

HT5xx Marine User Guide

v08/11

Professional intrinsically safe submersible marine handheld transceivers

Intrinsically Safe



Ex ib IIA T4 Gb

Common Information
(all models)



HT542
Entry



HT544
LCD

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Certification

Declaration of Conformity

We Entel UK Limited of:

320 Centennial Avenue
Centennial Park
Elstree
Borehamwood
Hertfordshire
WD6 3TJ
United Kingdom

Declares under our sole responsibility that the product range:

HT54x Marine Handheld Radio Transceivers

Conforms to the following standards or other nominative documents:

- EN 300 086-2 V1.1.1: 2010-06, EN 301 489-1 V1.8.1:2008-04, EN 301 489-5 V1.3.1:2002-08, EN 60950-1:2006, in accordance with Directive 99/5/EC.
- EN 60079-0:2006, EN 60079-0:2009, EN 60079-11:2007 in accordance with Directive 94/9/EC

Related Certificate:

94/9/EC: IECEX SIR 10.0097X

Notified Body No. 0518

Sira Certification, Rake Lane, Chester CH4 9JN, UK

Quality Assurance Notification:

94/9/EC

Intertek

Notified Body 0359

Intertek House, Leatherhead KT22 7SB, UK

Serial Number _____

M Austin



Quality Manager

Date: 15 February 2010



Introduction

The HT54x are professional marine handheld transceivers that operate on the VHF marine band. The HT544 has 58 international marine channels and 36 dealer programmable private channels. The 58 marine channels are switchable to comply with International, USA or Canadian regulations, which can be done directly via the radio's keypad using the screen's LCD. It has an emergency channel, which can be immediately selected from any channel using the 16 button. The HT542 has 16 channels within the marine band.

The HT54x commercial grade HT Series 2.0 portables utilise the latest intelligent Lithium-Ion battery technology and includes the following features: scan, battery life indicator, VOX (voice operated transmit) and low battery indicator.

Packing List

- HT54x Transceiver
- CATXX Antenna
- CNB550E Rechargeable 1800mAh Li-Ion battery
- CCA trickle charger included with certain models
- CBH750 Spring loaded belt clip

Radio Care

Warranty

The HT54x comes with a 24 month warranty, for details see our full terms & conditions.

Advice

- Do not use options or accessories not specified by Entel
- Ensure that the radio is used within the parameters for which it was designed
- Please switch the transceiver off before connecting optional accessories

Warning

Turn the transceiver off in the following locations:

- In explosive atmospheres (flammable gas, dust including metallic & grain powders etc)
- Whilst taking on fuel or while parked near a fuel station
- Near explosives or blasting sites
- In aircraft, medical institutions or near persons known to be wearing a pacemaker

Caution

- Do not disassemble or modify the transceiver for any reason
- Do not transmit while touching the antenna terminal or any exposed metallic parts of the aerial as this may result in a burn
- Please check and observe regulations in your country with regard to use whilst driving

Cleaning your Radio

After exposure to any potentially corrosive substance including salt water it is recommended to thoroughly wash the transceiver in fresh water. If washing with the battery removed from the radio, ensure that the battery is not immersed in water & that the accessory cap is attached & clean only with a damp cloth.

Note: Do not wash the transceiver if you suspect the waterproofing seal may be damaged. Please return to your supplier for inspection / repair.



End of Life Disposal

When your Entel transceiver reaches the end of its useful life, please ensure that the unit is disposed of in an environmentally friendly way. For country specific information please see www.entel.co.uk/recycling.

Preparing Your Radio For Use

Attaching / Removing the Aerial

- 1** To attach, carefully align the aerial with the socket. Screw in the aerial clockwise (taking care not to cross the thread) until it is seated firmly with the accessory cover's rubber ring between the aerial & the top of the radio.
- 2** To remove, unscrew the aerial anti-clockwise.

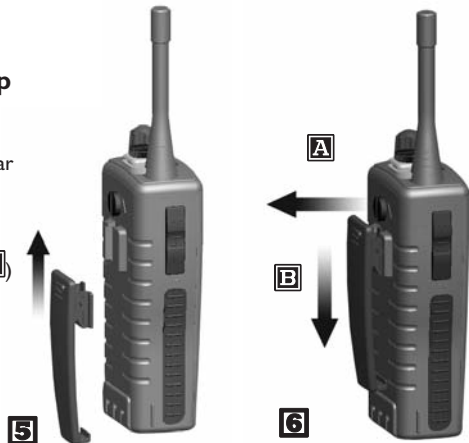


Attaching / Removing Audio Accessories

- 3** To attach, remove the accessory cover by unscrewing the locking screw anti-clockwise (leave cover secured under antenna as this provides a waterproof seal). Attach accessory plug by locating over the socket. Carefully tighten the locking screw clockwise until finger tight (do not tighten with a screwdriver etc).
- 4** To remove, unscrew accessory plug the locking screw by hand in an anti-clockwise direction (carefully use a coin or screwdriver if too tight). Ensure you re-fit the accessory waterproof cover so as to protect the accessory socket.

Attaching / Removing the Belt Clip

- 5** To attach, slot the clip onto the slot on the back of the battery and slide up until you hear a "click"
- 6** To remove, pull the tab towards the belt clip (A). Then slide the belt clip downwards (B).



Battery Care / Information

Introduction

Your Entel radio is supplied with a high performance Lithium-Ion (Li-Ion) battery. These batteries:

- Extend talk time
- Reduce the battery's size and weight
- Do not suffer from 'memory effect' that reduces the life of Ni-Cad and NiMH batteries
- Have a low toxicity, therefore reducing the impact on the environment

Battery Pack

- If a battery is not to be used for an extended period of time (e.g. several months) remove the battery pack from the equipment and store in a cool and dry location (around 0°C) part charged.

Do not fully discharge the battery before storage

- Each charge cycle reduces the battery's life. Minimise the number of times you charge your battery especially in hotter environments which further shortens a battery's life

Battery Pack Precautions

- Switch the transceiver OFF before charging
- Charge the battery pack before use
- Do not recharge the battery pack if it is already fully charged.
- Charge the battery in accordance with the instructions enclosed with your charger
- Do not charge the transceiver and /or battery pack if they are wet.

The battery pack includes potentially hazardous components. Please:

- Do Not disassemble or reconstruct battery
- Do Not short-circuit the battery
- Do Not incinerate or apply heat to the battery

- Do Not immerse the battery in water unless attached securely to the radio or get it wet by other means
- Use only the specified charger and observe charging requirements
- Do Not pierce the battery with any object or strike it with an instrument
- Do Not use the battery pack if it is damaged in any way
- Do Not reverse-charge or reverse connect the battery
- Do Not touch a ruptured or leaking battery.

If liquids from the battery get into your eyes, immediately:

- Wash your eyes out with fresh water & avoiding rubbing them.
- Seek medical treatment.

Attaching / Removing the Battery Pack

1 To attach, locate the pegs on the bottom of the battery into the slots on the radio and press the top of the battery against the radio. Secure battery by tightening the screw clockwise by hand. (Do not over tighten)

2 To remove, unscrew the locking screw anticlockwise & pull the battery away from the top of the radio.



Battery Care / Information

Battery Charging

1. Connect the AC adapter to the charger pod. The LED status light will illuminate green indicating ready for charge
2. Turn the transceiver off
3. Insert the battery pack into the charger pod, either with or without the transceiver attached. The LED status light changes from green to RED & trickle charge begins
4. A fully discharged battery pack will take approximately 6 hours to charge, depending on the remaining power condition. When charge is complete, the LED status light turns green.

Overcharging:

The battery pack has an over-current protection circuit fitted. When charging a completely discharged battery i.e. first charge, ensure the battery is removed from the radio and then re-attached (if fitted to radio when charging). This will reset the protection circuitry and ensure normal operation.

This process will need to be repeated if the battery is allowed to completely discharge in the future. In normal use this is unlikely.

Battery Indicator

For your safety and convenience your transceiver continually monitors the battery pack and gives an indication on the LCD:



- 3 Segments: 12 hours
- 2 Segments: 1 hour
- 1 Segment: 20 mins

Note: Only genuine Entel batteries should be used. Customer satisfaction is assured as you can not be supplied with sub standard, potentially dangerous battery packs from 3rd party manufacturers, ensuring it delivers the expected capacity and endurance.

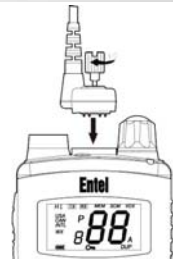
On HT series batteries a breathable membrane is used. This is clearly marked on the battery label. Piercing the membrane will allow water ingress to the battery, & will invalidate the warranty.

Optional Accessories

Attaching & Removing Accessories

To attach an accessory: Remove the accessory cover by unscrewing the locking screw anti-clockwise (leave cover attached or store in a safe place). Attach accessory plug to the socket. Carefully tighten the locking screw clockwise until finger tight (do not tighten with a screwdriver etc).

To remove an accessory: Unscrew the locking screw of the accessory by hand in an anti-clockwise direction (carefully use a coin or screwdriver if too tight). Ensure you re-fit the accessory cover so as to protect the socket.



Optional Accessories

Battery & Charger Options

CNB550E	Spare intrinsically safe approved 1800mAh Lithium-Ion battery pack with rear clip
CSAHT	1-way intelligent rapid charger, 100-240v
CSBHT	6-way intelligent, rapid charger, 100-240v
CCAHT-230	1-way trickle charger with 230V mains adapter
CCAHT-110	1-way trickle charger with 110V mains adapter
CCAHT-12	1-way trickle charger with cigar lighter lead, 12V DC operation

Carry Options

CLC952	Heavy duty black leather case with strap & belt loop
CLC953	Heavy duty black leather case with strap & belt loop
CLC956	Heavy duty black leather case with strap & belt loop
CBH750	Spare spring loaded belt clip

Audio Accessory Options

CMP500	Heavy duty submersible speaker microphone
EHP9	D-shaped earpiece (plugs into CMP500 above)
EA12/950	D-shaped earpiece with in-line PTT/microphone & VOX*
EA15/950	Earpiece microphone with transparent acoustic tube & VOX*
EA19/950	D-shaped earpiece with boom microphone and in-line PTT & VOX*
EHP950	D-Shaped earpiece (connects directly to radio)
EPT40/950	Bone conductive earpiece microphone with PTT and VOX*
CHP950HS	Single earpiece heavy duty ear defender headset with boom mic for hard hat & VOX*
CHP950HD	Double earpiece defender headset with boom mic & in line PTT for hard hat & VOX*
CHP950D	Double earpiece headband defender headset with boom mic and in line PTT & VOX*
CHP950BT	Bluetooth double earpiece headband defender headset with boom mic & ear cup PTT *VOX = Voice Operated Transmit (hands free operation)

Bluetooth option board in radio is required to use Bluetooth audio accessories.

Antenna Options

CXW640	Antenna adapter for external aerial	CAT10S-78	78MHz compressed antenna
CAT20	Helical antenna VHF	CAT10S-85	85MHz compressed antenna
CAT80	Whip antenna UHF	CAT10S	66-88MHz uncut compressed antenna
CAT20S	Stubby antenna VHF	CAT700-40	30-50MHz antenna
CAT80S	Stubby antenna UHF		

For complete up to date list of optional accessories visit www.entel.co.uk

Note: The use of non Entel approved accessories will invalidate your intrinsically safe approval. Refer to certificate Sira 10 for permitted accessories.

HT542

Standard Features:

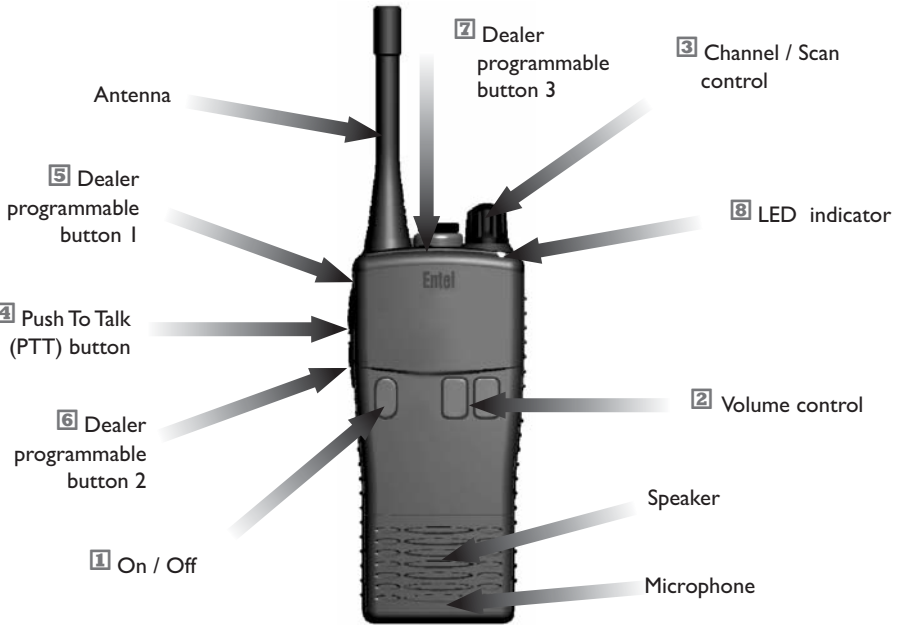
- 16 programmable channels
- Top mounted monitor button
- CTCSS & DCS (analogue & digital squelch) with squelch tail elimination (removes the 'shh' noise)
- Exceptionally loud and clear audio
- Robust design, exceeds MIL-STD-810C/D/E/F
- Environmentally protected to IP68 i.e. submersible to 5 metres for up to 60 minutes
- 1800mAH Lithium-Ion battery for superior operational time
- Full band switching allows access to all channels in each band
- Battery charge count
- Radio cloning mode
- Low battery alert indicates when the battery needs recharging

Dealer programmable features:

- VOX for hands free operation
- High / Low transmit power
- Normal & priority scan (programmable per channel position)
- Panic (personal attack) button causes high pitch, high volume, siren tone to be emitted from the radio's speaker
- Key lock button
- Prefixed minimum volume level and fixed beep level
- Talkaround (allows communication away from a base station)
- Transmit time out-timer (ensures channels are not blocked)
- Voice scrambler with 1 code per channel (option)
- Automatic power save to further increase operational time
- User adjustable squelch level



Controls & Indicators



- 1 On / Off button. Press to turn radio on, press and hold to turn off.
- 2 Press up / down buttons to increase / reduce volume.
- 3 Channel / Scan control. Rotate to select the desired channel or scan setting.
- 4 Push To Talk (PTT) button. Press to speak and release to listen.
- 5 Dealer programmable button 1 (ask your dealer for more information).
- 6 Dealer programmable button 2 (ask your dealer for more information).
- 7 Dealer programmable button 3 (ask your dealer for more information).
- 8 LED indicator:
 - RED steady = Transmitting
 - RED flashing slowly = Battery needs re-charging
 - GREEN steady = Receiving
 - YELLOW steady = Non valid signal detected
 - YELLOW flashing rapidly = Scanning

HT544

Standard Features:

- Environmentally protected to IP68 i.e. submersible to 5 metres for up to 60 minutes.
- Robust design, exceeds MIL-STD-810C/D/E/F.
- LCD screen to display channel number & current settings \ status.
- 1800mAH Lithium-Ion battery for superior operational time.
- INT, USA, CAN channels.
- Full transmit power output 5 Watts.
- Exceptionally loud & clear audio .
- Ch 16 \ 9 shortcut button.
- WX shortcut button.
- Scan button.
- Monitor button.
- MEM button.
- Automatic power save to further increase operational time.
- Low battery alert indicates when the battery needs charging or replacing.
- Battery charge count to indicate when a battery needs replacing.

Dealer Programmable Features:

- Key lock button
- Prefixed minimum volume level and fixed bleep level
- VOX (Voice Operated Transmit) Function.



Using Your HT544

Turning The Radio On & Off

Turn the ON/OFF control on the top of the radio clockwise until the LCD illuminates & a short beep is emitted. To turn the radio off turn the ON/OFF control anti-clock wise until the LCD deluminates.

Using Your radio

Before using your radio you may need to adjust the volume on the radio to take in to account background noise. Adjust the volume using the rotary control on the top of the radio.

Reception

1. Turn the transceiver on by rotating the volume control in a clockwise direction. A power on tone is generated after 1 second to indicate the transceiver has passed its self-diagnostic test. During standby the LED indicator will pulse amber every 3 seconds, to further verify its circuitry is functioning correctly. Select the desired audio level by further rotating the control clockwise. After power-on, the transceiver will always default to the last channel selected.
2. Turn the squelch control fully counter clockwise, then rotate clockwise until the white noise stops. This condition is known as the "squelch threshold". If the control is turned clockwise past this point, weak signals may not be received. No noise or signal is heard until a signal is received that exceeds the squelch threshold.
3. Select the desired channel using the [UP/DOWN] buttons. A full listing of channels can be found on page 17-18. Sometimes, a slight adjustment of the squelch threshold is needed as some channels have a higher noise level than others.
4. When receiving a signal the LED indicator illuminates green. An "RX" is also displayed on the LCD.

Transmitting

1. Perform steps 1 through 3 of RECEPTION.
2. Before transmitting, monitor the channel and make sure it is clear.
3. For communications over short distances, press the [H/L] key and select low power (1 watt). Transmitting on 1 watt prolongs battery life, and should be selected whenever possible.
4. When receiving a signal, wait until the signal stops before transmitting. The transceiver cannot transmit and receive simultaneously.
5. Press the [PTT] (Push-To-Talk) button to begin your transmission. To confirm transmission in progress the LCD indicator illuminates TX and the LED illuminates RED.
6. Hold the transceiver 1 inch from your mouth and speak slowly and clearly into the microphone.
7. When the transmission is finished release the [PTT] button.

Channels

INT, USA & Canadian Modes

In compliance with worldwide license regulations the following versions of HT544 are available:



Version A: INT, USA & Canadian modes

Version B, C & D: INT mode only

1. In the case of version A only; to change the channel set of the transceiver, hold down the [WX] key. The mode changes from USA to Canadian to International.
2. Refer to the marine channel charts in this booklet for allocated channels in each mode.

NOAA Weather Channels

(Applicable to version A model only)

1. To receive a weather channel, press the [WX] key. The transceiver enters into weather channel mode.
2. There are 10 weather channels. Use the  &  buttons to select the desired channel.
3. To exit from the weather channels press the [WX] key. The transceiver recalls the previous working channel.

Emergency Channels

To select the emergency channel, press the [16/9] button from any channel. Channel 16 appears on the display.

To recall the previous channel used, press the [16/9] button once again.

Channel 9



Channel 9 is used as a hailing channel for initial, non-emergency contact with other vessels. Hold down the [16/9] key for 1 second to select channel 9.

To recall the previous channel used, press the [16/9] button twice.

Monitor Channels

Press the blue monitor button on the top of the radio to defeat the squelch mute and release button to mute radio. A long press (radio will beep) will hold the squelch mute open until pressed again to cancel again to return to squelch mute.

Adjusting Squelch Threshold

Press the blue monitor button on the top of the radio and switch radio on. Use  &  buttons to adjust threshold (between 01 - 16, 01 is more sensitive & 16 is less sensitive). Press MEM to store the setting.

Channels

SIMPLEX / DUPLEX CHANNEL USE

Your transceiver has been factory programmed in accordance with FCC (USA), Industry Canada and International regulations. The mode of operation cannot be altered from simplex to duplex or vice versa. Simplex or duplex mode is automatically activated, depending on the channel and the channel set and whether USA, Canadian, or International mode is selected.

Refer to the channel charts listed on pages 17-18 of this user manual.

If you have a licence to use a specific simplex or semi-duplex channel, contact your dealer who may be able to programme your channel using the transceiver's private channel memory.

CHANNEL A/B INSTANT ACCESS

For your convenience, two user assigned channels can be programmed for instant access. If the [A/B] key is pressed and no channel A or B has been assigned, a short beep will be heard.

PROGRAMMING A/B INSTANT ACCESS BUTTONS

1. Hold down the [A/B] key and turn on the transceiver.
2. The letter A will appear on the display and dashes " _ _ " indicate that no channel has been designated channel A.
3. Press the [UP/DOWN] button until the desired channel number is displayed.
4. With the desired channel number displayed, press the [MEM] key once. The "A" will stop flashing, indicating that the displayed channel is now designated channel A.
5. Press the A / B button again. The letter "b" will appear on the display.
Repeat steps 2 through to 4.
6. Switch transceiver off and on to exit this mode and save changes. If you wish to clear instant access channels follow step 1 then press the [MEM] key. The "A" will flash. Now switch the transceiver off and on again.

Note: Should you later wish to delete any stored channels simply press "MEM" key whilst in A/B programming mode.



OPERATION OF A/B INSTANT ACCESS BUTTONS

Pressing the [A/B] button will toggle between A, B and the previous selected working channel. Channel A is represented by the "A" to the left of the channel number on the LCD, & channel B is represented by "B".

Note: Do not confuse this "A" with the one that is sometimes displayed to the right hand side of the channel number (in USA and Canadian modes)

Functions

The Scan Function

1. Select the desired channel to be scanned using the  &  buttons.
2. Press the [MEM] button to store the channel in the transceiver's memory. [MEM] is displayed on the LCD. This channel is now memorised to be scanned.
3. To add further channels, repeat steps 1 & 2.
4. To delete a channel from the transceiver's scan list, press the [MEM] button on a channel that displays the [MEM] icon until the icon disappears.
5. All channels programmed remain in the transceiver's scan memory, even if the power is switched off.
6. Adjust the squelch control until the white noise is eliminated.
7. To start scanning, press the [SCAN] key. The scan proceeds from the lowest to the highest programmed channel number & stops on channels when a transmission is received.
8. To stop the scan at any time, press the [SCAN] key again.



VOX (Voice Operated Transmit)

Press the [MEM] button & switch the transceiver on. The VOX symbol & a "0" will flash. "0" indicates VOX is switched off, 1 is for low sensitivity, 5 is for normal sensitivity, and 9 is for high sensitivity. Use the [UP/DOWN] button to select the desired level, press [MEM] to confirm, the transceiver is now set to VOX. To switch VOX off, go back into VOX programming mode by holding the [MEM] key whilst switching on. Press the UP/DOWN button until the vox level is "off" and press [MEM] to confirm.

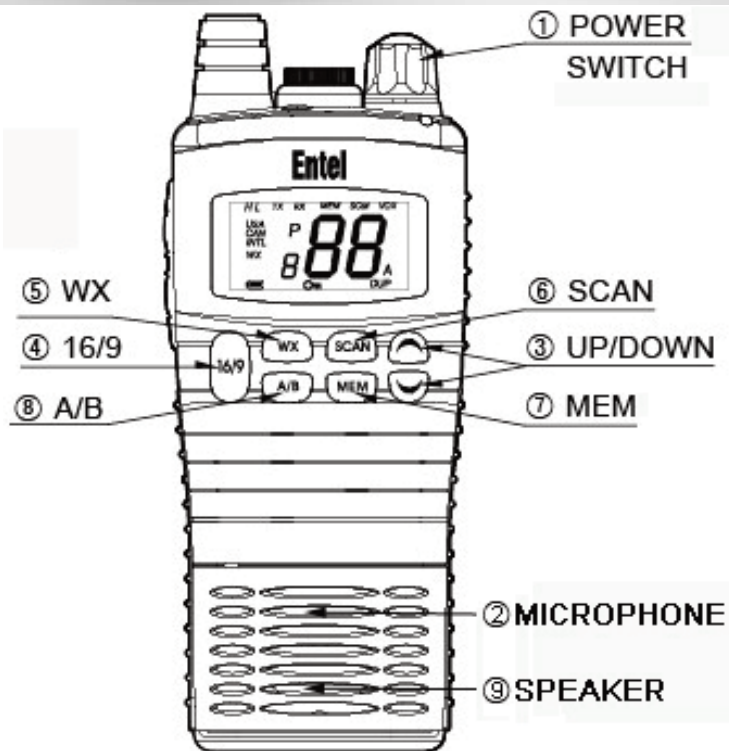
In VOX mode the transceiver will react to your voice, and transmit automatically without you having to press the PTT button. There is always a slight delay for the electronic switching & consideration will need to be given. To get optimum performance from the VOX feature you should use a noise cancelling headset or earpiece microphone (see accessory options).

LCD Indicators



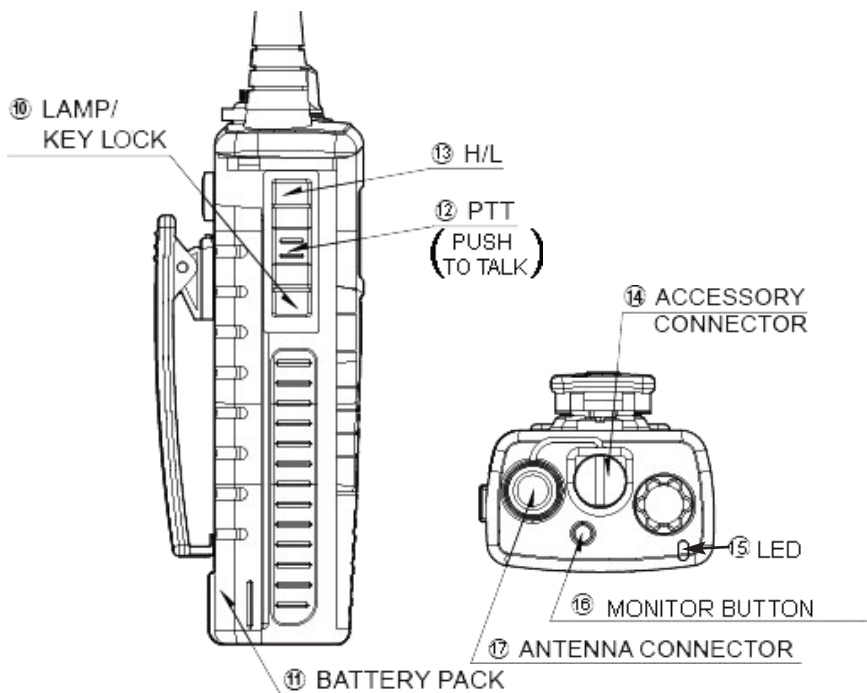
Indicator	Description
<i>H</i>	High power selected (5 Watts)
<i>L</i>	Low power (1 Watt).
TX	The Radio is Transmitting.
RX	The Radio is Receiving.
MEM	Indicated channel is memorised for scanning.
SCM	Scrambler mode enabled (version A & B only).
VOX	Voice operated transmit mode enabled.
USA	Indicates the channel set for USA.
CAN	Indicates the channel set for Canadian.
INTL	Indicates the channel set for International.
WX	NOAA weather channels selected (USA & Canadian waters only).
A	A ship-to-ship channel (in USA or Canadian mode).
	Battery life indicator.
	Indicates keypad is locked, excluding the PTT, H/L & LAMP buttons.
P	Private channel number selected.
DUP	Duplex channel selected (not simplex).

Controls



- 1 Power & Volume Control:** Powers the radio on and off and controls the volume.
- 2 The Microphone:** Internal condenser microphone
- 3 Up / Down Buttons:** Press up / down buttons to change channel.
- 4 16/9 Button:** A momentary press of the button selects channel 16 and a longer press select channel 9.
- 5 WX Button:** Immediately recalls the weather channels.
- 6 Scan Button:** Starts / Stops scanning the memorised channels.
- 7 The MEM Button:** Memorises a desired channel for scanning.
- 8 The A/B Button:** Provides Instant access to preassigned channels (if programmed)
- 9 Speaker:** The Radio's Speaker.

Controls



- 10 Lamp / Key lock Button:** Momentarily pressing this button illuminates the LCD display. Holding this button for over 1 second activates the key lock. To deactivate the key lock press & hold the button again until the lock removes.
- 11 The Radio's Battery Pack:** Rechargeable lithium-ion battery pack.
- 12 PTT (Push To Talk Switch):** Hold down to transmit, release to receive.
- 13 H/L Button:** Press and hold this button for 1 second to toggle between high and low power (1 & 5 Watts).
- 14 The Accessory Connector:** Used to attach any HT544 approved accessory.
- 15 LED Indicator:** Indicates the status of the radio:
 - RED Steady = Transmitting
 - RED Flashing slowly = Battery needs re-charging
 - GREEN Steady = Receiving
- 16 Monitor Button:** Press to monitor the channel without the squelch mute.
- 17 Antenna Connector:** Use to attach the antenna of the radio.

Troubleshooting

SYMPTOM	PROBABLE CAUSE	REMEDY
Transceiver not switching on	Battery needs charging or battery is exhausted	Charge the battery pack replace the battery pack
The scan key does not start the scan	No channels memorised (MEM) Squelch is not adjusted	Use the MEM key to enter desired channels into scan memory. Adjust the squelch to threshold or to the point where the white noise just disappears.
Cannot change any function	Key lock is switched on	Turn key lock off
The LED on the charger does not illuminate when charging	Defective battery or charger. Dirty terminal contact on battery or charger	Contact your dealer Clean contacts with dry clean cloth
No transmit or cannot select high power	Some channels are low power only Battery pack exhausted	Change to high power channel Charge / replace the battery
Transceiver transmits without pressing PTT button Buttons seem to work intermittently	VOX has been enabled	Hold MEM button for 2 secs, use UP or DOWN button & select "off" to turn VOX off

Channel Chart

CH	Channel Set			S/D	Frequency		Channel Use
	USA	CAN	INT		Receive	Transmit	
1A	X			S	156.05000		PORT OPERATION AND COMMERCIAL
1		X	X	D	160.65000	156.05000	PUBLIC, PORT OPERATIONS
2		X	X	D	160.70000	156.10000	PUBLIC, PORT OPERATIONS
3A	X			S	156.15000		US GOVERNMENT, COAST GUARD
3		X	X	D	160.75000	156.15000	PUBLIC, PORT OPERATIONS
4A		X		S	156.20000		COMMERCIAL FISHING
4			X	D	160.80000	156.20000	PUBLIC, PORT OPERATIONS
5A	X	X		S	156.25000		PORT OPERATIONS, VTS IN SEATTLE
5			X	D	160.85000	156.25000	PUBLIC, PORT OPERATIONS
6	X	X	X	S	156.30000		INTER-SHIP SAFETY
7A	X	X		S	156.35000		COMMERCIAL
7			X	D	160.95000	156.35000	PUBLIC, PORT OPERATIONS
8	X	X	X	S	156.40000		COMMERCIAL (INTER-SHIP ONLY)
9	X	X	X	S	156.45000		BOATER CALLING CHANNEL
10	X	X	X	S	156.50000		COMMERCIAL / INTERSHIP
11	X	X	X	S	156.55000		COMMERCIAL / PORT OPERATIONS
12	X	X	X	S	156.60000		PORT OPERATION
13	X	X		S	156.65000		INTER-SHIP NAVIGATION SAFETY
13			X	S	156.65000		INTER-SHIP NAVIGATION SAFETY
14	X	X	X	S	156.70000		PORT OPERATION
15	X			R	156.75000	-	SHIP MOVEMENT
15		X	X	S	156.75000		SHIP MOVEMENT \ INTERSHIP
16	X	X	X	S	156.80000		INTERNATIONAL DISTRESS
17	X	X	X	S	156.85000		STATE CONTROLLED \ INTERSHIP
18A	X	X		S	156.90000		COMMERCIAL
18			X	D	161.50000	156.90000	PORT OPERATION, SHIP MOVEMENT
19A	X	X		S	156.95000		COAST GUARD
19			X	D	161.55000	156.95000	PORT OPERATION, SHIP MOVEMENT
20A	X			S	157.00000		PORT OPERATION
20	X		X	D	161.60000	157.00000	PORT OPERATION AND SHIPMENT
20		X		D	161.60000	157.00000	PORT OPERATION AND SHIPMENT
21A	X	X		S	157.05000		U.S. GOV, CANADIAN COST GUARD
21			X	D	161.65000	157.05000	PORT OPERATION, SHIP MOVEMENT

Channel Chart

CH	Channel Set				Frequency		Channel Use
	USA	CAN	INT	S/D	Receive	Transmit	
22A	X	X		S	157.10000		
22			X	D	161.70000	157.10000	PORT OPERATION, SHIP MOVEMENT
23A	X			S	157.15000		U.S. GOVERNMENT ONLY
23		X	X	D	161.75000	157.15000	PUBLIC CORRESPONDENCE
24	X	X	X	D	161.80000	157.20000	PUBLIC CORRESPONDENCE
25	X	X	X	D	161.85000	157.25000	PUBLIC CORRESPONDENCE
26	X	X	X	D	161.90000	157.30000	PUBLIC CORRESPONDENCE
27	X	X	X	D	161.95000	157.35000	PUBLIC CORRESPONDENCE
28	X	X	X	D	162.00000	157.40000	PUBLIC CORRESPONDENCE
37			X	S	157.85000		MARINA CHANNEL
60		X	X	D	160.62500	156.02500	PUBLIC \ PORT OPERATIONS
61A	X	X		S	156.07500		-
61			X	D	160.67500	156.07500	PUBLIC \ PORT OPERATIONS
62A		X		S	156.12500		-
62			X	D	160.72500	156.12500	PUBLIC \ PORT OPERATIONS
63A	X			S	156.17500		PORT OPERATIONS
63			X	D	160.77500	156.17500	PUBLIC \ PORT OPERATIONS
64A	X	X		S	156.22500		
64		X	X	D	160.82500	156.22500	PUBLIC \ PORT OPERATIONS
65A	X	X		S	156.27500		PORT OPERATIONS
65			X	D	160.87500	156.27500	PUBLIC \ PORT OPERATIONS
66A	X			S	156.32500		PORT OPERATIONS
66A		X		S	156.32500		PORT OPERATIONS
66			X	D	160.92500	156.32500	PUBLIC \ PORT OPERATIONS
67		X	X	S	156.37500		INTERSHIP
67	X			S	156.37500		
68	X	X	X	S	156.42500		NON-COMMERCIAL
69	X	X	X	S	156.47500		INTERSHIP
70	X	X	X	R	156.25000	-	DIGITAL SELECTIVE CALLING
71	X	X	X	S	156.57500		PORT OPERATIONS
72	X	X	X	S	156.62500		NON-COMMERCIAL \ INTERSHIP
73	X	X	X	S	156.67500		INTERSHIP

Channel Chart

CH	Channel Set			S/D	Frequency		Channel Use
	USA	CAN	INT		Receive	Transmit	
74	X	X	X	S	156.72500		PORT OPERATIONS
75	X		X	S	156.77500		PORT \ GUARD CHANNELS
76	X		X	S	156.82500		PORT \ GUARD CHANNELS
77	X	X		S	156.87500		PORT OPERATIONS
77			X	S	156.87500		PORT OPERATIONS \ INTERSHIP
78A	X	X		S	156.92500		NON-COMMERCIAL
78			X	D	161.52500	156.92500	PUBLIC \ PORT OPERATIONS
79A	X	X		S	156.97500		COMMERCIAL
79			X	D	161.57500	156.97500	PORT OPERATION, SHIP MOVEMENT
80A	X	X		S	157.02500		COMMERCIAL
80			X	D	161.62500	157.02500	PORT \ SHIP MOVEMENT
81A	X	X		S	157.07500		
81			X	D	161.67500	157.07500	PORT OPERATION
82A	X	X		S	157.12500		
82			X	D	161.72500	157.12500	PUBLIC \ PORT OPERATIONS
83A	X	X		S	157.17500		
83		X	X	D	161.77500	157.17500	PUBLIC CORRESPONDENCE
84A	X			S	157.22500		PUBLIC CORRESPONDENCE
84	X	X	X	D	161.82500	157.22500	PUBLIC \ PORT OPERATIONS
85A	X			S	157.27500		PUBLIC CORRESPONDENCE
85	X	X	X	D	161.87500	157.27500	PUBLIC CORRESPONDENCE
86A	X			S	157.32500		PUBLIC CORRESPONDENCE
86	X	X	X	D	161.92500	157.32500	PUBLIC CORRESPONDENCE
87A	X			S	157.37500		PUBLIC CORRESPONDENCE
87	X	X		D	161.97500	157.37500	PUBLIC CORRESPONDENCE
87			X	S	157.37500		PUBLIC CORRESPONDENCE
88A	X			S	157.42500		COMMERCIAL
88	X	X		D	162.02500	157.42500	PUBLIC CORRESPONDENCE
88			X	S	157.42500		PUBLIC CORRESPONDENCE

Key:

- S = Simplex.
- D = Duplex.
- R = Receive Only.

Technical Specifications

GENERAL

Frequency Range	156 - 163.275MHz
Channel Spacing	25 kHz
Communication Method	Simplex
Antenna	High Efficiency Helical
Antenna Impedance	50 ohm
Power Supply Voltage	7.4V DC
Battery Life	8 Hours
Current Drain (nominal)	Standby 40mA; RX: 390 mA; 1.0 W audio output (1kHz) TX: Less than 1 A at 2W, 0.7 A at 1W.
Duty Cycle	TX: 10%, RX 10%, Standby: 80%
Microphone	Internal condenser microphone
Operating Temperature	-20°C to 60°C
Size	Height = 130mm (145mm including knobs);
	Width = 59.5mm (62mm including protrusions);
	Diameter = 37mm (41mm including battery protrusions);
Weight	Less than 300g.

Technical Specifications

TRANSMITTER

Frequency Range	156.025 - 157.425
Power Output	Selectable: HIGH = 4W, LOW = 1W
Modulation	16K0G3E
Oscillator Method	PLL
Frequency Stability	±2PPM
Maximum Deviation	±5 kHz
Audio Distortion	< 5% (1 kHz 60%)
Spurious Emissiong	-55db
Hum & Noise	-40 [dB]

RECEIVER

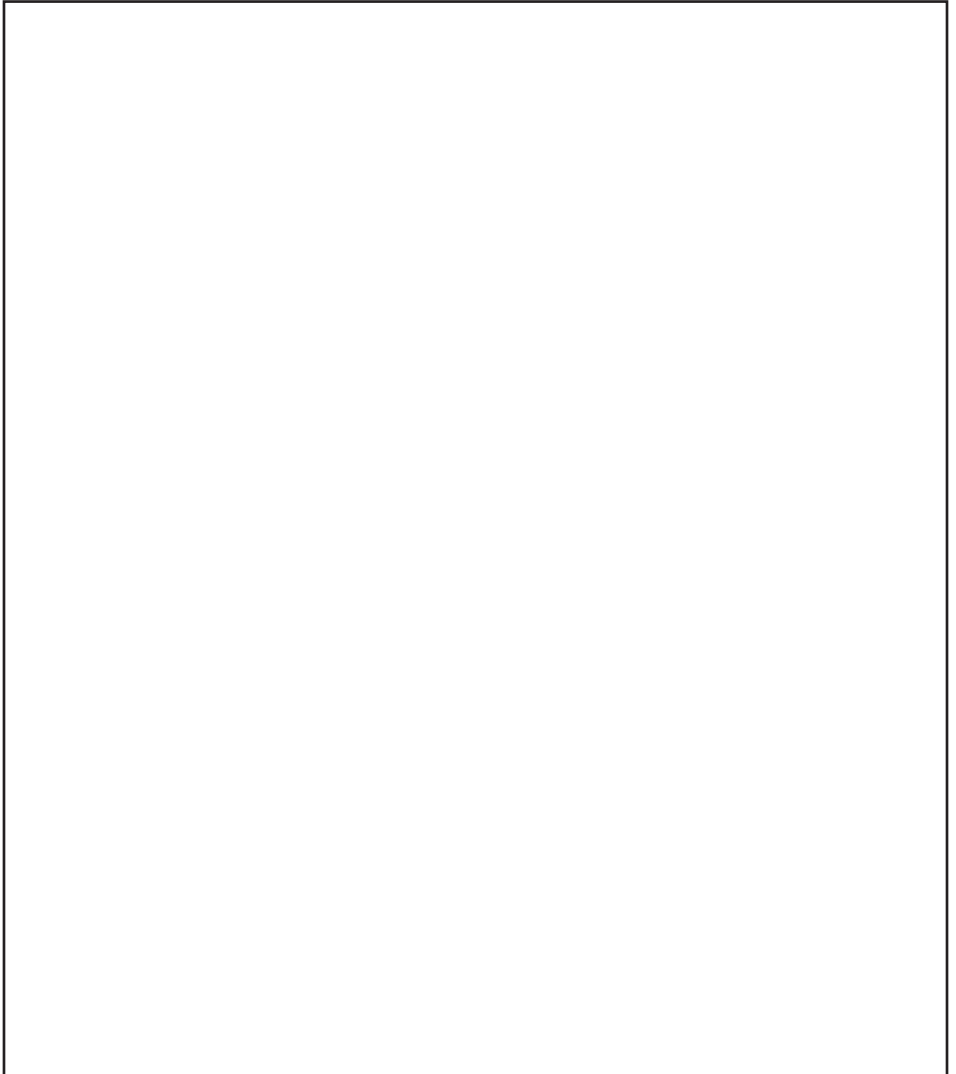
Frequency Range	156 - 163.275MHz
Receiver Type	Double Super Heterodyne type
Sensitivity	<0.25uV (12dB SINAD)
Frequency Stability	±2PPM
Spurious Rejection	-60 dB
Adjacent Channel Selectivity	-70 dB
Distortion	< 3% Typical
Hum & Noise	-40 dB
Audio Output	1W
Speaker Size	38 mm

Glossary of Terms

Term	Description
Canadian Channels	Channels designated as defined and regulated by Industry Canada, (RIC), Marine Communications & Traffic Services.
Duplex	Transmit and receive on different frequencies.
Encryption	Scrambled audio for extra privacy.
FM	Frequency Modulation.
International Channels	Channel designations as defined for use in international waters by the International Telecommunications Union (ITU).
Marine Channels	Special channels reserved for marinas located in selected European countries. These channels are pre-programmed in the transceiver as P1 & P2.
Private Channels	Channels which are assigned by regulatory agencies governing VHF radio use for a specific region or country. These channels are prefixed with a "P" and can only be programmed into the transceiver by authorised dealers.
PTT	Press To Talk (Transmit)
RX	Receive
Simplex	Transmit and receive on the same frequency.
Squelch	To suppress background noise
TX	Transmit
Transceiver	A device that can transmit and receive
USA Channels	Channel designations as defined by the Federal Communications Commission (FCCVOX)
VOX	Voice Operated Transmit
VHF	Very High Frequency (30MHz to 300 MHz)

Notes

Use this page to record important information, such as the serial number of your radio and any private channels programmed by your dealer etc.



Notes

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Certification

Certification



Ex ib IIA T4

SAFETY NOTES

- HT54x radios must always be used within the terms of their certification.
- Keep the radios away from aggressive substances. If used in a hostile environment, extra protection may be needed.
- To prevent ignition of hazardous atmospheres, batteries must only be charged in an area known to be non-hazardous.
- Use of battery chargers other than the Entel charger supplied will invalidate the explosion protection certification.
- No unauthorised repairs are permitted.
- Radios fitted with a CNB550E battery pack must not be used outside of the ambient temperature range $T_{amb} = -20^{\circ}\text{C}$ to $+28^{\circ}\text{C}$
- Radios fitted with a CNB550E battery pack must not be used outside of the ambient temperature range indicated on the battery pack label.

'the
professional's
choice'

<Intended Country Of Use>

- | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <input type="checkbox"/> AT | <input type="checkbox"/> FR | <input type="checkbox"/> LT | <input type="checkbox"/> SK |
| <input type="checkbox"/> BE | <input type="checkbox"/> DE | <input type="checkbox"/> LU | <input type="checkbox"/> SI |
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| <input type="checkbox"/> CY | <input type="checkbox"/> HU | <input type="checkbox"/> NL | <input type="checkbox"/> SE |
| <input type="checkbox"/> CZ | <input type="checkbox"/> IS | <input type="checkbox"/> NO | <input type="checkbox"/> CH |
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CE 0891 !

Registered Community Design Application 000810890

U.S. Design Patent Pending No. 23/182,829

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