



GW3-TRBO®
Channel
Software Version 2.12
Module Book

GW3-TRBO®

600-2.12.0-I.1
2/22/2016

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Refer to the *Troubleshooting & Support* section of the GW3-TRBO Manual Shell (Book 600-2.12.0-AA.1) for complete support and contact information.

Document History

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2.0.6	Added System Map View	REB
2.0.6	Updated Figures 2.7, 2.11, 2.13, 2.15, 2.16, 2.17 and 2.20.	REB
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2.0.6	Updated Figures 1.1, 2.6, 2.8, 2.10, System Header, Zone Header, Site Header	CLB
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2.7	Updated Various Screen Shots	CWF
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2.8	Revisions Before Release	ATG
2.8	Added Controller peer type to description of System Map.	REB
2.9	Revisions Before Release	REB
2.9	Removed obsolete note about Offline channels.	REB
2.10	Added MNIS to list of peer types and updated Slot Type description in the System Map section.	REB
2.10	Revisions Before Release	REB
2.10	Added Virtual Peer and Application peer types to System Map.	REB
2.10	Removed Controller peer type due to changes in R2.3 firmware.	REB
2.11	Converted to Docx format	CWF
2.11	Added description of new System Map customization features.	REB
2.12	Revisions Before Release	JAW
2.12	Added Reject Reason Information section.	REB

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Goals

This manual describes the role and function of the Channel module and Graphical User Interface (GUI) in the GW3-TRBO solution.

Who Should Read This Manual?



This manual is written for an intended audience of novice to mid-level MOTOTRBO system users and novice to mid-level PC users.

How This Manual Is Organized

This manual is organized as follows:

- **Overview:** Defines the Channel GUI and the organization of the channel information.
- **Using Channel:** provides instructions on reading the Channel data and setting up the GUI to satisfy your viewing needs.

This manual contains the following images, used to indicate that a segment of text requires special attention:

-  **Additional Information:** Additional information is used to indicate shortcuts or tips.
-  **Warning:** Warnings are used to indicate possible problem areas, such as a risk of data loss, or incorrect/unexpected functionality.

Important Note

The MOTOTRBO “backbone” that GW3-TRBO uses is a powerful stream of data that, as time goes by, will be revealing much more of its power. You may notice GW3-TRBO terms, setup options or real-time activity properties that may not make sense in the current MOTOTRBO world. If you see terms, options or properties that are not adequately explained in your GW3-TRBO documentation, please contact support, look in the Glossary section of the GW3-TRBO Manual Shell, or on our GW3-TRBO web site. If you see terms, options or properties that you understand, but do not pertain to MOTOTRBO, please disregard them for the time being. As new MOTOTRBO features are added over time, you will begin to understand that your GW3-TRBO is ready for those MOTOTRBO enhancements!

This chapter defines the Channel GUI and the organization of the channel information.

This chapter contains the following sections:

- **What is Channel?:** Defines the Channel GUI.

What is Channel?

The Channel GUI displays real-time, decoded channel activity, diagnostics and busies. The Channel GUI displays activity for each channel on individual virtual repeater channel blocks. The diagnostics and busies are shown in their own respective lists on the left side of the GUI.



This GUI's information is volatile. This means that if you close this GUI, Channel will not save the information in the Diagnostics and Busies lists or any information in the channel monitors.



Channel resources, such as systems, zones, sites and channels, reflect the changes made to these resources in the Alias module. For example, if you change a site's alias in Alias, Channel will reflect this change. These changes may take up to 30 seconds to take effect in the Channel GUI.

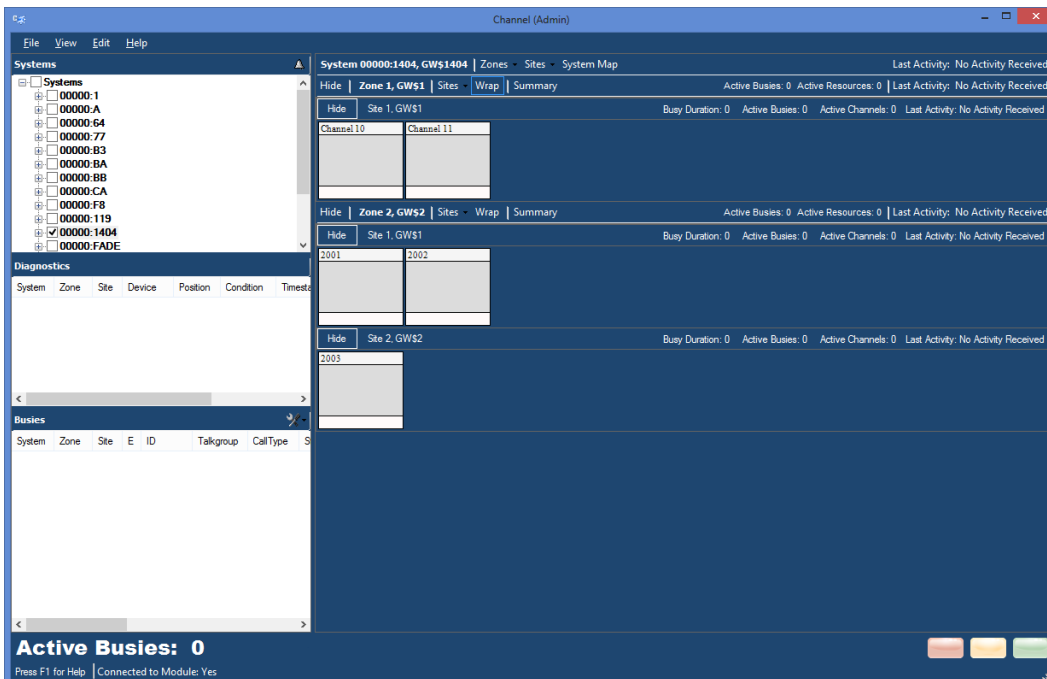


Figure 1.1 – Channel GUI

This chapter provides instructions on understanding the Channel data and setting up the GUI to satisfy your viewing needs.

This chapter contains the following sections:

- **Positioning Channels:** Describes how to position channels within a site.
- **Understanding Channel Status Data:** Describes each type of data displayed in the Channel GUI.
- **System Activity View:** Describes each section of the real-time system, zone, site and channel-based display.

Positioning Channels



This section references setup processes in the Alias GUI. Please refer to document *GW3-TRBO Alias* Module Book for instructions on using the Alias GUI.

The Channel GUI will only show activity on channels that exist in the Alias module.

The screenshot shows a configuration window titled "Site Options" with a dark blue background. It contains the following fields and controls:

- Site ID: 2
- Channel Key Type: A dropdown menu with "Frequency" selected.
- Alias: A text input field containing "GW\$2".
- A checkbox labeled "Dynamically Add Channels" which is checked.

Figure 2.1 – Dynamically Add Channels Option in Alias Configuration

By default the channels in the Channel GUI will display in order of the channel's key type; frequency or position. The channel's key type is determined by the Channel Key Type of the channel's site.

The Use Channel Aliases in Header option in the Channel GUI allows you to choose to sort these channels by the channel's alias instead (see the **Channel Options** section of this document for more details).

Three common patterns you can use to optimally display channels in the Channel GUI are:

- **Position based:** On a system with 11 channels, the primary control channel could be assigned alias 01 and the least active dispatch activity channel could be assigned alias 11. The first position needs to have a leading zero because alias sorting would put 11 before 2.
- **Frequency based:** To sort by frequency set the alias to the frequency number of each channel. Frequencies are generally the same length and will not have to be padded with zero values.
- **Position and Frequency based:** To sort by Position and frequency set the alias in the following format xx yyyyyyyyyy where xx is the position and yyyyyyyyyy is the frequency.

Understanding Channel Status Data

The Channel GUI displays a vast amount of information. This information is organized and displayed in the following areas:

- **Information Pane:** Shows the currently selected system and any diagnostics and busies.
- **Activity Panel:** Shows site-based channel blocks when a site is checked in the **Systems** panel.

Information Pane

The *Information Pane* contains multiple panels that may be resized or collapsed as desired. In addition to these panels, the *Information Pane* also contains the **Sounds** button.

- **Systems Panel:** Shows each system, zone and site that currently exists in the Alias database.
- **Diagnostics:** Show real-time diagnostic information here as it is received.
- **Busies Panel:** Shows real-time busy activity as it occurs.

Systems Panel Data

The **Systems Panel** (Figure 2.2) shows the tree of known system resources which pertain to the channel hierarchy. In this hierarchy:

- Zones exist under systems
- Sites exist under zones
- Channels exist under sites

This tree view structure displays this hierarchy down to the site level. To display channels on an existing site, check the box next to the site in the **Systems Panel**'s resource tree. To view this activity at the zone level, check the box next to a zone.

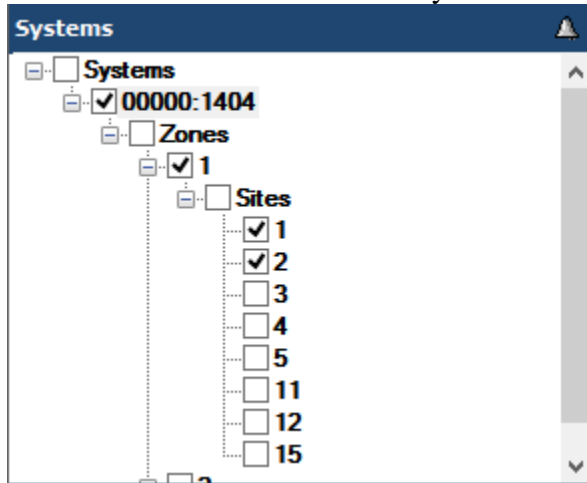


Figure 2.2 – Systems Panel Resource Tree



The check boxes beside the parent structures in the tree view for Zones and Sites can be checked or unchecked to select all of the sub items (Zones and Sites). The checkbox next to “Systems” is used to expand or collapse all sub items (Systems, Zones and Sites). The checkbox next to the system (WACN:System) is used to select the system you wish to view in the **Activity Panel**.

Reject Reason Information

The **Radio Rejects** button ([Radio Rejects](#)) is located toward the middle-left of the Channel GUI. Click this button to show radio rejects on this section of the screen (Figure 2.3). The reject reasons list shows each reject reason that has appeared on the control channel since the Channel GUI was opened. Each reject reason in the list contains the following information:

- **System:** The WACN and system on which the rejection occurred.
- **Zone:** The zone on which the rejection occurred.
- **Site:** The site on which the rejection occurred.
- **Talkgroup:** The talkgroup on which the rejection occurred.
- **ID:** The ID that was rejected.
- **Reason:** The reported reason the rejection occurred.
- **Rejectee:** Identifies what was rejected.
- **Timestamp:** The last date and time the rejection occurred.
- **Count:** The number of times this rejection has occurred.

Radio Rejects								Diagnostics	
System	Zone	Site	Talkgroup	ID	Reason	Rejectee	Timestamp	Count	
00000:1	1			212	Talkgroup Not Authorized	GROUP	12/8/2015 11:24:04	1	

Figure 2.3 – Radio Rejects List

Right-clicking on the **Radio Rejects Panel** will cause a context menu to be shown, with options to print the rejects or clear selected rejects.

Diagnostics Panel Data

The **Diagnostics** list shows each diagnostic that has been issued by a controller or repeater since the Channel GUI was opened. New diagnostics will be displayed with red text until they are cleared. Each diagnostic in the list contains the following information:

- **System:** The System on which the diagnostic occurred.
- **Zone:** The Zone on which the diagnostic occurred.
- **Site:** The Site on which the diagnostic occurred.
- **Device:** The type of diagnostic. All repeaters can issue the diagnostics listed below. The MTR3000 model repeater can report additional alarm types.
 - **RxFail:** Receiver failure
 - **TxFail:** Transmitter failure
 - **FanFail:** Fan failure
 - **Overheat:** The repeater reports it is overheating
 - **PowerFail:** Transmitter power out
 - **FCC Signal Interference:** Interference reported on timeslot
- **Position:** The channel number on which an error occurred.
- **Condition:** The condition of the reported device.
- **Timestamp:** The date and time this diagnostic was received.
- **Hardware:** Equipment from which the diagnostic was reported (*Repeater #* for a repeater-based diagnostic or *Channel* for a timeslot-based error).
- **Count:** The number of times this diagnostic packet was received.

Diagnostics								Radio Rejects	
System	Zone	Site	Device	Position	Condition	Timestamp	Hardware	Count	
00000:FADE	1	15	PowerOutFail	1	Malfuncti...	12/8/2015 11:30:47	Peer 15	1	

Figure 2.4 – Diagnostics List

Right-clicking on the **Diagnostics Panel** will cause a context menu to be shown with the following options:

- **Print Diagnostics:** Prints diagnostics.
- **Clear Selected Diagnostics:** Clear the selected diagnostics in GW3-TRBO. This option is available only for controller alarms because the controller does not report when they end. This will not affect the alarm state of the controller.
- **Purge Selected Diagnostics:** Removes the selected diagnostics from the panel.



Repeater diagnostic information is available only for MOTOTRBO repeaters using the R1.06.00 and later firmware. If you are using earlier firmware, you will not receive repeater-sourced diagnostics.

Busies Panel Data

Busy packets are displayed in the **Busies Panel** (Figure 2.5) as they are received over the data stream. The following information is shown for each received packet:

- **System:** System on which the busy occurred.
- **Zone:** Zone on which the busy occurred.
- **Site:** Site on which the busy occurred
- **E:** This column contains a flag indicating if the call was an emergency. If this was an emergency busy, this value will be 1. Otherwise, it will be 0.
- **ID:** Radio ID that initiated the busy call.
- **Talkgroup:** Group, if any, on which the busy call took place.
- **Call Type:** Call type of the busy call. This can be one of the following:
 - Group
 - Private
 - Radio Data
- **Start Time:** Date and time the busy started.
- **End Time:** Date and time the busy ended.
- **Elapsed Time (ms):** Duration of the busy.
- **Coded:** Flag indicating if the call was coded.
- **Digital:** Flag indicating if the call was digital.
- **Multigroup:** Flag indicating if the call was a multigroup call.
- **Multiselect:** Flag indicating if the call was multiselect.
- **System Wide:** Flag indicating if the call was system wide.

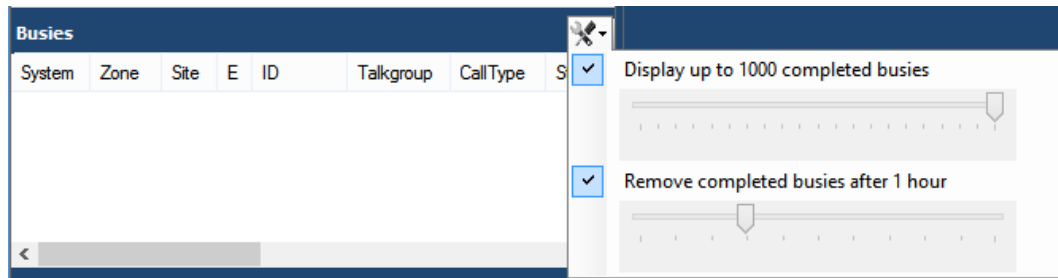


Figure 2.5 – Channel Busies Panel and Options Menu

Busies are shown in the **Busies Panel** only if the Alias module is aware of the system, zone and site on which the busy is occurring. For example, if a zone is not listed in the resource tree in Alias, busies occurring in that zone will not be listed in Channel. See the Alias manual book for information on how to enable the dynamic adding of zones and sites. The dynamic adding of resources will allow all busies for the currently selected system to be listed in Channel.

While a busy is in the system’s busy queue, it will show as a red entry in the list. Once the entry leaves the queue, it will show as black. The **Active Busies** at the bottom of Channel will be shown in red when there are active busies and black otherwise.

The **Busies Panel** can contain a maximum of 1000 active and completed busy entries. The number of completed busies displayed can be reduced with the slider in the **Busy Panel Options Menu**. Reducing the slider to the minimum value will remove all completed busies and only show active busies.

When the busy list is at maximum capacity, the oldest entries are removed as new busies occur. Busies can also be removed manually or automatically (based on time) by checking the **Remove Busies** option in the **Busy Panel Options Menu** (Figure 2.5). When this feature is enabled, busies will be automatically removed from the busy list after the duration specified by the slider.

Right-clicking on the **Busies Panel** will cause a context menu to be shown, with options to print the busies or clear selected busies.

Color Legend

The **Color Legend** window (Figure 2.6) shows the current color settings as configured via the **Edit→Colors** Menu discussed later in this document. This window is accessed from the View menu.

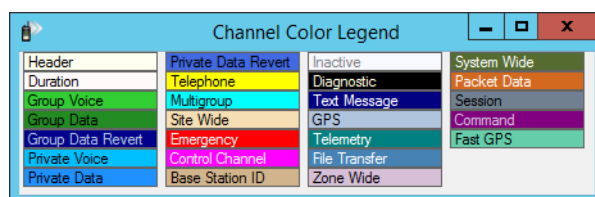


Figure 2.6 – Color Legend

Sounds Button

Click this button to toggle sounds on or off as desired (Figure 2.7).

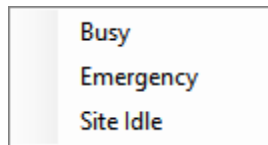


Figure 2.7 – Sound Options

Currently there are three available sounds:

- **Busy:** Plays whenever a busy call occurs.
- **Emergency:** Plays whenever an emergency call occurs.
- **Site Idle:** Plays whenever a site has not had activity for longer than the number of seconds that is set as its idle interval.

Menus

View

- **Information Pane:** Toggle visibility of the **Information Pane** on the left side of the Channel GUI.
- **Use Alias Colors:** Channel activity information displayed within each channel can be shown using the colors selected in the Alias GUI for radio IDs and talkgroups, as shown in Figure 2.8
- **Color Legend:** Toggle visibility of the **Color Legend** window.

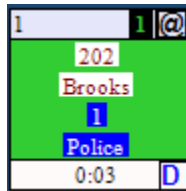


Figure 2.8 – Channel activity shown with the colors specified in Alias.

Edit

- **Global Site Idle Interval:** Determines how long the Channel GUI should wait to provide a visual indication that a site is idle (no activity has occurred for x amount of time) for all sites within all visible systems
- **Enhancements:** Customizes or optimizes the behavior and appearance of channels. These options can be checked (enabled) or unchecked (disabled) and are global preferences, saved per user session.
 - **Variable Channel Heights:** Allows channel blocks to vary in height based on the call information the user has selected to be shown.
- **Options:** Displays the **Channel Options** screen. See the next section for more information.
- **Colors:** Allows for modification of the foreground and background colors of each activity type (Figure 2.9).



Figure 2.9 – Channel Color Configuration

Help

- **Show Help:** Displays the Help document for Channel.
- **About:** Displays information about Channel.

Channel Options

Options are used to further customize how Channel is used. The *Channel Options* window can be accessed by navigating to **Edit → Options**.

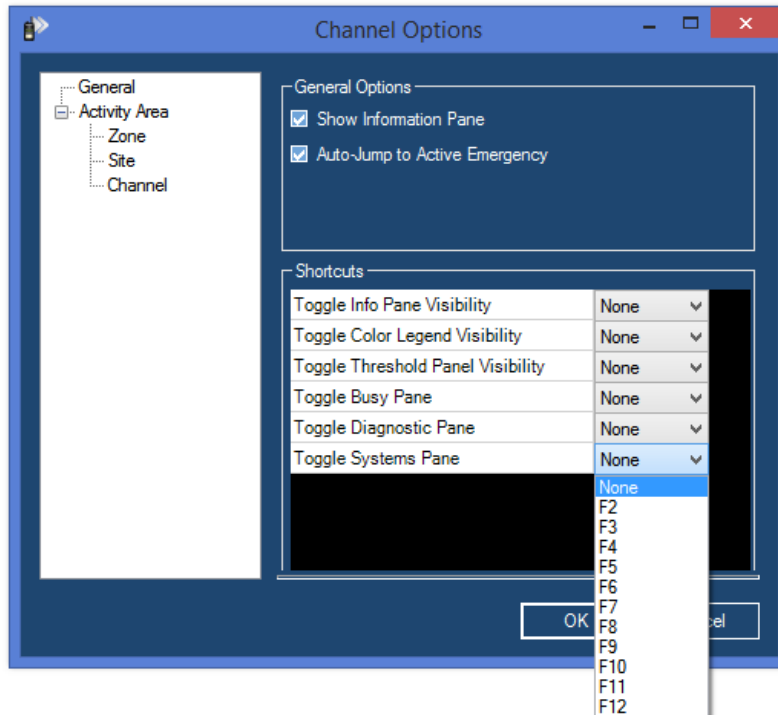


Figure 2.10 – General Options

There are several different sections in the *Channel Options* window that can be accessed by clicking on the appropriate section on the left side of the window. The first section that shows up is the **General** options section. The following options are available here:

- **General Options:** Visibility options that apply to the Channel GUI.
 - **Show Information Pane:** Toggle visibility of the **Information Pane** on the left side of the Channel GUI.
 - **Auto-Jump to Active Emergency:** Toggle feature for Channel to jump to the site on the current system that has an active emergency.
- **Shortcuts:** Allows you to assign an option that can be toggled to a function key. (The function keys are the F1-F12 keys that are at the top of the keyboard)
 - **Toggle Info Pane Visibility:** Toggles the **Show Information Pane** option with the designated key.
 - **Toggle Color Legend Visibility:** Toggles the visibility of the **Color Legend** window with the designated key.

- **Toggle Threshold Panel Visibility:** Toggles the visibility of the **Threshold Panel** with the designated key. (The **Threshold Panel** is the pop-up window in the bottom right corner with the flashing red, amber, and green lights)
- **Toggle Busy Pane:** Toggles the visibility of the **Busy Pane** near the bottom of the **Information Pane**.
- **Toggle Diagnostic Pane:** Toggles the visibility of the **Diagnostics Pane** in the **Information Pane**.
- **Toggle Systems Pane:** Toggles the visibility of the **Systems Pane** in the **Information Pane**.

The second section of options is the **Activity Area**. The **Activity Area** is the main portion of the GUI that contains the System, Zone, Site, and individual Channel information. There are individual sections that allow for modification of options that apply specifically to these sub-sections of the **Activity Area**. The **Activity Area** has the following options:

- **Variable Channel Heights:** Allows channel blocks to vary in height based on the call information the user has selected to be shown.

Zone Options:

- **Show Zone id/alias label:** Show the id/alias label of each zone in the **Zone Header**.
- **Show active resource count:** Show the number of active resources present in the Zone in the **Zone Header**.
- **Show active busy count:** Show the count of active busies occurring within this Zone in the **Zone Header**.
- **Show last activity timestamp:** Show the timestamp of the last call activity that occurred within this Zone in the **Zone Header**.

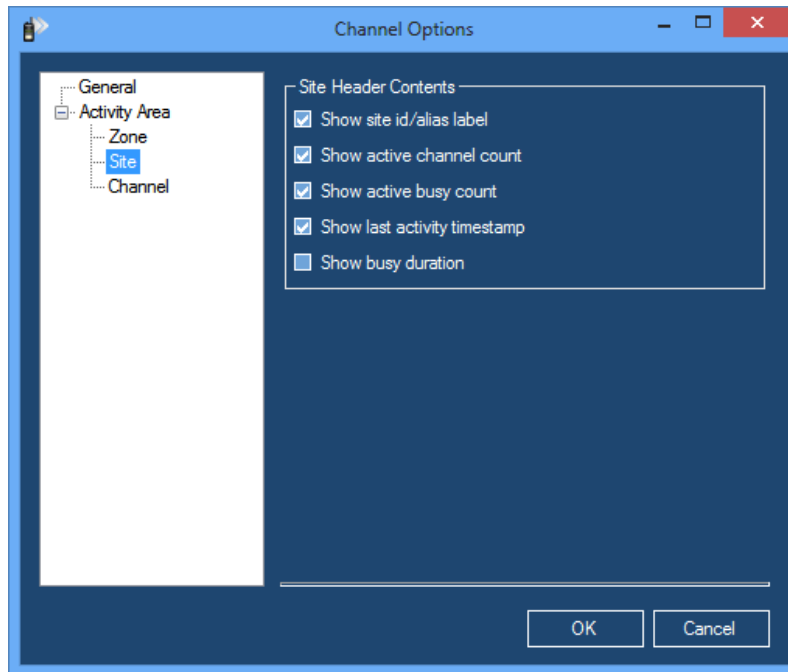


Figure 2.11 – Site Options

Site Options:

- **Show site id/alias label:** Show the id/alias label of each site in the **Site Header**.
- **Show active channel count:** Show the number of active channels present in the Site in the **Site Header**.
- **Show active busy count:** Show the number of active busies present in the site in the **Site Header**.
- **Show last activity timestamp:** Show the timestamp of the last call activity that occurred within the Site in the **Site Header**.
- **Show busy duration:** Show the duration of busies that occurred within the Site in the **Site Header**.

Channel Options:

- **Use colors from Alias:** Use the colors that are defined in the Alias module in the presentation of channels.
- **Use channel alias in header:** Displays the alias for the channel instead of the channel number or frequency. This will cause channels to be sorted by their alias.

System Activity View

To show the *System Activity View*, check the box next to a system, zone or site in the **Systems** panel. This will open the *System Activity View* for the system associated with the system, zone or site you checked. The *System Activity View* is made of the following parts:

System Header

The *System Header* (Figure 2.12) shows the following system-level information:

- **WACN:System ID:** WACN and SystemID.
- **System Alias:** Alias of the system.
- **Zones:** Adjust settings for all zones in the system.
- **Sites:** Adjust settings for all sites in the system.
- **System Map:** Launches the *System Map View* window.
- **Last Activity:** Date and time of the last call activity received by the system.



Figure 2.12 – System Header

Zones Menu

The **Zones Menu** on the *System Header* contains the following options:

- **View:** Allows selection of the summary/detail and wrapped/unwrapped options for all zones within the system.

Sites Menu

The **Sites Menu** on the *System Header* contains the following options:

- **Hide All:** Hide all channel displays of all sites within the system.
- **Show All:** Show all channel displays of all sites within the system.
- **Sort:** Allows for ascending or descending sorting of sites by Number or Alias.
- **Font:** Allows for modification of the font used throughout the system.
- **Call Info:** Allows for selection of information to display about activity in all channels within the system.
- **Width:** Allows for modification of all channel widths within the system.
- **Idle Timer:** Allows for setting the idle interval of all sites within the system.



The following options on the **Sites Menu** may be disabled when conflicting settings are detected in one or more zones within a system: **Hide All**, **Show All**, **Font**, **Call Info**. Changing the summary view settings on one or more zones may allow use of these options on the *System Header*.

Zone Header

The *Zone Header* (Figure 2.13) shows the following zone-level information:

- **Hide/Show:** Allows the *Zone Activity Area* under the *Zone Header* to be hidden or shown.
- **Zone ID:** ID of the zone.
- **Zone Alias:** Alias of the zone.
- **Sites:** Site-based options menu.
- **Wrap**
 - **On:** Channels/Sites are shown using as many rows as necessary to avoid the use of horizontal scrollbars.
 - **Off:** Channels/Sites are shown on a single row with horizontal scrollbars used as needed.
- **Summary**
 - **On:** Summarizes all channels in all sites under a zone by showing channels (without call info) on sites with an adjustable width.
 - **Off:** Shows all channels (with the selected call info) on sites which span the entire width of the *Zone Activity Area*.
- **Active Busies:** Number of active busies in this zone. Each site on which a radio is busy will be counted toward this total. For IP Site Connect, Capacity Plus or Linked Capacity Plus connections, this number will be the count of sites affected by an All Trunks Busy (ATB) condition.
- **Active Resources:** Number of active resources in this zone.
- **Last Activity:** Date and time of the last call activity received by this zone.

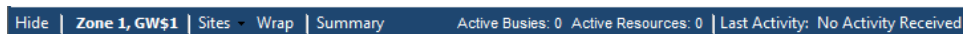


Figure 2.13 – Zone Header

Sites Menu

The **Sites Menu** on the *Zone Header* contains the following options:

- **Hide All:** Hide all channel displays of all sites within this zone.
- **Show All:** Show all channel displays of all sites within this zone.
- **Sort:** Allows for ascending or descending sorting of sites by Number or Alias.
- **Font:** Allows for modification of the font used on channels within this zone.
- **Call Info:** Allows for selection of what information to display about activity in all channels within this zone.
- **Width:** Allows for modification of all channel widths within the zone.
- **Idle Timer:** Allows for setting the idle interval of all sites within this zone.



The following options on the **Sites** Menu may be disabled based on the currently selected view settings: **Hide All**, **Show All**, **Font**, **Call Info**. Changing the summary view settings may allow use of these options on the *Zone Header*.

Site Header

The *Site Header* shows the following site-level information:

- **Hide/Show:** Allows the *Channel Activity Area* under the *Site Header* to be hidden (minimized) or shown (maximized).
- **Site ID:** ID of the site.
- **Site Alias:** Alias of the site.
- **Busy Duration:** Length of time a busy has been active.
- **Active Busies:** Number of active busies or ATBs on this site.
- **Active Resources:** Number of active resources in this site.
- **Last Activity:** Date and time of the last call activity received by this site.

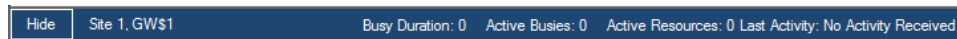


Figure 2.14 – Site Header

Statistics

Right-clicking on a channel, site or zone will cause a context menu to be shown, with an option of viewing statistics for completed calls. The *QUICK Statistics* window (Figure 2.15) cannot be refreshed and does not update itself as activity is received. It displays a snapshot of known statistics for the moment it was opened.

Notes about statistics:

- Multisite calls count as a resource on each site involved. For example, a call that involves two sites in a zone will count as two resources in that zone. Zone level statistics display resource counts to more accurately reflect this information.
- Calls with elapsed times of zero will be counted as Calls/Resources on the Summary tab, but will not appear on the Details tab.
- For a Connect Plus or TRBO ATIA input, the duration of a call is the time used by the entire session.

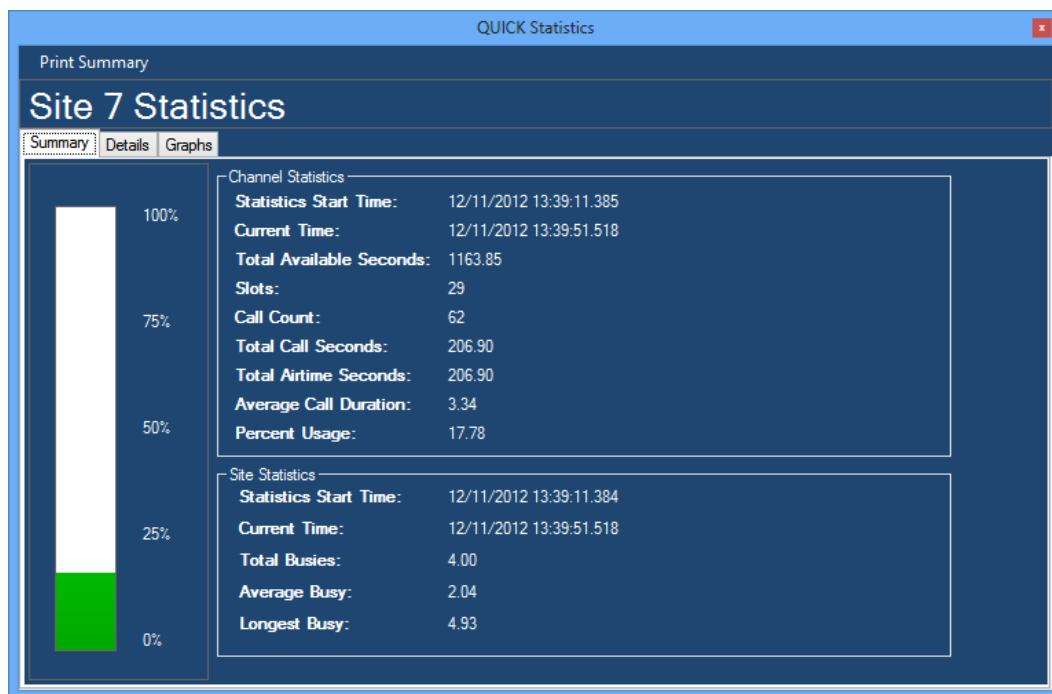


Figure 2.15 – QUICK Statistics Window

The *QUICK Statistics* window is divided into the following three tabs:

- **Summary:** Gives a high-level view of some commonly requested statistics at the channel and site level. Channels are added to statistics when the Channel module is notified of their existence.
 - Channel statistics
 - **Statistics Start Time** – The start time of the statistics for this channel.

- **Current Time** – The time that the statistics were requested.
- **Total Available Seconds** – Length of time the channel has been known multiplied by the slot count. For Site and Zone statistics, this will be the time since the first channel was known. Thus, if all four slots have been used on a MOTOTRBO system with two repeaters, a 15-second interval would display 60 available seconds.



For statistics at the channel level, this value will not account for how much time this channel's slots spent as the control channel. This will also affect the Percent Usage statistic described below.

- **Slots** – Number of slots. The control slot for a Connect Plus or TRBO ATIA site will be subtracted from this count if the site has generated a *Current Control Channel* packet since the GW3-TRBO service started.
 - **Call/Resource Count** – Number of calls/resources.
 - **Total Call Seconds** – Total duration of all calls.
 - **Total Airtime Seconds** – Sum of the resource times used by all calls. A call's resource time is the duration of the call multiplied by the number of slots used.
 - **Average Call Duration** – Average length of a call.
 - **Percent Usage** – Percent of time the channel or channels have been in use since they were known. Calculated by dividing Total Airtime by Total Available Seconds.
- Site statistics
 - **Statistics Start Time** – The start time of the statistics for this site.
 - **Current Time** – The time that the statistics were requested.
 - **Total Busies/Total Busy Resources** – Number of busies or busy resources.
 - **Average Busy** – Average length of a busy.
 - **Longest Busy** – Longest busy recorded.
 - **Details:** Shows a list of the previously mentioned statistics where values for each are logged every five minutes the GW3-TRBO service is running. Call/Resource counts reflect the number of calls that were active in that interval. If a single call spans two intervals, it will count as one call in each.
 - **Graphs:** Shows a graph of the previously mentioned statistics, charted over time, in five minute increments.

When opened at the site level, values found in the **Channel Statistics** section on the **Summary** tab represent the combined statistics for all channels within the site and values found in the **Site Statistics** section represent the statistics for the site.

When opened at the zone level, values found in the **Channel Statistics** section on the **Summary** tab represent the combined statistics for all channels within all sites within the zone and values found in the **Site Statistics** section represent the combined statistics for all sites within the zone. These statistics are only gathered while the GW3-TRBO service is running. All accumulated statistics are lost and cannot be recovered if the service is restarted.

Site Idle Interval

The site idle interval determines how long the Channel GUI should wait to provide a visual indication that a site is idle (no activity has occurred for x amount of time).

Site idle intervals can be set at the following levels in the hierarchy:

- **Global:** All sites within all visible systems.
- **System:** All sites within the currently selected system.
- **Zone:** All sites within the currently selected zone.
- **Site:** The currently selected site.

The global site idle interval can be set under the *Main Menu* by navigating to **Edit** → **Global Site Idle Interval**.

Right-clicking on a system, zone, or site shown on the right in Channel will provide an option for setting the system-wide, zone-wide or site-specific site idle interval, respectively, as shown in Figure 2.16.

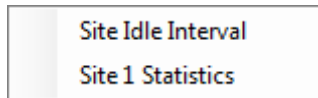


Figure 2.16 – Site Idle Interval option

The desired interval can then be entered into the *Idle Interval* window, shown in Figure 2.17.

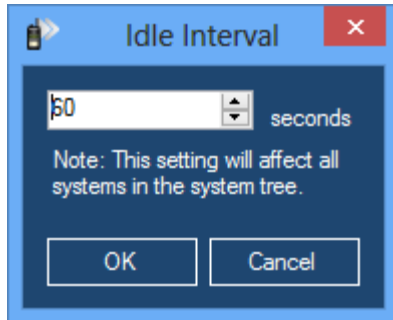


Figure 2.17 – Idle Interval Window

A site's idle state is indicated via the *Site Header*, which turns solid yellow, as shown in Figure 2.18.



Figure 2.18 – A yellow site, indicating it is idle

Channel Activity

The *Channel Activity Area* (Figure 2.19) shows real-time channel-based activity as it occurs.

Channel 10 1	Channel 10 2	Channel 11 1	Channel 11 2
8 Boggs 1 Police	8 Boggs 3 Fire Dept	8 Boggs 1 Brooks	8 Boggs 1 Police
0:02 D			

Figure 2.19 – Channel Activity Area

Channel block headers are color-coded to indicate which channels are involved in a call across multiple sites. If a call is being sourced from the site being viewed, the '@' symbol will appear on the right in the channel header, as seen in Figure 2.20:

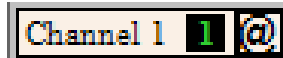


Figure 2.20 – Channel Header

The body of each channel block is colored according to the type of activity it is currently handling and corresponds to the **Color Legend**. Channels that do not contain any text in the body have not yet received activity.

Radio Commands

The following radio commands are “flashed” on the associated channels for about 200 milliseconds as they occur:

- Call Alert
- Radio Check
- Selective Inhibit
- Cancel Selective Inhibit
- IP Console Inhibit
- Cancel IP Console Inhibit
- Ring (Private Call Request)

Slotted Activity

MOTOTRBO uses a multiplexing method known as Time Division Multiple Access (TDMA) to divide each 12.5 kHz frequency into two 6.25-kHz-equivalent slots. When connecting GW3-TRBO to the repeaters with an IP connection, each channel will be divided into multiple slots. This will be represented in the Channel GUI by an additional block for each slot. A number to the right of the channel identifier will indicate the slot number, as shown in Figure 2.20. *Note: RF connections will show each slot as its own channel block.*

When Channel loads a site, it will display slot blocks based on the number of slots specified for the channel in the Alias module. Additional slot blocks will be shown if call activity occurs on those slots. If a channel displaying multiple slots receives activity that spans the entire channel, the channel will be temporarily recombined into one extra-wide channel block, as shown in Figure 2.21 below.

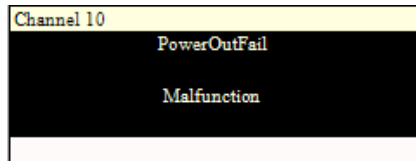


Figure 2.21 – Diagnostic affecting both slots of a TDMA-capable channel

Activity that is coded will show an icon in the lower right corner of either an “A” for analog or “D” for digital with a blue background and white lettering as shown below.



Figure 2.22 – Digital Indicator

Systems with large numbers of channels

Systems with more than 2000 channels can experience Windows resource issues in the Channel module. If this occurs, GW3-TRBO will display an error stating that window handles could not be created.

If this error occurs, you may need to reconfigure the Windows registry to allow more resources. Contact your local IT Department or Genesis Support to modify the following value:

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Windows\USERProcessHandleQuota



The default value of 10,000 can be increased to a maximum of 18,000.



Only a system administrator should edit the Windows registry. Microsoft has posted the following warning: Serious problems might occur if you modify the registry incorrectly by using Registry Editor or by using another method. These problems might require that you reinstall the operating system. Microsoft cannot guarantee that these problems can be solved. Modify the registry at your own risk.

APM Data Supplementation

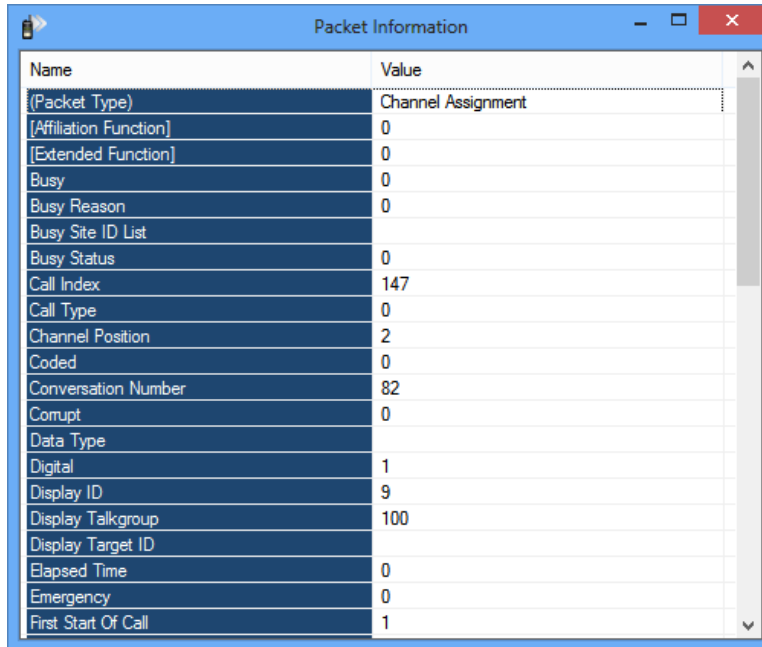
Channel can display transmit and receive channel information reported from an APM device. (See the GW_Connect module book for more information on APM device connections). While the APM reports a channel as transmitting, the transmit level is shown in white text with a green background. (See Channel 7 in Figure 2.23) While the APM reports a channel as not transmitting, the transmit level is shown in green text with a white background. (See Channel 6 in Figure 2.23)

6	70.8	7	63.1

Figure 2.23 – APM Data Supplementation

Packet Information Window

It is possible to get additional information about a call or event by double-clicking on any channel that has received activity.



Name	Value
{Packet Type}	Channel Assignment
[Affiliation Function]	0
[Extended Function]	0
Busy	0
Busy Reason	0
Busy Site ID List	
Busy Status	0
Call Index	147
Call Type	0
Channel Position	2
Coded	0
Conversation Number	82
Corrupt	0
Data Type	
Digital	1
Display ID	9
Display Talkgroup	100
Display Target ID	
Elapsed Time	0
Emergency	0
First Start Of Call	1

Figure 2.24 – Packet Information Window

The *Packet Information* window provides a list of all information GW3-TRBO has about the current (or last known) activity for the channel.

A channel with a control indicator that receives activity will return to displaying the control indicator once that activity ends. Double clicking the channel will display the information for the last activity received.

Threshold Lights

Threshold lights will flash when Channel receives a message from the Trigger module regarding a threshold that has been reached. Only threshold alerts involving groups in the current user's attachment list will be displayed. Depending upon how the threshold is set up, the red, amber or green light will flash. Clicking on one of the three lights will open the **Threshold Alerts** panel (see Figure 2.25).

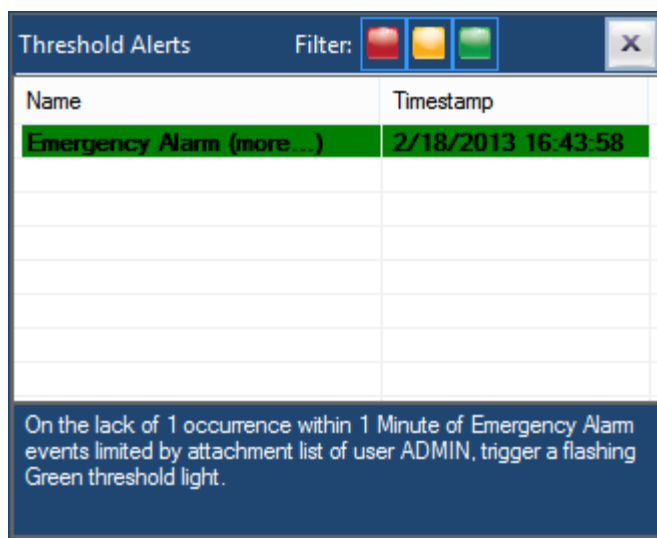


Figure 2.25 – Threshold Alerts panel without any filtering enabled

Example Thresholds

Threshold triggers are created in Trigger and can be configured to alert users to a wide range of conditions. The following example would alert users to the absence of call activity.

On the lack of 1 occurrence within 10 minutes of PTT events, trigger this red/amber/green light using the color amber.

The light color should be used to indicate the severity of a trigger, and since it's possible for the previous condition to arise within a fully operational site the amber threshold color has been selected. The next example shows a trigger that causes the red threshold light to flash when more than 5 busies occur in less than 1 minute.

On the presence of 5 occurrence(s) within 1 minute of Busy events, trigger this red/amber/green light using the color red.

See the Trigger Module Book for information about other triggers, detailed setup options and more examples.

Threshold Alerts panel

The **Threshold Alerts** panel lists all thresholds that have been reached and allows the thresholds to be filtered by color. Color corresponds to severity, where green indicates a normal priority and red indicates the highest priority. Each item listed contains the timestamp of when the threshold was reached and its description. Items will be displayed in bold until acknowledged.

Single-clicking on an item in the list will acknowledge the alert. If a trigger is based upon a threshold event, double-clicking on its threshold alert item in the alert panel will reposition the *Activity View* of Channel to show the site on which the activity was initiated. Alerts of a certain color can be filtered out by turning off the filter lights at the top of the **Threshold Alerts** panel. Click the **X** button at the top right of the panel to close it.

System Map View

The *System Map* window displays a real-time summary of the peers on your radio network. Peers represent the repeaters and applications to which GW3-TRBO is connected. Using the *System Map* window, you can quickly view the status of your repeaters. To open this view, click the **System Map** button on the *System Header*.



Figure 2.26 – System Header showing the System Map button

The screenshot shows a window titled "System Map: 00000:FADE" with a table of 5 peers. The table has columns for Peer ID, Alias, Type, IP Address, Port, Status, Zone ID, Site ID, Slot 1 RSSI, Slot 2 RSSI, Firmware, Tx Frequency, Rx Frequency, Channel Name, Slot 1 Type, and Slot 2 Type.

Peer ID	Alias	Type	IP Address	Port	Status	Zone ID	Site ID	Slot 1 RSSI	Slot 2 RSSI	Firmware	Tx Frequency	Rx Frequency	Channel Name	Slot 1 Type	Slot 2 Type
0		Virtual Peer	10.5.1.214	55000	Enabled	2	1							No Call Support	No Call Support
14	Repeater 14 LCP	Master	10.5.1.114	50114	Enabled	2	1	-132.5708	-133.1294	D02.30.37	467712500	462712500	LCP	LCP Trunked Channel	LCP Trunked Channel
0		Virtual Peer	10.5.1.3	55002	Enabled	2	2							No Call Support	No Call Support
22	Sat Receiver 22	Repeater	10.5.1.122	50122	Enabled	2	2	-115.3833	-115.3833	D02.30.37	408029000	467662500	LCP Voice	LCP Trunked Channel	LCP Trunked Channel
2003	Repeater 18	Repeater	10.5.1.3	50021	Enabled	2	2	-130.2505	-130.2505	D02.30.37	462662500	467662500	Channel1	LCP Trunked Channel	LCP Trunked Channel

Figure 2.27 – System Map window of a network

Each peer is represented by a row displaying the following elements shown on Figure 2.27:

1. **Alarm Status:** A colored block indicates whether any alarms are active on the repeater. Green indicates no alarms; red indicates one or more active alarms.
2. **Peer ID:** The ID of the peer. For a repeater, this value is programmed in the MOTOTRBO Customer Programming Software (CPS). For an application, this value is usually configured when setting up a connection.
3. **Alias:** The name of the repeater as it is programmed into the CPS. This value is not displayed if the peer is not RDAC-capable.
4. **Type:** Indicates the type of peer:
 - **Application:** A device identifying itself as a third-party application, such as a GW3-TRBO host.
 - **Data Revert:** A Capacity Plus or LCP data revert repeater
 - **Master:** The master peer in the peer network.
 - **MNIS:** The MOTOTRBO Network Interface Service peer.
 - **Other:** Any other peer that does not fall into one of the other known categories.
 - **Repeater:** A peer repeater.
 - **Virtual Peer:** A peer ID used by the repeater network as an abstraction of the rest slot on the system or site.
5. **IP Address:** Indicates the IP address used by the peer.
6. **Port:** Indicates the port used by the peer.
7. **Status:** Indicates whether the repeater is Enabled or Disabled.
8. **Zone ID:** The zone ID into which the peer is organized.

9. **Site ID:** The site ID into which the peer is organized.
10. **RSSI:** The number indicates the most recent known RSSI value for that slot. RSSI is requested from a repeater every few seconds. This value is not displayed if the peer is not RDAC-capable.
11. **Firmware:** Displays the firmware version of the repeater peer.
12. **Tx Frequency:** Displays the transmit frequency of a repeater peer.
13. **Rx Frequency:** Displays the receive frequency of a repeater peer.
14. **Channel Name:** Displays the currently active Channel on the repeater, as programmed in CPS.
15. **Slot 1/2 Type:** Displays the type of call support provided by the indicated slot on the peer. The type is determined by the services the peer requests from the peer network. Possible types include:
 - **No Call Support:** Peer does not receive call audio or data.
 - **Local:** Single-site call support.
 - **Wide:** IP Site Connect call support.
 - **LCP Trunked Channel:** Linked Capacity Plus voice slot.
 - **LCP Local Area Data Revert Channel:** Single-site LCP data slot.
 - **LCP Wide Area Data Revert Channel:** Multisite LCP data slot.
16. **Connection Name:** The name of the connection (as specified in the Trbo module) to which the peer is associated.

Organizing the System Map

The columns on the System Map window can be reordered by dragging the column header to the left or right. They can be resized by clicking the edge of the column header and dragging to the left or right. A column may be hidden by shrinking the column until it can no longer be seen.

The peer list may be sorted by clicking on a column header. Clicking the column header once will sort the list in ascending order by that column's values. Clicking the header of the column by which the list is currently sorted will toggle between ascending and descending order. If the **Zone ID** or **Site ID** column is used for sorting, the list will be sorted first by zone ID and site ID in ascending/descending order, then by Peer ID in ascending order. This allows the peers to be easily grouped by site.

View Menu

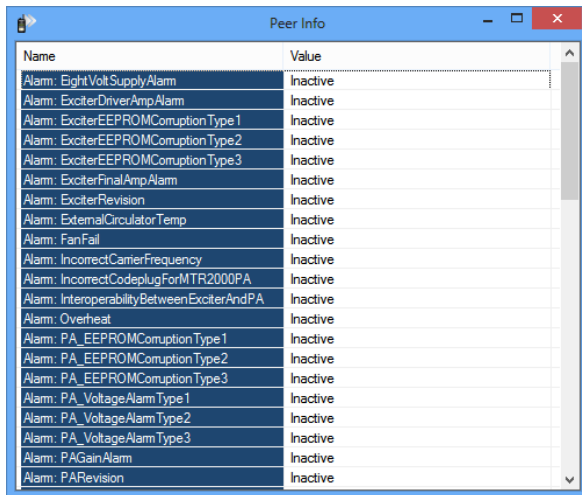
The **View Menu** on the System Map menu bar includes the following options:

- **Font:** Provides options for changing the font and text size of the peer list.
- **Show Gridlines:** Toggles the display of gridlines on the peer list.
- **Reset Window Defaults:** Restores the display settings of the System Map window to their default values. Use this option to quickly undo changes to settings such as the column order, column widths, font or window size. The window position will not be changed.

Choices made in the **View Menu**, as well as changes made to the column order or column widths, will be saved when the Channel GUI is closed and remembered when reopening the System Map window. These settings are saved for each system and each GW3-TRBO user, so each user may have different preferred settings for each system.

Peer Info Window

Double-clicking on a peer brings up the *Peer Info* window, which contains additional details about the peer, including the status of its alarms. Most of the information requires an active RDAC connection to obtain; therefore, XPR-series repeaters using firmware released prior to R01.06 will show limited details.



The screenshot shows a window titled "Peer Info" with a table of alarm data. The table has two columns: "Name" and "Value". All values listed are "Inactive".

Name	Value
Alarm: EightVoltSupplyAlarm	Inactive
Alarm: ExciterDriverAmpAlarm	Inactive
Alarm: ExciterEEPROMCorruptionType1	Inactive
Alarm: ExciterEEPROMCorruptionType2	Inactive
Alarm: ExciterEEPROMCorruptionType3	Inactive
Alarm: ExciterFinalAmpAlarm	Inactive
Alarm: ExciterRevision	Inactive
Alarm: ExternalCirculatorTemp	Inactive
Alarm: FanFail	Inactive
Alarm: IncorrectCenterFrequency	Inactive
Alarm: IncorrectCodeplugForMTR2000PA	Inactive
Alarm: InteroperabilityBetweenExciterAndPA	Inactive
Alarm: Overheat	Inactive
Alarm: PA_EEPROMCorruptionType1	Inactive
Alarm: PA_EEPROMCorruptionType2	Inactive
Alarm: PA_EEPROMCorruptionType3	Inactive
Alarm: PA_VoltageAlarmType1	Inactive
Alarm: PA_VoltageAlarmType2	Inactive
Alarm: PA_VoltageAlarmType3	Inactive
Alarm: PAGainAlarm	Inactive
Alarm: PARRevision	Inactive

Figure 2.28 – Peer Info Window