

FRS Two Way Radio OWNER'S MANUAL





ATTENTION! The radio is a multitask FRS transceiver. Combining the latest technology in radio communication along with a sturdy mechanical frame, the radio is the ideal and effective solution for the professionals who need to stay in touch with the working team (in construction sites, buildings, shows, trade fairs or hotels) or for leisure users that just want to keep up with friends and family.

To help you ward off bodily injury or property loss that may arise from improper operation, please read all the information carefully before using our products.

Before operating the radio, please read all safety and operating instructions. Save all instructions in a safe place for future reference.



FCC Part 15.21 Warning Statement

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Content of the packaging

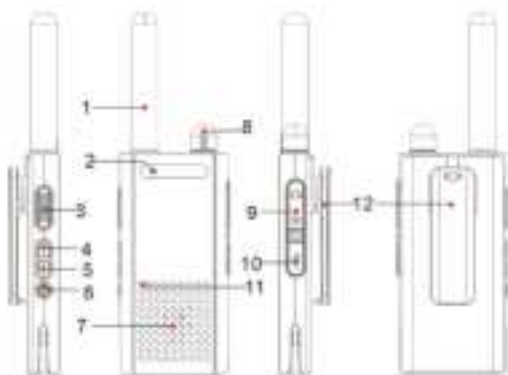
Package Content	1 PACK	2 PACK	6 PACK
Radio	1	2	6
Belt Clip	1	2	6
Lanyard	1	2	6
Owner's Manual	1	1	1

Note: The number of the above materials may be depending on the number of packages.

Main features

- FRS transceiver
- 22 FRS channels
- Channel scan
- Vocal tuning
- Battery low alert
- 2Pin Kenwood accessory jack
- Li-Ion 1400mAh battery pack
- Battery Life: up to 18 hours (under typical use conditions)
- Maximum Output Power: 462.5500-462.7250MHz: 31.07dBm
467.5625-467.7125MHz: 25.41dBm
- Channel monitor
- 260 Privacy Codes (50 CTCSS Codes & 210 DCS codes)
- Battery save
- TOT (Time out timer)
- Micro USB connector for charging

Radio Overview



1. Antenna
2. LED: TX red light, RX green light
3. PTT (Push-To-Talk) Button
4. +/Channel UP Button (SK1)
5. -/Channel Down Button (SK2)
6. Monitor/Alarm Button (SK3)
7. Speaker
8. Power switch/ Volume control
9. Accessory Port
10. Type-C USB Charging Port
11. Built-in microphone
12. Belt Clip

Charging the Battery

Using the Type-C USB Charger

The Type-C USB charger is a handy port that allows you to conveniently charge your Li-ion battery pack.

1. Make sure your radio is turned OFF.
2. Plug the Type-C USB cable into the Type-C USB charging port on your battery. The other end of the data line is connected to the output port of the power bank or the adapter of the mobile phone.
3. An empty battery will be fully charged in 4 hours.

Note:

- It is recommended to power OFF your radio while charging. However, if power is turned on while charging, you may not be able to transmit a message if the battery is completely empty.
- For optimal battery life, remove the radio from the charger within 6 hours. Do not store the radio while connected to the charger.

Operations

Power on/off and volume adjustment

Rotate the Power/Volume knob clockwise to turn the radio on. Rotate the control clockwise /counter-clockwise to adjust the volume level as you prefer. To turn the radio off, rotate the control counter-clockwise till hearing a mechanical “click”.

Channel selection

In standby mode, Press the + (**SK1**)/ - (**SK2**) buttons to step down or down to select the channel. When the voice prompt function is turned on, the corresponding channel is broadcast by voice.

Transmission

To communicate, all radios in your group must be set to the same channel. Press and hold the **Monitor (SK3)** button to enable the Monitor feature in order to make sure that the frequency is not busy, and then press the **[PTT]** button.

Release the **[PTT]** button to receive.

Only one user at a time can talk during radio communications.

Therefore, it is important not to transmit when you are receiving a communication and use the transmission mode sparingly to allow other users to talk. Transmission consumes a significant amount of energy and should therefore be used sparingly to prolong the battery life. If you are unable to contact a station that you have no problems in receiving, the station may be using CTCSS tones or DCS codes.

Scan

In standby mode, press and hold the - (**SK2**) button to enter the scanning function. The scan starts from the current channel, and the signal light is flashing "green".

Lights green when scanning pauses on a channel. Press and hold the **[PTT]** button to making a callback.

Press and hold the - (**SK2**) button again to exit the scan.

Monitor

The Monitor feature is for excluding (opening) the Squelch, in order to listen to signals that are too weak to keep the Squelch permanently

opened. Press the **Monitor (SK3)** button to enable such function. Press **Monitor (SK3)** button again to exit monitor state.

Emergency alarm

In standby mode, press and hold the **Monitor (SK3)** button to turn on and off the emergency alarm function.

VOX

The VOX feature enables hands free conversations without using PTT: just speak in the direction of the microphone and the communication will be automatically activated. The VOX sensitivity can be adjusted in 5 different levels (1...5) through the programming software:

Level 2 is set by default and has the lowest VOX sensitivity, 5 is the lowest one.

With the programming software you can enable/disable the VOX feature and select the sensitivity levels.

Squelch

The Squelch function suppresses noises on free channels and allows receiving even weak signals. The radio has 10 different Squelch levels that can be set by programming software: 0 means that the Squelch is turned off; from level 1 to level 9 you will have different levels of noise reduction. The higher is the level, the louder will be the Squelch. By default, the Squelch level of radio is set on level 4. Make sure you do not set an excessively high squelch level because in this case you may not be able to receive weaker signals. On the other hand an excessively low Squelch value could enable the Squelch even when no signals are present. Squelch must always be adjusted when no signals are present.

CTCSS/DCS tones

CTCSS and DCS tones are similar to access codes and enable the radio to communicate only with the users that are tuned on the same channel and have set the same code. For each channel, you can set up to 50 CTCSS tones and 210 DCS codes. The CTCSS/DCS tones are a sort of “access codes” and enable the radio to communicate only with the other users set on the same frequency and on the same CTCSS/DCS tone. Undesired signals coming from other stations set on the same frequency but with different CTCSS/DCS tones won't be received.

Quick operation radio

Without CPS programming software, you can perform the following quick operations through the combination of **PTT + Monitor (SK3)** buttons:

- On the 5th channel, press and hold the **PTT + Monitor (SK3)** buttons to turn on the radio and turn the VOX function on or off. Accompanied by a voice prompt VOX ON or VOX OFF.
- On the 15th channel, press and hold the **[PTT]+ Monitor (SK3)** to turn on the radio and switch the prompt language between Chinese and English.

Appendix A. – Technical Specifications

General Part

Frequency Range	FRS
Working temperature	-10°C to +50°C
Operation Voltage	DC 3.7 V \pm 10%
Operation Mode	Simplex
Dimensions	110mm×56mm×16mm (without Antenna)
Weight	110g (Battery pack included)
Antenna Impedance	50ohm

Transmitter Part

RF Output Power	462.5500-462.7250MHz: 31.07dBm 467.5625-467.7125MHz: 25.41dBm
FM Modulation	11K0F3E@12.5KHz
Adjacent Channel Power	60dB @ 12.5KHz
Transmission current	\leq 1200mA

Receiver Part

Receive Sensitivity	0.25 μ V (12dB SINAD)
Adjacent Channel Selectivity	\geq 55dB@12.5KHz
Inter Modulation and Rejection	\geq 55dB@12.5KHz
Conducted Spurious Emission	\leq -57dB@12.5KHz
Rated Audio Power Output	0.75W @8 ohms
Receive current	\leq 380mA
Rated Audio Distortion	\leq 5%

NOTE: All specifications may be modified without prior notice or liability.

Appendix B. – Trouble shooting guide

Phenomena	Analysis	Solution
You cannot turn on the radio.	The battery may be installed improperly.	Remove and reattach the battery.
	The battery power may run out.	Recharge or replace the battery.
	The battery may suffer from poor contact caused by dirty or damaged battery contacts.	Clean the battery contacts or replace the battery.
During receiving, the voice is weak or intermittent.	The battery voltage maybe low.	Recharge or replace the battery.
	The volume level may be low.	Increase the volume.
	The antenna maybe loose or maybe installed incorrectly.	Turnoff the radio, and then remove and reattach the antenna.
	The speaker maybe blocked.	Clean the surface of the speaker.
You cannot communicate with other group members.	The frequency or signaling type maybe inconsistent with that of other members.	Verify that your TX/RX frequency and signaling type are correct.
	You may be too far away from other members.	Move towards other members.
You hear unknown voices or noise.	You may be interrupted by radios using the same frequency.	Change the frequency, or adjust the squelch level.
	The radio in analog mode maybe set with no signaling.	Request your dealer to set signaling for the current channel to avoid interference
You are unable to hear anyone because of too much noise and hiss.	You may be too far away from other members.	Move towards other members.
	You may be in an unfavorable position. For example, your communication may be blocked by high buildings or blocked in an underground area.	Move to an open and flat area, restart the radio, and try again.
	It may be the result of external disturbance (such as electromagnetic interference).	Stay away from equipment that may cause interference.
The radio keeps transmitting.	VOX may be turned on or the headset is not installed in place	Turn off the VOX function. Check that the headphones are in place.

NOTE: If the above solutions cannot fix your problems, or you may have some other queries, please contact your dealer for more technical support.

Appendix C. –FRS Frequency Chart (MHz)

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	462.5625	12	467.0625
2	462.5875	13	467.0875
3	462.6125	14	467.1125
4	462.6375	15	462.1500
5	462.6625	16	462.1750
6	462.6875	17	462.6000
7	462.7125	18	462.6250
8	467.5625	19	462.6500
9	467.5875	20	462.6750
10	467.6125	21	462.7000
11	467.6375	22	462.7250

Appendix D. - DCS Table

DCS CODE LIST

Number	Code	Number	Code	Number	Code	Number	Code	Number	Code
1	D023	2	D025	3	D026	4	D031	5	D032
6	D036	7	D043	8	D047	9	D051	10	D053
11	D054	12	D065	13	D071	14	D072	15	D073
16	D074	17	D114	18	D115	19	D116	20	D122
21	D125	22	D131	23	D132	24	D134	25	D143
26	D145	27	D152	28	D155	29	D156	30	D162
31	D165	32	D172	33	D174	34	D205	35	D212
36	D223	37	D225	38	D226	39	D243	40	D244
41	D245	42	D246	43	D251	44	D252	45	D255
46	D261	47	D263	48	D265	49	D266	50	D271
51	D274	52	D306	53	D311	54	D315	55	D325
56	D331	57	D332	58	D343	59	D346	60	D351
61	D356	62	D364	63	D365	64	D371	65	D411

66	D412	67	D413	68	D423	69	D431	70	D432
71	D445	72	D446	73	D452	74	D454	75	D455
76	D462	77	D464	78	D465	79	D466	80	D503
81	D506	82	D516	83	D523	84	D526	85	D532
86	D546	87	D565	88	D606	89	D612	90	D624
91	D627	92	D631	93	D632	94	D645	95	D654
96	D662	97	D664	98	D703	99	D712	100	D723
101	D731	102	D732	103	D734	104	D743	105	D754

Note: DCS codes can be programmed for use on Channels 1~22 only.

Appendix E. - CTCSS Table

CTCSS CHART (Hz)

Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency
1	67.0	2	69.3	3	71.9	4	74.4	5	77.0
6	79.7	7	82.5	8	85.4	9	88.5	10	91.5
11	94.8	12	97.4	13	100	14	103.5	15	107.2
16	110.9	17	114.8	18	118.8	19	123.0	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2	25	151.4
26	156.7	27	159.8	28	162.2	29	165.5	30	167.9
31	171.3	32	173.8	33	177.3	34	179.9	35	183.5
36	186.2	37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1	45	225.7
46	229.1	47	233.6	48	241.8	49	250.3	50	254.1

Note: CTCSS Chart can be programmed for use on Channels 1~22 only

IMPORTANT NOTICE



WARNINGS: Replacement or substitution of transistors, regular diodes or other parts of a unique nature, with parts other than those recommended by PO FUNG COMPANY may cause a violation of the technical regulations of part 95 of the FCC rules, or violation of type acceptance requirements of part 2 of the rules. Your radio is set up to transmit a regulated signal on an assigned frequency. Any adjustment to your radio must be made by qualified technicians.

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.



FCC & RSS WARNINGS:

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

SAR tests are conducted using standard operating positions accepted by the FCC/ISED with the device transmitting at its highest certified power level in all tested frequency bands, although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. Before a new model is available for sale to the public, it must be tested and certified to the FCC/ISED that it does not exceed the exposure limit established by the FCC/ISED. Tests for each product are performed in positions and locations as required by the FCC/ISED.

For body worn operation, this device has been tested and meets the FCC/ISED RF exposure guidelines when used with an accessory designated for this product or when used with and accessory that contains no metal.

To maintain compliance with the FCC/ISED's RF exposure guidelines, hold the transmitter and antenna at least 1 inch (2.5 centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face.

This equipment complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment. In order to comply with the FCC/ISED RF exposure requirements, the antenna installation must comply with following:

Users must be fully aware of the hazards of the exposure and able to exercise control over their RF exposure to qualify for the higher exposure limits.

Your wireless hand-held portable transceiver contains a low power transmitter. This product sends out radio frequency (RF) signals when the Push-to-Talk (PTT) Button is pressed.

The device is authorized to operate at a duty factor not to exceed 50%.

This device complies with ISED licence-exempt RSS standard (s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'ISED licables aux ares radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Les tests SAR sont effectués en utilisant des positions de fonctionnement standard acceptées par la FCC/ISED, l'appareil émettant à son niveau de puissance certifié le plus élevé dans toutes les bandes de fréquences testées. Bien que le SAR soit déterminé au niveau de puissance certifié le plus élevé, le niveau SAR réel de l'appareil en fonctionnement peut être bien inférieur à la valeur maximale. Avant qu'un nouveau modèle ne soit disponible à la vente au public, il doit être testé et certifié par la FCC/ISED qu'il ne dépasse pas la limite d'exposition établie par la FCC/ISED. Les tests pour chaque produit sont effectués dans les positions et les lieux requis par la FCC/ISED.

Pour le port sur le corps, cet appareil a été testé et répond aux directives d'exposition aux radiofréquences de la FCC/ISED lorsqu'il est utilisé avec un accessoire désigné pour ce produit ou lorsqu'il est utilisé avec un accessoire qui ne contient pas de métal.

Pour rester en conformité avec les directives d'exposition aux radiofréquences de la FCC/ISED, tenez l'émetteur et l'antenne à au moins 2,5 centimètres de votre visage et parlez d'une voix normale, avec l'antenne dirigée vers le haut et éloignée du visage.

Cet équipement est conforme aux limites d'exposition aux rayonnements FCC/ISED établies pour un environnement non contrôlé. Afin de respecter les exigences de la FCC/ISED en matière d'exposition aux radiofréquences, l'installation de l'antenne doit être conforme à ce qui suit :

Les utilisateurs doivent être pleinement conscients des dangers de l'exposition et capables d'exercer un contrôle sur leur exposition aux radiofréquences pour pouvoir bénéficier des limites d'exposition plus élevées.

Votre émetteur-récepteur portable sans fil contient un émetteur de faible puissance. Ce produit émet des signaux de radiofréquence (RF) lorsque le bouton PTT (Push-to-Talk) est enfoncé. L'appareil est autorisé à fonctionner à un facteur d'utilisation ne dépassant pas 50 %

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.

Precautions for Portable Terminals

■ Operating Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not operate the product in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials. In such location, only an approved Ex-protection model is allowed for use, but any attempt to assemble or disassemble it is strictly prohibited.
2. Do not operate the product near or in any blasting area.
3. Do not operate the product near any medical or electronic equipment that is vulnerable to RF signals.
4. Do not hold the product while driving.
5. Do not operate the product in any area where use of wireless communication equipment is completely prohibited.

■ Important Tips

To help you make better use of the product, be sure to observe the following instructions:

1. Do not use any unauthorized or damaged accessory.
2. Keep the product at least 2.5 centimeters away from your body during transmission.
3. Do not keep the product receiving at high volume for a long time.
4. For vehicles with an air bag, do not place the product in the area over the air bag or in the air bag deployment area.
5. Keep the product and its accessories out of reach of children and pets.
6. Please operate the product within the specified temperature range.
7. Continuous transmission for a long time may lead to heat accumulation within the product. In this case, please keep it at a proper location for cooling.
8. Handle the product with care.
9. Do not disassemble, modify or repair the product and its accessories without authorization.

■ Hazardous Environments

Do not operate the radio in hazardous environments. Explosion or fire may result. Do not operate the radio near unshielded electrical blasting caps.

Under certain conditions, radios can interfere with blasting operations and may cause an explosion. Turn your radio OFF to prevent accidental transmission when in a blasting area or in areas posted: "Turn off two-way radio." Construction crews often use remote control RF devices to set off explosives.

Precautions for Batteries

■ Charging Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not charge or replace your battery in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials.
2. Do not charge your battery that is wet. Please dry it with a soft and clean cloth prior to charge.
3. Do not charge your battery suffering deformation, leakage and overheat.
4. Do not charge your battery with an unauthorized charger.
5. Do not charge your battery in a location where strong radiation is present.
6. Overcharge shall always be prohibited for it may shorten the life of your battery.

■ Maintenance Instructions

To help your battery work normally or prolong its life, be sure to observe the following instructions:

1. Accumulated dust on charging connector may affect normal charging. Please use a clean and dry cloth to wipe it on a regular basis.
2. It is recommended to charge the battery under 5°C~40°C. Violation of the said limit may cause battery life reduction or even battery leakage.
3. To charge a battery attached to the product, turn it off to ensure a full charge.
4. Do not remove the battery or unplug the power cord during charging to ensure a smooth charging process.
5. Do not dispose of the battery in fire.
6. Do not expose the battery to direct sunlight for a long time nor place it close to other heating sources.
7. Do not squeeze and penetrate the battery, nor remove its housing.

■ Transportation Instructions

1. Damaged batteries must not be transported.
2. To avoid short circuit, separate the battery from metal parts or from each other if two or more batteries are transported in one packaging.
3. The radio must be switched off and secured against switch-on, if the battery is attached.

The content of the shipment must be declared in the shipping documents and by a Battery Shipping Label on the packaging. Contact your hauler for the local regulations and further information.

■ Precautions for Disposal

Once the service life of our products (including but not limited to radios and batteries) has ended, they shall not be disposed as household garbage. Their recycling and disposal shall satisfy your local regulations.

Disclaimer

The Company endeavors to achieve the accuracy and completeness of this manual, but no warranty of accuracy or reliability is given. All the specifications and designs are subject to change without notice due to continuous technological development. No part of this manual may be copied, modified, translated, or distributed in any manner without the prior written consent of the Company.

We do not guarantee, for any particular purpose, the accuracy, validity, timeliness, legitimacy or completeness of the third-party products and contents involved in this manual.



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