GME Electrophone

GX600

VHF MARINE TRANSCEIVER

INSTRUCTION MANUAL

WARNING: SAFETY INFORMATION

The GX600 is a radio transmitting device.

- When transmitting, keep any part of your head or body more than 20 cm from the antenna.
- Do not transmit near electrical blasting equipment or in explosive atmospheres.
- Do not allow children to operate a radio transmitter unsupervised.

OPERATOR QUALIFICATIONS

Any person in Australia operating a VHF marine transceiver should posses at least a Marine Radio Operators VHF Certificate of Proficiency (MROVCP). Alternatively, operators may choose to obtain a Marine Radio Operators Certificate of Proficiency (MROCP), which covers the operation of both VHF and MF/HF equipment

Many TAFEs and marine organisations offer courses leading to examination for the MROVCP and MROCP although such courses are not compulsory. Persons wishing to obtain the MROVCP or MROCP should first purchase a copy of the Maritime Radio Operator Handbook which is essential reading for every boat owner in Australia.

The Australian Maritime College (AMC) provides the marine examination and certificate service on behalf of the ACA. The AMC can provide the details of organisations and individuals offering courses and or conducting exams. For further information visit: www.amc.edu.au

CONTENTS

INTRODUCTION

Congratulations. You have just purchased one of the most technically advanced VHF Marine Transceivers in the world.

The GME Electrophone GX600 is a VHF FM transceiver designed to operate in the 156 - 163 MHz marine band. The GX600 has a number of enhanced features including fully user programmable Channel Scanning, Dual Watch and Triple Watch functions, two programmable 'Instant" channel memories and tri-colour display lighting.

With its compact size and waterproof design it can easily be installed into almost any panel mounting location in your flybridge or cabin.

The GX600 is totally designed and manufactured at our Gladesville factory. Precision robots and the very latest manufacturing techniques ensure a consistantly high quality is maintained resulting in a communications system of extreme reliability and performance.

Please read this manual thoroughly to ensure you get the best from the GX600's features.

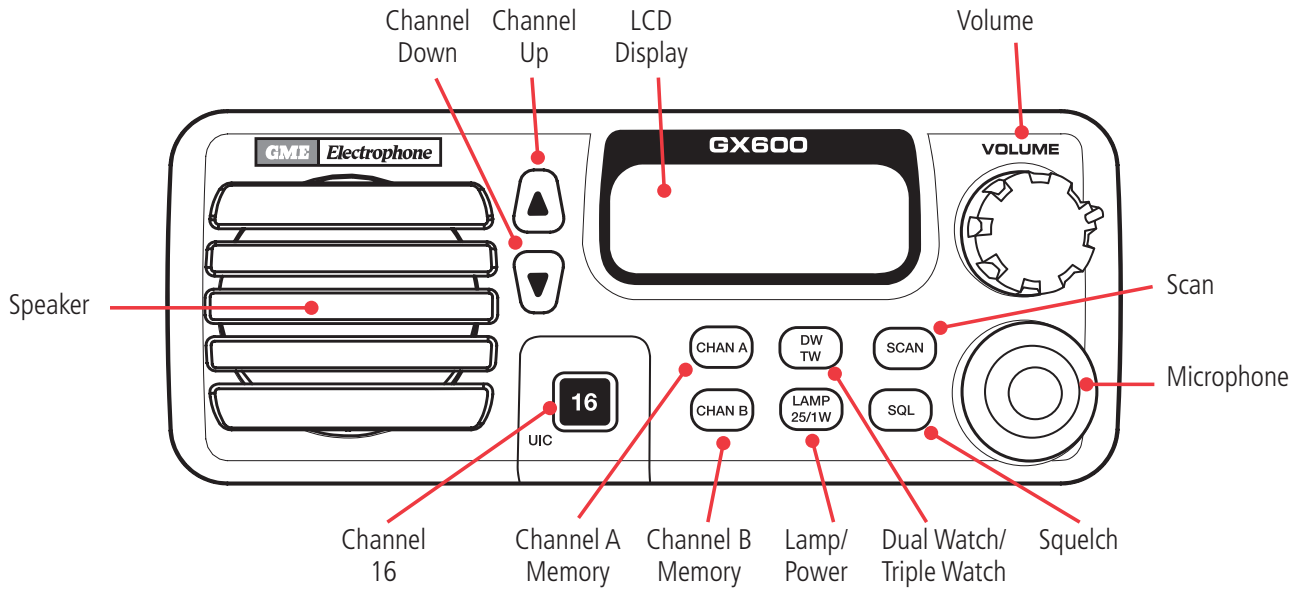
FEATURES

- Compact Waterproof Design
- Selectable International, USA, and Canadian Channel Sets
- Selectable USA Weather Channels
- Dual Watch and Triple Watch with Programmable Priority Channel
- 10 Private Channels available
- Programmable Channel Scanning
- Selectable Power 25/1 Watt
- Two Working Channel Memories
- Adjustable Digital Squelch

RANGE

The range of VHF transmissions depend on antenna height, transmitter power and the terrain over which the signals pass. Ship to ship communications should be possible over at least 8 nautical miles and up to about 27 nautical miles. Ship to shore ranges will often be greater due to the increased height of the shore antenna and communications of 25 to 50 nautical miles are possible.

CONTROLS



OPERATION

VOLUME ON/OFF

Rotate the Volume control clockwise past the 'click' to turn the GX600 on. While receiving a signal, continue to rotate clockwise to increase the sound in the speaker.

Rotate the control fully counterclockwise past the 'click' to turn the GX600 Off again.

Note: At minimum volume setting there is still sufficient volume to be heard in a quiet cabin environment.

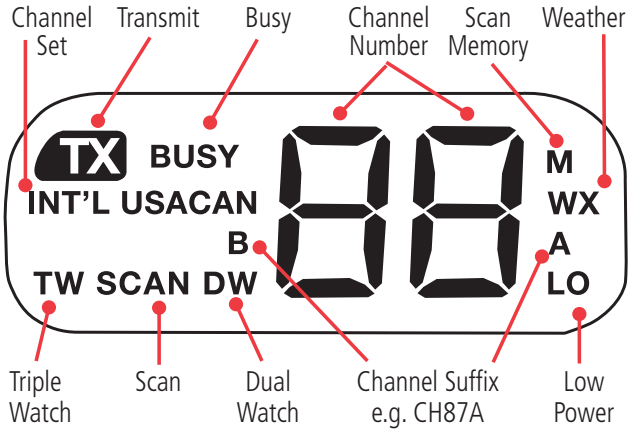
TRANSMITTING

To transmit, press the Push to Talk ***(PTT)*** switch on the microphone. Hold the microphone about 5 – 8 cm from your face and speak at a normal voice level. The microphone is quite sensitive so it is not necessary to raise your voice or shout. Release the ***PTT*** when you have finished talking.

Transmission time is controlled by a time-out timer. If the PTT is held for more than 90 seconds, a low beep will be heard and the transmitter will be disabled to prevent accidental jamming of the channel frequency. To reset the timer simply release the PTT.

Note: The transmitter is disabled on CH 70. If the ***PTT*** is pressed a low beep will be heard and the ***PTT*** will be ignored

DISPLAY



CHANNEL SELECTION

Standard Marine Channels

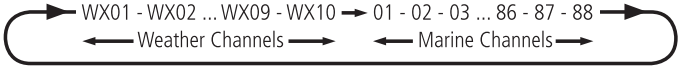
Briefly press the ▲ key to step upwards one channel or the ▼ key to step downwards one channel. A high beep will be heard at each press.

The ▲ and ▼ keys are also duplicated on the front of the microphone.

Press and hold the ▲ or ▼ key for 1.5 seconds to scroll quickly upwards or downwards through the channels at a rate of 10 channels per second. When the key is released channel scrolling stops.

Weather Channels.

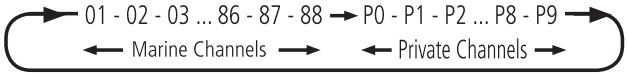
The US weather channels are available only when the USA Channel Set has been selected. When available, weather channels are numbered 01 – 10 and are inserted into the normal channel sequence below marine channel 01. They are selected in the usual way using ▲ or ▼ keys. Weather channels are identified by the WX icon on the display.



Private Channels

Private channels can be programmed into the GX600 for organisations that have been officially allocated special frequencies. Private channels are programmed on application by your nearest GME branch office. All requests for private channel programming must be supported by ACA documentation.

If Private channels have been installed they will appear as P0 – P9 above CH 88.



ADJUSTING THE SQUELCH

To open the squelch, briefly press the ***SQL*** key. A low beep will be heard and the squelch will open. Briefly press the ***SQL*** key again to close the squelch. A high beep will be heard and the squelch will be restored to its preset level.

Setting the Squelch Preset Level

The preset squelch level can be adjusted to suit local conditions. If you are in an electrically noisy location or unwanted weak signals keep opening the squelch, you can adjust the squelch setting so that the GX600 remains quiet. Note that increasing the preset squelch level will mean that stronger signals will be required to over come the squelch and may result in missed calls from weaker signals. The best setting is the minimum one required to keep the receiver quiet.

To enter the Squelch setting mode, press and hold the ***SQL*** key for 1.5 seconds until a high beep is heard. The present squelch setting will be displayed in digits from -0 to -9 with -0 being unmuted and -9 being maximum squelch. While in this mode, briefly press the ▲ or ▼ keys to increase or decrease the Squelch level respectively as required. Press the ***SQL*** key again to exit the Squelch setting mode or wait

5 seconds and it will exit automatically. A low beep will be heard.

CHANNEL 16 SELECTION

Briefly press the ***16*** key to switch straight to Channel 16. All previous control settings (such as scanning or low transmitter power) will be cancelled and the radio will be restored to normal operation with high transmit power selected. Press the ***16*** key again to return to the selected channel.

The ***16*** key is also duplicated on the front of the microphone.

SELECTING CHANNEL SETS.

The GX600 is programmed with three Channel Sets – International, USA and Canada. These Channel Sets support various channel and frequency allocations for other parts of the world. Once you have selected the required Channel Set for your location, you should not need to change it again unless you have moved to another country.

When using the GX600 in Australia, the ***International*** Channel Set should be selected.

To change the Channel Set:

- Switch the GX600 OFF.
- Press and hold the ***16 (UIC)*** key while turning the GX600 on again.
- Channel 16 will be selected and the presently selected Channel Set will flash on the display as ***INT'L***, ***USA*** or ***CAN***.
- Briefly press the ***16 (UIC)*** key to cycle through the Channel Set selections in the following order:

The selected Channel Set becomes active immediately.

- Once the required Channel Set is selected, return to normal operation by either holding the ***16 (IUC)*** key or switching the GX600 OFF momentarily or waiting 20 seconds for the Channel Set mode to time out automatically.

Note: When the USA Channel Set is selected, weather channels are accessible below Channel 01.

DISPLAY BACKLIGHTING

The LCD display is backlit for easy viewing at night. Both the brightness and the colour of the backlighting can be adjusted.

Brightness Adjustment

To set the brightness of the LCD backlighting, briefly press the ***LAMP*** key. Each press will cycle the following lamp illumination settings.

Illumination Colour

The LCD backlighting can be set to illuminate in one of three colours – Green, Red or Orange.

To set the colour of the LCD illumination:

- Turn the GX600 OFF.
- Press and hold the ***LAMP*** key while turning the GX600 ON again.
- Briefly press the ***LAMP*** key to cycle through the back lighting colours in the following order

Once the required colour is selected, return to normal operation by either holding the ***LAMP*** key or switching the GX600 OFF momentarily or waiting 20 seconds for the Colour Set mode to time out automatically

HIGH/LOW POWER SELECTION

To switch between High and Low transmit power, press and hold the ***25/1W*** key. A high beep indicates High power (25 Watts) is selected while a low beep indicates Low power (1 Watt) is selected. When low power is selected 'LO' is displayed.

Note: Selecting channel 16 automatically resets the transmitter to high power.

WORKING CHANNEL MEMORIES

The GX600 has two dedicated 'working channel' memories called Channel A and Channel B. These allow you to store and recall two often-used working channels. These memories are accessed using keys labeled ***CHAN A*** and ***CHAN B***. Channel A is also used as the priority channel for the Triple Watch function (see feature description later in this manual). These channel memories also allow faster channel switching across the band than would normally be possible using the ▲ or ▼ keys. E.g from CH16 to CH67.

Channel A

To store a frequency in Channel A, select the required channel using the ▲ or ▼ keys, then press and hold the ***CHAN A*** key for 1.5 seconds. The channel number will flash then a high beep will be heard as the channel is stored.

Channel B

To store a frequency in Channel B, select the required channel using the ▲ or ▼ keys, then press and hold the ***CHAN B*** key for 1.5 seconds. The channel number will flash then a high beep will be heard as the channel is stored.

To Recall Channel A or B

Briefly press the ***CHAN A*** or ***CHAN B*** key to switch immediately to the channel stored in that memory. If the radio was scanning the scan will be cancelled.

DUAL WATCH KEY (DW)

The Dual Watch function is a 2 channel scan feature where the GX600 switches between Channel 16 and any other selected channel. This allows you to monitor a working or club channel while still being able to receive important broadcasts on channel 16.

To use the Dual Watch function, select your preferred working channel - either by using the ▲ or ▼ keys - or by selecting one of the stored ***CHAN A*** or ***CHAN B*** memories - then briefly press the ***DW*** key. A high beep with be heard and 'DW' will appear on the display. The GX600 will now monitor the selected channel AND channel 16 by alternating equally between them. Only the working channel number is shown on the display when Dual Watching.

To cancel Dual Watching, briefly press the ***DW*** key again.

DUAL WATCH FEATURES

If a signal appears on channel 16:

The radio will switch immediately to Channel 16 and CH 16 will be displayed. At this point the selected channel is no longer being monitored because channel 16 has priority. *During this time the* ***PTT*** *may be pressed for normal transmissions on* ***channel 16***. Once channel 16 has become inactive for 5 seconds the Dual Watch function will resume.

If a signal appears on the selected channel:

Scanning will pause on the selected channel BUT channel 16 will continue to be monitored every 2 seconds. *During this time the* ***PTT*** *may be pressed for normal transmissions on the* ***selected channel*** (monitoring of channel 16 ceases while transmitting). Once the selected channel has become inactive for 5 seconds the Dual Watch function will resume.

To Transmit on the selected Channel while Dual Watching:

Simply press the ***PTT***. The Dual Watch function will pause during the transmission and remain paused until 5 seconds after all activity has ceased on the channel. Dual Watch will then resume.

To Transmit on Channel 16 while Dual Watching:

Press the ***16*** key to switch to channel 16. Dual watch will be cancelled and the radio will switch straight to Channel 16. Now press the ***PTT*** and transmit in the usual way. When your conversation has ended, press the ***DW*** key to resume Dual Watching.

To change the Working Channel while Dual Watching:

While Dual Watching, simply select another working channel by either using the ▲ or ▼ keys or selecting one of the stored ***CHAN A*** or ***CHAN B*** memories. Dual Watching continues on the newly selected channel.

TRIPLE WATCH KEY (TW)

The Triple Watch function is an extension of the Dual Watch feature. It allows the GX600 to monitor Channel 16, a selected channel AND a priority channel. Each channel is scanned equally for signals with priority given first to CH 16, then the Priority channel and lastly the selected channel.

When Triple Watch is selected, the TW icon is displayed along with the selected channel number. The "priority" channel is the one stored in the ***CHAN A*** memory.

To use the Triple Watch mode, first program your priority channel (the default priority channel is 9) into the ***CHAN A*** memory, then select your preferred working channel using the ▲ or ▼ keys. Now press and hold the ***TW*** key for 1.5 seconds until a high beep is heard. 'TW' and the selected channel will be displayed.

To cancel Triple Watch

Either - Briefly press the ***TW*** key to switch to Dual Watch mode. A high beep will be heard

or - Press and hold the ***TW*** key to return to normal operation. A low beep will be heard.

TRIPLE WATCH FEATURES

If a signal appears on channel 16:

The radio will switch immediately to Channel 16 and CH 16 will be displayed. At this point the selected channel and the Priority channel are no longer being monitored because channel 16 has highest priority. *During this time the* ***PTT*** *may be pressed for normal transmissions on channel 16.* Once channel 16 has become inactive for 5 seconds the Triple Watch function will resume.

If a signal appears on the Priority channel:

Scanning will pause on the Priority channel BUT channel 16 will continue to be monitored every 2 seconds (the selected channel is not monitored). *During this time the **PTT** may be pressed for normal transmissions on the Priority channel* (monitoring of Channel 16 ceases while transmitting). Once the Priority channel has become inactive for 5 seconds Triple Watch will resume.

If a signal appears on the selected channel:

Scanning will pause on the selected channel BUT channel 16 and the Priority channel will continue to be monitored every 2 seconds. *During this time the **PTT** may be pressed for normal transmissions on the selected channel* (monitoring of channel 16 and the Priority channel ceases while transmitting). Once the selected channel has become inactive for 5 seconds the Triple Watch will resume.

To Transmit on the selected Channel while Triple Watching:

Simply press the ***PTT***. The Triple Watch function will pause during the transmission and remain paused until 5 seconds after all activity has ceased on the channel. Triple Watch will then resume.

To Transmit on the Priority channel while Triple Watching:

Briefly press the ***CHAN A*** key. The Priority channel will then become the selected channel. Now press the ***PTT*** and transmit in the usual way. When your conversation has ended, re-select your selected channel.

To Transmit on Channel 16 while Triple Watching:

Press the ***16*** key. Triple watch will be cancelled and the radio will switch straight to Channel 16. Now press the ***PTT*** and transmit in the usual way. When your conversation has ended, press and hold the ***TW*** key to resume Triple Watching.

SCANNING

The Scan function allows the GX600 to scan through a series of user selected channels looking for activity. Scanning is done in an ascending sequence at a rate of 10 channels per second.

Channels can be selected and stored for scanning from any of the available channels, including weather channels (if the USA channel set is selected) and private channels (if they are enabled).

Note: The transmitter is disabled while scanning. If the ***PTT*** is pressed, a low beep will be heard and the ***PTT*** is ignored.

To store channels for scanning.

Select the required channel using the ▲ or ▼ keys, then press and hold the ***SCAN*** key for 1.5 seconds. The channel number will flash, a high beep with be heard and 'M' will appear next to the channel number.

Repeat the process to remove a previously stored channel from the scan list. When a channel is removed a low beep is heard and 'M' disappears from the display on that channel.

To Begin Scanning.

Briefly press the ***SCAN*** key. The GX600 will scan upwards through the stored channels at 10 channels per second and the display will show rapidly changing channel numbers. If a signal is located, scanning will pause on that channel and will remain for 5 seconds after the signal has gone. Scanning will then resume.

To stop the scan.

Briefly press the ***SCAN*** key again. The radio will return to the last selected channel.

SCANNING FEATURES

If the scan is paused on a busy channel and you wish to remain on that channel:

Briefly press the ***SCAN*** key. Scanning will be cancelled and the radio will remain on that channel. To resume scanning, briefly press the ***SCAN*** key again.

If the scan is paused on a busy channel and you wish to skip over that channel:

Briefly press the ▲ or ▼ key. Scanning will resume with the next channel in sequence. As an alternative, pressing the ***SCAN*** key twice will give the same result.

If the scan is paused on a busy channel and you wish to transmit on that channel:

Simply press the ***PTT*** switch. Scanning will be cancelled and the radio will remain on that channel. Note, if the **PTT** is pressed at any other time while scanning, a low beep will be heard and the ***PTT*** will be ignored.

To switch immediately to Channel 16:

Briefly press the ***16*** key. Channel 16 will be selected, scanning will be cancelled and the radio will be restored to normal operation with high transmitter power selected.

To switch immediately to a stored working channel (CHAN A or CHAN B):

Briefly press the ***CHAN A*** or ***CHAN B*** key. Scanning will be cancelled and the radio will switch to the channel stored in the selected memory.

Scanning Notes:

1. Each channel set has its own independent scan memory. E.g. Scan channels stored under the International channel do not affect those stored under the USA channel set.
2. If the GX600 is switched off while it is scanning, it will resume scanning automatically when it is switched on again.
3. A minimum of 2 channels is required in the scan memory before scanning is allowed. If there are less that 2 channels, pressing the ***SCAN*** key will give a low beep and the scan will be ignored.
4. The following keys/functions are disabled while scanning:
   - PTT
   - 25/1W
   - Scan memory storage

SCANNING WITH DUAL WATCH

If Dual Watch is selected while scanning, channel 16 will be inserted into the scan every alternate channel

SCANNING WITH TRIPLE WATCH

If Triple Watch is selected while scanning, channel 16 and the priority channel (stored in the ***CHAN A*** memory) will both be inserted into the scan.

INSTALLATION

Note: Your GX600 is designed for connection to negative earth electrical systems only.

SELECTING A LOCATION

It is advisable to spend a little time selecting the best location for your GX600. The mounting bracket can be rotated above, below or behind the radio enabling the radio to be mounted in a wide range of locations. In addition, using the optional flush mounting kit, the GX600 can be mounted directly in a panel or dashboard.

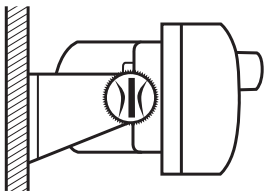
Upright or overhead mounting

Keep the following points in mind when choosing a location.

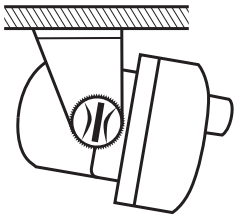
- The GR100 is designed to meet the IP67 specification which allows for direct water spray. However, we recommend you select a location that will minimise excessive exposure to water splashes or continuous rain.
- Select a location that wont expose your radio to continuous direct sunlight which could cause overheating.
- Ensure that the location allows a free flow of air around the heatsink on the back of the radio.
- The microphone and all controls should be readily accessible and the loud speaker easily heard from the normal steering position. An extension speaker (SPK600) can be installed if required.
- For best results connect the battery leads directly to the vessel's battery. If you need to extend the power leads to reach the battery use heavy insulated automotive wire of at least #10 gauge.
- Components and currents in the transceiver create magnetic fields. To avoid interference to ships compasses or autopilot sensors, the GX600 should be mounted at least 300 mm from such equipment.

INSTALLING THE UNIT

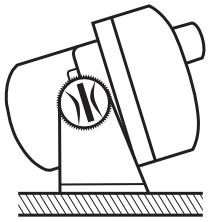
After choosing your location, hold the unit with the mounting bracket attached into the desired position and mark the location with a pencil. Remove the mounting bracket from the radio and drill the mounting holes. Bolt or screw the bracket in place using hardware suitable for the mounting surface. The unit is supplied with stainless steel screws, however, if the mounting surface is unsuitable for screws you may need to replace these with stainless steel bolts. Remember the fixings for overhead mounted units may have to withstand heavy pounding when the vessel is in rough water or being towed on a trailer.



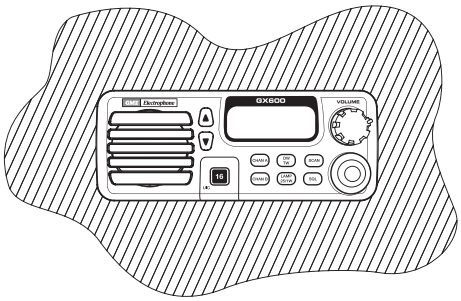
Panel Mounting



Overhead Mounting

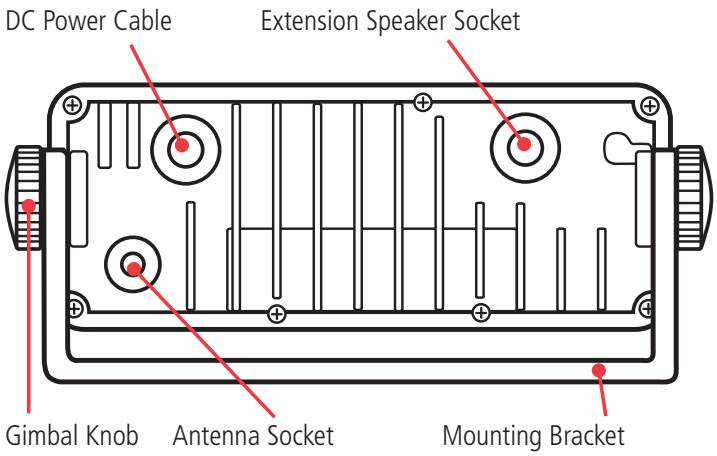


Upright Mounting



Flush Mounting (Optional MK600 flush mounting kit available)

Rear Panel Connections



DC CONNECTIONS

Connect the RED power lead to the Positive (+) side of the battery or to an accessory point in the vessel's fuse box.

Connect the BLACK power lead to the negative (-) side of the battery or to a ground point in your vessel's fuse box.

Note: The RED power lead is fitted with a 10 Amp fuse. If the fuse blows, use only a standard 10 Amp (3AG type) fuse as a replacement. Use of higher rated fuses or 'slow blow' types could result in damage to your radio which would void the warranty.

Connect the antenna cable to the rear antenna socket on the radio using a PL259 coaxial connector.

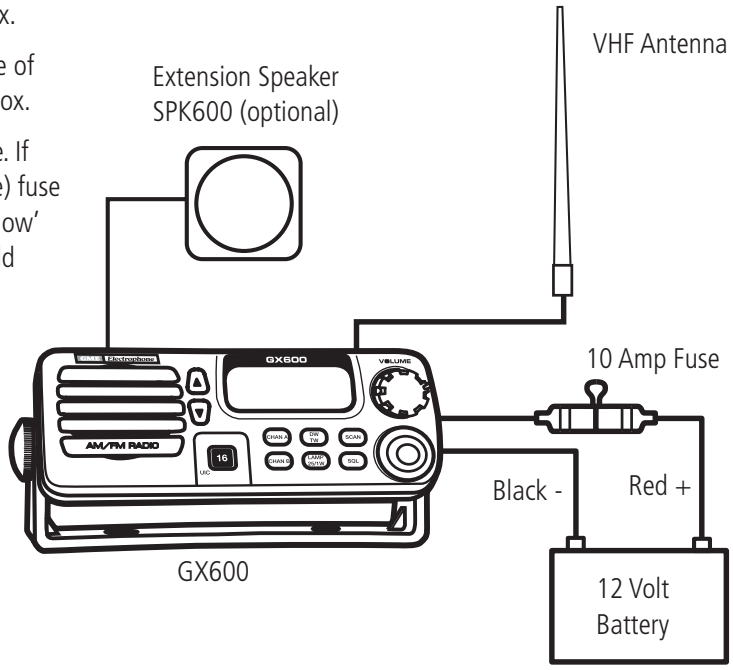
If required, an SPK600 extension speaker may be installed near the steering position or outside the cabin to improve the reception clarity in those areas. The SPK600 is specifically designed for the GX600 with a water tight connector to match the extension speaker socket on the rear of the radio.

NOISE SUPPRESSION

The inherent design of VHF FM transceivers results in a high level of resistance to ignition and electrical interference. However in some installations it may be necessary to take additional steps to help reduce or eliminate noise interference. During installation, try to route the DC battery leads, the antenna lead or any accessory wires away from the engine compartment, ignition or alternator wiring. If the noise continues, it may be necessary to fit a suppression kit. Contact your local marine dealer for more information.

Similarly, if the interference you are experiencing is from other electronic equipment such as a depth sounder, try to keep the depth sounder's DC leads and transducer cable well away from your GX600's wiring.

GX600 WIRING



SPECIFICATIONS

ELECTRICAL

General

Complies with:	AS/NZS4415.2.2003
Frequency Range:	155 – 165 MHz
Channel Spacing:	25 kHz
Modulation:	FM
Channels Sets:	• International, USA, Canada • Private – 10 Channels • USA Weather Channels • Customer Weather Channels
Supply Voltage:	• 12 Volt nominal • 10.5 – 15.6 Volt max. range • Negative Earth
Frequency Stability:	±1.5 kHz over environment extremes
Scan Speed:	100 ms/channel (10 channels/sec)

Transmitter

Power Output:	• High: 25 Watts Max • Low: 1 Watt Max
Spurious Emissions:	< -75 dBc
Frequency Deviation:	± 5 kHz max +20 dB limiting @ 1 kHz
Frequency Response:	+ 6 dB per octave, 300 Hz – 3 kHz, +1 - 3 dB
Demodulated S/N:	> 50 dB weighted
Current Consumption:	• High Power: < 5 Amps • Low Power: 850 mA

Receiver

IF Frequencies:	• 1st: 21.4 MHz • 2nd: 450 kHz
Sensitivity:	-121 dBm for 12 dB SINAD unweighted
Squelch Sensitivity:	Adjustable, 10 preset levels
Spurious Rejection:	> 70 dB
Intermodulation Rejection:	> 75 dB
Adjacent Channel Rejection:	> 74 dB
Blocking Rejection:	> 100 dB
RF Bandwidth:	< 4 MHz
Switching Bandwidth:	> 10 MHz
Frequency Response:	-6 dB per octave de-emphasis, 300 Hz – 3 kHz, +1 - 3 dB
Audio Output Power:	• 4 Watts average into external 4 Ohm speaker • 2 Watts average into internal speaker
Audio SN:	> 50 dB weighted
Conducted Spurious Emission:	< -70 dBm
Current Consumption:	• Muted: < 200 mA • Full Volume: 700 mA

MECHANICAL

Dimensions:	164 (W) x 65 (H) x 77 (D) mm
Flush Mounting:	46 mm Panel Depth minimum
Weight:	585 grams

ENVIRONMENTAL

Temperature Range:	- 10°C to + 55°C
Vibration:	MIL STD 810E, procedure I 3.4.8
Solar Radiation:	Case UV Stabilised
Water and Dust Resistance:	• IP67 excluding external cabling
Compass Safe Distance:	300 mm

EXTERNAL CONNECTIONS

Microphone:	6 Pin socket
DC Supply:	2 Pin Blade Socket
External Speaker:	3.5 mm Phono Line Socket

Specifications are typical unless otherwise indicated and may be subject to change without notice or obligation.

WARRANTY

GME ELECTROPHONE limit this warranty to the original purchaser of the equipment.

GME ELECTROPHONE warrant the GX600 to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase from their authorised dealer.

Should the product require servicing during this period, all labour and parts used to effect repairs will be supplied free of charge. GME ELECTROPHONE reserve the right to determine whether damage has been occasioned by accident, misuse or improper installation whereby the warranty would be void, including equipment which has been damaged due to:

(a) Incorrect or reverse polarity connection to a battery or power supply or to an incorrect supply voltage.

(b) Operation without an antenna or by connection to an antenna which has been incorrectly installed, resulting in damage to the transceiver's output circuit.

(c) Effects of water or moisture penetration.

(d) Non-factory modifications.

Procedure to be followed by claimant: In the event of a defect occurring during the warranty period, the original Purchaser may return the defective unit along with suitable proof of purchase date (i.e. receipt, docket, credit card slip etc.) and a full description of the defect to the Dealer from whom the unit was purchased. All freight charges incurred for transportation by the Dealer or GME ELECTROPHONE are the Purchaser's responsibility.

GME ELECTROPHONE AFTER SALES SERVICE

Your ELECTROPHONE transceiver is especially designed for the environment encountered in marine installations. The use of all solid state circuitry, careful design and rigorous testing, result in high reliability. Should failure occur however, GME ELECTROPHONE maintain a fully equipped service facility and spare parts stock to meet the customer's requirements long after expiry of the warranty period.

GME Electrophone

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