



SHUNFENGTM *Transceiver far away
communication be listened more clear ...*

S850

Multifunction
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 keep 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 entironment temperature is 10℃ to 35℃ when the battery is charging.
- ◆ When the environment Temperature is less than 10℃ , electrolyte will be leaked out when charging and turned into trouble battery finally. When the environment Temperature is more than 35℃ , discharge qty of battery will be decreased when charging, and further affect the use.
- ◆ If it is not use battery for long time ,should be charged once at least two months in order to maintain battery's performance .

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

Battery information

discharge state and after the discharge is complete, it will auto change to the charge state.)

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

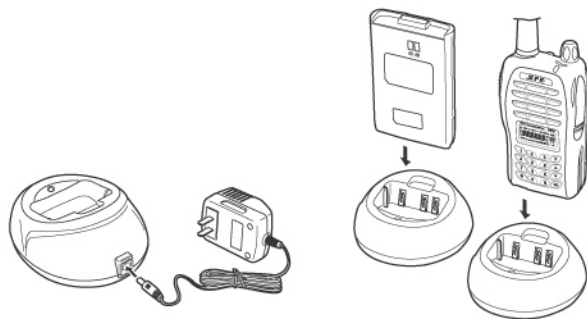


Figure 1

Accessories install

Install/Unade 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)

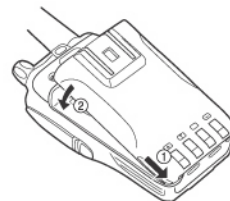


Figure 2

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

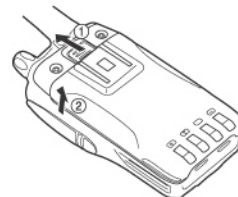


Figure 3

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)

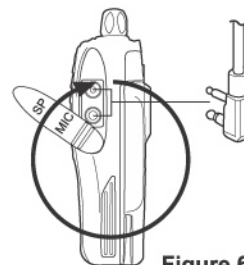


Figure 6

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)

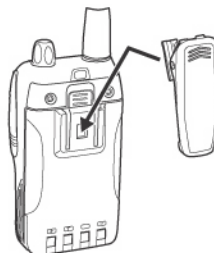


Figure 7

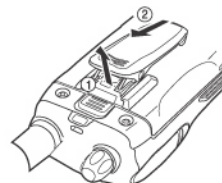
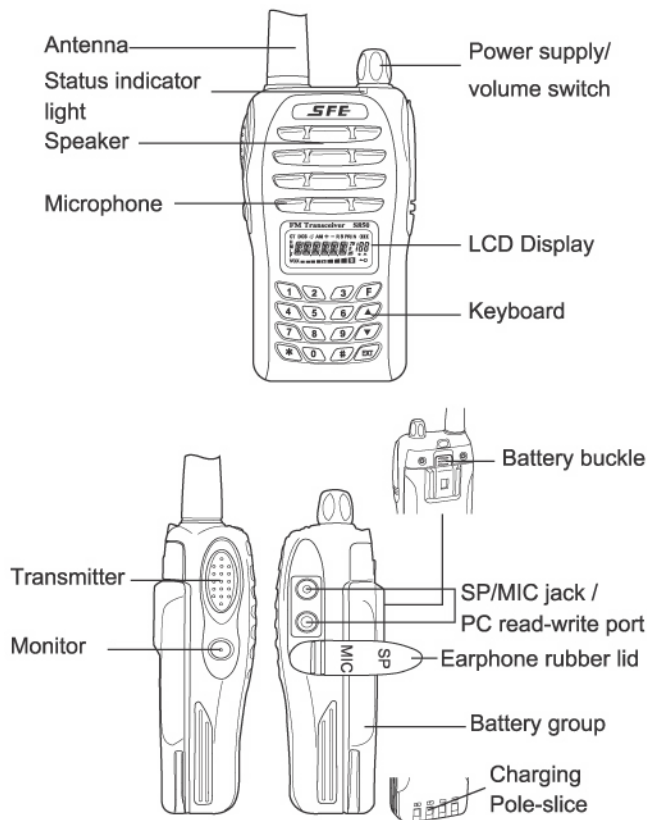


Figure 8

Understand this set



Understand this set

General mode

Startup by simultaneously pressing the key PTT and[**F**], enter the mode state . Press[**F**]or[**F**]select (LCD display MODE: FR、FC、CH) confirm by pressing PTT,Exit by pressing[**OFF**] .

- ① Frequency display state (FR)
- ② Channel store state (FC)
- ③ Display channel state (CH)

LCD display screen

At display screen , you can see various indicative icons expressing selective content . Sometimes you maybe forget the signification of those indicative icons or how to cancel way of existing setting . Under this condition, it is very useful as follows :



Display various letters and digits of use frequency , channel number ,etc.



Display memory channel number you selected when memory is dialed.



Indicate the intensity of transmitting and receiving signal .

Understand this set

	Icon	Function	Operation
1		Keyboard lock	Press[F](2 seconds)
2	188	Channel number	Startup by simultaneously pressing [PTT]+[F] Select CH state, press PTT to confirm
3	CT	CTCSS signal	Enter selection of store channel
4	DQT	DCS signal	Enter selection of store channel
5		Key voice	Press [F]+[8]
6	ANI	ID number	Startup by simultaneously pressing [MONI] + [F] Enter ANI operation
7	+	Plus potential difference	FR state , press[F]+[4]to select
8	-	Minus potential difference	FR state , press[F]+[4]to select
9	R	Reversal function	FR state , press[F] +[5]
10	S	Save power	Press[F] +[7]
11	PRI	Priority scan	Press[F]+[#]select(001-199)
12	N	Wide,narrow band (N is narrow band)	Enter selection of store channel
13		Power volume	-----
14	H/M/L	H / M / L power	Enter selection of store channel
15	F	Function key	-----
16	VOX	Voice Control open / close	Startup by simultaneously pressing [F]+[+], start VOX , repeat operation cancel VOX
17	VOX	Voice Control parameter setting	Press[F]+[+key, enter VOX parameter setting

Function and operation

Lock key

Press[]key for 2 seconds to lock keyboard ,
LCD display: " "
repeat the above operation to cancel
key-locked .



Scan and Priority scan

- Frequency scan : press[]+[]key, startup scan . Cancel scan by pressing any key except[]/[]key .
- CH priority scan : press[]+[]key, LCD display PRI: OFF or channel number press[]/[] to select PRI scan channel number , confirm by pressing PTT , LCD display PRI .
(PRI channel is alternative channel stored)



Step frequency

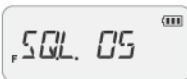
Press[]+[]key, LCD display STP and step frequency , again press []/[] to select 25KHz、5KHz、10KHz、6.25KHz、12.5KHz、 Confirm by pressing PTT .



Function and operation

Squelch

Press[F]+[3]key, LCD display SQL and squelch degrees(00-09 degree , factory setting is 06 degree) , again press [F]/[F] to select squelch degree needed , confirm by pressing PTT.



Plus & minus potential difference selection

Under condition of FR frequency , press [F]+[4]key, LCD display SFT: OFF, "-", "+", again press[F]/[F] to select , confirm by pressing PTT.



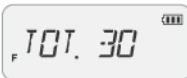
Reverse frequency

Under condition of FR frequency , press [F]+[5]key, LCD display: R Repeat operation to cancel .



Limit time for transmission

Press[F]+[6]key, LCD display TOT and limited time , again press[F]/[F] to select 30S、60S、120S、180S、240S、300S or OFF, confirm by pressing PTT .



Function saving power

Press[F]+[7]key , LCD display SAV: OFF /ON,again press[F]/[F] to 12



Function and operation

select , confirm by pressing PTT.
(LCD display " S " when charging)

Key voice

Press[F]+[8]key , LCD display BP: OFF/ON,again press[F]/[F] to select , confirm by pressing PTT.



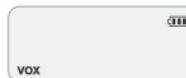
Lighting

Press[F]+[9]key, LCD display LED: AUT or OFF, again press[F]/[F] to select ,Confirm by pressing PTT.



Voice control switch and parameter setting

- Startup by simultaneously pressing [F]+[*], start voice control function , LCD display VOX, close voice control by repeating the above operations .
- Press[F]+[*]key, LCD display VOX and sensitivity degree of voice control , again press[F]/[F] to select suitable degree, confirm by pressing PTT .
(1 to 8, the bigger for degree , the higher for voice control sensitivity)
- Automatically enter transmission time-delaying selection (1S to 4S) When finishing to set voice control sensitivity degree , confirm by pressing PTT.



Function and operation

Select potential difference frequency

Under FR state , press[**F**]+[**0**]key,
LCD display original potential difference
frequency , directly input potential
difference frequency you need, confirm
by pressing PTT . (Frequency range
from 00.000 to 50.000MHz).

Prohibit transmission if busy

Press[**F**]+[MONI]key , LCD display
BCL:OFF/ON, again press[**↵**]/[**↵**]
to select , confirm by pressing PTT .






Store channel frequency

Startup by simultaneously pressing
[PTT]+[**F**]key ,enter mode state , press
[**↵**]/[**↵**] to select FC mode , confirm to
enter store state by pressing PTT ,
flowchart see belows:

Function and operation


Delete channel

Transceiver enter the state of FC store mode , confirm by pressing PTT.

LCD display channel number , again press[][]key, select channel number to be deleted , confirm by pressing PTT . LCD display current channel frequency, again press[]key , LCD display :-----, finish cancel by pressing PTT .




Reposition , cancel

Startup by simultaneously pressing [PTT]+[],LCD display :ERAESE?
Confirm by pressing PTT , transceiver will cancel all stored materials of channel .
(Had better record the stored materials before canceling channel materials)



ANI personal ID number (attached function)

Startup by simultaneously pressing [MONI]+[], enter ANI function to select OFF / ON , confirm by pressing PTT , select ON , LCD display three digitals after confirming . can be randomly coded

Function and operation

at the range of (000-999) , confirm by pressing PTT .

(Have prompt voice when transmitting with ANI function , talk should be after prompt voice is over . Or else the other can not be received your previous voice) .



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	199 CH
Span of channel	25KHZ / 12.5KHZ
Step of channel	5, 6.25KHZ
Working voltage	7.5V DC $\pm 20\%$
Battery working time	S-20 lithium battery (1100 mAH) about 10 hours according to 5-5-90
Working temperature	-20°C to +60°C
Frequency stability	$\pm 2.5\text{ppm}$ (-20°C to +60°C)
Antenna Impedance	50Ω
Dimension	52 x 32 x 100mm (No include bulge)
Weight	215g (including battery and antenna)

Technology specification

Transmitter	
Carrier Frequency Error	$< 7 \times 10^{-6}$
Carrier Output Power	$< 5W$
Modulate Limit	$< 5KHz$
Audio distortion	$< 5\%$
Modulate characteristic	$\pm 3dB$
Adjacent channel Power	$> 65dB$
Spurious response	$< 7.5\mu W$
In used Band	$< 16KHz$

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

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

Frequency Table

50 Groups Frequency(Hz)

67.0	85.4	107.2	136.5	165.5	186.2	210.7	254.1
69.3	88.5	110.9	141.3	167.9	189.9	218.1	
71.9	91.5	114.8	146.2	171.3	192.8	225.7	
74.4	94.8	118.8	151.4	173.8	196.6	229.1	
77.0	97.4	123.0	156.7	177.3	199.5	233.6	
79.7	100.0	127.3	159.8	179.9	203.5	241.8	
82.5	103.5	131.8	162.2	183.5	206.5	250.3	

104+1Group code

023	065	132	205	255	331	413	465	612	723
025	071	134	212	261	332	423	466	624	731
026	072	143	223	263	343	431	503	627	732
031	073	145	225	265	346	432	506	631	734
032	074	152	226	266	351	445	516	632	743
036	114	155	243	271	356	446	523	645	754
043	115	156	244	274	364	452	526	654	
047	116	162	245	306	365	454	532	662	
051	122	165	246	311	371	455	546	664	
053	125	172	251	315	411	462	565	703	
054	131	174	252	325	412	464	606	712	

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.: S850 transceiver