

KELVIN HUGHES

HUSUN COMPACT

OPERATIONS MANUAL



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General Information

General

A compact fully synthesized Marine VHF providing up to 56 channels with a nominal output power of 25 watts. The HUSUN COMPACT offers full coverage of all International channels allocated to Port Operation, Intership and Public Correspondence with the added facilities of dual watch on channel 16 with any selected channel and full channel scanning capability. Apart from the rotary controls for "volume & squelch" settings all other controls are via tactile touch controls.

Marine channels M1 and M2 are provided as standard.

Built in internal OR external loudspeaker.

Approved to UK specification MPT 1251.

SPECIFICATION :

General :

Frequency range	:	Transmit 156.050 - 157.425 MHz. Receive 156.300 - 162.025 MHz. Marina channels M1 157.850 MHz. M2 161.425 MHz.
Channel spacing	:	25 KHz.
Antenna impedance	:	50 ohms
Power supply	:	13.2V d.c. (nominal 12V) isolated earth
Dimensions	:	140 (width) x 51 (height) x 175 (depth) mm
Overall inc trunnion & knobs	:	165 (width) x 65 (height) x 187 (depth) mm

Transmitter ;

Frequency stability	:	+/- 0.001 %
Output power	:	High 25 Watt nominal Low 1 Watt nominal
Spurious & Harmonic emission	:	better than 2.5 micro-Watt
Modulation	:	16F3 +/- 5 KHz. for 100% at 1 KHz.
Audio Distortion	:	better than 10% THD
Adjacent channel power	:	better than 10 micro-Watt
Residual modulation	:	better than 40 dB
Audio freq. response	:	+1,-3 dB of 6 dB/Octave pre emphasis for 300 to 3000 Hz.
Current drain	:	HP 5.5 Amp at 12 volt d.c. LP 1.5 Amp at 12 volt d.c.

Receiver :

Frequency stability	:	0.001 %
Sensitivity (dB)	:	better than 1.0 micro-Volt (EMF) for 20 S+N+D/N+D
Squelch sensitivity	:	Threshold - less than 10 dB noise Hard - less than 20 uV
Adjacent channel selectivity	:	better than 70 dB

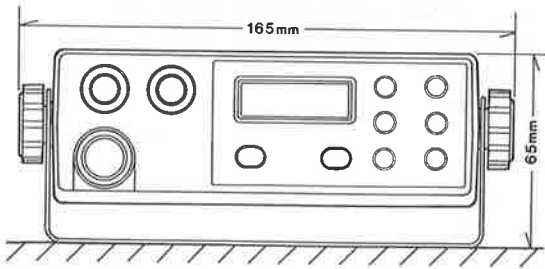
Spurious rejection : better than 70 dB
 Intermodulation : better than 70 dB
 Blocking : better than 70 dB
 Spurious emission : better than 2 nano-Watt
 Harmonic distortion : better than 10 % THD
 Audio output : 2 Watts into 8 ohms
 Audio freq. response : +1,-3 dB of 6 dB/Octave de
 emphasis over range 300 to
 3000 Hz.
 Current drain : 350 mA
 (squelched)

Licence Application : Equipment name / type number
 KELVIN HUGHES HUSUN COMPACT

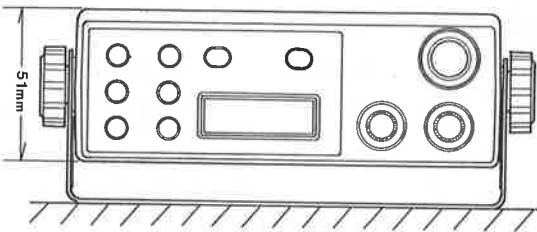
For information if required : Type Approval Number KM508

Compass Safe Distance	Grade 1	Grade 2 & 3	Grade 4	
	degs	1 degs	2 degs	
	0.9	0.6	0.5	mtrs

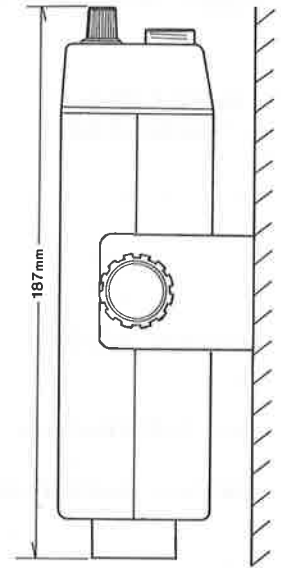
Installation



DESK MOUNTING



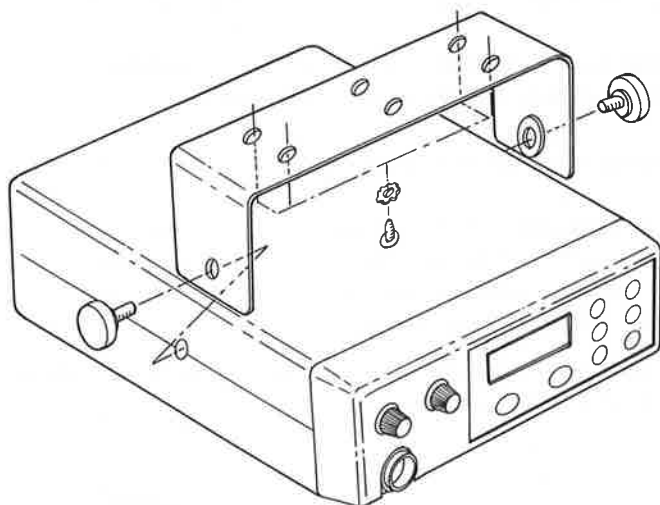
DECKHEAD MOUNTING



BULKHEAD MOUNTING

Location of Installation

Before installing the radiotelephone choose a location which is protected from moisture and excessive heat. Although designed for marine service, the radiotelephone should be protected from direct exposure to the elements. Make sure the location chosen is one in which it is convenient to operate the radiotelephone.



Mounting Bracket

The mounting bracket may be used for base or overhead mounting. Secure the bracket to the mounting surface using the appropriate screws.

Attach the radiotelephone to the mounting bracket using the two large knurled screws supplied.

Power connection

The DC power cable supplied is used to make the necessary DC voltage connection to the boat's battery supply. Choose a connection point which is capable of handling at least 6 amperes (never use a lighting circuit). The switched side of the ignition switch is usually a suitable point. If you must extend the power cable leads keep the wiring as short as possible ensuring that the voltage drop does not exceed 0.5 volt along the entire cable length from the boat's supply battery to the equipment input plug.

(Use 32/02 mm for runs upto 3 metres and 30/0.25 mm for longer runs).

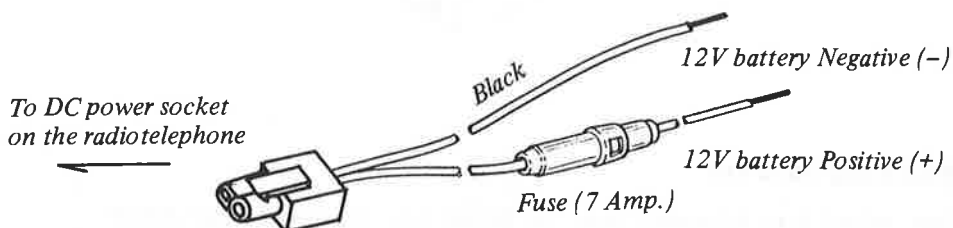
If possible connect the radiotelephone to the battery not normally used for starting the engine or with a single bank system ensure the radio is switch off when starting.

Connect the red (fused) lead to the positive and black lead to the negative side of the supply.

Note : Equipment power supply is isolated from ground

The radiotelephone is reverse polarity protected but before making the power plug at the rear of the equipment always make sure the keyway is aligned correctly and the equipment is switched off at the front panel.

Do not attempt to force the power connector, when properly aligned it will mate easily.

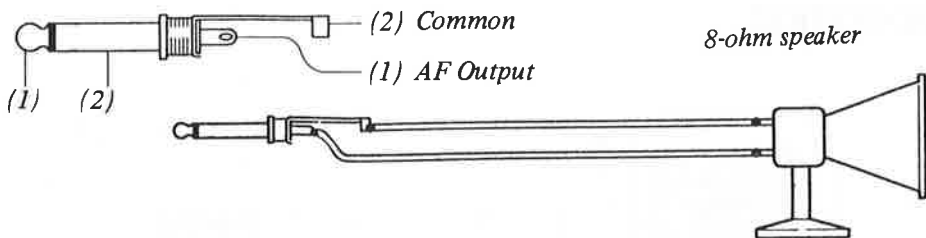


External Speaker Connection (Ext Sp) :

A protective rubber seal is fitted over the rear panel jack socket; do not remove the cover unless the jack plug is in use.

Follow the instructions below using a 3.5 mm single pole jack plug to connect the external loudspeaker (impedance 8 ohms).

Note : Connection of the external speaker automatically disconnects the internal one:

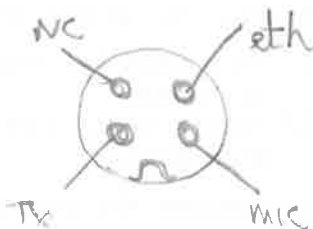
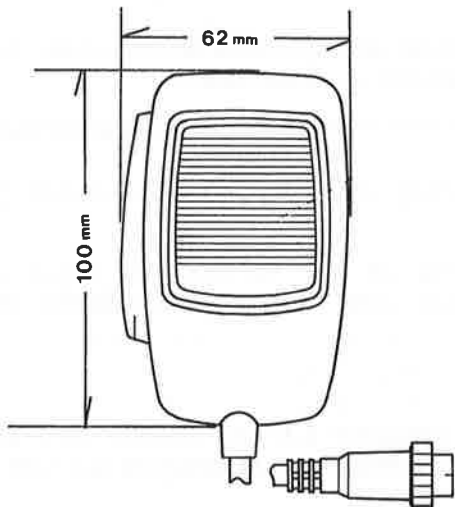


Antenna :

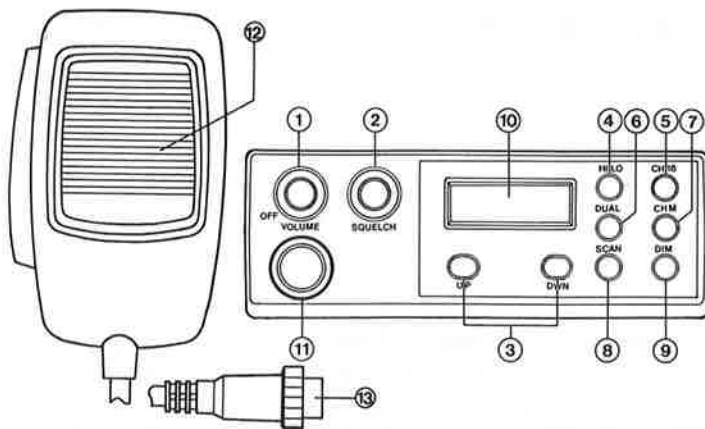
Use a VHF marine antenna which meets the 50 ohm termination requirements. It should be mounted as high as possible for maximum range within the constraints of the recommended down lead coaxial cable. The coaxial cable run should be kept as short as possible and any excess cable should be cut back to suit the installation. Where joints in the coaxial cable have to be made to ease mast removal use only proprietary connectors supplied by a recognised marine radio dealer. Connect the antenna cable to the rear panel of using a PL259 connector.

Handset (first microphone only) :

front view of
txcvr



Operation



Function of Controls :

1 - Off / Volume

To turn power on, rotate knob (1) clockwise. Further rotation will increase output from loudspeaker.

2 - Squelch Control

Used to eliminate annoying background noise when no signals present. To adjust proceed as follows :

- 1) Turn knob (2) counterclockwise until background noise is heard.
- 2) Rotate knob clockwise until background noise just disappears.

This ensures the receiver is set to maximum sensitivity and will remain in this quiet mode until an incoming signal is received.

3 - Channel Selection

Use the "UP" or "DOWN" buttons (3) to select the desired channel. Direction of movement will depend on the button pressed.

4 - 25W/1W transmitting Power Select Button (4)

Pressing this button selects 25 or 1 Watt. Level selected will be indicated in the LCD display (10).

5 - Channel 16 Priority

This button (5) switches the unit to channel 16 for Distress/Calling and will be indicated as "16" in the LCD display (10).

Pressing the button a second time will revert back to the original channel selected.

6 - Dual Watch

This button (6) switches in the dual watch circuit, which gives selected listening on a main channel while maintaining a listening watch on the Distress/Calling Channel 16. The circuit switches the receiver between the two channels in such a way that the receiver dwells on channel 16 for about 1/10 of the total shared time thus making it is possible to listen to and understand the traffic on the main channel while still maintaining a watch on channel 16. Should a signal appear on Channel 16 the receiver will automatically lock on to Channel 16 and will remain in this mode until transmission ceases when the receiver will automatically recommence dual watch operation again.

To disengage the Dual Watch press button (6) again.

Note : In the Dual Watch position it is not possible to transmit. Should transmission be required then the Dual Watch must be disengaged.

7 - Marina Channel Selection

Press button (7) selects Marina channel M1. Press a second time will bring up Marina Channel M2. To revert to main channel selection press button (3).

8 - Scan Control

Press scan button (8) will automatically set the receiver scanning through all channels and will continue until a signal is received on a particular channel when the scan facilities will stop on that channel. To stop the scan facilities press scan button (8) a second time.

Note : It is not possible to transmit when the unit is set to the Scan Mode..

9 - Dimmer Control

This is a multi step function, repeated pressing of Dim button (9) will set the LCD illumination to the desired level.

10 - LCD Readout

(10) This shows the various function the equipment is switched to

Channel Indication

Transmit indicate

Selection of simplex channel

Hi/Lo power

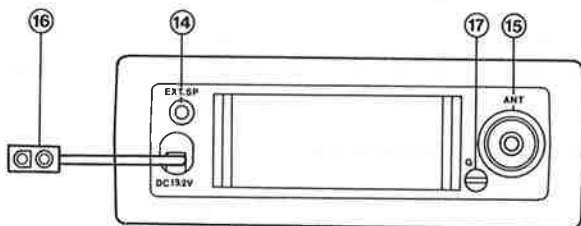
Dual Watch selected channels

11 - Fist microphone

(12) incorporating Press to talk switch.

12 - Microphone Connection

Microphone plug (13) mates with front panel mounted mic input socket (11).



13 - External Speaker jack (14)

Used to connect an external 8 ohms speaker. Accepts 3.5 mm diameter phone jack. Disconnects internal speaker.

14 - Antenna Connector (15)

Accepts PL257 type connector.

15 - Power Cable Socket (16)

Power to operate the equipment is fed via this socket using the DC power cable supplied with the unit.

16 - Ground Terminal. (17)

Used to ground connection of the radiotelephone to the vessel (to hull ground).

Transmitting and Receiving

Before operating the radiotelephone transmitter you must meet all the requirements of the local government agency responsible for the licencing of Marine VHF equipment. In most cases this means obtaining a proper licence, having access to the rules and regulations covering this type of equipment and having a licence to operate in the Marine VHF Band.

1. Install the radiotelephone in accordance with guidelines mentioned in the previous section.
2. Turn on the radiotelephone and adjust the volume and squelch controls for optimum setting and maximum receiver sensitivity.
3. Before transmitting always ensure the channel on which you wish to communicate is not occupied by listening for a few moments before commencing to call.
4. Set the high/low power switch to suit. Never use excessive radiated power. It will not only save interfering with other stations but will also conserve battery power.
5. To transmit, press the transmit switch (PTT) on the fist microphone and speak slowly and in your normal tone of voice.
6. To receive, simply release the PTT switch. Remember this radiotelephone on operates in the SIMPLEX mode only i.e. during transmission the receiver is muted and reception is impossible.

Channel Frequency Chart

CH	Frequency (MHz)		CH	Frequency (MHz)	
	RX	TX		RX	TX
M1*	157.850	157.850	26	161.900	157.300
M2*	161.425	161.425	27	161.950	157.350
			28	162.000	157.400
			60	160.625	156.025
1	160.650	156.050	61	160.675	156.075
2	160.700	156.100	62	160.725	156.125
3	160.750	156.150	63	160.775	156.175
4	160.800	156.200	64	160.825	156.225
5	160.850	156.250	65	160.875	156.275
6	156.300	156.300	66	160.925	156.325
7	160.950	156.350	67	156.375	156.375
8	156.400	156.400	68	156.425	156.425
9	156.450	156.450	69	156.475	156.475
10	156.500	156.500	70*	156.525	156.525
11	156.550	156.550	71	156.575	156.575
12	156.600	156.600	72	156.625	156.625
13	156.650	156.650	73	156.675	156.675
14	156.700	156.700	74	156.725	156.725
15**	156.750	156.750	77	156.875	156.875
16	156.800	156.800	78	161.525	156.925
17**	156.850	156.850	79	161.575	156.975
18	161.500	156.900	80	161.625	157.025
19	161.550	156.950	81	161.675	157.075
20	161.600	157.000	82	161.725	157.125
21	161.650	157.050	83	161.775	157.175
22	161.700	157.100	84	161.825	157.225
23	161.750	157.150	85	161.875	157.275
24	161.800	157.200	86	161.925	157.325
25	161.850	157.250	87	161.975	157.375
			88	162.025	157.425

(*) Channel 70 is being allocated for digital selective calling and is not available in this set for voice transmission.

(**) Channel 15 and 17 Transmitter 1 watt only

KELVIN HUGHES LTD

USERS WARRANTY AGREEMENT

1. Subject to paragraph 3, Kelvin Hughes shall without charge repair or at its option replace any product supplied under this warranty which becomes defective within the period of 12 months from its delivery to you provided that:
 - (1) the registration card supplied with the product has been properly completed and returned to Kelvin Hughes;
 - (2) a written report of the relevant defects is supplied to Kelvin Hughes as soon as practicable after discovery of the defects;
 - (3) the defective product is returned carriage paid to Kelvin Hughes or to the point of sale, or to one of Kelvin Hughes' authorised distributors, within the warranty period. Where it is not possible to return the goods, Kelvin Hughes will not be liable for any expense incurred in travelling to repair or replace the product.

Where a product is returned or examined and is found not to be defective Kelvin Hughes may make a reasonable charge for inspection and handling.

2. A product is "defective" if it fails to function properly owing to a fault in its design, material or workmanship arising under normal conditions of installation, storage and use, and service appropriate to the purpose for which it is designed.
3. Kelvin Hughes' obligations under this warranty do not apply in relation:
 - (1) defects caused by installation or siting of the product;
 - (2) defects caused by failure to observe the instructions for use laid down in Kelvin Hughes' operating manual;
 - (3) a product on which the serial number has been altered or removed;
 - (4) any repairs carried out on a product;
 - (5) defects, which in Kelvin Hughes' opinion, are the result of misuse, negligence, accident, application, adjustment, repair or attempted repair or where any interference has occurred which precludes determination of the true cause of the defect.
4. All claims under this warranty shall be subject to repair being carried out by:-
 - (1) Kelvin Hughes or
 - (2) One of Kelvin Hughes' authorised distributors provided that:-
 - (a) a detailed report of the defects and work carried out is submitted to Kelvin Hughes;
 - (b) the repair work is carried out in accordance with best trade practices;
 - (c) Kelvin Hughes is satisfied that clauses 2 and 3 above have been complied with;
5. The warranty period specified in clause 1 shall run from the original date of delivery and it shall not be extended by any subsequent replacement or repair of a defective product.
6. Outside of the UK the warranty condition only applies to defective materials (excluding any item used in the installation of the product) subject to the defective item being returned to Kelvin Hughes for investigation. All charges due to labour and travel will be settled by the customer.
7. All other conditions or warranties whether implied by statute, common law or trade usage or expressed by the purchaser of the product, and hereby excluded with the exception of any warranty expressly accepted by Kelvin Hughes in writing and other terms and conditions, the exclusion of which is prohibited by law.
8. In order to offer you the user the fullest protection under this Warranty, please complete the associated registration card and return it to:

Kelvin Hughes Limited,
(Boat Electronics)
New North Road,
Hainault,
Ilford,
Essex IG6. 2UR



KELVIN HUGHES

KELVIN HUGHES LTD. A SUBSIDIARY OF SMITHS INDUSTRIES PLC.

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CABLES/GRAMS: MARINST ILFORD