VYTEK

WIRELESS

# 2nd Generation Base Transmitter (G2BT)

# User Manual

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# 1 FOREWORD

## 1.1 GENERAL INFORMATION

The information in this manual is preliminary to the production release of the G2BT tranmistter. It is to be used to guide the user in the operation of the equipment, but has not been reviewed for accuracy. No responsibility is assumed for inaccuracies. Vytek Wireless reserves the right to make changes to any product discussed hearin. Vytek does not assume any liability arising from the application or use of any product or circuit described herin. Neither does Vytek convey any license under any patents or rights of others.

Refer questions concerning the contents of this manual to:

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## 1.2 COMPUTER SOFTWARE COPYRIGHTS

This manual covers the following products:

Models: ***G2BT NPCS transmitter***



**This product contains copyrighted material.**

## 1.3 WARNINGS!

**WARNING !**

This device has not yet been approved by the FCC and may not be sold or marketed until such approval is obtained. Changes or modifications to this device that are not expressly approved by Vytek Wireless are prohibited and could void the user's warranty and possibly his authority to operate this product.

**DO NOT allow the antenna to come close to or touch the eyes, face, or any exposed body parts while the radio is transmitting.**

**DO NOT operate the transmitter unless it is properly connected to a suitable antenna or dummy load.**

**DO NOT apply power to the transmitter unless it is properly connected to a suitable antenna or dummy load.**

**DO NOT operate the radio near electrical blasting caps.**

**DO NOT operate this product near explosives or near explosive gasses.**

**DO NOT operate the radio unless it has been installed and inspected by a qualified radio technician.**

**DO NOT let children operate transmitter equipment.**

**DO NOT defeat the ground connection or polarization provisions of the equipment.**

**DO NOT allow the antenna used by this product to come within 6 meters of any human.**

## 1.4 HUMAN EXPOSURE

This equipment can radiate large amounts of RF energy. It is designed to use an antenna permanently fixed mounted to an outdoor structure. The selected area of this structure should prevent personnel from inadvertently being closer to the antenna than six meters. It is the responsibility of the user to install and use this equipment in the proper manner. It should be installed and maintained by trained technicians only. Licensees of the FCC using this equipment are responsible for insuring that its installation and operation comply with FCC regulations designed to limit human exposure. See FCC Rules part 1, section 1.1310 as published in CFR part 47.

# 2 GENERAL OVERVIEW

## 2.1 G2BT PAGING TRANSMITTER OVERVIEW

The Sonik *Second Generation Base Transmitter (G2BT)* is a ReFlex[tm] paging transmitter for the 900 MHz frequency band. It is a multi-carrier design, based on the original Motorola Base Transmitter (BT). It Features:

### FEATURES

- Multi-carrier linear transmitter with 1-4 simultaneous, independent carriers.
- Reduced overall systems cost with an Sat RX and Ethernet port.
- ReFLEX25 and ReFLEX50 compatible.
- Existing BT features with enhancements to networking, alarming, management, and reliability.
- Transmit data from Satellite controller interface.
- High reliability100W and 400W models, useful in multi-carrier or single-carrier systems (one-way or Oasis type systems)
- Reduced size, weight, and power consumption.
- Modular design for easy upgrading and field service.
- GPS receiver generates precise frequency and timing
- SNMP provides network control and alarming
- Software updates may be downloaded over network or via front panel console port
- Generic RS485 interface to allow for other Satellite interfaces
- Enhanced 64 Kbps satellite link data rate

## 2.2 FRONT-PANEL CONTROLS

### 2.2.1 AC ON/OFF

Located on the AC Distribution panel, are two circuit breakers. They are used to turn the AC power to the unit off or on. The left one is the MAIN AC breaker, and switches both sides of the 240VAC power. The right breaker is the 125VAC circuit breaker, and switches the 125VAC outlets on the front and rear of the AC Distribution Panel.

**CAUTION!**

If there is an internal AC Uninterruptable Power Supply in the station, there still may be AC power applied to some sub-systems when both of the circuit-breakers on the front of the unit are turned off!

The control-equipment chassis has its own battery back-up and will continue to run, even after the AC power is switched off with the front-panel circuit breakers. You must switch it off with the On/OFF switch on the front of the CE Power Supply.

### 2.2.2 AMPLIFIER POWER-SUPPLY SWITCHES

Located on the front of each amplifier's power supply, is a small AC power switch. There are 4 switches, one for each power supply. These switches turn the AC to each individual amplifier on or off. In general, they should always be left in the ON position. All 4 amplifier power supplies must be turned on before the station can transmit. Transmitting with less than 4 power supplies turned on will cause an alarm, and the station may-not work properly.

## 2.3 FRONT-PANEL INDICATORS

### 2.3.1 AMPLIFIER INDICATORS

| | |
|---|---|
| *Status LED* | Green=Normal operation<br>Amber=Fault (hot, overdrive,…)<br>Red=Off-line (either hard-failed or taken off-line by the operator) |
| *TX LED* | Lights green when more than 10 watts of RF are output from the amplifier |

### 2.3.2 AMPLIFIER POWER SUPPLY INDICATORS

### 2.3.3 CE CHASSIS INDICATORS

There are 4 LEDs on the front of the System Controller Module (SCM) in the control chassis. The funtion of the LEDs on this module are as follows:

| | GREEN ● | AMBER ● | RED ● | OFF ● |
|---|---|---|---|---|
| **Power LED** | Online | Warming up or unit is off-line. It is also amber when the network paging feed is disabled. | Diagnostics mode. | |
| **Sync LED** | Locked (GPS SYNC ACQUIRED state) | Holding (GPS SYNC LOST state) | Searching (GPS OPEN SEARCH state) | |
| **Alarm LED** | Station OK | Minor Alarm | Major Alarm Flashing = Critical Alarm | Booting up |
| **Network LED** | MDP Data is being received | | | No MDP Data is being received |

# 3 SPECIFICATIONS

## 3.1 RF SPECIFICATOINS

| Function | Specification |
|---|---|
| Operating Frequency Range | 929.00 – 941.00 MHz |
| Modulation Modes | Per ReFLEX 2.7 and ReFlex 50 specs:<br>4 level FSK, 3200 & 6400 bps<br>2 level FSK, 1600 & 3200 bps |
| Launch Time Delay | Programmable, 1µS to 1 mS |
| Encoder Clock Stability | +/- 2.5 ppm |
| Launch Time Accuracy | 1 µS |
| Launch Time Resolution | 1 µS |
| Transmit Rise Time | <= 10 mS |
| Transmit ON Timing | Rated power before first sync symbol |
| Transmit Off Timing | <= -13 dBm within 2.5 mS |
| Sub-Channel Spacing | 10 KHz or 12.5 KHz |
| Modulation Bandwidth | 10 to 50 KHz |
| Number of Sub-Channels | One to Four |
| Power Amplifier Type Options | Class A or Class C, Field Installable |
| Frequency Accuracy | +/- 1 Hz (when locked to GPS) |
| Frequency Offset Range | +/- 500 Hz |
| Frequency Offset Resolution | 1 Hz |
| GPS Time Sync Accuracy | 500 nS |
| GPS Sync Freewheeling Time | > 30 minutes (typical) |
| Amplifier Power Level Options | 100 or 400 watts (multi-carrier linear mode)<br>250 watts (single-carrier non-linear mode) |

## 3.2 NETWORK & PROTOCOL SPECIFICATIONS

| | |
|---|---|
| Transmitter Protocol | ReFlex Version 2.7 and ReFlex 50 |
| Satellite Receiver Interface Protocol | Mtel Distribution Protocol (MDP) |
| Network Interface Protocol | TCP/IP over IEEE 802.3 10baseT Ethernet |
| MDP Packet Receipt Time | >= 200ms |
| Launch Timing | Launch based on GPS time + delay |
| Command & Control Protocol | SNMP Version 1 via UDP |
| Software Download Protocol | TFTP via UDP over Network,<br>XMODEM or YMODEM via<br>Front Panel Console |

## 3.3 POWER SPECIFICATIONS

| | |
|---|---|
| Sub-Systems with Battery Backup | Controller operation for 15 minutes |
| Input Voltage | 1 phase 176-264 VAC, 50-60Hz |
| Input power consumption | 3500 watts max |
| AC Input Connection | 240VAC, Single phase, NEMA L14-30P |

## 3.4 MECHANICAL SPECIFICATIONS

| | |
|---|---|
| EMP/Lightning Protection | Antennas: SatRx, GPS, Transmitter<br>AC power, lease line |
| RF Connector | 7/16" Type Female |
| GPS Connector | "N" Type Female |

| | |
|---|---|
| Satellite Receiver Connector | "F" Type Female |
| Ethernet LAN Connector | RJ-45 [10baseT] |
| Weight | < 500 pounds |
| Front Panel Console Connector | DB-9 Female |
| Connector Locations | Accessible, with clearance for wrenches |
| Connector Finish | Resistant to corrosion, oxidation |
| Intrusion Alarms | Front and rear doors |

## 3.5 COMMUNICATIONS INTERFACE SPECIFICATIONS

| | |
|---|---|
| Ethernet LAN | TCP/IP over IEEE 802.3 10baseT Ethernet |
| Supervision/Maintenance Console Port | Front Panel Serial Port (VT100) RS-232, 9600 baud, 8 bits, 1 stop, no parity |
| Satellite Receiver Interface | RS-422, up to 64 Kbps based on SpaceCom FM-Cubed Receiver |

## 3.6 ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| Operating Temperature | -30 to +70 deg C, per TIA 603 |
| Humidity | 0% to 95% at 50 deg C, per TIA 603 |

# 4 ELECTRICAL REQUIREMENTS

All electrical wiring for the site must meet the requirements of the National Electrical Code (NEC) and all applicable local codes. All conductors must be made of copper.

The G2BT paging Transmitter is supplied with a NEMA L14-30P plug. 240V/12-V is supplied from a center-tapped transformer. The two 120V circuits are 180 degrees out of phase, therefore 240VAC is available betweent he phases. All equipment in the G2BT operates off 120VAC other than the 4 high-current power supplies that provide power to the RF power amplifiers. The high-current power supplies operate off the 240 VAC.

AC start-up in-rush current may be as much as 100amps, lasting less than 5mS. Typical AC current draw of the station is 15 amps during transmission, and 3.5 amps during standby.

# 5 SITE PLANNING

Vytek recommends the following considerations when selecting a site to locate the transmitter at:

1. A minimum floor-space of 20 square feet to allow acess to the front and rear of the cabinet.
2. Floor loading capable of supporting the weight of the cabinet and personel operating the cabinet.
3. A minimum ceiling height of 7 feet.
4. A ceiling structure designed to support the cabls entering and exiting the G2BT, so that the cable connections are not stressed.
5. The ambient temperature must be maintained between –30 and +60C.
6. The cabinet should be tied to earth-ground at the lug-provided internal to the cabinet.
7. The site must not have hazardous or combustable materials in it, either stored or spilled.
8. An HVAC system is highly recommended. Maitaining the ambient temperature in the range of 0C to +40C, will increase the life of the product.
9. The G2BT emits approximately 10,000 BTUs of heat when it transmits, and this should be taken into account when considering the amount of cooling necessary to maintain a reasonable ambient temperature.
10. The ambient humidity must be less than 95%, non-condensing.
11. The site must be properly grounded. It is beyond the scope of this manual to explain the proper techniques, but every site should have Ground-Rings installed around it, the tower properly grounded, the cabinet grounded, and the cable-tray grounded.

Installation of this Equipment is to be performed only by qualified service personnel.

# 6 INSTALLATION

## 6.1 CABINET GROUNDING

Safety and operation depends on proper grounding of the equipment. The main cabinet ground is on the top of the cabinet, as shown in the following diagram. The main cabinet ground connects to the cabinet rail, and each chassis installed in the cabinet has an independent ground.

Locate the site ground wire and connect it to the cabinet as follows:

***Note: The site ground wire must be AWG #2 or larger, green-insulated solid copper wire.***

1. Strip 3/8 of an inch of wire from the end of the ground wire.
2. Loosen the set-screw on the ground connetion to the transmitter and insert the stripped end of the wire under it.
3. Leave approximately 1/16 of an inch of bare-wire exposed outside the grounding connection.
4. Tighten the set-screw to secure the ground wire to the ground of the transmitter.
5. Ensure that the other end of the ground wire is properly connected to the site ground system.

## 6.2 ANTENNA CONNECTIONS

### 6.2.1 GPS

The GPS antenna connection is a type N connection on the top of the unit. Locate and connect the GPS antenna cable to the GPS N connector, and tighten it securely.

**CAUTION!**

The transmitter supplies +5Vdc power to the antenna using the coax center pin. If you use a GPS antenna with a DC short to ground, you must install a DC block in-line with the antenna coax cable.

### 6.2.2 TRANSMITTER RF OUTPUT

This Transmitter is designed to operate with a fixed mounted outdoor antenna only. The placement should be such that personnel are prevented from inadvertently being within six meters of the antenna.

# 7

### 7.1.1 SATELLITE RECEIVER

## 7.2 NETWORK CONNECTIONS

If the frame-relay interface is installed on the unit, there is a line filer-box attached to the top of the cabinet. The connection to the network is via screw-down terminals on this filter box. You can determine the proper connections to the network by following the wire colors on the transmitter side of the filter-box. The connections are as follows:

| *Wire Color* | *Typical RJ-45 Pin* | *Function* |
|---|---|---|
| RED | 1 | Transmit R |
| GREEN | 2 | Transmit T |
| BLACK | 7 | Receive TI |
| YELLOW or WHITE | 8 | Receive RI |

# 8 OPERATION

## 8.1 POWERING UP THE SYSTEM

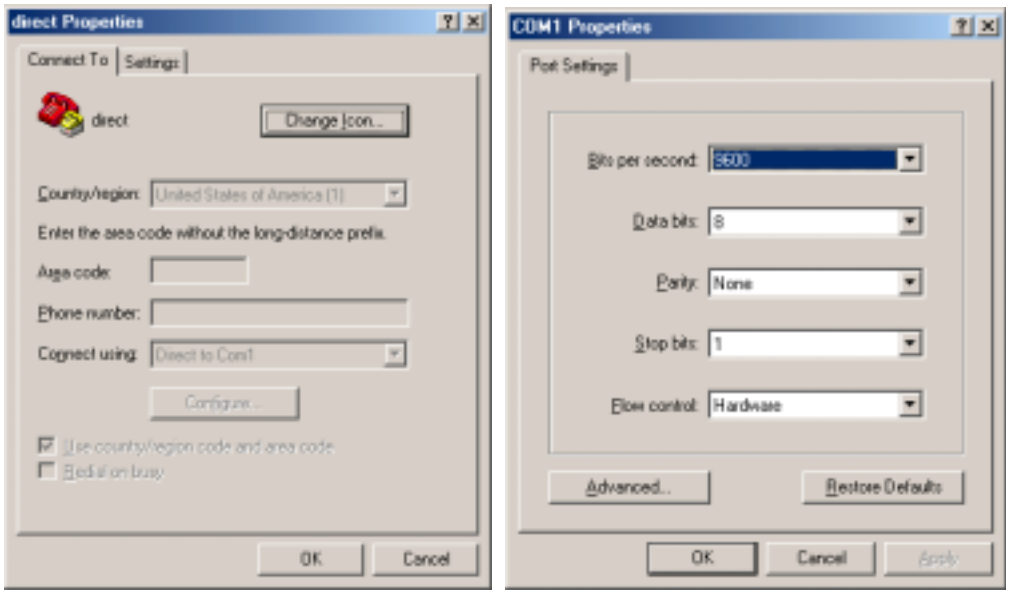
Upon applying power to the G2BT, the software will bootstrap itself before transmission or calibration is possible.

## 8.2 CONNECTING A TERMINAL

To monitor the boot-up process, connect a computer running HyperTerminal (or any similar terminal emulation program) to the front Console port of the G2BT. The serial port is configured as a *data communication equipment* (DCE) interface, and thus can be directly connected to most PC computer serial ports. A null-modem is not required.

The HyperTerminal settings are shown below. Note that you must select the type of connection you want. HyperTerminal typically defaults to some brand of modem, so when you set-up a new connection, be sure to select "direct connect" and choose the correct COM port. You must also set the serial COM port parameters as listed in the following table:

| Description | Setting |
|---|---|
| **Baud Rate** | 9600 |
| **Parity** | None |
| **Data Bits** | 8 |
| **Stop bits** | 1 |
| **Emulation** | VT100 |




HyperTerminal Settings

### 8.2.1 BOOTLOADER

The bootloader code is the first software executed in the bootstrap process. Its function is to initialize and verify basic hardware functionality, then load and pass execution on the application software.

Loading the final application software can be circumvented for diagnostic purposes, however under normal circumstances the bootloader should be allowed to run without any user intervention.

The bootloader will write to the front panel serial console a message that approximates the following:

```
*************************
G2BT BOOTLOADER
Version 2F49405
*************************
Current MAC address = 00:01:02:03:04:05
Current IP address = 11.31.3.4
Current subnet = 255.255.255.128
Current gateway = 11.31.3.126
Current TFTP Server = 10.0.0.1
Current Download File = g2bt.pkg

***You've got 5 seconds to escape normal boot process by entering any key...

Loading application...
```

The Power LED on the front panel will light orange.

### *8.2.2 APPLICATION*

Once the application has been loaded and execution has been passed to it, the following message will appear on the front panel serial console:

```
*************************
G2BT SCM Application
Version 2F443C5
*************************
Downloading FPGA & DSP code...
Jam STAPL Byte-Code Player Version 2.1

Copyright (C) 1998-2000 Altera Corporation
Device #1 IDCODE is 110300DDconfiguring FLEX device(s)...DONEExit code = 0...
Success
Downloading FPGA & DSP code -- PASS
Restoring configuration

Current MAC address = 00:01:02:03:04:05
Current IP address = 11.31.3.4
Current subnet = 255.255.255.128
Current gateway = 11.31.3.126
Current TFTP Server = 10.0.1.30
Current Download File = g2btapp.pkg
```

The Power LED on the front panel will remain yellow until the system is able to transmit pages, when the Power LED will become green. (Calibration may occur prior to this.)

## 8.3 QUICK-START CONFIGURATION

All user configuration settings will have factory defaults set prior to shipment. However there are several settings that are unique to each unit and must be configured in order for the transmitter to function correctly in the field.

In order to change configuration settings, a "user session" must be created by logging into the command line interface. To do this, connect a 9-pin DIN to the front panel RS232 port. Using terminal emulation software (set at 9600 baud, 8 data bits, 1 stop bit, no parity), press ENTER. At the **`login:`** prompt, type ADMIN, then press ENTER twice. An OK> prompt should be seen.

The essential configuration settings are listed below. Go through, and configure each on for the network that this device will be used in:

### 8.3.1 DISTRIBUTION: INCOMING MDP CONFIGURATION

#### 8.3.1.1 Network Zones (the zone number is a number between 0 and 65535)

```
DIstr Hdlc Net 1 xxx
```

#### 8.3.1.2 Network Zone mask (the zone mask is a number between 0 and 65535)

```
DIstr Hdlc Net Mask yyy
```

### 8.3.2 TRANSMISSION: OUTGOING REFLEX CONFIGURATION

#### 8.3.2.1 Tranmission Frequency (frequency is in MHz between 929.0 and 941.0)

```
TRAN Freq xxx.yy
```

#### 8.3.2.2 Subchannel offsets (offset frequencies are in Hz between –20000 and 20000)

```
TRAN Sub 1 Config Freq xx
TRAN Sub 2 Config Freq xx
TRAN Sub 3 Config Freq xx
TRAN Sub 4 Config Freq xx
```

#### 8.3.2.3 Launch Delay (in microseconds, this must be set to 203)

```
TRAN Launch 203
```

#### 8.3.2.4 ReFLEX25 Color Code Index

```
TRAN R25colorcode x
```

### 8.3.3 NETWORK CONFIGURATION

#### 8.3.3.1 IP Address (this is an address in IP notation)

```
Net Lan Ip x.x.x.x
```

#### 8.3.3.2 Subnet (this is an address in IP notation)

```
Net Lan Subnet x.x.x.x
```

#### 8.3.3.3 Gateway (this is an address in IP notation)

```
Net Lan Gateway x.x.x.x
```

### 8.3.4 IMPORTANT ALARM THRESHOLDS (IF DEFAULT OF 20 MINUTES IS NOT DESIRED)

Alarm thresholds are set in the factory to reasonable defaults.

#### 8.3.4.1 Dekey alarm (timeout in minutes)

```
THresh Dekey xx
```

#### 8.3.4.2 Freerun timeout (timeout in minutes)

```
THresh Freerun xx
```

### 8.3.5 CLEAR ALARMS & ALARM LOGS

To ensure that alarms and the alarm log start from a known state, it is advisable to clear all alarms and the alarm log.

#### 8.3.5.1 Clearing Alarms

```
Alarm All STATus Clear
```

#### 8.3.5.2 Clearing Alarm Log

```
Log Clear
```

To save these new configuration settings in non-volatile memory, perform the following command:

```
Flash Save
```

# 9 SUBSYSTEMS

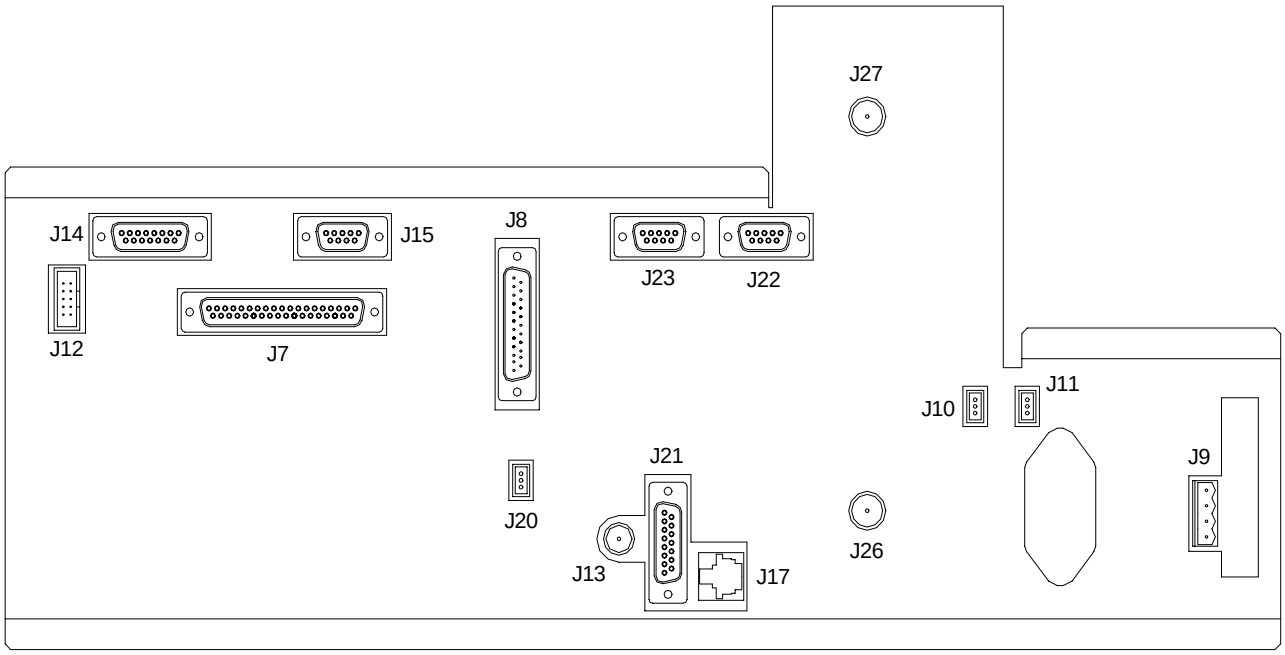
## 9.1 G2BT CONTROL CHASSIS

The G2BT Control Equipment Chassis houses the "brains" of the G2BT. All functionality is supported by the modules in this Chassis, with the exception of high-power RF generation. Its modular construction allows for easy field service. Most of the individual modules have backward compatibility with existing SkyTel BTs. The Chassis itself is self-contained, making it a superior low-power exciter for single carrier FLEX /Oasis systems. It may be used with the G2BT amplifiers for multi-carrier, applications, or used with low-cost external class C amplifiers for single-carrier sites.

There is a single Ethernet Network interface on the transmitter. The Ethernet is for connection to other units on site, local computers, routers, RFA-II receivers or direct network communications to the NOC.

### 9.1.1 CE BACKPLANE

The G2BT Control Equipment Backplane has the I/O connections for the CE chassis. The following diagram shows the location of the connectors.




**G2BT CE Backplane**

#### 9.1.1.1 J7 External Controller Interface (37 Pin Female D Sub Connector)

| PIN | PnP/xTIP | I-20 | SatRX | SyLC | SCM NET NAMES | CONNECTS TO |
|---|---|---|---|---|---|---|
| J7 P1 | SHIELD | GND | GND | GND | Backplane | |
| J7 P2 | RFC MAINT A | R(A) | AsyncRXD + | AsyncRX D+ | MODEM_TX DA | J3-P58, J16-P2, J25-P2 |
| J7 P3 | TX MAINT A | T(A) | AsyncTXD + | AsyncTX D+ | MODEM_RX DA | J3-P62, J16-P3, J25-P3 |
| J7 P4 | PT DATA A | I(A) | DTA+ | DATA | RS485_D+ | J4-P37, J6-P41 |
| J7 P5 | PT FRAME A | C(A) | DCD+ | KEY+ | DIST_DCD | J4-42, J6-P50 |
| J7 P6 | Wildcard out 1 | Wildcard out 1 | Wildcard out 1 | | | |
| J7 P7 | SGND | GND | GND | GND | | Backplane |
| J7 P8 | MARK A | B(A) | Wildcard in 2+ | BAUD | MODEM_DC DA | J3-P73, J16-P8, J25-P8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| J7 P9 | Wildcard out 2+ | Wildcard out 2+ | AsyncCTS + | AsyncCTS+ | MODEM_CTSA | J3-P67, J16-P5, J25-P5 |
| J7 P10 | Wildcard in 3 | Wildcard in 3 | Wildcard in 3 | | | |
| J7 P11 | TX OK+ | Wildcard out 3+ | AsyncDSR + | AsyncDSR+ | MODEM_DSRA | J3-P69, J16-P6, J25-P6 |
| J7 P12 | Wildcard in 4 | Wildcard in 4 | Wildcard in 4 | | | |
| J7 P13 | | | | | | |
| J7 P14 | RFC MAINT B | R(B) | AsyncRXD - | AsyncRXD- | MODEM_TXDB | J3-P12, J16-P14, J25-P14 |
| J7 P15 | Wildcard in 6 | Wildcard in 6 | Wildcard in 6 | | | |
| J7 P16 | TX MAINT B | T(B) | AsyncTXD - | AsyncTXD- | MODEM_RXDB | J3-P10, J16-P16, J25-P16 |
| J7 P17 | PT CLOCK A | S(A) | CLK+ | CLK | RS485_CLK+ | J4-P39, J6-P51 |
| J7 P18 | Wildcard in 7 | Wildcard in 7 | Wildcard in 7 | | | |
| J7 P19 | GND | GND | GND | GND | | Backplane |
| J7 P20 | RFC REQ+ | Wildcard in 8+ | AsyncDTR + | AsyncDTR+ | MODEM_DTRA | J3-P71, J16-P20, J25-P20 |
| J7 P21 | Wildcard in 9+ | Wildcard in 9+ | AsyncRTS + | AsyncRTS+ | MODEM_RTSA | J3-P66, J16-P4, J25-P4 |
| J7 P22 | PT DATA B | I(B) | DTA- | Data- | RS485_D- | J4-P36, J6-P42 |
| J7 P23 | Wildcard in 10 | Wildcard in 10 | Wildcard in 10 | | | |
| J7 P24 | PT FRAME B | C(B) | DCD- | KEY- | DIST_DCDB | J4-P45 |
| J7 P25 | Wildcard in 9- | Wildcard in 9- | AsyncRTS - | AsyncRTS- | MODEM_RTSB | J3-P14, J16-P19, J25-P19 |
| J7 P26 | MARK B | B(B) | Wildcard in 2- | Wildcard in 2- | MODEM_DCDB | J3-P4, J16-P10, J25-P10 |
| J7 P27 | Wildcard out 2- | Wildcard out 2- | AsyncCTS - | AsyncCTS- | MODEM_CTSB | J4-P70, J16-P13, J25-P13 |
| J7 P28 | Wildcard out 4 | Wildcard out 4 | Wildcard out 4 | | | |
| J7 P29 | TX OK- | Wildcard out 3- | AsyncDSR - | AsyncDSR- | MODEM_RI | J25-P22,J8-P22 |
| J7 P30 | RFC REQ- | Wildcard in 8- | AsyncDTR - | AsyncDTR- | MODEM_DTRB | J3-P16, J16-P23, J25-P23 |
| J7 P31 | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| J7 P3 2 | Wildcard out 5 | Wildcard out 5 | Wildcard out 5 | | | |
| J7 P3 3 | Wildcard out 6 | Wildcard out 6 | Wildcard out 6 | | | |

### 9.1.1.2 J7 External ControllerInterface (37 Pin Female D Sub Connector)

| PIN | PnP/xTIP | I-20 | SatRX | SyLC | SCM NET NAMES | CONNECTS TO |
|---|---|---|---|---|---|---|
| J7 P3 4 | Wildcard out 7 | Wildcard out 7 | Wildcard out 7 | | | |
| J7 P3 5 | PT CLOCK B | S(B) | CLK- | CLK- | RS485_CLK- | J4-P40, J6-P52 |
| J7 P3 6 | Wildcard out 8 | Wildcard out 8 | Wildcard out 8 | | | |
| J7 P3 7 | Wildcard out 9 | Wildcard out 9 | Wildcard out 9 | | | |

### 9.1.1.3 J8 CSU/DSU Interface (25 Pin Male D Sub Connector)

| PIN | FUNCTION | DIRECTION | | |
|---|---|---|---|---|
| J16P1 | GND | To Backplane | Backplane | |
| J16P2 | MODEM_TXDA | From Backplane | J3-P58, J7-P2, J25-P2 | MODEM_TXDA |
| J16P3 | MODEM_RXDA | To Backplane | J3-P62, J7-P3, J25-P2 | MODEM_RXDA |
| J16P4 | MODEM_RTSA | From Backplane | J3-P66, J7-P21, J25-P4 | MODEM_RTSA |
| J16P5 | MODEM_CTSA | To Backplane | J3-P67, J7-P9, J25-P5 | MODEM_CTSA |
| J16P6 | MODEM_DSRA | To Backplane | J3-P69, J7-P11, J25-P6 | MODEM_DSRA |
| J16P7 | GND | To Backplane | Backplane | |
| J16P8 | MODEM_DCDA | To Backplane | J3-P73, J7-P8, J25-P8 | MODEM_DCDA |
| J16P9 | MODEM_RXCB | To Backplane | J4-P33, J25-P9 | MODEM_RXCB |
| J16P10 | MODEM_DCDB | To Backplane | J3-P4, J7-P26, J25-P10 | MODEM_DCDB |

| | | | | |
|---|---|---|---|---|
| | B | | | |
| J16P11 | MODEM_SCTEB | From Backplane | J3-P3, J25-P11 | MODEM_SCTEB |
| J16P12 | MODEM_TXCB | To Backplane | J4-P34, J25-P12 | MODEM_TXCB |
| J16P13 | MODEM_CTSB | To Backplane | J4-P70, J7-P27, J25-P13 | MODEM_CTSB |
| J16P14 | MODEM_TXDB | From Backplane | J3-P12, J7-P14, J25-P14 | MODEM_TXDB |
| J16P15 | MODEM_TXCA | To Backplane | J3-P60, J25-P15 | MODEM_TXCA |
| J16P16 | MODEM_RXDB | To Backplane | J3-P10, J7-P16, J25-P16 | MODEM_RXDB |
| J16P17 | MODEM_RXCA | To Backplane | J3-P18, J25-P17 | MODEM_RXCA |
| J16P18 | MODEM_LL | To Backplane | J3-P75, J7-P29, J25-P18 | MODEM_LL |
| J16P19 | MODEM_RTSB | From Backplane | J3-P14, J7-P25, J25-P19 | MODEM_RTSB |
| J16P20 | MODEM_DTRA | From Backplane | J3-P71, J7-P20, J25-P20 | MODEM_DTRA |
| J16P21 | MODEM_RL | From Backplane | J3-P6, J25-P21 | MODEM_RL |
| J16P22 | MODEM_RI | To Backplane | J3-P20, J25-P22 | MODEM_RI |
| J16P23 | MODEM_DTRB | From Backplane | J3-P16, J7-P30, J25-P23 | MODEM_DTRB |
| J16P24 | MODEM_SCTEA | From Backplane | J3-P64, J25-P24 | MODEM_SCTEA |
| J16P25 | MODEM_TM | To Backplane | J3-P8, J25-P25 | MODEM_TM |

### *9.1.1.4 J9 Backup Battery (4 Pin Male Snap and Lock Connector)*

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J9P1 | +28VDC | To Backplane | J1P4-15 |
| J9P2 | GND | To Backplane | Backplane |
| J9P3 | B+ | To Backplane | J1P54, J1P55 |
| J9P4 | B- | To Backplane | J1P56, J1P57 |

### *9.1.1.5 J10 Aux +5 Vdc (3 Pin Male Snap and Lock Connector)*

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J10P1 | +5VDC | From Backplane | J1P24-31 |
| J10P2 | Not used | | |

| | | | |
|---|---|---|---|
| J10P3 | GND | To Backplane | Backplane |

### 9.1.1.6 J11 Aux +14 Vdc Interface (3 Pin Male Snap and Lock Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J11P1 | +14VDC | From Backplane | J1P16-23 |
| J11P2 | GND | To Backplane | Backplane |
| J11P3 | GND | To Backplane | Backplane |

### 9.1.1.7 J12 External Power Interface (10 Pin Male Snap and Lock Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J12P1 | GND | To Backplane | Backplane |
| J12P2 | GND | To Backplane | Backplane |
| J12P3 | +5 Vdc | From Backplane | J1P24-31 |
| J12P4 | +5 Vdc | From Backplane | J1P24-31 |
| J12P5 | +14 Vdc | From Backplane | J1P16-23 |
| J12P6 | +14 Vdc | From Backplane | J1P16-23 |
| J12P7 | +28 Vdc | From Backplane | J1P4-15 |
| J12P8 | GND | To Backplane | Backplane |
| J12P9 | +28 Vdc | From Backplane | J1P4-15 |
| J12P10 | GND | To Backplane | Backplane |

### 9.1.1.8 J13 10 MHz Ref. (BNC FEMALE)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J13 OTR CON | GND | To Backplane | Backplane |
| J13 Center | 10 MHz Ref | To Backpane | J4P56 |

### 9.1.1.9 J14 GPS Sharing Interface ( 15 Pin Female D Sub Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|

| | | | |
|---|---|---|---|
| J14P1 | Not used | | |
| J14P2 | Not used | | |
| J14P3 | Not used | | |
| J14P4 | Not used | | |
| J14P5 | GPS_RX+ | From Backplane | J5-P5 |
| J14P6 | GPS_1PPS+ | From Backplane | J5-P7 |
| J14P7 | GPS_RDY | From Backplane | J5-P10 |
| J14P8 | GND | From Backplane | |
| J14P9 | GND | From Backplane | |
| J14P10 | GND | From Backplane | |
| J14P11 | GND | From Backplane | |
| J14P12 | Not Used | | |
| J14P13 | GPS_RX- | From Backplane | J5-P6 |
| J14P14 | GPS_1PPS- | From Backplane | J5-P8 |
| J14P15 | GPS_MSTR_SEL | From Backplane | J5-P9 |

### *9.1.1.10 J15 Debug Interface (9 Pin Female D Sub Connector)*

| PIN | FUNCTION | DIRECTION | Default Function | CONNECTS TO |
|---|---|---|---|---|
| J15P1 | GND | To Backplane | Ground connection | Backplane |
| J15P2 | DAC1 | To Backplane | Sub Channel 0 baseband | J3P13 |
| J15P3 | DAC3 | To Backplane | Composite Q waveform | J3P31 |
| J15P4 | DIG1 | To Backplane | GPS 1PPS | J3P17 |
| J15P5 | DIG3 | To Backplane | IO Strobe | J3P21 |
| J15P6 | DAC0 | To Backplane | Sub Channel 0 I waveform | J3P11 |
| J15P7 | DAC2 | To Backplane | Composite I waveform | J3P32 |
| J15P8 | DIG0 | To Backplane | Frame Pulse | J3P15 |
| J15P9 | DIG2 | To Backplane | Sync window | J3P19 |

### 9.1.1.11 J17 Telco Interface (8 Conductor Modular Keyed Socket)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J24P1 | SIG1 | Programmable | J25P73 |
| J24P2 | SIG2 | Programmable | J25P74 |
| J24P3 | SIG3 | Programmable | J25P75 |
| J24P4 | SIG4 | Programmable | J25P76 |
| J24P5 | SIG5 | Programmable | J25P77 |
| J24P6 | SIG6 | Programmable | J25P78 |
| J24P7 | SIG7 | Programmable | J25P79 |
| J24P8 | SIG8 | Programmable | J25P80 |

### 9.1.1.12 J20 Door Alarm Interface (3 Pin Male Snap and Lock Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J20P1 | GND | | Backplane |
| J20P2 | DOOR_ALM | To Backplane | J4-P25 |
| J20P3 | GND | | Backplane |

### 9.1.1.13 J21 PA SPI Interface (15 Pin Female D Sub Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J17P1 | GND | To Backplane | Backplane |
| J17P2 | PA_SPI_A5 | From Backplane | J4-P65 |
| J17P3 | PA_SPI_A4 | From Backplane | J4-P66 |
| J17P4 | PA_SPI_A3 | From Backplane | J4-P67 |
| J17P5 | PA_SPI_A2 | From Backplane | J4-P68 |
| J17P6 | PA_SPI_A1 | From Backplane | J4-P64 |
| J17P7 | PA_SPI_A0 | From Backplane | J4-P63 |
| J17P8 | PA_SPI_CLK | From Backplane | J4-P77 |
| J17P9 | PA_SPI_MOSI | From Backplane | J4-P78 |
| J17P10 | PA_SPI_MISO | To Backplane | J4-P75 |
| J17P11 | Not used | | |
| J17P12 | Not used | | |
| J17P13 | Not used | | |
| J17P14 | Not used | | |

| | | | |
|---|---|---|---|
| J17P15 | Not used | | |

### 9.1.1.14 J22 Internal Detector Interface (9 Pin Female D Sub Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J18P1 | VREF1 | To Backplane | J2RCP8 |
| J18P2 | +28 Vdc | From Backplane | Backplane |
| J18P3 | GND | To Backplane | Backplane |
| J18P4 | GND | To Backplane | Backplane |
| J18P5 | VFWD1 | To Backplane | J2RCP7 |
| J18P6 | SHIELD_GND | To Backplane | Backplane |
| J18P7 | Not used | | |
| J18P8 | Not used | | |
| J18P9 | Not used | | |

### 9.1.1.15 J23 Remote Detector Interface (9 Pin Female D Sub Connector)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J19P1 | VREF2 | To Backplane | J2RCP16 |
| J19P2 | +28 Vdc | From Backplane | |
| J19P3 | GND | | Backplane |
| J19P4 | GND | | Backplane |
| J19P5 | VFWD2 | To Backplane | J2RCP14 |
| J19P6 | SHIELD GND | | Backplane |
| J19P7 | Not used | | |
| J19P8 | Not used | | |
| J19P9 | Not used | | |

### 9.1.1.16 J26 Exciter RF Feedback (Female SMA)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J21 CTR CON | RF_FEEDBACK_IN | To Backplane | Exciter CCA |
| J21 OTR CON | GND | To Backplane | Backplane |

### 9.1.1.17 J27 Exciter RF Out (Female SMA)

| PIN | FUNCTION | DIRECTION | CONNECTS TO |
|---|---|---|---|
| J22 CTR CON | RF_OUT | From Backplane | To Splitter |
| J22 OTR CON | GND | To Backplane | Backplane |

### 9.1.1.18 Backplane Mating Connector Table

| Connection | Description | Manufacturer | MFR P/N |
|---|---|---|---|
| J7 | 37 Pin Male D sub | | |
| J8 | 25 Pin Female D sub | | |
| J9 | 4 Pin Snap and Lock | Molex | WM5864-ND |
| J10 | Connector 3 Pin/Contact Mod IV | AMP/Tyco Electronics | 102241-1, 1-87523-9 |
| J11 | Connector 3 Pin/Contact Mod IV | AMP/Tyco Electronics | 102241-1, 1-87523-9 |
| J12 | 10 Pin Male Snap and Lock | Adamtech | FCS-10-SG |
| J13 | BNC(m) | | |
| J14 | 15 Pin Male D sub | | |
| J15 | 9 Pin Male D sub | | |
| J17 | RJ45 Male | | |
| J20 | Connector 3 Pin/Contact Mod IV | AMP/Tyco Electronics | 102241-1, 1-87523-9 |
| J21 | Connector 3 Pin/Contact Mod IV | AMP/Tyco Electronics | 102241-1, 1-87523-9 |
| J22 | 9 Pin Male D sub | | |
| J23 | 9 Pin Male D sub | | |
| J26 | SMA(m) | | |
| J27 | SMA(m) | | |

## 9.2 CE POWER SUPPLY

The control chassis power supply has been designed by Mesa Power Systems. It has its own AC power supply with provision battery-back-up for up to 15 minutes of operation. Internally, it uses an off-the-shelf AC-DC switching power converter. A simple micro-controller monitors the AC supply, battery voltage and current, and battery charging. It communicates this status information to the CPU via the SPI bus.

The back-up battery powers the control chassis, and does not power the RF power amplifiers, so no RF output will be produced when operating off of the internal back-up supply. The internal network interface will continue to operate off of the back-up supply.

# 10 USER INTERFACES

## 10.1 COMMAND LINE EDITOR

The command line editor accumulates keystrokes from user input into a command line to be passed to a command line interpreter (CLI) then displays the results of the command. The editor interacts with the operator allowing characters in the command to be inserted and deleted before it is submitted to the CLI. A history buffer is maintained for each operator session containing the previous 20 commands that can be recalled, edited, and resubmitted to the CLI using the arrow keys.

If current session is logged on as the system administrator or the administrator is not logged on and the current session is with the front panel console port, the command line editor will also output the system console messages in-between operator input.

## 10.2 CONSOLE

The front panel serial port, or Console, is managed by a Telnet "translator" task. In its idle state, the console manager outputs the console messages out the serial port. When an operator strikes a key the console manager initiates an internal Telnet session and simply passes characters between the serial port and the TCP/IP socket. This relieves the rest of the operator interface code from having to support user I/O coming from multiple places and requiring separate decisions and API calls for all input and output.

Once a user session is initiated on the console port the console messages are no longer displayed by this task because the command line editor then assumes this responsibility until the session is exited. Console message output will also be yielded while the system administrator is currently logged on through Telnet.

## 10.3 TELNET AND CONSOLE PORT USER INTERFACE

The user interface is presented at the control module's front panel serial port or when the system is accessed remotely using the Telnet protocol.

The uses interface allows for reading and modifying configuration parameters as well as launching calibration, test and reset processes.

There are four levels of access in the user interface:

- Admin all display/set commands
- Oper1 all display commands, all set commands except critical system settings
- Oper2 all display commands, some set commands
- Oper3 all display commands, no set commands

# 11 SW DOWNLOAD PROCESS

There are three phases in the software download process:

1. Receive the software download file.
2. Write the software download file into Flash memory.
3. Cutover to the new version of downloaded software.

## 11.1 RECEIVE SOFTWARE DOWNLOAD FILE

The software download file is transferred to the G2BT Station remotely through the LAN using TFTP, or locally through the front panel serial port using Xmodem or Ymodem protocols. When one of the methods has been activated but not yet completed, the other method handling is disabled (any data received using that protocol is ignored).

- TFTP (Trivial File Transfer Protocol)

The transmitter functions as a TFTP client; in this mode, the software download file will be "pulled" or downloaded by the station from a predefined server. The server IP address, download date, time and file name is specified through the user interface or through SNMP MIB sets.

During download, the system keeps information on the number of packets that have been transferred with or without success and the number of packets that have been transferred with success. There are also user specified values to control the timeout value from packet ack/err sent and the next packet received, number of retries that the station will send packet err to the server before aborting the session and interval from when the station receives a data packet to when it sends a packet ack/err.

- Front Panel Serial Port

The software download file can be transferred locally using the serial port and specifying the Xmodem or Ymodem protocols through the serial program (typically Hyperterminal or ProComm).

## 11.2 WRITE SOFTWARE DOWNLOAD FILE INTO FLASH MEMORY

The software download file always contains all binary images for the SCM software, the DSP software and the FPGA configuration code.

The G2BT contains Flash memory to store two complete images of the software download file (i.e. two complete images of each of the binary images for the SCM software, the DSP software and the FPGA configuration code). One virtual Flash memory bank contains a copy of the currently active software images, the other virtual Flash memory bank contains a copy of a dormant set of binary images. The SCM controls this information by storing several small arrays of software download status in the EEPROM.

The arrays in EEPROM contain the following information:

- FlashBank[active, dormant] = *virtual bank 1* | *virtual bank 2*
- Version[active | dormant ] [SCM | DSP | FPGA | Loader | Revert] = *version*

The software download file is decoded, verified for platform and data integrity and then written to the dormant virtual Flash memory bank. The Version[dormant][] array is updated with the version values of the SCM, DSP and FPGA binary images as written in the software download file.

## 11.3 CUTOVER TO THE NEW VERSION OF DOWNLOADED SOFTWARE

The software binaries remain in the Flash memory as dormant until actively specified to be cutover.

First the user specifies which version to cutover to through the user interface or through SNMP MIB sets. The system verifies that these are valid versions. If valid, the SCM updates the arrays in EEPROM to reflect the user specified versions. The actual cutover does not yet occur.

Then the user activates the cutover process through the user interface or through SNMP MIB sets. The activation can be **NOW** or **TIMED** (scheduled) depending on command parameters. The system verifies that the specified cutover version(s) is different from the current active version. This prevents unnecessary cutovers. If the cutover version(s) is different from the active current version, the system disables paging, turns off all interrupts thereby halting all network and front panel activity, and performs a warm CPU reset.

At reset, the boot loader loads the active SCM software into RAM and begins execution. The SCM software sends the active FPGA configuration code to the FPGA and the active DSP code to the DSP.

# 12 POWER CONTROL

## 12.1 INTRODUCTION

The power control function is designed to control keying and dekeying of the RF transmitter, monitor the functionality and integrity of the exciter, power amplifiers, and the PA power supplies, and operate the control loop that maintains the RF power output at the desired level.

## 12.2 CONFIGURATION MONITORING

The station power control and power output equipment is periodically monitored to ensure a safe shutdown or cutback to a lower output power. The monitoring rate is every 100 mS. The RF amplifiers themselves will not output power into an open load for more than about 100mS.

The user interface variable *pa installed* should be set to the number of power amplifiers present. If 4 are present, the desired output power may be set to 400W, if 1 is present, the output power may not exceed 100W. If 4 are present, but 1 or more cannot be operated, the output power will be automatically reduced as detailed in the power cutback and transmitter de-key section below.

The number of available PAs can be determined from the internal monitoring functions of the PAs, which allow supply voltage, supply current, temperature, fan status, and power output be measured. In the event of a problem, the gain of the PA can be reduced, or it can be shut down entirely.

The exciter card is monitored to determine that the IF and RF synthesizer LOs are operating and locked.

The integrity of the system output devices and cabling is determined by measuring forward and reflected power at the 4 PA internal wattmeters and the system wattmeter.

## 12.3 POWER CONTROL ALGORITHM

The G2BT can be configured as either a high power station, transmitting a maximum of 400 watts when fitted with 4 PAs, or as a low-power station transmitting a maximum of 100 watts when configured with 1 PA. The desired power level may be selected by the user in the range 100W to 400W for the high power station, and 25W to 100W for the low power station. The station may also cut back the output power as a response to fault conditions such as overheating.

The power reporting and control system take into account the number of carriers being transmitted at any one time. The power setting and reporting value is the total station RF output power, in watts. For example, if there are 4 carriers enabled, and the user sets the station power to 400 watts, each carrier will be controlled to 100 watts. When the station is transmitting, it will report 400 watts as being full power.

If the station is configured for 4 carriers, and the transmit data feed only tells the station to use one of the carriers, the power output will be reported as 100 watts. If some or all of the subcarriers dekey before the end of the frame, the power will be reported as if the carriers had been transmitting for the entire frame. The power control algorithm takes into account the number of carriers on the air at any instant, and normalizes that to the power output relative to the maximum number of carriers that the station is configured to use. For example, if the station is set up for 400W with 3 carriers enabled, each carrier will radiate 133W. The reported output power when only 2 subchannels are active will be 267W.

## 12.4 POWER CUTBACK AND SHUTDOWN

Power cutback is carried out when an operational failure is detected by the configuration monitor task. The system may cut back by 1dB or 3dB, or may de-key the transmitter. An alarm and error log entry is generated for all cutback and de-key events.

The following events trigger cutbacks and de-keying of the transmitter:

| Cutback by 1 dB | Cutback by 3 dB | Station de-keys |
|---|---|---|
| VSWR at 1 PA RF output connector > 3:1 | VSWR at 1 PA RF output connector > 10:1 | VSWR at more than 1 PA RF output connector > 10:1 |
| | VSWR at antenna connector > 3:1 | VSWR at antenna connector > 10:1 |
| Temperature of station exceeds 65˚C | Temperature of station exceeds 70˚C | Temperature of station exceeds 80˚C |
| One or more PAs issue a temperature warning | 1 PA or 1 PSU fails internally in a 400W station | More than 1 PA and/or PSU fails internally in a 400W station |
| | | The PA and/or PSU fails internally in a 100W station |
| | | Clipping of RF waveform detected (FCC rules) |
| | | Exciter card loses lock |
| | | Cartesian feedback loop fails or is disconnected |
| | | RF output power at antenna connector exceeds set power level by 10% |

**Table 1, Power Cutback Conditions**

If a cutback occurs due to a fault, the G2BT may revert to full power if the fault goes away for 60 seconds.

If a de-key occurs, the station will set the transmission paging mode user interface variable *(tran pa)* to OFF, and the calibration test mode variable *(cal t)* to STOP, and will not allow transmission even after cycling power until the paging mode variable is locally or remotely set to ON, or the calibration test mode variable is locally or remotely set to START.

# 13 COMMAND LINE USER INTERFACE

The command line interface is a password-protected English language command interpreter. The command structure is based on a hierarchy of parameter mnemonics that can be displayed or modified and additional commands that can activate subprograms, which may display reports, such as the "ping" command, or run interactively, such as the "menu" command. Subsets of parameters can be displayed by entering partial commands and the output of such long reports is then processed by a filter similar to the "more" utility on Unix system or the "/p" option on many MS-DOS commands.

Wherever logical, the hierarchy and mnemonics of parameters mirror the SNMP MIB structure.

A command line editor maintains a history of the previous 20 commands entered which can be recalled using the up and down arrow keys. Any single command line can be edited using the right, left, backspace and delete keys or canceled using the escape key.

## 13.1 CONVENTIONS

| *Convention* | *Description* |
|---|---|
| *[brackets]* | ***Indicates an optional item in a syntax statement. Only type the optional item, not the brackets themselves.*** |
| \| | ***Stands for "or" and separates items that you must select one or the other of.*** |
| *<key>* | ***Refers to a single key on the keyboard. For example, <F1> refers to the key labeled "F1" on your keyboard.*** |
| *UPPERCASE* | ***Indicates the actual commands, words, or characters that you must type. Only the upper-case underlined characters must be typed. Lower case characters are optional.*** |
| *Italic* | ***Provides a placeholder for information that you must type.*** |
| *<Tab>* | ***TAB key and VT100 arrow keys can be used for moving around between fields in forms and viewing statistics in menu system. Also <ESC> cancels the field edit or returns to previous menu.*** |
| *Command Line Editor* | ***Supports "editing" of command lines. <Left>, <Right>, <Home>, <End>, <Insert>, <Delete>, and <Backspace> gives the user more flexibility.*** |
| *Oper1, Oper2* | ***Indicates what user level is support for each command . Note: Admin has display/set access to all commands, Oper3 has display only access to all commands so these user levels are not indicated.*** |

## 13.2 COMMAND LIST

### 13.2.1 ALARM...

There are a number of alarm events which operate and can be configured independently. Each alarm event alarmName is managed by the following sub-commands. See Section "Alarms and Management" for alarm management and conditions.

Oper1 **Alarm *[alarmName]* Enable *[ YES | NO ]***

Set or display whether this alarm is operational. This command can either enable or disable individual alarms or, when combined with the **ALL** command mnemonic, can be used to turn all alarms on or off with the single command **ALARM ALL ENABLE NO** or **ALARM ALL ENABLE YES**.

Oper1 **Alarm *[alarmName]* SEverity *[ OFF | INFO | MINOR | MAJOR | CRITICAL ]***

Set or display the alarm's severity. When the alarm severity is set to **OFF** the alarm event is disabled, regardless of the ALARM alarmName ENABLE setting. Generation of SNMP trap messages is also controlled by the THRESHOLD TRAPLEVEL setting. Trap messages will only be sent if the configured severity is greater than or equal to the threshold level.

Oper1 Oper2 **Alarm *[alarmName]* STATUs *[ SET | CLEAR ]***

Set or display the current status of the alarm. Using this command an alarm can be cleared, or set, by the operator by setting this value but the normal functioning of an alarm event will not occur. If an alarm is manually set or cleared by the operator the system may, depending on the alarm, change its status. That is to say manually changing the alarm's status is not "permanent" and does not override the system's manipulation of the alarm.

Oper1 **Alarm *[alarmName]* Manual *[ SET | CLEAR ]***

Manually set or clear an alarm. Setting or clearing and alarm using this command will also trigger normal alarm functioning. That is to say, trap messages, console message, or log entries will be generated, depending on the alarm's configuration, when this command is used.

**Alarm *[alarmName]* STATS Set Timestamp**

Display the timestamp of the last time this alarm event occurred as YYYY/MM/DD HH:MM:SS.

**Alarm *[alarmName]* STATS Set Count**

Display the number of times this alarm condition occurred since the last system startup.

**Alarm *[alarmName]* STATS Clear Timestamp**

Display the timestamp of the last time this alarm event was cleared as YYYY/MM/DD HH:MM:SS.

**Alarm *[alarmName]* STATS Clear Count**

Display the number of times this alarm condition was cleared since the last system startup.

Oper1 Oper2 **Alarm *[alarmName]* COnsole Enable *[ YES | NO ]***

Set or display whether to print a message on the console when this alarm status changes.

Oper1 Oper2 **Alarm *[alarmName]* COnsole Interval *[ 0...4294967295 ]***

Set or display how often, in seconds, to redisplay a console message while the alarm status is SET. Setting this value to zero disables repeating of the alarm message. Setting this value to 60, for example, will cause a console message to be printed every 60 seconds informing the operator of the alarm until it's status changes to CLEAR. If console messages are not enabled this setting has no effect.

Oper1 **Alarm *[alarmName]* Trapmsg Enable *[ YES | NO ]***

Set or display whether to send SNMP trap message when this alarm status changes. If this value is set to **YES** an SNMP trap message will be sent to all defined SNMP destinations (see SNMP [1..5] command). The THRESHOLD TRAPLEVEL and ALARM alarmName SEVERITY settings also controls transmission of SNMP trap messages.

Oper1 **Alarm *[alarmName]* Trapmsg Interval *[ 0…60 ]***

Set or display how often, in seconds, to retransmit an SNMP trap message while the alarm status is SET. Setting this value to zero disables repeating SNMP trap messages. Setting this value to 60, for example, will cause an SNMP trap message to be transmitted every 60 seconds until it's status changes to CLEAR. If SNMP trap messages are not enabled this setting has no effect. The THRESHOLD TRAPLEVEL and ALARM alarmName SEVERITY settings also controls transmission of SNMP trap messages.

Oper1 Oper2 **Alarm *[alarmName]* Log Set *[ YES | NO ]***

Set or display whether an entry will be written to the alarm log when this alarm status transitions from CLEAR to SET. If the alarm is not enabled, or the severity is set to **OFF**, or if Log is set to **NO**, no log entry will be generated.

Oper1 Oper2 **Alarm *[alarmName]* Log Clear *[ YES | NO ]***

Set or display whether an entry will be written to the alarm log when this alarm status transitions from SET to CLEAR. If the alarm is not enabled, or the severity is set to **OFF**, or the Log Clear is set to **NO**, no log entry will be generated.

### *13.2.2 CALIBRATION...*

The following are the commands relating to station calibration.

Oper1 **CAlibration Subchan *[ 1…4 ]* Pattern *[ Disable | SymA | SymB | SymC | SymD | BigComma | LittleComma | Staircase | PseudoRandom | ReFLEX50 | Magellan1/4R25 | Magellan1/2R25 | Magellan3/4R25 | Carrier ]***

Set or display the pattern used for calibration and test for the specified subchannel

Oper1 **CAlibration Framerate *[ 0…128 ]***

Set or display the frame rate used for calibration and test. Note that a frame rate of 0 implies a single frame, 1 implies every frame, 2 implies every other frame, 3 implies every 3rd frame, …

Oper1 **CAlibration Subchan *[ 1…4 ]* FWdblocks *[ 0…11 ]***

Set or display the forward channel block count used for calibration and test for the specified subchannel.

Oper1 **CAlibration Testmode *[ START | STOP ]***

Set or display the calibration and test mode status. NOTE: The set command will only take effect if the transmitter has been set in local or remote transmission mode. Refer to command TRANSmission TXMode described below.

### *13.2.3 CLOCK...*

The following are the commands relating to the station console port settings.

Oper1 Oper2 **CLock Date *[ YYYY/MM/DD ]***

Display the current system clock date as "YYYY/MM/DD". The system clock is read at startup from the on board battery backed up RTC. The RTC and system date/time are updated when:

- The operator manually changes the date or time.
- When GPS data is received indicating valid date/time data that is more than 1 second different than the current system date/time.

Oper1 Oper2 **CLock Time *[ HH:MM:SS ]***

Display the current system clock time of day as "HH:MM:SS". ". The system clock is read at startup from the on board battery backed up Real-Time-Clock (RTC). The RTC and system date/time are updated when-

- The operator manually changes the date or time.
- When GPS data is received indicating valid date/time data that is more than 1 second different than the current system date/time.

**CLock Uptime**

Display the time the system has been running since the last reboot as "DAYS HH:MM:SS". It is initialized to zero at startup and continually increments.

**CLock Operation**

Display the time the system has been operational as "DAYS HH:MM:SS".

**CLock Reflex Cycle**

Display the current ReFLEX cycle number.

**CLock Reflex Frame**

Display the current ReFLEX frame number.

**CLock Reflex State**

Display the current ReFLEX frame state. The returned value will be **MISSING**, **RECEIVED** (MDP packet received) or **LAUNCHED** (frame sent to DSP)**.**

### *13.2.4 CONSOLE...*

The following are the commands relating to the station console port settings.

Oper1 Oper2 **COnsole Timeout *[ 0...4294967295 ]***

Set or display the console port user interface inactivity timeout period in seconds. Setting this value to zero disables the session inactivity timeout function. Any other setting will abort user sessions after the configured number of seconds expires with no input from the user.

Oper1 Oper2 **COnsole Baud *[ 300 | 600 | 1200 | 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200 ]***

Set or display the baud rate operating on the front panel RS-232 serial console port.

Oper1 Oper2 **COnsole Databits *[ 7 | 8 ]***

Set or display the number of data bits per asynchronous symbol transmitted and received on the front panel RS-232 serial console port.

Oper1 Oper2 **COnsole Stopbits *[ 1 | 2 ]***

Set or display the number of framing stop bits per asynchronous symbol transmitted and received on the front panel RS-232 serial console port.

Oper1 Oper2 **COnsole Parity *[ NONE | ODD | EVEN | SPACE | MARK ]***

Set or display the parity method for asynchronous symbols transmitted and received on the front panel RS-232 serial console port.

### 13.2.5 CUTOVER...

The following are the commands relating to software cutover.

Oper1 **CUtover Mode *[ OFF | TIMED | NOW ]***

Set or display the cutover mode. A value of **OFF** means that cutovers are disabled, **TIMED** means that a cutover occurs at the below specified time (if dormant versions are not the same as active versions), **NOW** means the cutover will occur immediately after a software download occurs.

Oper1 **CUtover Time *[YYYY/MM/DD HH:MM:SS ]***

Set or display the cutover time.

Oper1 **CUtover Version *[ version ]***

Set or display the version to revert to in the event of cutover failure.

### 13.2.6 DISTRIBUTION...

The following are the commands relating to the station page data distribution settings.

Oper1 **DIstribution Portselect *[ ALL | SatRx | LAN ]***

Set or display the distribution port selection. A value of **ALL** indicates that the transmitter will accept valid MDP packets from all distribution ports. Any other setting means that only the indicated distribution port can input MDP packets.

Oper1 **DIstribution Hdlc Lowerlimitcrc *[ 0…100 ]***

Set or display the distribution lower hysteresis CRC limit for good HDLC frames received. The parameter is a percentage of good HDLC frames received.

Oper1 **DIstribution Hdlc Upperlimitcrc *[ 0…100 ]***

Set or display the distribution upper hysteresis CRC limit for good HDLC frames received. The parameter is a percentage of good HDLC frames received.

Oper1 **DIstribution Hdlc NUmcrcframes *[ 0…30000 ]***

Set or display the distribution HDLC frames CRC error measurement. The parameter is the computational interval in frames.

Oper1 **DIstribution Hdlc NEtzone 1 *[ 0…65536 ]***

Set or display the distribution network zone address 1.

Oper1 **DIstribution Hdlc NEtzone 2 *[ 0…65536 ]***

Set or display the distribution network zone address 2.

Oper1 **DIstribution Hdlc NEtzone 3 *[ 0…65536 ]***

Set or display the distribution network zone address 3.

Oper1 **DIstribution Hdlc NEtzone 4 *[ 0…65536 ]***

Set or display the distribution network zone address 4.

Oper1 **DIstribution Hdlc NEtzone Mask *[ 0…65536 ]***

Set or display the distribution network zone address mask.

**DIstribution Satrx NETUnitaddr**

Display the Satellite receiver network unit address.

**DIstribution Satrx Swver**

Display the Satellite Receiver SW Version.

**DIstribution Satrx PRimarycarrierfreq *[ 950…1450 ]***

Set or display the Satellite Receiver primary carrier frequency in MHz.

**DIstribution Satrx Lnbcontrolmode *[ OFF | ON ]***

Set or display the Satellite Receiver Low-Noise Block (LNB) mode.

**DIstribution Satrx POrtsetting *[ RS232 | RS485 ]***

Set or display the Satellite Receiver port settings.

**DIstribution Satrx Installed**

Display whether the Satellite Receiver is installed. The returned value will be **YES** or **NO**.

**DIstribution Satrx Alignment Level**

Display the Satellite Receiver alignment level. The returned value will be between 0 and 65536.

**DIstribution Satrx Alignment Mode *[ OFF | ON ]***

Set or display the Satellite Receiver alignment tone mode.

### *13.2.7 DOWNLOAD…*

The following are the commands relating to software downloads.

Oper1 **DOwnload Mode *[ OFF | NOW | TIMED ]***

Set or display the remote software download mechanism. A value of **OFF** indicates software downloads cannot be done remotely. A value of **NOW** will start a download immediately. A value of **TIMED** indicates the station will begin making TFTP file requests of the specified filename at the time specified to the specified server IP address.

Oper1 **DOwnload SErver *[ a.b.c.d ]***

Set or display the TFTP Client mode server IP address in Internet dot notation.

Oper1 **DOwnload File *[ filename ]***

Set or display the TFTP download file name.

Oper1 **DOwnload TIME *[ YYYY:MM:DD HH:MM:SS ]***

Set or display the TFTP Client mode download date and time.

Oper1 **DOwnload TIMEOut *[0…4294967295 ]***

Set or display the TFTP download timeout in milliseconds. This value indicates the amount of time the station will wait after it has sent an acknowledge (or error) packet for the next packet to arrive.

Oper1 **DOwnload Interval *[0…4294967295 ]***

Set or display the TFTP packet interval in milliseconds. This value indicates the time between packet receipt and packet acknowledgement.

Oper1 **DOwnload Retries *[0…4294967295 ]***

Set or display the TFTP download retries. This value indicates the number of error packets the station will send before it will abort the download session.

**DOwnload Packets Received *[ 0…4294967295 ]***

Display the TFTP Client mode download packets received (successfully or not).

**DOwnload Packets Programmed *[ 0…4294967295 ]***

Display the TFTP Client mode download packets successfully received.

Oper1 **DOwnload Xmodem *[filename ]***

Set or display the XMODEM/YMODEM uploaded filename from the local front panel serial port. If a filename is specified, this implies that a local file upload is being initiated.

Oper1 Oper2 **DOwnload TRACe *[ YES | NO ]***

Set or display the software download trace status. The trace status sends out status information to the front panel console.

### *13.2.8 EXCITER...*

The following are the commands relating to the station exciter settings.

**EXCiter Intselftest**

Display the station exciter internal self-test results. The returned value will be **PASS** or **FAIL**.

**EXCiter Traininterval *[ NOW | 0…60 ]***

Set or display the tranlin training interval in minutes. A value of zero indicates training at every keyup. A value of **NOW** indicates training will take place at the next available key point (the set numerical value will not be altered).

### 13.2.9 EXIT

This command will end the user session.

### 13.2.10 FLASH...

The following are the commands relating to the firmware contained in flash memory.

Oper1 **Flash Default**

Restore the configuration to the factory default settings. NOTE: This does not automatically save the default settings in Flash; a "FLASH SAVE" must also be entered to achieve that.

Oper1 **Flash Restore**

Restore the configuration from Flash memory.

Oper1 **Flash Save**

Save the current configuration to Flash memory.

**Flash View**

Display the configuration in Flash memory.

### 13.2.11 GPS...

The following are the commands relating to the GPS settings.

**Gps Model**

Display the model of the GPS.

**Gps STatus**

Display the status of the GPS device driver. When no GPS is connected or the device is not operating this command will return "NO SIGNAL". When the GPS device is operating but does not have adequate satellite visibility, is in power up search mode, or cannot resolve an adequate time fix this command will return "SEARCHING". When the GPS device is reporting accurate timing information this command returns "GOOD".

**Gps Altitude**

Displays the altitude reported by position device in meters.

**Gps Dop Type**

Displays the Dilution-Of-Precision type. The value will be either PDOP (3D) or HDOP (2D).

**Gps Dop Value**

Displays the Dilution-Of-Precision value. This will be a number between 0 and 999, each number representing a 0.1 resolution.

**Gps LAtitude**

Displays the latitude reported by position device in radians (degrees, minutes, seconds).

**Gps LOngitude**

Displays the longitude reported by position device in radians (degrees, minutes, seconds).

**Gps SAtellite Tracked**

Displays the number of tracked satellites.

**Gps SAtellite Visible**

Displays the number of visible satellites.

**Gps SYnc**

Displays the current state of the timing synchronization status. This information is the equivalent of the Sync LED; the returned values will be "OFF" (Sync LED off), "SEARCHING" (Sync LED red), "TRACKING" (Sync LED red), "LOCKED" (Sync LED green) or "HOLDING" (Sync LED orange).

### 13.2.12 LOG…

The following are the commands relating to the Alarm logs.

**Log Clear**

Display the list of alarms that have been cleared.

**Log Curr**

Display the list of all currently active alarms.

**Log HIGhest**

Display the worst case active alarm condition. The return value could be **CRITICAL, MAJOR, MINOR, INFO**.

**Log HIStory**

Display the list of all alarm history information.

**Log Last**

Display the last send alarm.

**Log Sent**

Display the number of alarms that have been sent.

### 13.2.13 NETWORK…

The following are the commands relating to the Ethernet LAN or Telnet settings.

Oper1 **Network Gateway *[ a.b.c.d ]***

Set or display the IP address of the default gateway in Internet dot notation. This is the address of the default network device to route packets through that are not immediately addressable on the Ethernet LAN.

Oper1 **Network Host *[ hostname ]***

Set or display the transmitter host name. The host name can be up to 16 characters.

Oper1 **Network Lan Ipaddr *[ a.b.c.d ]***

Set or display the IP address of the Ethernet LAN link in Internet dot notation.

Oper1 **Network Lan Subnet *[ a.b.c.d ]***

Set or display the IP address subnet mask of the Ethernet LAN interface for this device in Internet dot notation.

**Network Lan Macaddr**

Display the Ethernet LAN MAC address.

**Network Telnet ADMINName *[ name ]***

Set or display the Telnet administrator name.

**Network Telnet ADMINPassword *[ password ]***

Set or display the Telnet administrator password.

Oper1 **Network Telnet OPER1Name *[ name ]***

Set or display the specified Telnet operator name.

Oper1 **Network Telnet OPER1Password *[ password ]***

Set or display the specified Telnet operator password.

Oper1 **Network Telnet OPER2Name *[ name ]***

Set or display the specified Telnet operator name.

Oper1 **Network Telnet OPER2Password *[ password ]***

Set or display the specified Telnet operator password.

Oper1 **Network Telnet OPER3Name *[ name ]***

Set or display the specified Telnet operator name.

Oper1 **Network Telnet OPER3Password *[ password ]***

Set or display the specified Telnet operator password.

Oper1 **Network Telnet Idletimeout *[ 0…86400]***

Set or display the Telnet inactivity timeout in seconds. Setting this value to zero disables the session inactivity timeout function. Any other setting will abort user sessions after the configured number of seconds expires with no input from the user.

Oper1 **Network Telnet Sessions**

Display the number of currently active user sessions. NOTE: The number of Telnet sessions is limited to 5, so that this parameter cannot exceed 6 (it includes the front panel console if active). Also note that only one active “admin” session is allowed.

### *13.2.14 PA…*

The following are the commands relating to the Power Amplifier settings.

**PA Installed**

Display the number of Power Amplifiers installed in the station transmitter.

**PA Operational**

Display the number of Power Amplifiers in the station that are currently operational.

**PA *[ 1…4 ]* Attenlevel**

Display the attenuation level of the specified Power Amplifier.

**PA *[1…4 ]* Current**

Display the DC supply current in Amps of the specified Power Amplifier.

Oper1 **PA *[ 1…4 ]* Enable *[ YES | NO ]***

Set or display the state of the specified power amplifier. A **YES** value indicates that the power amplifier is enabled, a **NO** value indicates that the power amplifier is not enabled.

**PA *[ 1…4 ]* Fanstatus**

Display the fan status of the specified Power Amplifier. The returned value will be **FAIL** or **OK**.

**PA *[ 1…4 ]* ONline**

Display the online status of the specified Power Amplifier. The returned value will be **YES** or **NO.**

**PA *[1…4]* OUtputpwr**

Display the output power in Watts of the specified Power Amplifier.

**PA *[1…4]* OVerdrivestat**

Display the overdrive status of the specified Power Amplifier. The returned value will be **OK**, **PROBLEM** or **FAIL**.

**PA *[1…4 ]* Rfltdpwr**

Display the reflected power in Watts of the specified Power Amplifier.

**PA *[ 1…4 ]* TEmperature**

Display the temperature in degrees Celsius of the specified Power Amplifier.

**PA *[ 1…4 ]* THermalstatus**

Display the thermal status of the specified Power Amplifier. . The returned value will be **OK**, **PROBLEM** or **FAIL**.

**PA *[1…4 ]* Voltage**

Display the DC supply voltage in Volts of the specified Power Amplifier.

### *13.2.15 PS…*

**PS *[ 1…4 ]* Acsense**

Display the AC power status of the specified power amplifier power supply. The returned value will be **PASS** or **FAIL**.

**PS *[ 1…4 ]* Current**

Display the current of the specified power amplifier power supply in Amps. The returned value will be a number between 0 and 50.

Oper1 **PS *[ 1…4 ]* Enable *[ YES | NO ]***

Set or display the state of the specified power amplifier power supply. A **YES** value implies that the power supply is enabled, a **NO** value implies that the power supply is not enabled.

**PS *[ 1…4 ]* Overcurrent**

Display the overcurrent status of the specified power amplifier power supply. The returned value will be **PASS** or **FAIL**.

**PS *[ 1…4 ]* Status**

Display the overall status of the specified power amplifier power supply. The returned value will be **PASS** or **FAIL**.

**PS *[ 1…4 ]* Voltage**

Display the voltage of the specified power amplifier power supply in Volts. The returned value will be a number between 0 and 54.

### *13.2.16 PWRSUPPLY…*

The following are the commands relating to the station power supply settings.

**PWrsupply Acstatus**

Display the AC power status of the power supply. The returned value will be **AC** or **BATTERY**.

**PWrsupply Currstatus**

Display the current status of the power supply. The returned value will be **FAIL** or **PASS**.

**PWrsupply Fanstatus**

Display the fan status of the power supply. The returned value will be **FAIL** or **PASS**.

**PWrsupply Overallstatus**

Display the overall status of the power supply. The returned value will be **FAIL, OK** or **PROBLEM**.

**PWrsupply Tempstatus**

Display the temperature status of the power supply. The returned value will be **FAIL** or **PASS**.

### *13.2.17 RESET…*

The following is the command and options relating to resets.

Oper1 **Reset**

Perform a cold reset on the system..

### 13.2.18 SNMP…

The following are the commands relating to the SNMP settings.

Oper1 **SNmp Getcommunity**

Set or display the SNMP community name used to validate SNMP get request messages. Changing this value does not take effect until the system is restarted.

Oper1 **SNmp Setcommunity**

Set or display the SNMP community name used to validate SNMP set request messages. Changing this value does not take effect until the system is restarted.

Oper1 **SNmp Trapcommunity**

Set or display the SNMP community name encoded in SNMP trap messages the system sends.

Oper1 **SNmp Trap 1** ***[ a.b.c.d ]***

Set or display an Internet IP address in Internet dot notation defining SNMP management stations to be sent SNMP trap messages. SNMP trap messages can be generated by the TCP/IP library for events such as system restart or network interface up or down, etc. or can be generated by the alarm event functionality of the system. Setting an entry to "0.0.0.0" disables that destination. Changes to this entry do not take effect until the system is restarted.

Oper1 **SNmp Trap 2** ***[ a.b.c.d ]***

Set or display a second Internet IP address in Internet dot notation.

Oper1 **SNmp Trap 3** ***[ a.b.c.d ]***

Set or display a third Internet IP address in Internet dot notation.

Oper1 **SNmp Trap 4** ***[ a.b.c.d ]***

Set or display a fourth Internet IP address in Internet dot notation.

Oper1 **SNmp Trap 5** ***[ a.b.c.d ]***

Set or display a fifth Internet IP address in Internet dot notation.

### 13.2.19 STATISTICS…

The following are the commands relating to station statistics.

**STatistics Grid Status**

Display the status of the previous and current frames. The return value will be **MISSING, RECEIVED** or **LAUNCHED**.

**STatistics Grid Timedelta**

Display the time delta between the frame received from the distribution port and the time the frame is be must be launched, as well as the time delta between when the frame is sent to the DSP for launching and the time the frame is be must be launched. Both time delta values are in increments of 10ms ticks.

**STatistics Cumframeloss** ***[ 0…127 ]***

Display the cumulative frame loss per specified frame. Frame loss is defined by frame data that was not received, was received with data error, was not received in completion, or was received too late to be launched. The return value will be a count between 0 and 255.

**STatistics Subchanloading** ***[ 1…4 ] [ 0…23 ]***

Display the specified subchannel loading as a percentage of maximum data (2703360 bytes per hour) for the specified hour.

**STatistics Cpu** ***[ cpuNow | cpuMin | cpuMax | cpuAvg ]***

Display the percentage of CPU utilization. The **cpuNow** value is updated on 10 second intervals. The **cpuMin**, **cpuMax**, and **cpuAvg** values are computed from a sample period of one hour. A value of zero would imply the processor was idle. A value of 100 would imply the processor was fully loaded.

**STatistics Temp** ***[ tempNow | tempMin | tempMax | tempAvg ]***

Display the internal temperature of the transmitter in degrees centigrade. The now value is updated on 10 second intervals. The min, max, and avg values are computed from a sample period of one hour.

Oper1 Oper2 **STatistics MDPPKTSRecvd** ***[ 0…4294967295 ]***

Set or displays the total number of MDP packets successfully received since this value was last set to 0. This number will rollover to 0 when its maximum is exceeded.

Oper1 Oper2 **STatistics MDPPKTSLost** ***[ 0…4294967295 ]***

Set or displays the total number of MDP packets not received or received with error since this value was last set to 0. This number will rollover to 0 when its maximum is exceeded.

Oper1 Oper2 **STatistics TRansmittedFrames** ***[ 0…4294967295 ]***

Set or displays the total number of frames transmitted since this value was last set to 0. This number will rollover to 0 when its maximum is exceeded.

### *13.2.20 THRESHOLD…*

The following are the commands relating to alarm threshold settings.

Oper1 **THreshold MDPTimeout** ***[ 1…256 ]***

Set or display the MDP timeout alarm threshold in seconds. When no MDP packets are received within this timeout period, the ***mdpInputTimeout*** alarm will trigger. The ***mdpInputTimeout*** alarm will clear when MDP packets are received.

Oper1 **THreshold MDPCRC** ***[ 0…32767 ]***

Set or display the MDP CRC alarm threshold in number of packets. When the number of MDP packets with CRC failures exceeds this value, the ***mdpPktCRCFail*** alarm will trigger.

Oper1 **THreshold MDPLostPkts** ***[ 0…32767 ]***

Set or display the lost MDP packets alarm threshold in number of packets. When the number of MDP packets that have been lost (not received) exceeds this value, the ***mdpPktsLostFail*** alarm will trigger.

Oper1 **THreshold NOMDPSatrx *[ 1…32767 ]***

Set or display the alarm threshold in minutes of no MDP packets received from the Satellite Receiver.When the number of minutes exceeds this value, the ***noMDPSatRx*** alarm will trigger.

Oper1 **THreshold NOMDPLan *[ 1…32767 ]***

Set or display the alarm threshold in minutes of no MDP packets received from the LAN. When the number of minutes exceeds this value, the ***noMDPLan*** alarm will trigger.

Oper1 **THreshold Freerunningtimeout *[ 1…256 ]***

Set or display the free running timeout alarm threshold in minutes. When no 1 PPS signal is received from the GPS within this timeout period, the ***freeRunning*** alarm will trigger. The ***freeRunning*** alarm will clear when a 1PPS signal is received from the GPS.

Oper1 **THreshold TRaplevel *[ OFF | INFO | MINOR | MAJOR | CRITICAL ]***

Set or display the SNMP trap message severity level threshold. Alarm events that are configured to generate SNMP trap messages will only send a message if the corresponding severity level is equal to or greater than this setting. When this value is set to **OFF** no SNMP trap messages will be sent.

Oper1 **THreshold Gpstimeout *[ 1…32767 ]***

Set or display the GPS data timeout alarm threshold in seconds. The ***gpsNoData*** alarm will trigger when no valid GPS protocol data units have been received on the GPS interface for this period of time.

Oper1 **THreshold Usersessions *[ 0…6 ]***

Set or display the user sessions threshold. The ***userSessionsExceeded*** alarm will trigger when the number of active sessions (both console and Telnet) exceeds this value. The ***userSessionsExceeded*** alarm will clear when the number of sessions drops to this value or below.

Oper1 **THreshold Sessionidletimeout *[ 1…256 ]***

Set or display the session idle threshold in seconds. The ***sessionTimeout*** alarm will trigger when the idle time of an active session (both console and Telnet) exceeds this value. The ***sessionTimeout*** alarm will clear when an active user session is terminated by a correct exit sequence.

Oper1 **THreshold Dekeytimeout *[ 1…256 ]***

Set or display the dekey timeout threshold in minutes. The ***dekeyTimeout*** alarm will trigger when the station dekeyed exceeds this value. The ***dekeyTimeout*** alarm will clear when the station is keying.

### *13.2.21 TRACE…*

Enable various diagnostics output to either the “admin” telnet session console, or if not opened to the front panel console port. NOTE: Only one trace can be active at one time and trace states are not saved (always comes up from a power-on or reset with all trace messages turned off).

**TRACe Frame *[ YES | NO ]***

Set or display the state of the Frame timing message.

**TRACe GPS *[ YES | NO ]***

Set or display the state of GPS diagnostics messages.

**TRACe Mdp Hdlc *[ YES | NO ]***

Set or display the state of MDP via HDLC diagnostics messages.

**TRACe Mdp Tcp *[ YES | NO ]***

Set or display the state of MDP via TCP diagnostics messages.

**TRACe Mdp Udp *[ YES | NO ]***

Set or display the state of MDP via UDP diagnostics messages.

### *13.2.22 TRANSMISSION…*

The following are the commands relating to station transmission settings.

**TRANsmission Frequency *[929.0000..941.0000 ]***

Set or display the station center frequency in MHz.

Oper1, Oper2 **TRANsmission INcompleteframe *[ None | ALL ]***

Set or display the station transmission mode when a frame has not received or not received accurate subchannel information. A value of **NONE** indicates that an incomplete frame is not keyed for any subchannels. A value of **ALL** indicates that **good received** subchannels are transmitted normally and nothing is transmitted on the subchannel(s) that is bad or missing.

Oper1 **TRANsmission Launchdelay *[ 0…1000 ]***

Set or display the station paging frame launch delay in microseconds.

Oper1 **TRANsmission Offset *[ -500…500 ]***

Set or display the station transmitter subchannel frequency offset in Hz.

Oper1 **TRANsmission PAgingmode *[ OFF | ON ]***

Set or display the station paging mode status. A value of **OFF** indicates that paging transmission is disabled, a value of **ON** indicates paging transmission is enabled.

Oper1, Oper2 **TRANsmission PWRControlmode *[ OFF | ON ]***

Set or display the station power control mode status. A value of **OFF** indicates that power control is disabled, a value of **ON** indicates power control is enabled. If set to **OFF** the station output power will remain at or near it's last value prior to disabling power control. Power control should only be disabled for maintenance, since cutbacks will not take effect.

**TRANsmission PWROutput**

Display the instantaneous station power output in Watts.

**TRANsmission PWRReflected**

Display the instantaneous station reflected power in Watts.

Oper1, Oper2 **TRANsmission PWRSetting *[ 0…400 ]***

Set or display the station power output setting in Watts (this is the desired power setting, not the measured output setting as indicated by command TRAN PWROutput).

Oper1 **TRANsmission R25colorcode *[ 0…127 ]***

Set or display the color code index for ReFLEX25 sync transmission. This value is an index that gets translated into a Color Code string. Refer to the ReFLEX25 protocol document for specific information.

Oper1 **TRANsmission SUbchan Config *[ 1…4 ]* MOde *[ OFF | ON ]***

Set or display the mode for the specified subchannel. A value of **OFF** indicates that no data should be transmitted for this subchannel, a value of **ON** indicates data should be transmitted for this subchannel.

Oper1 **TRANsmission SUbchan Config *[ 1…4 ]* Frequency *[ -20000… 20000 ]***

Set or display the offset frequency for the specified subchannel in Hz.

**TRANsmission SUbchan Config *[ 1…4 ]* Deviation *[ 0… 2400 ]***

Set or display the deviation for the specified subchannel in Hz.

Oper1 **TRANsmission SUbchan Empty *[ None | Sync | Idle | Ignore ]***

Set or display the station transmission mode when a subchannel is received with a block size of 0. A value of **NONE** indicates that the entire frame is not keyed for any subchannels. A value of **SYNC** means that only the sync field will be transmitted on the subchannel(s) that is of size 0. A value of **IDLE** means that sync and idle data pattern will be transmitted on the subchannel(s) that is of size 0. A value of **IGNORE** indicates that received subchannels are transmitted normally and nothing is transmitted on the subchannel(s) that is of size 0.

**TRANsmission TESTStatus**

Display the station transmission test status. A value of **ON** indicates that we are currently testing. A value of **OFF** indicates we are not testing. Refer to the *CAlibration Subchantest* command for activating/deactivating the actual tests.

Oper1 **TRANsmission TESTTimout *[ 1…65536 ]***

Set or display the test mode (local or remote) timeout value in minutes. This value indicates the amount of time in minutes the transmitter will stay in test mode while no test patterns are being transmitted.

Oper1 **TRANsmission TXMode *[ NORMAL | LOCAL | REMOTE ]***

Set or display the station transmission mode. A value of **NORMAL** indicates we are transmitting normally, a value of **LOCAL** indicates that we are in test mode triggered by a front panel console session, a value of **REMOTE** indicates we are in test mode triggered by a Telnet session.

### *13.2.23 VERSION…*

The following are the commands to display various executing software versions.

**Version Boot**

Display the bootstrap loader software version.

**Version Package**

Display the executing software package version.

**Version Machine**

Display the machine serial number.

### 13.2.24 WATCH

Below describes the Watch command, which allows the user to define periodic commands.

**Watch *[ 1 … 3600] [COMMAND]***

Specify a command to run between 1 to 3600 seconds. If no time is specified, the default is 1 second. The command can be any valid command defined above.

# 14 ALARMS AND MANAGEMENT

The G2BT includes an SNMP agent allowing remote management and providing the primary alarm notification mechanism to the NOC. Station configuration, status, and statistics can be inspected using the SNMP protocol. Configuration parameters can also be set using SNMP. Current alarm status and station statistics are presented through the SNMP MIB in table form. Unsolicited alarm messages are delivered to the NOC through SNMP trap messages. Standard MIB branches for system information, network interfaces, etc. and an ASN.1 MIB file will be provided defining product specific configuration, statistics, and trap messages.

SNMP trap messages can be delivered to multiple management terminals. An overall SNMP trap message severity threshold also allows the operator to configure the minimum severity level for which trap messages will be delivered. This allows system operators to squelch the less important messages during busy times without having to configure each alarm individually.

A Non-Volatile memory in the BT control module provides storage for XX hours of station statistics and numerous log file entries.

## 14.1 ALARM MANAGEMENT

### 14.1.1 ALARM PROCESSING

The G2BT processes alarms based on the parameters set for each given alarm. When an alarm transition occurs, the status for the given alarm is updated to either a "set" (ACTIVE condition) or a "clear" (non-ACTIVE condition). A "set" or "clear" counter for the given alarm is incremented and an associated date/time stamp is saved for this instance.

These parameters can be found as shown below for each alarm under the status and stats parameter:

Alarm [alarm_name] STATUs = CLEARED

Alarm [alarm_name] STATS Set Timestamp = 1999/07/02 12:29:12

Alarm [alarm_name] STATS Set Count = 20197

Alarm [alarm_name] STATS Clear Timestamp = 1999/07/02 13:10:16

Alarm [alarm_name] STATS Clear Count = 278163

*These alarm parameters are updated at every alarm transition instance.*

Several parameters for the given alarm will provide control information as to how the alarm instance will be handled subsequence to the status and stats update. These parameters control the overall alarm handling, display to the console session, the sending of alarm event trap messages to a network manager and the logging of the given alarm instance.

An alarm must be "enabled" and have a severity level of Critical, Major, Minor or Informational associated with the given alarm before any subsequent processing takes place. Therefore if the given alarm is not "enabled" or has a severity level of "off" no further alarm processing will take place. These parameters can be found in the following two examples:

Alarm [alarm_name] Enable = NO

Alarm [alarm_name] SEverity = MAJOR

NOTE: If the given alarm is not "ENABLED", then no further processing of the alarm takes place. The RFA II receiver will NOT log or give any indication of a problem. The only indication will be through the alarm status of any problems.

If the alarm "enable" is yes and the associated severity is other than "off", then the given alarm is handled according to the alarm control parameters as shown in the example below:

Alarm [alarm_name] COnsole Enable = YES

Alarm [alarm_name] TrapMsg Enable = YES

Alarm [alarm_name] Log Set = YES

Alarm [alarm_name] Log Clear = YES

The given alarm is displayed on the console session if enable is "yes". The date/time is recorded for the instance and then may be displayed again on the console session depending on the console interval parameter as shown in the example:

Alarm [alarm_name] COnsole Interval = 0

NOTE: An interval of zero means that the alarm instance will be displayed one time. If other than zero, the alarm instance will be displayed after the number of seconds given in the interval parameter,

The given alarm is sent to a network manager via a SNMP trap message if TrapMsg enable is "yes" AND the given alarm severity level is greater than or equal to the "Thresholds trapLevel" parameter. Provided the given alarm instance meets the above criteria, the date/time is recorded for the instance and then may be sent again to the network manager depending on the TrapMsg interval parameter as shown in the example:

Alarm [alarm_name] TrapMsg Interval = 60

The given alarm is logged for historical purposes if enable is "yes" for the "set" transition or the "clear" transition instance. If logging is not enabled for a given transition, then the given alarm transition instance will not be found in the log.

The overall station health depends on only the alarms that are enabled and have a severity level that is other than "off". The system health displays the highest severity of all ACTIVE alarms. The alarm LED on the front panel will be controlled based on the the overall system health status.

By definition, **CRITICAL** alarms indicate that the transmitter is shutdown (all subchannels are dekeyed). Therefore **CRITICAL** alarms cannot be disabled, nor can non-critical alarms be configured as **CRITICAL**.

### *14.1.2 ALARM TYPES*

| Alarm Name | Description | Default Severity | Solutions |
|---|---|---|---|
| *General Station* | | | |
| cabinetIntrusion | This alarm triggers when the cabinet is opened. | Major | This alarm clears when the cabinet is closed. |
| cePwrFail | This alarm triggers when the station power supply is not functioning. | Critical | This alarm clears when the station power supply is functioning. |
| cePwrProblem | This alarm triggers when the station power supply indicates a problem but is still functioning. | Major | This alarm clears when the station power supply is not experiencing any problems. |
| ceOverCurrent | This alarm triggers when the station power supply indicates an overcurrent. | Major | This alarm clears when the station power supply does not indicate an overcurrent. |

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|---|---|---|---|
| lostACPwr | This alarm triggers when the AC power is lost and the system is running off the battery. | Critical | This alarm clears when the AC power is online. |
| g2btFail | This alarm triggers when the G2BT fails. | Critical | This alarm clears when the G2BT is working properly. |
| parmsNotSaved | This alarm triggers when the user ADMIN logs off without saving the system configuration to FLASH memory. | Info | This alarm clears when the saveParms command is issued or when user ADMIN saves the system configuration to FLASH when terminating the user session. |
| powerControlFail | This alarm triggers when the system is unable to control excessive power output or temperature using cutbacks. | Critical | This alarm clears when the system can control excessive power output or temperature. |
| reset | This alarm triggers on system startup. As the alarm management software is initialized two RESET alarm events are generated. The first event is a CLEAR event that issues a SNMP trap message containing the value of 9999 for the *alarmIndex* indicating that all outstanding alarm conditions should be reset. The second event is a SET event and operates as configured using the ALARM RESET command. | Major | This alarm is not automatically cleared by the system and can only be manually cleared by the operator. |
| resetPending | This alarm triggers when an operator enters the RESET command. | Major | The alarm status is CLEAR upon reset. Since it never transitions from SET to CLEAR status no corresponding console/SNMP messages or log entries are generated for the CLEAR event. |
| statsLogFull | This alarm triggers when the statistics log is full. | Major | This alarm clears when one or more entries in the stats log is cleared. |
| tempHigh | This alarm triggers when the temperature inside the station cabinet exceeds the high temperature threshold. | Major | This alarm clears when the temperature inside the station cabinet falls below the high temperature threshold. |
| tempLow | This alarm triggers when the temperature inside the station cabinet falls below the low temperature threshold. | Major | This alarms clears when the temperature inside the station cabinet rises above the low temperature threshold. |

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| *Distribution* | | | |
| mdpInputTimeout | This alarm triggers when no MDP packets are received within the MDP timeout threshold. | Critical | This alarm clears when MDP packets are received. |
| mdpPktsLostFail | This alarm triggers when the number of MDP packets that have not been received exceeds the MDP lost packet threshold. | Major | This alarm is not cleared internally by the system. |
| noMDPSatRx | This alarm triggers when no MDP packets are received from the Satellite Rx within the noMDPSatRx timeout threshold. | Minor | This alarm is not cleared internally by the system. |
| noMDPLan | This alarm triggers when no MDP packets are received from the LAN within the noMDPLan timeout threshold. | Minor | This alarm is not cleared internally by the system. |
| mdpPktCRCFail | This alarm triggers when the number of MDP packet CRC failure rises above the MDP packet CRC failure threshold. | Major | This alarm is not cleared internally by the system. |
| mdpPktBuffFull | This alarm triggers when there is not enough memory to buffer incoming MDP packets. | Major | This alarm is not cleared internally by the system. |
| mdpProtocolFail | This alarm triggers when an MDP packet contains data that does not conform to the MDP Specification. | Minor | This alarm clears when an MDP packet is received that contains data that conforms to the MDP Specification. |
| satRxCRCFail | This alarm triggers when the Satellite Receiver subsystem indicates it has received data with a CRC error. | Minor | This alarm clears when the Satellite Receiver has received good data. |
| satRxFail | This alarm triggers when the Satellite Receiver indicates a failure, or when the CPU cannot communicate normally with it. | Major | This alarms clears when the Satellite Receiver does not indicate an error and the CPU can communicate normally with it. |
| *Transmission* | | | |
| dekeyTimeout | This alarm triggers when the station dekey time exceeds the the dekey timeout threshold. | Critical | This alarm clears when the station is keyed. |
| inLocalMode | This alarm triggers when the station is in local test mode. | Info | This alarm clears when the station is in remote mode. |
| pagingDisabled | This alarm triggers when the station has paging disabled. | Critical | This alarm clears when the station has paging enabled. |

| | | | |
|---|---|---|---|
| stnCutback1dB | This alarm triggers when the station has been cutback 1dB due to a problem other than power amplifier or temperature. | Major | This alarm clears when the station is no longer cutback 1dB. |
| stnCutback3dB | This alarm triggers when the station has been cutback 3dB due to a problem other than power amplifier or temperature. | Major | This alarm clears when the station is no longer cutback 3dB. |
| stnShutdown | This alarm triggers when the station has been shutdown due to a problem other than power amplifier or temperature. | Critical | This alarm clears when the station is no longer shutdown. |
| *SW Download* | | | |
| cutoverFail | This alarm triggers when a failure occurs while switching to new software version. | Major | This alarm is not cleared internally by the system. |
| downloadFail | This alarm triggers when a failure occurs during software download. | Major | This alarm is not cleared internally by the system. |
| *Network* | | | |
| admin | This alarm triggers when the user ADMIN logs on to the system. | Info | This alarm clears when the ADMIN logs off. |
| admin2 | This alarm triggers when the user ADMIN is logged on to the system and a second session attempts to log on as ADMIN. | Info | This alarm is not cleared internally by the system. |
| badLogon | This alarm triggers when an invalid logon attempt is made. | Info | This alarm is not cleared internally by the system. |
| lanErr | This alarm triggers when transmission or reception errors are detected on the Ethernet LAN device. | Major | This alarm clears when successful operation is restored on the LAN interface and no further errors are detected. |
| sessionTimeout | This alarm triggers when a user session has no activity for longer than the sessionIdleTimeout threshold. | Info | This alarm is not cleared internally by the system. |
| telnet | This alarm triggers when a Telnet user session is activated. | Info | This alarm clears when no Telnet user sessions are active. |
| userSessionsExceeded | This alarm triggers a user session is intiated that causes the number of active user sessions to exceed the userSession threshold. | Info | This alarm clears when the number of active user sessions falls below the userSessions threshold. |

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|---|---|---|---|
| *Exciter Subsystem* | | | |
| exciterFail | This alarm triggers when the exciter fails. | Critic al | This alarm clears when the exciter is functioning normally. |
| *Power Amp Subsystem* | | | |
| paFail | This alarm triggers when a power amplifier is not functioning or reports a failure. | Major | This alarm clears when all power amplifiers are functioning normally. |
| paOverdrive | This alarm triggers when a power amplifier is in an overdrive condition. | Major | This alarm clears when the power amplifier is no longer in an overdrive condition. |
| paThermal | This alarm triggers when a power amplifier has a thermal problem. | Major | This alarm clears when the power amplifier no longer has a thermal problem. |
| *GPS Subsystem* | | | |
| gpsNoLock | This alarm triggers when the system has exceeded its freerunning timeout threshold. | Critic al | The alarm clears when the system has syncronized to accurate GPS time. |
| gpsFail | This alarm triggers when the GPS cannot track at least 4 satellites within the GPS timeout threshold after system startup. | Major | The alarm clears when the GPS is able to track at least 4 satellites. |
| uhsoFail | This alarm triggers when the UHSO does not generate correctly a clock. | Major | This alarm clears when the UHSO generates an accurate clock. |

## 14.2 MANAGEMENT INFORMATION BASE (MIB)

A MIB file will be released with each released version of software.

# 15 FACTORY DEFAULT VALUES

The following values are programmed into the unit, as the factory defaults.

```
Alarm All Enable = YES
Alarm CabinetIntrusion SEverity = MAJOR
Alarm CabinetIntrusion COnsole Enable = YES
Alarm CabinetIntrusion COnsole Interval = 60
Alarm CabinetIntrusion TrapMsg Enable = YES
Alarm CabinetIntrusion TrapMsg Interval = 0
Alarm CabinetIntrusion Log Set = YES
Alarm CabinetIntrusion Log Clear = YES
Alarm CEPwrFail Enable = NO
Alarm CEPwrFail SEverity = CRITICAL
Alarm CEPwrFail COnsole Enable = YES
Alarm CEPwrFail COnsole Interval = 60
Alarm CEPwrFail TrapMsg Enable = YES
Alarm CEPwrFail TrapMsg Interval = 0
Alarm CEPwrFail Log Set = YES
Alarm CEPwrFail Log Clear = YES
Alarm CEPwrProblem Enable = NO
Alarm CEPwrProblem SEverity = MAJOR
Alarm CEPwrProblem COnsole Enable = YES
Alarm CEPwrProblem COnsole Interval = 60
Alarm CEPwrProblem TrapMsg Enable = YES
Alarm CEPwrProblem TrapMsg Interval = 0
Alarm CEPwrProblem Log Set = YES
Alarm CEPwrProblem Log Clear = YES
Alarm CEOverCurrent Enable = NO
Alarm CEOverCurrent SEverity = MAJOR
Alarm CEOverCurrent COnsole Enable = YES
Alarm CEOverCurrent COnsole Interval = 60
Alarm CEOverCurrent TrapMsg Enable = YES
Alarm CEOverCurrent TrapMsg Interval = 0
Alarm CEOverCurrent Log Set = YES
Alarm CEOverCurrent Log Clear = YES
Alarm LostACPwr Enable = NO
Alarm LostACPwr SEverity = CRITICAL
Alarm LostACPwr COnsole Enable = YES
Alarm LostACPwr COnsole Interval = 60
Alarm LostACPwr TrapMsg Enable = YES
Alarm LostACPwr TrapMsg Interval = 0
Alarm LostACPwr Log Set = YES
Alarm LostACPwr Log Clear = YES
Alarm G2BTFail SEverity = CRITICAL
Alarm G2BTFail COnsole Enable = YES
Alarm G2BTFail COnsole Interval = 60
Alarm G2BTFail TrapMsg Enable = YES
Alarm G2BTFail TrapMsg Interval = 0
Alarm G2BTFail Log Set = YES
Alarm G2BTFail Log Clear = YES
Alarm ParmsNotSaved SEverity = INFO
Alarm ParmsNotSaved COnsole Enable = YES
Alarm ParmsNotSaved COnsole Interval = 60
Alarm ParmsNotSaved TrapMsg Enable = YES
Alarm ParmsNotSaved TrapMsg Interval = 0
Alarm ParmsNotSaved Log Set = YES
Alarm ParmsNotSaved Log Clear = YES
Alarm PwrCntrlFail SEverity = CRITICAL
```

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Alarm PwrCntrlFail COnsole Enable = YES
Alarm PwrCntrlFail COnsole Interval = 60
Alarm PwrCntrlFail TrapMsg Enable = YES
Alarm PwrCntrlFail TrapMsg Interval = 0
Alarm PwrCntrlFail Log Set = YES
Alarm PwrCntrlFail Log Clear = YES
Alarm Reset SEverity = MAJOR
Alarm Reset COnsole Enable = YES
Alarm Reset COnsole Interval = 60
Alarm Reset TrapMsg Enable = YES
Alarm Reset TrapMsg Interval = 0
Alarm Reset Log Set = YES
Alarm Reset Log Clear = YES
Alarm ResetPending SEverity = MAJOR
Alarm ResetPending COnsole Enable = YES
Alarm ResetPending COnsole Interval = 60
Alarm ResetPending TrapMsg Enable = YES
Alarm ResetPending TrapMsg Interval = 0
Alarm ResetPending Log Set = YES
Alarm ResetPending Log Clear = YES
Alarm StatsLogFull SEverity = MAJOR
Alarm StatsLogFull COnsole Enable = YES
Alarm StatsLogFull COnsole Interval = 60
Alarm StatsLogFull TrapMsg Enable = YES
Alarm StatsLogFull TrapMsg Interval = 0
Alarm StatsLogFull Log Set = YES
Alarm StatsLogFull Log Clear = YES
Alarm TempHigh SEverity = MAJOR
Alarm TempHigh COnsole Enable = YES
Alarm TempHigh COnsole Interval = 60
Alarm TempHigh TrapMsg Enable = YES
Alarm TempHigh TrapMsg Interval = 0
Alarm TempHigh Log Set = YES
Alarm TempHigh Log Clear = YES
Alarm TempLow SEverity = MAJOR
Alarm TempLow COnsole Enable = YES
Alarm TempLow COnsole Interval = 60
Alarm TempLow TrapMsg Enable = YES
Alarm TempLow TrapMsg Interval = 0
Alarm TempLow Log Set = YES
Alarm TempLow Log Clear = YES
Alarm MDPInTimeout SEverity = CRITICAL
Alarm MDPInTimeout COnsole Enable = YES
Alarm MDPInTimeout COnsole Interval = 60
Alarm MDPInTimeout TrapMsg Enable = YES
Alarm MDPInTimeout TrapMsg Interval = 0
Alarm MDPInTimeout Log Set = YES
Alarm MDPInTimeout Log Clear = YES
Alarm MDPPktsLost SEverity = MAJOR
Alarm MDPPktsLost COnsole Enable = YES
Alarm MDPPktsLost COnsole Interval = 60
Alarm MDPPktsLost TrapMsg Enable = YES
Alarm MDPPktsLost TrapMsg Interval = 0
Alarm MDPPktsLost Log Set = YES
Alarm MDPPktsLost Log Clear = YES
Alarm NoMDPSatRx SEverity = MINOR
Alarm NoMDPSatRx COnsole Enable = YES
Alarm NoMDPSatRx COnsole Interval = 60
Alarm NoMDPSatRx TrapMsg Enable = YES
Alarm NoMDPSatRx TrapMsg Interval = 0
Alarm NoMDPSatRx Log Set = YES
Alarm NoMDPSatRx Log Clear = YES
Alarm NoMDPLAN SEverity = MINOR
```

```
Alarm NoMDPLAN COnsole Enable = YES
Alarm NoMDPLAN COnsole Interval = 60
Alarm NoMDPLAN TrapMsg Enable = YES
Alarm NoMDPLAN TrapMsg Interval = 0
Alarm NoMDPLAN Log Set = YES
Alarm NoMDPLAN Log Clear = YES
Alarm MDPPktCRCFail Enable = NO
Alarm MDPPktCRCFail SEverity = MAJOR
Alarm MDPPktCRCFail COnsole Enable = YES
Alarm MDPPktCRCFail COnsole Interval = 60
Alarm MDPPktCRCFail TrapMsg Enable = YES
Alarm MDPPktCRCFail TrapMsg Interval = 0
Alarm MDPPktCRCFail Log Set = YES
Alarm MDPPktCRCFail Log Clear = YES
Alarm MDPPktBuffFull SEverity = MAJOR
Alarm MDPPktBuffFull COnsole Enable = YES
Alarm MDPPktBuffFull COnsole Interval = 60
Alarm MDPPktBuffFull TrapMsg Enable = YES
Alarm MDPPktBuffFull TrapMsg Interval = 0
Alarm MDPPktBuffFull Log Set = YES
Alarm MDPPktBuffFull Log Clear = YES
Alarm MDPProtocolFail SEverity = MINOR
Alarm MDPProtocolFail COnsole Enable = YES
Alarm MDPProtocolFail COnsole Interval = 60
Alarm MDPProtocolFail TrapMsg Enable = YES
Alarm MDPProtocolFail TrapMsg Interval = 0
Alarm MDPProtocolFail Log Set = YES
Alarm MDPProtocolFail Log Clear = YES
Alarm SatRxCRCFail SEverity = MINOR
Alarm SatRxCRCFail COnsole Enable = YES
Alarm SatRxCRCFail COnsole Interval = 60
Alarm SatRxCRCFail TrapMsg Enable = YES
Alarm SatRxCRCFail TrapMsg Interval = 0
Alarm SatRxCRCFail Log Set = YES
Alarm SatRxCRCFail Log Clear = YES
Alarm SatRxFail Enable = NO
Alarm SatRxFail SEverity = MAJOR
Alarm SatRxFail COnsole Enable = YES
Alarm SatRxFail COnsole Interval = 60
Alarm SatRxFail TrapMsg Enable = YES
Alarm SatRxFail TrapMsg Interval = 0
Alarm SatRxFail Log Set = YES
Alarm SatRxFail Log Clear = YES
Alarm DekeyTimeout SEverity = CRITICAL
Alarm DekeyTimeout COnsole Enable = YES
Alarm DekeyTimeout COnsole Interval = 60
Alarm DekeyTimeout TrapMsg Enable = YES
Alarm DekeyTimeout TrapMsg Interval = 0
Alarm DekeyTimeout Log Set = YES
Alarm DekeyTimeout Log Clear = YES
Alarm InLocalMode SEverity = INFO
Alarm InLocalMode COnsole Enable = YES
Alarm InLocalMode COnsole Interval = 60
Alarm InLocalMode TrapMsg Enable = YES
Alarm InLocalMode TrapMsg Interval = 0
Alarm InLocalMode Log Set = YES
Alarm InLocalMode Log Clear = YES
Alarm PagingDisabled SEverity = CRITICAL
Alarm PagingDisabled COnsole Enable = YES
Alarm PagingDisabled COnsole Interval = 60
Alarm PagingDisabled TrapMsg Enable = YES
Alarm PagingDisabled TrapMsg Interval = 0
Alarm PagingDisabled Log Set = YES
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Alarm PagingDisabled Log Clear = YES
Alarm Cutback1dB SEverity = MAJOR
Alarm Cutback1dB COnsole Enable = YES
Alarm Cutback1dB COnsole Interval = 60
Alarm Cutback1dB TrapMsg Enable = YES
Alarm Cutback1dB TrapMsg Interval = 0
Alarm Cutback1dB Log Set = YES
Alarm Cutback1dB Log Clear = YES
Alarm Cutback3dB SEverity = MAJOR
Alarm Cutback3dB COnsole Enable = YES
Alarm Cutback3dB COnsole Interval = 60
Alarm Cutback3dB TrapMsg Enable = YES
Alarm Cutback3dB TrapMsg Interval = 0
Alarm Cutback3dB Log Set = YES
Alarm Cutback3dB Log Clear = YES
Alarm CutbackShutdown SEverity = CRITICAL
Alarm CutbackShutdown COnsole Enable = YES
Alarm CutbackShutdown COnsole Interval = 60
Alarm CutbackShutdown TrapMsg Enable = YES
Alarm CutbackShutdown TrapMsg Interval = 0
Alarm CutbackShutdown Log Set = YES
Alarm CutbackShutdown Log Clear = YES
Alarm DownloadFail SEverity = MAJOR
Alarm DownloadFail COnsole Enable = YES
Alarm DownloadFail COnsole Interval = 60
Alarm DownloadFail TrapMsg Enable = YES
Alarm DownloadFail TrapMsg Interval = 0
Alarm DownloadFail Log Set = YES
Alarm DownloadFail Log Clear = YES
Alarm CutoverFail SEverity = MAJOR
Alarm CutoverFail COnsole Enable = YES
Alarm CutoverFail COnsole Interval = 60
Alarm CutoverFail TrapMsg Enable = YES
Alarm CutoverFail TrapMsg Interval = 0
Alarm CutoverFail Log Set = YES
Alarm CutoverFail Log Clear = YES
Alarm AdminLogged SEverity = INFO
Alarm AdminLogged COnsole Enable = YES
Alarm AdminLogged COnsole Interval = 60
Alarm AdminLogged TrapMsg Enable = YES
Alarm AdminLogged TrapMsg Interval = 0
Alarm AdminLogged Log Set = YES
Alarm AdminLogged Log Clear = YES
Alarm Admin2Logged SEverity = INFO
Alarm Admin2Logged COnsole Enable = YES
Alarm Admin2Logged COnsole Interval = 60
Alarm Admin2Logged TrapMsg Enable = YES
Alarm Admin2Logged TrapMsg Interval = 0
Alarm Admin2Logged Log Set = YES
Alarm Admin2Logged Log Clear = YES
Alarm BadLogon SEverity = INFO
Alarm BadLogon COnsole Enable = YES
Alarm BadLogon COnsole Interval = 60
Alarm BadLogon TrapMsg Enable = YES
Alarm BadLogon TrapMsg Interval = 0
Alarm BadLogon Log Set = YES
Alarm BadLogon Log Clear = YES
Alarm LANError SEverity = MAJOR
Alarm LANError COnsole Enable = YES
Alarm LANError COnsole Interval = 60
Alarm LANError TrapMsg Enable = YES
Alarm LANError TrapMsg Interval = 0
Alarm LANError Log Set = YES
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Alarm LANError Log Clear = YES
Alarm SessionTimeout SEverity = INFO
Alarm SessionTimeout COnsole Enable = YES
Alarm SessionTimeout COnsole Interval = 60
Alarm SessionTimeout TrapMsg Enable = YES
Alarm SessionTimeout TrapMsg Interval = 0
Alarm SessionTimeout Log Set = YES
Alarm SessionTimeout Log Clear = YES
Alarm TelnetActive SEverity = INFO
Alarm TelnetActive COnsole Enable = YES
Alarm TelnetActive COnsole Interval = 60
Alarm TelnetActive TrapMsg Enable = YES
Alarm TelnetActive TrapMsg Interval = 0
Alarm TelnetActive Log Set = YES
Alarm TelnetActive Log Clear = YES
Alarm UsersExceeded SEverity = INFO
Alarm UsersExceeded COnsole Enable = YES
Alarm UsersExceeded COnsole Interval = 60
Alarm UsersExceeded TrapMsg Enable = YES
Alarm UsersExceeded TrapMsg Interval = 0
Alarm UsersExceeded Log Set = YES
Alarm UsersExceeded Log Clear = YES
Alarm ExciterFail Enable = NO
Alarm ExciterFail SEverity = CRITICAL
Alarm ExciterFail COnsole Enable = YES
Alarm ExciterFail COnsole Interval = 60
Alarm ExciterFail TrapMsg Enable = YES
Alarm ExciterFail TrapMsg Interval = 0
Alarm ExciterFail Log Set = YES
Alarm ExciterFail Log Clear = YES
Alarm PAFail SEverity = MAJOR
Alarm PAFail COnsole Enable = YES
Alarm PAFail COnsole Interval = 60
Alarm PAFail TrapMsg Enable = YES
Alarm PAFail TrapMsg Interval = 0
Alarm PAFail Log Set = YES
Alarm PAFail Log Clear = YES
Alarm ExciterFail SEverity = CRITICAL
Alarm ExciterFail COnsole Enable = YES
Alarm ExciterFail COnsole Interval = 60
Alarm ExciterFail TrapMsg Enable = YES
Alarm ExciterFail TrapMsg Interval = 0
Alarm ExciterFail Log Set = YES
Alarm ExciterFail Log Clear = YES
Alarm PAOverDrive SEverity = MAJOR
Alarm PAOverDrive COnsole Enable = YES
Alarm PAOverDrive COnsole Interval = 60
Alarm PAOverDrive TrapMsg Enable = YES
Alarm PAOverDrive TrapMsg Interval = 0
Alarm PAOverDrive Log Set = YES
Alarm PAOverDrive Log Clear = YES
Alarm PAThermal SEverity = MAJOR
Alarm PAThermal COnsole Enable = YES
Alarm PAThermal COnsole Interval = 60
Alarm PAThermal TrapMsg Enable = YES
Alarm PAThermal TrapMsg Interval = 0
Alarm PAThermal Log Set = YES
Alarm PAThermal Log Clear = YES
Alarm PSFail Enable = NO
Alarm PSFail SEverity = MAJOR
Alarm PSFail COnsole Enable = YES
Alarm PSFail COnsole Interval = 60
Alarm PSFail TrapMsg Enable = YES
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```
Alarm PSFail TrapMsg Interval = 0
Alarm PSFail Log Set = YES
Alarm PSFail Log Clear = YES
Alarm PSOverCurrent Enable = NO
Alarm PSOverCurrent SEverity = MAJOR
Alarm PSOverCurrent COnsole Enable = YES
Alarm PSOverCurrent COnsole Interval = 60
Alarm PSOverCurrent TrapMsg Enable = YES
Alarm PSOverCurrent TrapMsg Interval = 0
Alarm PSOverCurrent Log Set = YES
Alarm PSOverCurrent Log Clear = YES
Alarm GPSNoLock SEverity = CRITICAL
Alarm GPSNoLock COnsole Enable = YES
Alarm GPSNoLock COnsole Interval = 60
Alarm GPSNoLock TrapMsg Enable = YES
Alarm GPSNoLock TrapMsg Interval = 0
Alarm GPSNoLock Log Set = YES
Alarm GPSNoLock Log Clear = YES
Alarm GPSFail SEverity = MAJOR
Alarm GPSFail COnsole Enable = YES
Alarm GPSFail COnsole Interval = 60
Alarm GPSFail TrapMsg Enable = YES
Alarm GPSFail TrapMsg Interval = 0
Alarm GPSFail Log Set = YES
Alarm GPSFail Log Clear = YES
Alarm UHSOFail SEverity = MAJOR
Alarm UHSOFail COnsole Enable = YES
Alarm UHSOFail COnsole Interval = 60
Alarm UHSOFail TrapMsg Enable = YES
Alarm UHSOFail TrapMsg Interval = 0
Alarm UHSOFail Log Set = YES
Alarm UHSOFail Log Clear = YES
CAlibration Framerate = 1
CAlibration Mode = STD
CAlibration Subchan 1 Pattern = CARRIER
CAlibration Subchan 1 Fwdblocks = 11
CAlibration Subchan 2 Pattern = CARRIER
CAlibration Subchan 2 Fwdblocks = 11
CAlibration Subchan 3 Pattern = CARRIER
CAlibration Subchan 3 Fwdblocks = 11
CAlibration Subchan 4 Pattern = CARRIER
CAlibration Subchan 4 Fwdblocks = 11
COnsole Timeout = 300
COnsole Baud = 9600
COnsole Databits = 8
COnsole Stopbits = 1
COnsole Parity = NONE
DIstribution Hdlc Lowerlimitcrc = 80
DIstribution Hdlc NUMcrcframes = 0
DIstribution Hdlc Upperlimitcrc = 90
DIstribution Portselect = ALL
DIstribution Satrx Lnbcontrolmode = OFF
DIstribution Satrx POrtsetting = RS485
DIstribution Satrx PRimarycarrierfreq = 1445
DOwnload File = g2btapp.pkg
DOwnload Interval = 0
DOwnload Mode = OFF
DOwnload Packets Programmed = 0
DOwnload Retries = 50
DOwnload Server = 10.0.1.30
DOwnload TIME = 2196/02/06 06:28:15
DOwnload TIMEOut = 5000
EXCiter Traininterval = 0
```

```
EXCiter  DAC = 0x0330
EXCiter  tranlin 01 = 0x0E
EXCiter  tranlin 02 = 0x14
EXCiter  tranlin 03 = 0x31
EXCiter  tranlin 04 = 0xF1
EXCiter  tranlin 05 = 0x18
EXCiter  tranlin 06 = 0x27
EXCiter  tranlin 07 = 0x3C
EXCiter  tranlin 08 = 0x38
EXCiter  tranlin 09 = 0xBB
EXCiter  tranlin 0A = 0x51
EXCiter  tranlin 0B = 0x7E
EXCiter  tranlin 0C = 0xA5
EXCiter  tranlin 0D = 0x40
EXCiter  tranlin 0E = 0x20
EXCiter  tranlin 0F = 0xFF
EXCiter  tranlin 10 = 0x36
EXCiter  tranlin 11 = 0x4D
EXCiter  tranlin 12 = 0x00
EXCiter  tranlin 13 = 0x1F
EXCiter  tranlin 14 = 0x7F
EXCiter  tranlin 15 = 0x13
EXCiter  tranlin 16 = 0xFF
EXCiter  tranlin 17 = 0x00
EXCiter  tranlin 18 = 0x00
EXCiter  tranlin 19 = 0x10
Network Host =
Network Telnet ADMINName = admin
Network Telnet ADMINPassword =
Network Telnet OPER1Name = oper1
Network Telnet OPER1Password =
Network Telnet OPER2Name = oper2
Network Telnet OPER2Password =
Network Telnet OPER3Name = oper3
Network Telnet OPER3Password =
Network Telnet Timeout = 300
PA  Installed = 4
PA 1 Attenuation = 63
PA 2 Attenuation = 63
PA 3 Attenuation = 63
PA 4 Attenuation = 63
PA 1 phase = 0
PA 2 phase = 0
PA 3 phase = 0
PA 4 phase = 0
PA 1 Enable = YES
PA 2 Enable = YES
PA 3 Enable = YES
PA 4 Enable = YES
PS 1 Enable = YES
PS 2 Enable = YES
PS 3 Enable = YES
PS 4 Enable = YES
SNMP Getcommunity = public
SNMP Setcommunity = public
SNMP TRAPCommunity = public
STatistics Mdppktsrecvd = 0
THreshold Dekeytimeout = 20
THreshold Freerunningtimeout = 20
THreshold Gpstimeout = 10
THreshold MDPCrc = 0
THreshold MDPLostpkts = 256
THreshold MDPtimeout = 256
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THreshold NOMDPLan = 10
THreshold NOMDPSatrx = 10
THreshold Sessionidletime = 256
THreshold TEMPHigh = 80
THreshold TEMPLow = 5
THreshold TRaplevel = MINOR
THreshold Usersessions = 6
TRANsmission Frequency = 940.775 MHz
TRANsmission INcompleteframe = ALL
TRANsmission Launchdelay = 203
TRANsmission PAgingmode = ON
TRANsmission Offset = 0
TRANsmission PWRControlmode = ON
TRANsmission PWRSetting = 400
TRANsmission R25colorcode = 0
TRANsmission Subchan Config 1 Deviation = 2400
TRANsmission Subchan Config 1 Frequency = -5000
TRANsmission Subchan Config 1 Mode = ON
TRANsmission Subchan Config 2 Deviation = 2400
TRANsmission Subchan Config 2 Frequency = 5000
TRANsmission Subchan Config 2 Mode = ON
TRANsmission Subchan Config 3 Deviation = 2400
TRANsmission Subchan Config 3 Frequency = 15000
TRANsmission Subchan Config 3 Mode = ON
TRANsmission Subchan Config 4 Deviation = 2400
TRANsmission Subchan Config 4 Frequency = -15000
TRANsmission Subchan Config 4 Mode = ON
TRANsmission Subchan Empty = IDLE
TRANsmission TESTStatus = OFF
TRANsmission TESTTImeout = 256
TRANsmission TXMode = NORMAL
dsp attenuation = 255
dsp Clip = 100
dsp DAC1 = i3
dsp DAC2 = bb3
dsp DAC3 = iout
dsp DAC4 = qout
dsp IGain = 0x7000
dsp QGain = 0x7000
dsp IOffset = 0
dsp QOffset = 0
dsp Forward Gain = 100
dsp Forward Offset = 0
dsp Reflected Gain = 100
dsp Reflected Offset = 0
dsp TP1 = 0
dsp TP2 = 1
dsp TP3 = 2
dsp TP4 = 4
dsp VARSelect = PWR
dsp Xf = 1
```