3•3•3•1 Log Filtering

Pressing the Filter button above will switch screens for selection options of what events show in the log in the Display.

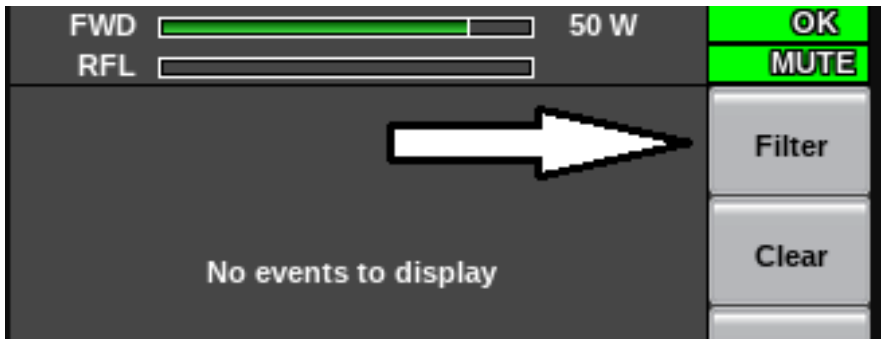


Figure 3-11 Log Filter Button

The display changes to the screen below. Pressing any of the buttons can check or uncheck the desired filtering.

Figure 3-12 Log Filtering

3.4 Home Screen Block Diagram

The Icons in the Block Diagram allow navigation to metering and the various setups for the transmitter.

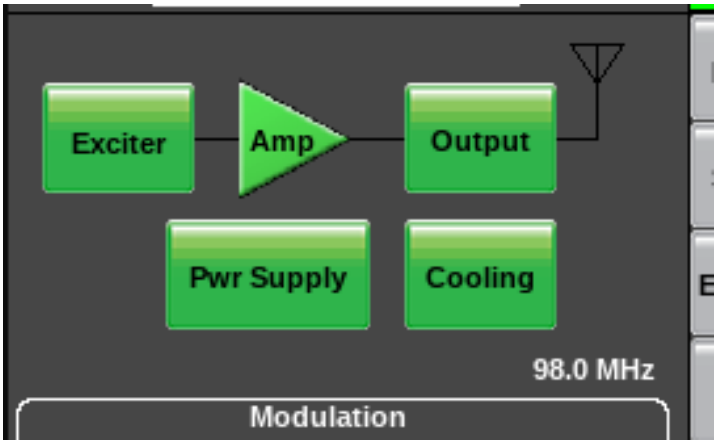


Figure 3-13 Home Screen Block Diagram

3.4.1 Exciter Icon

When touched, the Exciter Icon opens to this screen.

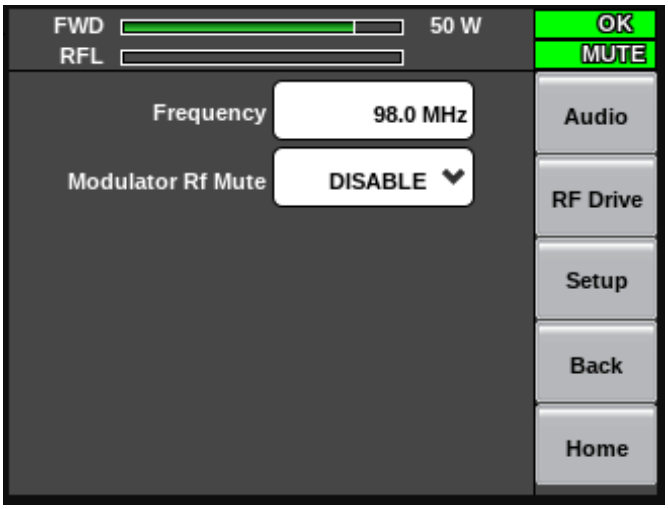


Figure 3-14 Exciter Icon Screen

Touching the Frequency Field/Window will open up the Key Pad screen to set the frequency. Touching the Modulator RF Mute Field/Window allows selections to Enable & Disable. The following sections provide additional information for these 3 buttons assigned to the Exciter Icon:

- Audio: Provides selections of various audio sources for switch as primary and backup.
- RF Drive: Provides selection of RF drive source and switching options
- Setup: Provides selection of APC and RF gain source and settings

3•4•1•1 Audio Button

Touching the Audio button opens to this screen.

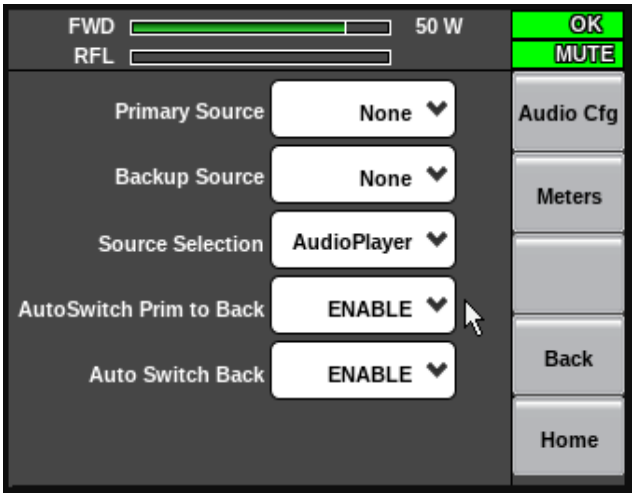


Figure 3-15 Audio Button Screen

Table 3-5 Audio Button - Primary & Backup Source Selections

Field	Description - Audio Button Sub-Window/Fields
Primary Source	Select None, Analog, Main and Aux; AES Audio, Composite, MPX L and MPX R
Backup Source	Select None, Analog, Main and Aux; AES Audio, Composite, MPX L and MPX R
Source Selection	Selects source choice between Primary, Backup or Audio Player.
Auto Switch Prim to Back	Controls whether the modulator switches automatically from the primary to the backup audio source when the primary source fail.
Auto Switch Back	Controls whether the modulator automatically switches back to the primary audio source when it recovers.

- Audio Cfg Button: Opens to screen for selection of additional loss of audio or SCA when touched
- Meters Button: The GX transmitter has a built-in input audio monitor. This monitor displays the audio at the input of the transmitter. Meters will display all audio signals that are present regardless if they are on-air.

3•4•1•1•1 Audio Player

Audio Player is an alternate to Primary or Backup for in the case of an emergency where the Primary/Backup audio feeds are have been broken or missing.

If selected/enabled, it will play a list of audio files or a prerecorded message to stay on air. Refer to Section 4, GUI for setup and function information for this feature.

3•4•1•2 RF Drive

Setting up the External RF input will require opening the RF Drive Screen. In Figure 3-16 left screen, touch the Exciter icon and the screen will change to what is shown in Figure 3-16 on the right. Then touch the RF Drive button and the display will open to the RF Drive Screen in Figure 3-17.

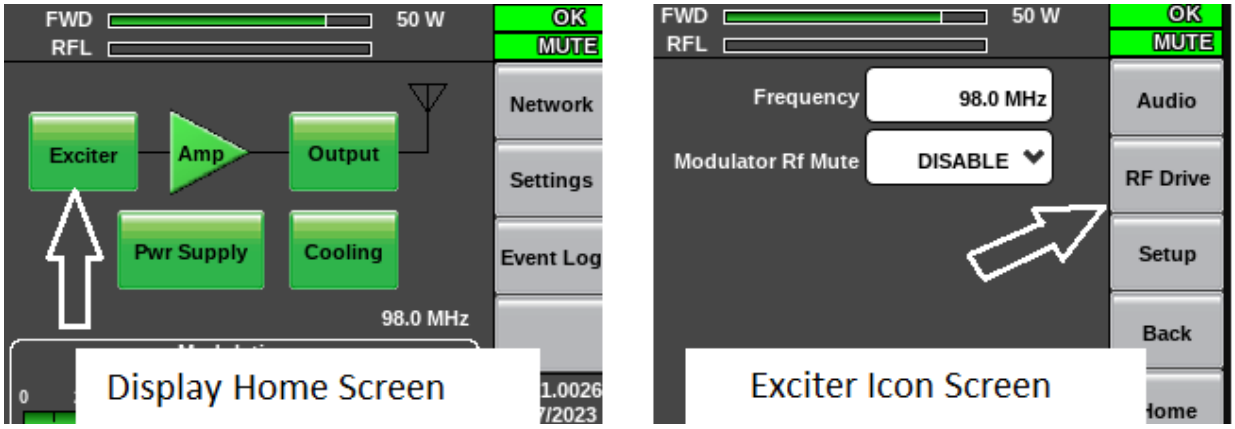


Figure 3-16 RF Drive Button

The screen on the left side of Figure 3-17 is the RF Drive Screen. To change the RF source from the Internal External, touch the field for "RF Source" and the screen on the left will open. Touch "Ext RF" field.

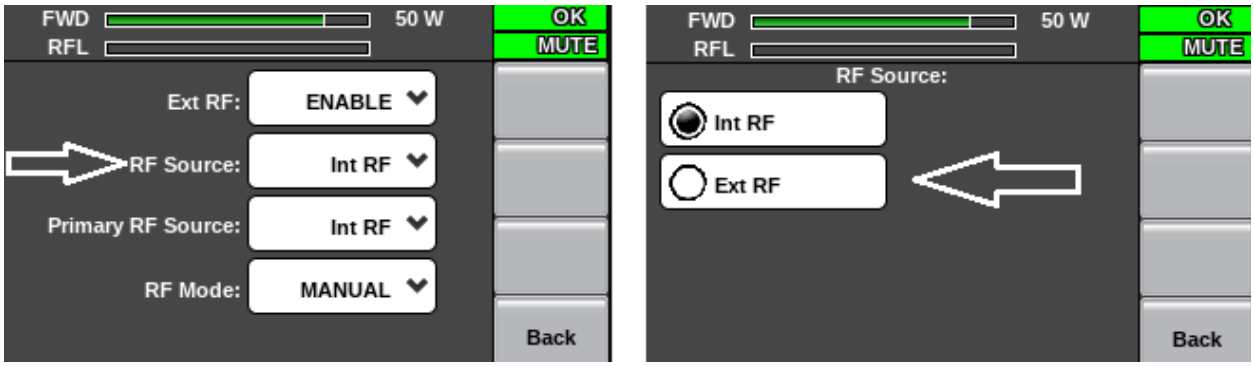


Figure 3-17 RF Source Selection

Table 3-6 RF Drive Screen Fields and Functions

Field	Description
Ext RF:	Select Enable to activate the External RF Input function.
RF Source:	Use this field to select "Ext RF" or "Int RF" to use for the RF source.
Primary RF Source	When RF Mode is in "Auto" use this field to select which RF source to be Primary and the other to be Back up.
RF Mode:	Select Manual or Auto

3.4.2 Amp Icon

The Amp Icon when touched, displays the final PA voltage and current.

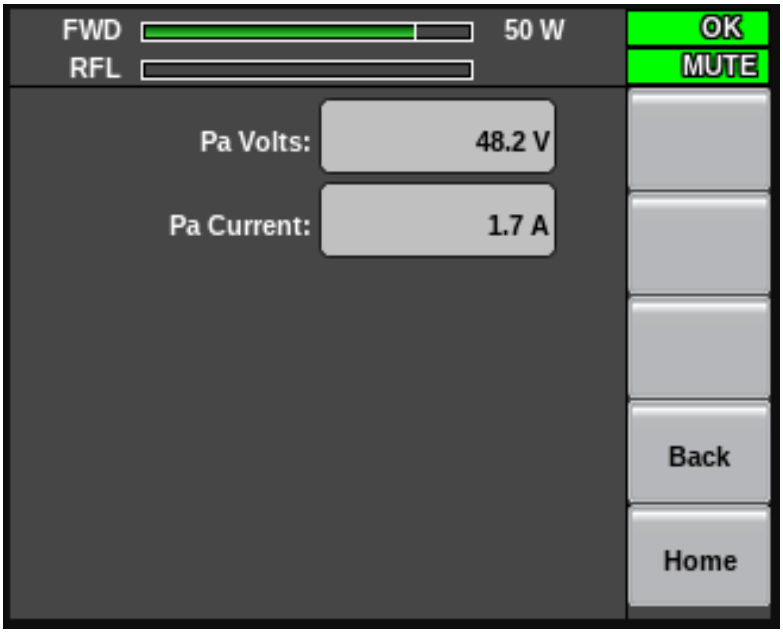


Figure 3-18 Amp Icon Screen

3.4.3 Output Icon

Touching the Output Icon will open the following screen.

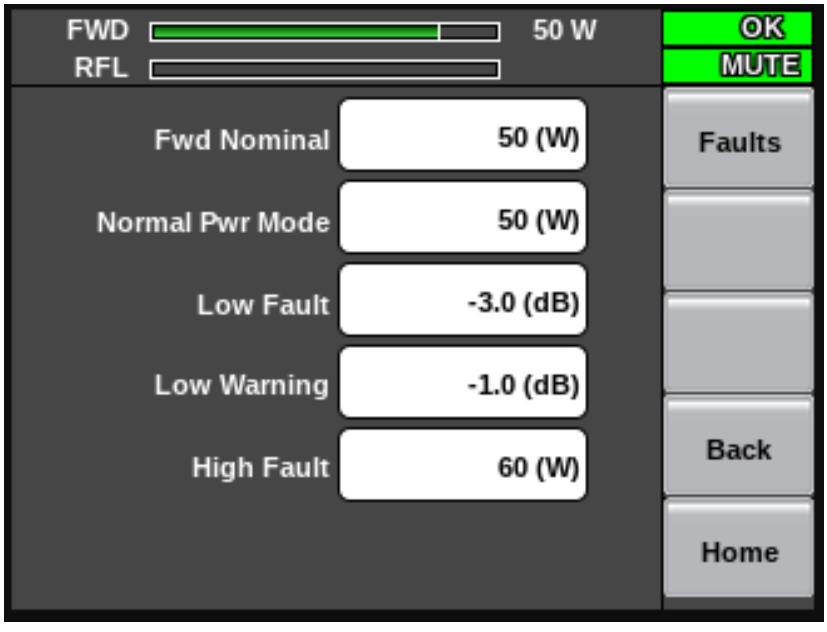


Figure 3-19 Output Icon Screen 1

Touching any of the 5 fields in the screen will open to a key pad display to apply settings defined in Table 3-7.

Table 3-7 Output Icon Fields

Menu	Description
Fwd Nominal	Sets the 100% level on the forward power meter to match the Normal Pwr Mode setting.
Normal Pwr Mode	Sets the RF output power level.
Low Fault	RF level to trigger a Fault set in dB below the forward power level.
Low Warning	RF level to trigger a Warning in dB below the forward power level.
High Fault	RF level to trigger a Fault if power raises above the forward power level.

An addition button is added in the right hand column of Screen 1 and when opened will display Fault / Warning and Power Control indications.

Figure 3-20 Output Icon Screen 2

WARNING: Disconnect primary power prior to servicing.

3.4.4 Pwr Supply Icon

The Power Supply Icon opens to the this screen

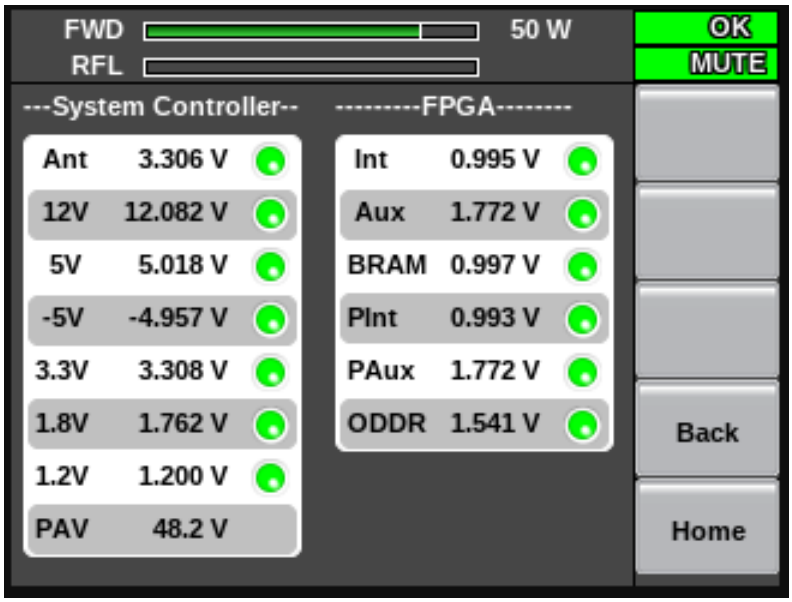


Figure 3-21 Pwr Supply Icon Screen

Table 3-8 Pwr Supply Icon

Menu	Description
	LEFT COLUMN
Ant	GPS Internal Antenna Voltage (5V or 3.3V set by modulator Jumper JP8)
12V	Monitored system voltages
5V	Monitored system voltages
-5V	Monitored system voltages
3.3V	Monitored system voltages
1.8V	Monitored system voltages
1.2V	Monitored system voltages
PAV	The voltage applied to the PA for producing RF Power
	RIGHT COLUMN
Int	Monitored system voltages
Aux	Monitored system voltages
BRAM	Monitored system voltages
Pint	Monitored system voltages
PAux	Monitored system voltages
ODDR	Monitored system voltages

3.4.5 Cooling Icon

This Icon opens into 3 screens.

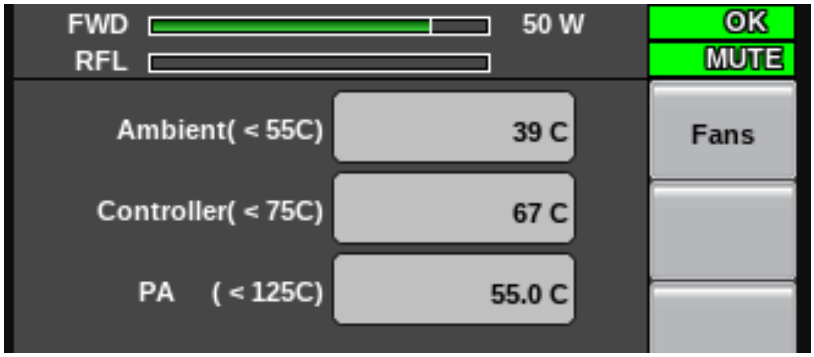


Figure 3-22 Temperature Readings

The Min PA Fan Speed can be adjusted via the GUI control, but not on the LCD Display.

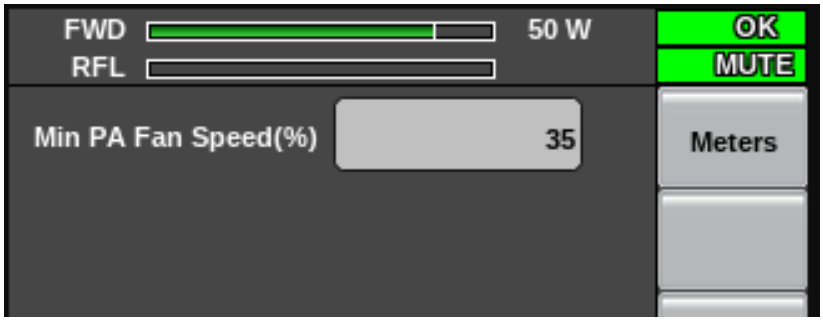


Figure 3-23 Minimum Speed Percentage

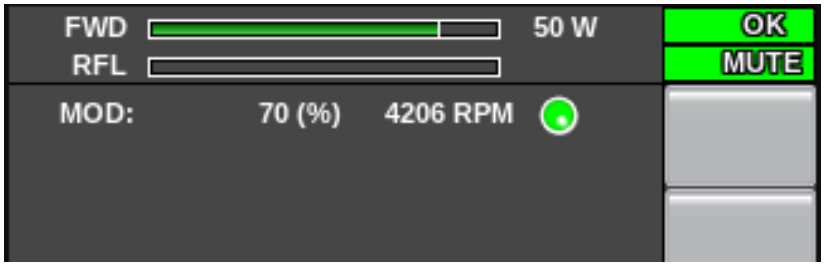


Figure 3-24 Fan RPM

4 Section-4 GUI

4.1 GUI Introduction

The remote GUI, Graphical User Interface, allows the user to monitor and control the GX series transmitters and it requires only a computer and any web browser to function. When connected to the rear Ethernet port, the "Remote" must be Enabled using the front panel's REM/LOC button, to allow for changes to be made using the GUI.

As shown in Figure 1, the GUI opens in a Home Page consisting of a block diagram and buttons which open to other screen pages or drop down menus. Many of the block diagram icons will function as buttons, and when clicked on, will open to additional screens. The same color coding of Green, Yellow and Red, as described in Section 3, is used with many of the icons and buttons. The GUI pages functions are the same in all GX LP models, however some page functions will not be present, based on an option not installed. Block diagrams may vary slightly based on model size such as a GX1K 1000W mode, Figure 4-1, vs GX50 50W model, Figure 4-2.

4.1.1 Home Page Navigation

Refer to Table 4-1 on the following page for a list all of the items in the Home Page use for navigation and monitoring. When navigating to another page, the area of the screen used for the Block Diagram, Source Input box and Total Modulation box will change to the required information or function. The other items listed in Table 4-1 will remain in their locations as shown on the Home Page.

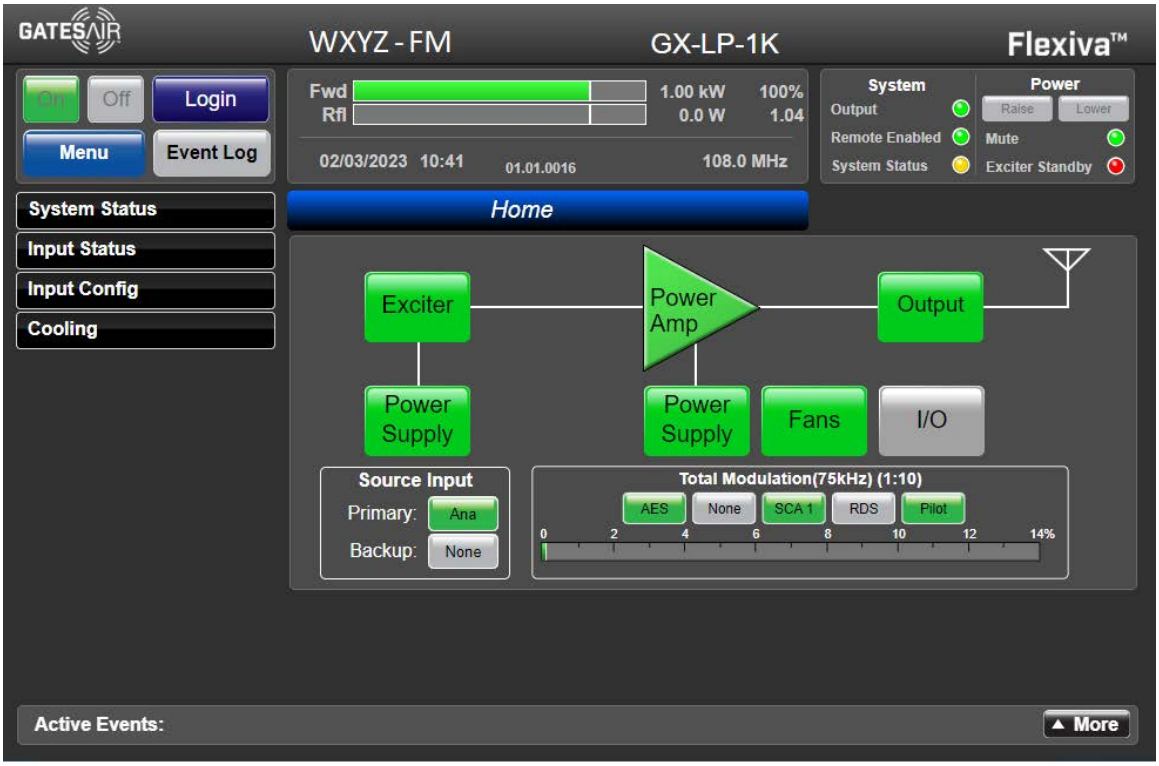


Figure 4-1 GX1K GUI Home Page

WARNING: Disconnect primary power prior to servicing.

Table 4-1 Home Page & Navigation Items

Item	Explanation
Top Banner (text lines between* GATESAIR *and* Flexiva*)	
Station or Site Name:	20 characters text line for user for site or transmitter name. This can be changed after logging in and using the Menu>Setup>Service drop down.
Model Number:	20 characters text line for user for site or transmitter name. This can be changed after logging in and using the Menu>Setup>Service drop down.
Upper Left Box	
ON/OFF:	These buttons turn the transmitter ON or OFF.
Login/Logout:	Opens the Login page, logs the user out if already logged on, and displays level of login.
Menu / Home:	Opens drop down buttons for the GUI menus: Setup, Audio, Exciter, Exciter PS, Power Amp, Pwr Supply, Output, Fans and Remote I/O. Text changes to Home when in GUI page.
Event Log:	Opens the Event Log page. The Event log displays faults, warnings, and information. The log can be exported, printed, or deleted from the Event Log page.
Upper Center Box	
Forward 100% Mark:	The vertical line on the Forward Power Bargraph represents 100% of nominal power as set during transmitter calibration.
Reflected 100% Mark:	The vertical bar in the power bargraph display for reflected power is the 100% reflected power level based on the 1.5:1 VSWR calibrated power.
Date and time:	Shows the current date and time.
Frequency:	Shows operating frequency of the transmitter; this information comes from the exciter.
Upper Right Box	
Output:	Displays the status of the output.
Remote Enabled:	Displays if the Remote is Enabled.
System Status:	Displays the summary status of the transmitter.
Power:	Buttons to Raise and Lower the transmitter power.
Mute:	Displays the status of the any Mute command.
Block Diagram	
Exciter:	Displays the current summary fault of the Exciter, green is Normal.
Power Supply-Exc:	Displays the status of the Exciter Power Supplies.
Power Amp:	Displays the status of the Power Amps.
Power Supply-PA:	Displays the status of the PA Power Supplies in the GX1K. (*Icon not displayed in GX50*)
Output:	Displays the current summary fault of the Output, Green is Normal.
Fans:	Displays the status of the Fans.
I/O:	Displays the status of the Remote Input/Output.
Additional Buttons, Boxes and Banners	
Status / Config Buttons:	Four Black Buttons located on the left of the page will open to provide status or metering information for System Status, Input Status, Input Configuration and Cooling.
Source Input:	This box near bottom center, displays the status of the Primary and Backup Inputs.
Modulation Bar and Audio Buttons:	This box near bottom right, displays Total Modulation and Audio Status buttons.
Title/Event Banners	The blue Title Banner above block diagram and the Event Banner on bottom of the page.

A small difference between the larger models such as the GX1K and a GX50 is in the Block Diagram. The lower RF power of the GX50 does not require the larger power supply used in the larger models and therefore the GX50 only has a single Power Supply Icon in it's block diagram shown here in Figure 4-2.

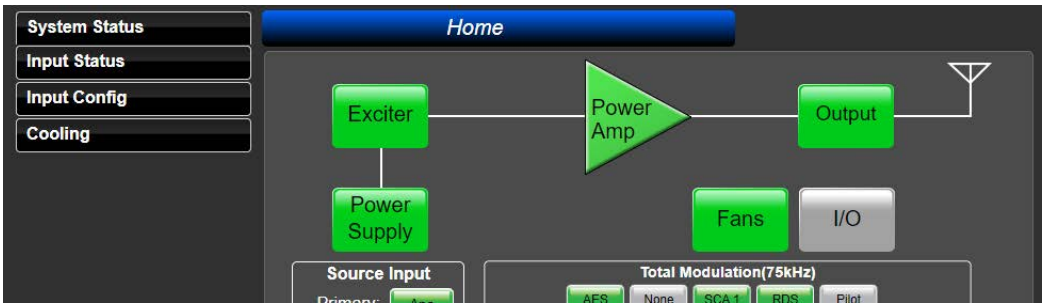


Figure 4-2 GX50 Block Diagram

4.1.2 Banners & Buttons displayed in all GUI pages

All of the Buttons on the left part of the page and all 3 Banners remain displayed on the page when navigating to other functions. The Menu button will drop down into additional buttons to provide navigation to the majority of the set up pages for the GX. This includes navigation to input the station/site information and transmitter model in the Top Banner. The other two Banners and Buttons not already introduced are as follows:

4•1•2•1 Title Banner

The blue colored banner above the block diagram is the Title Banner which will change text to match the new page. In Figure 4-3 below, the Power Amp icon was clicked on. The Block Diagram changed to the new page of information for the Power Amp and it's Title Banner changed name also. On many Title Banners, the "?" appears in the Banner. This means additional information about that page can be accessed by clicking on the "?" symbol.

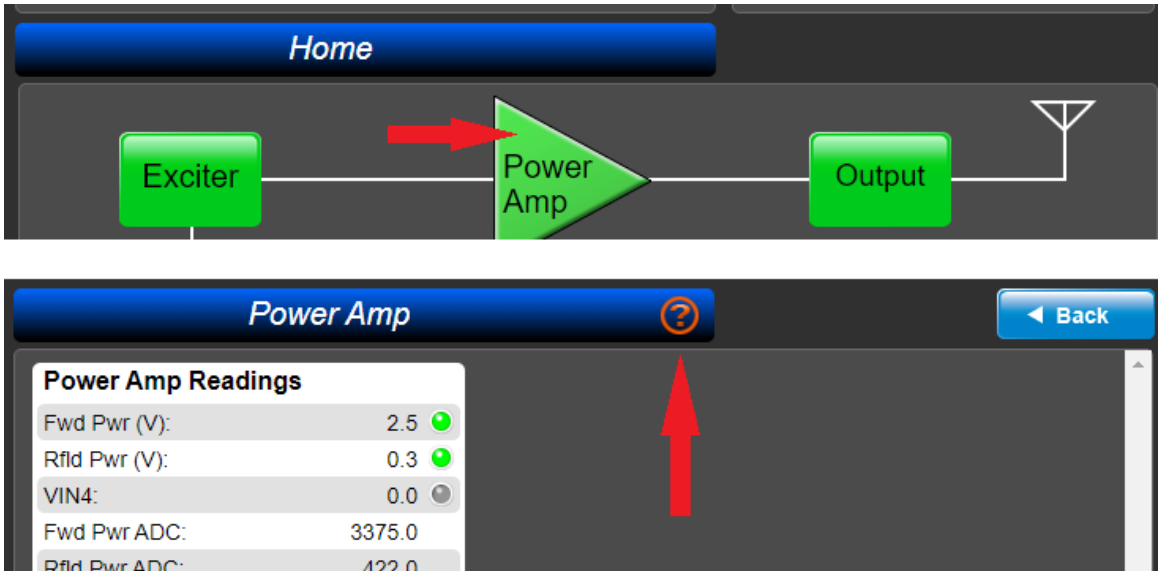


Figure 4-3 Title Banner

WARNING: Disconnect primary power prior to servicing.

4•1•2•2 Active Events Banner

The banner located at the bottom of the screen will be the Active Event Banner. If no events are active or have been cleared, the Banner will be gray in color. The color of the Banner changes to yellow or red to match the most recent active event. In Figure 4-4, we have a yellow warning for Fan 1 displayed with a time stamp and color change to yellow of the event. The color also changes on the block diagram Fan Icon to yellow.

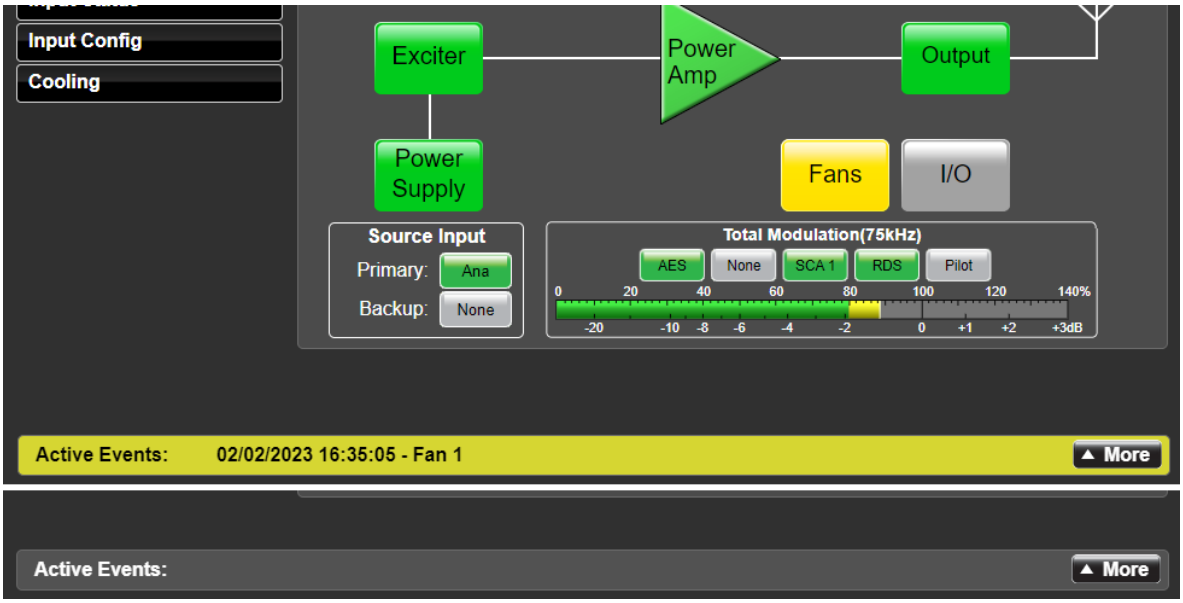


Figure 4-4 Active Events Banner

4•1•2•3 Status / Config Drop Downs

All 4 of these Buttons have been opened up in the composite figure below. These status drop downs can be selected for quick reference, but there are no navigation actions on these drop downs. The selected button will remain open when using other navigation buttons on a GUI page until the drop down button is clicked on again.

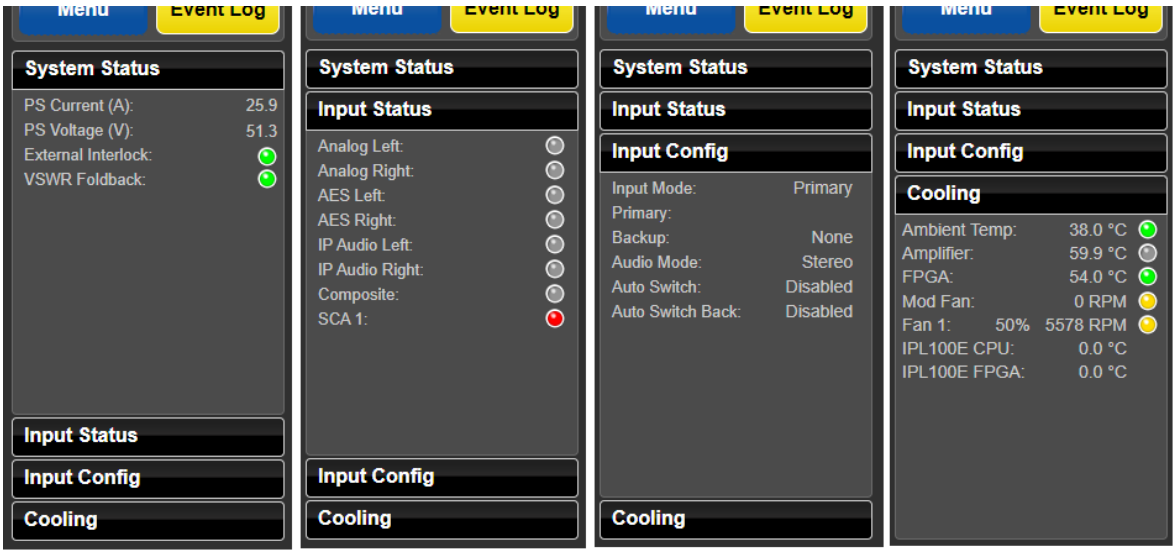


Figure 4-5 Status Drop Down Menus

4•1•2•4 Event Log Button

When clicking on the Event Log button, the Event Log opens as shown below in Figure 4-6. Events are broken down into Faults, Warnings, Information and Activity.

Active faults (FLT) are displayed in red. Active warnings (WRN) are displayed in yellow.

Information (INF) entries provide information on faults that have cleared. They display the date and times that the faults occurred (Set), and cleared (Clear).

Activity (ACT) entries display an action that was taken, e.g. Transmitter was turned ON/OFF or the power was raised or lowered.

Note that the Title Banner contains additional buttons to Save, Clear and Filter.

To clear the log click on the "CLR LOG" button. The event log will store up to 1,000 events, after which the oldest event is deleted when a new event is added.

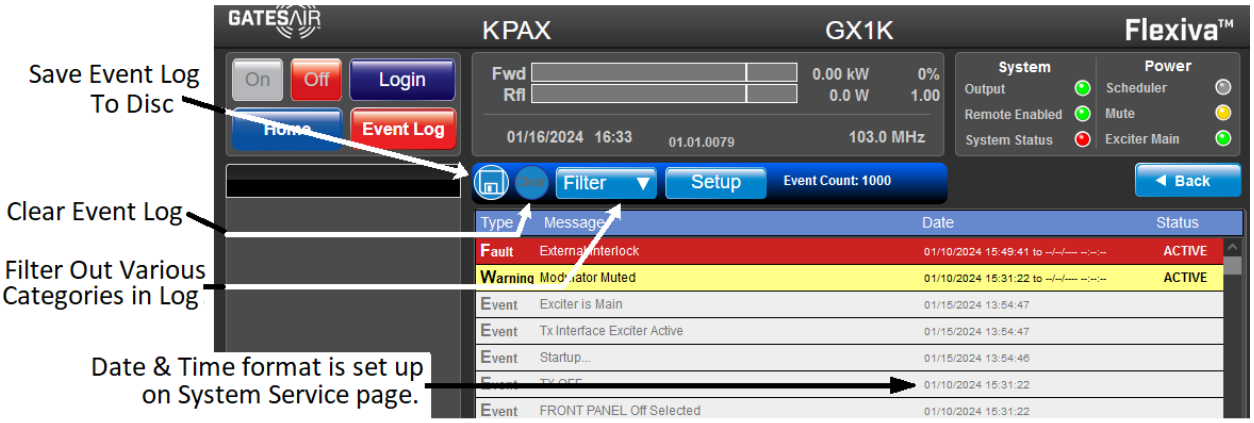


Figure 4-6 Event Log Screen

4.1.3 GUI vs Front Panel LCD Display and Control

In the GX LP transmitters, some functions are only available using the GUI, and are not available on the Front Panel LCD Display menus, such as RDS setup. Versus some functions that are only available in the Front Panel LCD Display menus, such as calibrations and system resets to default settings, are not available on the GUI. Therefore, after transmitter installation, the GUI may be required, if only locally, to complete the GX setup.

When connected to the rear Ethernet port for GUI operation, another reminder about the REM/LOC Button located on the Front Panel:

Note

***Remote**, must be Enabled using the front panel's REM/LOC button, to allow for changes to be made using the GUI. However, most GUI screens can be monitored when not switched to Remote.*

Note

*A **valid login** to is required to **make changes** to the transmitter system using the GUI.*

WARNING: Disconnect primary power prior to servicing.

4.2 GUI Login and Passwords

There are two **Permission Groups**, (also referred to as Permission Level), that is explained as follows:

Admin, for administration, is the level to edit and/or create other users and their passwords.

Engineer. This is the permission group that allows setup and changes to the transmitter system. However, the Engineer login level cannot add/edit login or password definitions. This can only be done in the Admin group.

The GX is shipped with default settings to log into the GX GUI for the first time. The default settings for Admin are:

Username: admin and P**assword: admin**. For Engineer: **Username: eng** and **Password: eng**.

4.2.1 Users and Password Setup

Open the web browser and in the address bar enter the IP address of the port the computer is connected to.

Click the **Login** button in the upper left corner of the Home screen. This will open the Login window, Figure 4-7.

Enter the username "admin" and password "admin". The Admin Screen will open as shown in Figure 4-8.

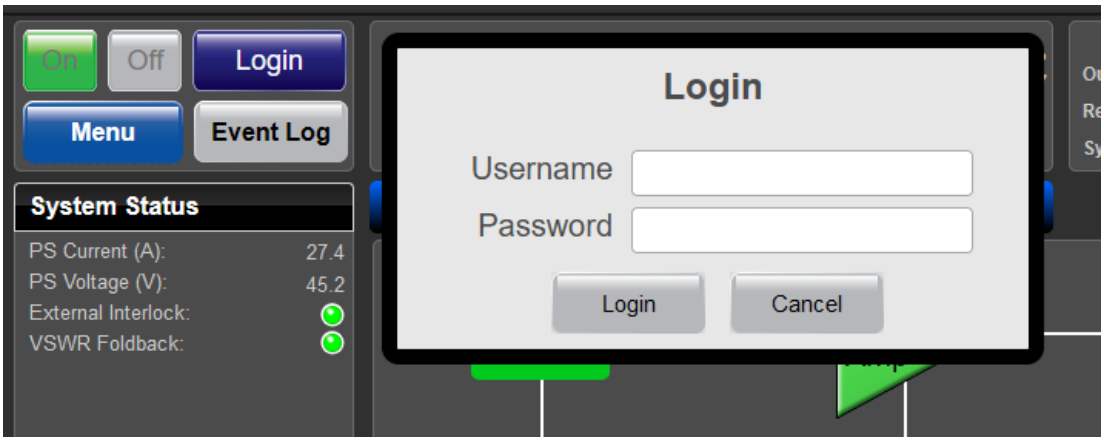


Figure 4-7 Login Window

Note the Login button text has changed to Logout and there now 4 column names, (referred to as **Fields)**, that are listed in the Title Banner and they are: **Username, Permission Group, Max Logins and Idle Timeout.**

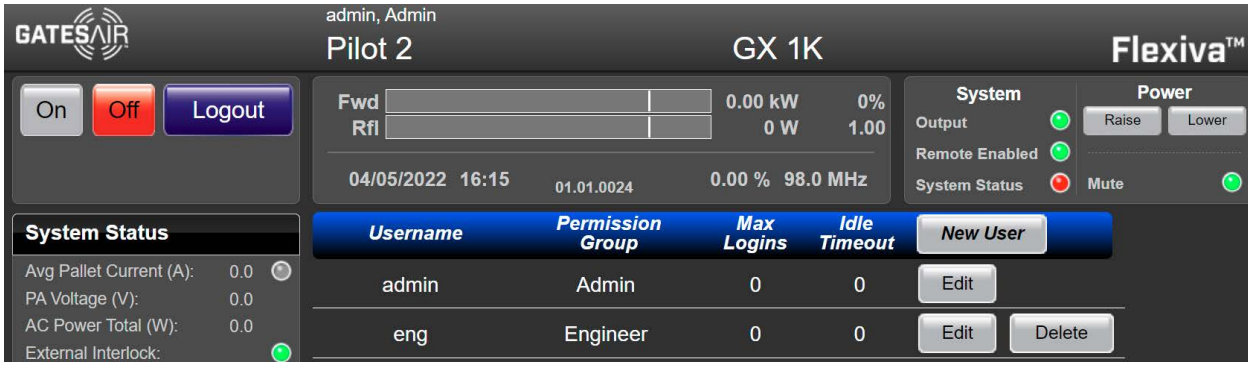


Figure 4-8 GX Admin Screen

While In the Admin screen, Figure 4-8, on the previous page, click the **Edit** button of the desired username and the following GUI screen will open:

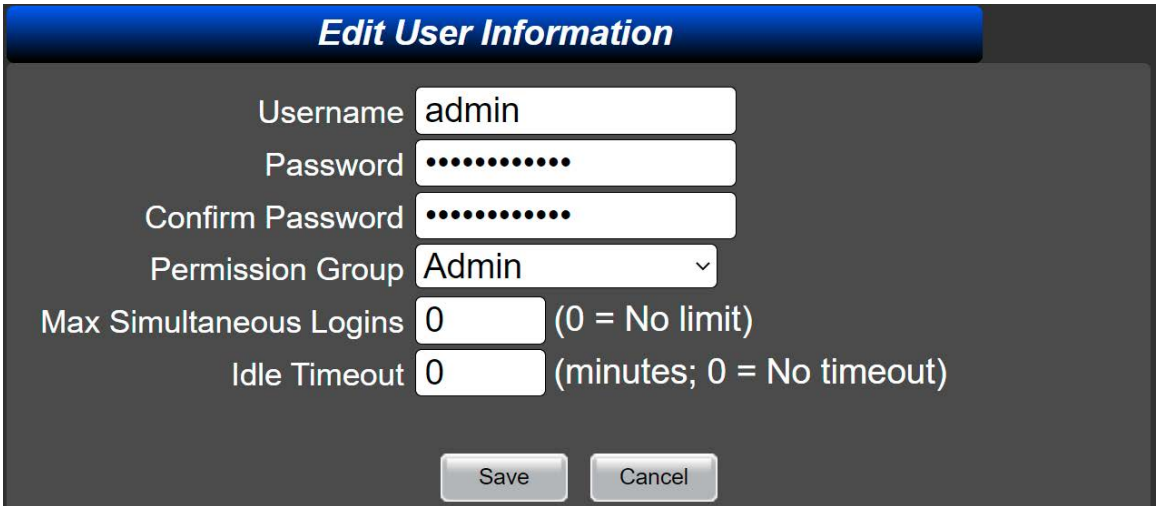


Figure 4-9 Edit User Information Screen

Use the following summary of in entering information for each user to be setup.

- The GX can handle a high number of different usernames. Multiple users can be logged in at the same time. This is for both Permission Groups.
- The number of simultaneous logins per username can be limited in the **Max Simultaneous Logins** field. If there is to be no limit, enter 0.
- The desired timeout value for inactive or idle is entered in the **Idle Timeout** field (in minutes). Entering 0 will keep the user logged in until the browser closes or times out.
- If the session ends without logout, the user will stay logged in for five additional minutes before being logged out.
- Passwords: Case sensitive, all letters can be used A - Z or a - z, and numbers, 0-9, and special character _ Maximum length is 80 characters.
- For security, the factory default usernames "admin" and "eng" should be edited with a new passwords. The username admin and it's permission group are set in software and only the password can be changed. The "eng" username can be edited or deleted if desired.

When finished completing the Fields for a user, click **Save** and the *Edit User Information* window will close and return to Admin screen. Click the Logout button to end the procedure and exit the Admin screen.

If a new user is to be added, select **New User** in the Admin Screen and the *Edit User Information* screen will open again. Enter the new settings in the same manner clicking Save and repeating for addition Users.

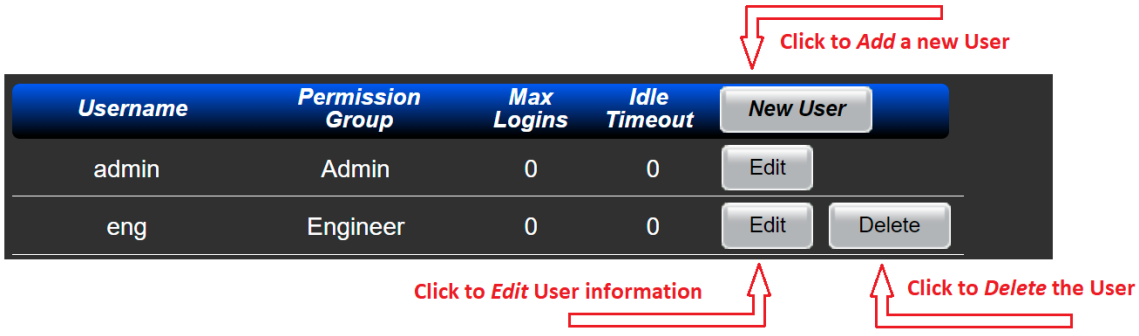


Figure 4-10 New User

4.2.2 Lost or Forgotten Password

If login information is forgotten or lost for a User with an Engineer level, use the Admin login and procedure to correct or edit that user's settings.

If a User with the Admin permission level is lost or forgotten, and the Admin screen cannot be accessed, this will require a reset of all GUI user names and passwords by using the **GXLP Front Panel LCD Touch Display** located at the front of the transmitter and then to navigate to the **Settings screen** as shown in Figure 4-11.

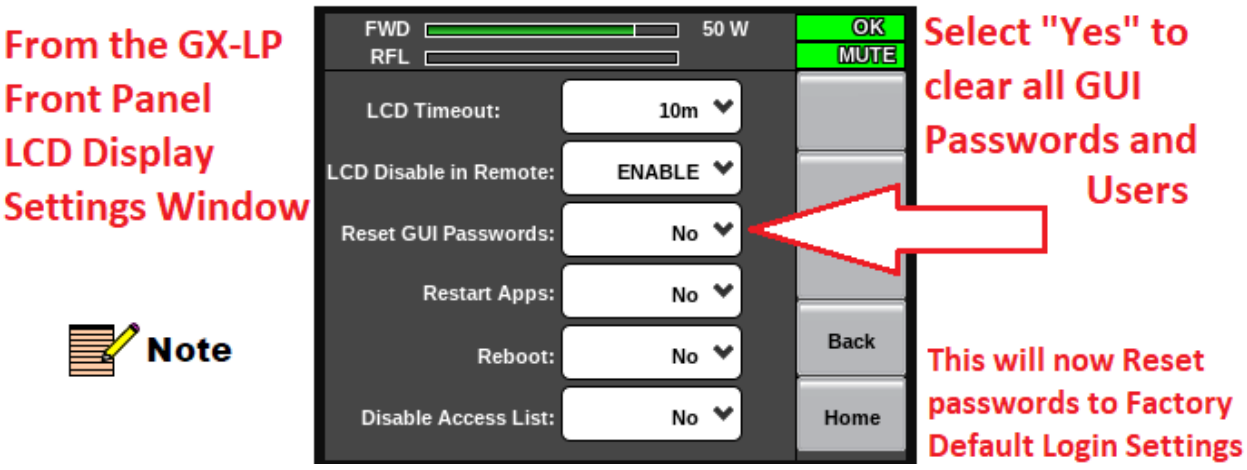
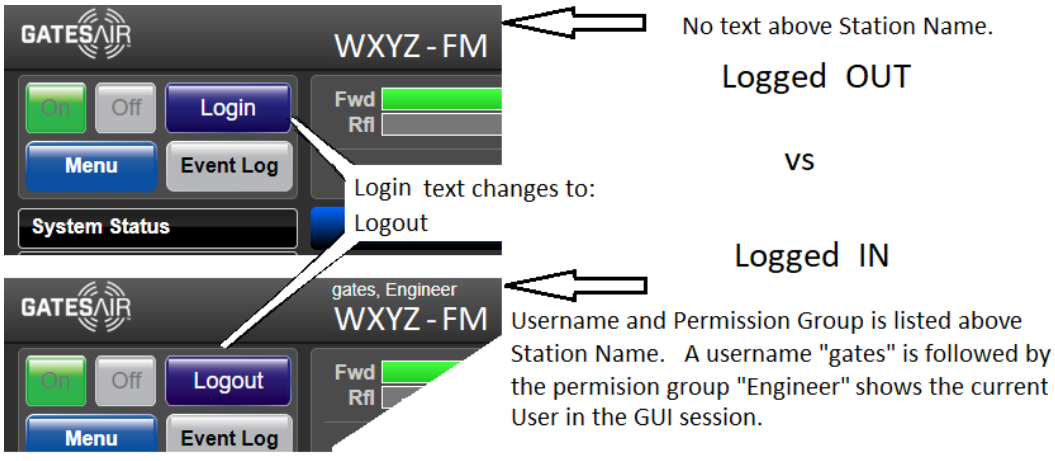


Figure 4-11 GX LCD Display Settings Screen

4.2.3 Login Summary

Be sure to change the default password for usernames "admin" and eng for security.



Record the new usernames and passwords for future reference.

When logged in as an Administrator, screen navigation and actions will be very limited to such actions as to turn the transmitter OFF.

If logged in as an Administrator, you will have logout and then log back in as Engineer to make changes.

4.2.4 Menu Button

The Menu pull down button will be a primary starting point to get quick access to the majority of settings for the GX using the GUI. Clicking the Menu button drops down the primary menu to navigate from.

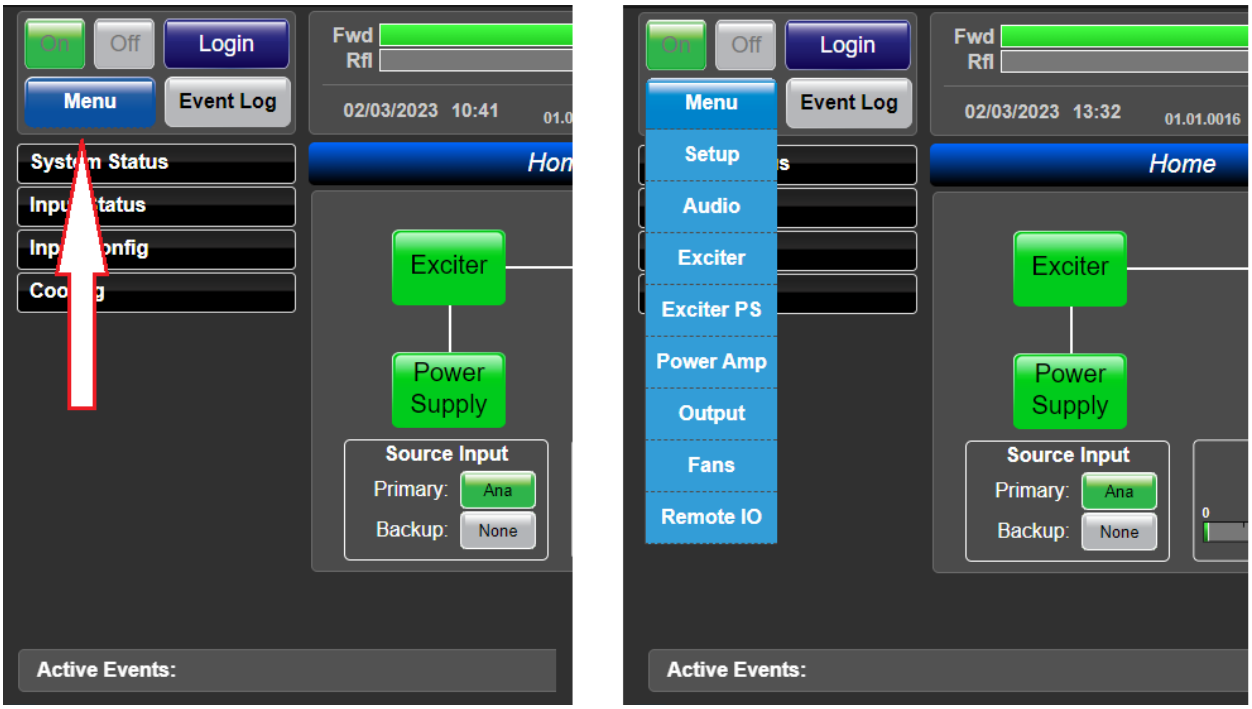


Figure 4-12 Primary Menu Buttons

Table 4-2 Menu Button Pull Downs Sub-Index for Remainder of Section

Section / Button	Explanation / Section 4 Locations by Page Numbers
4.3 / Setup	Opens path to Network, Service, Modulator, Transmitter, Update (software), Version and Log Setup.
4.4 / Audio	Opens to all audio settings such as Analog, AES, Composite & SCA.
4.5 / Exciter	Opens to Modulator and RF settings.
4.6 / Exciter PS	Displays power supply metering and parameters.
4.7 / Power Amp	Displays power metering voltages from the directional couplers.
4.8 / Output	Provides navigation to RF Output settings and PID settings.
4.9 / Fans	Displays fan RPM and speed reduction percent.
4.10 / Remote IO	Opens to pin out settings for the User Remote connector.

Detailed information about these setup screens is provided in the following sections.

4.3 Setup Button

The first button in the drop down menu titled "Setup", leads to the configurable screens for the Network, Service, Modulator, Transmitter, Update (software), Version and Log Setup.

4.3.1 Network

- Select M**enu > Setup > Network** to pull down the Network menu buttons listed in Table 4-3:

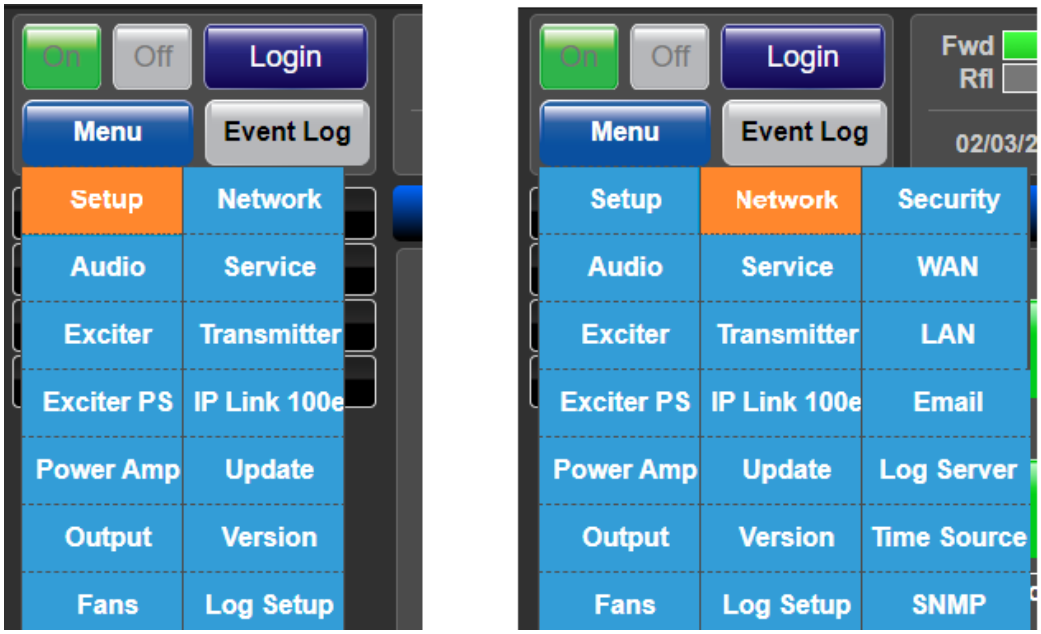


Figure 4-13 Setup Network Menu

Table 4-3 Setup Network

Item	Explanation
Security:	Opens addition drop down to Routes / ACT / Secure Comm
WAN:	Wide Area Network setup screen.
LAN:	Local Area Network setup screen.
PAN:	PBC Area Network setup screen.
Email:	Email setup screen.
Time Source:	Time Source setup screen.
SNMP:	SNMP setup screen.
Logged In:	Logged In browser session information screen.

4•3•1•1 Security

- Select **Menu > Setup > Network > Security >Routes** to read and edit the network route table information.

4•3•1•1•1 Route Table Setup

The Network Route Table screen provides the network route table information; netmask and gateway for various IP routes. This allows the transmitter to know in advance which IP port to use (WAN, LAN, TSOIP, etc.) to reach a certain destination.

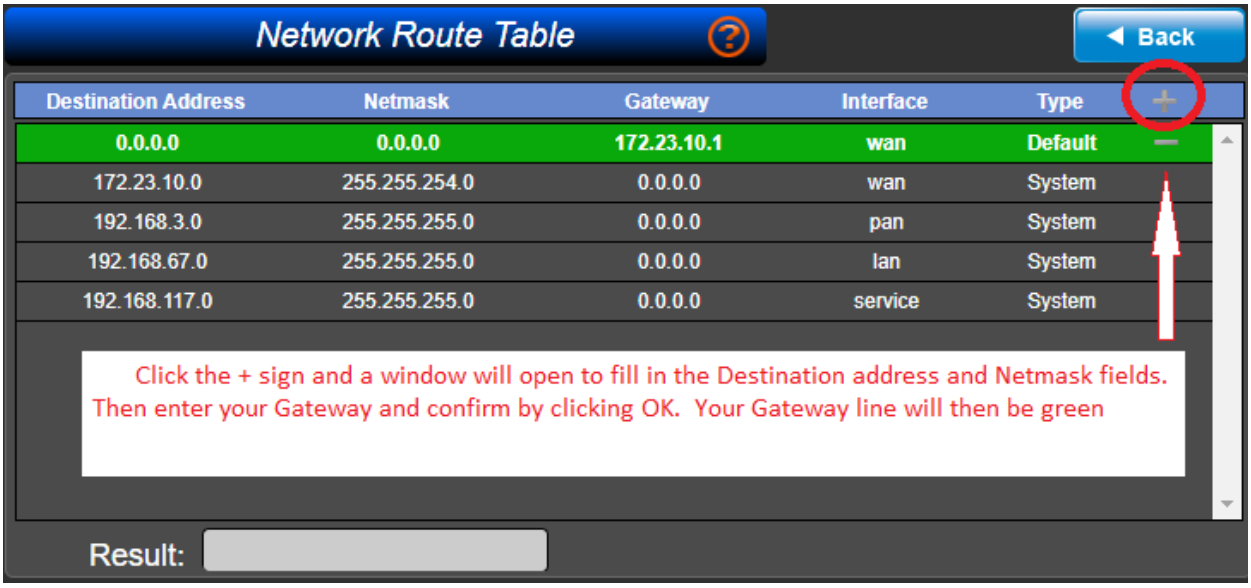


Figure 4-14 Network Route Table Screen

The following table lists the column headings listed across the top.

Table 4-4 Network Route Table

Item	Explanation
Destination Address:	Specifies the address of the remote IP location in contact with the transmitter.
Netmask:	Sets the netmask filter for the specified IP address.
Gateway:	Sets the gateway the transmitter will use to send back any responses.
Interface:	Indicates the relevant IP port on the rear or front face of the LPU.
Type:	Describes the nature/purpose of the interface.
+/-:	Allow the addition or deletion of network routes. [+] launches a sub menu where a new route can be entered.
Result field:	Indicates whether the route is valid or not. [Success] = the requested route has been successfully added. [Invalid Route] = the requested route yielded no reply, is invalid. [Duplicate Route] = a duplicate already exists for the requested route.

-

Network Route Table Window - Add a new route

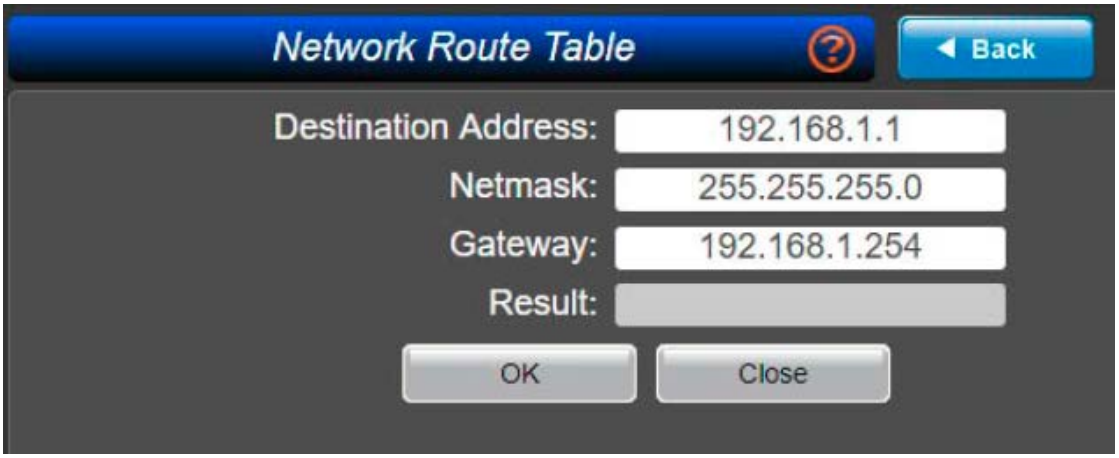


Figure 4-15 Add New Route Window

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Table 4-5 Network Route Table

Item	Explanation
Destination Address:	Specifies the address of the remote IP location in contact with the transmitter.
Netmask:	Sets the netmask filter for the specified IP address.
Gateway:	Sets the gateway the transmitter will use to send back any responses.
Result:	Indicates whether the route is valid or not. [Success] = the requested route has been successfully added. [Invalid Route] = the requested route yielded no reply, is invalid. [Duplicate Route] = a duplicate already exists for the requested route.
OK:	Tests the proposed network route and returns a result as to its validity.
Close:	Closes this sub-menu and returns to the main **Network Route Table** screen.

4•3•1•2 WAN Setup

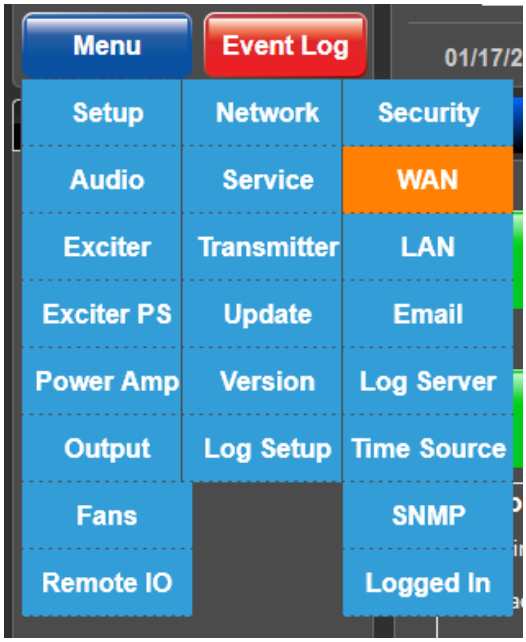


Figure 4-16 Setup Network WAN Menu

- Select **Menu > Setup > Network** > **WAN** to open the **Wide Area Network** window

The WAN screen below provides network information and setup of the WAN (Wide Area Network), DHCP Mode (Disabled=Static or Enabled=DHCP), IP, Net mask, and Gateway for the rear Ethernet WAN port. Also, Duplex Type and speed can be selected.

A green LED provides additional information when the WAN link is active.

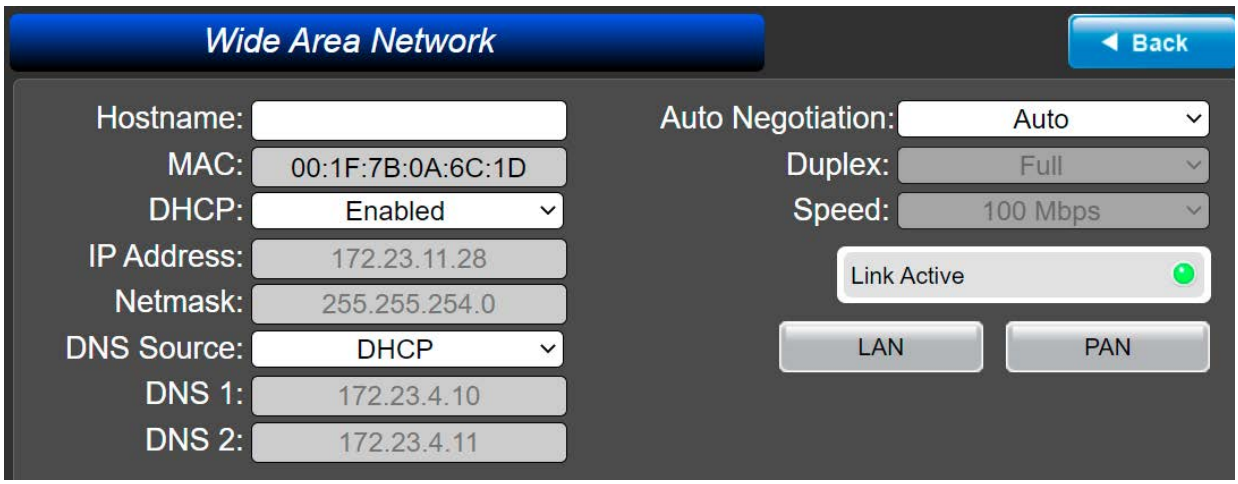


Figure 4-17 Setup Network WAN screen

Table 4-6 Network WAN

Item	Explanation
Hostname:	Displays a label that identifies the LPU on the network router. Used for network administration.
MAC:	Displays the Ethernet port MAC address. Set at the factory. Each MAC address is assigned to a specific unit and is tracked by serial number.
DHCP:	Determines the operating mode for the LPU WAN connection. [Disabled] = the LPU WAN port uses a static IP address, as entered by the user. [Enabled] = the LPU WAN will automatically set its IP address to value assigned to it by a DHCP server elsewhere on the network.
IP Address:	Displays the WAN port IP address. Assigned automatically in DHCP mode. Allows entry when in static mode. *This is the IP address entered into the web browser to access the LPU web GUI interface*.
Netmask:	Displays the WAN port netmask. Assigned automatically in DHCP mode. Allows entry in static mode.
DNS Source:	Selects the Domain Name System source. [Manual] = the user must enter DNS1 and or DNS2 IP addresses. [DHCP] = the IP addresses for DNS1 and DNS2 are automatically set by a DHCP server elsewhere on the network.
DNS 1 & DNS 2:	Display the host addresses for DNS sources in DHCP mode. Allow input of DNS addresses when **DNS Source** = [Manual].
Auto Negotiation:	Determines how the WAN port sets in communications flow and speed. This is typically left in the [Auto] position by default. [Auto] = duplex and speed will be set automatically. [Manual] = allows users to select the duplex mode and speed below.
Duplex:	Sets/displays the communications flow as being full or half duplex. [Full] = full duplex is for network systems that allow simultaneous bidirectional communication. [Half] = half duplex is for network systems that allow only one device to transmit while others receive.
Speed:	Sets/displays the communications speed in bits per second. [1Gbps, 100Mbps, 10Mbps] Note that [1Gbps] must always be used in conjunction with full duplex.
Link Active:	Provides a pseudo-LED status of the IP connection to the port. [Link active] = the port has a valid IP connection. [Not linked] = the port does not have a valid IP connection.
LAN:	Opens the **Local Area Network** setup screen and allows users to toggle between LAN and WAN setup screens.

4•3•1•3 LAN Setup

- Select: **Menu** > **Setup** > **Network** > **LAN** to open the **Local Area Network** window

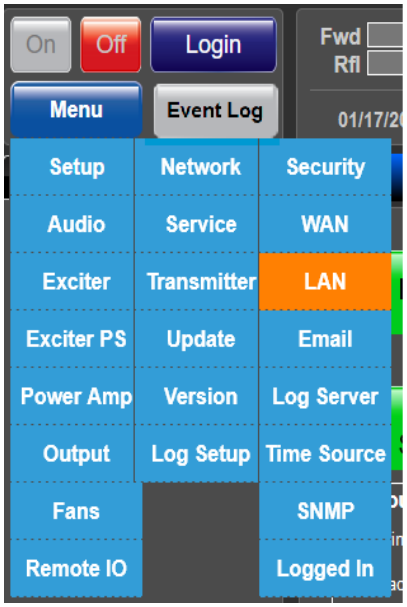


Figure 4-18 Setup Network LAN Menu

The LAN screen below provides network information and setup of the LAN (Local Area Network), DHCP Mode (Disabled=Static or Enabled=DHCP), IP, Netmask, and Gateway for the rear Ethernet LAN port. Also Duplex Type and speed can be defined.

A green LED shows additional status information when the LAN link is active.

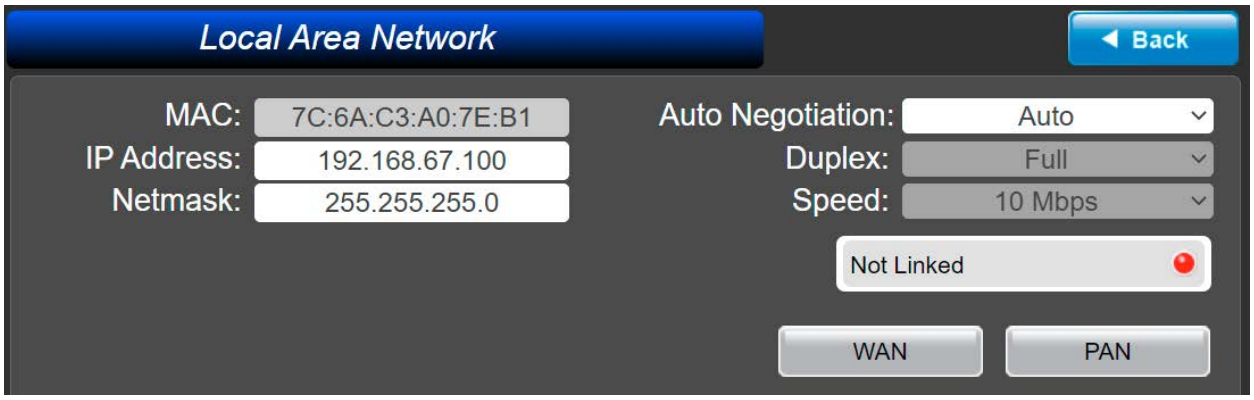


Figure 4-19 Setup Network LAN screen

WARNING: Disconnect primary power prior to servicing.

Table 4-7 Network LAN

Item	Explanation
MAC:	Displays the Ethernet port MAC address. Set at the factory. Each MAC address is assigned to a specific unit and is tracked by serial number.
IP Address:	Sets/displays the LAN port IP address. This is the IP address used by the MSC_3 dual drive controller to contact the LPU.
Netmask:	Sets/displays the LAN port netmask.
Auto Negotiation:	Determines how the WAN port sets in communications flow and speed. This is typically left in the [Auto] position by default. [Auto] = duplex and speed will be set automatically. [Manual] = allows users to select the duplex mode and speed below.
Duplex:	Sets/displays the communications flow as being full or half duplex. [Full] = full duplex is for network systems that allow simultaneous bidirectional communication. [Half] = half duplex is for network systems that allow only one device to transmit while others receive.
Speed:	Sets/displays the communications speed in bits per second. [1Gbps, 100Mbps, 10Mbps] Note that [1Gbps] must always be used in conjunction with full duplex.
Link Active:	Provides a pseudo-LED status of the IP connection to the port. [Link active] = the port has a valid IP connection. [Not linked] = the port does not have a valid IP connection.
WAN:	Opens the **Wide Area Network** setup screen and allows users to toggle between LAN and WAN setup screens.
PAN:	PBC Area Network.

4•3•1•4 Email Setup

- Select: **Menu > Setup > Network > Email** to open the **Network Email** window

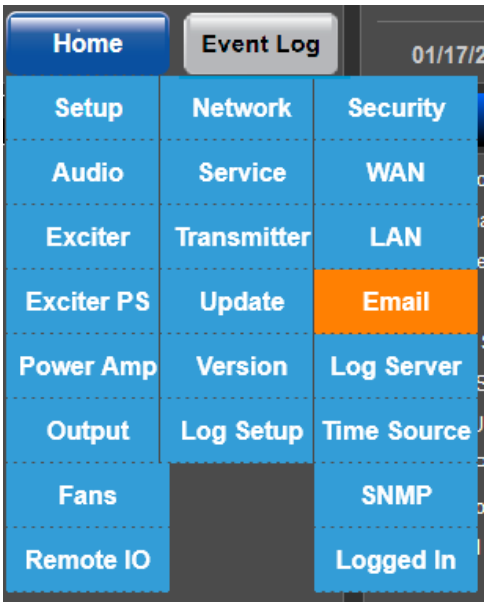


Figure 4-20 Set Up Network Email Menu

The email setup screen allows users to define general email settings for sending log messages. These messages can include log types as faults, warnings and events.

Additional options include: the suppressing of sending emails for selected warnings or faults; enable sending email on startup; and the sending of active messages only. When email setup has been completed, the correct setup can be tested by sending a test email.

Figure 4-21 Email Screen

Table 4-8 Network Email

Item	Explanation
Email Server:	Sets the address of the external e-mail server. The e-mail message originating in the LPU must first be sent to an e-mail server before being forwarded by the server to its final destination.
From:	Sets the **From:** message field to indicate the origin of e-mail being sent.
Subject:	Sets the **Subject:** message field to indicate the nature of e-mail being sent.
To:	Sets the **To:** message field to indicate the intended e-mail recipient.
Message Footer:	Provides an optional footer in the text body of e-mail. If the footer contains the IP address of the LPU, the e-mail message will contain a hyperlink that will take the user directly to the web GUI of the affected transmitter system.
Email Notification:	Activates the automatic e-mail function. [Enable, Disable].
Include Fault Log:	When selected, includes a copy of the current event log in each e-mail notification. [Yes, No].
Disable in Local:	When selected, suppresses the sending of e-mail notifications while in local control mode so as to prevent the generation of spurious e-mails during maintenance procedures. [Yes, No].
Send Test Email:	Forces the sending of a test e-mail to verify the message is successfully delivered.
Log Filters:	Allows user to determine which types of system events will trigger the generation of an automated e-mail: **Faults** = send e-mail for all faults, when enabled. **Warnings** = send e-mail for all warnings, when enabled. **Events** = send e-mail for all events, when enabled. **Send on Startup** = send e-mail each time the LPU starts up / reboots, when enabled. **Active** = send an e-mail only at the start of alarm (but not when it clears) if set to [Active Only], otherwise send a separate e-mail for both the start and the end of the alarm if set to [Active & Cleared].
Email Status:	Displays the result of the most recent attempt to send an e-mail message. [Error No route] = the e-mail message was not sent because the mail server address was not valid. [No valid DNS Server] = the e-mail message was not sent because the WAN port did not have a valid DNS server address on file. [Success] = the e-mail message was successfully sent.

4•3•1•5 Log Server Setup

- Select: **Menu > Setup > Network > Log Server** to open the **Log Server** window

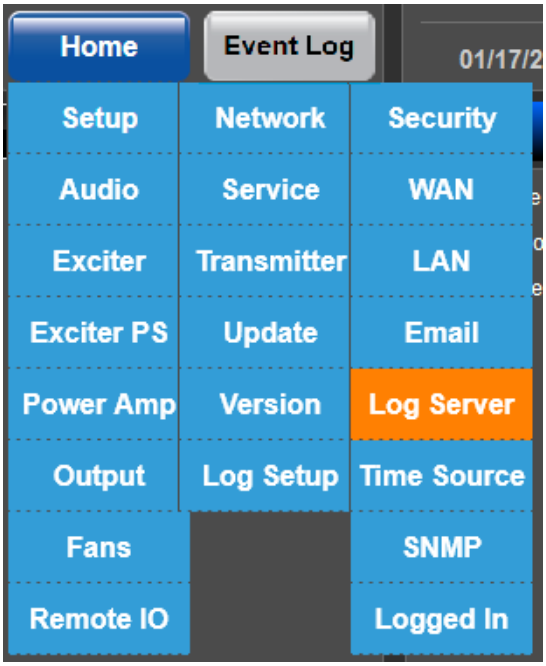


Figure 4-22 Set Up Network Log Server

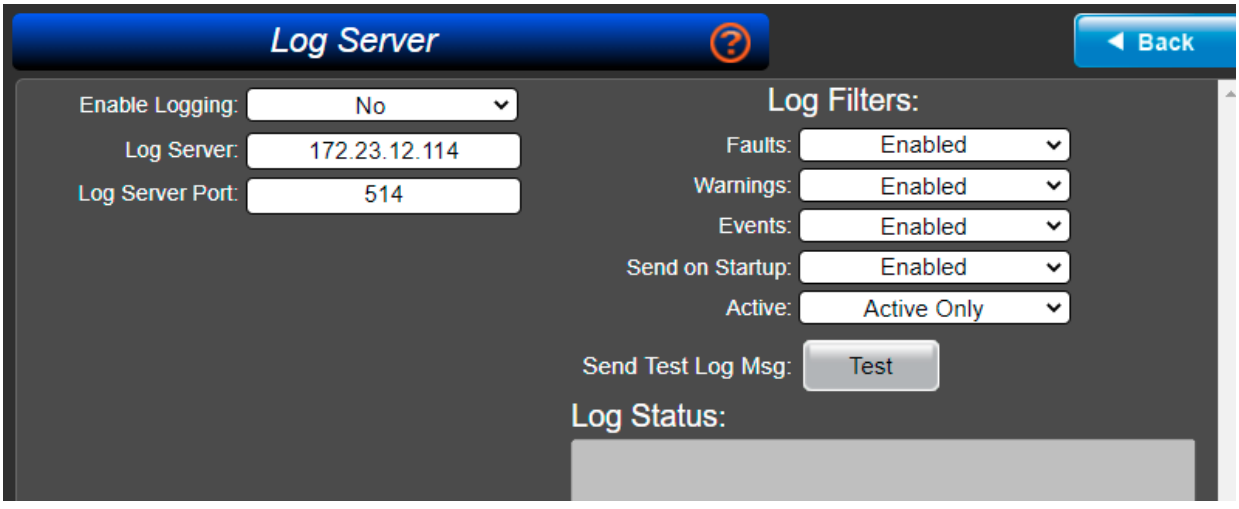


Figure 4-23 Set Up Network Log

Item	Explanation
Log Server	The IP address of the external event log server.
Log Server Port	The Port of the external event log server, use 514, or 1025-65535.
Eternal Event Log Notification	Enabled/Disable email notification.
Include Fault Log	If enabled, will send the entire fault log.
Send Test Log	Selecting this will send a test message to the external server.
Log Filters	
Faults:	Enabled/Disable Faults for email notification.
Warnings:	Enabled/Disable Warnings for email notification.
Events:	Enabled/Disable Events for email notification.
Send on Startup:	Enabled/Disable an email to be sent when FMXi powers up.
Active:	Active/(Active & Cleared) Send only notifications when the event is active. Active and Cleared will also send an email notification when the events has been cleared.
Log Status	Status of the last log sent.

4•3•1•6 Time Source Setup

The Real Time Clock (RTC) can be periodically updated by utilizing GPS or a NTP (Network Time Protocol) server. The RTC time is used for time-stamping of events. This Time Source definition only will be used as a reference in the Event Log entries and will not be used for signal synchronization of the input signal (e.g. SFN).

If using the NTP setting for more accurate time and date, an IP address of a NTP time server must be entered. A list of time server IP addresses can be obtained from NIST. If the network that the transmitter is connected to does not have a NTP server then a connection to the Internet is required.

- Select: **Menu > Setup > Network > Time Source** to open the **Time Source** window

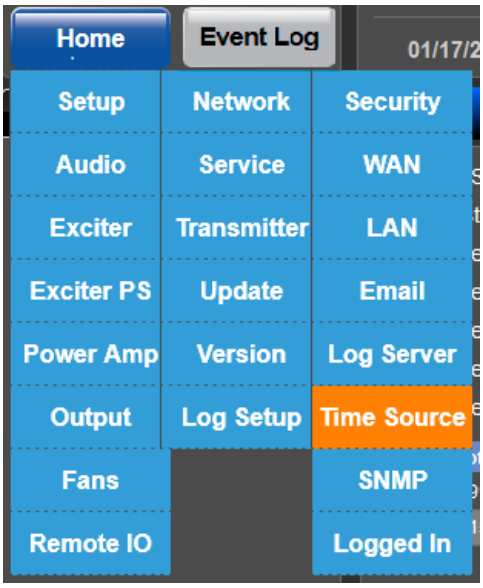


Figure 4-24 Set Up Network Time Source Menu

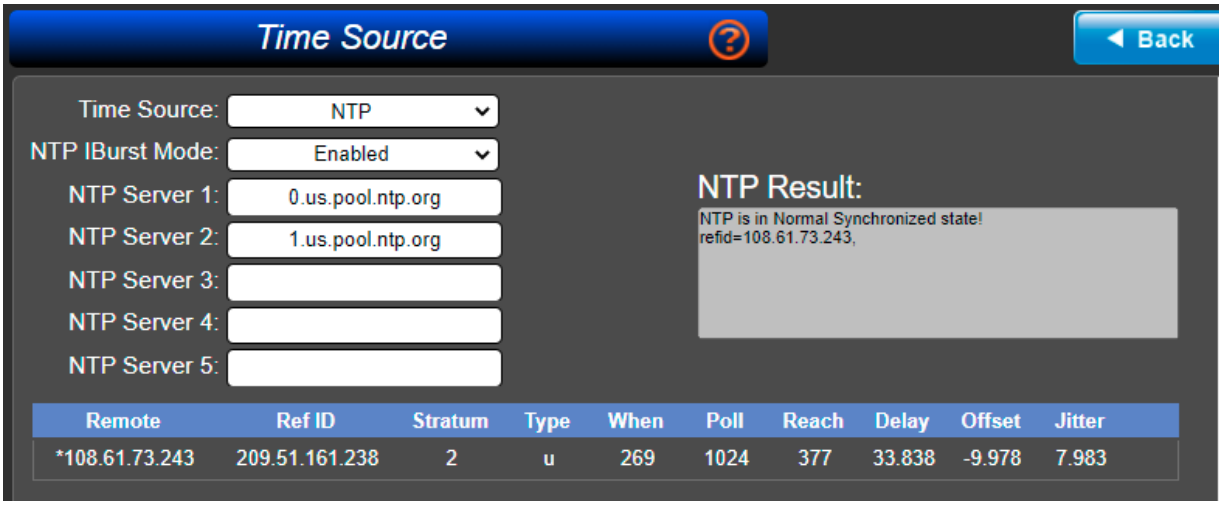


Figure 4-25 Set Up Network Time Source Screen

Table 4-9 Network Time Source

Item	Explanation
Time Source:	The selection of which time source will keep the GX System time in sync. Selects the reference time source. [**Disabled**] = No Timesource selected. The user can enter the time via the System Service page. [**NTP**] = the RTC is synchronized to an IP-based NTP server. Up to 5 NTP servers can be entered [**GPS**] = the RTC is synchronized to a global satellite reference. The GX will compare the received gps time with the GX time and if different will adjust the GX time accordingly. [**NTP IBurst Mode**] = IBURST sends a burst of eight packets when the server is unreachable (tries to find out if a host is reachable), and then shorten the time until the first sync. We specify the NTP IBURST for faster clock synchronization. This option is considered aggressive by some public NTP servers. Certain items listed on this page will not be present depending on the selection made in this field.
NTP Server 1-5:	Sets/displays NTP server IP addresses. Up to 5 NTP Servers can be defined.
NTP STATS:	
remote:	IP of the NTP server contacted. ***** = current time source **#** = source selected, distance exceeds maximum value **o** = source selected, Pulse Per Second (PPS) used **+** = source selected, included in final set **x** = source false **.** = source selected from end of candidate list **–** = source discarded by cluster algorithm blank = source discarded high stratum, failed sanity.
refid:	Remote source's synchronization source.
st:	Stratum level of the source. **Stratum 0** devices (including atomic and gps clocks) are the most accurate, but cannot be connected to via a network connection. A Stratum 0 device is usually used as a reference clock (or synchronization source) for a Stratum 1 time server. **Stratum 1** devices are the most accurate ntp time sources accessible via a network connection. A -Stratum 1 device would normally be synchronized via a Stratum 0 reference clock. **Stratum 2** devices are synchronized from a Stratum 1 device across a network connection. Due to network jitter and delays, Stratum 2 servers are not as accurate as Stratum 1 time servers. An NTP client synchronized from a Stratum 2 source would be a Stratum 3 device etc...
t:	Types available. **l** = local (such as a GPS, WWVB). **m** = multicast. **u** = unicast (most common). **b** = broadcast. **–** = netaddr.
when:	Number of seconds passed since last response.
poll:	Polling interval, in seconds, for source.
reach:	Indicates success/failure to reach source, 377 all attempts successful.
delay:	Indicates the round trip time, in milliseconds, to receive a reply.
offset:	Indicates the time difference, in milliseconds, between the client server and source.
jitter:	Indicates the difference, in milliseconds, between two samples.

4•3•1•7 SNMP Setup

The SNMP screen manages the remote control interface via Simple Network Management Protocol, described below.

- Select: M**enu > Setup > Network > SNMP** to open the **SNMP** window

.

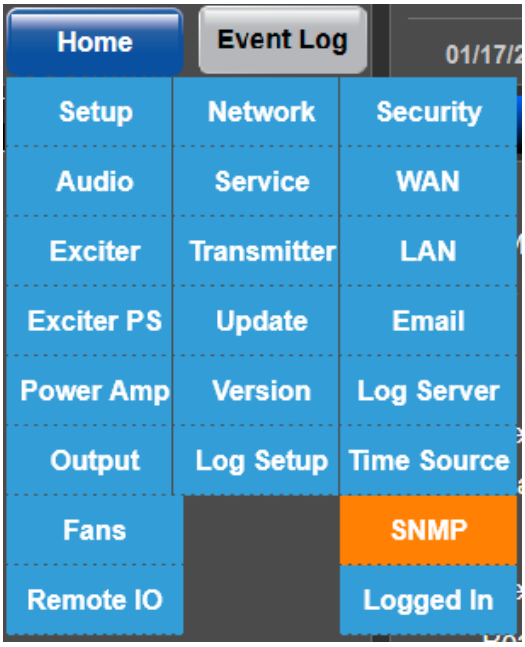


Figure 4-26 Set Up Network SNMP Menu

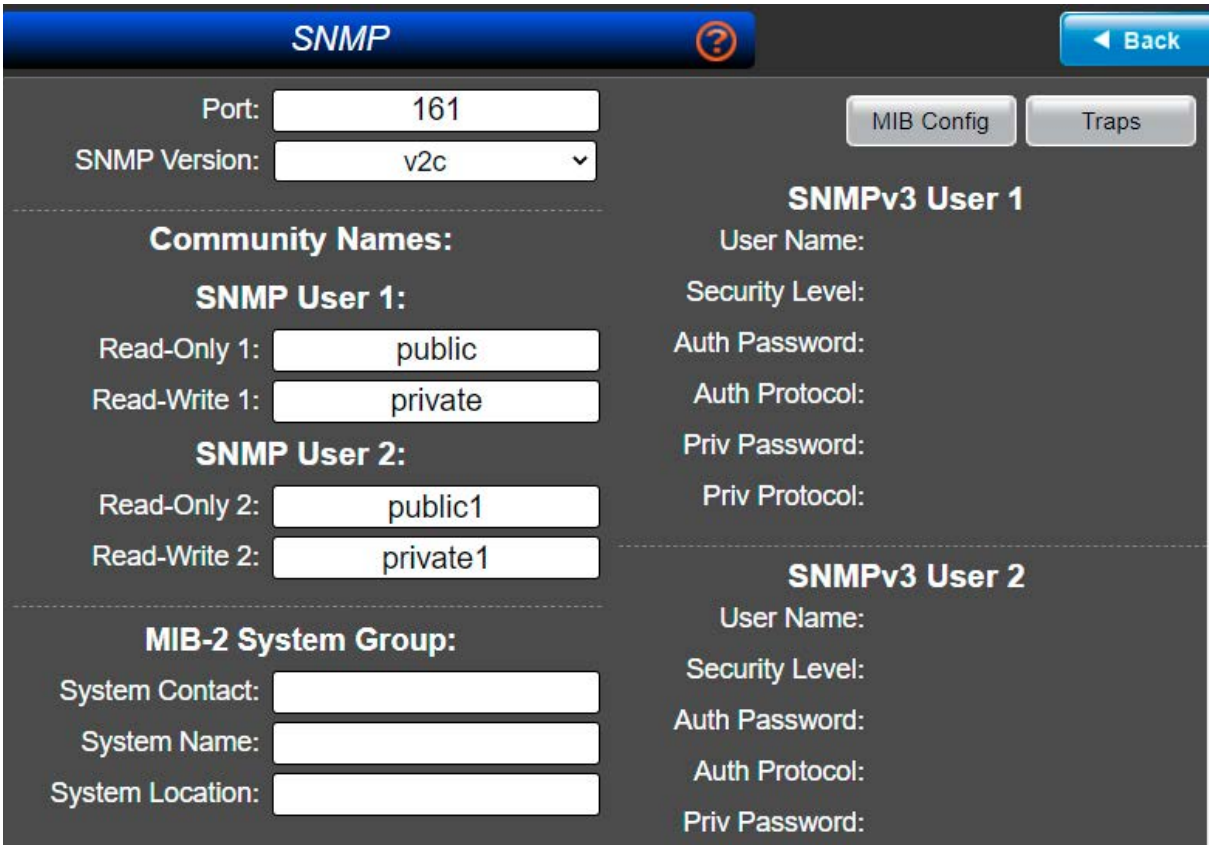


Figure 4-27 Network SNMP Screen

Item	Explanation
Port:	Selects the port number to be used. [161, 8170...8179]. Port 161 is the default.
SNMP Version:	Selects the SNMP version: [**Version 1**] = the trap sent tells of an occurrence of an event but gives no details. [**Version 2C**] = the trap tells of an occurrence of an event and gives further details concerning it. [**Version 3**] = Enhanced security and encryption. Note: These settings must match those of the SNMP manager.
Community Names	
Read-Only 1,2:	Sets/displays a password that allows an SNMP GET to be performed. Default is *public.*
Read-Write 1,2:	Sets/displays a password that allows an SNMP SET to be performed. Default is *private*.
MIB Config:	Leads to the SNMP **MIB Selection** screen.
Traps:	Leads to the SNMP **Traps / Informs** screen.
MIB-2 System Group	
System Contact:	Sets/displays the name of the person responsible for the transmitter system.
System Name:	Sets/displays the name of the transmitter system.
System Location:	Sets/displays the name of the transmitter system location.

4•3•1•7•1 MIB Configuration

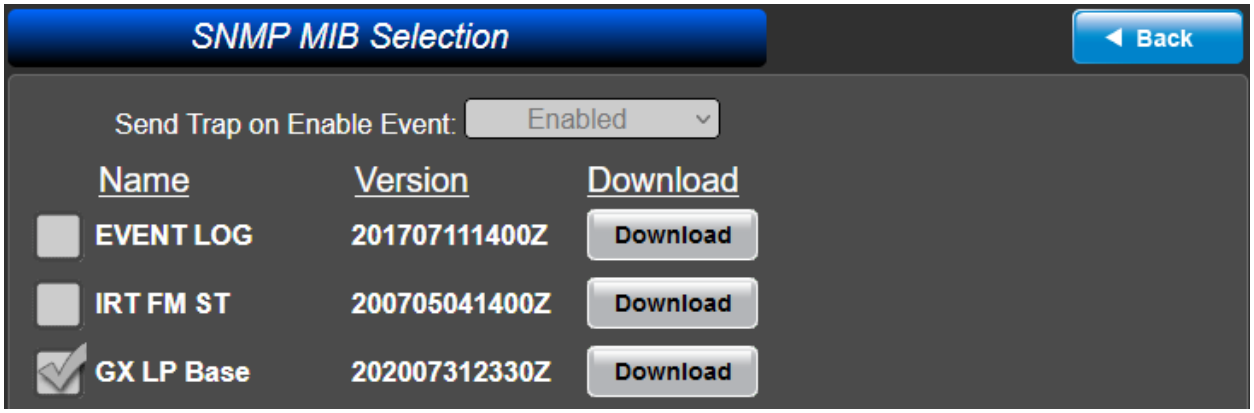


Figure 4-28 SNMP MIB Selection Screen

This screen allows users to download and activate MIBs (Management Information Base) from the agent. After choosing download, the MIB file can be opened or stored. Selection of different MIBs will open a "Save" field, which must be confirmed.

Table 4-10 SNMP MIBs

Item	Explanation
Send Trap on Enable Event:	Sends a fresh trap whenever a trap type is enabled, thus allowing the NMS at the far end to know what the current status of the alarm tied to the trap at the moment of activation. [Enable, Disable].
Name:	Provides a listing of the MIBs currently being stored in the LPU.
Version:	Lists the MIB version number.
Download:	Provides the ability to download the MIB from the LPU.
Event Log Filters	
Faults:	When enabled, all fault-level messages in the GUI event log are also included in the SNMP event log. [Enabled, Disabled].
Warnings:	When enabled, all warning-level messages in the GUI event log are also included in the SNMP event log [Enabled, Disabled].
Events:	When enabled, all event-level messages in the GUI event log are also included in the SNMP event log [Enabled, Disabled].
Active:	Sets how event start and end points are recorded in the SNMP log. [**Active Only**] = record only the start of the event/condition. [**Active&Clrd**] = record both the start and the end of the event/condition.

4•3•1•7•2 SNMP Traps

Figure 4-29 Set Up Network SNMP Traps Screen

Item	Explanation
Host 1,2,3:	Provides trap/inform sending to up to three different destinations.
Address:	Sets the target IP address for traps/informs being sent out from the LPU.
Port:	Sets the port on the trap/inform target IP address. Default is port 162.
Community:	Sets the trap community.
Type:	Sets the SNMP notifications as being either traps or informs.
Retries Interval:	Sets number of minutes the LPU will wait before re-sending an unacknowledged inform.
Retries Times:	Sets the number of times the LPU will attempt to re-send an unacknowledged inform.
Max Outstanding PDUs:	Sets the number of unacknowledged informs the LPU will hold its buffer and keep trying to resend.
Pending:	Provides a read out of how many informs are in the buffer waiting to be acknowledged.
Timeouts:	Read out of how many times an inform went unacknowledged from the receiving end.
Overflow:	Provides a read out of how informs were lost because the buffer overflowed with unacknowledged informs.
Max Pending:	Provides a read out the highest number of informs that were ever parked in the buffer at one time since the system was last rebooted.

4•3•1•8 Logged In Page

The Logged In screen provides a display of all the users currently communicating with the transmitter via the web GUI interface.

- Select: **Menu > Setup > Network > Logged In** to open the **Logged In** window

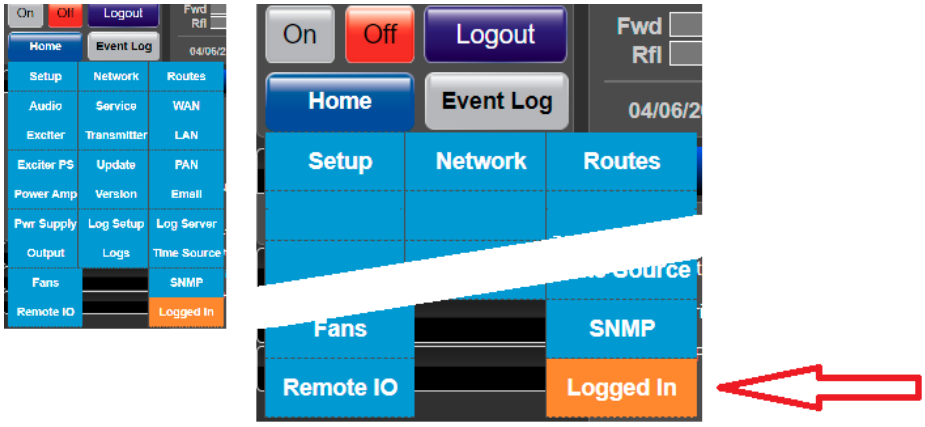


Figure 4-30 Network Logged In Menu Button

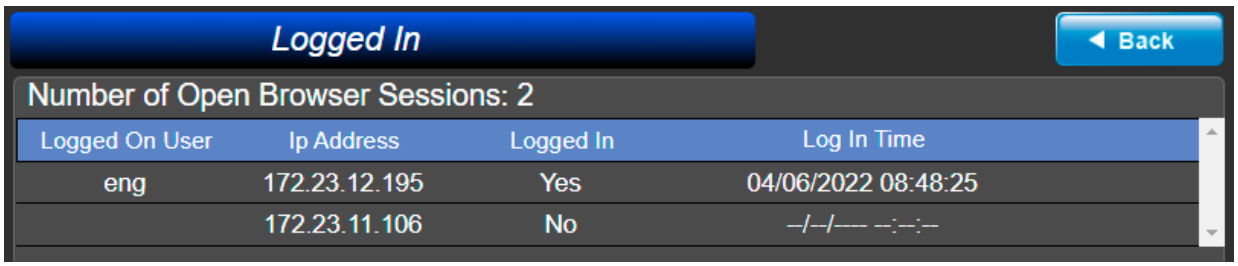


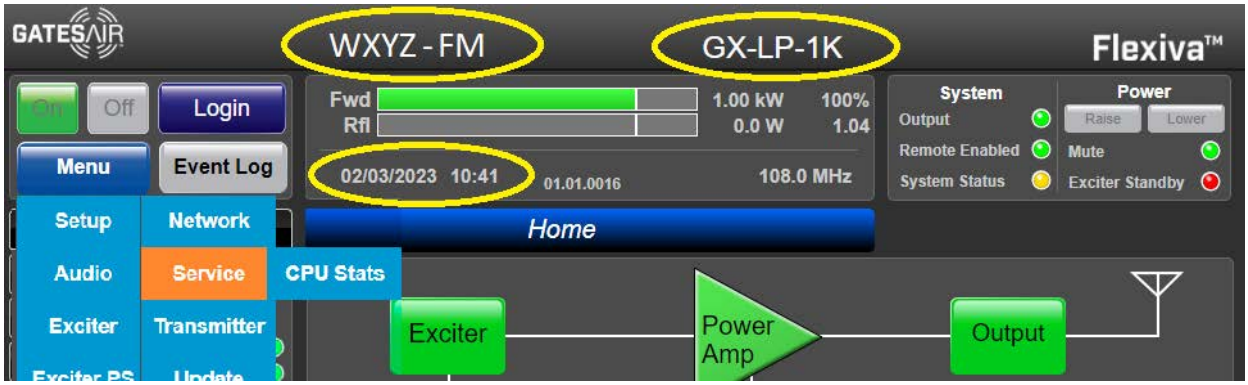
Figure 4-31 Network Logged In Screen

Table 4-11 Logged In

Item	Explanation
Number of Open Browser Sessions:	Provides an indication of how many remote browser sessions are currently in contact with the LPU at the present time.
Logged On User:	Lists any users who are actively logged in at the present time.
IP Address:	Lists the IP address of any logged in users.
Logged In:	Displays whether the user is fully logged in. [**Yes**] = user has logged is as *Engineer* or *Admin*. [**No**] = user has *Guest*-level read-only access.
Log in Time:	Indicates the login time and date for all logged in users.

4.3.2 System Service Setup

- Select **Menu > Setup > Service,** clicking on Service to open the **System Service Window**, Figure 4-32.



The items circled in the figure above, correspond to the fields as arrowed in Figure 4-32 below. The Top Banner updates to what is entered in first two fields after exiting the System Service screen.

Date and Time is used in the time stamps in the Event Log and on the Event Banner in the bottom of the GUI page. After entering time, click the Set Time button and time will start before existing.

Refer to Table 4-12 for the remainder of the Field Definitions.

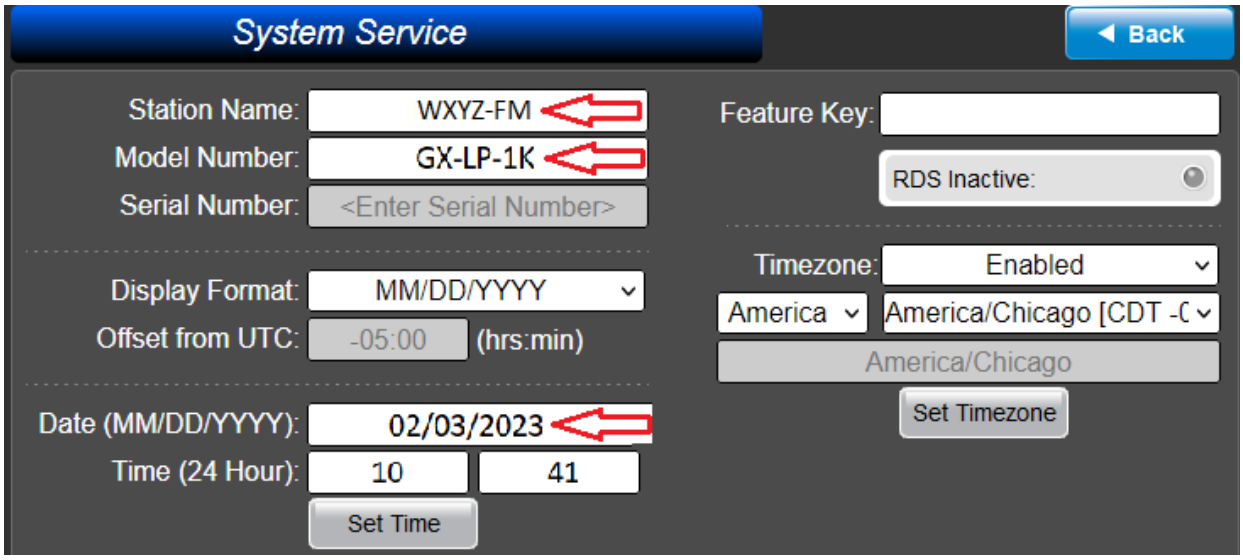
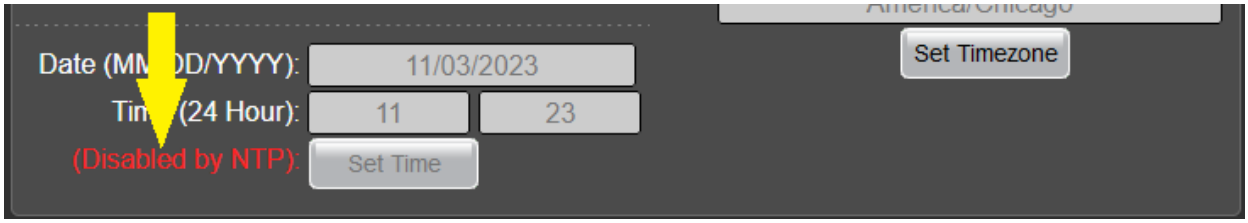


Figure 4-32 System Service Setup Page

Note If the time fields are grayed out, as in the figure below, this is because an external time source is "enabled' such as NTP. Click on the text: (Disabled by NTP), and the Time Source window will open as described in Section 4.3.1.6 and the Time Source can be changed. Then navigate back to this Service Setup page to enter the Date/Time manually if needed.



WARNING: Disconnect primary power prior to servicing.

Table 4-12 System Service Definitions

Item	Explanation
Station Name:	Sets the station call letters or site name.
Model Number:	Sets the equipment model or identifier.
Serial Number:	Displays the unit serial number. This field is for information only and cannot be changed. Serial number will be entered in the factory during final tests procedures.
Display Format:	Sets the date format based on a 24 hour clock. MM/DD/YYYY or DD/MM/YYYY or YYYY/MM/DD
Offset from UTC:	Sets offset hours relative to universal time coordinated (also referred to as GMT). [-12:00 ... +13:00]
Date (MM/DD/ YYYY):	Displays the current date in the selected format. The date can be set here if NTP/GPS as an external time source is disabled.
Time (24 Hour):	Displays the current time. The current time can be set here if NTP/GPS as an external time source is disabled.
Set Time:	Saves the date and time settings after being manually changed. NTP/GPS as an external time source must be disabled to set the time manually.
Feature Key:	Enter the feature key to activate a GXLP option such as Dynamic RDS. This field is normally blank when no options are active in the GXLP.
Time Zone:	Displays the Time Zone and can be set with the Date and Time fields when external NTP/ GPS time source is disabled.

4•3•2•0•1 .Service CPU Stats

The Stats window and CPU usage window are accessed using:

- Select: H**ome > Setup > Service > CPU** will open the Stats (Statistics)

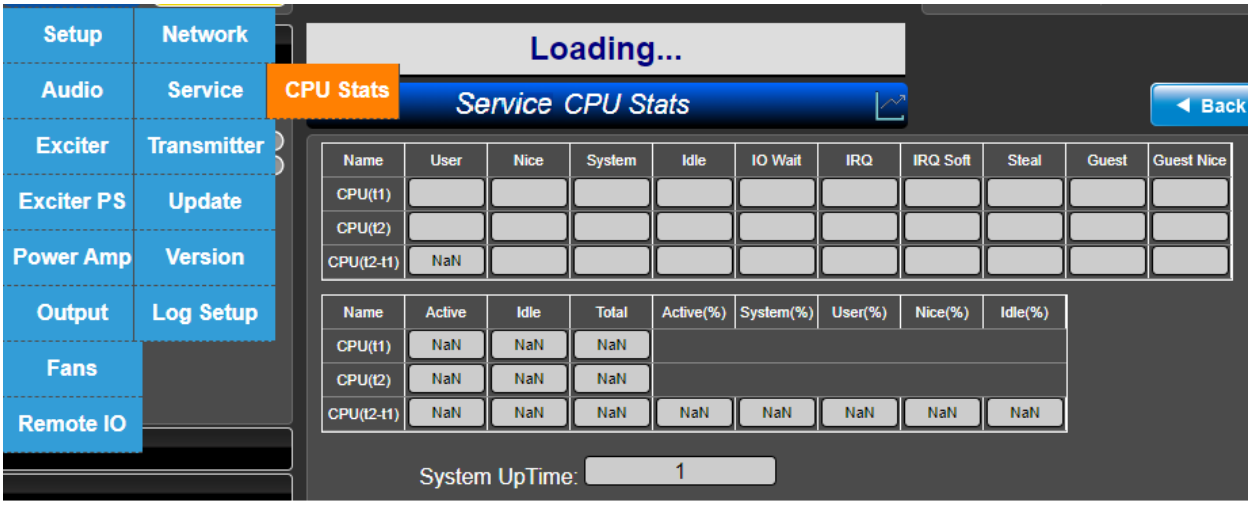


Figure 4-33 Service CPU Stats Screen

4•3•2•0•2 CPU Stats - Usage Logger

- Select: H**ome > Setup > Service > CPU > Logger** will open the **(%) Logger** screen.

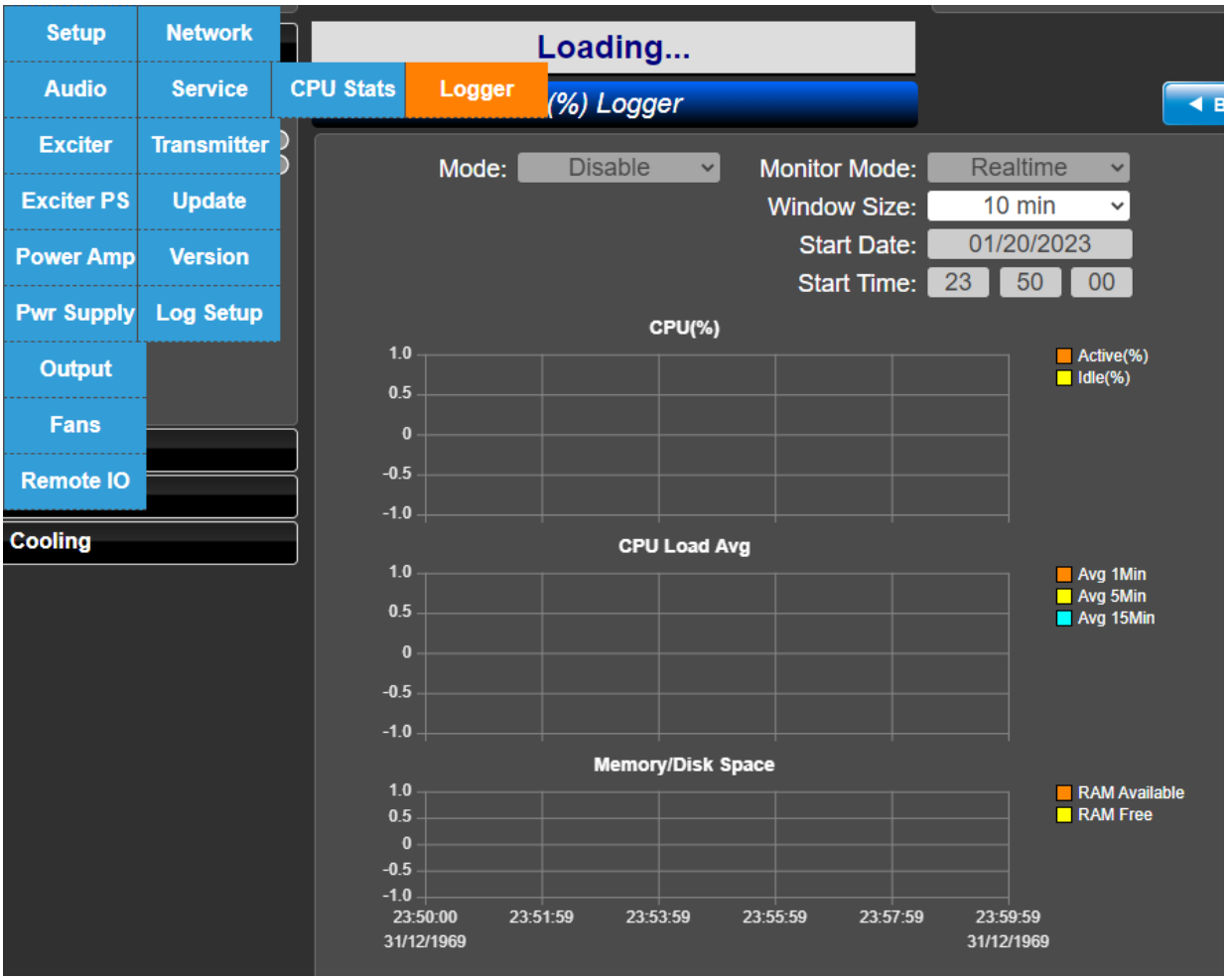
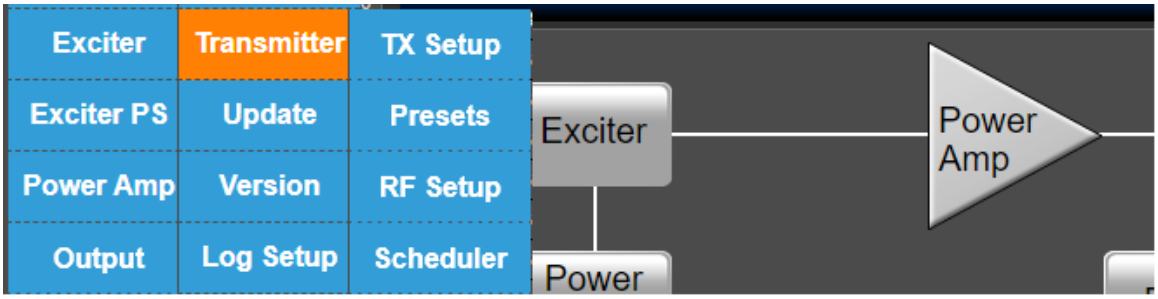


Figure 4-34 CPU Stats Logger Screen

4.3.3 Transmitter Pull-down Buttons

The Transmitter button navigates you to the TX Setup, Presets, RF Setup are Scheduler buttons.

- Select: H**ome > Setup > Transmitter** to navigate to these transmitter setup screens



WARNING: Disconnect primary power prior to servicing.

4•3•3•1 TX Setup Button

Selecting the **TX Setup** button opens the Transmitter Setup screen to access fields for APC, Frequency, RF Gain and a quick link to additional Modulator settings.

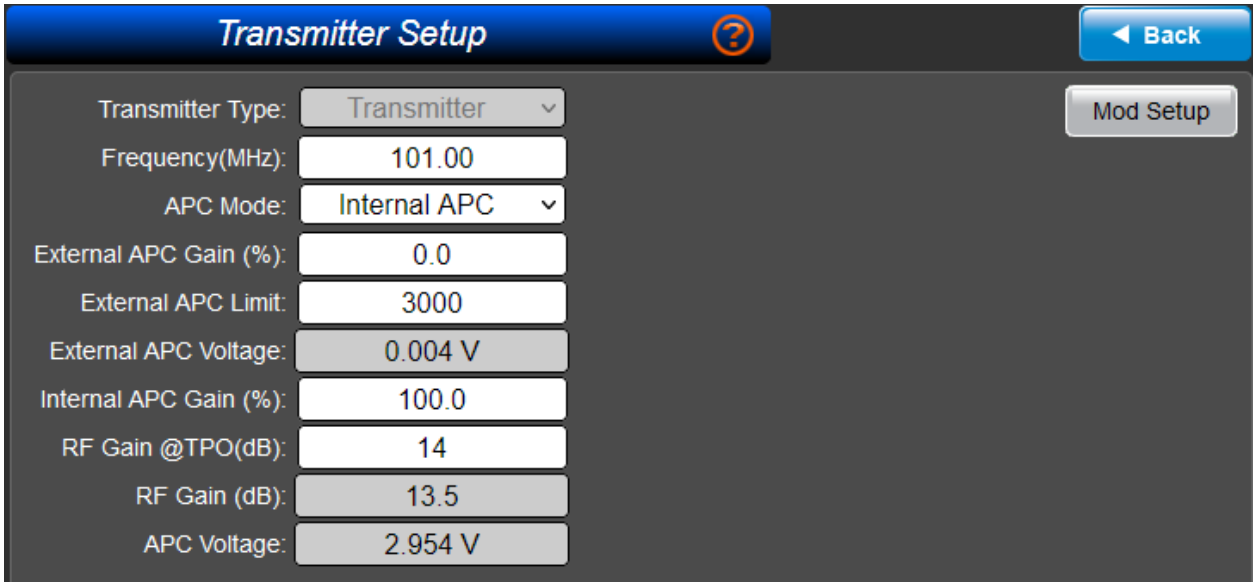


Figure 4-35 Transmitter Setup Screen

Table 4-13 Transmitter Setup

Item	Explanation
Transmitter Type:	Select Transmitter or Exciter. (Modulator is also listed, but not active in GXLP)
Frequency(MHz):	Frequency setting for the transmitter. The transmitter can be configured to operate on frequencies 87.5 MHz to 108 MHz.
APC Mode:	Selectable. Internal or External. Internal mode handles power control internally to reach TPO. External mode is used with an external APC voltage for power control.
External APC Gain (%):	Used during the setup process to set power out for a specific external APC voltage.
External APC Limit:	When External is selected, sets the upper limit of RF power output.
External APC Voltage:	Displays the APC voltage level when External is selected.
Internal APC Gain (%):	0-100 % Used to set the UC Attenuation voltage in the range of 3.0 +/-0.1 VDC at TPO.
RF Gain @ TPO (dB):	Sets the Step Attenuator to allow for maximum power limit.
RF Gain (dB):	Displays the active gain.
APC Voltage:	0 to 5 VDC (Only if APC Mode is set to Internal); voltage to the variable attenuator on modulator set by Internal APC Gain. Set to 3.0 +/-0.1 VDC at TPO during factory test.
Mod Setup Button	Quick link to navigate to Modulator Screen

4•3•3•2 Presets

Selecting **Presets** opens the Transmitter/Exciter Presets screen where you can store up to 8 combination of settings. All the Modulator settings such as frequency, power levels & calibration, APC, audio & RDS properties can be saved in a Preset.

In addition to N+1 applications, Presets can be used to backup settings for quick retrieval. A Preset can be activated by pressing the Load button in this screen or by Remote Control or using the System Scheduler described later in this section.

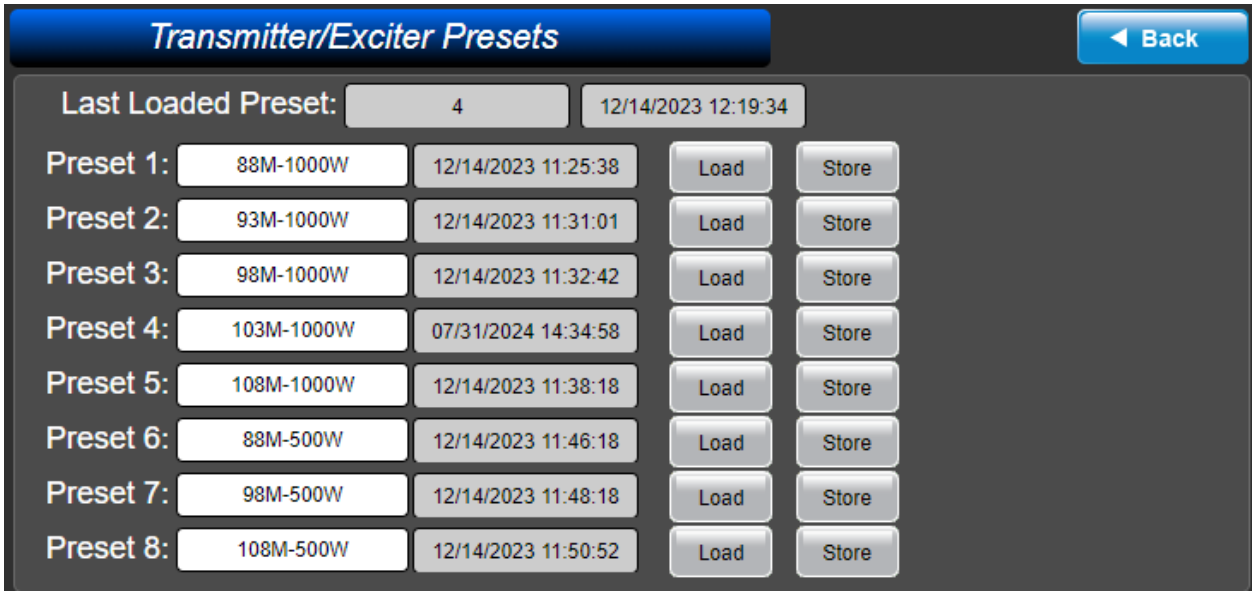


Figure 4-36 Transmitter Presets Menu

Table 4-14 Presets Page

Field	Explanation
Last Loaded Preset	
Text Field	Displays number and date of last loaded preset. Field turns yellow when a preset is being modified, but not saved or loaded.
Date & Time	Displays the date & time of the last load.
Presets 1 Thru 8	
Text Field	Field for the user to define the preset, such as frequency in N+1 application or other information for the settings saved to the preset. Up to 19 characters .
Date & Time	Displays the date & time the preset settings were saved.
Load Button	Loads and actives all the settings defined in the preset.
Store Button	Saves all settings made with the GUI to be use for the preset number .

Note

Apply a good description for identification at a later

4•3•3•3 RF Setup

Select: **Setup > Transmitter > RF Setup** opens the **Output Setup** screen setting 100% Power and other RF related parameters such as fault levels and reflected power thresholds.

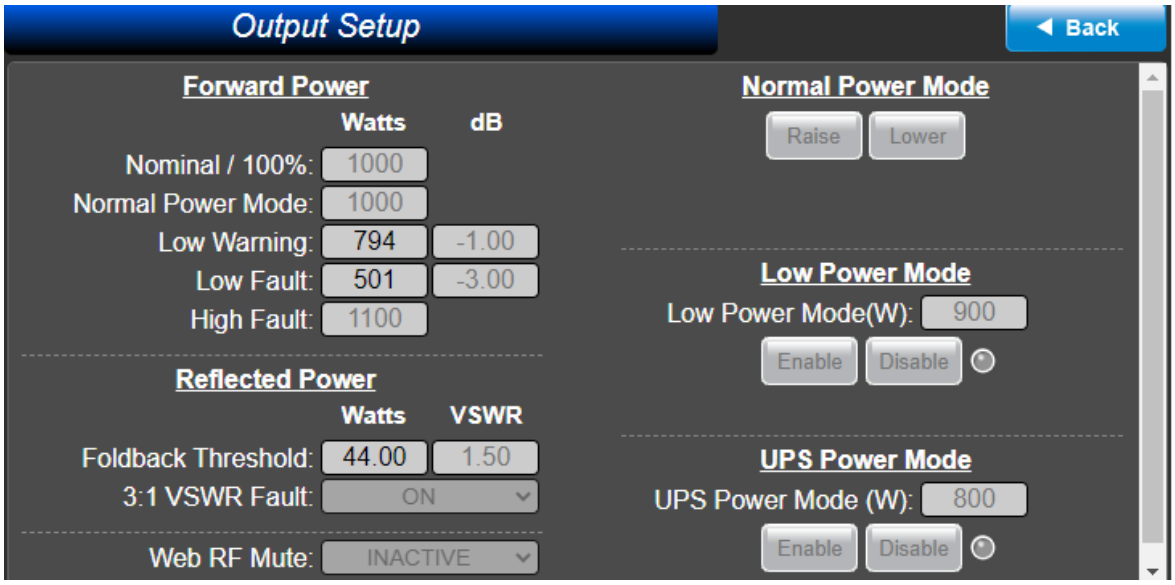


Figure 4-37 Output Setup Screen

Table 4-15 Output Setup Page

Field	Explanation
Forward Power	
Nominal / 100%	Enter the nominal power for 100% TPO. Sets the bar-graph %.
Normal Pwr Mode	Sets the target output power level.
Low Warning	Entered in Watts, a forward power setting that if the level goes below, display bar turns yellow. (System will calculate dB the setting below Normal Pwr Mode.)
Low Fault	Entered in Watts, a forward power setting that if the level goes below, display bar turns red. (System will calculate dB the setting below Normal Pwr Mode.)
High Fault	Entered in Watts, a level higher than the Normal Pwr, and display bar turns red.
Reflected Power	
Foldback Threshold	Entered as Watts, system will calculate a VSWR setting to set a foldback point between 1.3:1 and 1.5:1.
3:1 VSWR Fault	ON recommended. OFF selection or operations beyond 3:1 is not recommended.
Web RF Mute	Inactive / Active. Active mutes the RF output.
Normal Power Mode	
Raise / Lower	Adjusts Normal Pwr RF output.
Low Power Mode	
Enable / Disable	Enter the power in watts for Low Power. Activated from Remote I/O programmable input.
UPS Power Mode	
Enable / Disable	Enter the power in watts when in UPS Mode. Activated from Remote I/O program input.

4•3•3•4 System Scheduler

Select: M**enu > Setup > Transmitter > Scheduler** to open the System Scheduler main screen.

This feature allows an automatic action, "Event", such as control or change of settings to occur at given times of the day and/or different days. Refer to Tables 4-16 for the definition and setup for the various columns of this screen.

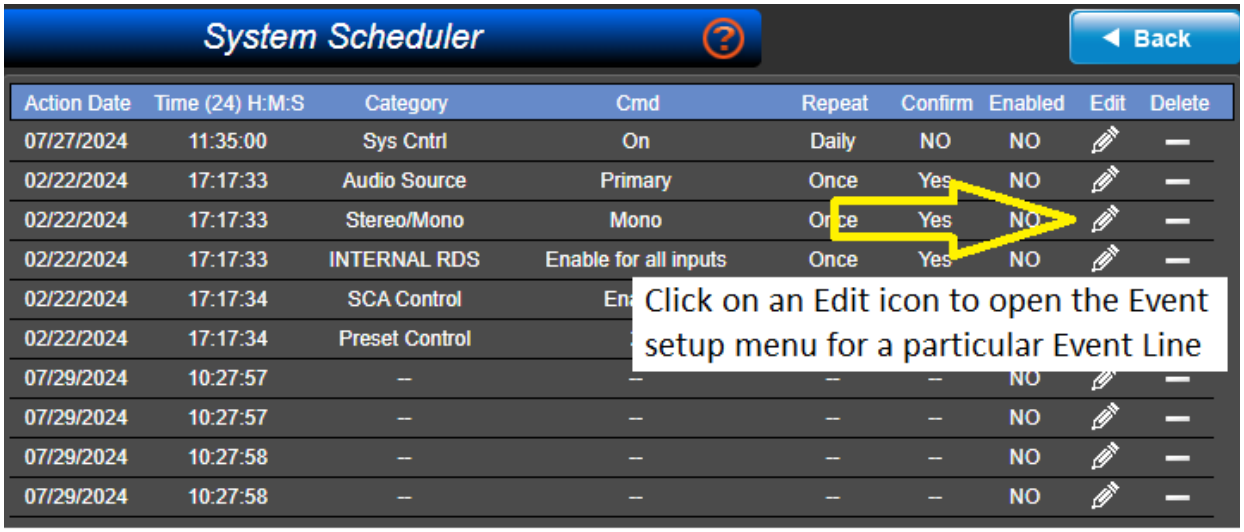


Figure 4-38 System Scheduler Main Screen

The Main screen above displays the Events that are set up. Up to 10 Events can be set up in the System Scheduler. Clicking on the Edit icon opens the Event setup window to create an Event for the first time or edit an existing Event. The Event window below will be titled with a line number 1 thru 10.

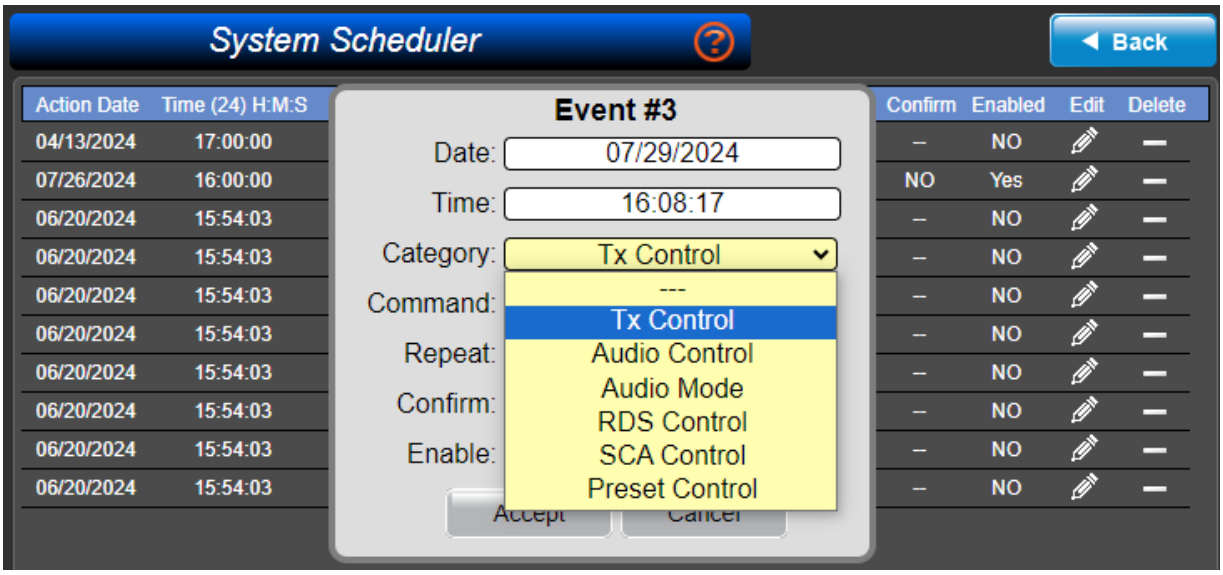


Figure 4-39 Scheduler Event Window

WARNING: Disconnect primary power prior to servicing.

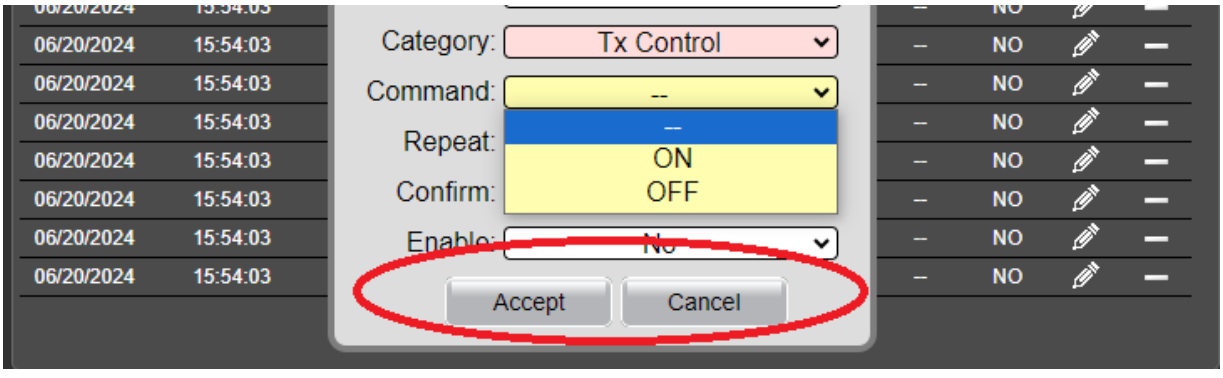
Table 4-16 Scheduler Columns

Column	Explanation
Event Setup Menu	
Date	Sets the Date to be used for an automated action.
Time	Sets the Time to be used for an automated action.
Category	Select from the 6 Categories listed in the Event menu window as shown in Figure 4-39.
CMD	Command function to be select based on what Category is selected. Refer to Table 4-17.
Repeat	If Enabled, allows an action to be repeated at the same Time and/or Date.
Confirm	If Enabled, presents a popup screen to confirm the command of to be manually confirmed, Yes or No. This allows override of the scheduled Event command.
Enabled	Default is No. If Yes allows action to be active.
Edit	Icon to navigate to the Event menu for set up of scheduled events.

Table 4-17 Command Selections vs Category

Category	Selections
TX Control	ON or OFF
Audio Control	Primary or Backup
Audio Mode	Mono or Stereo
RDS Control	Disable or Enable (All Inputs)
SCA	Disable or Enable
Preset Control	Preset 1, Preset 2, Preset 3, Preset 4, Preset 5, Preset 6, Preset 7, or Preset 8

After completing the entries in the Event setup window, click Accept to save the Event or Cancel to exit.



4.3.4 IP Link 100e Option

Flexiva GX software provides support for the IP Link 100e option board. When the 100e is in the system, it replaces the Aux AES audio path. As a result, all references in the GUI to the Aux AES is replaced with "IP Audio". This will show up in screens described later in this section from the pull down menus for Audio and Exciter.

Note

If this option is not installed in the GX, the IP Link 100e button will not be present. Instead the buttons, ***Update, Version*** *and* ***Log Setup,*** *move up the ladder as shown in the figure below.*

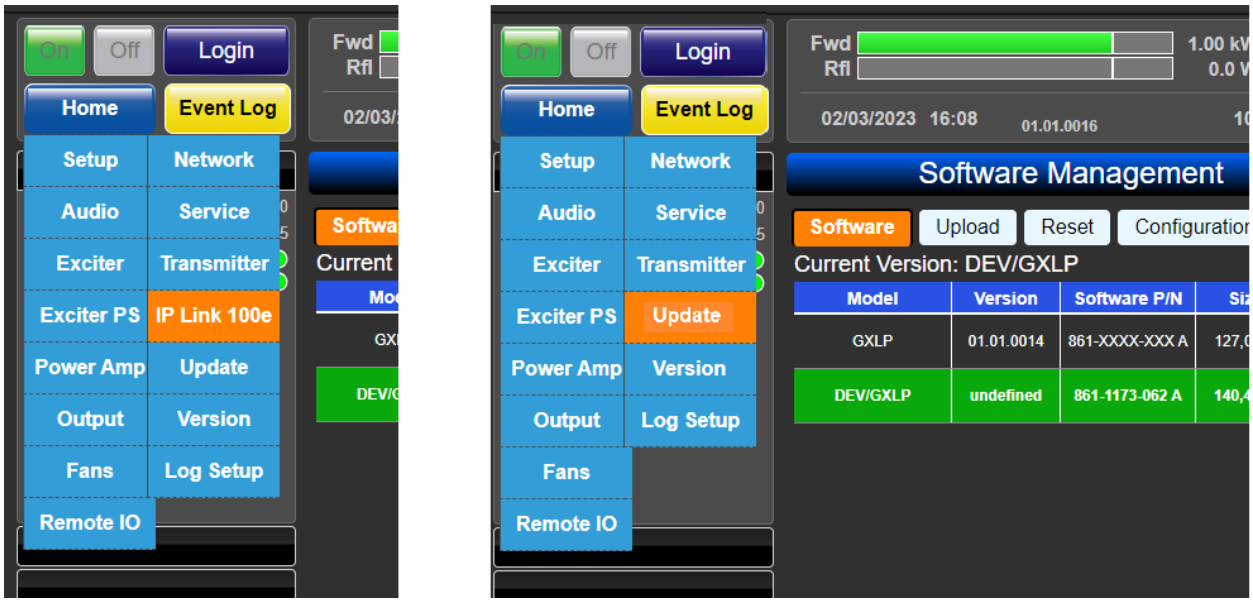


Figure 4-40 Pull Down Menu with and without the IP Link option installed

4.3.5 Update

Select: **Setup > Update** to open the *Software Management* main screen.

4•3•5•1 Software Management (Main Screen)

The GX has the ability to store two or more versions of software at the same time. In Figure 4-40, there are five navigation / function buttons underneath the Title Banner; ***Software, Upload, Reset, Configuration,*** *and* ***Backup.***

Figure 4-41 shows the complete Software Management main screen. Also, the navigation button ***Software***, will be highlighted in orange and the versions of software will be listed. The entire list is called the Software Package.

This functional allows users to have more than one version of the software loaded and ready to activate at a later time. Also, when testing a new software release, this functionality will allow users to switch back to the previous version immediately, if desired.

The current/active software version is highlighted in green. The active software, as well as the other versions listed, have a button called *View to* display.release notes and software history. With the other versions listed in the Software Package, are function buttons, *Activate* and *Delete,* to manage these versions.

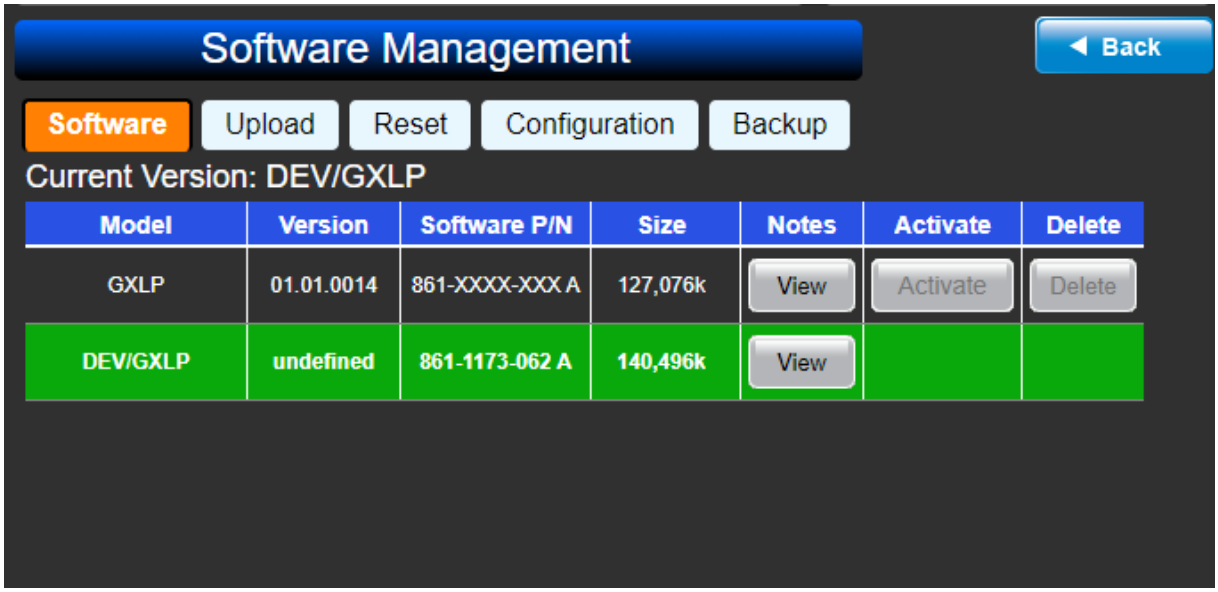


Figure 4-41 Software Management Screen

Table 4-18 provides a quick reference for the remaining navigation buttons and the information provided for the software versions.

Table 4-18 Software Management Main Screen

Button / Item	Explanation
Software:	Displays the Software Management Main Screen. When in other sub-menu screens and the Back button is selected the GUI returns to this screen.
Upload:	Leads to the Software Update **Upload** screen.
Reset:	Leads to the Software Update **Reset** screen.
Configuration:	Leads to the Software Update **Configuration** screen.
Backup:	Leads to the Software Update **Backup** screen.
Current Version:	Indicates the current version of software running in Modulator.
Model:	Indicates the model of the software version.
Version:	Indicates the software version number.
Software P/N:	Indicates the software version, GatesAir part number, and revision level.
Size:	Indicate the size of the software version in bytes.
Notes / View:	Displays the release notes and software history for this software version when pressed.
Activate:	Places the software version into effect when pressed.
Delete:	Used to delete old software no longer needed.

Once your transmitter has been installed and configured properly it is a good idea to save the configuration file of the transmitter save in another location such as PC, Server or USB storage device. This will add in the recovery of transmitter settings in the case arises in the future.

Continue reviewing this introduction to Software Management and proceed to **Section 6** for step by step instructions on saving the configuration file and uploading updated software.

4•3•5•2 Software Management (Sub Menu Functions)

The Software Management function contains several sub menus assigned to their navigation buttons located underneath the title banner.

Each button will be highlighted in orange when that function or screen is active as shown in Figure 4-42.

Quick reference of the field information for these sub menu function buttons, ***Software, Upload, Reset, Configuration,*** *and* ***Backup*** are detailed in **Table 4-19** on the next page.

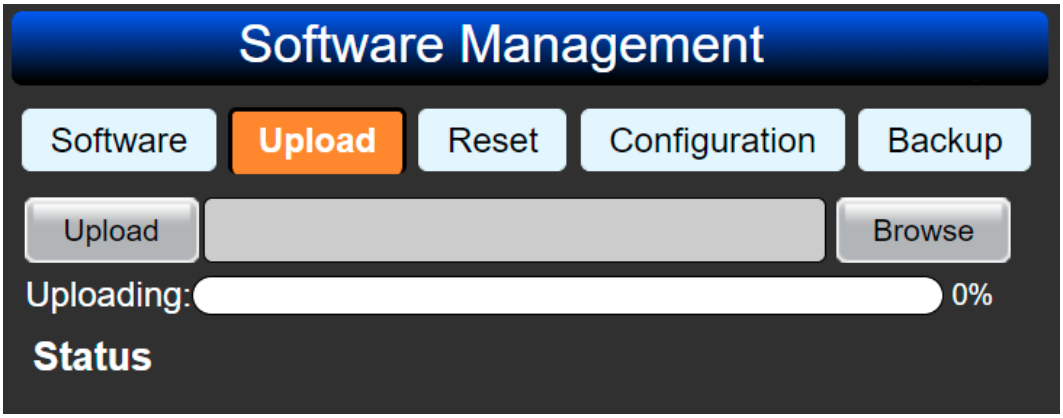


Figure 4-42 Software Management Screen - Upload

The ***Upload*** function is used to upload software update files to the Software Package list. In addition, other saved configuration files can be uploaded here.

Software file types have *.imx6 extensions and saved configuration files have *.xml.

The software file must be downloaded from the GatesAir web site to a PC so that it can be uploaded from the computer to the transmitter.

Saved configuration files must also be stored on a seperate computer first before uploading to the transmitter. After upload, the file type will be automatically be checked and verified. Then the software package can be loaded from the software tab under Software Package selection in main screen.

Table 4-19 Software Management (Sub Menus)

Item	Explanation
Upload	
Upload:	Transfers a previously-selected software (.imx6) or configuration (.xml) file to the modulator. The software file must be downloaded from the GatesAir web site to a local computer before being uploaded from local computer to the transmitter.
Browse:	Launches a file browse dialog to locate the previously downloaded software file or .xml configuration file on a local computer.
Uploading:	Provides a status bar showing the current uploading progress. Once uploaded, the software can be activated on the **Software** screen.
Reset	
Restart:	Performs a software reset when pressed. Takes 2-5 seconds. All internal control processes are closed and restarted. This action will not take the transmitter off-air.
Reboot:	Performs a hardware and software reset when pressed. Takes 10 - 20 seconds. All hardware is reset and internal control processes are closed and restarted. This action will take the transmitter off air for approximately 15-20 seconds.
PAC Reboot	Performs a hardware and software reset of the PAC when pressed.
Configuration	
Export:	Provides basic configuration, power, frequency settings, and factory settings as to TX model, number of PA's, number of cabinets, etc. from the .xml configuration file to be exported via the **Download System Configuration** button. [Net Routes] = also include the network routes table.
Import:	Provides basic configuration, power, frequency settings, and factory settings as to TX model, number of PA's, number of cabinets, etc. from the .xml configuration file to be imported on the **Software Management > Upload** page. [Net Routes] = also include the network routes table.
Download system configuration:	Downloads an .xml file that contains system configuration values. *.xml files can be saved or opened using a text editor such as *Notepad.exe*. Configurations settings can be reloaded using **Upload** page as needed. The system configuration download allows users to clone the configuration of one transmitter to another.
Download system data:	Downloads an .xml files that contains a snapshot of all system data values. *.xml files can be saved or opened using a text editor such as *Notepad.exe*. This allows users to save a set of transmitter readings for future reference.
Backup	
Load Factory Defaults	This loads the Factory setup. Reverts the transmitter settings back to the day it shipped.
Store User Setup	This stores your User Setup that is different than the Factory Setup. After the transmitter is installed some settings are changed for your particular situation. This will store all your settings for future use if needed.
Load User Setup	This Loads the User Setup stored on an SD card.

Before uploading, go to the Configuration screen and record the current Release Version value for later use in confirming the update.

4.3.6 Version

Select: **Menu** > **Setup** > **Version** to open the Software Version screen.

4•3•6•1 Software Version

All software installed in the transmitter is detailed here. When performing software updates, this is where you can verify the new software installed correctly as you would see the revision change.

The information contained in these fields may be useful when discussing software questions with your GatesAir service representative.

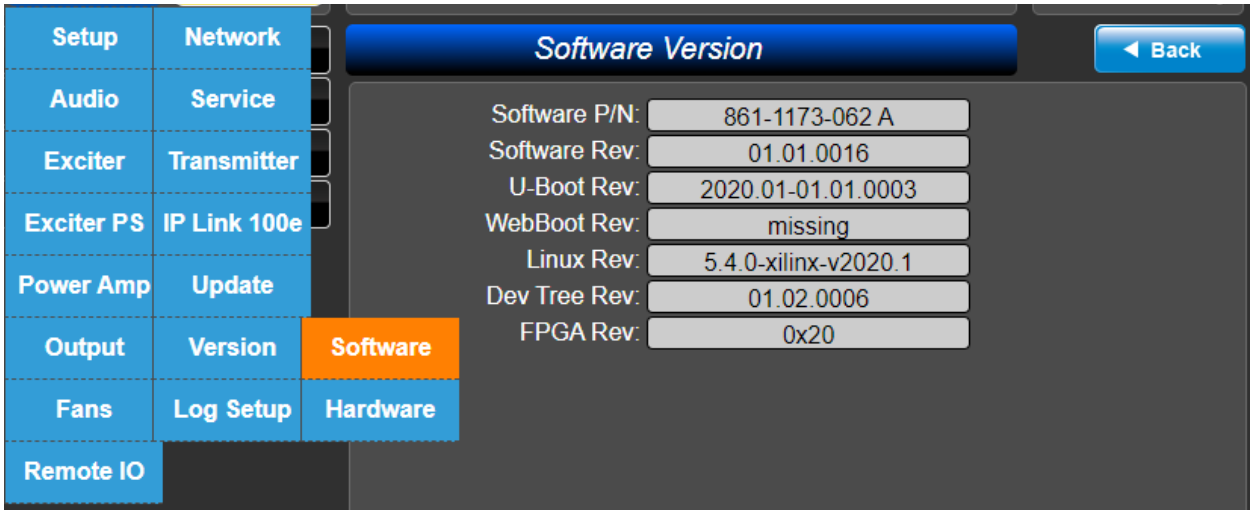


Figure 4-43 Version Software Menu

Table 4-20 Software Version

Item	Explanation
Software P/N:	Indicates the software part number and revision level.
Software Rev U-Boot Rev WebBoot Rev Linux Rev Dev Tree Rev FPGA Rev Others if displayed: Xtmod Setup Rev Modulator App Rev PBC1 Rev	These Fields indicate the revision level of individual components of the total software package. These individual components can not be upgraded à la carte by the end-user. Only the top-level (complete) software package can be changed/upgraded. The information contained in these fields may be useful when discussing software questions with your GatesAir service representative.

4•3•6•2 Hardware Version

The Hardware Version screen displays the current hardware version of key sub-assemblies inside the transmitter.

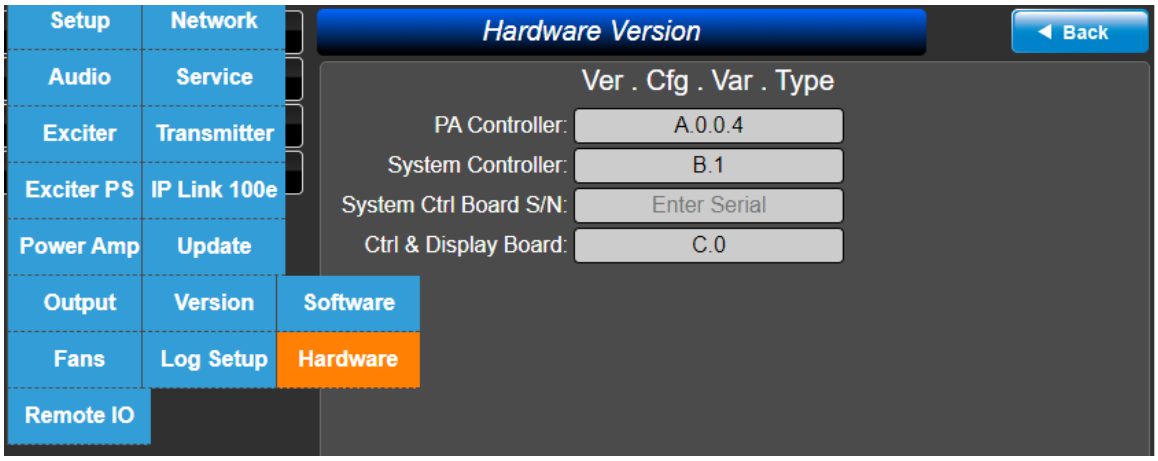


Figure 4-44 Hardware Version Menu

Table 4-21 Hardware Version

Item	Explanation
PA Controller	Indicates the hardware version of the Controller board.
System Controller:	Indicates the hardware version of the System Controller.
System Ctrl Board S/N	Indicates the Serial Number of the Printed Circuit Board used for the System Controller
Ctrl & Display Board	Indicates the hardware version of the Display board.

4.3.7 Event Log Setup

- Select: M**enu > Setup > Log Setup** to open the Event Log Setup menu screen.

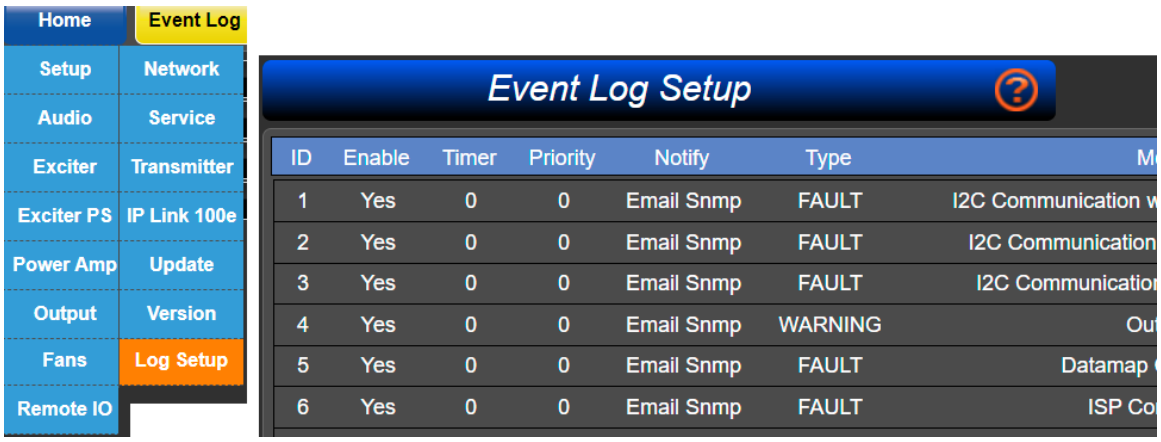


Figure 4-45 Log Setup Navigation

The **Event Log Setup** screen allows users to manage the appearance and composition of the event log.
Individual messages can be enabled / disabled, combined with a timer, and assigned priorities.
Select notification of events via e-mail and SNMP can also be programmed.
The Event Log can be configured to send messages when events appear in the log.

Click and use the " ? " in the banner for more information.

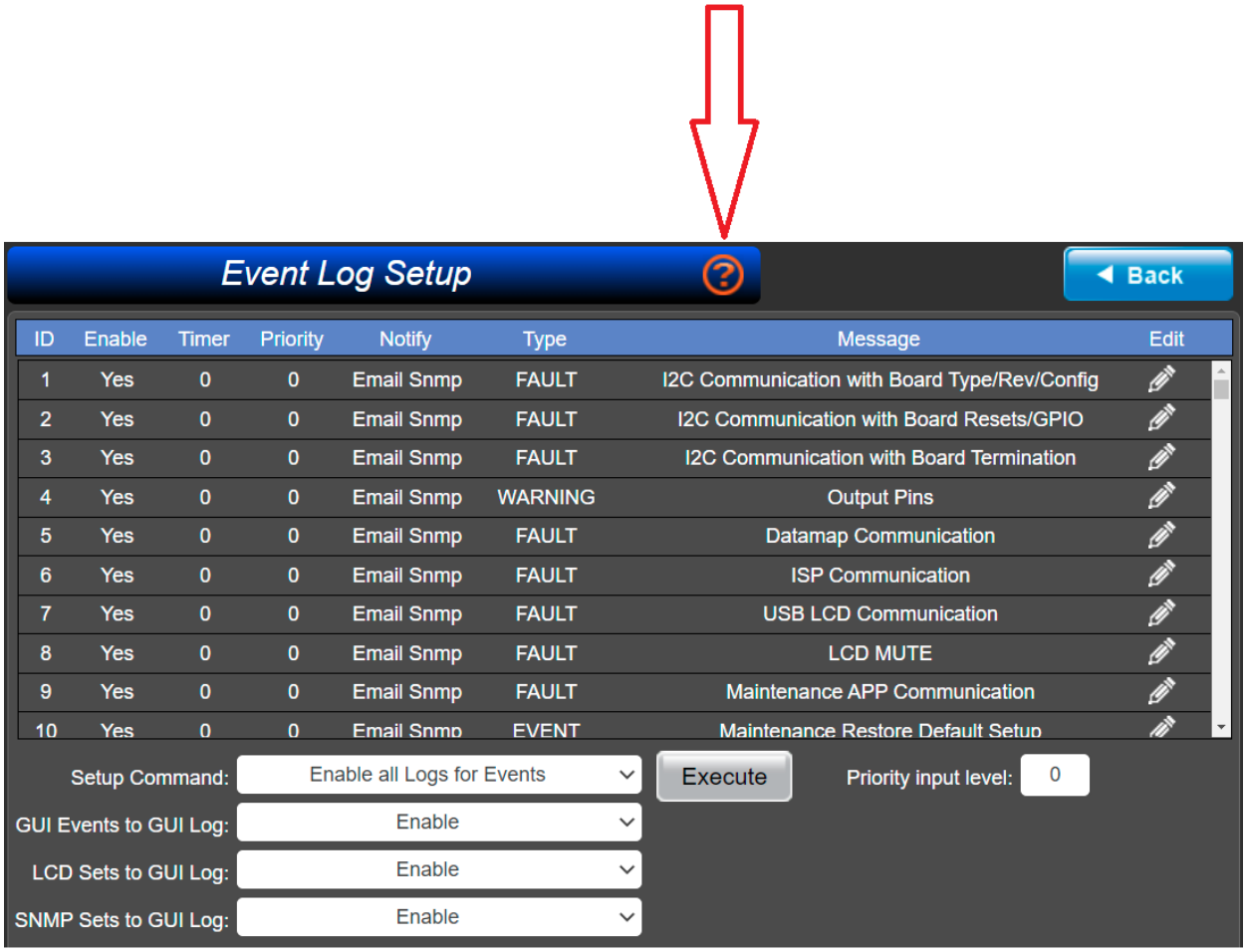


Figure 4-46 Event Log Setup Screen

- Click on the ***pencil*** icon located on the right to open the sub-menu **Edit** screen Figure 4-47.
- Table 4-22 details the Event Log Setup main screen, Figure 4-46.
- Section 4.3.7.1 provides the information for submenu Edit screen in Figure 4-47.

Table 4-22 Event Log Setup

Item	Explanation
ID:	Lists the event's ID number. All event types have a unique, predefined ID number.
Enable:	Indicates whether an event is enabled or disabled. In the case of an event occurrence, only those events that are enabled will be recorded. Selection for disable / enable is done in the **Edit** submenu, which can be accessed at the end of each message line.
Timer:	Defines how long an event has to be present before it is reported. The first event in a series will be logged, but successive occurrences of the same fault will not be recorded until the logic state for that event is stable for the time delay indicated. This prevents the event log from filling with events when an alarm rapidly toggles about a threshold. [0...60 seconds].
Priority:	Displays the priority level for an event type. If the priority level of a specific event falls beyond the priority number defined in the filter at the bottom of the page, the event will not be logged. [0...10].
Notify:	Displays the current election for notifications triggered an event. Modifications to these setting can be made in the **Edit** submenu, which can be accessed at the end of each message line. [Disabled] = no notifications will occur upon an occurrence of this event. [Email] = an occurrence of this event will trigger the sending of an e-mail. [Snmp] = an occurrence of this event will trigger the sending of an SNMP trap or inform.
Type:	Displays the event type. There are two types (fault or warning), which cannot be changed. These event types have a fixed assignment.
Message:	List a predefined event message.
Edit:	Provides access to the **Edit** submenu to make changes to key log event setup parameters.
Setup Command:	Allows certain log filtering commands to be applied simultaneously to all events in the setup table, so as to save time and avoid having to enable/disable each event manually. [Enable all Logs for Events] = enables event log recording for all events. [Disable all Logs for Events] = disables event log recording for all events. [Enable all Events for SNMP Notification] = enables SNMP trap/inform notifications for all events. [Disable all Events for SNMP Notification] = disables SNMP trap/inform notifications for all events. [Enable all Events for Email Notification] = enables e-mail notifications for all events. [Disable all Events for Email Notification] = disables e-mail notifications for all events.
Execute:	Places into effect the log filtering rule displayed in the **Setup Command** window.
GUI Events to GUI Log:	When enabled, includes in the GUI event log any events initiated by the user via the web GUI interface. [Enable, Disable].
LCD Sets to GUI Log:	When enabled, includes in the GUI event log any events initiated by the user via the front panel LCD interface. [Enable, Disable].
SNMP Sets to GUI Log:	When enabled, includes in the GUI event log any events initiated by the user via the remote SNMP interface. [Enable, Disable].
Priority Input Level:	Defines the priority level beyond which all alarming notification will be suspended. [0...10] For example, if this field is set to [4], all alarm events with priorities of [5...10] will not appear in the log nor trigger e-mails and SNMP notifications.

4•3•7•1 Event Log Edit Sub-Menu

This screen allows the inspection and modification of the parameters associated with a single event log message.

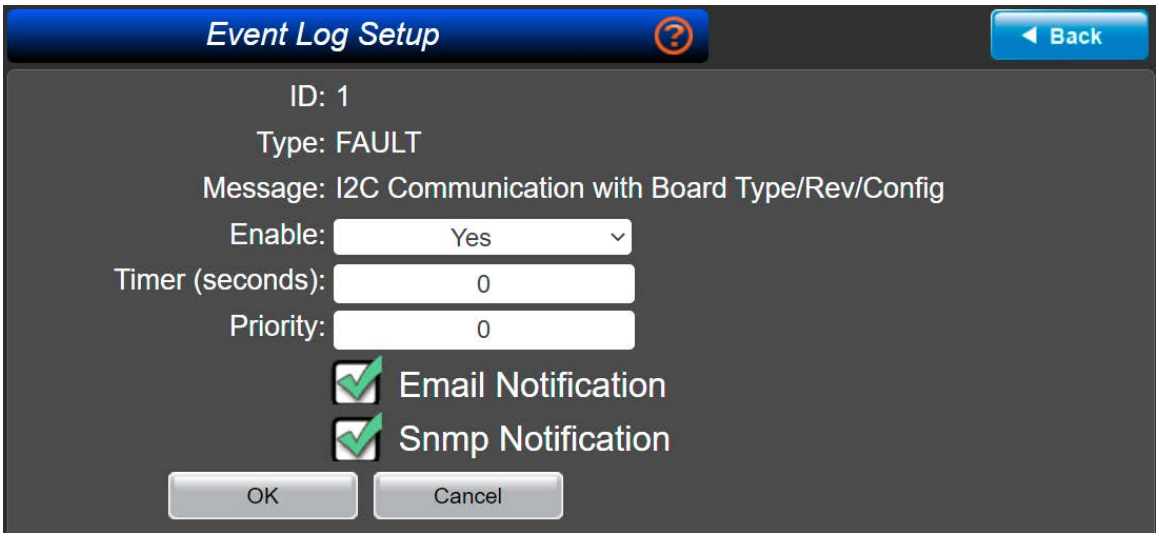


Figure 4-47 Event Log Edit

Table 4-23 Event Log Sub-Screen

Item	Explanation
ID:	Indicates the unique ID number of the event type.
Type:	Indicates the event type. [FAULT, WARNING].
Message:	Describes the event type.
Enable:	Globally enables or disables the event. All individual events can be disabled, thus preventing them from being recorded in the event log. [Yes] = event is globally enabled and will appear in the event log. [No] = event is globally suppressed and will not appear in the event log.
Timer (seconds):	Defines how long an event has to be present before it is reported. The first event in a series will be logged, but successive occurrences of the same fault will not be recorded until the logic state for that event is stable for the time delay indicated. This prevents the event log from filling with events when an alarm rapidly toggles about a threshold. [0...60 seconds].
Priority:	Displays the priority level for an event type. If the quantity of a specific event falls beyond the priority number defined in the filter at the bottom of the main **Event Log Setup** page, the event will not be logged. [0...10].
Email Notification:	Determines whether an e-mail notification is to be sent upon each event occurrence.
Snmp Notification:	Determines whether an SNMP trap or inform notification is to be sent upon each event occurrence.
OK:	Records into memory the most recent changes to settings on this screen.
Cancel:	Discards the most recent changes to settings on this screen.

4•3•7•2 Logs - HTML Index

The Logs button is visible only when the user is logged into the transmitter. Selecting Logs after you have signed in, will take you to the HTML Index below.

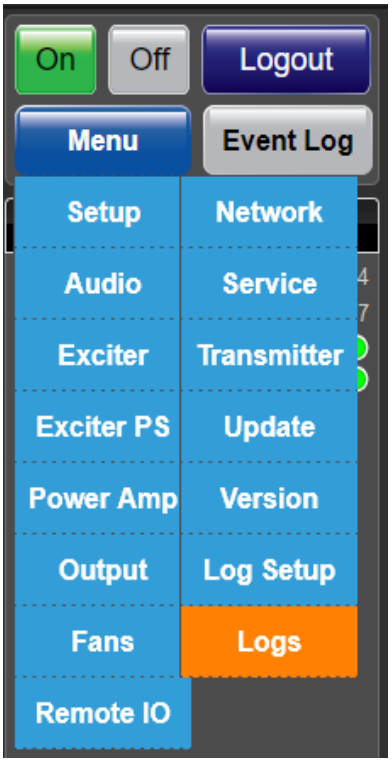


Figure 4-48 Setup Logs

Index of /logs/

Name	Modified	Size
BIT/	13-Sep-2018 13:54	[DIRECTORY]
audioFiles/	15-Nov-2023 04:30	[DIRECTORY]
data/	14-Nov-2023 15:46	[DIRECTORY]
debug/	18-Jan-2024 13:56	[DIRECTORY]
devcal/	17-Oct-2023 13:45	[DIRECTORY]
devcfg/	14-Dec-2023 10:50	[DIRECTORY]
hdd.debug/	18-Jan-2024 13:56	[DIRECTORY]
images/	31-Dec-1969 18:00	[DIRECTORY]
logo/	17-Mar-2023 10:55	[DIRECTORY]
logs/	20-Dec-2023 11:40	[DIRECTORY]
syslogs/	15-Jan-2024 13:54	[DIRECTORY]
FaultLogList	15-Jan-2024 13:54	15.2k

Figure 4-49 HTML Index of Logs

The HTML logs contain some advanced information that is not available in the LCD menu log or the GUI Event log.

4.4 Audio Button

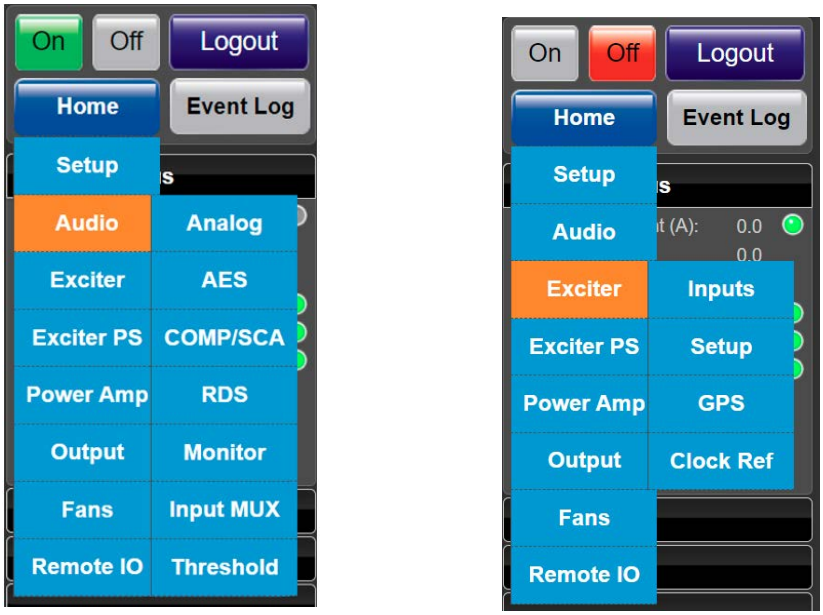


Figure 4-50 Audio Menu

The audio/modulator inputs can be accessed under two menu drop-down locations; Audio or Exciter Inputs. Both will take you to the same screen and functions.

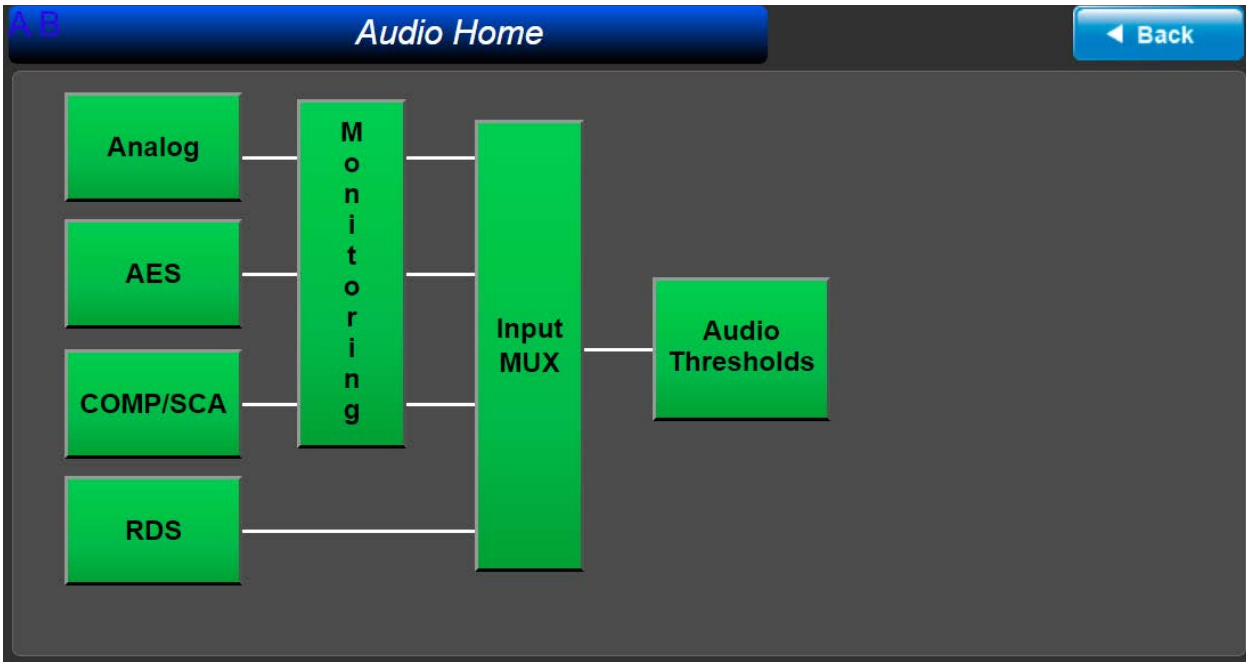


Figure 4-51 Audio Home / Exciter Inputs Screen

Access the Audio screens from here; Analog, AES, Comp/SCA, RDS, Monitor, and Threshold.

4.4.1 Analog Audio Setup

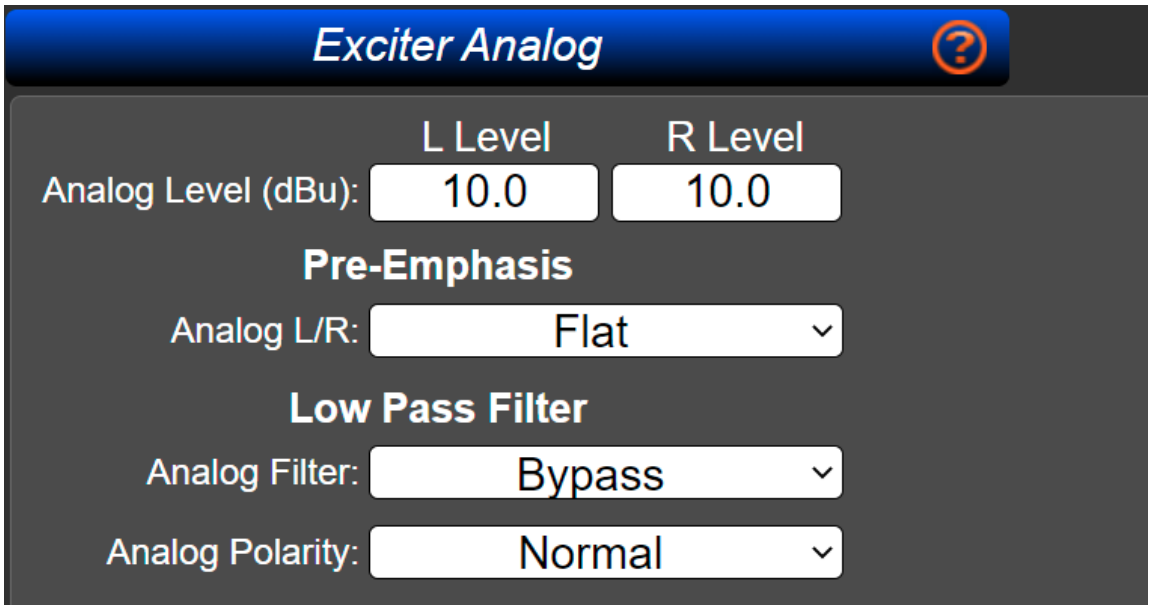


Figure 4-52 Analog Audio Setup

Table 4-24 Analog Audio Setup

Item	Explanation
L and R Level	
Analog Level (dBu):	Range 0 to +15 dBu; Level that must be at the Analog audio input(s) on rear panel of transmitter for 100 % modulation.
Pre-Emphasis	
Analog L/R:	Flat (0 uS) or 25, 50, 75 uS Pre-Emphasis.
Low Pass Filter	
Analog Filter:	Bypass, 15 kHz or 17 kHz Low Pass Filter.
Analog Polarity:	Normal or Inverted.

4.4.2 AES

Figure 4-53 AES Audio Setup

Table 4-25 AES Audio Setup

Item	Explanation
L and R Level	
AES (dBfs) Level:	Range -25.5 to 0 dBfs; Level to be set at the AES input on rear panel for 100 % modulation.
IP Level	Range -25.5 to 0 dBfs;
Pre-Emphasis and Polarity	
AES-Pre-Emphasis:	Flat (0 uS) or 25, 50, 75 uS Pre-Emphasis.
IP Pre-Emphasis:	Flat (0 uS) or 25, 50, 75 uS Pre-Emphasis.
AES Polarity	Normal or Inverted.
IP Polarity	Normal or Inverted
Low Pass Filter	
AES Low Pass Filter:	Bypass, 15 kHz or 17 kHz Low Pass Filter.
IP Low Pass Filter	Bypass, 15 kHz or 17 kHz Low Pass Filter.

4.4.3 COMP/SCA

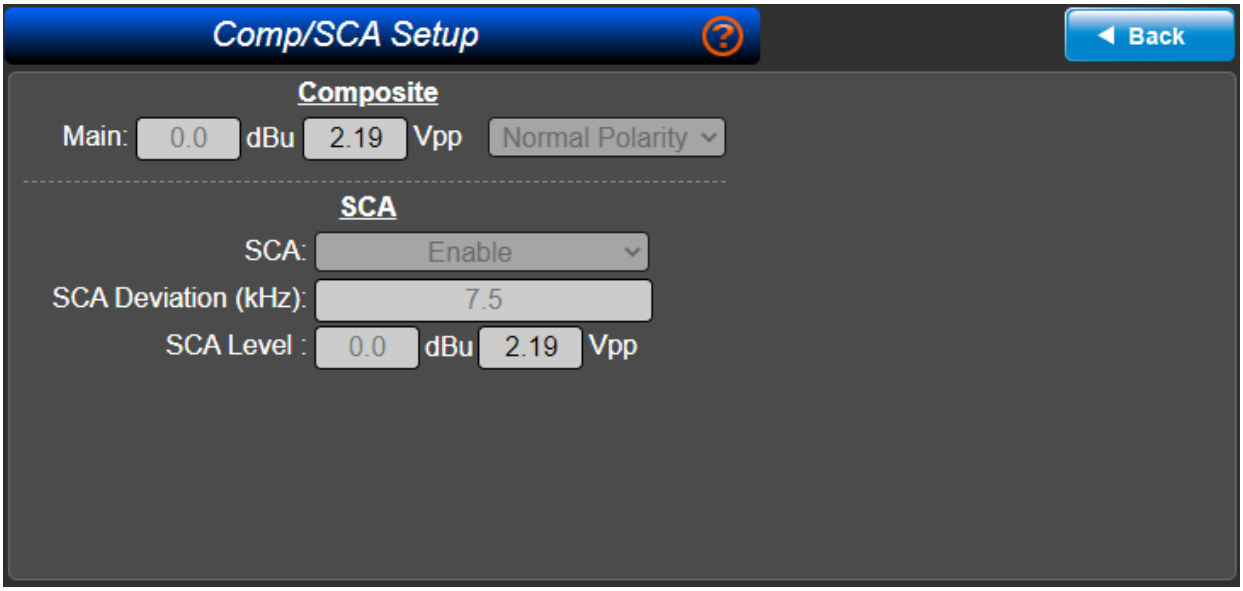


Figure 4-54 Composite / SCA Setup

Table 4-26 Composite/SCA Setup

Item	Explanation
Composite	
Main Level (dBu):	Range -0.6 to 18 dBu; Level that must be at the Analog audio input(s) on rear panel of transmitter for 100 % modulation.
SCA	
SCA Deviation:	Deviation of Sub-Carrier 1 and 2; Range 0 - 15 kHz.
SCA Level:	Level required at the input to produce 100 % SCA deviation; Range -6.8 to 5.32 dBu.

4.4.4 RDS

The GX transmitter has a built-in Static RDS generator, or an optional Dynamic RDS generator requiring a feature key and activation. For either the Static or Dynamic RDS, the navigation path is the same via the Menu drop down buttons, selecting Audio and clicking on the RDS button, or by the clicking the RDS icon in the Audio Home Screen.

For Static RDS, the screen will open as shown in Figure 4-55 with it's field information detailed in Table 4-27.

If the Dynamic RDS feature key is installed, the screen will go directly to a different set of screens for navigation and configuration and these are described starting at page 4-53. The PTY codes listed in Table 4-28 are the same for both Static or Dynamic RDS setup.

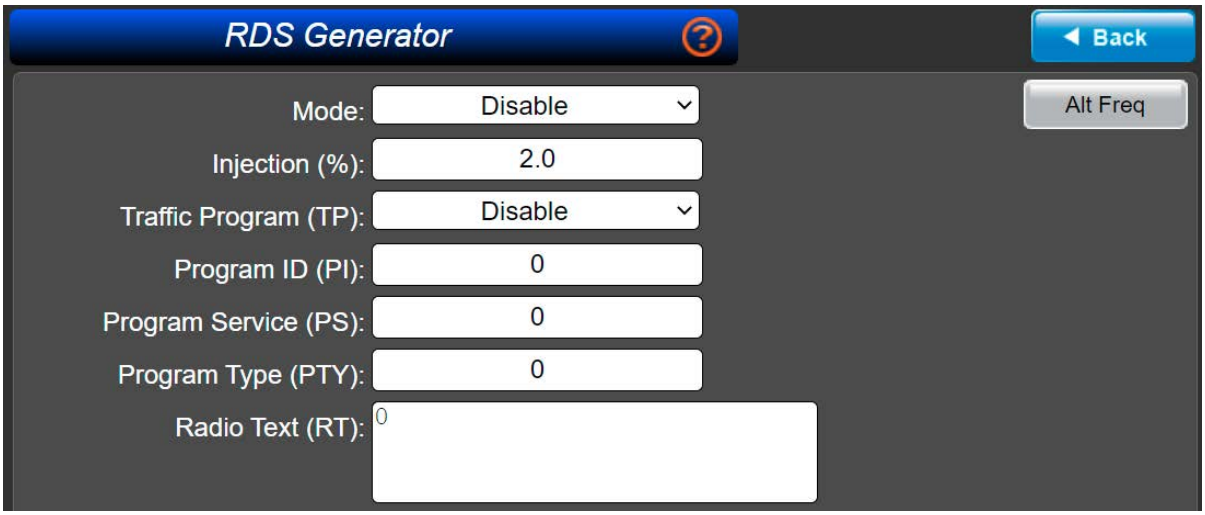


Figure 4-55 Static RDS Generator Setup

Table 4-27 Static RDS Generator

Item	Explanation
Mode	Enable or Disable; with this disabled all other parameters are ignored and no 57 kHz subcarrier is on air.
Injection (%)	Injection level of 57 kHz subcarrier; 0 to 15%.
Traffic Program (TP)	Enable or Disable; Used only if traffic reports are to be broadcast.
Program ID (PI)	Code that is mapped from station call letters, must be a Hex number. Generators are available on the Internet to calculate PI Code from call letters.
Program Service (PS)	Up to 8 characters long, Station call letters ie - KHAR-HD.
Program Type (PTY)	Code for station format, ie - Jazz, Rock, classical, etc; Decimal value see Table 4-25.
Radio Text(RT)	Text field can be entered; up to 64 characters.
Alt Freq	Alternate Frequency (top button); opens screen for entry of up to 6 alternate frequencies. Allows receivers to find a simulcast station quickly.

For more detailed descriptions of the RDS, definitions and setups, refer to NRSC RDS Guidelines.

Table 4-28 PTY Codes for Americas and EU

PTY Code	RBDS Standard (Americas)	RDS Standard (EU)
0	No program	No program
1	News	New
2	Information	Affairs
3	Sports	Info
4	Talk	Sport
5	Rock	Education
6	Classic Rock	Drama
7	Adult Hits	Cultures
8	Soft Rock	Science
9	Top 40	Varied Speech
10	Country	Pop Music
11	Oldies	Rock Music
12	Soft	Easy Music
13	Nostalgia	Light Classics Music
14	Jazz	Serious Classics
15	Classical	Other Music
16	Rhythm and Blues	Weather
17	Soft Rhythm and Blues	Finance
18	Foreign Language	Children
19	Religious Music	Social Affairs
20	Religious Talk	Religion
21	Personality	Phone In
22	Public	Travel
23	College	Leisure
24	Spanish Talk	Jazz Music
25	Spanish Music	Country Music
26	Hip Hop	National Music
27	Unassigned	Oldies Music
28	Unassigned	Folk Music
29	Weather	Documentary
30	Emergency Test	Alarm Test
31	Emergency	Alarm

4•4•4•1 Dynamic RDS

With this option and it's feature key activated, Dynamic RDS will open in the "System Dataset" screen" as shown in Figure 4-56.

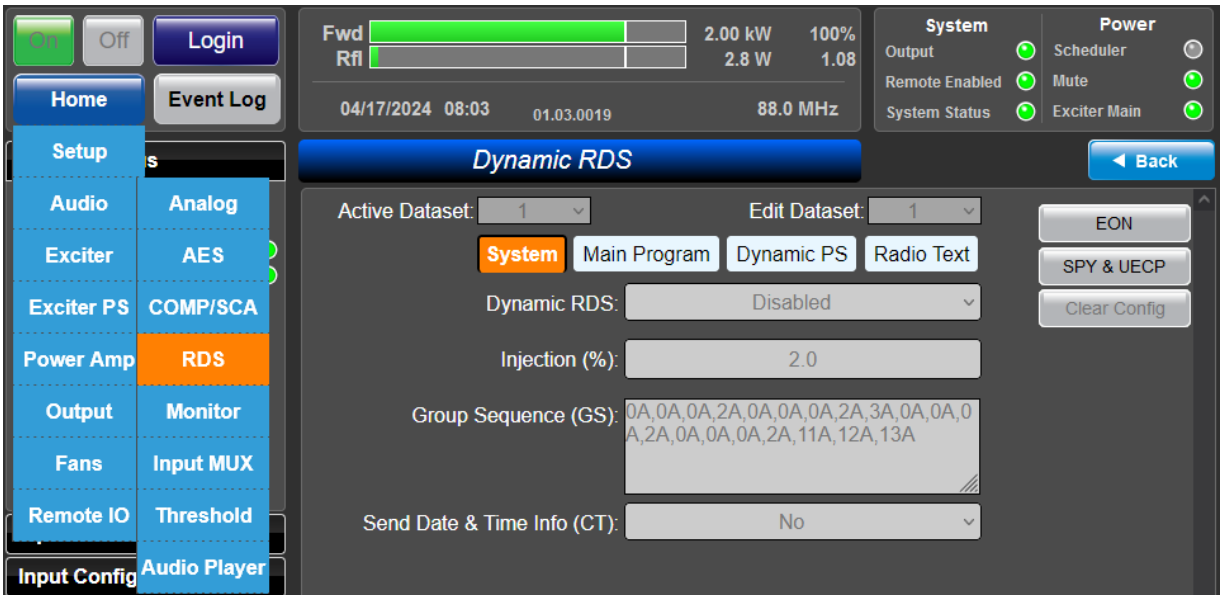


Figure 4-56 Dynamic RDS System Screen

The Dataset Configurations are split into four screens; "System", "Main Program", "Dynamic PS", and "Radio Text".

Above this row of Dataset buttons, are two drop down fields, "Active Dataset" and "Edit Dataset", that control which dataset is being shown and which dataset is being used to transmit RDS information to the receiver. Use the "Active Dataset" to control which dataset to transmit to the receiver, 1 through 4. Use "Edit Dataset", to select which dataset is shown in the System Screen, from datasets 1 through 4.

When two GX exciters are used in a dual exciter system, the two exciters share the same dynamic RDS configuration. When you change a configuration element, the transmitter controller sends that change to both exciters.

From any of the dataset configuration screens, you can open the "EON", and "SPY & UECP" configuration screens via the right-hand navigation buttons.

You can clear the entire dynamic RDS configuration back to the default values by clicking on the Clear Config button.

System Screen

The four Fields in the System Screen that contains configuration items that are common to all 4 datasets. Therefore, the "Edit Dataset" control is disabled because all the datasets share these Fields. These fields are as follows:

Dynamic RDS - This controls when the dynamic RDS is active. There are 4 possible choices. Note that when the composite input is active, the dynamic RDS generator is disabled regardless of the setting of this control.

- Disabled: inactive
- Enable For All Inputs: active regardless of the active audio input
- Enable For Primary Input: active when the primary audio input selection is the active input
- Enable for Backup Input: active when the backup audio input selection is the active input

Injection (%) - This controls the injection level for the RDS. The range is from 0% to 15%, inclusive. The resolution for injection level is to a tenth of a percent. This is the only control on the page that does not require confirmation from the user. Also, on a dual drive high power transmitter, the injection level can be set to different percentages on each exciter. You will have to click on the A|B buttons to see the injection levels on each exciter.

Group Sequence (GS) - This field defines the multiplex of RDS group types that are transmitted out. The sequence needs to be in the format of group types separated by commas, e.g. 0A,1A,2A. Unrecognized group types are removed from the sequence. It's up to the user to create a mixture with a group repetition rate as recommended by the RBDS and RDS standards. For example, the sequence "0A,0A,0A,0A,1A,1B,2A,2A,10A,14A" would create a multiplex that 40% 0A groups, 20% 1A and 1B groups, 20% 2A groups, and 10% 10A and 14A groups respectively. The 4A group type is ignored if included in the group sequence because it's automatically inserted every minute when the CT field is enabled. Likewise, the 14B group is ignored and inserted automatically as controlled by the EON TA flag. Finally, the 15B group is inserted automatically as controlled by the Main Program TA flag.

Send Date & Time Info (CT) - The CT field enables the transmission of time-of-day information to the receiver. When enabled, the 4A group is automatically inserted into the group sequence every minute. You do not have to put the 4A group in yourself.

Main Program Screen

The Main Program screen, Figure 4-57, contains the fields specific to the Dataset that's been selected using the "Edit Dataset" to represent the characteristics of the main service.

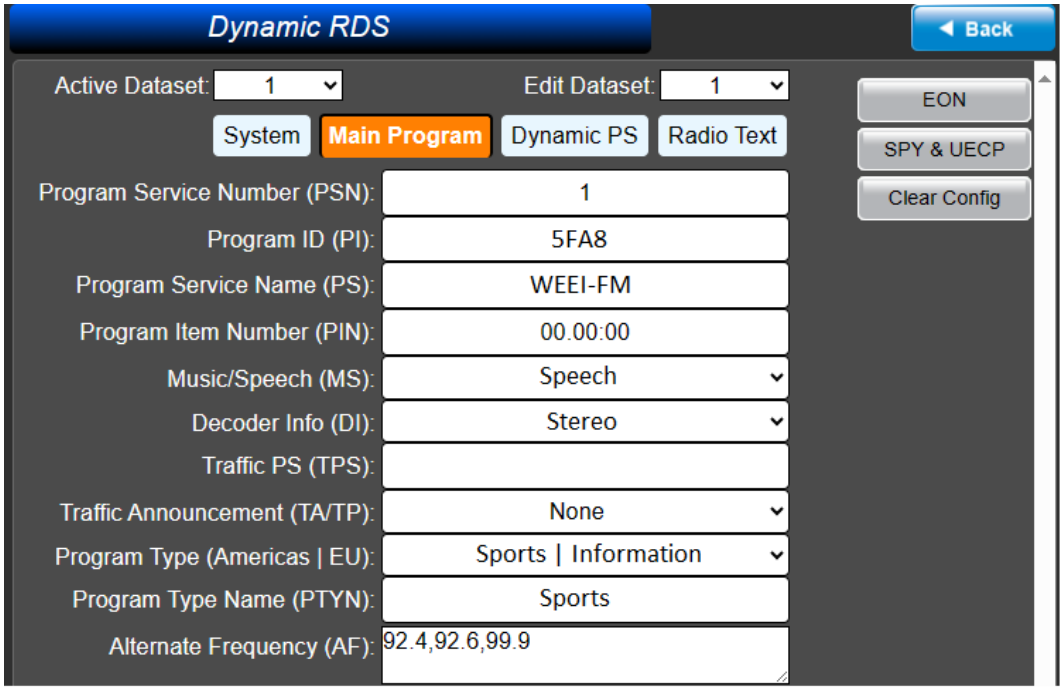


Figure 4-57 Main Program Screen

Program Service Number (PSN) - A number used to identify this program ranging from 1 to 255.

Program ID (PI) - A code used by the receiver to differentiate between different programs. One common use is to allow the receiver to switch to one of the alternate frequencies. The receiver will switch to an alternate frequency if it sees a program on that frequency with an identical PI.

Program Service Name (PS) - An eight-character string displayed on the receiver to inform the listener from what station they are receiving a program. This is often the call letters for the station.

Program Item Number (PIN) - Identifies the day and start time for a particular PSN. The PIN is entered in the format DD.HH:MM whether DD is the day of the month, and HH:MM is the hour and minute of the start time. If no PIN is defined, the day in the PIN field in group 1 will be set to zero.

Music/Speech (MS) - Identifies if this program service is music or speech.

Decoder Info (DI) - Identifies what operating mode the receiver should switch to. Only "stereo" and "mono" are supported.

Traffic PS (TPS) - An eight-character string that is displayed on the receiver when a traffic announcement is occurring on this program service

Traffic Announcement (TA/TP) - Controls the setting of the Traffic Announcement (TA) and Traffic Program (TP) flags. The possible settings are

- None: there is no traffic announcement on this program or on an EON (TA = 0, TP = 0)
- Present on other Program: there is traffic information on a program referred to by an EON (TA = 1, TP = 0)
- This Program/Not Present: this program carries traffic information, but none is being broadcast at present (TA = 0, TP = 1)
- This Program/Present: traffic information is being broadcast on this program (TA = 1, TP = 1)

Program Type (Americas | EU) - Describes the programming being broadcast. There are 31 possible program types. The RBDS (the Americas) and RDS (EU) standards define the codes differently as shown in Table 4-25.

Program Type Name (PTYN) - An eight-character text field that gives more detail about the current program type.

Alternate Frequency (AF) - A comma separated list of frequencies of other transmitters broadcasting the same program in the same or adjacent reception areas. Frequencies must have a resolution of a tenth of a megahertz and be in the range from 87.6 MHz to 107.9 MHz, inclusive. The RDS encoder supports up to 25 alternate frequencies, and frequencies in the list that are incorrectly formatted, or out of range, are removed from the list. In addition, the RDS encoder currently uses method A only for AF coding as described in the U.S. RBDS Standard.

Dynamic PS

Clicking on the Dynamic PS button opens the Dynamic PS configuration fields as shown in Figure 4-58.

These elements are specific to the Dataset that's been selected with the "Edit Dataset" drop-down control and represents the characteristics of Dynamic PS operation for the main service.

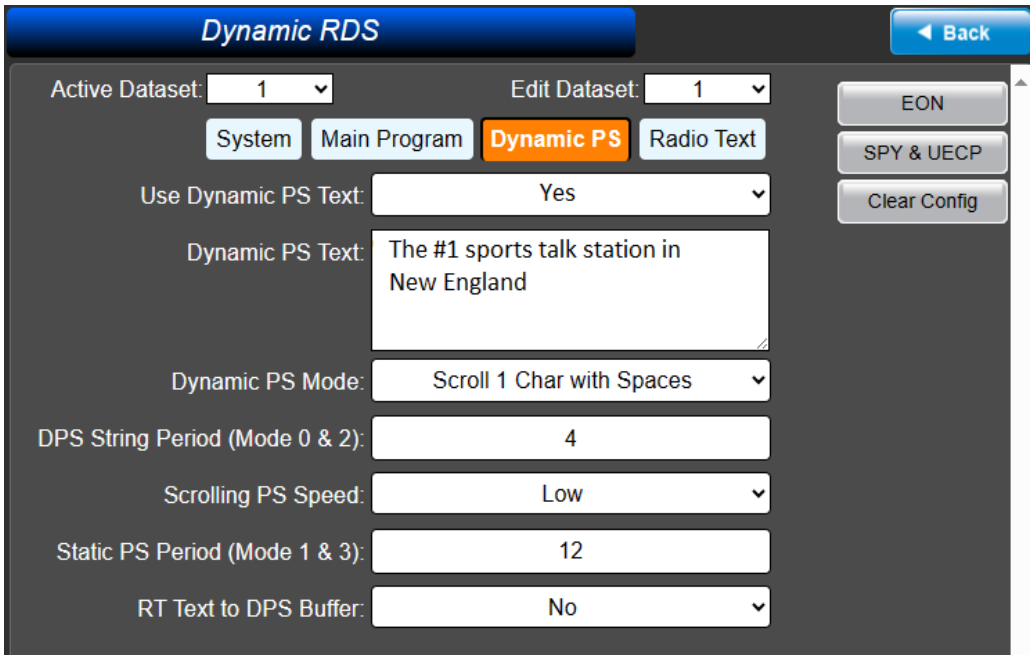


Figure 4-58 Dynamic PS Screen

Use Dynamic PS Text - enables the use of dynamic program service name (PS). When enabled, the RDS encoder will alternate between sending the eight-character program service name configured on the main program tab and the dynamic program service text defined on this tab.

Dynamic PS Text - A 128-character text string cycled through the PS field.

Dynamic PS Mode - Configures how the dynamic PS text string is broadcast in the PS field. The possible options are

- Scroll 8 Char: Eight characters at a time of the dynamic PS string are scrolled through the receiver display (mode 0).

- Scroll 1 Char: One character at a time of the dynamic PS string is scrolled through the receiver display (mode 1).
- Scroll By Words: The dynamic PS string is scrolled through the receiver display by words, up to eight characters at a time (mode 2).
- Scroll 1 Char with Spaces: The dynamic PS string is scrolled through the receiver display one character at a time with a space at the beginning and end of what's shown in the receiver display (mode 3).

DPS String Period (Mode 0 & 2) - Defines in dynamic PS how long the text is displayed on the receiver when scrolling by 8 characters or scrolling by words. This value has a range from 0 to 255, and each incremental value increases the period by approximately 0.6 seconds.

Scrolling PS Speed - Defines the scrolling speed of the dynamic PS transmission, low or high. Note that a high scrolling speed can be unreadable on some receivers that are experiencing bad reception.

Static PS Period (Mode 1 & 3) - Defines the time between two repetitions of the dynamic PS when scrolling by character or scrolling by character with spaces. The value has a range from 0 to 255, and each incremental value increases the period by approximately 0.6 seconds.

RT Text to DPS Buffer - If enabled, the RDS encoder copies any new radio text is also copied into the dynamic PS scrolling buffer.

Radio Text Screen

The Radio Text Screen, Figure 4-59, contains configuration elements for the radio text operation of the RDS encoder.

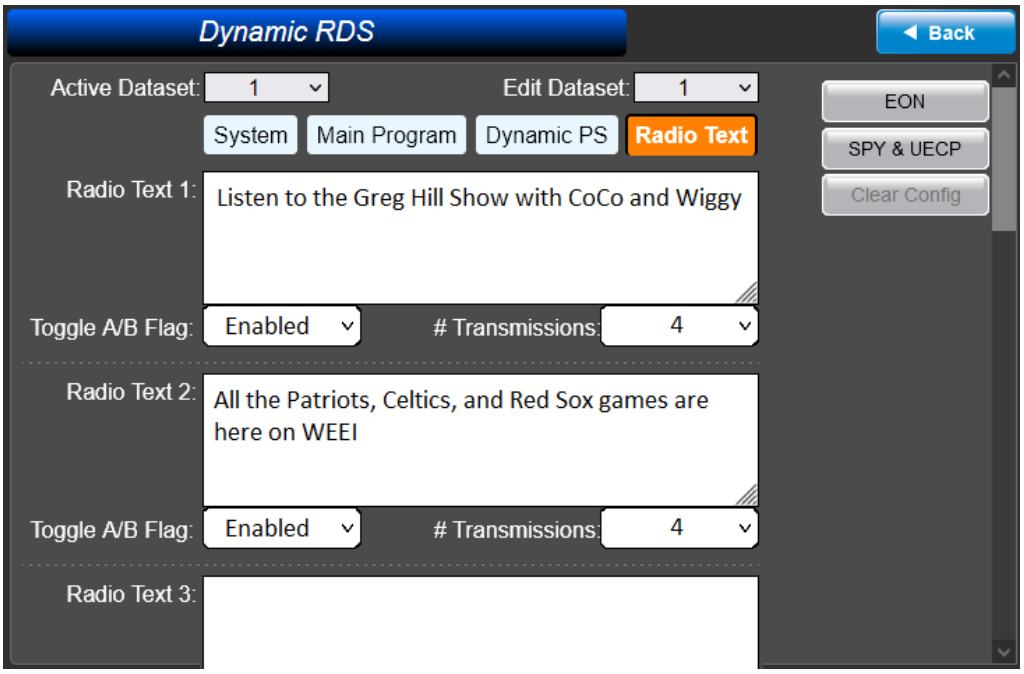


Figure 4-59 Radio Text Screen

Radio Text Fields 1 Thru 10 -This screen supports up to 10 radio text strings of 64 characters transmitted in a loop starting with Radio Text 1, (RT 1) . When a new radio text is entered in an open RT field, the GUI automatically moves the text string into the next empty slot in the loop. For example, a string entered in the RT 4 field when the RT 3 field is empty, will move into the RT 3 field. The transmission of the radio text strings is controlled by the following parameters, configurable for each string.

Toggle A/B Flag: - The RDS encoder alternates the transmission of this radio text in a 2A group and a 2B group.

 # Transmissions: - Defines the number of times the radio text string is transmitted before the RDS encoder moves on to transmit the next radio text string. The possible values are from 0, or infinite, to 15. Note that setting this field to "infinite" for a radio text will block the transmission of any radio text following it in the loop.

EON Configuration Screen

From any Dataset configuration screen, clicking on the EON button in the upper right corner takes you to the EON Configuration screen shown in Figure 4-60.

Buttons "EON 1" thru "EON 4" provide access to one of the four EON profiles associated with each of the four datasets. Above the four EON buttons are the two dropdown fields used to select which data set is being shown and which data set is being used to transmit RDS information to the receiver. To control which dataset to transmit to the receiver, select dataset 1 through 4 in the dropdown control labeled "Active Profile". To select which dataset is being shown and can be edited, pick dataset 1 through 4 from the dropdown control labeled "Profile to Edit:".

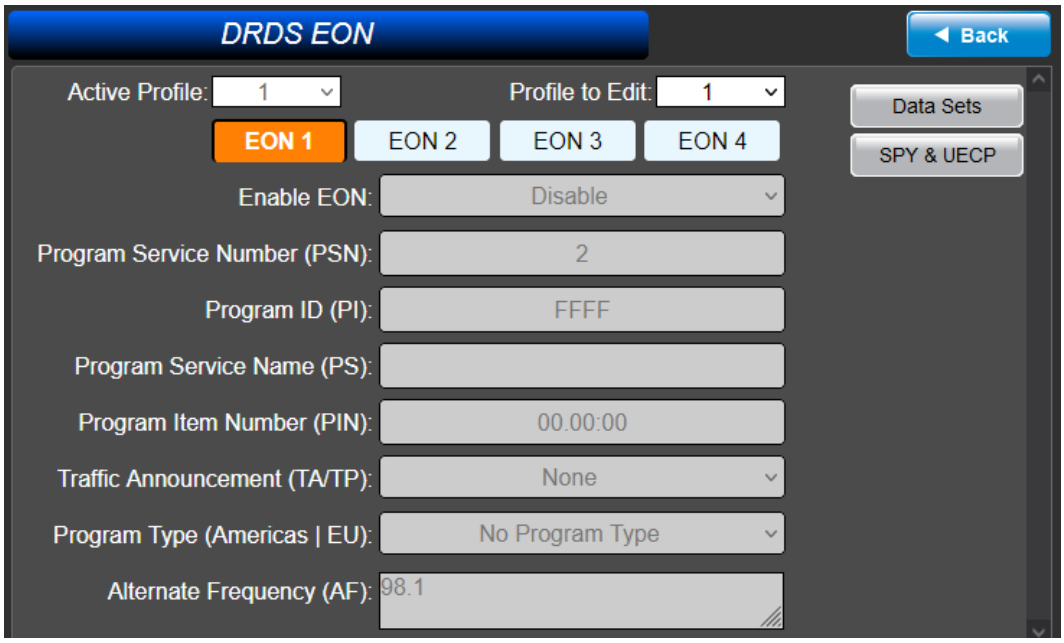


Figure 4-60 EON Configuration Screen

UECP & SPY Configuration Screens

To enter the The SPY and UECP Configuration screens, click the "SPY & UECP" button in any of the previous screens, Figures 4-56 thru 4-60. The GUI then opens to the configuration elements for the SPY and UECP servers.

Figure 4-61 SPY Configuration Screen

SPY Screen in Figure 4-61, provides controls for the SPY server. The RDS encoder is compatible with the SPY Windows based RDS decoder freeware program available at www.rdsspy.com. By enabling the SPY server, you can use the SPY program to see the RDS information being transmitted by the RDS encoder.

SPY Server - Enables the SPY server. Running the SPY server is not required by the RDS encoder.

Port Number - Specifies port number of the listening socket used by the SPY server.

Client Address - Provides the IP address of the SPY program currently connected to the SPY server. A value of "0.0.0.0" indicates that there's no client connected.

Client Port Number - Provides the port number in use by the SPY program to communicate with the SPY server. A value of "0" indicates that the SPY program isn't connected.

UECP Server Configuration Screen

Figure 4-62 UECP Server Configuration

This screen provides configuration controls for the UECP server function as follows:

UECP - Enables the UECP server function. Turning on the UECP server is not required for the dynamic RDS encoder to function.

Site Address - Specifies the transmitter site address, together with the encoder address, to which the UECP server should respond. The address should be in the range 1 to 1023. The UECP server listens to only one site address, entered here, and all UECP messages with a site address of 0.

Encoder Address - Specifies the encoder address, together with the site address, to which the UECP server should respond. The address should be in the range 1 to 63. The UECP server listens to only one encoder address, entered here, and all UECP messages with an encoder address of 0.

Port Number - Defines the port number of the listening socket of the UECP server. The port number must be between 1 and 65535, and it cannot be the same as other ports in use by the transmitter. The default value is 1000.

Client Address - Provides the IP address of the client currently connected to the UECP server. A value of "0.0.0.0" indicates that there's no client connected.

Client Port Number - Provides the port number in use by the client to transmit UECP frames to the server. A value of "0" indicates that there's no client connected.

To return to the EON configuration screen, click the "EON" button.

To return to the Dataset configuration screens, click the "Data Sets" button and you return to the last screen you were on in "Data Sets" - System, Main Program, Dynamic PS, or Radio Text - (whatever was orange before you entered EON or SPY/UECP screens)

4.4.5 Audio Monitor

The GX transmitter has a built-in input audio monitor. This monitor displays the audio at the input of the transmitter. It will display all audio signals that are present regardless if they are on-air

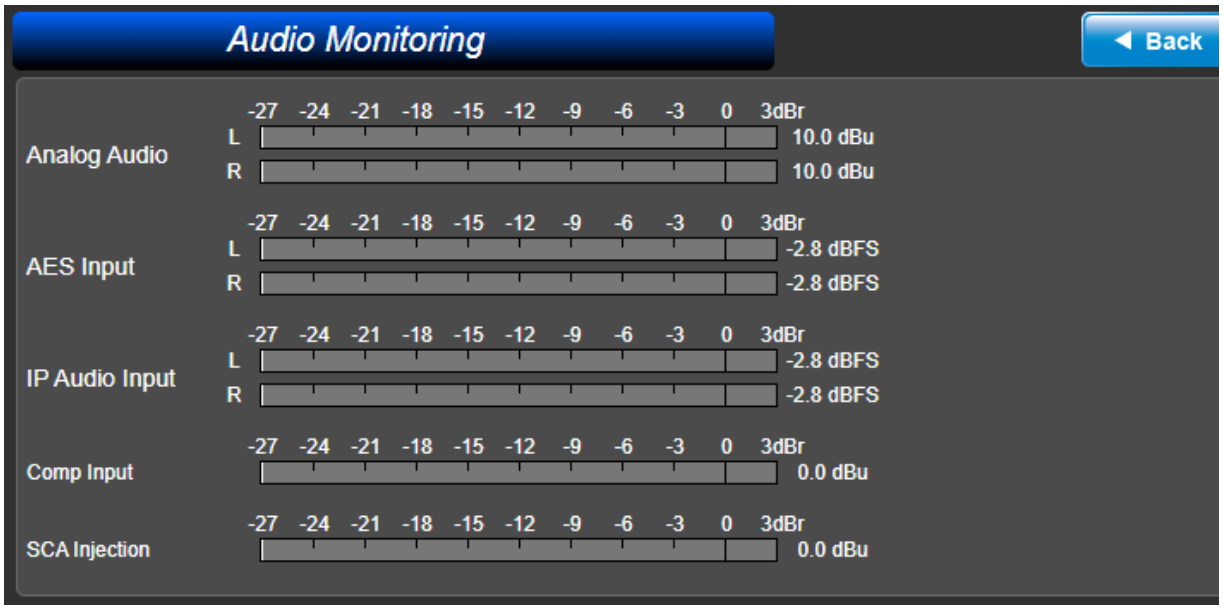


Figure 4-63 Audio Monitor

4.4.6 Audio Input Multiplex

The Audio Input Multiplex screen is where you setup the primary and backup audio sources and whether you want switching to take place if the source goes away.

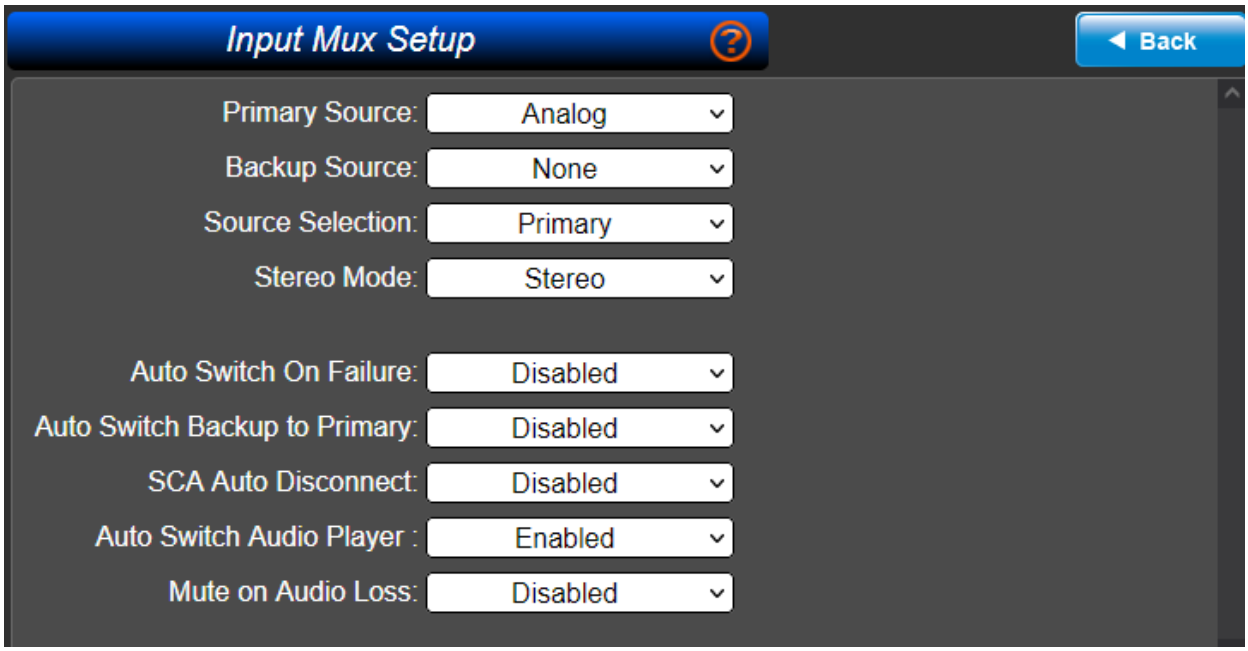


Figure 4-64 Audio Input Multiplex Setup

Table 4-29 Input Multiplex Setup

Item	Explanation
Primary and Backup Source:	Select None, Analog, Main and Aux; AES Audio, Composite, MPX L and MPX R.
Source Select:	Select the Primary or Backup source.
Stereo Mode:	Select Mono (L+R), Stereo, Mono (L) or Mono (R).
Auto Switch On Failure:	Select Enable or Disable
Auto Switch Backup to Primary:	Controls whether the modulator switches automatically from the primary to the backup audio source when the primary source fails.
SCA Auto Disconnect:	Select Enable or Disable
Auto Switch Audio Player:	Select Enable or Disable
Mute on Audio Loss	Select Enable or Disable

4.4.7 Audio Thresholds

The Audio Input Thresholds screen allows to select the level and times for switching between the Primary and Backup audio sources.

Figure 4-65 Audio Thresholds Setup

Table 4-30 Audio Thresholds

Item	Explanation
Monitor Threshold:	Level where switch will occur.
Undercut Delay T1:	Time that Primary source needs to remain below Monitor Threshold level to switch.
Return Delay T2:	Time Primary source needs to remain above Monitor Threshold to switch back.
Log Type:	Type of event that is logged, None, Warning or Fault. The setting in this field will not effect the Primary/Backup switching or transmitter operation. This will only generate an entry into the Event Log. If the Log type is set to Fault or Warning and no audio is present a continuous event, Fault or Warning, will be in the Event Log. Set the fields only for the audio types in use.

4.4.8 Audio Player

The Audio Player function provides a backup audio source if the primary and secondary audio program source is not available.

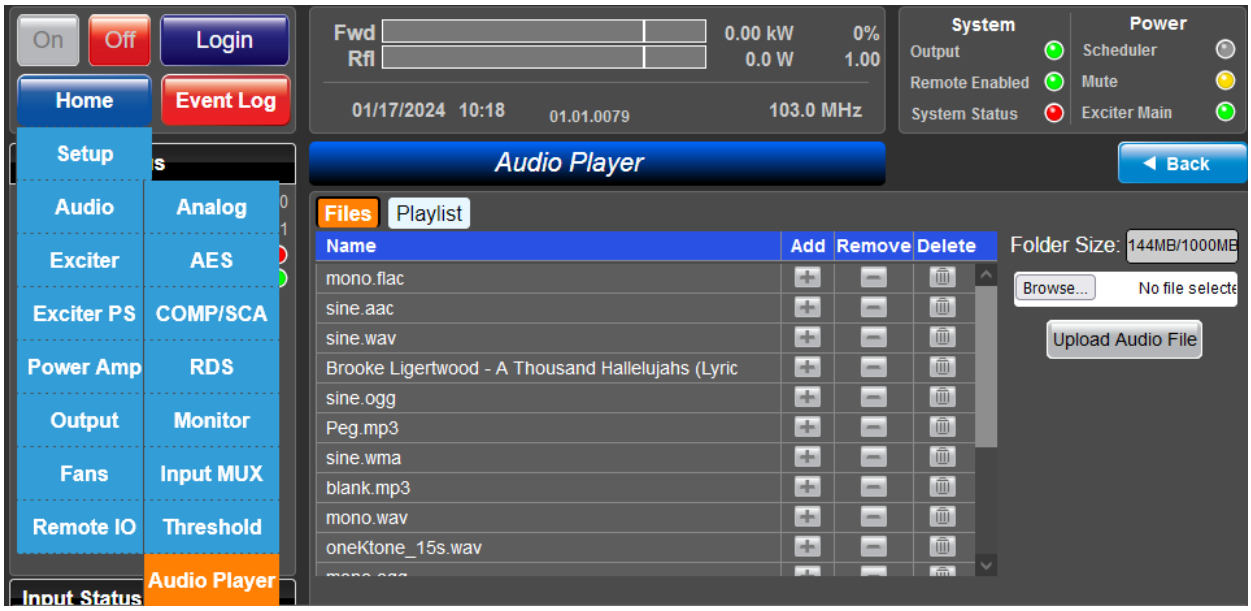


Figure 4-66 Audio Player Main Screen

Table 4-31 Audio Player - Main Screen

Item	Explanation
Files button:	Button to return to main screen if user is currently in one of the submenu screens. Color changes to orange to show you are currently in the main screen.
Playlist button:	Button to open the Audio Player track or files that is / are setup for Audio Player Loop
	Title Bar Columns
Name	Lists and names of audio files and file types in Playlist.
Add:	Button to add audio file to Playlist.
Remove:	Button to remove audio file from Playlist, but kept in Audio Player folder.
Delete:	Button to delete the audio file from Audio Player folder.
	Fields and Buttons on Right of Screen
Folder Size field:	First number displays folder storage in use. Second number is folder's max capacity.
Browse button:	Opens to a submenu screen to navigate on PC to the location to add/upload audio files to the GX player folder.
Upload Audio File	Click on this button to upload file when ready.

Figure 4-67 Play List submenu Screen

Table 4-32 Audio Player - Submenu Screen

Item	Explanation
Files button:	Returns to Main screen
Playlist button:	Color changes to orange to show you are currently in the submenu screen,
	Fields
Current Track:	Displays the current track playing from the playlist.
Loop Mode:	Select Continuous or Single
	Buttons on Right of Screen
Clear:	Clears the playlist file
Save:	Saves the modified playlist file
Log:	The playlist to your PC
Download:	Download of the file of the playlist files that have played

Audio Files that can be used:

- wav
- aac
- mp3
- wma
- ogg
- flac

4.5 Exciter Button

- Select: M**enu > Exciter** and the Exciter Home screen will open.

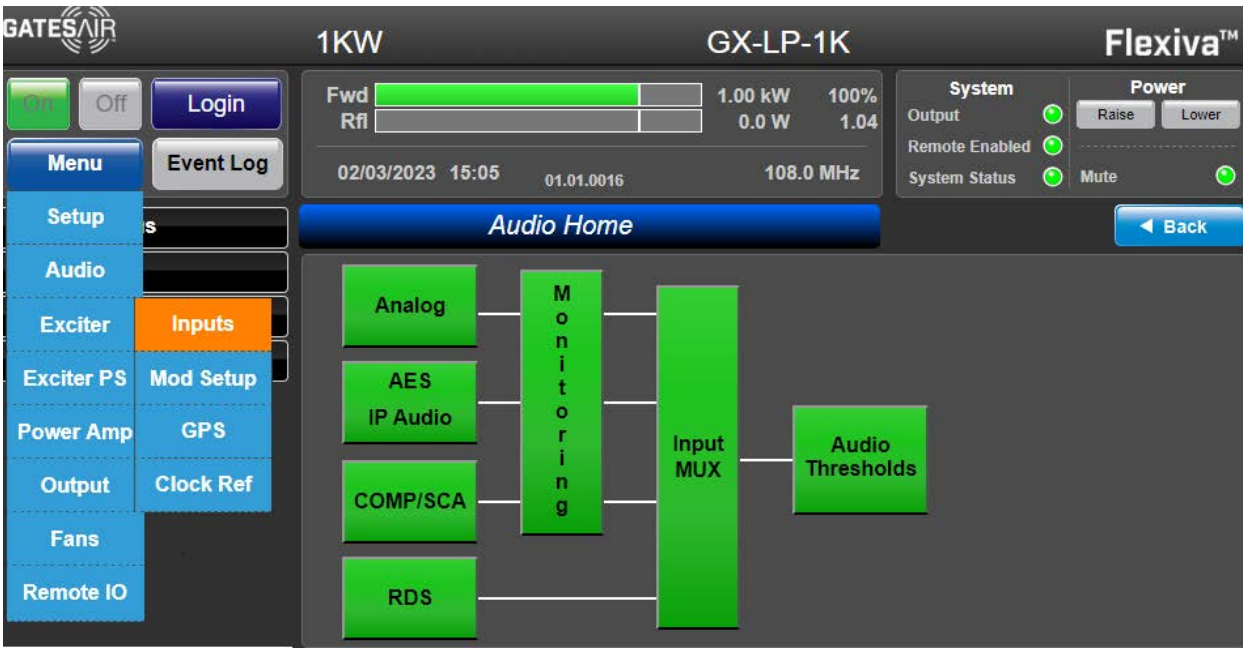


Figure 4-68 Exciter Home Screen

Table 4-33 Exciter Pull Down Buttons

Item	Explanation
Inputs:	Opens to the Audio Home Screen to set Audio Inputs.
Mod Setup:	Opens to the Modulator Setup Screen.
GPS:	Displays if GPS Option is installed. Clock Ref button moves up if option not installed.
Clock Ref:	Opens to Clock Reference Setup Screen.

4.5.1 Inputs Button

Clicking on **Exciter > Inputs** button will open up the Audio Home screen as shown above in Figure 4-68.

Refer to Section 4.4 Audio Button, covered previously, for setting up the audio inputs.

4.5.2 Mod Setup

- Select **Menu** > **Exciter** > **Setup** to open up the Modulate Setup screen as shown in Figure 4-69.

The Modulator Setup screen is where you can enter in the carrier frequency and deviation, control the pilot and sidebands etc. There is also a test tone generator available.

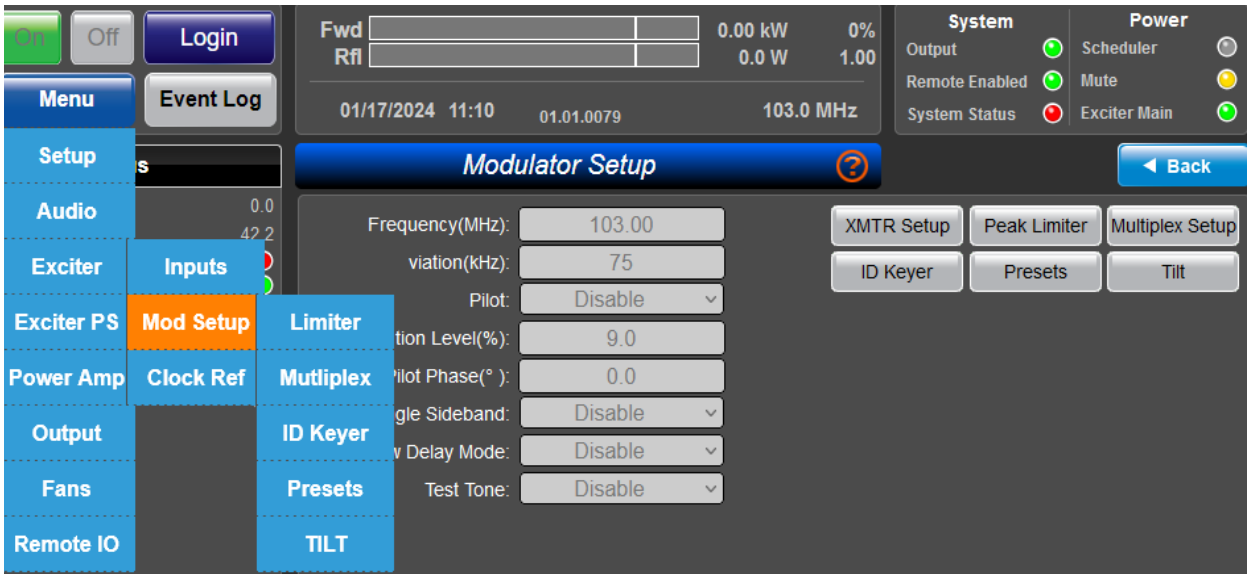


Figure 4-69 Modulator Setup

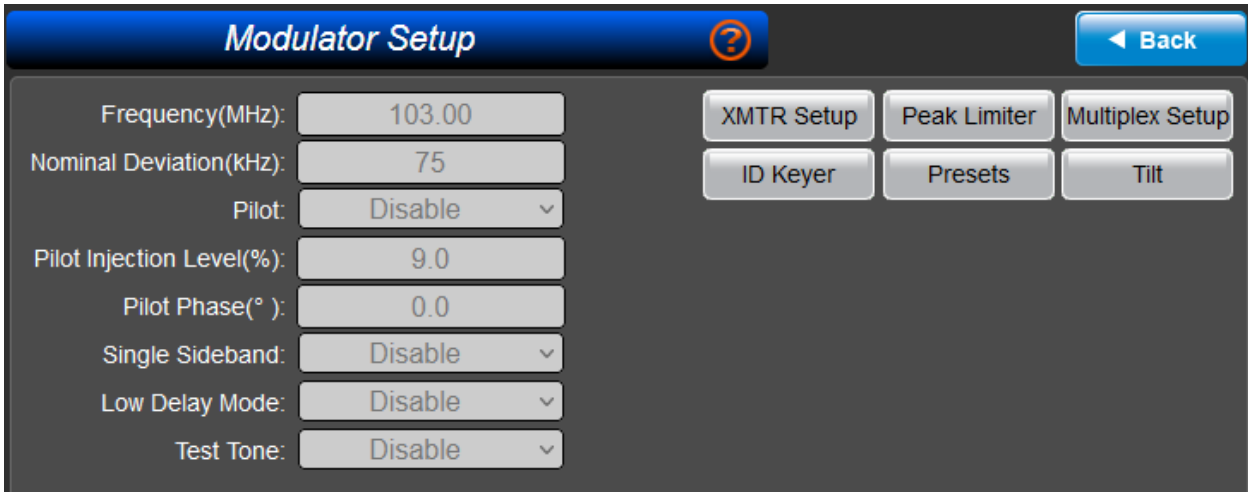


Figure 4-70 Modulator Setup screen

Table 4-34 Modulator Setup Screen

Item	Explanation
	Fields on LEFT SIDE of SCREEN
Frequency (MHz):	Frequency setting for the transmitter. Frequency can be configured to operate on frequencies 87.5 MHz to 108 MHz.
Nominal Deviation (kHz):	The nominal frequency deviation setting for the modulator.
Pilot:	Enable or Disable the Internal 19 kHz Pilot.
Pilot Injection Level (%):	The desired injection level of the pilot; 0 to 12%.
Pilot Phase (°):	Pilot phase offset; range is -5° to 5°.
Single Sideband:	Enable/Disable for Stereo Operation. Enable places the Stereo Encoder in SSB?SC mode. Single sideband mode can not be used if low delay mode is selected. Disable places the Stereo Encoder in traditional DSB?SC mode.
Low Delay Mode:	Control to enable the low delay path through the modulator. This mode can not be selected is single side band mode is enabled.
Test Tone:	Enables or Disables 1 kHz - 100% modulated internal test tone.
	Navigation Buttons on RIGHT SIDE of SCREEN
XMTR Setup:	Quick link to Transmitter Setup Screen located in Section 4.3.3.1
Peak Limiter:	Refer to 4.5.2.1 Limiter Setup
Multiplex Setup:	Refer to 4.5.2.2 Multiplex Setup
ID Keyer	Refer to 4.5.2.3 ID Keyer Setup
Presets	Quick link to Presets Screen in Section 4.3.3.2
Tilt	Not used in GXLP.

4•5•2•0•1 Single Sideband Suppressed Carrier (SSB-SC)

The GXLP contains an implementation of SSB-SC stereo mode. To use SSB in Flexiva, access the Modulator Setup page and Enable SSB mode and Enable Peak Limiting.

The GX uses the Hilbert transform method, where a 90 degree broadband phase shift is used to cancel/eliminate the upper sideband of the 38kHz stereo subcarrier. The remaining lower sideband level is increased 6dB to support the correct L+R/L-R matrixing in the receiver.

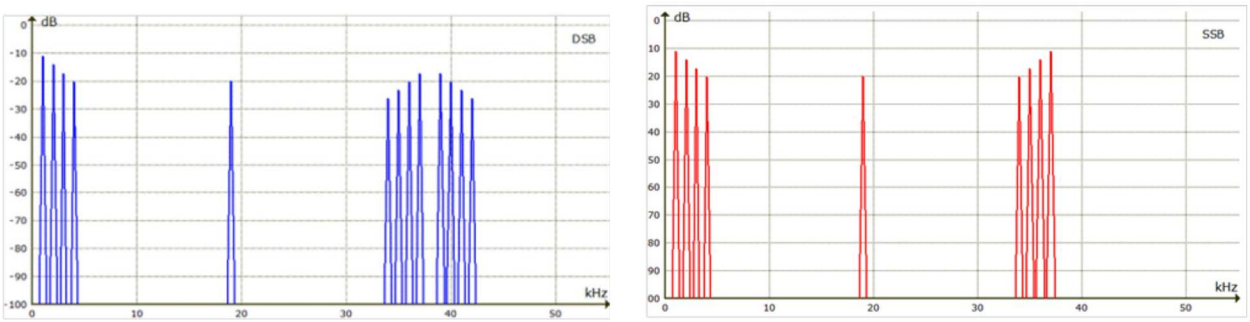


Figure 4-71 SSB Disabled / Enabled

+Without the benefit of interleaving in the SSB waveform as opposed to DSB, instantaneous phase differences between the L/R program channels can result in up to a 2.8 dB increase gain causing composite peak modulation overshoots. Peak limiting from the Flexiva's Composite Peak Limiter should be enabled and set to maintain desired modulation levels and equivalent loudness when using SSB mode.

Warning

ENABLING THE TEST PATTERN FUNCTION WILL TAKE THE PROGRAM AUDIO OFF-AIR. THE 1 KHZ TONE WILL REMAIN ON-AIR UNTIL IT IS DISABLED.

Warning

SSB MODE IS CURRENTLY NOT AUTHORIZED BY THE FCC. § 73.322 FM STEREOPHONIC SOUND TRANSMISSION STANDARDS SPECIFICALLY REQUIRES THE DOUBLE SIDEBAND, SUPPRESSED-CARRIER SYSTEM. SSB MODE SHOULD NOT BE ENABLED WITHOUT SPECIFIC FCC EXPERIMENTAL AUTHORIZATION FOR SSB-SC.

Warning

USE OF THE SSB MODE CAN CAUSE PEAK MODULATION OVERSHOOTS. USE OF THE COMPOSITE PEAK LIMITER IS REQUIRED FOR SSB-SC OPERATION.

4•5•2•1 Limiter Setup

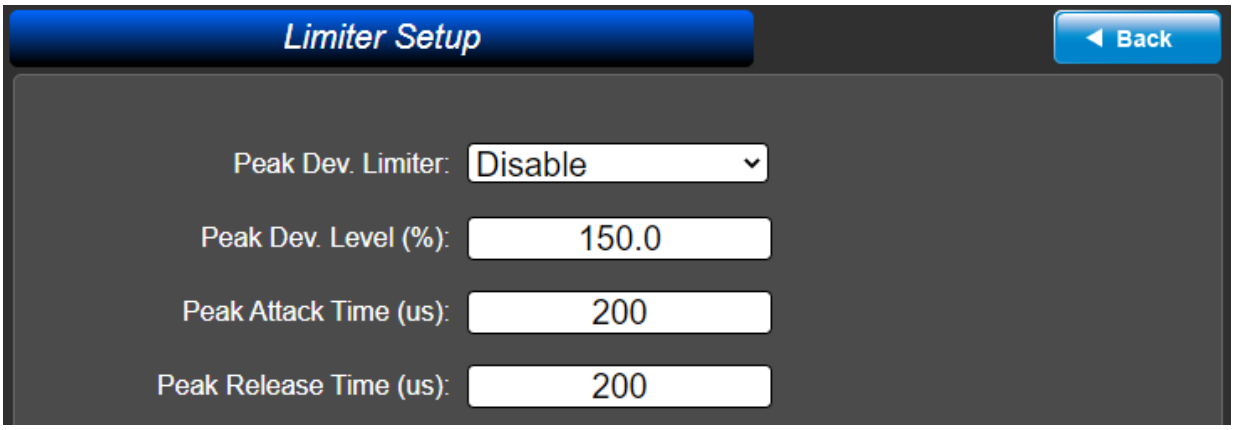


Figure 4-72 Peak Limiter

Table 4-35 Modulation Peak Limiter

Item	Explanation
Peak Dev. Limiter	Select Enable or Disable.
Peak Level(%):	Audio peak level where the limiter takes effect.
Peak Attack Time (us):	Time delay before the limiter starts acting on the composite signal once it has reached the Peak Level setting.
Peak Release Time (us):	How soon the limiter starts to release the signal level back to normal after the level drops below the Peak Level setting.

4•5•2•2 Multiplex Setup

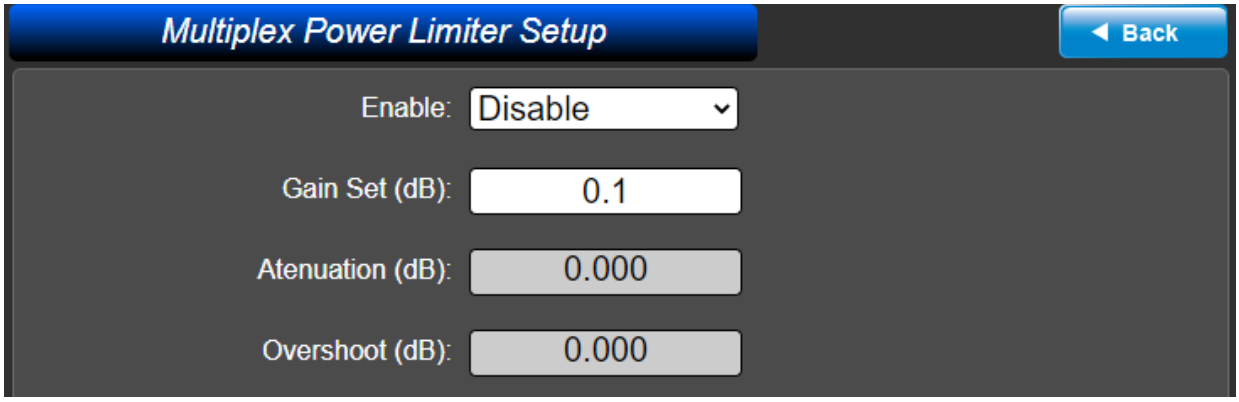


Figure 4-73 Multiplex Power Limiter Setup Screen (ITU-R 412)

Warning

THE MULTIPLEX POWER NEEDS TO BE DISABLED IN MOST CASES.

Table 4-36 MUX Power Limiter Setup

Item	Explanation
Enable:	Enables or Disables the internal Multiplex Power Limiter; Set to DISABLE unless the country of installation requires this standard (ITU-R 412).
Gain Set:	Range -30 to 60.
Attenuation (dB):	Displays current Attenuation applied in order to maintain 40 kHz 1 minute averaged MPX power.
Overshoot (dB):	Displays the current 1 minute average MPX Power relative to the 40 kHz reference.

4•5•2•3 ID Keyer Setup

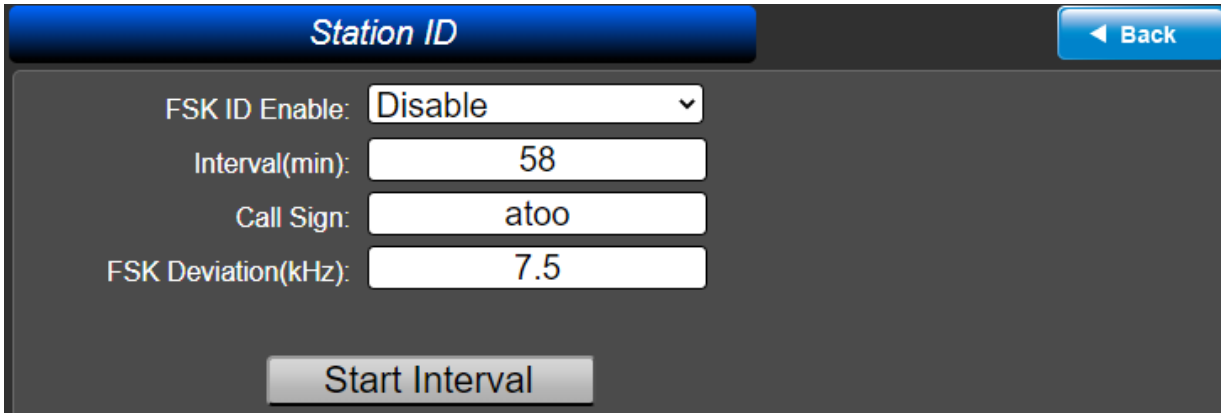


Figure 4-74 Modulation ID Keyer

Note

This screen used for translators ONLY.

Table 4-37 ID Keyer

Item	Explanation
FSK ID Enable	Enables/Disables FSK ID Broadcasting. Once enabled, the ID will be transmitted at the interval programmed.
Interval (min)	Broadcasts ID every 60 minutes (as required by FCC regulations).
Call Sign	Enter translator call sign; FM translator call signs consist of W (if the transmitter location is east of the Mississippi River) or K (if the transmitter location is west of the Mississippi River), the FM channel number, and a two letter suffix (e.g., W285AD or K220AA).
FSK Deviation (kHz)	Range -25 to +25 (excluding -5 to +5).
Start Interval	Press button to transmit FSK ID immediately for testing purposes.

4.5.3 GPS

The GPS screen is available when the GPS Receiver Option is installed in the GX LP.

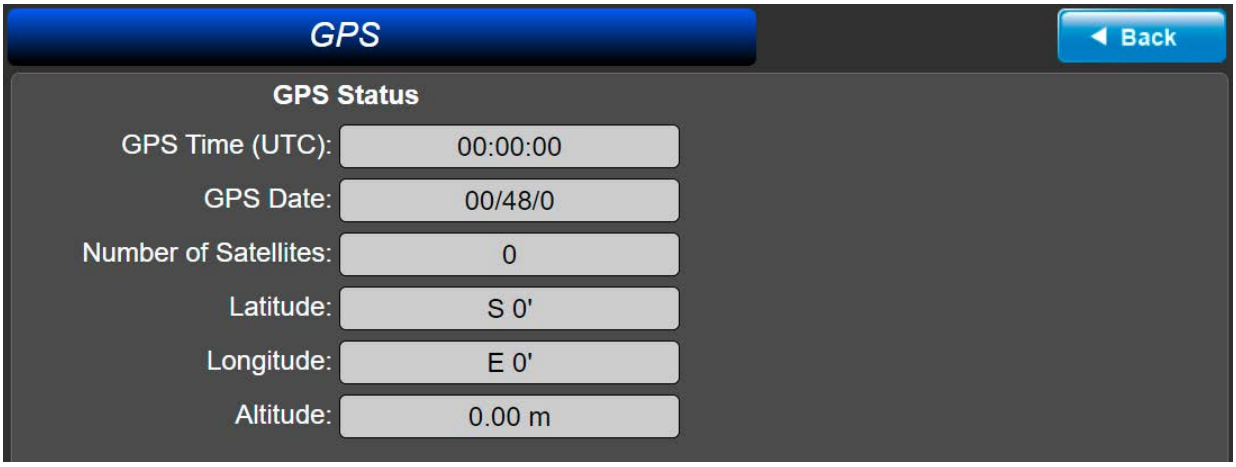


Figure 4-75 Exciter GPS

Table 4-38 Exciter GPS

Item	Explanation
GPS Time (UTC):	Displays the time recovered from the satellite(s); hh:mm:ss in UTC (Coordinated Universal Time).
GPS Date:	Displays the date recovered from the satellite(s).
Number of Satellites:	Indicates the number of satellites currently being received.
Latitude:	Displays the current N/S yy degrees in yy.yy minutes format.
Longitude:	Displays the current W/E yy degrees in yy.yy minutes format.
Altitude:	yyy.yyy meters.

Note

The Fields in the GPS Screen will be GRAYED OUT if the GPS receiver is not installed.

4.5.4 Clock Reference

The Clock Reference screen provides status and setup for external timing reference signals if applied to either the 1PPS or 10 MHz BNC inputs in the rear of the GX.

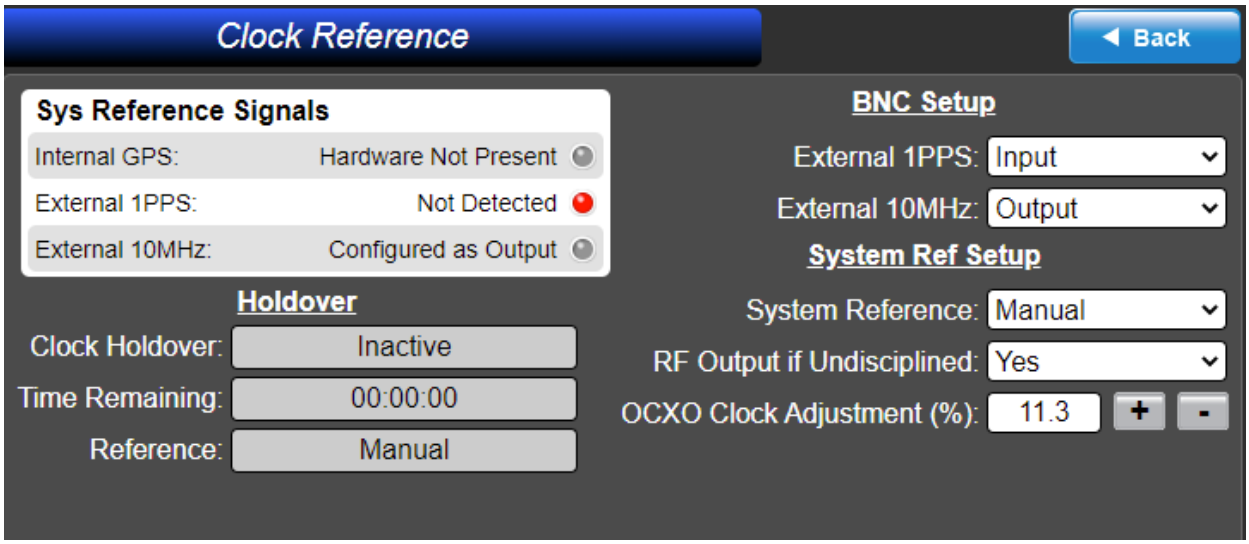


Figure 4-76 Internal Exciter Clock Reference screen

Table 4-39 Exciter Clock Reference

Item	Explanation
Sys Reference Signals	
Internal GPS	Indicates the Internal GPS status - Requires optional internal GPS receiver board, antenna kit and valid feature key to be installed in unit.
External 1PPS	Indicates the transmitter rear panel BNC configuration.
External 10MHz	Indicates the transmitter rear panel BNC configuration.
Holdover	
Clock Holdover	Status of Clock Holdover.
Time Remaining	Indicates the amount of remaining time the oscillator can free-run and still maintain acceptable frequency stability. When this time reaches zero, if in SFN Mode the transmitter will mute according to RF Output Undisciplined setting.
Reference	Select what the clock and frequency of the transmitter will be locked to.
BNC Setup	
External 1PPS	Select; Input, Synth 1PPS Output or GPS 1PPS Output.
External 10MHz	Select Input or Output.

Item	Explanation
	System Ref Setup
System Reference:	**Manual** - Running on internal oscillator. Clock Holdover and RF Output if Undisciplined don't apply. **External 10 MHz** - Requires a 10 MHz at rear panel and BNC Setup must have External 10 MHz set to Input. **External 1 PPS** - Requires a 1 PPS at rear panel and BNC Setup must have External 1 PPS set to Input. **External 10 MHz PLL** - **Internal GPS** - **Auto 1PPS** -
RF output if Undisciplined:	If this field is set to YES, RF will mute when on loss of lock to the selected System Reference. If internal GPS is selected, loss of lock will not occur until holdover has counted down to 0 seconds.
OCXO Clock Adjustment (%):	0 to 100 %, Adjusts the internal 40 MHz OCXO frequency to set the final output frequency 88-108 MHz. Only when System Reference set to Manual.

4•5•4•1 Internal Software / Hardware Mute Status

Internal Software / Hardware Mute Status

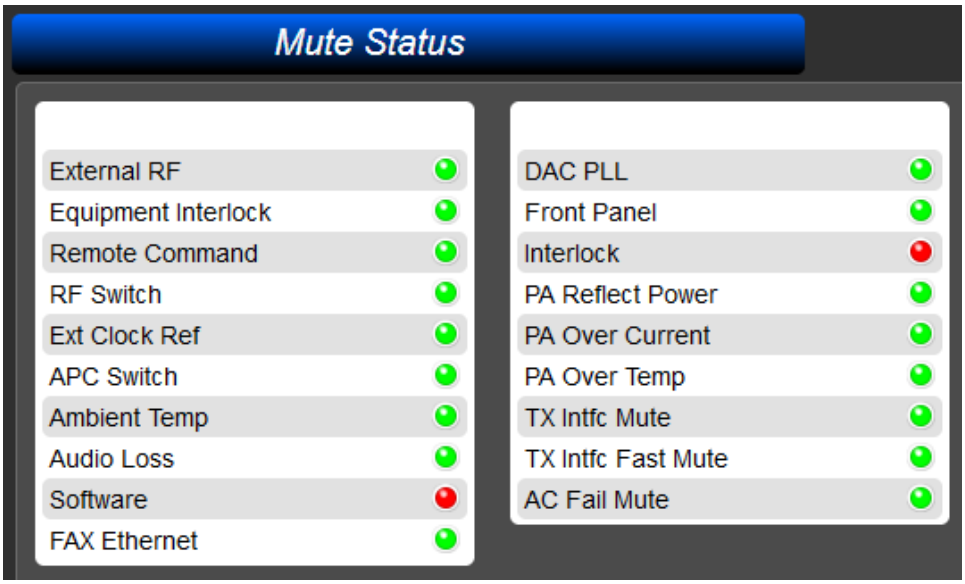


Figure 4-77 Internal Exciter Mute Status

Item	Explanation
Software:	Monitors the Mute Status of the Exciter Software.
Hardware:	Monitors the Mute Status of the Exciter Hardware.

4.6 Exciter PS Button

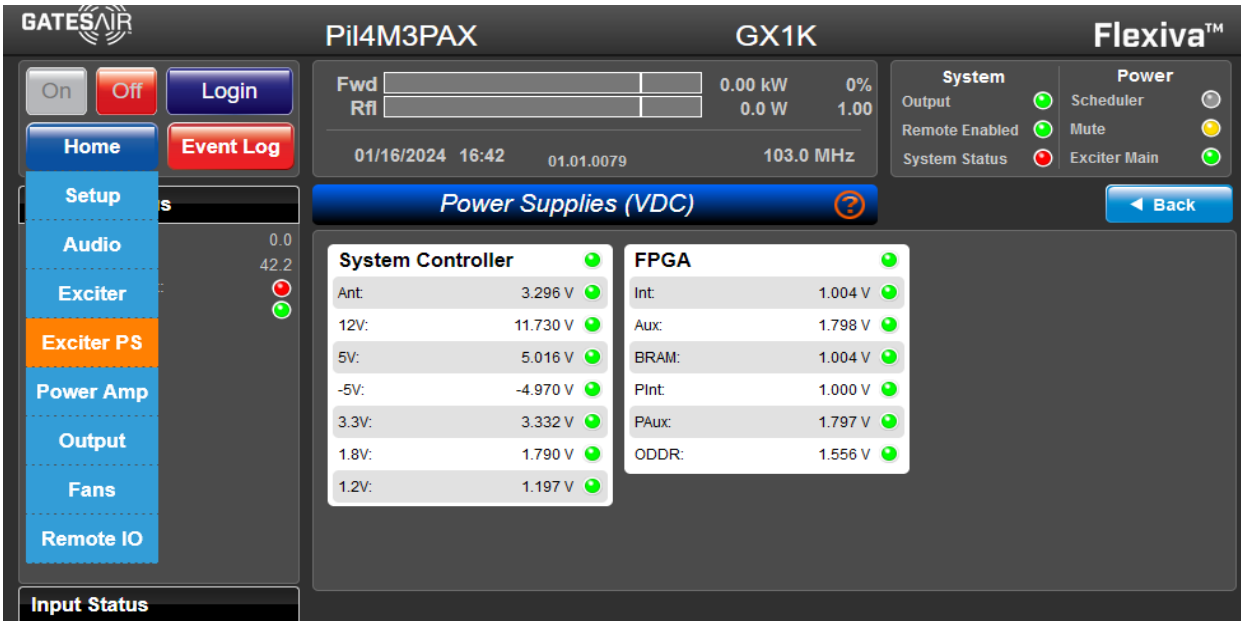


Figure 4-78 Exciter Power Supply Menu

Table 4-40 Internal Exciter Power Supply

Item	Explanation
System Controller	Monitors the critical voltages of the System Controller.
FPGA	Monitors the FPGA Power Supplies.

4.7 Power Amp Button

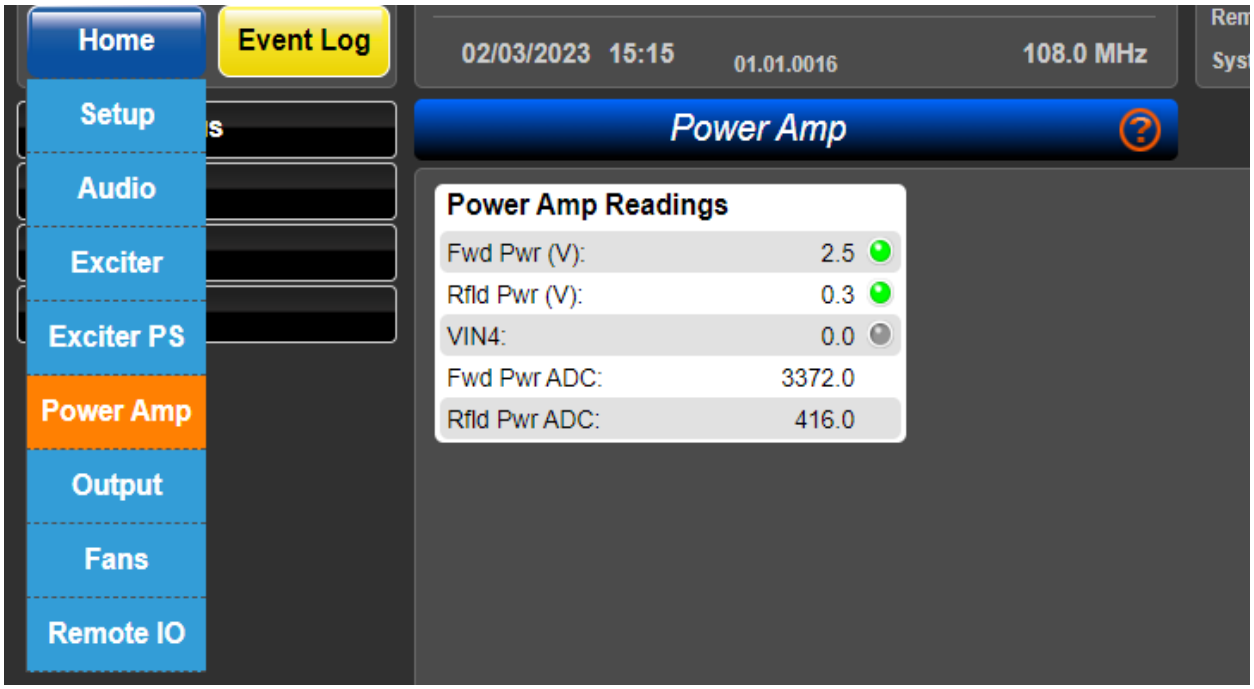


Figure 4-79 Power Amp Screen

The Power Amp screen shows power metering voltages from the directional couplers.

Item	Explanation
Fwd Pwr (V):	Displays the directional coupler forward power sample analog voltage.
Rfld Power (V):	Displays the directional coupler reflected power sample analog voltage.
VIN4:	
Fwd Pwr ADC	Displays the Analog to Digital Converter voltage from the forward sample.
Rfld Pwr ADC	Displays the Analog to Digital Converter voltage from the reflected sample.

4.8 Output Button

The Output screen shows top level summary status of the functional areas in the transmitter.

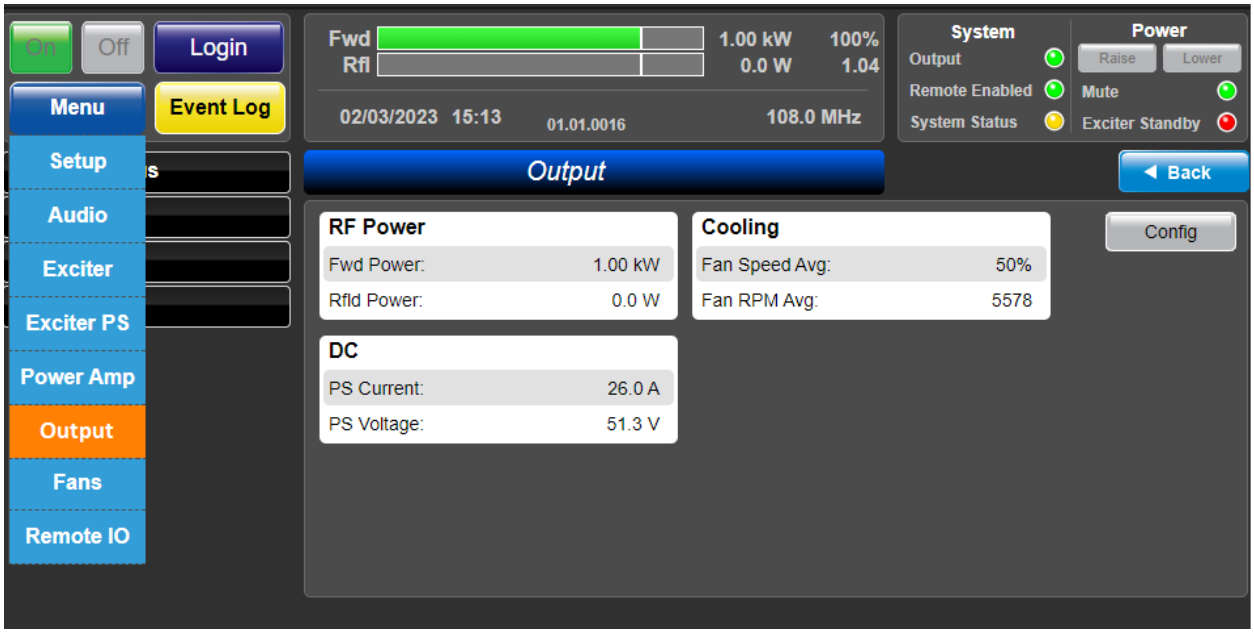


Figure 4-80 Output Button GX1K

- Selecting Menu > Output > PID, opens the following PID Setup Screen.

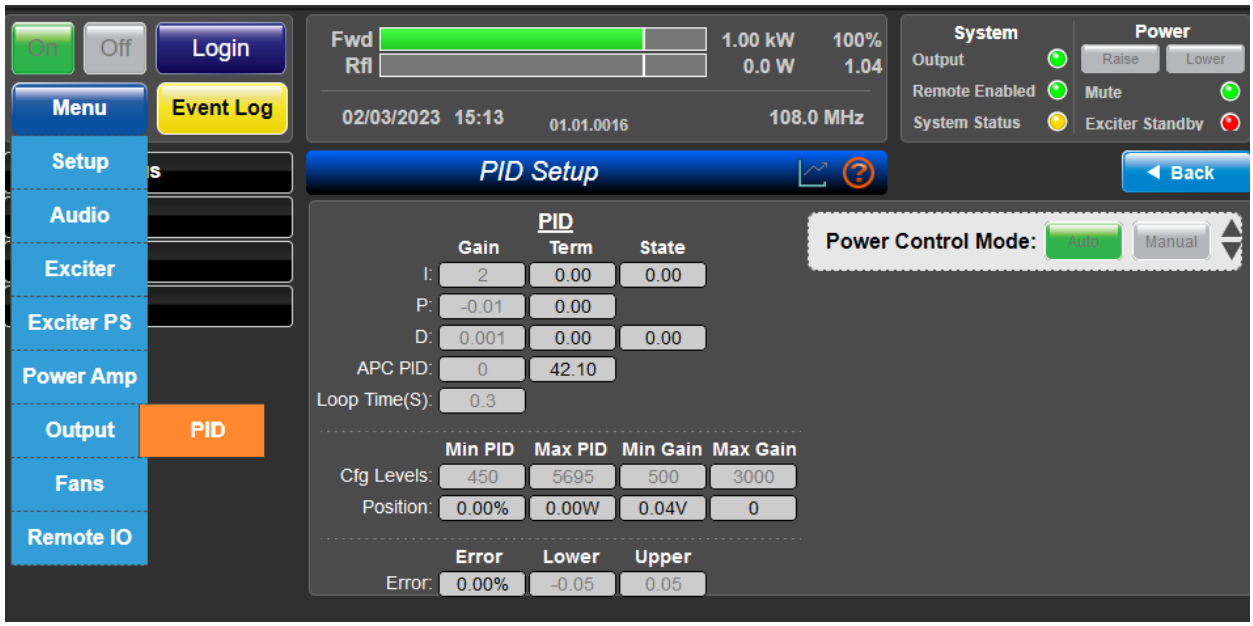


Figure 4-81 PID Button

4•8•0•1 PID Setup Screen

A proportional, integral, derivative controller (PID controller or three-term controller) is a control loop mechanism employing feedback that is widely used in industrial control systems and a variety of other applications requiring continuously modulated control. A PID controller continuously calculates an error value as the difference between a desired setpoint and a measured process variable and applies a correction based on proportional, integral, and derivative terms (denoted P, I, and D respectively), hence the name

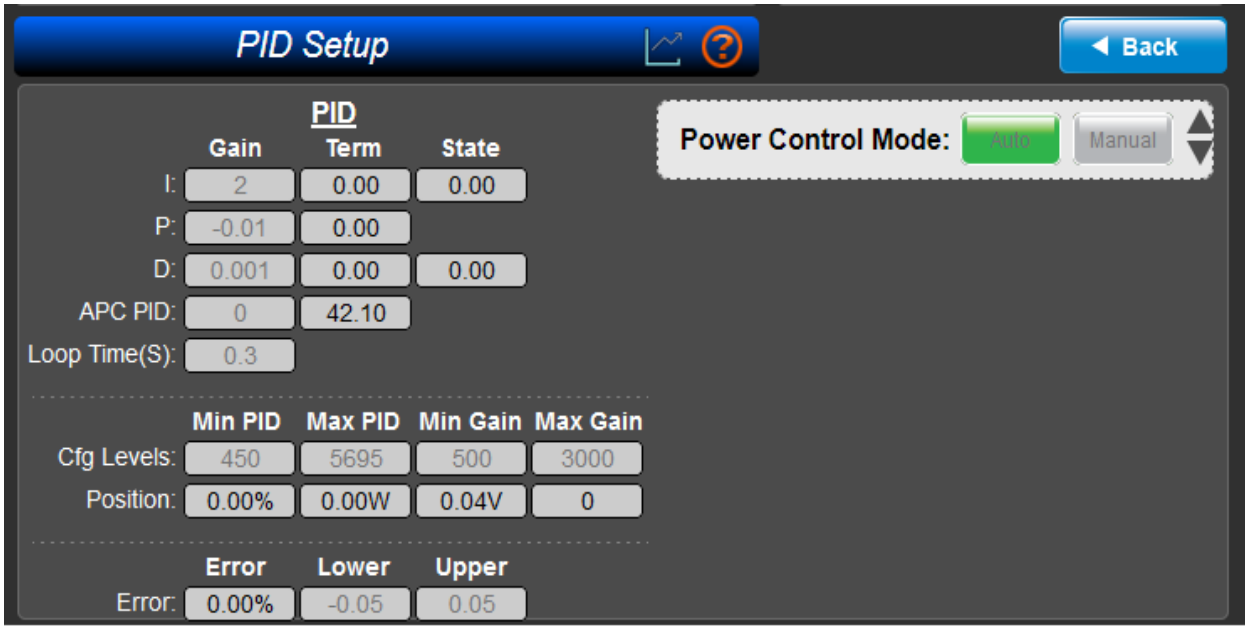


Figure 4-82 Output Configuration / Setup

Table 4-41 Output PID

Item	Explanation
iGain:	Display only.
pGain:	Display only.
dGain:	Display only.
Power Control Mode	
Auto	PID is in Automatic Mode where it monitors the Forward Power and tries to maintain that power level by adjusting Preamp Pallet Bias and PA VDC. Manual Mode is used for debugging.