SIMRAD
A KONGSBERG Company

ALWAYS AT THE FOREFRONT OF TECHNOLOGY

M A N U A L

Simrad HT50/HT51
Axis 50 GMDSS
Handheld VHF Radio

For service and advice please contact the main Simrad dealer in your country of residence.

CONTENTS

1 General

1.1 Introduction

The Simrad waterproof handheld VHF comprises three models -

The **HT50** VHF radio is designed for leisure and light commercial use and meets or exceeds stringent International Regulations EN301-178.

The **HT51** model has all the features of the HT50 but also includes an accessory socket for use with fitmikes, headsets and other third party accessories.

The **Axis 50** model for GMDSS convention vessels conforms to Pan European specification ETS300-225 for the use of radios for Safety at Sea.

All models are waterproof to IP67 standard.

Please note that regulations vary from country to country. Simrad sets are also approved specifically by the countries in which they are sold. Consequently, there may be differences in the programming of sets bought in different countries, and therefore in their associated manuals. If using outside the country of purchase, it is vital to check that the set conforms to local regulations before use.

Thank you for choosing Simrad

If you are pleased with your radio we hope you will be interested in our range of marine electronic equipment, which is manufactured to the same high standards as the HT50. Please contact your nearest Simrad Agent for a catalogue showing our increasing range of high tech navigational instruments, autopilots and VHF radio sets.

HT50 waterproof handheld VHF

Simrad operate a policy of continual development and reserve the right to alter and improve the specification of their products without notice.

2 Operation

2.1 Controls

The location of the controls for the HT50 are shown in Fig 2.1 -

	Function
1	On/off
2	High/Low power / Keypad Lock
3	PTT (Push To Talk)
4	Volume mode select
5	Squelch mode select
6	Up key
7	Down key
8	Scan mode
9	Dual /Tri watch
10	Select Priority / Personal channel
11	Backlight on/off & Light Mode select

Pressing and holding certain keys will access additional functions. These are indicated by a double beep, or a triple beep if held for longer (see table below).

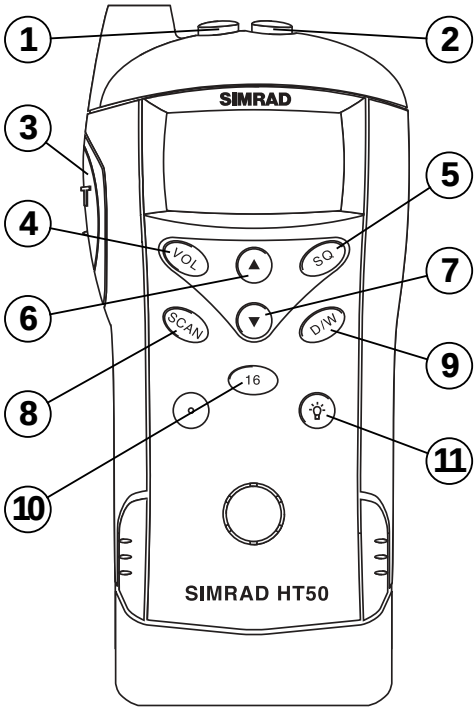


Fig 2.1 - HT50 Controls

Key	1 x Press	2 x Press	Press & Hold Double Beep	Press & Hold Triple Beep	Hold During Power Up
VOL	Select Volume Mode				Select secondary channel set*
SQ	Select Squelch Mode				Disable / Enable First Key Beep
▲ ▼	**Standard Mode** Channel Up/Down **Volume Mode** Volume Up/Down **Squelch Mode** Squelch Up/Down **Light Mode** Light level Up/Down				
SCAN	Memory Scan	Add / Delete channel from memory scan	Scan All Channels	Inhibit /Enable selected channel from scan	
D/W	Dual Watch		Tri Watch		
16	Select Channel 16		Select Personal Channel	Set Personal Channel	
☼	Select Light Mode Backlight On/Off				
Hi/Lo	Select 1 or 5 Watt		Engage/disable keypad lock		

** If available*

On/Off (1)
Press ⏻ to turn the HT50 on. To turn off, press and hold the key for approximately 2 seconds. This is to avoid accidental power off.

Hi/Lo (2)
Toggles between high and low transmit power (see specification section 3.8). Use the low setting over short ranges to preserve battery life.

VOL - Volume (4)
SQ - Squelch (5)
Press to select Volume or Squelch mode then use the ▲ and ▼ keys to adjust the level.

The display shows "VOL" or "SQL" for 3 seconds - if ▲ or ▼ are not pressed within this time, their function reverts to channel select.

▲ / ▼ (6 & 7)
These keys will change the selected channel. Pressing VOL, SQ or ☼, then ▲ / ▼ within 3 seconds will adjust the volume, squelch or backlighting level respectively. The bargraph will indicate the level selected.

SCAN mode (8)
Scans through the channels stored in the channel memory (display shows MEM SCAN).

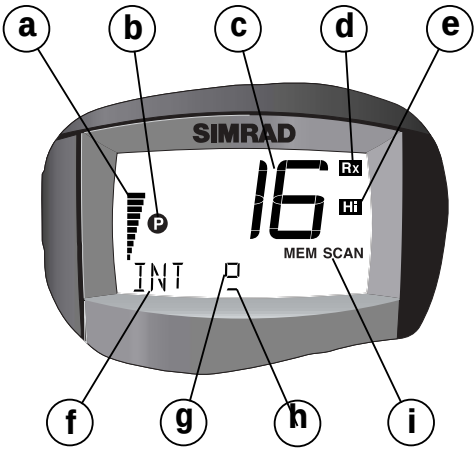
• Select channel and press twice to add / delete to memory scan (display shows ENT or DEL respectively). The □ icon indicates that the selected channel is included in memory scan.

• Press and hold until double beep sounds to scan all channels (display shows SCAN).

• Press and hold until triple beep sounds to inhibit / enable selected channel from scan (display shows INH or ENA respectively). The ⎓ icon indicates the channel is inhibited.

D/W - Dual Watch / Triwatch (9)
Press to select Dual Watch of selected channel and Ch16. Display shows D / W.

• Press and hold until double beep sounds for Triwatch - selected channel, personal channel and Ch 16. Display shows T / W.



a **Bar graph** -

Power up	Battery level
Standby	Battery level
Transmit	Battery Level
Volume Mode	Volume Level
Squelch Mode	Squelch Level
☼ pressed	Backlight level

b **Personal channel indicator**
c **Channel selected**
d **Receiving or transmitting indicator**
e **High or Low power indicator**
f **Function indicator**
g **Selected channel stored in memory**
h **Channel inhibited from scan**
i **Scan mode selected**

Fig 2.2 - HT50 display functions

16 -Channel 16 / Personal Channel (10)
Press to select channel 16.

• Press and hold until double beep to select personal channel (display shows Ⓟ)

• Press and hold for three beeps to set selected channel as the personal channel.

☼ - Backlight (11)
Press to turn on and off. Use ▲/▼ to adjust the backlighting level (5 levels available). The bargraph indicates the backlighting level.

• The battery save function turns the backlighting off if no key is pressed after 20 seconds. Press any key (except ⏻ or ☼) to turn light on again.

2.2 Selecting Alternative Channel Sets

In countries where it is permitted, holding **VOL** down while turning the radio on will enable the radio to operate on a secondary set of channels (Fig 2.3).

Where the display will normally show INT (International channel set) on the bottom line, this will show USA for USA channels, CAN for Canadian channels etc.

• Channel sets available will depend on which country the radio is programmed for use in. *This function will only be available if permitted in the country of purchase.* Please enquire with your national licensing authority for details of permitted channel sets.

• The radio will revert to International channels if it is switched off then on again.

2.3 Disable / Enable Key Beep

The HT50 beeps every time a key is pressed to confirm operation. To disable key beep, press and hold **SQ** while turning the set on. Repeat this procedure to turn the key beep on again.

• Second level functions (such as All Channel Scan, Triwatch etc) will still be indicated by a beep, even if the key beep is disabled.

Fig 2.3 - Selecting alternative channel set

2.4 Keypad Lock

(Not available on Axis50 GMDSS models)

The HT50 keypad can be locked to prevent accidentally pressing keys while in a pocket etc.

To lock the keypad, press and hold the **Hi/Lo** key. The HT50 will beep twice and any key pressed will not function - LOCK will appear in the display.

To disengage keypad lock, press and hold **Hi/Lo** again.

Note that the PTT key will still function when the keypad lock is on, allowing transmission and receiving as normal.

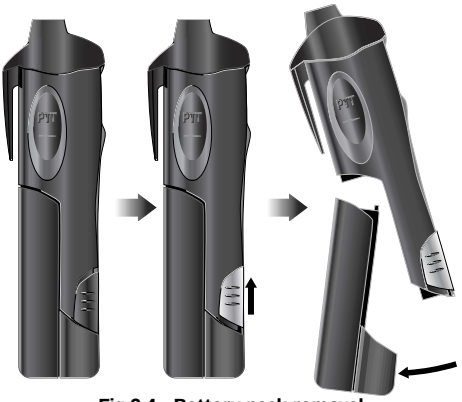


Fig 2.4 - Battery pack removal

2.5 Removing and Attaching Battery

The HT50 is supplied with a 1200mAh NiMH battery (part no NH12). The Axis 50 GMDSS radio has two battery options - an 850mAh NiCad (NC08) or a non rechargeable Lithium battery (LTB3). **Note that Axis 50 batteries cannot be used with an HT50 and vice versa.**

The batteries are supplied with a label across the contacts to prevent accidental discharge while in the box. This label should be removed before use.

To remove the battery, lift the two locking clips holding the battery pack in place (Fig 2.4). When reattaching, ensure the two locating pegs on the top of the battery are located into the slots in the radio and that the two locking clips have both engaged.

The set is fully waterproof even with the battery removed, but it is recommended that any moisture on the top of the battery or in the battery compartment is wiped clear before attaching to prevent the water creating a conductive path between the contacts and reducing battery life.

Fig 2.5 - Battery charger

2.6 Charger Options

The HT50 is supplied with a TC50 trickle charger that will accept the whole radio, or the battery only (Fig 2.5). The TC50 runs from a 12.6v-15.5v DC supply or from AC mains with an appropriate optional adaptor / power supply. Charging with the trickle charger takes approximately 12-16 hours. There is also a rapid charger available (RC50) which will charge the battery within $1^{1}/_{2}$ hours.

2.7 Charging of Batteries

To charge the NiCad and NiMH battery packs, insert the battery or radio into the charger ensuring that any moisture is wiped from the contacts on the back of the battery pack. The TC50 will trickle charge the battery to full capacity. The RC50 will rapid charge the battery until it is fully charged and will then automatically switch to maintenance charge.

• Batteries are supplied uncharged.

• Fully charge the battery when not in use, although it may lose some of its charge after several months of storage.

• Do not charge at temperatures below 0ºC or above 40ºC.

• Turn off radio if charging battery.

• Regularly discharge the battery totally - repeated recharging of the battery while it is partly discharged may create a 'memory effect', preventing it reaching full charge.

• Dispose of used batteries carefully. The contents of the batteries could be harmful to the environment.

• Never expose to a naked flame.

• IMPORTANT : The LTB3 Lithium battery is not rechargeable, and under no circumstances should any attempt be made to recharge it. Replacement batteries can be re-ordered from your local Simrad Agent.

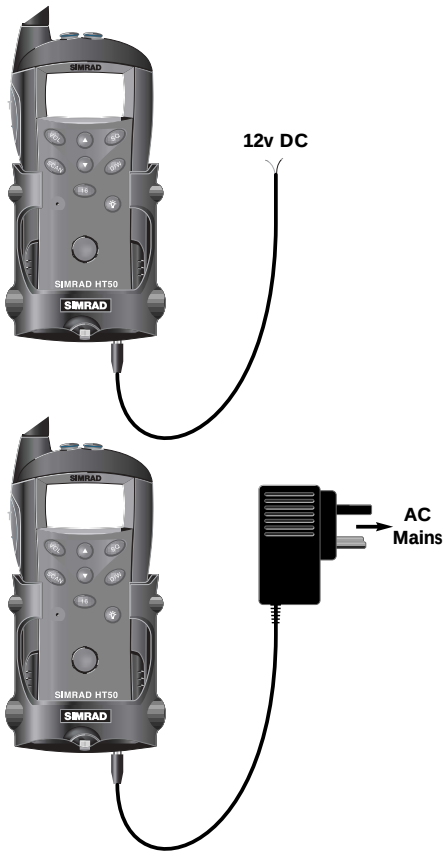


Fig 2.6 - Charging Options

2.8 Battery Level Indicator

Except when adjusting the Volume or Squelch, the bar graph on the display shows the battery charge level (Fig 2.7). This indicates the voltage at the battery terminals, not necessarily the charge stored. Ten or nine bars indicate a fully charged battery, three or four bars mean the battery is almost drained.

• A more accurate indication of the battery state will be obtained by transmitting briefly on high power. **Do not use CH16 for this purpose.**

• When using a lithium battery pack, the low level battery indicator may flash under transmit conditions. This does not necessarily reflect the charge level remaining in the battery, as it is due to the different voltage characteristics of a Lithium battery pack under load.

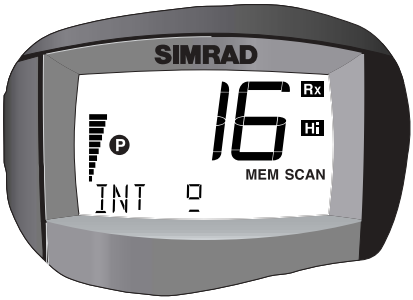


Fig 2.7 - Battery level indicator

2.9 HT51 Accessory Socket

The HT51 features an accessory socket (Fig 2.8) for use with fistmikes, headsets and boom-mikes etc. The features, functionality and operation of the HT51 are identical to the HT50.

Only accessories made specifically for use with the HT51 should be connected - incompatible accessories could damage the radio and invalidate the warranty.

• Switch off the radio before connecting an accessory to the socket.

Note that the HT51's internal speaker, microphone and PTT button are disabled when the accessory is connected - these functions are transferred to the accessory.

For details of compatible accessories available, contact your Simrad Distributor or the Simrad Preferred Supplier -

Fig 2.8 - HT51 with accessory socket

Atlantic Instruments
The Coach House, Trefor, Holyhead, Anglesey
Wales, LL65 1LZ, United Kingdom

Phone 44 (0) 1407 720513
Fax 44 (0) 1407 720616
E-mail charles@atlanticuk.com
Website www.atlanticuk.com

3 Appendix

3.1 Licensing

Prior to use check the national licensing requirements for the operator.

In the UK license applications and queries should be made to the following authority -

Ship Radio Licensing
Radio Licensing Centre
The Post Office
PO Box 1495
Bristol
BS99 3QS

A set may only be operated by, or under the supervision of a holder of a **Certificate of Competence** and **Authority to Operate**. This involves a simple examination and an annual license renewal fee. The VHF only certificate is administered by the Royal Yachting Association -

Royal Yachting Association
RYA House
Ensign House
Hamble
Southampton
SO31 4YA

Tel - 0845 3450400

Holders of the Restricted Certificate of Competence in Radio-telephony (which covers MF / HF SSB etc), do not need a separate VHF certificate.

In all other countries, please contact your regional authority for information.

3.2 Antenna

The antenna for the radio is fitted to the unit via a robust screw fitting to an M6 threaded socket on the top of the radio. This system is more rugged than a traditional BNC connector, so the radio's drop-proof integrity is not compromised by the antenna fixing.

While the radio is drop-proof and very robust, damage to the antenna such as bending or kinking may adversely affect the transmission efficiency of the unit, which may lead to overloading of the power module. Damaged antennae should be replaced immediately.

Replacement antennae can be purchased from authorised Simrad Service Agents. Please refer to section 3.7 for more details on spare parts and accessories available.

3.3 Transmission Range

Because VHF signals travel in a straight line and are not reflected back off the ionosphere as lower frequency signals are, the range of VHF signals is limited to 'line of sight', beyond which the other vessel passes behind the curve of the Earth. Therefore, the range will increase greatly the higher above sea level the antenna is, as Fig 3.1 illustrates (assuming maximum transmission power is used):

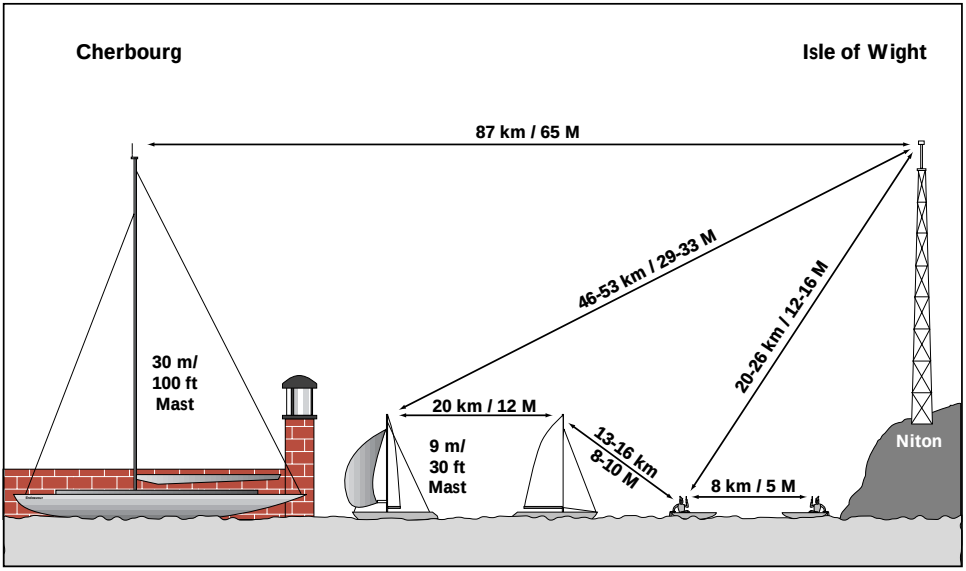


Fig 3.1 - VHF transmission range

Therefore, the typical range of a handheld radio such as this one used at sea level will be approximately 8 Km (5 Miles). This will increase as height above sea level increases, or if the other radio user's antenna is at a greater height - note that the range between the yacht with the antenna mounted on a 9 M (30 Ft) mast and the handheld user increases to 13-16 Km (8-10 Miles).

3.4 Frequency of Channels

Channel Designators	Tx	INT Rx	USA Rx
0	156.000	156.000	156.000
60	156.025	160.625	156.025
01	156.050	160.650	156.050
61	156.075	160.675	156.075
02	156.100	160.700	156.100
62	156.125	160.725	156.125
03	156.150	160.750	156.150
63	156.175	160.775	156.175
04	156.200	160.800	156.200
64	156.225	160.825	156.225
05	156.250	160.850	156.250
65	156.275	160.875	156.275
06	156.300	156.300	156.300
66	156.325	160.925	156.325
07	156.350	160.950	156.350
67	156.375	156.375	156.375
08	156.400	156.400	156.400
68	156.425	156.425	156.425
09	156.450	156.450	156.450
69	156.475	156.475	156.475
10	156.500	156.500	156.500
70	156.525	156.525	156.525
11	156.550	156.550	156.550
71	156.575	156.575	156.575
12	156.600	156.600	156.600
72	156.625	156.625	156.625
13	156.650	156.650	156.650
73	156.675	156.675	156.675
14	156.700	156.700	156.700
74	156.725	156.725	156.725
15	156.750	156.750	156.750
75	-	156.775	156.775
16	156.800	156.800	156.800
76	-	156.825	156.825

Channel Designators	Tx	INT Rx	USA Rx
17	156.850	156.850	156.850
77	156.875	156.875	156.875
18	156.900	161.500	156.900
78	156.925	161.525	156.925
19	156.950	161.550	156.950
79	156.975	161.575	156.975
20	157.000	161.600	161.600
80	157.025	161.625	157.025
21	157.050	161.650	157.050
81	157.075	161.675	157.075
22	157.100	161.700	157.100
82	157.125	161.725	157.125
23	157.150	161.750	157.150
83	157.175	161.775	157.175
24	157.200	161.800	161.800
84	157.225	161.825	161.825
25	157.250	161.850	161.850
85	157.275	161.875	161.875
26	157.300	161.900	161.900
86	157.325	161.925	161.925
27	157.350	161.950	161.950
87	157.375	157.375	157.375
28	157.400	162.000	162.000
88	157.425	157.425	157.425
29	-	-	157.450
89	-	-	157.475
WX01	-	-	162.550
WX02	-	-	162.400
WX03	-	-	162.475
WX04	-	-	162.425
WX05	-	-	162.450
WX06	-	-	162.500
WX07	-	-	162.525
WX08	-	-	161.650
WX09	-	-	161.775
WX10	-	-	163.275

The following channels may be fitted to your radio. These are only licensed for use in the countries indicated. No attempt should be made to use them in any other country.

Designation	Tx	Rx	Country
M	157.850	157.850	UK
M2	161.425	161.425	UK
31	157.550	161.150	Holland/Belgium
96	162.425	162.425	Belgium
L1/1L	155.500	155.500	Scandinavia
L2/2L	155.525	155.525	Scandinavia
L3/3L	155.650	155.650	Scandinavia (not Denmark)
F1/1F	155.625	155.625	Scandinavia
F2/2F	155.775	155.775	Scandinavia
F3/3F	155.825	155.825	Scandinavia

Axis 50 GMDSS models are fitted with simplex channels only.

Ch 70 is restricted for DSC (Digital Selective Calling) use only and is therefore not available on the HT50 or Axis 50 VHF radio.

Ch 0 will only be made available in the UK to Coastguard users with written authorisation.

3.5 Battery Life Guidelines

• New batteries should be fully (trickle) charged and fully discharged several times to achieve full capacity.

To a large extent, the battery life will depend on the usage, or Duty Cycle of the radio - i.e the battery will be drained much quicker if the radio is transmitting continually than if it is just receiving. Additionally, if the radio is set to High Power (5 watts*), the power drain will be considerably greater than if transmitting on Low Power (1 watt*)

* Standard power settings.

Values predicted from calculation -

BATTERY PACK	Typical Life of fully charged pack at 25°C		
	Duty Cycle Ai	Duty Cycle Aii	Duty Cycle B
850mAh NiCad	9 hrs	12 hrs	5 hrs
1200mAh NimH	12 hrs	20 hrs	7 hrs

Ai Based on - 5% Transmit at 5 Watts setting of r.f. output power (1.4 Amp)
5% Receive at 200mWatts Audio (0.15Amps)
90% Receiver squelched (0.02Amps)

Aii Based on - 5% Transmit at 1Watt setting of r.f output power (0.8Amp)
5% Receive at 200mWatts Audio (0.15Amps)
90% Receiver squelched (0.02Amps)

B Based on - 10% Transmit at 5Watt setting of r.f. output power (1.4 Amp)
10% Receiver at 250mWatts Audio (0.15Amps)
80% Receiver squelched (0.02Amps)

Charge Held While Stored

The Following Data is Approximate:

Battery Pack		Duration	
		At 25 °C	At 45°C
850mAh NiCad	Up to 50% Charge	4-6 Months	4 Weeks
1200mAh NimH	Up to 50% Charge	4 Months	4 Weeks

3.6 Fault Finding

Symptom	Possible Cause	Remedy
Unit will not switch on	• Battery not charged • Battery not attached correctly to radio	• Re-charge battery • Ensure battery is fully engaged (see section 2.5)
Scan or Memory Scan is locking on a channel without a signal	• Noise on the channel is holding the scan	• Increase squelch level • Inhibit channel from scan
Dual Watch not being entered	• Priority channel selected (normally Ch16)	• Select a working channel
Cannot change channel	• Dual Watch (D/W) engaged	• Exit Dual Watch
Certain channel numbers are not obtainable	• Some channels are restricted and programmed out depending on country of purchase	• Consult your national authority for permitted channels in your region
Will not transmit	• Scanning or D/W function active	• Exit D/W or Scan
Will not transmit on 5W but OK on 1W	• Low voltage when full transmitting current is drawn • Some channels are restricted to low power transmission only	• Battery charge low - recharge the battery • Consult your national authority
Transmissions persistently weak	• Damaged antenna	• Replace antenna

These simple checks should be carried out before seeking technical assistance and may save time and expense.

Before contacting your servicing agent please obtain the radio's serial number and the software iteration - this is shown in the large digits on the display for 2 seconds after the radio is turned on.

3.7 Spares & Accessories

The following spares and accessories are available from authorised Simrad Agents. A list of dealers is included with this unit. Please quote Part No. when ordering.

ANT3

Spare Antenna

HT50 Batteries -

NH12

1200 mAh NimH Battery Pack

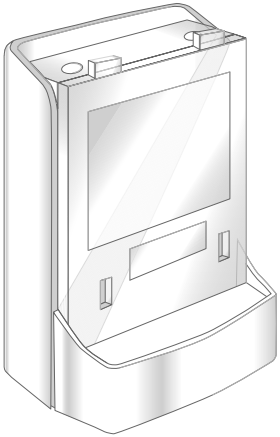
Axis 50 GMDSS Batteries -

NC08

850 mAh NiCad Battery Pack

LTB3

Lithium Battery Pack
(Non rechargeable)



TC50

Trickle Charger

RC50

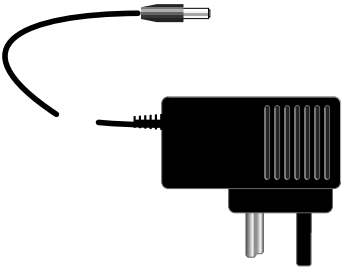
Rapid Charger

MAT50:U (UK)
MAT50:E (Euro)
MAT50:A (USA)

Mains Adaptors for TC50

MAR50:U (UK)
MAR50:E (Euro)
MAR50:A (USA)

Mains Adaptors for RC50



3.8 Technical Specification

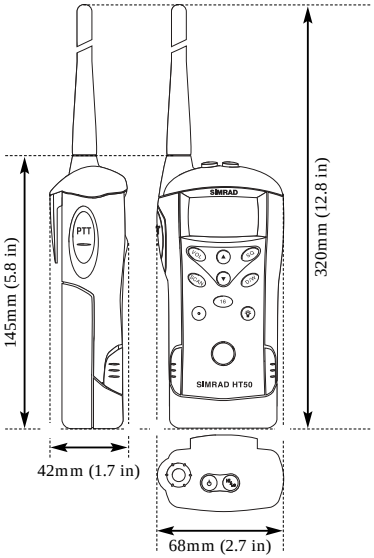
Electrical

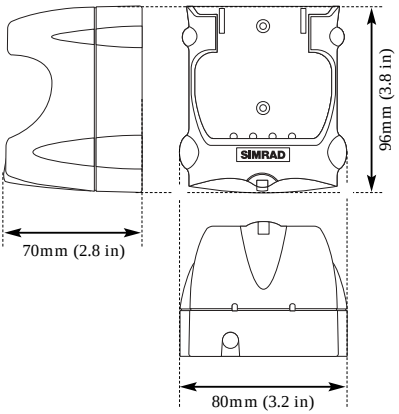
Channel Capability	54 international channels 1-28, 60-69, 71-88 Up to 10 private channels* UK : includes M (previously 37) and M2 USA : includes 0, 29, 89, 75, 76, Wx1-10 receive only. Scandinavia : leisure or fishing channels as appropriate. Canada : Canadian and USA channels. GMDSS sets have simplex channels only - 06, 08-17, 67-69, 71-74, 77		
Frequency Range	155-163Mhz		
Operating Temperature Range	-20ºC - +60ºC		
Output Power	HT50 - 1 & 5 Watts Axis 50 GMDSS - 1 & 2.5 Watts		
Harmonic and Spurious Emissions	<.25µW Tx, <1nW Rx		
Sensitivity	0.5µV for 20 dB SINAD		
Selectivity	70 dB (±25 kHz)		
Intermodulation	70 dB		
Channel Spacing	25kHz		
Blocking	90dB		
Spurious Response	70dB		
Audio Output Power	Max 0.4 Watt		
Current Consumption	Squelched <25mA		
	Receive	typically 125mA	
	Transmit	5 Watts	1.4A
		1 Watt	0.8A
Weight	400g including battery pack		

* Contact local Simrad Agent for further details of channel programming etc.

Environmental

Waterproof	To a depth of 1m fully submersed, including a 45ºC thermal shock Will withstand petrol, diesel and other fuel oils.
Drop Resistance	Will withstand a drop from 1m on to a hard surface on any face.





3.9 Service & Warranty

Your radio should seldom need servicing, although it will benefit from an application of silicone or Teflon grease to the battery contacts and antenna socket each season. For HT51 only, please ensure the accessory connector is regularly greased.

This unit is guaranteed for 2 years from date of retail sale. If it is necessary to have the unit repaired, return it carriage prepaid to the agent in the country of purchase with a copy of the receipted invoice showing the date of purchase. Where possible, return all the components unless you are certain that you have located the source of the fault. If the original packing is not available, ensure that it is well cushioned in packing; the rigours of freight handling can be very different from the loads encountered in the marine environment for which the unit is designed.

IMPORTANT - The HT50 / HT51 / Axis50 are sealed waterproof units. To create and maintain their waterproof integrity they were assembled in a controlled environment using special equipment. The radios are not user maintainable units, and UNDER NO CIRCUMSTANCES should the units be opened, except by authorised Simrad Service Agents. Unauthorised opening of the unit will invalidate the warranty.

DECLARATION OF CONFORMITY

English Hereby, **Simrad Limited (Margate)**, declares that this **HT50/HT51/Axis50 GMDSS** is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Finnish **Simrad Limited (Margate)** vakuuttaa täten että **HT50/HT51/Axis50 GMDSS** tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Dutch Hierbij verklaart **Simrad Limited (Margate)** dat het toestel **HT50/HT51/Axis50 GMDSS** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG

French Par la présente, **Simrad Limited (Margate)** déclare que ce **HT50/HT51/Axis50 GMDSS** est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables

Swedish Härmed intygar **Simrad Limited (Margate)** att denna **HT50/HT51/Axis50 GMDSS** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Danish Undertegnede **Simrad Limited (Margate)** erklærer herved, at følgende udstyr **HT50/HT51/Axis50 GMDSS** overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF

German Hiermit erklärt **Simrad Limited (Margate)**, dass sich dieses **HT50/HT51/Axis50 GMDSS** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)

Greek Με την παρουσα **Simrad Limited (Margate)** δηλωνει οτι **HT50/HT51/Axis50 GMDSS** συμμορφωνεται προζ τιζ ουσιωδειζ απαιτησειζ και τιζ λοιπεζ σχετικεζ διαταξειζ τηζ οδηγιαζ 1999/5/EK

Italian Con la presente **Simrad Limited (Margate)** dichiara che questo **HT50/HT51/Axis50 GMDSS** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Spanish Por medio de la presente **Simrad Limited (Margate)** declara que el **HT50/HT51/Axis50 GMDSS** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE

Portuguese **Simrad Limited (Margate)** declara que este **HT50/HT51/Axis50 GMDSS** está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.

Website - www.simrad.com

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