

Function and Operation

- 3) Press  to choose desired SMS and press  to read the SMS.
- 4) Press  to enter sub-menu and choose "Reply", press  again to enter message edition.
- 5) Message input via keypad is available when a flashing cursor appears.
- 6) After message input finished, press  to choose "send" or "exit".
User can also press  to exit or go back to the previous menu.
- 7) Press  to choose "send" and press  to send the message.
- 8) "Sending" will appear on the screen, and if message is sent successfully, transceiver will then emit an alert tone "Dudu".

SMS Forward

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose Inbox and press  to enter Inbox.
- 3) Press  to choose desired SMS and press  to read the SMS.
- 4) Press  to enter sub-menu and choose "Forward", press again to choose "Search Contacts" or "Input Number".
 1. Choose "Search Contacts" and press  to choose the existing contact with pre-programmed name/alias;
 2. Choose "Input Number" and press  to input the desired contact ID via keypad;
- 5) Press  to send the message, "Sending" will appear on the screen, and if message is sent successfully, transceiver will then emit an alert tone "Dudu".

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SMS Edit

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose Inbox and press  to enter Inbox.
- 3) Press  to choose desired SMS and press  to read the SMS.
- 4) Press  to enter sub-menu and choose "Edit" and input the text.
- 5) press  again to choose "Search Contacts" or "Input Number".
 1. Choose "Search Contacts" and press  to choose the existing contact with pre-programmed name/alias;
 2. Choose "Input Number" and press  to input the desired contact ID via keypad;
- 6) Press  to send the message, "Sending" will appear on the screen, and if message is sent successfully, transceiver will then emit an alert tone "Dudu".

SMS Delete

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose Inbox and press  to enter Inbox.
- 3) Press  to choose desired SMS and press  to read the SMS.
- 4) Press  to enter sub-menu and choose "Delete".
- 5) Press  again to delete the message.
- 6) After message deleted, "SMS is deleted" will appear on the screen.

Function and Operation

Create New SMS

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose "Create SMS" and press  to enter.
- 3) Message edition via keypad is available when a flashing cursor appear on the screen.
- 4) After message edition, press  to choose "Search Contacts" or "Input Number".
 1. Choose "Search Contacts" and press  to choose the existing contact with pre-programmed name/alias;
 2. Choose "Input Number" and press  to input the desired contact ID via keypad;
- 5) Press  to send the message, "Sending" will appear on the screen, and if message is sent successfully, transceiver will then emit an alert tone "Dudu".

Outbox(Max 20 SMS store capacity)

SMS Check:

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose Outbox and press  to enter Outbox.
- 3) Press  to choose desired SMS.
- 4) Press  to confirm and read the message.

Outbox supports message resend, forward, edit and delete, for operation steps pls refer to inbox message operation steps.

Function and Operation

Common Phrases (Max 20 SMS store capacity)

Common Phrases Check and Sending

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose "Common Phrases" and press  to enter.
- 3) Press  to choose desired phrase.
- 4) Press  to confirm and read the phrase.
- 5) Press  to choose "Search Contacts" or "Input Number".
 1. Choose "Search Contacts" and press  to choose the existing contact with pre-programmed name/alias;
 2. Choose "Input Number" and press  to input the desired contact ID via keypad;
- 6) Press  to send the phrase, "Sending" will appear on the screen, and if the phrase is sent successfully, transceiver will then emit an alert tone "Dudu".

SMS Delete

- 1) In digital channel, press  to enter menu, press  to choose SMS, press  to confirm.
- 2) Press  to choose "Delete SMS" and press  to enter.
- 3) Press  to choose Inbox or Outbox.
- 4) Press  twice to delete all the messages in Inbox or Outbox.
- 5) After all the messages deleted, "SMS is deleted" will appear on the screen.

Function and Operation

Digital Contacts

Digital contacts is an “address book” built inside the radio, each contact is configured with a specific ID (range: 1-16776415), call name (alias contains symbols, letters and numbers up to 16 characters) and call type(individual call, group call and all call). The transceiver supports users to place a temporary call, check contacts’ details, add new contacts, edit contacts, send message and set default contact.

Note: “Add” and “edit” is available only for individual call contacts.

Place a Temporary Call

- 1) In digital channel, press  to enter menu, press  to choose “Contacts”.
- 2) Press  to choose desired contact name.
- 3) Press PTT button to place a call and contact name will display on the screen.

Check Contacts Details

- 1) In digital channel, press  to enter menu, press  to choose “Contacts”, press  to confirm.
- 2) Press  to choose desired contact name.
- 3) Press  to enter and choose “Details”.
- 4) Press  to enter and read the details (Name, ID number and call type).

Add Contacts

- 1) In digital channel, press  to enter menu, press  to choose “Contacts”, press  to confirm.

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- 2) Press  to enter and choose “Add”.
- 3) Press  to enter and input contact name and ID number step by step.
- 4) Press  to save after finished and “Save OK” will display on the screen.

Note: “Num Out of Range” will appear on the screen if there is no ID number input, “Num Exist” will appear on the screen if the ID number input has been existing in the contacts.

Valid ID number range: 1-16776415

Edit Contacts

- 1) In digital channel, press  to enter menu, press  to choose “Contacts”, press  to confirm.

Note: Only individual call contacts are available for edition.

- 2) Press  to enter and choose “Edit”.
- 3) Press  to enter and change contact name and ID number as required step by step.
- 4) Press  to save after finished and “Save OK” will display on the screen.

Note: “Num Out of Range” will appear on the screen if there is no ID number input, “Num Exist” will appear on the screen if the ID number input has been existing in the contacts.

Valid ID number range: 1-16776415

Send SMS to Existing Contacts

- 1) In digital channel, press  to enter menu, press  to choose “Contacts”, press  to confirm.

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- 2) Press  to enter and choose "Send SMS".
- 3) Press  to enter message edition, input characters via keypad.
- 4) Press  to choose "Send", "Sending..." will display on the screen and transceiver will emit an alert tone after message sent successfully.

Setup Default Contacts

- 1) In digital channel, press  to enter menu, press  to choose "Contacts", press  to confirm.
- 2) Press  to enter and choose "Default Contacts".
- 3) Press  to save it as default contacts and "Save OK" will display on the screen.

Call Log(Recent Call History)

The transceiver will record all recent dialed in and dialed out histories automatically, user is able to check the recent dialed in/out histories and delete the histories.

Dialed In

- 1) In digital channel, press  to enter menu, press  to choose "Call log", press  to confirm.
- 2) Press  to choose "Dialed In".
- 3) Press  to check the dialed in history and details.

Dialed Out

- 1) In digital channel, press  to enter menu, press  to choose "Call log", press  to confirm.
- 2) Press  to choose "Dialed Out"
- 3) Press  to check the dialed out histories and details.

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Delete Call Logs

- 1) In digital channel, press  to enter menu, press  to choose "Call log", press  to confirm.
- 2) Press  to choose "Delete Logs", press  to choose "Dialed In" or "Dialed Out".
- 3) Press  twice to delete the selected dialed histories and "Delete Completed" will appear on the screen.

Scan Settings

- 1) Press  to enter menu, press  to choose "Scan Settings", press  to confirm.
- 2) Press  to choose "Scan List Select" and press  to enter scan List selection.
- 3) Press  to choose desired scan list available and press  to save the selection.

Zone Select

- 1) Press  to enter menu, press  to choose "Zone Select", press  to confirm.
- 2) Press  to choose desired zone, then press  to save the selection and transceiver will switch to the target zone.

Settings

Power Output

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.

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- 3) Press  to choose "Power Output" and press  to confirm.
- 4) Press  to choose "High Power" or "Low Power", press  to confirm.

Squelch Level

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Squelch Level" and press  to confirm.
- 4) Press  to choose desired squelch level (Range: 0-9), press  to confirm.

Battery Save Mode

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Battery Save Mode" and press  to confirm.
- 4) Press  to choose battery save on or off, press  to confirm.

TOT(Time-out-timer)

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "TOT" and press  to confirm.
- 4) Press  to choose desired TOT(Range: off, 30s, 60s, 90s, 120s, 150s, 180s, 210s and 240s), press  to confirm.

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VOX Level

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "VOX Level" and press  to confirm.
- 4) Press  to choose desired VOX level (Range: 0-9), press  to confirm.

VOX Delay

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "VOX Delay" and press  to confirm.
- 4) Press  to choose desired TOT(Range: 1s, 2s, 3s and 4s), press  to confirm.

Alert Tone Set

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Alert Tone Set" and press  to confirm.
- 4) Press  to choose alert tone on or off, press  to confirm and save.

Backlight Level

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.

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- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Backlight Level" and press  to confirm.
- 4) Press  to choose desired backlight level (Range: 0-5), press  to confirm and save.

Backlight Delay

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Backlight Delay" and press  to confirm.
- 4) Press  to choose desired backlight delay time.
(Range: On, 5s, 10s, 15s.....60s), press  to confirm and save.

Keypad Lock

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Keypad Lock" and press  to confirm.
- 4) Press  to choose desired automatic keypad lock time
(Range: On, 5s, 10s, 15s.....60s), press  to confirm and save.

Language Set

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.

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- 3) Press  to choose "Language Set" and press  to confirm.
- 4) Press  to choose English or Chinese, press  to confirm and save.

Slot Set

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Settings" and press  to confirm.
- 3) Press  to choose "Slot Set" and press  to confirm.
- 4) Press  to choose Slot 1 or Slot 2, press  to confirm and save.

Own Info(My Radio Information)

This allow users to check the model, Radio ID, software version and firmware version of the radio, check operation steps are as bellows:

- 1) Press  to enter menu, press  to choose "Settings" and press  to confirm.
- 2) Press  to choose "Own Info" and press  to confirm.
- 3) Press  to enter and choose desired item.
- 4) Press  to confirm and read the information.

Troubleshooting and Maintenance

Troubleshooting

Problem	Solution
The transceiver does not work when switched on.	The battery is low. Please recharge the battery pack and make sure the battery pack is properly fitted or insert a fresh battery, refit it if necessary. Swap the battery onto another radio to check if one is available.
The battery runs out in a short time.	The battery is no longer in good condition and needs to be replaced with a new one.
The radio can't communicate with other units in the same user group.	The radio is out of usable range, is not on the same channel, is not of the same model type, or the CTCSS/DCS/CC Code/Group ID settings and/or frequencies are incorrect and do not match. Please re-set it.
The radio receives unwanted transmissions from other radio users.	Change the channel of all the radios in the required group to a quiet channel, or change CTCSS/DCS of all the radio in the required group.

Maintenance and Cleaning

Do not carry the transceiver by the antenna or attached audio accessories. Always turn the transceiver OFF when attaching or detaching audio accessories. Clean the buttons, control knob and radio body with a dry cloth when it has been unused for a long time or becomes dirty.

Specifications

General	
Frequency range	EU 400-470MHz/USA 400-480MHz
Channel capacity	1024CH
Channel Zone	64Zones
Operating voltage	7.4V DC $\pm 10\%$
Battery capacity	Li-Ion battery 2200mAh 20hours according to 5-5-90
Operating temperature	-20°C to + 40°C
Antenna impedance	50 Ω
Dimensions	52x31x104mm (exclude projection)
Weight	about 230g (including battery and antenna)
Transmitting	
RF power output	$\leq 5W$
Analog Modulation	11K ϕ F3E@12.5KHz
4SK Modulation	7K60FXD for Data Only; 7K60FXW for Data and Voice
Adjacent channel power	$\leq -60dB (\pm 12.5KHz)$
Spurious RF sponderance	-36dBm $\leq 1GHz$ -30dBm $\geq 1GHz$
Frequency response	+1~ 3dB
Audio distortion	$\leq 3\%$
Vocoder	AMBE+2™
Frequency stability	$\pm 1ppm$ (-20°C to + 60°C)
Receiving	
Frequency sensitivity	5% BER: 0.25 μV
Digital Protocol	$\leq 5\%$
Audio distortion	$\geq -8 dB$
Spurious restraint	65 / 60dB (12.5KHz)
Adjacent-channel selectivity	65 / 60dB (12.5KHz)
Inter-modulation distortion	+1~3dB
Frequency response	$\geq 85 dB$
Jam-up	ETSI-TS 102 361 -1,-2,-3

Sub-tone Table

50 Groups CTCSS

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	

110 Groups DCS(N/I)

017	053	122	165	246	311	371	455	546	664
023	054	125	172	251	315	411	462	565	703
025	065	131	174	252	325	412	464	606	712
026	071	132	205	255	331	413	465	612	723
031	072	134	212	261	332	423	466	624	731
032	073	143	223	263	343	431	503	627	732
036	074	145	225	265	346	432	506	631	734
043	077	152	226	266	351	445	516	632	743
047	114	155	243	271	356	446	523	645	754
050	115	156	244	274	364	452	526	654	760
051	116	162	245	306	365	454	532	662	765

Noted: Only Invalid in Analog Mode

Warranty and Service

Quanzhou SFE Electronic Technology Co.,Ltd warrants against defects in material or workmanship, for a period of 18 months for radio body, and for a period of 6 months for batteries and accessories, from the date of original purchase. This warranty is limited to repair or replacement of defective parts only and is not valid if the equipment has been tampered with, misused or damaged.

This manual is special for transceiver SD850 Series.

Use this SD850 Digital Portable radio in the environment with temperature between 0-40°C, otherwise, it may damage your Digital portable radio. It can be operating under 2000m. Hereby, Quanzhou SFE Electronic technology Co.,Ltd. declare that the radio equipment type SD850 Digital portable radio is compliance with Directive 2014/53/EU.

For safe operating, the antenna for the product shall be least 25 mm away from your face and 0 mm from your body with belt clip.

The product supplied by Li-ion battery and charged from approved travel Charger.



RF Exposure Information

WARNING! Read this information before using the radio. In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated transmitters.

Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of the radio complies with the FCC guidelines and these international standards.

Never allow children to operate the radio without adult supervision and the knowledge of the following guidelines.

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

For a transmitter that can only be operated with an FCC license, warnings concerning compliance with applicable licensing requirements and information concerning license application procedures.

Our 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, our 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:

---IEEE Std. 1528:2013 and KDB447498, 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 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.

RF Exposure Information

Electromagnetic Interference/Compatibility

During transmissions, Our radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. DO NOT operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use

The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Attention:

This radio complies with IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% and is authorized by the FCC for occupational use only. An appropriate warning label is affixed to all units. In order to comply with RF exposure requirements, a minimum distance of 2.5cm must be maintained when held-to-face, and body-worn operations are restricted to the approved original accessories (belt clip) a minimum distance of 0 mm. Do not use this device when antenna shows obvious damages.

This product is compliance to FCC RF Exposure requirements and refers to FCC website

<https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm> search for FCC ID: 2AYFQ -SD850 to gain further information include SAR Values.

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

WARNING! It is up to the user to properly operate this radio transmitter to insure safe operation. Please adhere to the following:

Use only the supplied or an approved antenna(max gain 2.15dBi) Unauthorized antennas, modifications, or attachments could impair call quality, damage the radio, or result in violation of FCC regulations.

If a damaged antenna comes into contact with the skin, a minor burn may result. Please contact your local dealer for a replacement antenna.

RF Exposure Information

■ FCC Compliance Statements:

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.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Information

■ Licensing Information

Use our radio in USA is subject to the rules & regulations of FCC. Changes or modifications not expressly approved by our may void the user authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement of any transmitter component (crystal, semiconductor, etc) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

Note: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Important: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device. Your radio is set up to transmit a regulated signal on an assigned frequency. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments to your radio must be made by qualified technicians.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.