTT key of transmitted transceiver, the orange lamp flashes during the copy. After copy, the orange lamp is lit long time. If there have some error during the copy, the red lamp flashes, pls reset to operate it.

Function and operation

Monitor

Pressing and holding monitor key can adjust the volume or receive the weak signal, and at the same time it can monitor the state of current channel.

CTCSS and DCS

CTCSS and DCS are used in avoid the irrelevant call of the same channel. Example: If it is setup in the CTCSS/DCS, it is only receive the same call between of channel and CTCSS/DCS in effect communication range. If it isn't setup in the CTCSS/DCS, and it can receive all calls of same channel in effect communication range.

Remark: CTCSS and DCS are used in avoid the irrelevant call of the same channel, but it isn't means the call is absolute secrecy.

Sound-control transmission

Turn on sound-control function in the read-write software of PC machine, also adjust sound-control sensitivity and delay writing in transceiver when transmitting. By contraries, cancel sound-control function, turn off that function in PC machine, and then write in transceiver.

Trouble dispose and maintain

Trouble dispose

Trouble	solution
The transceiver does no work after turning on it.	The battery is low, please change the battery or charge for it. The battery is bad contact with the transceiver, please install the battery repeat.
It is short time for use of the battery.	The life of battery is short, please change the battery.
Don't communication with the other member of same group	The distance of communication is over the effective communication range of transceiver. The used frequency or CTCSS is not same, please setup it again.
The communication channel is appear the sounds from other member of different group	Please change the CTCSS for every member of the same group.

Maintain and cleanliness

Don't hold the antenna or microphone directly.

After long time used, you can use the litmusless wash and wet cloth cleanout the dirty of the keyboard, knob, and transceiver. Don't use the strong caustic chemical for cleanout.

Technology specification

Normal Specification	
Frequency Range	136-174MHZ
	350-390MHZ
	400-470MHZ
Number of channel	16 CH
Span of channel	25KHZ / 12.5KHZ
Step of channel	5, 6.25KHZ
Working voltage	7.2V DC \pm 20%
Battery working time	S820 lithium battery (1100 mAH) about 10 hours according to 5-5-90
Working temperature	-20°C to +60°C
Frequency stability	\pm 2.5ppm (-20°C to +60°C)
Antenna Impedance	50Ω
Dimension	52 x 28 x 100mm (No include bulge)
Weight	200g (including battery and antenna)

Technology specification

Transmitter	
Carrier Frequency Error	$\leq 5 \times 10^{-6}$
Carrier Output Power	$\leq 5W$
Modulate Limit	$\leq 5KHz$
Audio distortion	$\leq 5\%$
Modulate characteristic	$\pm 3dB$
Adjacent channel Power	$\geq 65dB$
Spurious response	$\leq 7.5\mu W$
In used Band	$\leq 16KHz$

Receiver	
Reference Sensitivity	12dB (SINAD) 0.18μV
Audio distortion	$\leq 5\%$
Audio response	$+2dB \sim -10dB$
Common channel Rejection	$\geq -8dB$
Adjacent Channel Selectivity	$\geq 55dB$
Intermodulation distortion	$\geq 55dB$
Spurious response	$\geq 55dB$
Blocking characteristic	$\geq 85dB$

* It is not inform for change of the technology data due to the technology is developing.

Frequency Table

Model: _____

SN: _____

Channel	Receiver frequency	CTCSS/DCS	Transmitter Frequency	CTCSS/DCS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Quanzhou Donghai Lianfa Radio Factory reserve the right to the design and specification of this manual, and will not information.

Quality guarantee and Service

Quanzhou Donghai Lianfa Radio Factory guarantee:

Under normal use and proper maintenance condition, with a warranty of a month free replacement for the products with the same products from the date of purchase, against manufacturer defect or failure material used, and the transceiver enjoy one year's free repair. The detail regularity please refer to the Quality guarantee and Service.

The manual is suitable for item no.: S820 transceiver