

VHF MARINE RADIO

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INSTRUCTION MANUAL

- USB Charging (Micro-B USB Type)
- IPX7 Waterproof Construction
(1m Depth of Water for 30 Minutes)
- Float and Flash Alarm, Vibration Draining Function



Thank you for purchasing this marine radio. You will find the professional and humanized design of the radio during using. Please read all instructions carefully and completely before using the radio.

It is a multifunctional and well-designed marine radio which meets the IMO (International Maritime Organization) regulation.

As adopting advance waterproof technology, the radio is with good waterproof performance, can float and flash alarm when drops into the water.

CAUTION

- The power supply of this radio is DC 3.7V. Please use the li-ion battery as configured.
- The radio should be charged by the configured adaptor.
- Do not expose the radio to direct sunlight for a long time. Do not place it in environment or near any heating devices below -20°C or above +55°C.
- Stop using and contact the local dealer if the radio emits strange odor or smoke.
- Do not transmit without antenna installed, or the devices will be damaged.
- Please power off in flammable and explosive environment.
- Keep the radio at least 1 meter away from your vessel's magnetic navigation compass.
- The radio meets IPX7 waterproof requirement. However, once the radio has been dropped, waterproof protection cannot be guaranteed because of possible damage to the radio's sealed structure.
- Make sure the radio antenna, earphone jack cover and battery cover are dry before attachment. Or the radio inner components will be damaged.

SUGGESTION

Clean the radio thoroughly with fresh water after exposure to salt water. Dry it before operating. Otherwise the radio keys and control components may be unusable due to salt crystallization.

DO NOT submerge the radio in water. The waterproof protection may not be effective if the radio rubber ring of earphone cover or DC jack cap is damaged in unexpected accident. Please contact the local dealer if they are damaged.



FEATURES

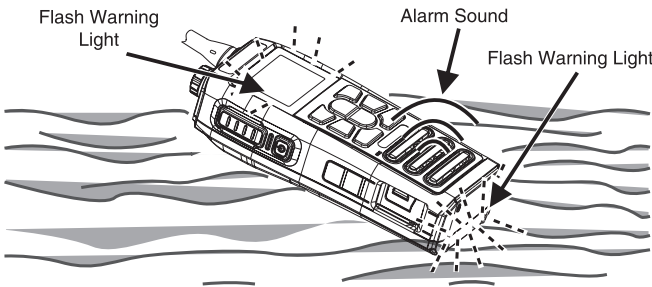
Water-resistant and Float

The radio water-resistant protection meets IPX7 requirements. Can be 1 meter depth in water for 30 minutes. The radio can float in fresh or salt water with the standard accessories-battery, belt clip and antenna.

When a third-party battery, belt clip and antenna etc. are used, the radio may sink.

Flash Alarm

The radio will float, make alarm sound and send out automatic flash alarm when drops into the water. As the LED light flashing, the radio can be easily retrieved to support the emergent rescue. This function works even the radio is powered off.



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PREPARATION

■ Standard Accessories

Carefully unpack the radio. We recommend that you identify items listed in the following table before discarding the packing materials. If any item is missing or has been damaged, please contact the dealer immediately.

Items	Quantity
Antenna	1
AC Adaptor	1
Belt Clip (With Screws)	1
Hand Strap	1
Instruction Manual	1

■ Preparation

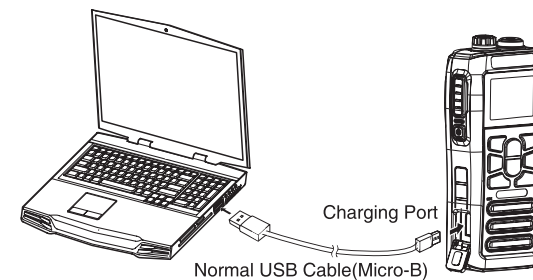
◇ Charging the Battery Pack

1. Connect the adaptor to AC power.
2. Open the radio charging port cover. Connect the adaptor with the radio USB charging port to start charging. LCD appears “

3. If the battery is full charging, LCD appears “FL”. You should remove the adaptor.
 - If you do not insert the battery pack while charging, the LCD appears “Er”.

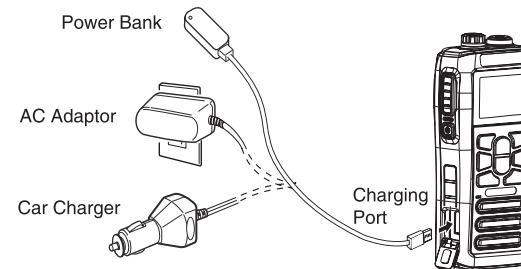
4. Charge by Other Power Supplies
 - Charge by computer USB port

NOTE: Few computers do not meet the voltage and current as required.



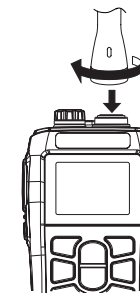
- Charge by Micro-B adaptor

NOTE: The power supply output should be 5V/1A.



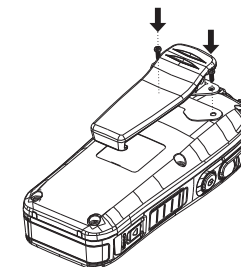
◇ Install/Remove Antenna

1. Connect the supplied fixable antenna to the antenna connector, rotate it clockwise until it is tight.
2. To remove it, rotate it counter clockwise.



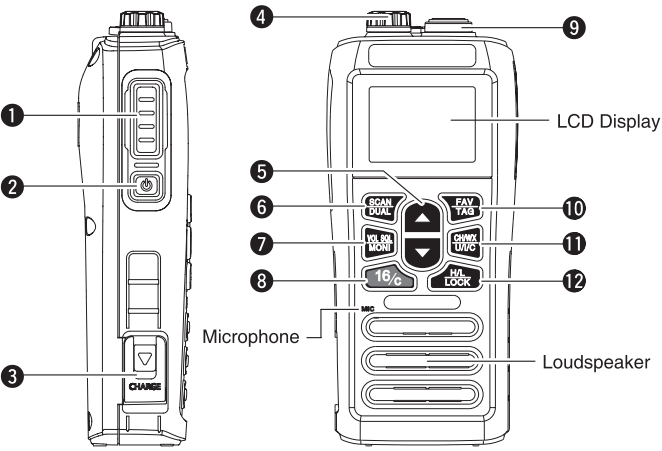
◇ Install Belt Clip

1. Attach the belt clip to radio rear cover. Ensure the screw holes are aligned.
2. Screw tightly using Phillips screwdriver.



GET AQUAINTED

■ Appearance



- 1 [PTT] Key**
 - Hold down [PTT] to transmit. Speak with normal tone.
 - Release [PTT] to receive.
- 2 Power Key**
 - Hold down this key for 1 second to power on/off the radio.
- 3 Charging Port**
 - Push down to open the charging port.
 - The USB port is for charging only. Cannot support data communications.

NOTE: Ensure the cover for the DC charging connector is affixed tightly to avoid water ingress.

- 4 Earphone Jack (SP/MIC)**
 - External earphone/microphone jack.
 - Revolve the jack counter clockwise to open. Revolve clockwise to close.
 - This jack can be connected with computer for data communication through programming cable.

NOTE: Ensure the cover for the earphone jack is affixed tightly to avoid water ingress.

- 5 [▲]/[▼]**
 - Press to select operation channel.
 - While in the set mode, press to select the items.
 - While in channel scan, press to change the scan direction.
- 6 [SCAN]/[DUAL]**
 - Press to start or stop scan mode (including normal and priority scan).
 - Hold on 1 second to enter the Dual or Tri-watch mode.
 - Push to exit the watch mode.
 - Hold this key and [HI/LO] key for 1 second to activate the Vibration Draining Function.
- 7 [VOL/SQL]/[MONI]**
 - Press to enter the volume adjustment mode. Press again to enter the squelch adjustment mode.
 - Hold for 1 second to active the Monitor Function.

- Hold this key while power off. Press [] at the same time to power on and enter the set mode.
- While in the set mode, press to select set items.
- While holding this key, press [▼] to turn on the Volume Mute Function. Repeat again to turn off this function.

- 8 [16/C]**
 - Press to select Channel 16.
 - Hold for 1 second to select Call Channel.
 - The factory default for Call Channel is Channel 9.
 - When the Call Channel is selected, hold for 3 seconds to enter the Call Channel programming mode.
 - While in the set mode, press this key to exit.

- 9 Antenna Connector**
 - Connect with 50Ω supplied antenna.

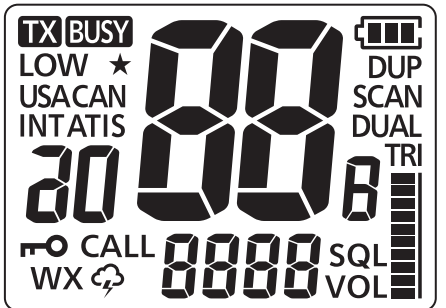
- 10 [FAV]/[TAG]**
 - Press to sequentially select the favorite (TAG) channel while ignoring untagged channel.
 - Hold for 1 second to set or clear the TAG channel.
 - Hold this key and power on to clear or set all TAG channels.

- 11 [CH/WX]/[U/I/C]**
 - Press this key to select normal channel or weather channel.
 - Hold for 1 second to select USA Channel, International Channel or Canada Channel.

- 12 [H/L]/[LOCK]**
 - Press to select high or low output power.
 - Hold for 1 second to turn Lock Function on or off.

■ Display

There are several kinds of symbols on the LCD display. Each symbol represent one meaning. Knowing these meaning helps the operation.



ICON	DESCRIPTION
TX	Appear while transmitting.
LOW	Appear while selecting low power. "LOW" flashes when forced to select low power because of battery low voltage or radio high temperature etc.
ATIS	Appear while working in ATIS Channel.
USA	Select USA Channel.

ICON	DESCRIPTION
INT	Select International Channel.
CAN	Select Canadian Channel.
	Appear while channel is busy. Flash while in Scan Channel.
★	Appear when TAG Channel is selected.
CALL	Appear when Call Channel is selected.
	Battery indicator. Indicate piecewise while charging. Flash while full charging.
SCAN	Flash while scanning.
	Appear while key locked.
DUP	Appear while a duplex channel is selected.
DUAL	Appear while dual watch.
TRI	Appear while tri-watch.

ICON	DESCRIPTION
	Indicate the operating channel number. Indicate the selected condition in set mode.
	Indicate assistant channel. Appear while setting volume. Appear while setting squelch. Appear while setting mode.
	Appear while weather alarm.
WX	Appear while weather channel is selected.

BASIC OPERATION

■ Power ON/OFF

1. Hold [] for 2 seconds to power on.
2. Hold [] again for 1 second to power off.

■ Adjust the Volume Level

The volume level can be adjusted through [VOL/SQL] and [▲]/[▼].

1. Press [VOL/SQL] and then press [▲]/[▼] to adjust the volume level.
 - The “VOL” flashes.
 - There are 31 volume levels. OF means the volume is turned off.
 - When no operation is performed within 5 seconds, the radio returns to normal mode.
2. Press [VOL/SQL] again to exit the volume adjustment mode.

■ Adjust the Squelch Level

The squelch level can be adjusted through [VOL/SQL] and [▲]/[▼]. Set the proper squelch level to have better receive signal and effectual scan.

1. Press [VOL/SQL] for twice and then press [▲]/[▼] to adjust squelch level.
 - “SQL” flashes.
 - The radio has 11 squelch levels. OP is completely open. 10 is maximum squelch.

- When no operation is performed within 5 seconds, the radio returns to the normal mode.
2. Press [VOL/SQL] again to exit squelch level adjustment mode.

■ Transmit and Receive

◇ Transmit

1. Press [H/L] to select transmit power.
 - “LOW” appears when low power is selected.
 - Select low power for short distance communication while high power for long distance communication.
 - Some channels are for low power transmit only.
2. Press and hold [PTT] to transmit. Then speak to microphone.
 - “TX” appears.
 - Channel 70 cannot be used for normal transmission.
3. Release [PTT] to receive.

NOTE:

- Transmitting without antenna will damage the radio.
- To forbid the long time continuing transmit, please turn on TOT Function through PC programming software.
- Hold the microphone 5-10cm from your mouth while talking.

◇ Receive

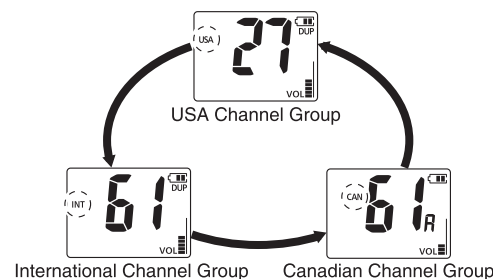
1. Enter volume adjustment mode. Press [▲] or [▼] to adjust.

2. Enter squelch adjustment mode. Press [▲] or [▼] to adjust.
 - “**BUSY**” appears and audio comes from the loudspeaker when receiving signal.
 - The radio has Power Saving Function. The power saving function activated automatically when no signal is received within 5 seconds.

■ Select Channel Group

This radio contains USA Channel, International Channel and Canadian Channel. Choose the appropriate channel groups for your operating area.

1. Press [CH/WX] to select a regular channel group.
 - Press again if the radio indicates weather channel.
2. Press and hold [CH/WX] to change the channel group. USA Channel, International Channel and Canadian Channel can be selected sequentially.
3. Press [▲] or [▼] to select channel.
 - “**DUP**” appears when a duplex channel is selected. “**A**” appears when a simplex channel is selected.

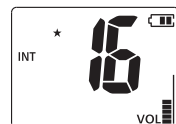


■ Select Channel

◇ Channel 16

Channel 16 is the distress and safety channel. It is used for establishing initial contact with a station and for emergency communications. Channel 16 is monitored during both dual watch and tri-watch.

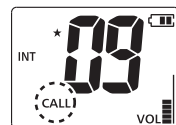
1. Press [16/C] to select Channel 16.
2. Press [CH/WX] to return to the channel used before Channel 16. Press [▲] or [▼] to select operating channel.



◇ CALL Channel

Each channel group has a Call Channel. The Call Channel is monitored during tri-watch. The factory default for Call Channel is Channel 9. It can be reprogrammed.

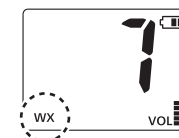
1. Press and hold [16/C] for 1.5 seconds to select the Call Channel of the current channel group. “**CALL**” and call channel number appears.
2. Press [CH/WX] to return to the operating channel used before call channel. Or press [▲] or [▼] to select other operating channel.



◇ Weather Channel

This radio has 10 weather channels. It can detect a weather alert sound automatically in the selected weather channel when receiving and scanning.

1. Press [CH/WX] to select weather channel or normal channel.
 - Appear “**WX**” when weather channel is selected.
 - Appear “**WX ALT**” when weather alert is turned on.
2. Press [▲] or [▼] to select channel.



■ Edit CALL Channel

A CALL Channel can be edited in each channel group. The factory default is Channel 9.

1. Hold [U/I/C] for 1 second to select a desired programmed channel group (USA, International or Canadian).
2. Hold [16/C] for 1 second to select CALL Channel.
 - Appear “**CALL**” and CALL Channel number.
3. Hold [16/C] for 3 seconds until a long “BEEP” sound and two “DUDU” sound are heard to enter CALL Channel programming mode.
 - Channel number starts flashing.



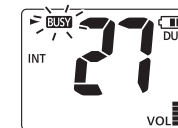
4. Press [▲] or [▼] to select desired CALL Channel.
5. Press [16/C] to confirm and save CALL Channel.
 - Press [16/C] to cancel and exit.



■ Monitor Function

The Monitor Function can open the squelch and monitor useful signals. For setting monitor key, please refer to the explanation at the back.

- Hold [MONI] for 2 seconds to activate monitor function.
- “**BUSY**” flashes and a sound is heard when monitor function is activated.



■ Volume Maximum Function

The Volume Maximum Function can temporarily maximize the volume level. This function is invalid when the volume level reaches 31.

1. Hold **[VOL/SQL]** and press **[▲]** to turn on this function.
 - The volume will be maximum.
 - The rolling indicator strip appears.
2. Hold **[VOL/SQL]** and press **[▲]** to turn off.

■ Volume Mute Function

The Volume Mute Function can be activated temporarily. This function is invalid when the volume level is OF.

1. Hold **[VOL/SQL]** and press **[▼]** to activate.
 - The volume is mute.
 - The volume indicator strap flashes.
2. Hold **[VOL/SQL]** and press **[▼]** to turn off.

■ Automatic Backlight

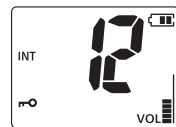
The Automatic Backlight Function is convenient for night operation. This function can be turn on/off in set mode.

- Press any key except **[PTT]** to turn on LCD and keypad backlight.
- The backlight is automatically turned off after 5 seconds without operation.

■ Key Lock

The Key Lock Function locks all keys except **[⏻]**, **[PTT]**, **[VOL/SQL]** and **[LOCK]** to avoid accidental operation of channel switch.

- Hold **[LOCK]** for 1 second to turn on/off this function.



■ Vibration Water Draining Function

The Vibration Water Draining Function helps to drain the water away from the loudspeaker housing. It can prevent water ingress to affect the loudspeaker voice quality. The radio emits a vibrating sound when this function is activated.

- Press and hold **[SCAN]** and **[H/L]** at the same time to activate.
- A deep sound emits for 10 seconds to drain water.
- Any key operation is invalid when vibration water draining is activated.

SCAN OPERATION

■ Scan Types

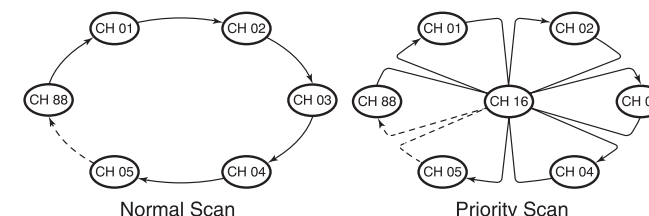
The Scan Types including normal scan and priority scan, can be selected in the set mode (Please refer to set mode operation).

The weather channel will be scanned also if the weather alert function is activated.

Set TAG channels before scanning. Cancel TAG for channels not need to be scanned.

Normal scan: Scan TAG channels. Channel 16 won't be scanned if it is not set as TAG channel.

Priority scan: Scan Channel 16 during normal scan.



■ Set TAG Channels

Set TAG (★) for channels need to be scanned. Cancel TAG (★) which is no need. The untagged channels will be skipped during the scan period.

◇ Set/Cancel Single TAG Channels

1. Press **[U/I/C]** to select channel group.

2. Press **[▲]** or **[▼]** to select the desired TAG channel.
3. Hold **[FAV/TAG]** for 1 second to set the current channel as TAG channel.
 - “★” appears on LCD.
4. Hold **[FAV/TAG]** again for 1 second to cancel the TAG channel.
 - “★” disappears on LCD.

◇ Set/Cancel All TAG Channels

1. Power off. Hold **[FAV/TAG]** and press **[⏻]** to power on. All TAG channels will be canceled in the selected channel group.
2. Repeat the above operation to set all channels as TAG channels.

■ Scan Operation

Set scan resume timer in the set mode.

1. Press **[SCAN]** to start normal scan or priority scan.
 - “SCAN” flashes on LCD.
 - “16” appears on the sub channel readout during priority scan.
 - The scan pauses when a signal is received (The resume time can be set in the set mode).
 - Channel 16 is monitored in priority scan.
 - Press **[▲]** or **[▼]** to change the scan direction.
2. Press **[SCAN]** to stop scanning. Or press **[PTT]**, **[16/C]**, **[CH/WX]** and **[U/I/C]** to stop.

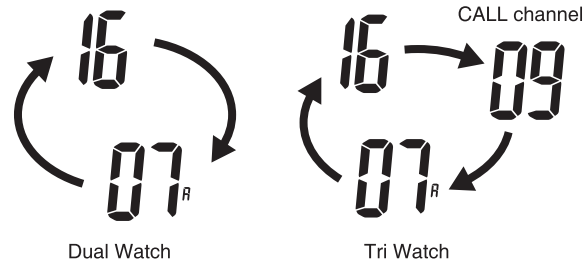
DUAL/TRI WATCH

■ Description

This radio contains DUAL/TRI WATCH, can be selected in the set mode.

Dual watch: Watch and monitor in turns between the current channel and Channel 16.

Tri watch: Watch and monitor in turns among the current channel, Channel 16 and CALL Channel.



Receive signal during watch and monitor:

• Receive signal in Channel 16

Dual/tri watch pause in Channel 16 until the signal disappeared.

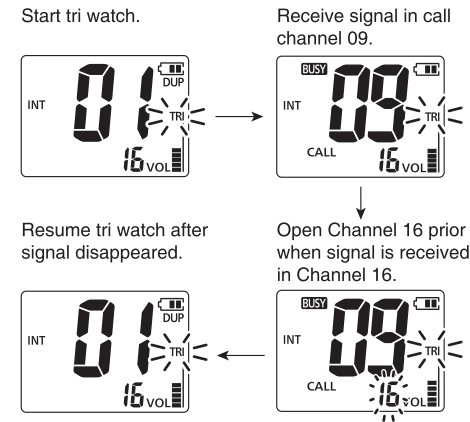
• Receive signal in CALL Channel

Tri watch switches to dual watch until the signal disappeared in CALL Channel.

■ Operation

- Hold [**SCAN/DUAL**] for 1 second to start dual/tri watch.
 - “DW” flashes during dual watch; “TW” flashes while tri watch.
 - A “BEEP” sound emits when signal is received in Channel 16.
 - Tri watch switches to dual watch when signal received in CALL Channel.
- Press [**SCAN/DUAL**] to cancel dual/tri watch.

For example: Tri watch in International Channel 01.



SET MODE

■ Set Mode Operation

The Set Mode can be used to change the settings of the radio's function. The function settings including Prompt Tone, Weather Alert, Priority Scan, Scan Resume Timer, Auto Scan, Dual/Tri Watch, Monitor Key Function, Automatic Backlight, LCD Contrast, Power Save, Float Alarm and Vibration Water Draining.

Set mode operation as below.

- Power off.
- Press and hold [**VOL/SQL**], power on to enter set mode.
- Release [**VOL/SQL**], LCD appears “bEEP”.
- Press [**VOL/SQL**] to select desired setting items.
- Press [**▲**] or [**▼**] to select desired setting parameter.
- Press [**16/C**] to exit set mode.

No.	Display	Set Items	Set Parameter Options	Default Value
1	bEEP	Prompt Tone	oF (OFF) / oN (ON)	oN (ON)
2	RLrt	Weather Alert	oF (OFF) / oN (ON)	oF (OFF)
3	Pr. o	Priority Scan	oF (OFF) / oN (ON)	oF (OFF)
4	S. t.	Scan Resume Timer	oF (OFF) / oN (ON)	oF (OFF)
5	Auto	Automatic Scan	oF (OFF) / oN (ON)	oF (OFF)
6	dt	Dual/Tri Watch	d - (Dual watch) / t - (Tri watch)	d - (Dual watch)
7	SQLS	Monitor Key Function	Pu (Push) / Ho (Hold)	Pu (Push)
8	RLbL	Automatic Backlight	oF (OFF) / oN (ON)	oN (ON)
9	LcdC	LCD Contrast	Hi / Lo	Hi
10	P_SA	Automatic Power Save	oF (OFF) / oN (ON)	On
11	AbLE	ATIS Enable	oF (OFF) / oN (ON)	oF (OFF)
12	. d	ATIS ID	10-digit ID	FFFF(Null)
13	FLAR	Float Alarm	oF (OFF) / oN (ON)	oF (OFF)
14	U. b	Vibration Water Draining	oF (OFF) / 2 / 5 / 10 (seconds)	oF (OFF)

■ Set Mode Items

◇ Prompt Tone

Turn on/off the prompt tone while operating.

◇ Weather Alert

The U.S.A NOAA broadcast station will transmit weather alert when there are significant weather information. When the weather alert function is activated, the radio will send alert. “wx☞” flashes at the same time. The current used weather channel will be scanned during the scan.

- With this function enable, “wx☞” appears when weather channel is selected.

◇ Priority Scan

The radio has 2 scan types, Normal Scan (of) and Priority Scan (on). Normal scan searches all TAG channels in the selected channel group. Priority scan scans Channel 16 during normal scan.

◇ Scan Resume Timer

The Scan Resume Timer can be turned off (of)/on (on).

- **(of):** The scan will pause until the signal disappears.
- **(on):** The scan will pause for 5 seconds and then resume.

◇ Automatic Scan

The Automatic Scan will be activated when no signal is received and no operation is performed for 30 seconds.

◇ Dual/Tri Watch

Select dual (d-)/tri (t-) watch.

◇ Monitor Key Function

Press Monitor Key, the squelch inhibit function will be turned off to monitor the operating channel. There are two options for opening key.

- **Pu (PUSH):** Press and hold [MONI], the sound emits from loudspeaker. Keep holding [MONI], the loudspeaker continuing opened. Release [MONI], the loudspeaker closed.
- **Ho (HOLD):** Press and hold [MONI] for 1 second, the sound emits from loudspeaker. The mode remains when release [MONI]. Press other key to turn off the loudspeaker.

◇ Automatic Backlight

The Automatic Backlight Function is convenient for night operation. Press any key except [PTT] to turn on LCD and keypad backlight.

- The backlight is automatically turned off after 5 seconds without operation.

◇ LCD Contrast

The LCD Contrast can be selected according to using environment. It can be set as “Hi” or “Lo”.

◇ Power Save

The Power Save Function can reduce the current drain and extend the battery using time.

When the power save function is opened, the radio will enter power save mode automatically if no signal is received or no operation is performed within 5 seconds.

◇ ATIS Transmitting Enable "ABLE"

When this function is enabled, press PTT and channel group with ATIS function will transmit with ATIS communication command.

- OFF - ATIS function is not enabled (Default Setting).
- ON - ATIS function is enabled.

◇ Viewing and editing of ATIS ID code "Ai"

When the setting mode is in this item, the current ATIS code (10 digits) is scrolled to display on screen, press the FAV key to enter (next) ATIS code editing, Press the SCAN key to enter (previous) ATIS code editing, press the up and down keys to select ATIS code until the 10 digit ATIS code editing is completed or press SQL to exit ATIS editing.

◇ Float Alarm

When the radio drops into the water, it will float automatically, make intermittent alarm sound and flash alarm which can be easily found in water.

The radio will make intermittent alarm sound when floats on water. This function stops automatically when press any key or fish out the radio after 10 seconds.

◇ Vibration Water Draining

The Vibration Water Draining Function will be automatically activated when the radio fished out from water.

This function activates automatically after float alarm sound stops. The loudspeaker emits 5 or 10 seconds deep vibrate sound to drain the water.

NOTE: This function is invalid when using external loudspeaker microphone.

■ VHF Marine Channel List

USA-USA Channel, INT-International Channel, CAN-Canadian Channel

Channel Number			Frequency (MHz)		Channel Number			Frequency (MHz)		Channel Number			Frequency (MHz)		Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive
01A	01	01	156.050	160.650	20A			157.000	157.000	66A	66A	66A* ¹	156.325	156.325	85	85	85	157.275	161.875
			156.050	156.050		21	21	157.050	161.650	67	67	67	156.375	156.375	85A			157.275	157.275
	02	02	156.100	160.700	21A		21A	157.050	157.050	68	68	68	156.425	156.425	86	86	86	157.175	161.925
	03	03	156.150	160.750			21b	RX Only	161.650	69	69	69	156.475	156.475	86A			157.325	157.325
03A			156.150	156.150		22		157.100	161.700	70	70	70	RX Only	156.525	87	87	87	157.375	161.975
	04		156.200	160.800	22A		22A	157.100	157.100	71	71	71	156.575	156.575	87A			157.375	157.375
		04A	156.200	156.200		23	23	157.150	161.750	72	72	72	156.625	156.625	88	88	88	157.425	162.025
	05		156.250	160.850	23A			157.150	157.150	73	73	73	156.675	156.675	88A			157.425	157.425
05A		05A	156.250	156.250	24	24	24	157.200	161.800	74	74	74	156.725	156.725	1019* ³			156.950	156.950
06	06	06	156.300	156.300	25	25	25	157.250	161.850	75* ¹	75* ¹	75* ¹	156.775	156.775	1020* ³			157.000	157.000
	07		156.350	160.950			25b	RX Only	161.850	76* ¹	76* ¹	76* ¹	156.825	156.825	1078* ³			156.925	156.925
07A		07A	156.350	156.350	26	26	26	157.300	161.900	77* ¹	77	77* ¹	156.875	156.875	1079* ³			156.975	156.975
08	08	08	156.400	156.400	27	27	27	157.350	161.950		78		156.925	156.525		A1* ²		161.975	161.975
09	09	09	156.450	156.450	28	28	28	157.400	162.000	78A		78A	156.925	156.925		A2* ²		162.025	162.025
10	10	10	156.500	156.500			28b	RX Only	162.000		79		156.975	161.575					
11	11	11	156.550	156.550		60	60	156.025	160.625	79A		79A	156.975	156.975	WX Channel			Frequency (MHz)	
12	12	12	156.600	156.600		61		156.075	160.675		80		157.025	161.625				Transmit	Receive
13* ¹	13	13* ¹	156.650	156.650	61A		61A	156.075	156.075	80A		80A	156.025	157.025	1			RX Only	162.550
14	14	14	156.700	156.700		62		156.125	160.725		81		157.075	161.675	2			RX Only	162.400
15* ¹	15* ¹	15* ¹	156.750	156.750			62A	156.125	156.125	81A		81A	157.075	157.075	3			RX Only	162.475
16	16	16	156.800	156.800		63		156.175	160.775		82		157.125	161.725	4			RX Only	162.425
17* ¹	17	17* ¹	156.850	156.850	63A			156.175	156.175	82A		82A	157.125	157.125	5			RX Only	162.450
	18		156.900	161.500		64	64	156.225	160.825		83	83	157.175	161.775	6			RX Only	162.500
18A		18A	156.900	156.900	64A		64A	156.225	156.225	83A		83A	157.175	157.175	7			RX Only	162.525
	19		156.950	161.550		65		156.275	160.875			83b	RX Only	161.775	8			RX Only	161.650
19A		19A	156.950	156.950	65A	65A	65A	156.275	156.275	84	84	84	157.225	161.825	9			RX Only	161.775
20	20	20* ¹	157.000	161.600		66		156.325	160.925	84A			157.225	157.225	10			RX Only	163.275

*¹ Low power only. *² For only the AUS version. *³ For only the USA version.

SPECIFICATION

General Specification	
Frequency Range	TX: 156.000~161.450MHz
	RX: 156.000~163.425MHz
Type of Emission	FM (16K0G3E)
Battery Pack	DC3.7V, 1750mAh li-ion
Frequency Stability	± 10ppm
Operating Temperature	-20°C ~ +60°C
Dimensions (H×W×D)	142mm×64mm×37mm
Weight	235g (With battery, antenna and belt clip)

Transmmiter Specification	
Ourput Power	5W/1W
Max. Frequency Deviation	±5kHz
Spurious Emission	≤0.25μW
Adjacent Channel Power	≥70dB
Audio Harmonic Distortion	≤10%
Current Drain	≤1.5A (High power)
	≤0.9A (Low power)
	≤0.35A (Max. audio output)

Receiver Specification	
Receive Sensitivity	≤0.22μV
Squelch Sensitivity	≤0.22μV
HUM and Noise	≥40dB
Adjacent Channel Selectivity	≥70dB
Spurious Response	≥70dB
Intermodulation Rejection	≥68dB
Audio Output Power	≥0.6W (10%)

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
Cannot power on.	• The battery is exhausted.	• Charge the battery pack.	• 1
Cannot transmit or transmit in high power is incapable.	• Some channels are limited to low power transmit. • The battery is exhausted • Low power transmit. • Work in Weather Channel or Channel 70.	• Switch to channels without output power limit. • Charge the battery pack. • Press [H/L] to select high power transmit. • Exit Weather Channel or Channel 70.	• 5, 6 • 1 • 5 • 6
Cannot not change channel.	• The keypad is locked.	• Hold [LOCK] for 1 second to turn off key lock function.	• 7
Cannot scan.	• No TAG channels are set.	• Set TAG channels.	• 8
Cannot communicate in the same channel.	• The channel is duplex (DUP). • Work in self-set channel group.	• Select channel. • Set the same channel frequency.	• 6 • 6
No prompt tone.	• The prompt tone is turned off.	• Turn on the prompt tone in the set mode.	• 10
No sound from loudspeaker.	• The squelch level is too high. • The volume level is too low. • Water ingress in loudspeaker.	• Set the proper squelch level. • Turn up the volume. • Drain water in loudspeaker.	• 5 • 5 • 7
Battery sign flashes and indicates “ER” and “CHG”.	• The temperature range for charging exceed 0~+45°C. • Continuing charging causes high battery heat.	• Put the radio in somewhere cool.	---
Cannot charge full.	• Power on when charging. • The inner battery service life is short.	• Power on and then charge again. • Change inner battery from the local dealer.	• 1

FCC Statement

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 1: 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, 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- This radio is designed for and classified as “Occupational/Controlled 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;NOT intended for use in anGeneral population/uncontrolled environment.
- DO NOT operate the radio without a proper antennaattached, as this may damage the radio and may alsocause you to exceed RF exposure limits. Aproper antenna is the antenna supplied with this radio bythe manufacturer or an antenna specifically authorized bythe manufacturer for use with this radio.
- DO NOT transmit for more than 50% of total radio usetime, more than 50% ofthe time can cause RF exposure compliancerequirements to be exceeded.
- This transmitter may operate with the antenna(s) documented in this filing in Push-to-Talk and body-worn configurations. RF exposure compliance is limited to the specific belt-clip and accessory configurations as documented in this filing and the separation distance between user and the device or its antenna shall be at least 2.5 cm.

IC Statement

This device complies with Industry Canada license-exempt RSS standard(s): Operation is subject to the following Two conditions: this device may not cause interference, and This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

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

The information listed above provides the user with information needed to make him or her aware of a RF exposure, and what to do to assure that this radio operates within the RSS-102 exposure limits of this radio.

Output power listed is rated conducted. This device must be restricted to work-related operations only in an Occupational/Controlled RF exposure environment and must operate with a duty factor not exceeding 50%. This transmitter may operate with the antenna(s) documented in this filing in Push-to-Talk and body-worn configurations. The device complies with RF specifications when the device used at 25 mm from your frontface and 0 mm from your body. All qualified end-users of this device must have the knowledge to control their exposure conditions and/or duration to comply with occupational/controlled Exposure limit and requirements. A label, as described in this filing, must be displayed on the device to direct users to specific training information for meeting occupational exposure requirements.

Warning! : This portable 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.