



COMMERCIAL

RP3800

UHF REPEATER



INSTRUCTION MANUAL

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THE FOLLOWING ITEMS ARE INCLUDED WITH YOUR RP3800

- 1 x TX3600T Radio
 - 1 x TX3800T Radio
 - 19" mounting cabinet
 - 2 cable exit points with covers
 - Temperature controlled fan
 - Instruction manual
 - DC Lead
- If any items are missing or damaged, please contact your retailer or place of purchase.

INTRODUCTION

The GME RP3800 Commercial UHF Repeater has been wholly designed and manufactured in Australia by Standard Communications Pty. Ltd. to meet the requirements of commercial radio users. The RP3800 combines the very latest in electronic hardware with computer aided design and manufacturing techniques to produce a compact commercial repeater with outstanding features, specifications and performance.

FEATURES

- Strong die cast metal construction.
- Tested to MIL-STD 810C/D/E standards for shock, vibration, humidity and dust.
- Simple-to-use Controls – rotating on/off volume control and channel switch and push button function keys (when using the optional AK3600 control head).
- Up to 99 channels capacity.
- Transmitter output power of 25 watts, switchable to 5 watts.
- The very latest surface mount component types, design and assembly techniques and quality control procedures are used to ensure the highest performance and reliability.
- Microprocessor and Controlled Frequency Synthesizer provides user programmable control of channel memories and selected feature options.
- Permanent memory retains all settings in memory even when the power has been removed.
- A built-in Continuous Tone Coded Squelch System (CTCSS) option provides quiet channel operation of up to 5 individual users.

CONTROLS

The RP3800 has no visible controls. It is designed to be pre-programmed using a PC and custom dealer software. Once programmed, it can be put into service locally or installed at a remote site where it is used to pass voice signals for the purpose of extending the range of mobile and portable radios. A LED on the front panel adjacent to the TX3800 label indicates the operational state of the radio. The LED has four (4) states:

1. Solid Green: Power is converted
2. Flashing Green: Radio is in sleep mode.
3. Solid Orange: Radio is receiving
4. Solid Red: Radio is transmitting

ANTENNA CONNECTION

Connect the co-ax cable connectors from suitable UHF antenna/s to the BNC antenna connectors on the rear of each radio. The antenna/s should be tuned to match the frequency band of any channels programmed into the radio. A single antenna is used if an optional diplexer is used.

OPTIONAL AUDIO KIT

An optional AK3600 audio kit is available for the RP3800. The AK3600 consists of an extension speaker and a remote head unit that plugs into the front panel socket to provide limited control features and allow voice talk-through operation. The audio kit is useful for testing radio links associated with the GME RP3800 during installation and service.

The RP3800 Commercial Repeater has an interconnect board mounted inside the cabinet that is used for the interconnection of both the Transmitting and Receiving radios. Also located on the PCB are two 9-pin 'D' connectors, which may be used to connect further RP3800 repeaters or single TX3600/3800's for use as link radios. In FIG 1, the input/output ports and controls of this circuit board are shown. Also fitted to this board is a High Pass filter to filter out any CTCSS that is received by the RP3800 and is therefore not passed to the Transmit or Link radios.

Figure 1.

Notes for Link M and F: Busy is input, PTT is output, RX audio is input, TX audio is output.

Operating Adjustments:

1. VR1 – this adjusts the audio level being passed from the RX to the TX radio.
2. VR2 - this adjusts the audio being sent to the pin 'D' connector labelled 'Link F'.
3. VR3 – this adjusts the audio being sent to the 9 pin 'D' connector labelled 'Link M'

Input/Output Ports

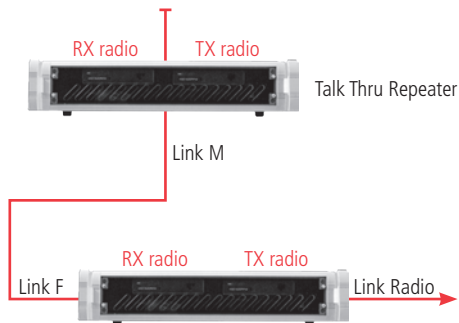
4. Link M & F – these two 9 pin 'D' connectors are used for the interconnection of a second or third RP3800 when used as a duplex link radio. See figures 2 to 4.
5. The 'Transmit Radio' & 'Receive Radio' are connected to the TX3800T and TX3600T transceivers respectively in the repeater, which have been programmed for the Transmit and Receive functions.
6. J13 – this link is removed when the RP3800 has been enabled for duplex link operation.
7. J9 located at the top left of the PCB enables a high pass filter to be inserted in between RX & TX radio when regenerating CTCSS in the TX radio.
8. J10 located between the two 25 pin 'D' connectors is used when one of the five CTCSS tones being accepted by the RX radio is to be generated by the link radios. This jumper allows for a serial transfer of information of these five CTCSS tones to be passed to the link radios for regenerations. (See notes pages 5 to 7 for programming).
9. J5 & J6 allows for selection of either Active High or Low 'Busy' out from the RP3600 to the radios connected to Link M or Link F.
10. JP1 located between the two 25 pin 'D' connectors is used when one of the five CTCSS tones being accepted by the RX radio is to be regenerated by the TX radio. This jumper allows for a serial transfer of information of these five CTCSS tones to be passed to the TX radio for regeneration. (See notes pages 5 to 7 for programming.)
11. J11 allows for either Active High or Low of the 'PTT' of the link radio's connected to either Link M or F.

Note: These two 9 pin 'D' connectors can also be used to connect the RP3800 to external equipment. These connectors are labelled with the appropriate pin outs.

With this version (revision 5) of the interconnect PCB, the five tones being accepted by the receive radio in the RP3800 can now be sent to a second site via an RP3800 configured as a duplex link. The RP3800 configured as a duplex link would be programmed for CTCSS regeneration in the same manner as the RP3800 configured as a duplex repeater

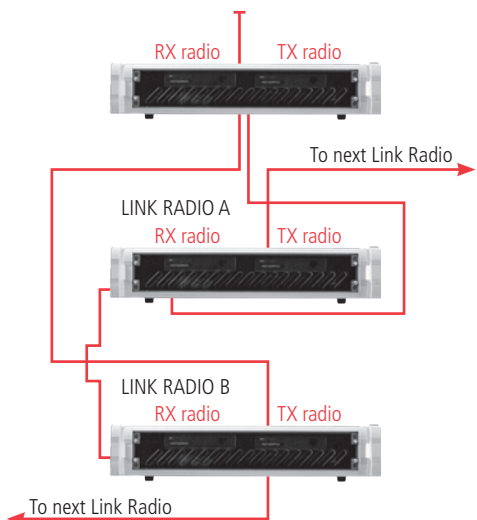
Shown below are diagrams outlining the different scenarios in which the RP3800 can be used:

Figure 2. Link Terminating Repeater



Shows an RP3800 repeater being fed by 2 RP3800's, acting as a point-to-point link. Audio and control signals are interconnected by a single 9 Pin 'D' cable.

Figure 3. Multiple Link Repeater System



Shows an RP3800 repeater being fed at the junction point by 2 RP3800 Radios being used in a point-to-point link repeater chain. Audio signals, which are being passed along the chain are dropped and inserted at this point to feed the RP3800 repeater. The connection of three 9 pin 'D' cables in the manner shown will allow audio routing in every direction as shown in Figure 4.

Figure 4a. From Mobiles

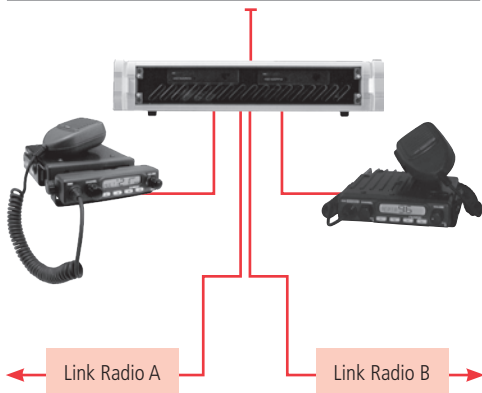


Figure 4b. From a left side Link

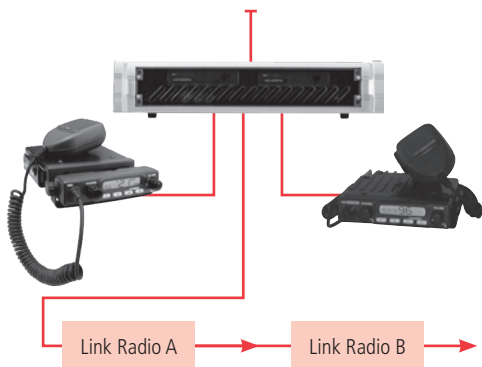
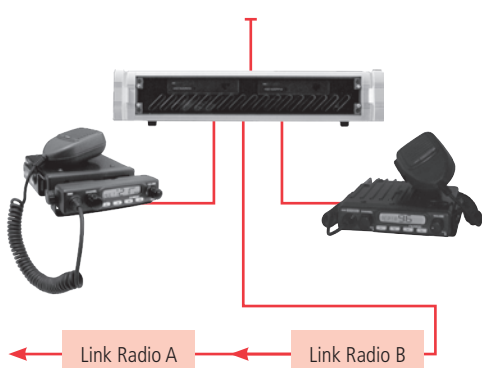


Figure 4c. From a right side Link



Shows A, B, C. Traffic flow diagrams for lined repeater operation.

SPECIFICATIONS

Electrical

General

RF Performance:	Compliant with AS4295
Frequency Band:	450 to 520MHz.
No. of Channels:	99 commercial channels
Channel Spacing:	25 or 12.5kHz
Frequency Stability:	+ 1kHz
Modulation:	FM
Antenna Impedance:	50 Ohms nominal
Antenna Connector:	BNC
Operating Voltage Range:	10.8 to 15.6 Volts
Test Voltage:	13.8 Volts DC
Reverse Polarity Protection:	Diode crowbar
Overvoltage Protection:	18-volt crowbar
Current:	0.2 Amps receive (power save ,60mAH) 6 amps transmit into 50 Ohms

Transmitter

RF Output:	High: 25Watts Max. Low: 5 Watt adj.
Transmit Duty Cycle:	50% duty cycle
RF Switching Bandwidth:	UHF, 70MHz
Deviation Limiting:	+ 2.5 kHz at + 20dB AF Limiting
Pre-Emphasis:	+6dB per Octave, +1dB -3dB, 300Hz to 1Hz
AF Distortion:	3% below limiting.
Residual Modulation:	-40 to -45dB0
Spurious Outputs:	< - 75dBc

Receiver

Circuit Type:	Double Conversion Superheterodyne
Intermediate Frequencies:	1st: 45MHz; 2nd: 455kHz
Sensitivity:	-122dBm for 12dB SINAD unweighted.
Adjacent Channel Selectivity:	-73dB
Intermodulation:	74dB
Blocking:	> 100dB

Spurious Rejection:	>75dB
RF Switching Bandwidth:	UHF, 70MHz
Audio Signal to Noise:	>40dB unweighted
Conducted Spurious Emission:	<80dBm

Mechanical

Dimensions:	
Weight:	4 Kg

Environmental

Operating Temperature Range:	-10°C to +60°C
Storage Temperature:	-30°C to +70°C
Shock and Vibration:	MIL SPEC 810

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

WARRANTY

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

GME warrant the RP3800 to be free from defects in material and workmanship for a period of twenty four (24) months from the date of purchase from their authorised retailer.

Should the product require servicing during this period, all labour and parts used to effect repairs will be supplied free of charge. GME 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) Connection to incorrect power supply.
- (c) Operation without an antenna or by connection to an antenna which has been incorrectly installed, resulting in damage to the radio's output circuit.
- (d) Effects of water or moisture penetration.
- (e) 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 retailer from whom the unit was purchased. All freight charges incurred

for transportation by the retailer or GME are the purchaser's responsibility.

GME AFTER SALES SERVICE

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

Website:

www.gme.net.au



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For customers outside Australia and New Zealand, please contact your local GME retailer or email to: export@gme.net.au

Part Number: 310199 Drawing Number: 41842-2