

Section 3 Operating Instructions

3-1 Introduction

This section contains operating instructions for the Multicarrier Cellular Amplifier System.

3-2 Location And Function Of Amplifier Module Controls And Indicators

Primary +27 Vdc power is applied to the amplifier via a 100-amp circuit breaker (ON-OFF) located on the left side of the amplifier front panel.

The plug-in amplifier module RF control and indicators, located in the center of the amplifier front panel between the cooling fans, are shown in figure 3-1. The status and RF control functions and alarms are described in detail in the subsequent paragraphs.

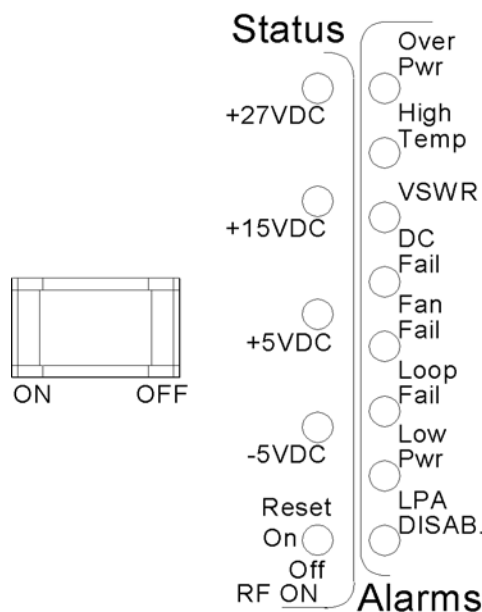


Figure 3-1 G3S-800-140-031 Amplifier Module RF Control and Indicators

3-2.1 Voltage Indicators And On/Off/Reset Switch

3-2.1.1 +27VDC Indicator

Green LED. When lit, indicates that the +27 Vdc supply is greater than +21 Vdc and less than +31 Vdc. If the +27 Vdc indicator goes out, the DC FAIL indicator will illuminate. This indicates that the +27 Vdc voltage dropped below +21 Vdc.

3-2.1.2 +15VDC Indicator

Green LED. When lit, indicates that the +15 Vdc supply is greater than +12 Vdc and less than +17 Vdc. If the +15 Vdc indicator goes out, the DC FAIL indicator will illuminate. This indicates that the +15 Vdc voltage dropped below +12 Vdc or increased above +17 Vdc.

3-2.1.3 +5VDC Indicator

Green LED. When lit, indicates that the +5 Vdc supply is greater than +2 Vdc and less than +7 Vdc. If the +5 Vdc indicator goes out, the DC FAIL indicator will illuminate. This indicates that the +5 Vdc voltage dropped below +2 Vdc or increased above +7 Vdc.

3-2.1.4 -5VDC Indicator

Green LED. When lit, indicates that the -5 Vdc supply is greater than -7 Vdc and less than -2 Vdc. If the -5 Vdc indicator goes out, the DC FAIL indicator will illuminate. This indicates that the -5 Vdc voltage dropped below -7 Vdc or increased above -2 Vdc.

3-2.1.5 RF ON Switch

Three position switch:

Off (down position) - Turns off amplifier module.

On (center position) - Normal amplifier on position.

Reset (up position) - When toggled to reset position, all the red LED indicators will turn on one at a time in sequence followed by all the green indicators one at a time in sequence; this will also reset the fault latches. If the switch is held in the reset position, a microcontroller reset will occur. This will be verified by the LEDs toggling state again. The switch is spring loaded to return to the normal ON position when released. If a fault occurs and the MCPA is disabled, the alarms can be cleared and the MCPA enabled by this reset position. The functions of the switch are disabled for five seconds after a power-up condition.

3-2.2 Alarm Indicators

The alarm modes described here are indicative of amplifier alarm modes made to the amplifier subrack. The amplifier subrack interprets these alarms and may subsequently deliver a different alarm indication to the host equipment. Refer to the amplifier subrack manual to determine host equipment level alarms.

Refer to section 6 to interpret and correct the various alarm states.

Refer to table 3-1.

A 'Minor Alarm' indicates a potential fatal amplifier problem via the amplifier front panel LEDs. and the MCPA fault will be in evaluation.

A 'Major Alarm' indicates a major problem but the MCPA module will not be disabled.

A 'Critical Alarm' is indicative of a fatal problem. The fault indicator will latch on and the MCPA module will be disabled.

Both 'Major Alarm' and 'Critical Alarm' will be sent to the host system via the MCPA subrack.

Table 3-1 Amplifier Module Alarm Indicators Definition

| Alarm | Mode | LED | MCPA Module | MCPA Disable signal (pin 4 in Table 2-1) | Condition |
|------------------------|----------|-----|-------------|--|---|
| Over Pwr | Critical | Red | Disable | High | MCPA module output power >200 watts (Note 4) |
| Over Pwr | Critical | Red | Disable | High | Input power >-2 dBm |
| High Temp | Minor | Red | Enable | Low | High temperature detected |
| High Temp | Critical | Red | Disable | High | High temperature detected for longer than two minutes |
| VSWR | Minor | Red | Enable | Low | 14.5 W < Reflected Power < 38W |
| VSWR | Critical | Red | Disable | High | 60W < Reflected power detected at output longer than approx. two min. |
| DC Fail | Minor | Red | Enable | Low | One of the internal DC voltages dropped below or exceeded the safe threshold level |
| DC Fail | Critical | Red | Disable | High | Voltage out of range for longer than approx. two minutes (Note 2) |
| DC Fail (Over voltage) | Critical | Red | Disable | High | +27 Vdc input >30 V for longer than one sec. after initial detection of DC input >31 V (Note 3) |
| Fan Fail (one) | Major | Red | Enable | Low | Any fan failure |
| Loop Fail | Minor | Red | Enable | Low | Loop failure detected |
| Loop Fail | Critical | Red | Disable | High | Loop failure detected longer than 2 minutes |
| Low Pwr | Minor | Red | Enable | Low | Rack controller detected MCPA output is 3 dB below that of the other MCPA in the system. |
| Low Pwr | Critical | Red | Disable | High | Rack controller detected low power condition for more than approx. two minutes |
| LPA DISAB. | Critical | Red | Disable | High | Unit is manually switched off using the front panel RF ON switch, or disabled by a serial command or auto shutdown by an alarm condition. |

NOTES:

1. RS-485 serial alarm will follow LED status.
2. The appropriate status LED shall turn off indicating which voltage is out of its range.
3. When overvoltage is detected:
 - a) MCPA shall shut down (disable)
 - b) Turn on red DC Fail LED
 - c) Set flag for DC Fail alarm
4. When overpower is detected:
 - a) MCPA shall shut down (disable)
 - b) Turn on Over Pwr LED
 - c) Set flag for Over Pwr alarm
 - d) The MCPA module shall use a peak power detector to determine the overpower fault.

3-3 Initial Start-Up And Operating Procedures

The amplifier module has two operating controls, both located on the front face of the module: the power ON - OFF switch and the RF ON - ON/OFF/RESET switch (refer to figures 1-1 and 3-1).

To perform the initial start-up, proceed as follows:

1. Verify that all input and output cables are properly connected.

CAUTION

Before applying power, make sure that the input and output of the amplifier are properly terminated at 50 ohms. Do not operate the amplifier without a load attached. Refer to table 1-2 for input power requirements. Excessive input power may damage the amplifier

WARNING

Ensure the amplifier is turned off while disconnecting and reconnecting cables between the antenna interface and power measurement equipment. Failure to do so may cause damage to the equipment or personal injury.

NOTE

The output coaxial cable between the amplifier and the antenna must be 50 ohm coaxial cable. Use of any other cable will distort the output.

2. Verify that the amplifier front panel switches are in the OFF position.
3. Turn on supply that provides +27 Vdc to the amplifier system. Do not apply an RF signal to the amplifier system
4. Place the ON - OFF circuit breaker on the amplifier in the ON position. Visually check the indicators on the amplifier module, and verify that the following indicators are on:
 - A. LPA DISAB. indicator (red) should be on.
 - B. The +27VDC, +15VDC, +5VDC and -5VDC indicators (green) on the amplifier module should be on.
5. Set the RF ON switch to the ON (center) position. All red LEDs should turn off after six seconds.
6. Follow the power setting procedure set forth in the amplifier subrack or system integration manual. Turn on external exciter/transceiver and apply RF input signals.