

Section 1 General Description

1-1 Introduction

This manual contains information and procedures for installation, operation, and maintenance of Powerwave's G3S-800-140-031 multicarrier RF power amplifier. The manual is organized into six sections as follows:

- Section 1. General Description
- Section 2. Installation
- Section 3. Operating Instructions
- Section 4. Principles of Operation
- Section 5. Maintenance
- Section 6. Troubleshooting

1-2 General Description

The G3S-800-140-031 (see figure 1-1) is a linear, feed-forward power amplifier that operates in the frequency band from 851 MHz to 869 MHz. The amplifier can simultaneously transmit multiple frequencies, with better than -60 dBc third order intermodulation distortion (IMD). It is designed for use in an amplifier system that is modular in design, and is ideally suited for use in base stations. The plug-in Model G3S-800-140-031 amplifier modules can each provide 140 watts of power and function completely independently of each other. The amplifier modules are designed for parallel operation to produce high peak power output and backup redundancy for remote applications. All solid-state, the system is designed to provide trouble-free operation with minimum maintenance. The system's modular construction and unique and highly effective LED-based operational status and fault indicators help minimize downtime. The turn-on and turn-off sequences of voltages are fully automatic, as is overload protection and recycling. Inadvertent operator damage from front panel manipulation is virtually impossible.

The amplifier module has a status connector that allows the host system to monitor the amplifier module performance. The front panel of each amplifier module has unit level status/fault indicators and an RF on/off/reset switch. Primary power for the amplifier is +27 Vdc. Cooling for each plug-in amplifier module is provided by four fans, two mounted on the front and two on the rear of the module. The fans draw outside air through the front of the module and exhaust hot air out through the rear of the module.

1-3 Functional And Physical Specifications

Functional and physical specifications for the amplifier are listed in table 1-2.

1-4 Equipment Changes

Powerwave Technologies, Inc. reserves the right to make minor changes to the equipment, including but not necessarily limited to component substitution and circuitry changes. Changes that impact this manual may subsequently be incorporated in a later revision of this manual.

1-5 Ordering Information

Table 1-1 following gives the part numbers and descriptions to be used when ordering either an entire amplifier or replacement fans.

Table 1-1 Major Amplifier Components

Model Number	Description
G3S-800-140-031	140 W 851-869 MHz MCPA Module
800-01075-003	Front fan assembly
800-00972-002	Rear fan assembly.

Table 1-2 G3S-800-140 Multicarrier Cellular Amplifier Functional Specifications

Frequency Range	851-869 MHz (18 MHz Bandwidth)
Instantaneous Bandwidth	18 MHz
Total Maximum Input Power	-6.54 dBm
Total Output Power	140 W (51.46 dBm) typical (1 Module)
IMD and In-band Spurious, mean measurement, 30 kHz bandwidth@ +26 to +28Vdc, 25°C	-60dBc or -16 dBm max @ up to 16 equal power CW tones with a combined maximum power of P ₀ with a max single carrier power of P ₀ /16 with maximum crest factor of 7.5dB up to the maximum rated RF output power.
Out of Band Spurious & Noise, measured in 30 KHz BW	-60 dBc max @ +26 to +28 Vdc
RF Gain	58 dB ±0.5 dB
Gain Flatness:	±0.5 dB @ 27 Vdc ±1 Vdc
Gain Variation w/ Voltage and Frequency	± 0.5 dB; 26 to 28 Vdc
Gain Variation Over Temperature:	±0.5 dB
Noise Figure	25 dB max
Output Protection:	Mismatch Protected
Input Port Return Loss:	16 dB min
Harmonics:	Better than -50 dBc
Out of Band Spurious:	Better than -60 dBc
Duty Cycle:	Continuous
DC Input Power:	+27 Vdc ±1 Vdc, 70 amps max Operational +21 Vdc to 30 Vdc
DC Circuit Breaker Rating	100 Amps
Operating Temperature:	0° C to +50° C
Storage Temperature:	-40° C to +85° C
Operating Humidity:	0 % to 80 % Relative Humidity (noncondensing)
Storage Humidity:	0 % to 100 % Relative Humidity (noncondensing)
DC Input, Summary Alarm, and RF Input / Output Connectors:	21-Pin D-Subminiature Combo Connector plus single-pin D-Sub connector for additional DC capability.
Heat Generation	5510 BTUS (1 Amplifier)
Weight	50 lbs.
Dimensions:	5.20" High, 17.00" Wide, 20.00" Deep
Electrical Service Recommendations Circuit Breakers	Capable of handling anticipated inrush current (normally 25% over equipment maximum current draw), in a load center with a master switch.

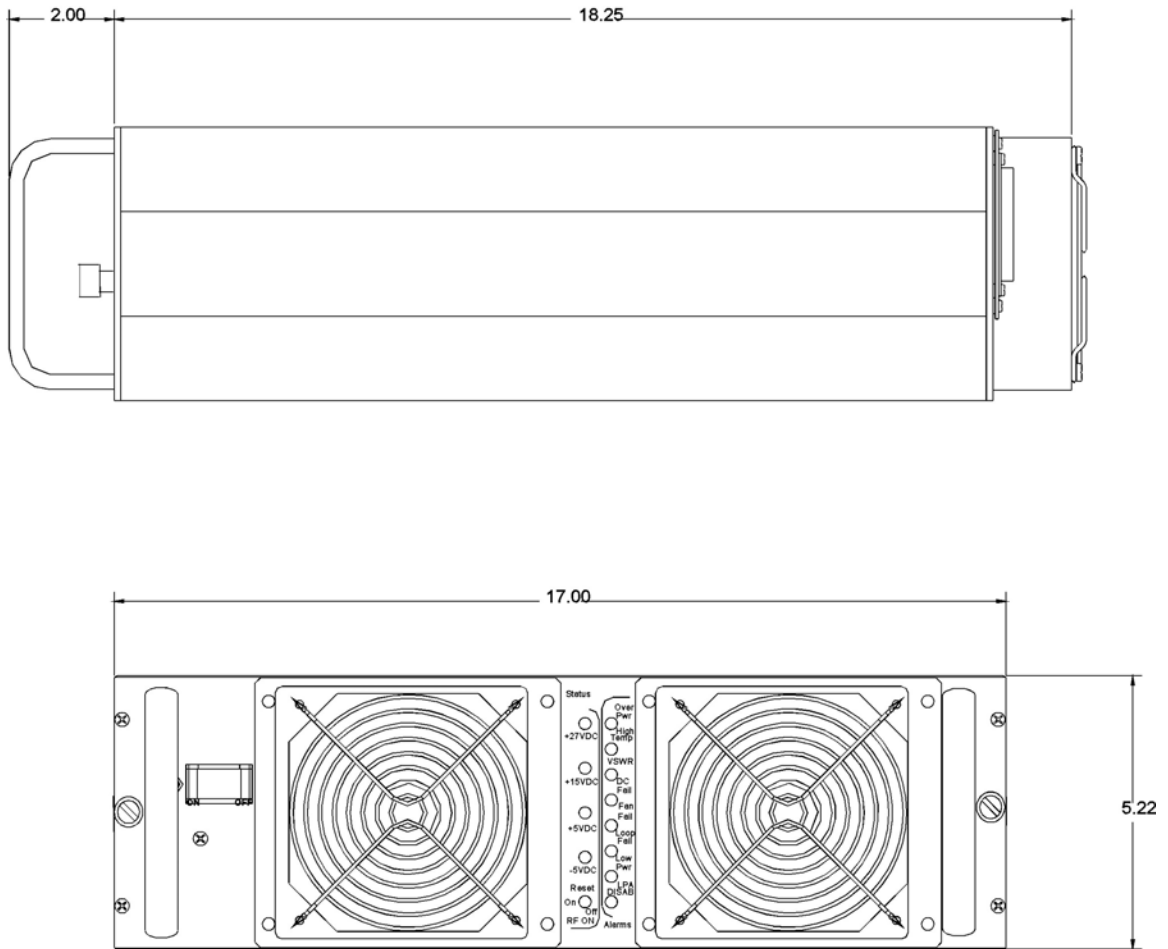


Figure 1-1 G3S-800-140-031