ProRAE Guardian™

Version 1.6

Rev. D
September 2012
P/N S01-A130-000

Contents

WARNINGS

Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining, or servicing this product. The product will perform as designed only if it is used, maintained, and serviced in accordance with the manufacturer's instructions.

Important Security Feature: Read Before Operating

This version of ProRAE Guardian requires user logon to change critical settings. The default username is "administrator" and the default password for this account is "raesystems". PLEASE WRITE THIS DOWN. The password for this account is always reset to "raesystems" upon installation. To change/add accounts, click "Administration/Admin Panel…" under the global menu in the upper left corner of the application.

1 General Information

The ProRAE Guardian software program collects, stores, and displays real-time sensor data from a variety of sensing devices to enable critical decision support for safety applications.

One ProRAE Guardian installation can capture real-time readings from up to 64 PTM (AreaRAE, etc.) monitors, and up to 450 RCS (Mesh-radio, such as MeshGuard) monitors. It supports not only RAE Systems wireless products, but selected third-party devices as well.

ProRAE Guardian collects, stores, and displays real-time data from remote monitors. Google Maps are integrated into the interface, plus MXD and other maps and graphics can be imported and applied. Sensor locations are overlaid on the maps or graphics, providing direct context. The integrated datalog stores each sensor's data that can be viewed as text, summarized, or expressed graphically.

1.1 Key Features

- Real-time display of device status, sensor readings, and alarms
- Access security prevents tampering
- User interface displays multiple simultaneous instrument readings
- Reconfigurable pane sizes and locations for customized viewing
- Integrated Google Maps show precise instrument locations with alarm status
- Remote alarming via email
- Datalogging in text and graphical formats, including boolean filters
- Open platform for third-party devices and systems
- Image overlay option

2 Requirements

2.1 Hardware Requirements

Pentium (or compatible) CPU, 1.0 GHz or better.
VGA monitor (at least 1024x768 resolution, 16-bit color)
100 MB of free hard disk space*
CD-ROM drive
Serial port (RS-232/USB COM port) for instrument/modem connection
Sound card (to enable local sound notifications)
LAN connection for network-connected devices.
Live Internet connection (required to view Google Maps)

*Software installation only. ProRAE Guardian may require significantly larger amounts of disk space to store device datalog information.

2.2 Software Requirements

Operating system: Microsoft Windows (XP SP3, Vista, or Windows7).
Adobe Acrobat Reader V5.0 or higher (to view documentation)

2.3 Run-Time Requirements

The PC's "Energy Saving" feature should be set at "Always On." Never turn off the hard disk when ProRAE Guardian software is running. "Hibernate" (if available) must be disabled.

2.4 User Privilege Requirements

During installation, you must have administrator privileges on the local PC.

Notes:
Administrator privileges are not required in order to run the program; this applies for all operations except GPS module registration.

1. Registering the GPS module in ProRAE Guardian requires administrator privileges:

   A. Right-click the ProRAE Guardian icon on the Desktop and select "Run as administrator" (Windows7 or Vista) or select "Run as…"
   B. Select "Administrator" (Windows XP) to run ProRAE Guardian with administrator privileges.
   C. Go to "ESRI Map" to register the GPS module.

2. After the GPS module is registered, you can restart ProRAE Guardian with a normal user account.

3. The tool "GISDataRegistration" is for registering the GIS map from RAE Systems. It requires administrator privileges.

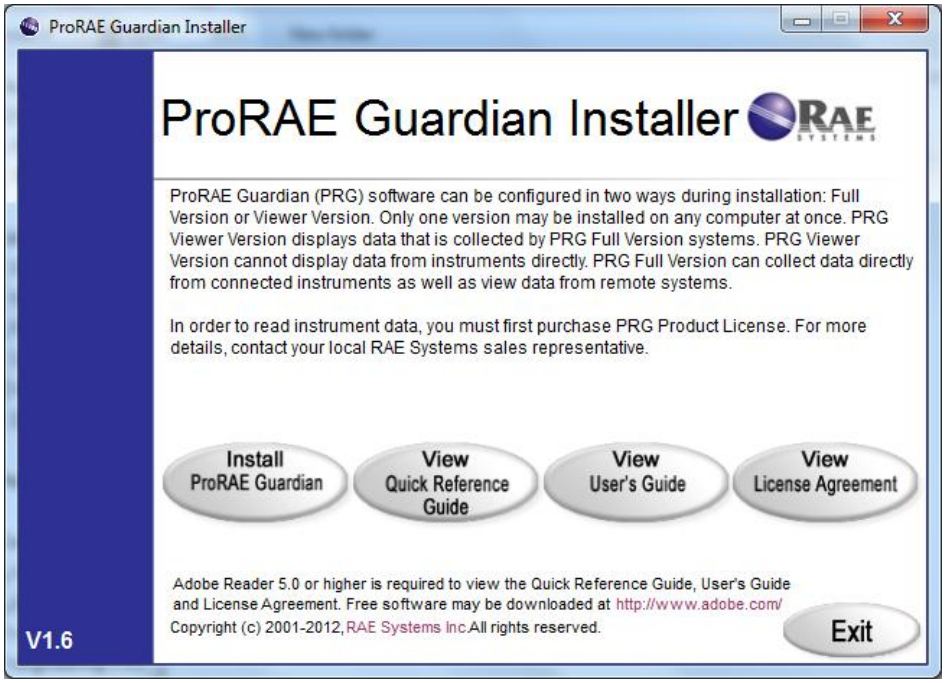
   Start the tool by clicking the menu "Start >> Programs >> RAE Systems Inc >> ProRAE Guardian >> ProRAEGuardian >> GISDataRegistration."

4. "Datalog TransferTool" is for transferring the datalog in ProRAE Remote and/or ProRAE.Net to ProRAE Guardian, if you are upgrading from ProRAE Remote or ProRAE.Net on the PC. It requires administrator privileges.

   Start the tool by clicking the menu "Start >> Programs >> RAE Systems Inc >> ProRAE Guardian >> ProRAEGuardian >> Datalog TransferTool."

3 ProRAE Guardian Installation

Load the ProRAE Guardian software from the CD or from the Internet, and when this window appears, follow the installation instructions:



When the installation is complete, click "Finish" to exit the installer program.

Click "Exit" on the initial screen to dismiss it.

Important!
You can run the program without local administrator privileges. On some windows operating systems (such as Windows7 or Vista), the OS prevents you from writing to the file in some protected folders such as "C:\Windows" and "C:\Program Files." During installation, *do not* change the datalogging folder to a folder that requires administrator privileges, if you do not want to run the ProRAE Guardian with administrator privileges. Choosing the default folder provided by the installer is recommended. The default folder is typically "C:\RAE Systems Inc\ProRAE Guardian Datalog\".

4 ProRAE Guardian License Registration

ProRAE Guardian requires a license that must be purchased from RAE Systems. The license is based on the number and types (tiers) of instruments to be monitored via ProRAE Guardian.

The license can be registered and activated two ways: With a computer connected to the Internet or on a computer that is not connected to the Internet. The two methods are included in the next section.

4.1 Activating A License Using A Computer With Internet Access

1. Purchase a ProRAE Guardian license from RAE Systems sales. You will receive a license certificate that includes your Product Key and the number of Tier 1, Tier 2, and Tier 3 licenses. (**Note:** If you want to add more instrument tiers later to accommodate more instruments, you can contact RAE Systems.)
2. Download ProRAE Guardian software from **www.raesystems.com** or install it from a CD.
3. Install ProRAE Guardian software.
4. Once installation is complete, start ProRAE Guardian. Because your license has not been registered and bound to your machine, you see the ProRAE Guardian License Wizard screen.
5. Enter the 20-character Product Key and follow the steps in the Installation Wizard to fill in Registration Information. Click "Next."
6. Follow the steps in the next screens for registration information, including naming your computer something memorable (or a name assigned by your IT department, for example).
7. Click "Finish" to upload to RAE Systems and receive confirmation of registration.

   Note: If you receive an error message, make sure your computer is connected to the Internet. If it is not, but should be, establish an Internet connection and try again. Also, make sure that you are using a Product Key that is not already in use on another computer.

8. If the Product Key is accepted upon retrying, then ProRAE Guardian starts.

Note: After running ProRAE Guardian for the first time and performing license registration, you will not need to go through these steps again, unless you uninstall the program or release the license from the computer.

4.2 Activating A License Using A Computer Without Internet Access

1. Purchase a ProRAE Guardian license from RAE Systems sales. (**Note:** If you want to add more instrument tiers later, you can. Contact RAE Systems.)
2. Install ProRAE Guardian Software from the CD.
3. Once installation is complete, start ProRAE Guardian. Because your license has not been registered and bound to your machine, you see the ProRAE Guardian License Wizard screen. Click "Next."
4. Enter the 20-character Product Key and follow the steps in the Installation Wizard to fill in Registration Information. Click "Next."
5. Follow the steps in the next screens for registration information, including naming your computer something memorable (or a name assigned by your IT department, for example).
6. Click "Finish" to upload to RAE Systems and receive confirmation of registration.

   You will receive an error message. Before proceeding, make sure that you are using a Product Key that is not already in use on another computer.

7. Plug a flash drive into your computer's USB port.
8. Select "I want to use another computer with an Internet connection."

   Note: If you typically have a problem viewing external sources, such as Google Maps, then consult with your I.T. department so that they can configure your Proxy Server settings. Otherwise, you likely do not need to use Proxy Server settings.

9. Click "Next."
10. The License Wizard now shows a screen with instructions for manually providing the registration file.
11. Select the path to the file named request.key on your computer by clicking the link and then selecting the file.
12. Copy "request.key" to your flash drive.
13. Unplug the flash drive and then plug it into a computer with Internet access.
14. Open a browser window and go to www.proraeguardian.com/register. You now see the screen that says "Welcome to ProRAE Guardian Product Product Key Management."
15. Select "Register and activate a new Product Key," and click "Next."
16. You will see a screen that says "Register a new Product Key." Select your "request.key" file and click "Open."
17. Click "Next."
18. When the screen changes to "Register a new Product Key," follow the instructions to download a file called "activation.key" to your flash drive.
19. Remove the flash drive and plug it into the computer where you have installed ProRAE Guardian.

20. Browse to the location where "activation.key" is stored on your flash drive and upload the file by clicking "Next."
21. If the Product Key is accepted, then you see a "Congratulations!" screen that informs you that ProRAE Guardian is now registered and activated for use.
22. Click "Finish" to exit the License Wizard. ProRAE Guardian automatically starts.

Note: After running ProRAE Guardian for the first time and performing license registration, you will not need to go through these steps again, unless you uninstall the program or release the license from the computer.

5 Starting ProRAE Guardian

Once ProRAE Guardian has been installed on your computer, there should be an icon for it on the desktop.

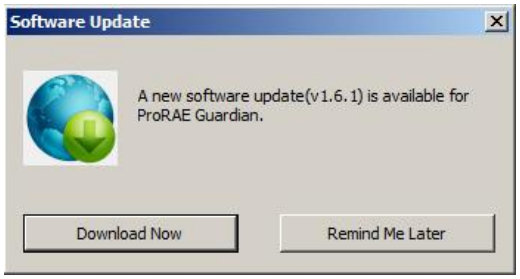
To start ProRAE Guardian, double-click the icon.

The main screen appears, and ProRAE Guardian is ready to use.

Note: If there is no ProRAE Guardian icon on your computer's desktop, you can start it by launching it directly by following this path:

Start >> Programs >> RAE Systems Inc >> ProRAE Guardian >> ProRAEGuardian

Note: When you start ProRAE Guardian, it checks whether any updates are available. A "Software Update" message box tells you if your software is up to date or if a newer version is available.



Note: Internet connectivity is required in order to check for software updates and to download them.

6 Security Features

ProRAE Guardian has password protection for changing critical settings, plus it has an automatic countdown that locks everyone out (requiring a password for re-entry) after 30 minutes. This does not stop or pause ProRAE Guardian operation, but it does prevent tampering. The administrator can provide access privileges for others, plus manage them from within ProRAE Guardian.

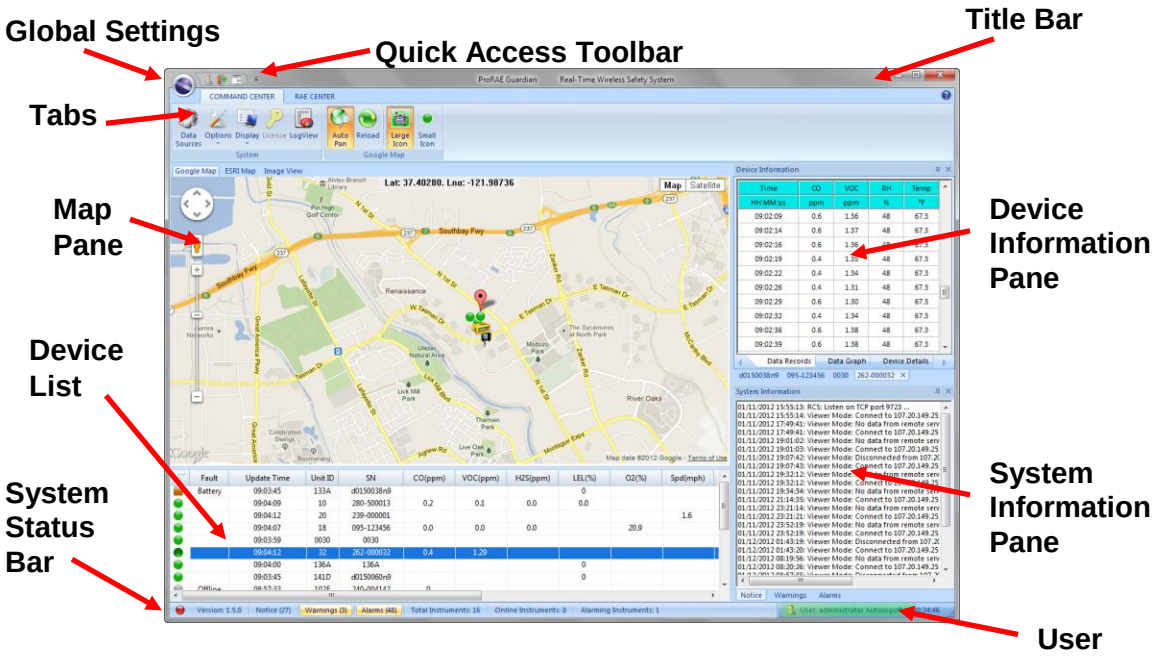
6.1 Important Security Feature: Logon And Password

This version of ProRAE Guardian requires user logon to change critical settings. The default username is "administrator" and the default password for this account is "raesystems". PLEASE WRITE THIS DOWN. The password for this account is ALWAYS reset to "raesystems" upon installation. To change/add accounts, click "Administration/Admin Panel…" under global menu in the upper left corner of the application.

For further information, refer to section 7.1, which explains Admin access and functions.

7 ProRAE Guardian User Interface Overview

The ProRAE Guardian user interface consists of a single main window, organized into sections by function. The Map Pane and Device List are organized as a group, and can be collectively resized. The Device Information Pane and System Information Pane can be resized, reorganized, or selectively hidden. The System Status Bar along the bottom can also be selectively hidden.



7.1 Resizing The Window

The window can be changed, and standard Windows-style controls are used. The buttons are located in the upper right corner of the window, and include (left to right):

- Minimize
- Restore/Maximize
- Close

At the bottom right corner of the window is a place where you can grab to resize/reshape the main window (if it is not maximized).

Click on this corner, and while holding down the left mouse button, drag it to change the width and height of the window.

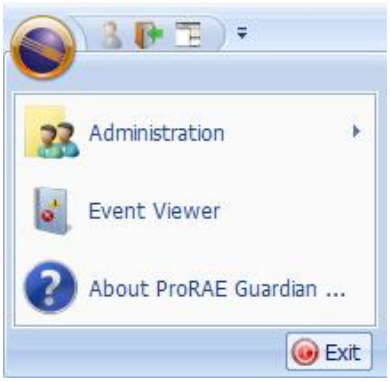
8 Global Settings

All settings that pertain to the entire application are available under the Global Settings control, located in the upper left corner of the screen. Clicking on the RAE Systems logo reveals the Global Settings menu.

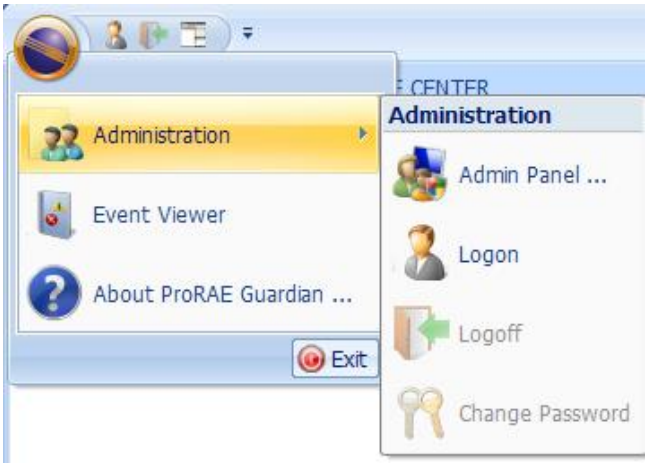
8.1 Accessing Global Settings

Click on the RAE Systems logo in the upper left corner of the window (when highlighted, there is a yellow glow around the logo), and three main options headings are shown:

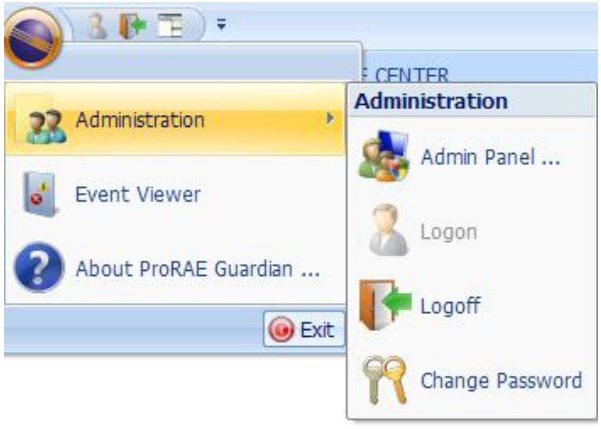
- Administration
- Event Viewer
- About ProRAE Guardian…



When you move the mouse over "Administration," it is highlighted, and a submenu appears:



Note: If you have provided an administrator's password, the submenu looks like this:



Access to the Admin Panel requires that you provide a password (the default administrator password is "raesystems"):

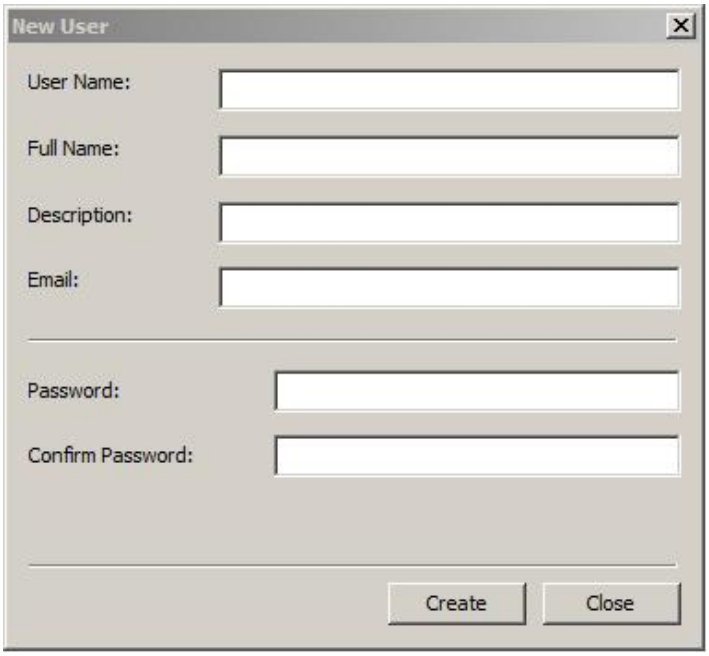
Type in the password and click "OK." The Admin Panel is now on your screen:

It shows local users and groups. If users have already been added, names are shown in the panel:

8.1.1 To Add A User

1. Right-click "Users."
2. Right-click or left-click the tooltip that says "New User."

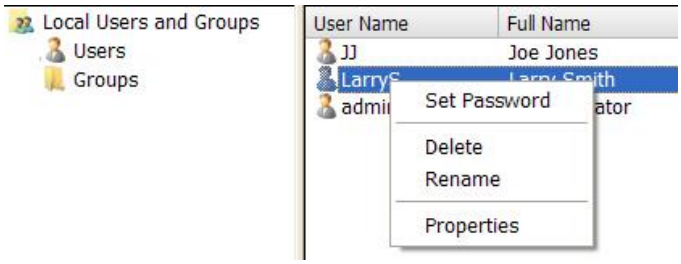
A dialog box appears with fields for setting up a new user's account:



3. Type in a User Name.
   Note: If the name is already in use, a message pops up to tell you that the name is in use. You must then choose a different User Name.
4. Type in a Full Name (such as Joe Smith).
5. Include a description, if any (such as Electrical Department Manager).
6. Provide an email address for notifications, etc.
7. Type in a password, and then type it again. They must be identical, or an error message will pop up when you click "Create."
8. Click "Create" to create the profile. (It can be edited later, if necessary.)

8.1.2 To Edit A User Profile

Right-click on a User Name. A panel of options is shown:



Options include Set Password, Delete, Rename, and Properties. Mouse over any of them and click on one that is highlighted to edit it.

Set Password

Like setting up a password the first time, you must type a password and then retype it in the second field. They must match exactly. Then click "OK" to save the change or "Cancel" to abandon it.

Delete

This deletes a User (and all profile information and access settings associated with the user) from the system. Note: You must have administrator group privileges to delete a user.

Important! If you delete a user, the record is completely deleted, meaning that you will have to create a new user profile if you want to reinstitute the user and his/her access.

Rename

You can rename the User Name by selecting "Rename." The name is highlighted, so you can type over it or edit any characters in it. When you are done, simply type a Return."

Properties

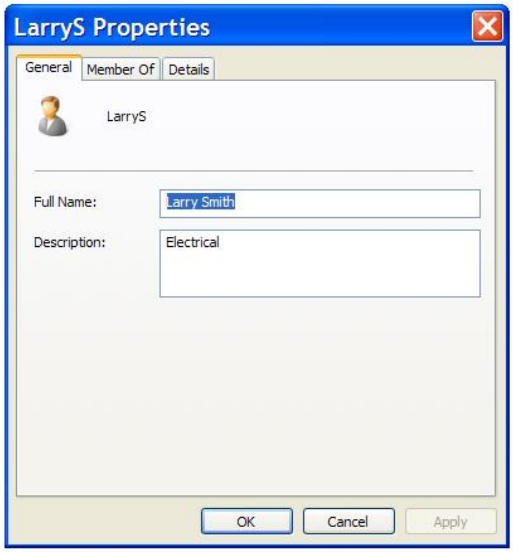
All information previously provided in setting up the user's account are included here. They can also be edited, and the changes saved when you exit this dialog window.

Data is organized under three tabs:

General: Full Name and Description
Member Of: Group
Details: Company, Department, Phone, Mobile Phone, Email

To save changes to Properties, you must click "OK"

The General properties consist of the person's Full Name and Description (there is ample space for including a lot of information).

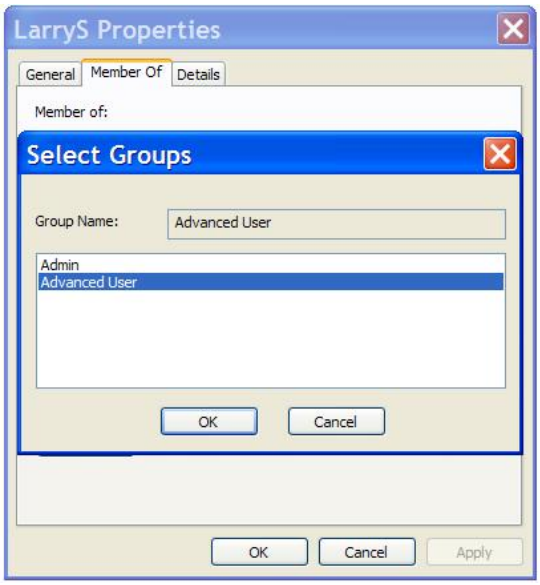


After you have made changes to the General properties, click "OK" to save the changes and exit, or "Cancel" to exit without changing them.

The "Member Of" properties set access to groups. In addition, the user can be given administrator access. Click "Select" to see the available groups. If you want to add access to a group, click on the group's name (or admin).

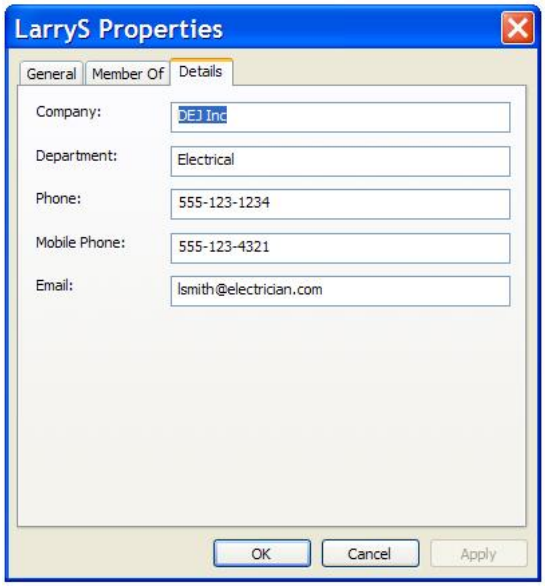
Note: The default action when you add a user is to give them "Advanced User" permission (that is, they are added to the "Advanced User" group).

You must explicitly change this and add them to the "Admin" group if you want them to be a member of the Admin group. The only difference between Advanced User and Admin is that Admin can add/modify/delete other user accounts.



After you have made changes to the Member Of properties, click "OK" to save the changes and exit, or "Cancel" to exit without changing them.

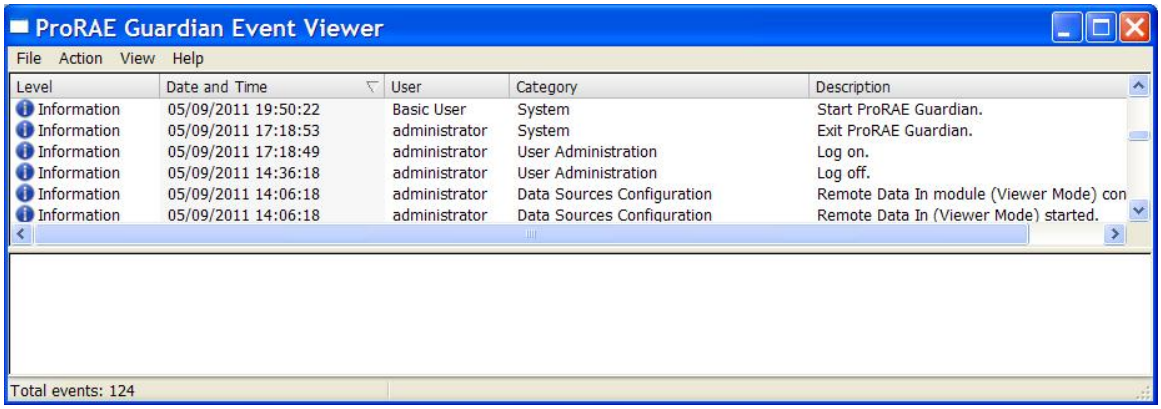
Details are about the individual, including contact information. These include Company, Department, Phone, Mobile Phone, and Email.



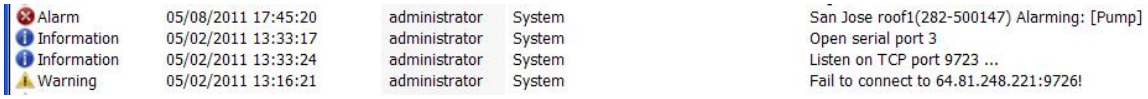
After you have made changes to the Details properties, click "OK" to save the changes and exit, or "Cancel" to exit without changing them.

8.2 Event Viewer

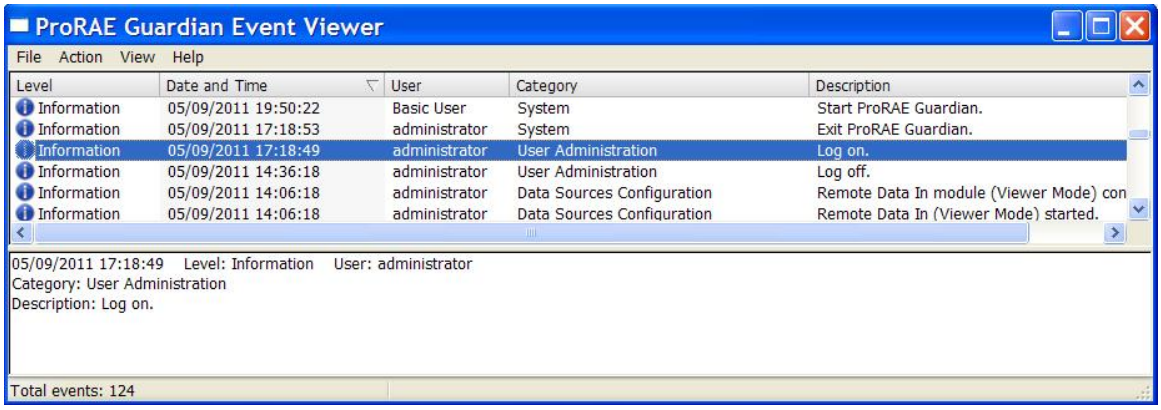
The Event Viewer gives you insight into what events were recorded since ProRAE Guardian was first started after installation. The Level (of importance/severity) is listed first in each row, along with date and time, the system's user, the category of the information, and a description of what occurred. In addition, the total number of events is shown at the lower left corner of the window.



Alarms and warnings are color-coded with different icons, making it easy to scroll through the list to find events of interest/concern.



For more details, click on the row containing any event. The bottom pane then shows whatever details are available.



The event log stores 10,000 unique events, which should be enough for about six months of normal use. Further, the event log incorporates a "FIFO," or "first-in/first-out," buffer, which means it will always store the most-recent 10,000 events.
For security reasons, there is no way to directly edit the Event log. You may export the event log to an Excel-readable file by using the export function. ProRAE Guardian V1.6 ships with a separate Event Viewer exe (located in the ProRAE Guardian installation

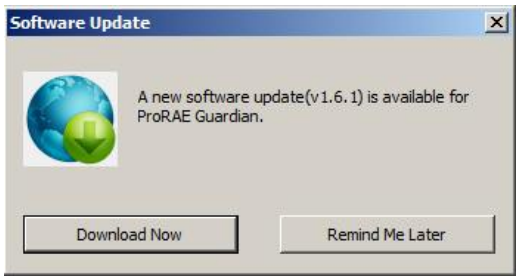
directory) that can be used to view the Event Log in the event that ProRAE Guardian is not installed or will not start.

8.3 About ProRAE Guardian

When you click "About ProRAE Guardian," a window appears, and it includes general and support information, as well as tab-organized information about the End User License Agreement (EULA), Legal Notices, and Components.

The PRG About box also shows you the current IP Address that PRG is using, as well as the Windows Machine name of your system.

Note: Click the button labeled "Check for Updates" if you want to find out if there is an update available to ProRAE Guardian. A "Software Update" message box tells you if your software is up to date or if a newer version is available.



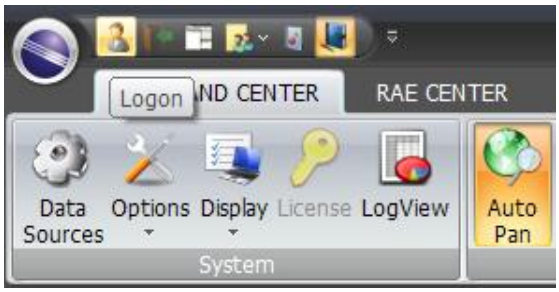
Note: Internet connectivity is required in order to check for software updates and to download them.

8.4 Quick Access Toolbar

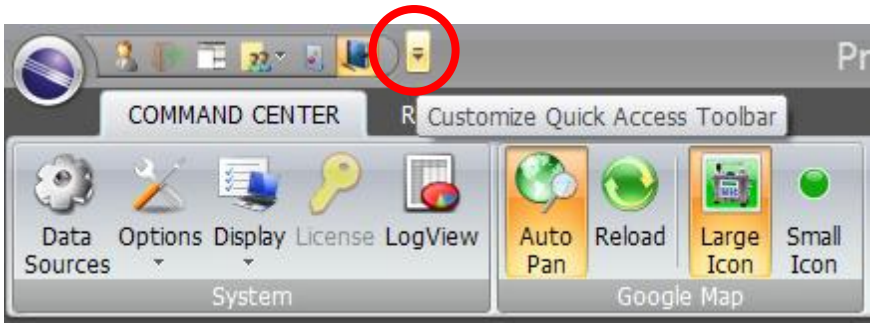
The Quick Access Toolbar provides a customizable way for you to have fast access to the functions that you use most.

You can move the Quick Access Toolbar below the Ribbon that includes the Command Center and RAE Center.

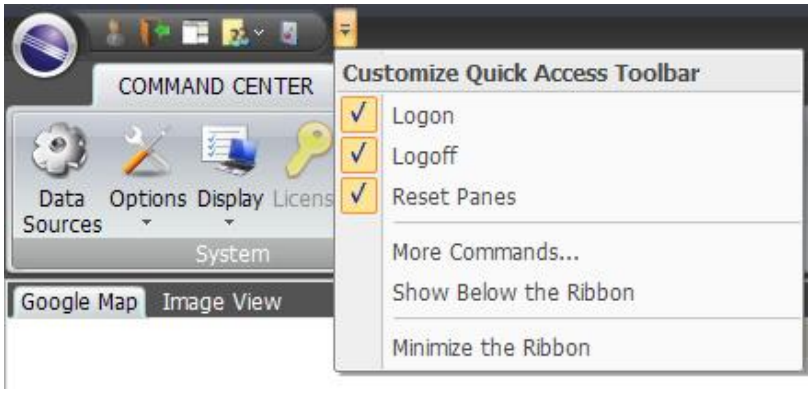
When you mouse over any of the Quick Access Toolbar icons, a tooltip shows you what it is. The default set is Logon, Logoff, and Reset Panes. However, you can customize the toolbar to include other functions.



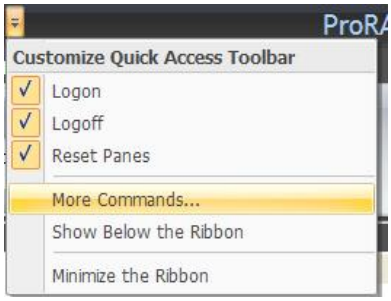
Click on the downward-facing arrow icon to the right of the Quick Access Toolbar to access the Customize Quick Access Toolbar options.



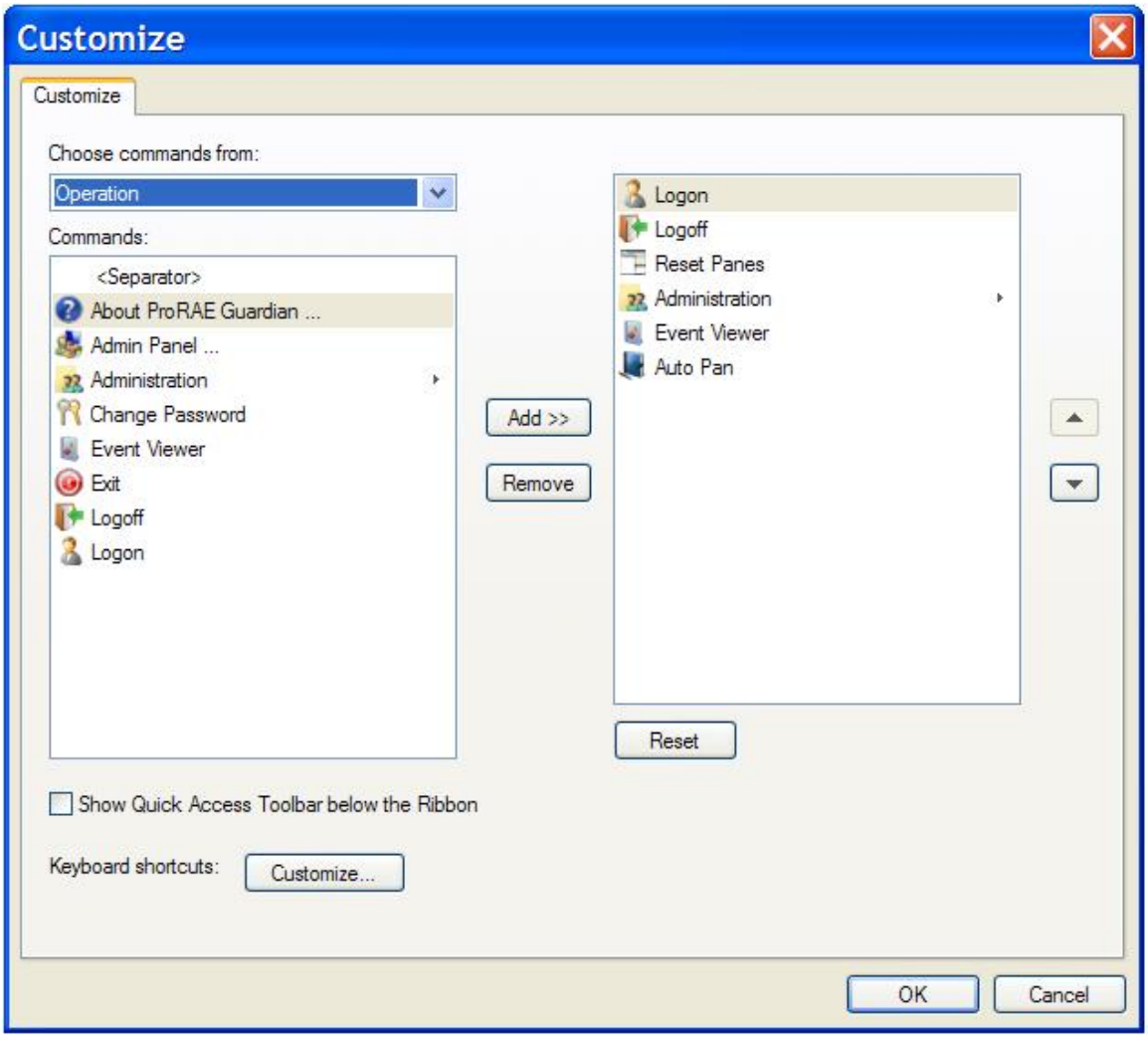
Here you can change whether Logon, Logoff, and Reset Panes are visible, but you can also move the Quick Access Toolbar (by clicking "Show Below the Ribbon") or minimize Ribbon.



Note: You can right-click on the Ribbon to access "Customize Quick Access Toolbar…", "Show Quick Access Toolbar Below The Ribbon," and "Minimize the Ribbon."Click "More Commands…" to access a panel that allows you to customize the Quick Access Toolbar:



The "Customize" window appears:



Click an item in the left pane and then click "Add>>" to add it to the list in the right pane. (If something is already in the list in the right pane, ProRAE Guardian does add it again.)

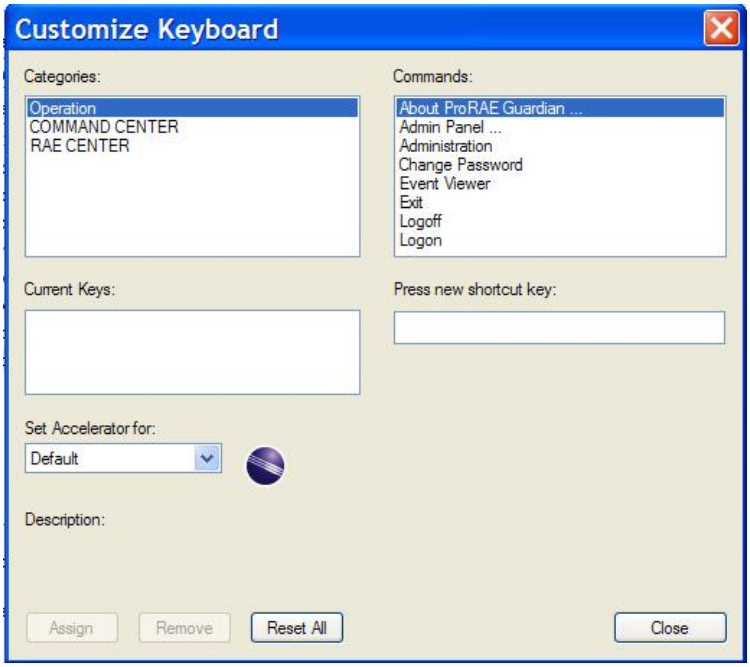
To change the order in which any of the items in the right pane appear in the Quick Access Toolbar, click on the item and then click either the up arrow or down arrow to move it up or down in the list. The top item appears farthest to the left in the row of icons, whereas the bottom item appears at the far right.

You can select to Show Quick Access Toolbar below the Ribbon by clicking the checkbox. When you close this window, the change is made. (You can return it to its original location above the Ribbon by clicking the checkbox so that it is empty.)

To remove an item from the Quick Access Toolbar, highlight the item and then click "Remove."

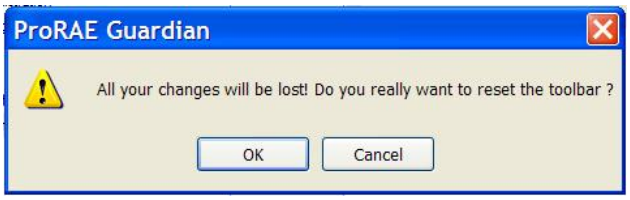
Shortcuts using keyboard commands can be created and edited by clicking the "Customize…" button at Keyboard shortcuts.

Categories and commands can be selected by clicking them. If there are current keyboard shortcuts, they are shown in the pane labeled Current Keys.



To create a new shortcut, click a command and then press a key (or combination of keys, such as Control-Shift-E), and it is then shown in the Current Keys box.

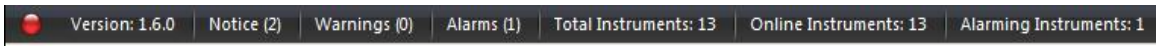
You can reset the list to the originally installed set (Logon, Logoff, Reset Panes) by clicking "Reset." An alert pops up to make sure you really want to do this:



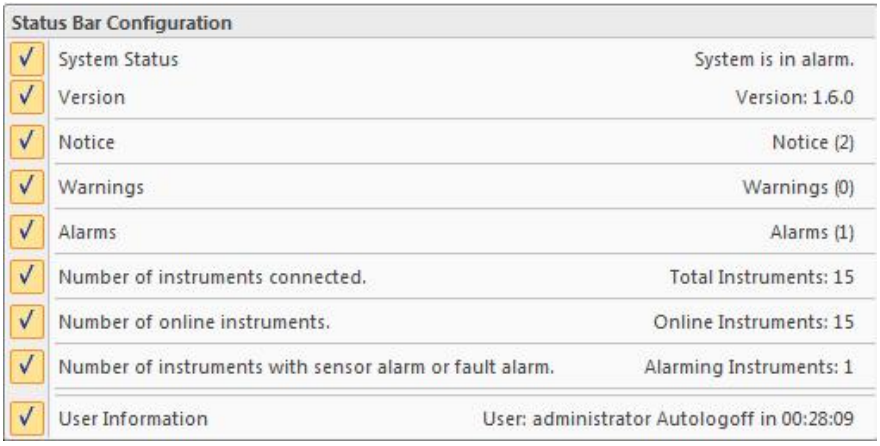
Click "OK" to reset the toolbar.
Click "Cancel" to not reset the toolbar and to dismiss the alert.

8.5 System Status Bar

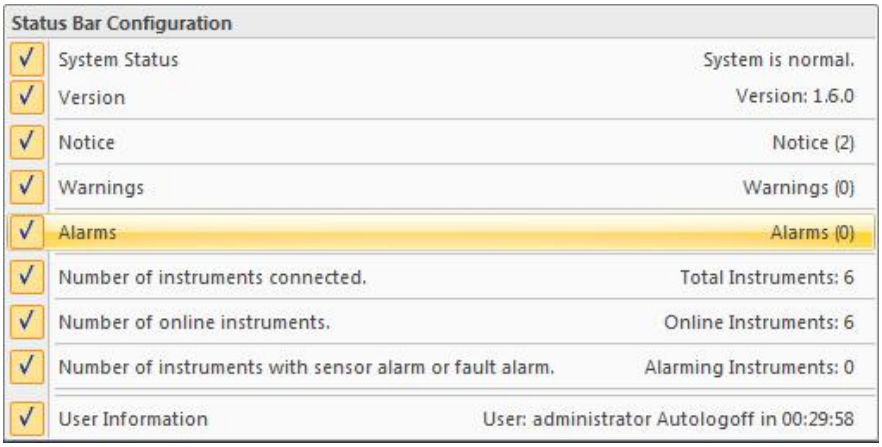
The System Status Bar, which runs along the bottom of the window, indicates whether the system is online (green dot), as well as the number of notices, warnings, and alarms during the session.



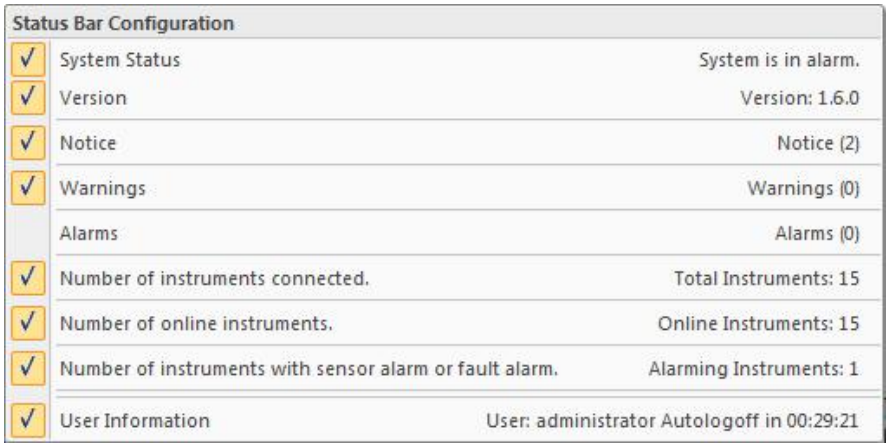
You can customize what is on the System Status bar. Right-click on any item in the bar. You will see this pop-up menu:



As shown, all options are selected, and therefore these items are visible on the System Status Bar. To turn any of the items on or off, mouse over the items, which highlights them:



Then click on the item. If it is checked, it is "live" and appears in the System Status Bar. If it is not checked, then it is not included on the System Status Bar.



To close this dialog box, click on the System Status Bar.

For information on resizing and relocating the panes, see page 88.

9 Tabs

Major functional groups within ProRAE Guardian are organized as "Centers," which are accessed by clicking each area's tab along the top of the application. In ProRAE Guardian, there are two such Centers, the Command Center and the RAE Center.
The Command Center encapsulates all the real-time functionality of ProRAE Guardian. It includes real-time instrument readings, maps, and datalogs. The RAE Center is your personal portal to RAE Systems. It includes up-to-the minute information direct from RAE Systems about your ProRAE Guardian system, updates, and new options, along with valuable offers for both hardware and software from RAE Systems. Check the RAE Center periodically for updates.

9.1 Command Center

The main tab for ProRAE Guardian, Command Center, contains the most often used functions for setting up and using the program. Clicking on any of the icons opens windows with menus and other functional controls. The Command Center is divided into two sections, System and Google Map.

Note: On a computer acting as a ProRAE Guardian host, there are areas for the device type and GPS.

9.1.1 System

The System area of the Command Center provides access to the tools you need for setting up ProRAE Guardian, setting options, and other features, all outlined in the following sections.

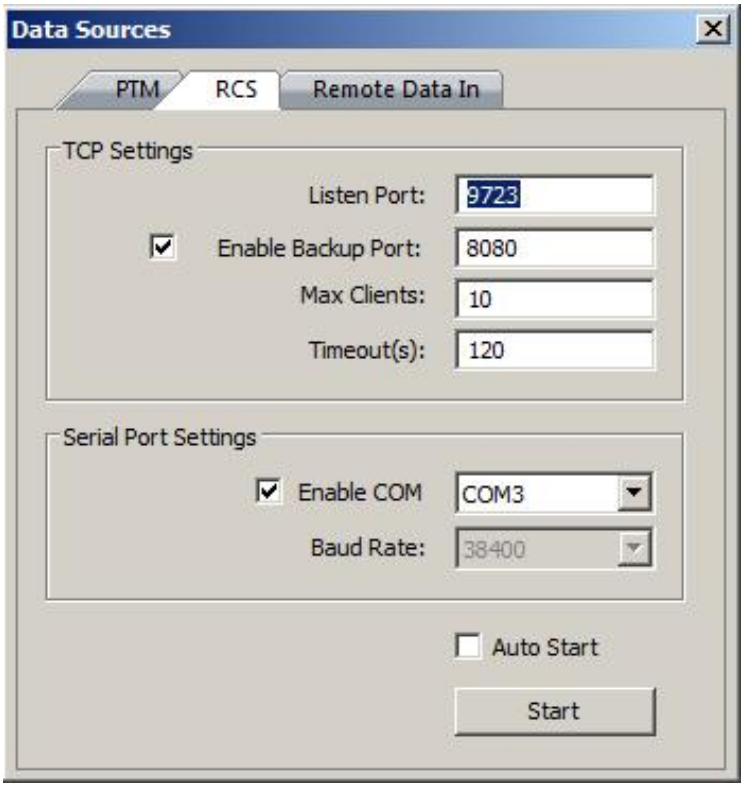
9.1.1.1 Data Sources

When you click the Data Sources button, a window appears with three tabs that include the places where you input and choose settings that help you to configure the software for your computer running ProRAE Guardian.

Three types of data sources can be configured to match the source:

PTM	Point To Multipoint, for use with RAELink3 or RAELink2 modem
RCS	Remote Communication Standard, for use with RAE Systems mesh radio-equipped devices such as MeshGuards
Remote Data In	Data from external sources via ProRAE Guardian's XML interface

The general settings are described in the following section. Configuration of a system using each of these Data Sources types is covered in the following sections.



Close the Data Sources window by clicking the "X" at the upper right corner.

9.1.1.2 PTM

"PTM" stands for "point to multipoint." This Data Sources tab allows configuration with AreaRAEs and other monitors via a RAELink3 or RAELink2 in Host mode.

9.1.1.3 Settings: Serial Port

The serial port being used by a compatible modem/device is typically sensed by the program and preselected. If you want to change the selection, make sure the "Start" button is not on, and you should be able to select any of the COM ports available on your system. If no port shows up, it could be because ProRAE Guardian did not detect any available local COM ports.

Select which serial port is connected to the RAELink, RAELink2, or RAELink3 host modem. Select a COM port from the drop-down menu. This selection should typically be left at its default setting.

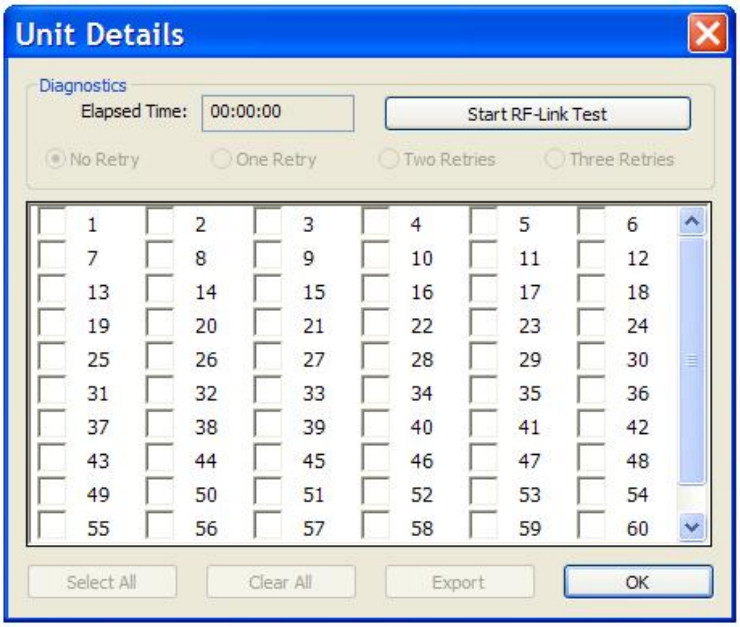
9.1.1.4 Settings: Baud Rate

The baud rate is the transmission rate at which data flows between computers. The baud rate is roughly equivalent to the number of bits per second (bps). For proper data transfer, the baud rate must be the same at the transmitting and receiving ends of a connection. Currently, the baud rate is fixed at 19200 bps. This setting should not be changed.

9.1.1.5 Settings: Unit IDs

Clicking the "View" button under "Unit IDs" opens up the Unit IDs dialog box. This box has two modes: Normal and Diagnostic. The default is Normal mode. In Normal mode, ProRAE Guardian shows a check next to each PTM channel on which it has detected an instrument. ProRAE Guardian automatically detects any instrument broadcasting on any of the 64 available channels. (By default, channels 1 through 8 are selected.) Alternatively, you can manually select a channel, and ProRAE Guardian scans it regardless of whether there is a device present.

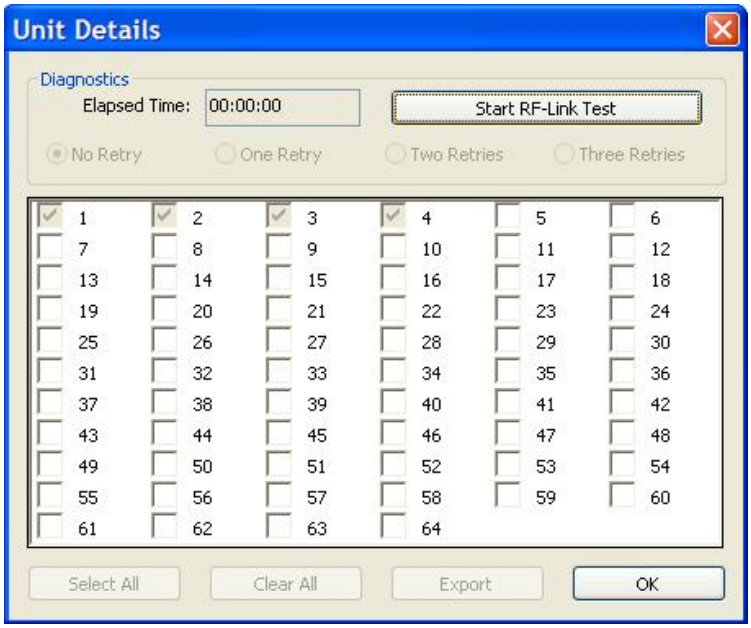
You can select the remote units if polling is not started. Click the ones you want, and then click "OK" to dismiss this dialog box.



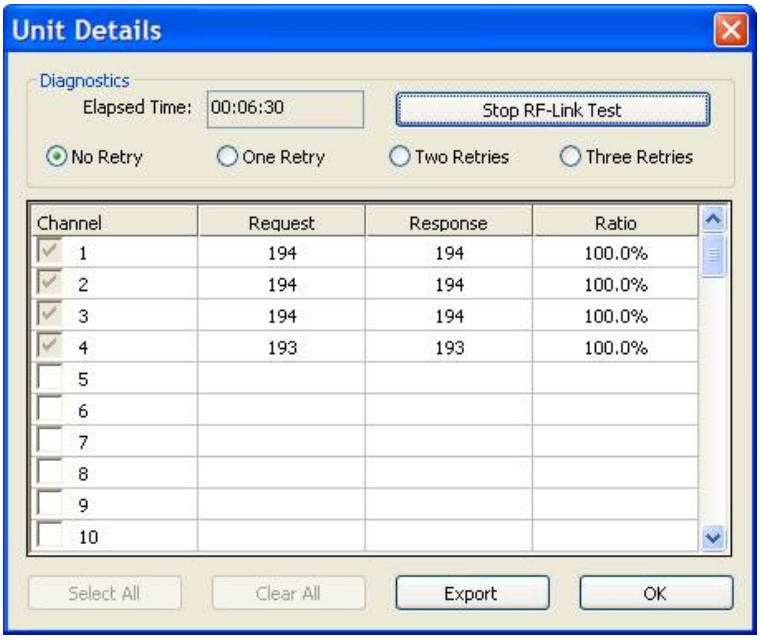
In Diagnostic mode, ProRAE Guardian measures the efficiency of each channel and shows the percentage of successful transmission attempts. In this mode, ProRAE Guardian ignores the "Max Retries" setting on the PTM tab. Instead, it retries the channel link transfer according to the retry radio button selections in the "Diagnostics" section of the "Channel Details" dialog.

You can start diagnostic mode after starting PTM polling begins.

Click "Start RF-Link Test" to start diagnostic mode.



Once it starts, it checks the channels one by one and provides results in the table:



You can save the results for reference or troubleshooting. Click "Export" to save the test results to a text file.

To stop diagnostic mode, Click "Stop RF-Link Test."

To exit, click "OK."

Why You Shouldn't Automatically Opt For The Maximum Number Of Channels

You might wonder, why not simply click on "select all" in the "Unit Details" dialog box so that you don't have to think about how many channels you will use, and let the system "size itself."

We strongly advise against automatically choosing the maximum number. ProRAE Guardian can run when all 64 channels are selected, but you will most likely experience poor updating performance with this setting, especially if you do not actually have 64 instruments connected. This is because of how ProRAE Guardian polls PTM instruments.

In order to completely understand the next section, you need to understand just how ProRAE Guardian collects data from PTM instruments. ProRAE Guardian sends out a request for data on a particular channel. It waits to see if an instrument responds with data. If, after a certain period of time (Max Timeout), it gets no response on that channel, it resends the request. If, after a certain number of retries (Max Retries), it still gets no response, it then moves on to the next channel. It repeats this sequence until all selected channels (Max Channels – selected channels only) have been covered. Then ProRAE Guardian waits until the total polling cycle time (Poll Master Interval) is reached (since the polling on first checked channel). Then it goes to the beginning and starts over.

Here is another way to express this sequence: On every selected channel of Max Channels, ProRAE Guardian sends out a request for the channel. It waits for every Max Timeout to get a response to that request, and if it gets no response after Max Retries, it moves on to the next selected channel.

Therefore, if you only have two instruments, one set to Channel 1 and one set to Channel 64, you would get completely different update times depending upon:

1. If you had all 64 instruments selected under Max Channels, or just Channel 1 and Channel 64, and
2. If you had a long or short Poll Master Interval, and
3. If you had a long or short Timeout, and
4. If you had a large or small number of Max Retries.

9.1.1.6 Settings: Poll Master Interval(s)

The Poll Master Interval decides the minimum updating interval for every active remote monitor. When ProRAE Guardian is in operation, it polls all active remote detectors in sequence. The Poll Master Interval is the channel reading update interval. ProRAE Guardian asks for data according to the Poll Master Interval. For example, if the Poll Master Interval is set to 2 sec (the default setting), ProRAE Guardian sends out a request for information every two seconds for each active channel. If there are many detectors in the system, if you selected a large number in the Max Channels section, or if Max Timeout and/or Max Retries values are set too high, the actual time for one cycle might be longer than this number. The number range is 1 to 60 seconds, and the default is 2 seconds.

These examples illustrate how this works:

Condition: The Poll Master Interval is set to 2 seconds, and ProRAE Guardian gets a response from the instrument in 600ms.

1. There is only one instrument in the system.
   ProRAE Guardian waits 2 seconds to poll the instrument again.
   Therefore, the instrument data updating interval is 2 seconds.
2. There are 64 instruments in the system.
   After polling all 64 instruments, ProRAE Guardian takes about 38 seconds (which is larger than the Poll Master Interval) to poll all the instruments. Therefore, the instrument data upgrading interval is about 38 seconds.

9.1.1.7 Settings: Timeout (ms)

Every time ProRAE Guardian sends out a request for data, it waits for a response. If there is valid response within the Timeout time, ProRAE Guardian switches to poll other active monitors. If there is no valid response in the Timeout interval, ProRAE Guardian resends the request. The range is 200 to 800 ms, and the default is 600ms.

Note: Using the default value of 600ms is highly recommended.

9.1.1.8 Settings: Max Retries

Due to the nature of wireless communication, some errors may occur when an instrument communicates with the host computer. When errors occur or when an instrument is switched off, the host computer cannot receive valid data from it. Max Retries displays the number of times the host computer retries communication with the instrument before it is considered to be one failure of communication. When 10 consecutive failures of communication occur, the status indicator for that instrument changes from green to gray, and this monitor is then set to" inactive." The number range is 0 to 5.

9.1.1.9 Settings: Broadcast On Alarm

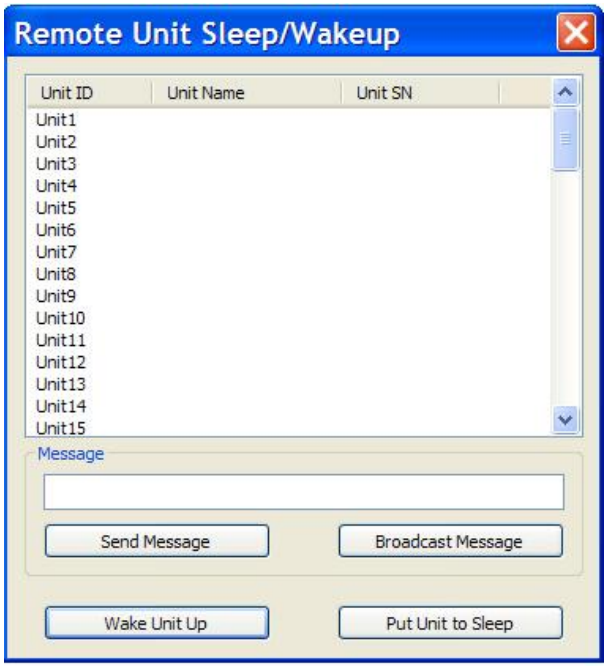
Checking this box enables ProRAE Guardian to send a signal that places all PTM devices in alarm when one PTM device goes into alarm. Input the number of seconds between alarms.

9.1.1.10 Auto Start

This setting automatically commences communication with the indicated instruments whenever ProRAE Guardian is started. If this checkbox is checked, you only need to hit the Start button once, and thereafter ProRAE Guardian will always attempt communication every time it starts.

9.1.1.11 Remote Unit Sleep/Wakeup

Clicking the Remote Unit Sleep/Wakeup button opens this window. You can select specific units on the network to wake or put to sleep, as well as send a message that you type in the "Message" field. You can also click "Broadcast Message" to send the message to the entire network. Just type any message in the "Message" text box, and click "Broadcast message" to send to the displays of all active PTM devices attached to this machine. Alternatively, click "Send Message" to send the message to only the display of the selected Unit(s).



9.1.1.12 Start

Clicking the Start button tells ProRAE Guardian to start communicating with the indicated instruments. If Auto Start is not checked, you must perform this operation every time ProRAE Guardian is started if you want communication to take place with these instruments.

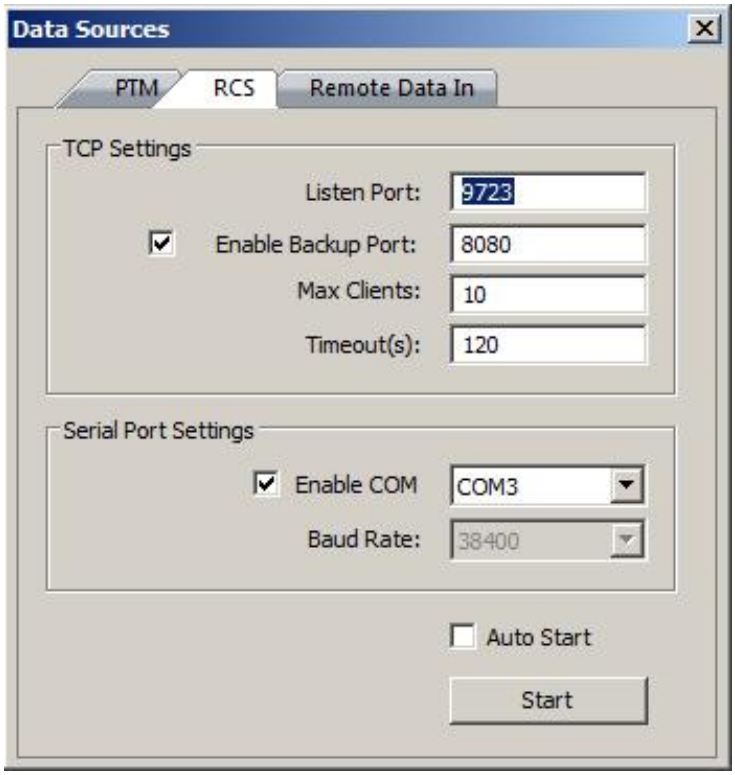
9.1.2 RCS

"RCS" stands for "RAE Communication Standard." This is the communication protocol used by all RAE Systems mesh radios. RAE Systems mesh radios utilize a peer-to-peer, self-configuring, self-healing radio signaling system based upon the Zigbee standard. It provides robust communications in noisy environments, even in the presence of obstacles that may disrupt more fragile point-to-point radio systems.

This tab has two distinct sections. One is labeled "TCP Settings," and the other is labeled "Serial Port Settings." These sections are for configuring RAEMesh Readers in two different ways, depending upon their specific connectivity to the host PC.

The "TCP Settings" section of the RCS tab allows for configuration of RAE Systems devices that are connected on a local area network via Internet protocol. These include the FMC2000 controller and the RAEMesh Reader (indoor version).

The "Serial Port Settings" section of the RCS tab allows you to set up a mesh-type reader that is connected directly to the computer's serial port via DB-9 or USB connection.



9.1.2.1 Listen Port (TCP Settings)

Set the appropriate port to match your reader device (the default is 9723).

Note: If you change the port on ProRAE Guardian, you should change the TCP port with the same value for all the FMC2000 controllers and RAEMesh Readers (indoor version) that connect to the ProRAE Guardian.

9.1.2.2 Enable Backup Port (TCP Settings)

In some installations, port 9723 is blocked and therefore communication between the reader and the computer is also blocked. In these situations, the problem may be resolved if you enable the backup communication port option. If you do not wish to enable a backup port, leave the box unchecked (the default is "Off"). Most installations will not require this.

9.1.2.3 Max Clients (TCP Settings)

ProRAE Guardian can support large numbers of mesh instruments. However, when these instruments are connected to a mesh reader configured via Ethernet in this fashion, serious negative network performance issues may result if large numbers of instruments are involved. Consider this when configuring large mesh networks. The default for this setting is 10, and the range is 1 to 64.

9.1.2.4 Timeout(s) (TCP Settings)

ProRAE Guardian closes the TCP connection if there is no data communication on the TCP connection after the Timeout interval elapses. The default is 120 seconds.

9.1.2.5 Enable COM (Serial Port Settings)

Once your mesh modem is connected and operating, simply select the "Enable COM" checkbox and use the drop-down menu to select the appropriate COM port.

9.1.2.6 Baud Rate (Serial Port Settings)

The baud rate is the transmission rate at which data flows between computers. The baud rate is roughly equivalent to the number of bits per second (bps). For proper data transfer, the baud rate must be the same at the transmitting and receiving ends of a connection. Currently, the baud rate is fixed to 38400 bps. This setting should not be changed.

9.1.2.7 Auto Start

This setting automatically commences communication with the indicated instruments whenever ProRAE Guardian is started. If this checkbox is checked, you only need to hit the Start button once, and thereafter ProRAE Guardian will always attempt communication every time it starts.

9.1.2.8 Start

Clicking the Start button tells ProRAE Guardian to start communicating with the indicated instruments. If Auto Start is not checked, you must perform this operation every time ProRAE Guardian is started if you want communication to take place with these instruments.

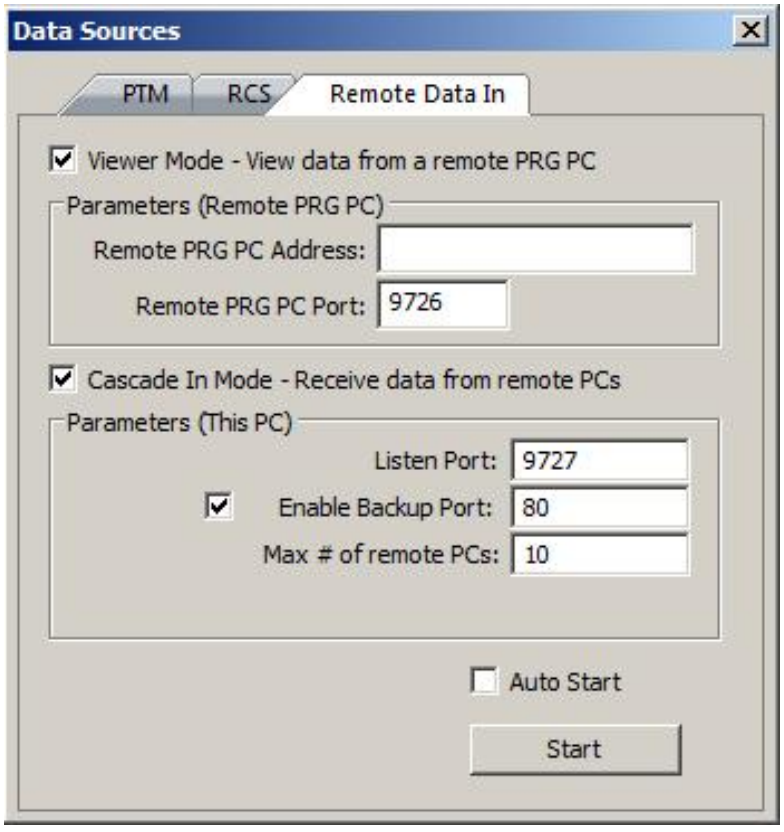
9.1.3 Remote Data In

The "Remote Data In" has settings that control how ProRAE Guardian uses instrument and other data sent to it from other ProRAE Guardian Full Version machines. So-called "Remote ProRAE Guardian computers" can send data to another ProRAE Guardian Full Version machine to be used in two possible ways:

1. **Remote Viewer.** In "Viewer Mode," the local ProRAE Guardian machine can "view" instrument data from instruments that are attached to a remote machine running ProRAE Guardian software. This is the most common way Remote Data In is used. Viewer mode is available in all ProRAE Guardian Versions.

2. **Data "Aggregator."** In "Cascade Mode" many other ProRAE Guardian machines can forward their data to a "master" ProRAE Guardian machine for aggregation. In this way, all data from all machines can be aggregated into one master view, regardless of source.

   Note: Cascade Mode is only available on ProRAE Guardian Full Version installations.



9.1.3.1 Viewer Mode – View data from a remote PRG PC

To set up this machine to view data from a remote computer with ProRAE Guardian, check the checkbox labeled "Viewer Mode – View data from a Remote PRG PC."

9.1.3.2 Remote PRG PC Address (Parameters – Remote PRG)

Input the IP address of the remote ProRAE Guardian computer into this field. **Note:** The IP address of the remote ProRAE Guardian computer must be known and accessible in order for Viewer mode to function properly. It is also recommended to use a fixed IP address.

9.1.3.3 Remote PRG PC Port (Parameters – Remote PRG)

Type in the port number of the remote ProRAE Guardian computer on which the viewer data can be accessed. **Note:** If both machines (Viewer and host) are set to their default values, this should work without changes, unless the specific port is blocked (possibly by a firewall). If this occurs, change port numbers on both systems, or consult your IT department.

9.1.3.4 Cascade In Mode – Receive data from remote PCs

To allow this computer to accept data from other ProRAE Guardian Full Version computers to be aggregated into a single view, check the checkbox beside "Cascade In Mode – Receive data from remote PCs.

.

9.1.3.5 Listen Port (Parameters – This PC)

In order for Cascade Mode to operate properly, both computers (sender and receiver) must have the same port number specified. The default is 9727.

9.1.3.6 Enable Backup Port (Parameters – This PC)

Sometimes, ports may be blocked due to network configuration. If this occurs, checking the checkbox beside "Enable Backup Port" may resolve the problem. **Note:** This is typically not necessary.

9.1.3.7 Max # of remote PCs (Parameters – This PC)

ProRAE Guardian can accept Cascaded data from many computers, but the more computers that send data, the more network bandwidth that is required. The default for the setting is 10, and the range is 1 to 64.

9.1.3.8 Auto Start

This setting automatically commences communication with the indicated instruments whenever ProRAE Guardian is started. If this checkbox is checked, you only need to hit the Start button once, and thereafter ProRAE Guardian will always attempt communication every time it starts.

9.1.3.9 Start

Clicking the Start button tells ProRAE Guardian to start communicating with the indicated instruments. If Auto Start is not checked, you must perform this operation every time ProRAE Guardian is started if you want communication to take place with these instruments. If it is already communicating, the Start button says "Stop."

9.1.4 Options

This toolbar icon opens the Options dialog box, which allows setting various display, alarm, and other functions.

The Options Dialog/Control window has four tabs:

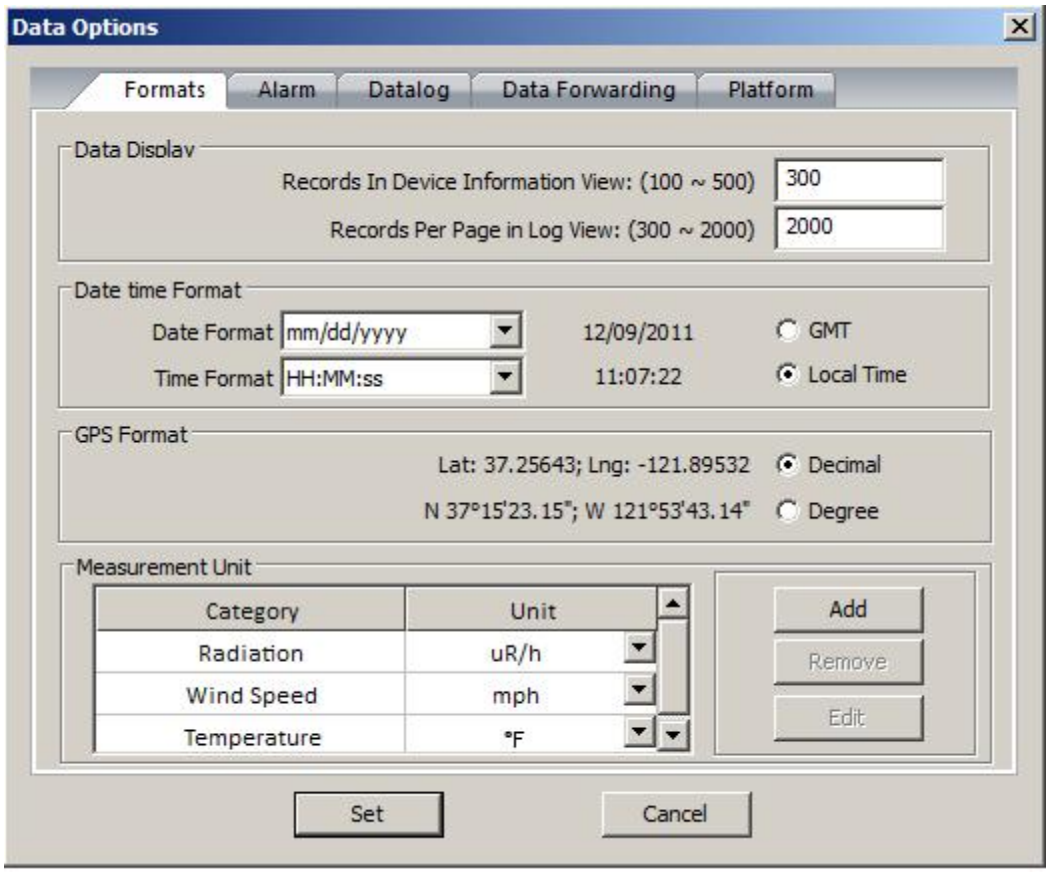
- Data Options
- Add-ons
- Device Templates
- Status

9.1.4.1 Data Options

Data Options has five tabs and many features that set parameters and provide insight and control for ProRAE Guardian and its data.

9.1.4.2 Formats

As its name implies, Formats is where you set the way in which data is presented. There are four sections, Data Display, Date time Format, GPS Format, and Measurement Unit:



Data Display

Records In Device Information View. This sets the maximum number of records shown in the Device Information Pane (the range can be set from 100 to 500). The larger the setting, the more system RAM the program will use, but the more data that will be available via this pane.

Records Per Page in Log View. This sets the maximum number of records shown in the Log View (the range can be set from 300 to 2,000). This setting allows you to configure how much data can be viewed on any one page of the datalog for viewing convenience.

Date time Format

Date and time can be expressed in many different ways.

The date can be indicated in one of the following formats via the pull-down menu:

- mm/dd/yyyy 12/31/2010
- yyyy-mm-dd 2010-12-31
- yy-mm-dd 10-12-31
- yyyy/mm/dd 2010/12/31
- yy/mm/dd 10/12/31
- dd/mm/yyyy 31/12/2010

The time can be indicated in one of the following formats via the pull-down menu:

- HH:MM 12:15
- HH:MM:ss 12:15:27
- HH:MM:ss AM/PM 12:15:27 AM
- HH:MM AM/PM 12:15 AM

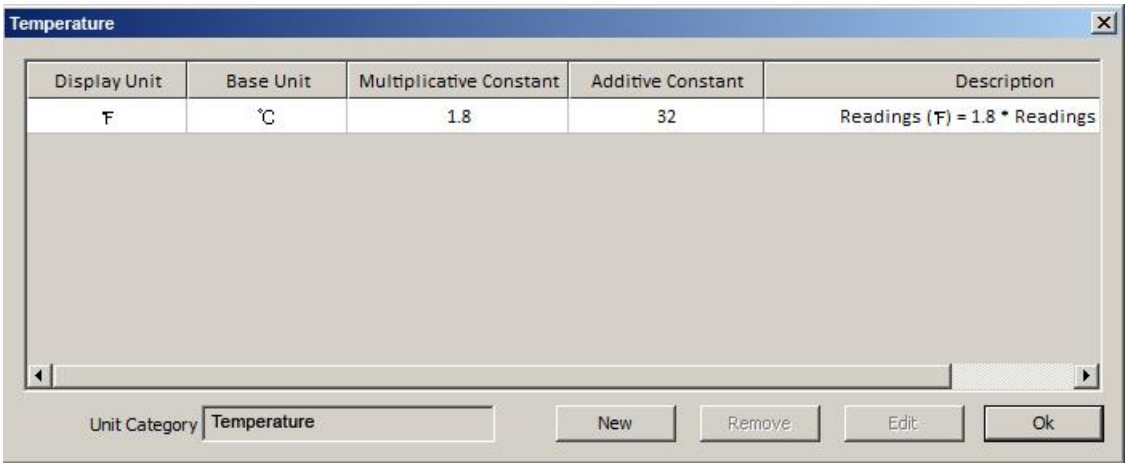
GMT/Local Time. Click either of the radio buttons to select GMT (Greenwich Mean Time) or local time, which is shown in the time format you select via the pull-down menu.

GPS Format

Click either of the radio buttons to select decimal or degree GPS coordinate data format.

Measurement Unit

This section allows configuration of a custom measurement unit for some instrument readings. An example of such a custom unit setting is pre-loaded into the program by default to illustrate a conversion from Fahrenheit to Celsius. To see how the conversion is programmed, select the "Temperature" line in the Measurement Unit box. Then click "Edit". You will then see the following dialog:



This dialog shows that an equation has been programmed into the system relating Degrees F to Degrees C. The equation is:

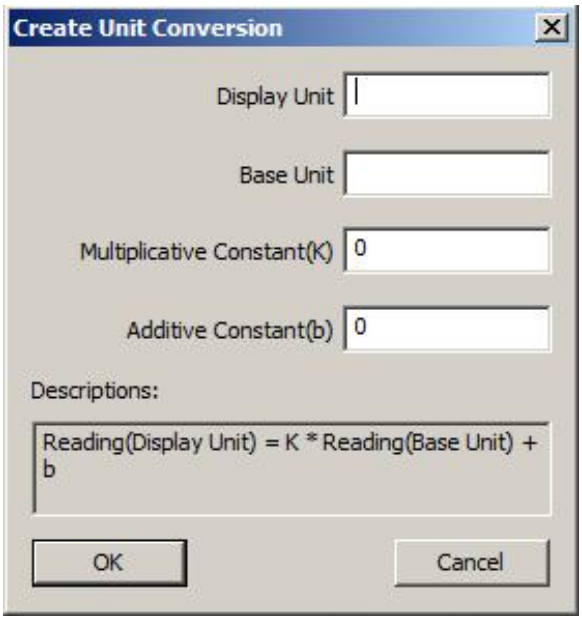
Readings (°F) = 1.8 * Readings (°C) + 32

To add a new Unit of Measurement, go back to the previous dialog and click the "Add" button. Then, in the "Unit Category" text box, type in a new Measurement Category name of your choice. This should typically be the general category that both Units (the original source and your new Unit of Measurement) have in common. Referring to the example, "Temperature" is the category that both °F and °C are members of.

To illustrate this further, let's enter a useful new Unit of Measurement for Velocity. ProRAE Guardian has, by default, only one unit of measurement for velocity: m/sec (meters per second). So let's add a new unit of Velocity equal to mi/hr (miles per hour). To do this, perform the following actions:

1. Go to the original dialog and click on "Add."
2. Enter "Velocity" in the "Unit Category" text field.
3. Click the button labeled "New".
   Note: If you do not enter a name (such as "Velocity") into the text field and click "New," an error message saying, "Please input the unit category name" will pop up to remind you to give it a name.

You should now see another dialog box like the following:



In the text field labeled "Display Unit," type "mph" (for "miles per hour"). This is our new unit of measurement for velocity. For "Base Unit," you must enter a unit of measurement that ProRAE Guardian currently has defined. The best way to figure out what unit ProRAE Guardian already has defined is to use the "Device Information" pane for an instrument that you want to work with. If you have, for example, a WeatherPak with a wind velocity monitor, then in the Device Information pane you should be able to click on the "Device Details" tab and scroll down to see the "Spd" sensor detail. In this detail you will see the "Unit of Measurement" of the Spd sensor for the WeatherPak is "m/sec" (meters per second). This is what you need to type into the "Base Unit" field of the Create Unit Conversion dialog box in our example.

After you have entered the new Display Unit name, and determined the Base Unit name that it will be derived from, then you must enter a linear equation relating the two values that conforms to the general form:

Output Value = Input Value * Additive Constant + Additive Constant.

If you can express the relationship between the two values with the above equation, you can use this function to create whatever new Units of Measurement you want.

In our example above, the equation relating miles per hour to meters per second is 1 m/sec = 2.24 mph. That means

Display Value (in mph) = 2.24 * Input Value (in m/sec)

For example, the instrument's wind speed sensor has a reading of 10 m/sec, which equals to 22.4 mph.

So in order to program our new conversion, type 2.24 into the "Additive Percent" text field. Leave the "Additive Constant" text field set to zero. Now the "Description" field should read:

Readings (mph) = 2.24 * Readings (m/sec)

After this, click the "OK" button to close the dialog. You should now see your new Measurement Unit in the Measurement Unit box. To choose between m/sec and mph, simply select the desired Unit from the drop-down menu, and click the "Set" button. After you do this, all m/sec readings in ProRAE Guardian will now be displayed as mph readings.

Note: This unit conversion is only for the local computer, and does not affect the datalog. It is for display only.

9.1.4.3 Alarm

The Alarm tab provides options for local and remote notification when ProRAE Guardian receives alarm data from its network.

Enable Off-Line Alarm Notifications. If this is checked, the Off-line Alarm feature is activated, ensuring that you are informed in cases when remote instruments lose connection with ProRAE Guardian.

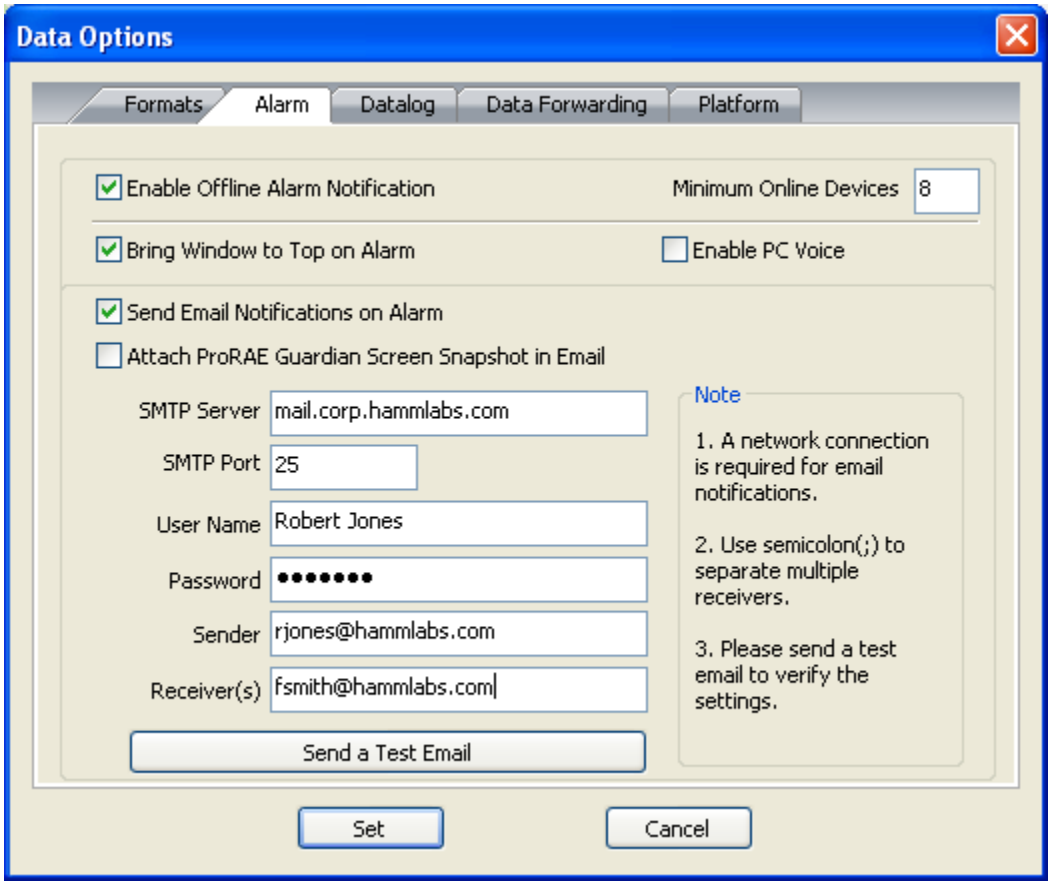
How the Off-Line Alarm Works

ProRAE Guardian starts to check the online instrument number once the number is equal to (or greater than) the value of "Minimum Online Devices" (refer to the next screen image). When some instruments go offline (as a result of their power being turned off or because of lost communication with ProRAE Guardian) and if the online instrument number drops below the value of "Minimum Online Devices," ProRAE Guardian activates the Off-line Alarm.

Once the online instrument number equals or exceeds the value set in "Minimum Online Devices," ProRAE Guardian no longer activates the alarm.

Notes:

1. The Off-line Alarm has a lower priority than the Main Alarm. If there is a Main Alarm, ProRAE Guardian shows the Main Alarm.
2. If the TCP connection is not stable, do not enable this the Off-Line Alarm feature on a cascaded ProRAE Guardian.



Minimum Online Devices. The threshold for ProRAE Guardian to check if any remote devices lose communication with ProRAE Guardian.

Bring Window to Top on Alarm. When this is checked, the ProRAE Guardian window comes to the top if you have other applications open on your computer, ensuring that you are informed of any alarm state changes.

Enable PC Voice. When this is checked, a voice reads any information that is shown in the System Information pane. This lets you know when ports are opened or closed, when a monitor goes into or out of alarm, etc.

Note: If you enable this option, make sure your computer has a sound card and that the volume is not set too low or muted.

Send Email Notifications on Alarm. If the host computer is connected to the Internet via a LAN, checking this option enables email alarm notification. The alarm time, monitor number, and the reason (pump blocked, concentration of some gas is too high, etc.) is included in the email.

Attach ProRAE Guardian Screen Snapshot in Email. Enable this by checking the box. This captures ProRAE Guardian's image and sends it as an attachment with the email to whoever is notified.

SMTP Server. Adding proper settings under "SMTP Server" may require that you get this information from your I.T. department (they may also have to supply a "User Name" and "Password" for you). Once all settings are done, use the "Send a Test Email" button to send a test email.

SMTP Port. This controls the port for which outgoing mail connections will be accepted.

User Name. This edit box shows the username used for authentication on the SMTP server (Extended SMTP). If the SMTP server does not require authentication, leave it blank.

Password. This edit box shows the password companion with the User Name used for authentication on the SMTP server (Extended SMTP). If the SMTP server does not require authentication, leave it blank.

Note: There are various authentication methods (LOGIN, CRAM-MD5, PLAIN, etc.) for Extended SMTP. ProRAE Guardian only supports the most common "Login" method that uses BASE64 coding. Contact your IT support for more information about your SMTP server.

Sender. This edit box shows the originator (source of alarm) of the alarm email.

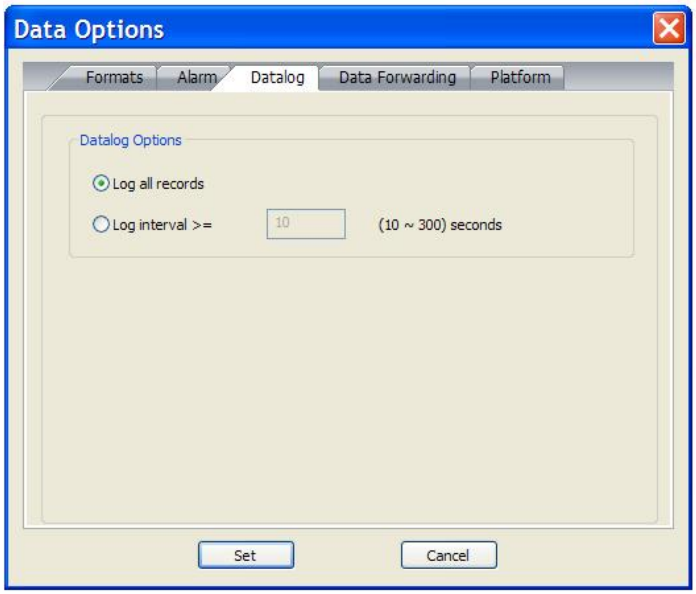
Receiver(s). In this edit box, input the destination email address of the manager who is in charge of alarm notification circulation. If you want to send emails to multiple addresses, separate them with a semicolon (";"), but do not place spaces between them or in the addresses.

Send a Test Email. Clicking this button sends a test email to the destination email address. This is to be used for testing the Internet Email configuration.

Note: It is recommended that you test the email function to make sure it works when configuring the email parameters.

9.1.4.4 Datalog

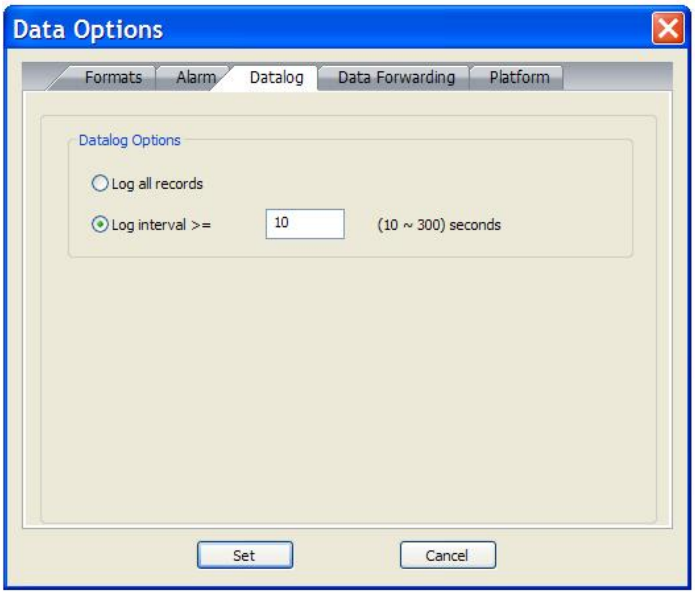
ProRAE Guardian generates a datalog of activity for all devices on the network. The size of the file is limited only by the amount of available local hard disk storage and operating system constraints (maximum file size, etc.).



There are two options for datalogging: logging all records or logging records only at a preset interval.

Log all records. Selecting this option directs ProRAE Guardian to save every record of each polling cycle. If this option is selected, more detailed information is saved, but note that the data file requires extra disk space.

Log Interval. Selecting this option directs ProRAE Guardian to save records at an interval you set (from 10 to 300 seconds), regardless of the polling interval.



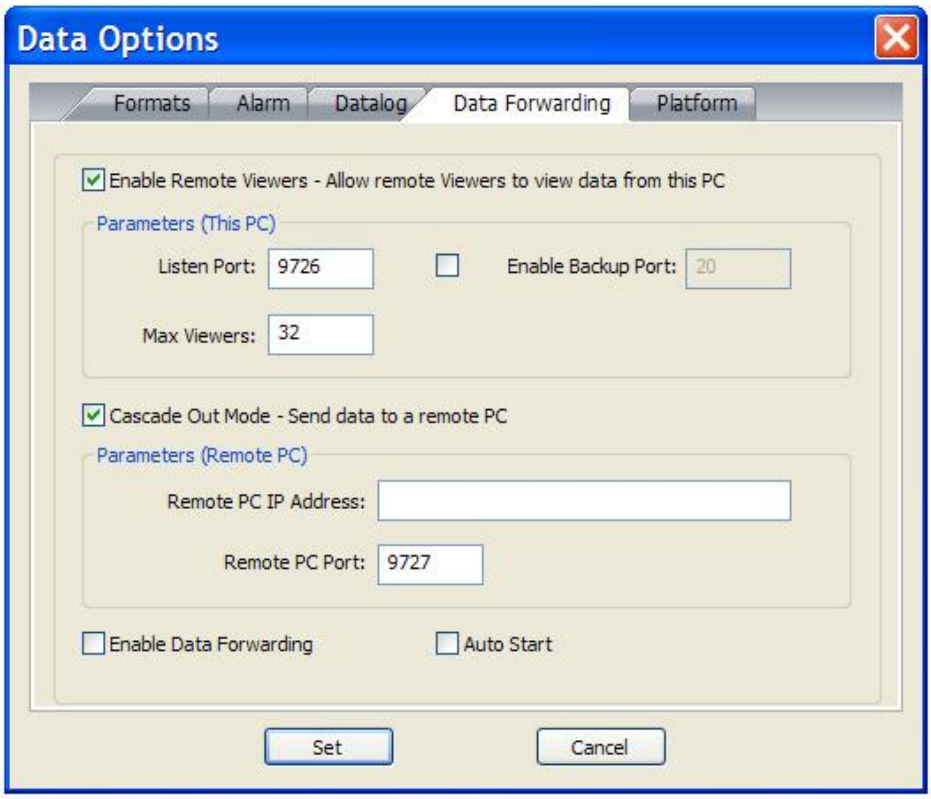
Note: ProRAE Guardian saves all alarm records, regardless of the Log Interval.

After you make your selection (and set the interval if you choose the "Log interval" option), click "Set" to save your intended datalogging interval. If you do not want to save a new interval setting, click "Cancel."

Note: Setting a specific logging interval results in fewer entries and therefore smaller file sizes. However, remember that if you do not select "Log all records," then any data occurring between the log interval points is not saved and cannot be reconstructed or retrieved later.

9.1.4.5 Data Forwarding

After Data Forwarding is properly set and started, the remote ProRAE Guardian Full version and/or ProRAE Guardian Viewer can connect to this ProRAE Guardian to retrieve real-time instrument data from the ProRAE Guardian. Data forwarding must also be properly enabled to allow Add-ons to communicate with ProRAE Guardian.



There are two modes for forwarding real-time data:

- "Remote Viewer" mode
- "Cascade Out" mode

In "Remote Viewer" mode, ProRAE Guardian acts as server for a remote ProRAE Guardian to connect to. This is a common configuration.

In "Cascade Out" mode, ProRAE Guardian connects to the remote ProRAE Guardian Full version. Use this mode in cases in which the remote ProRAE Guardian cannot connect to the local ProRAE Guardian (for instance, if the local PC is using a dynamic IP address).

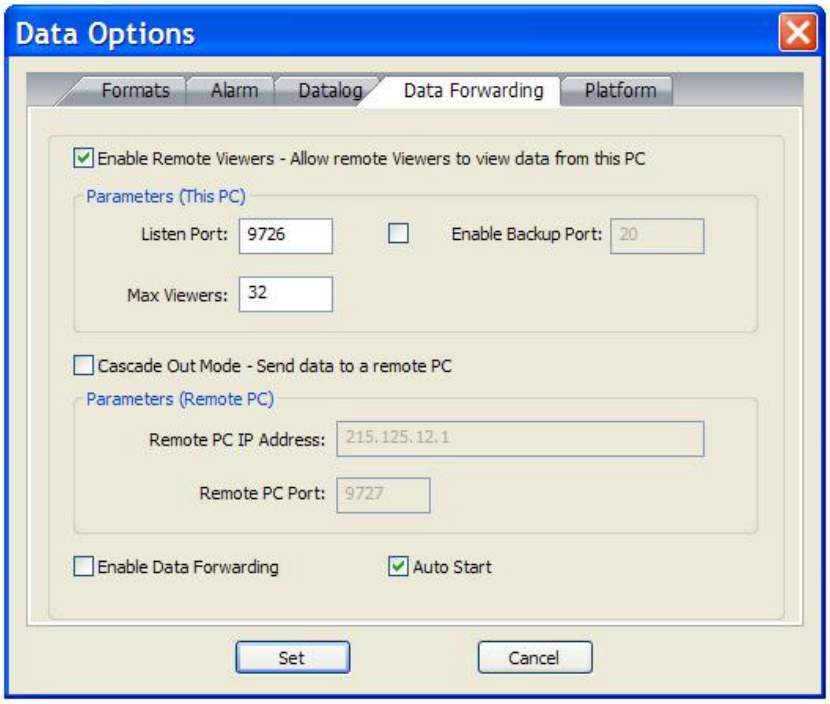
Notes:

1. ProRAE Guardian Viewer does not support the Data Forwarding function.
2. When the local ProRAE Guardian Full version is set to "Cascade Out" mode, the remote ProRAE Guardian must be a Full version.

To configure the settings, you must stop the Data Forwarding function by unchecking the "Enable Data Forwarding."

9.1.4.6 Remote Viewer mode

To configure the settings for "Remote Viewer" mode, you must check the box labeled "Enable Remote Viewers."



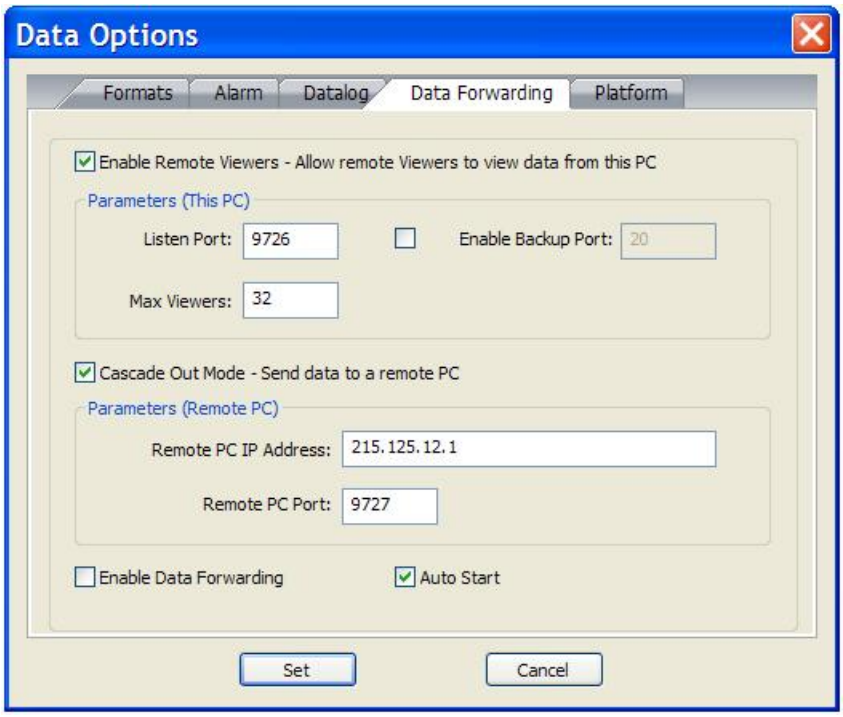
Listen Port: The TCP port on which ProRAE Guardian listens for other ProRAE Guardian that are connected. The default is 9726. Use the default setting on both the local ProRAE Guardian and the remote ProRAE Guardian.

Enable Backup Port: Sometimes, ports may be blocked due to the network configuration. If this occurs, checking the box beside "Enable Backup Port" may resolve the problem. **Note:** This is typically not necessary.

Max Viewers: ProRAE Guardian can accept connections from many computers, but the more computers that are connected, the more network bandwidth that is required. The default for the setting is 32.

9.1.4.7 Cascade Out mode

To configure the settings for "Cascade Out" mode, you must check the box labeled "Cascade Out Mode."

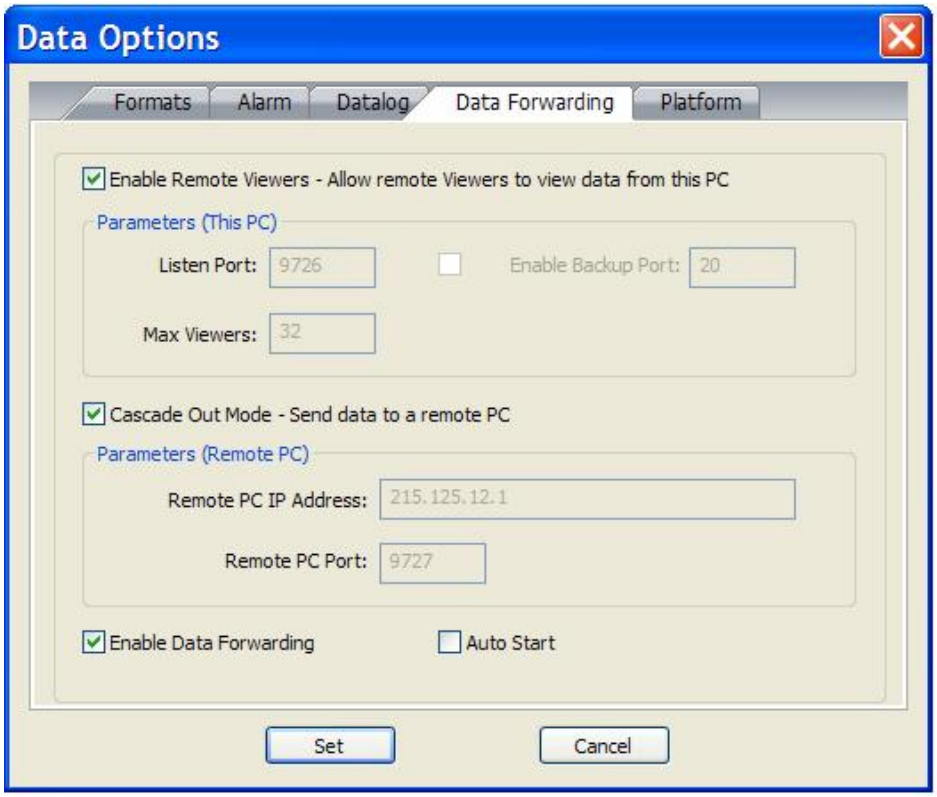


Remote PC IP Address: The remote ProRAE Guardian Full version IP address (such as 215.125.12.1) or domain name (such as remoteprg.company.com).

Remote PC port: The TCP port on which the remote ProRAE Guardian Full version listens. The default is 9727. Use the default setting on both the local ProRAE Guardian and the remote ProRAE Guardian.

9.1.4.8 Enable Data Forwarding

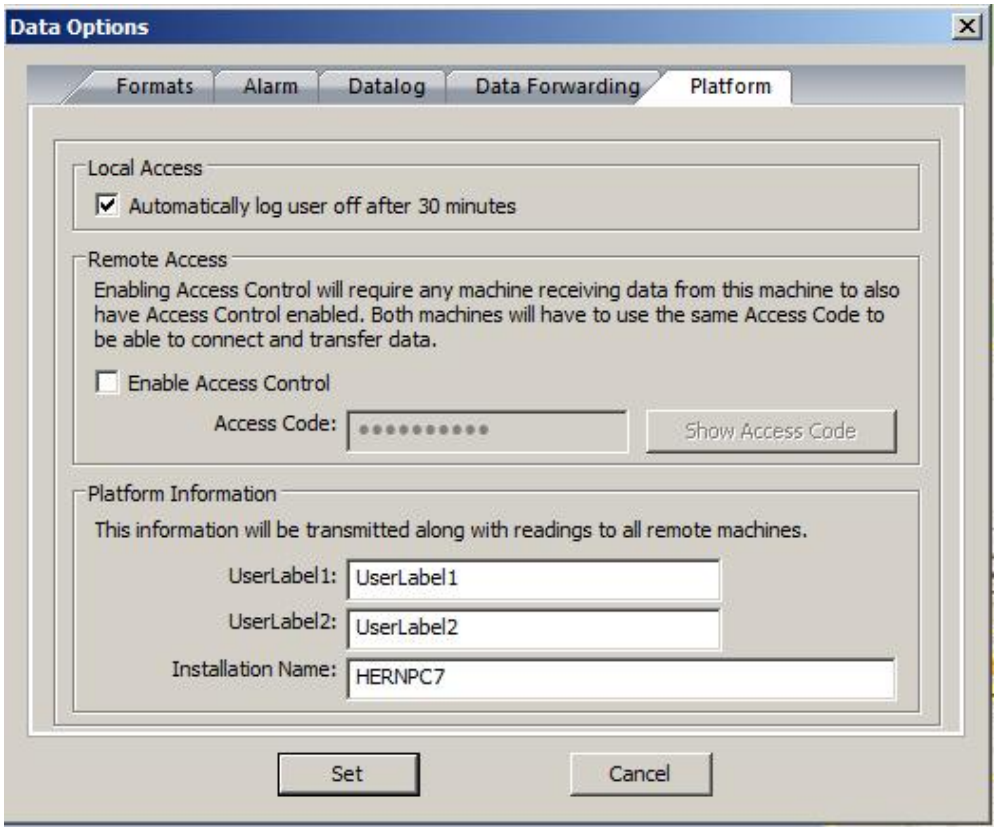
To enable the Data Forwarding function, you must check the "Enable Data Forwarding" box.



After you make your selections, click "Set" to save your intended settings. If you do not want to save the new settings, click "Cancel."

9.1.5 Platform

This contains settings for managing the platform's local and remote access, as well as settings for identifying the computer running ProRAE Guardian.

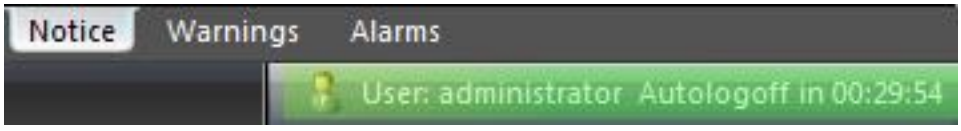


Local Access

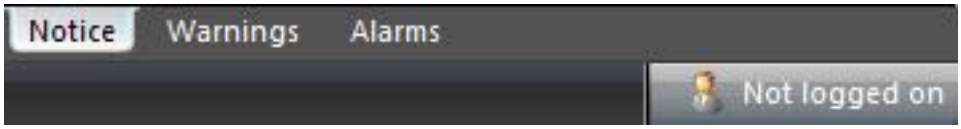
Automatically log user off after 30 minutes. Selecting this checkbox provides a type of "automatic security" by automatically logging off users if you should leave the computer running ProRAE Guardian unattended. You will be automatically logged off 30 minutes after you log on. The default setting for automatic logoff is "on." To disable automatic logoff, uncheck the checkbox and click "Set."

When this is enabled, the countdown starts as soon as you successfully log in. A countdown timer is displayed in the lower right corner of the screen, along with the name of the user. A progress bar is overlaid in green to indicate that it is "live." As the countdown elapses, the green becomes shorter. When only 4 minutes remain, the bar turns red to indicate that ProRAE Guardian will automatically log you off. If you click the bar, it will reset to a 30-minute countdown.

Note: On a PC running Windows XP, this progress bar does not appear.



Note: When no user is logged into ProRAE Guardian, the program remains running, and this image is shown:



You can monitor all instruments as usual. You simply cannot make any changes to critical settings.

Remote Access

Enable Access control. This setting provides an additional level of security when ProRAE Guardian is sending information to another ProRAE Guardian machine. If disabled, ProRAE Guardian connects to other machines as before, using only the settings in "Data Forwarding" and "Remote Data In" dialog boxes. When enabled, however, any machine that ProRAE Guardian connects to must also have "Access Control" enabled and also have the identical Access Code entered into its settings. This way, both machines must be configured with the same secret code in order to establish a connection and transfer data.

Machines attempting to connect without the proper code will be rejected. All connections, successful and failed, are logged in the Event Viewer.

The default setting for this feature is disabled. To enable Access Control, check the checkbox, enter your desired Access Code into the text box, and click "Set."

Note: The default Access Code is "raesystems".

Access Code. This sets the code that any machines receiving data from this machine must have. If the operator of the remote machine does not use the exact code, then communication is not established.

Show Access Code. Once you have clicked "Show Access Code," the dots in the Access Code field change to letters or numbers, and the button says, "Hide Access Code."

Platform Information

Two columns of information are transmitted along with other data to remote machines. Each can have its own label, which you type into the fields "User Label 1" and "User Label 2." A third field is called "Installation Name," which by default takes the name of your computer, but can be any name you choose.

Platform information refers to information from your ProRAE Guardian installation that is transmitted along with instrument readings to all remote machines that ProRAE

Guardian connects to. This helps identify the connecting machine, as well as help the remote user understand the context of the information they are receiving.

UserLabel1 and UserLabel2 are column headings for two user-defined columns in the ProRAEGuardian Device list. The default column headings are "UserLabel1" and "UserLabel2," although you may change these headings to whatever you wish by typing in the text boxes and clicking "Set." As soon as you do, the corresponding column headings in the Device List change.

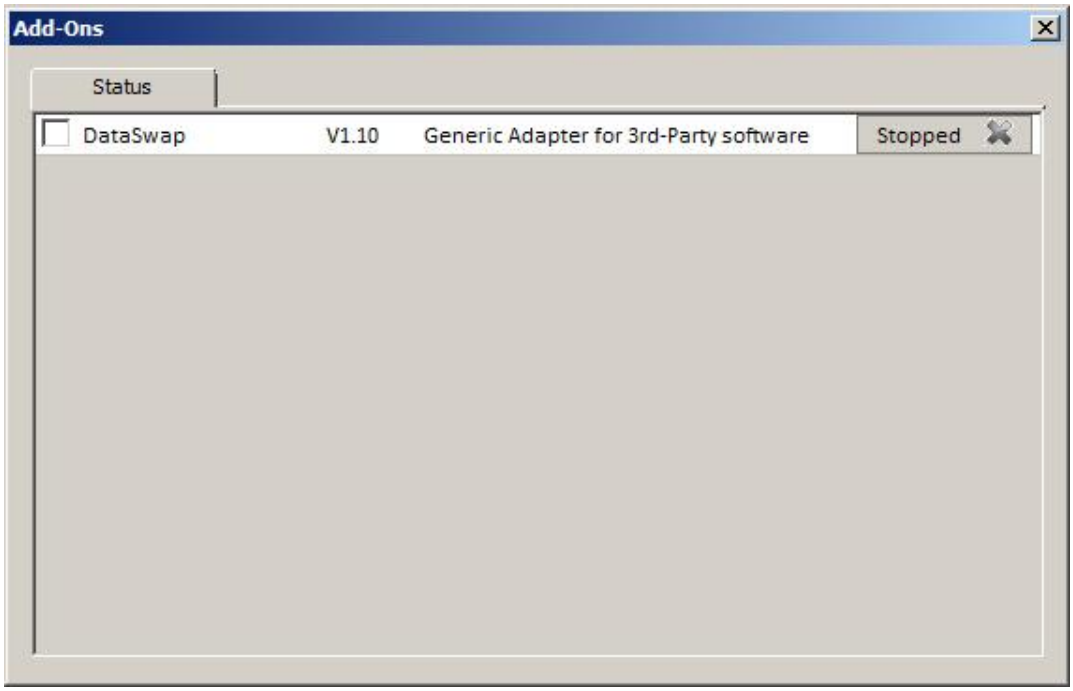
If a remote machine connected to this machine is running ProRAE Guardian Viewer, its corresponding column headings also change. This way, you can name each of these columns with easily identifiable names that are meaningful to you, such as "Location" and "User."

Installation Name is used to identify the computer when it is connecting to a remote system. This name is stored in the Event Log of the remote system for later reference. By default, the Installation Name is set to the Windows Machine Name of the computer that ProRAE Guardian is installed on. You can change this to any convenient name by typing in the text box and clicking "Set." This way, you can name each of your ProRAE Guardian machines with easily identifiable names that are meaningful to you, such as "PRG Installation 1."

9.1.5.1 Add-Ons

The Add-on module(s) are to extend the ProRAE Guardian functions. Each add-on module is a stand-alone process for customized functions that are not provided by ProRAE Guardian as a "standard" function.

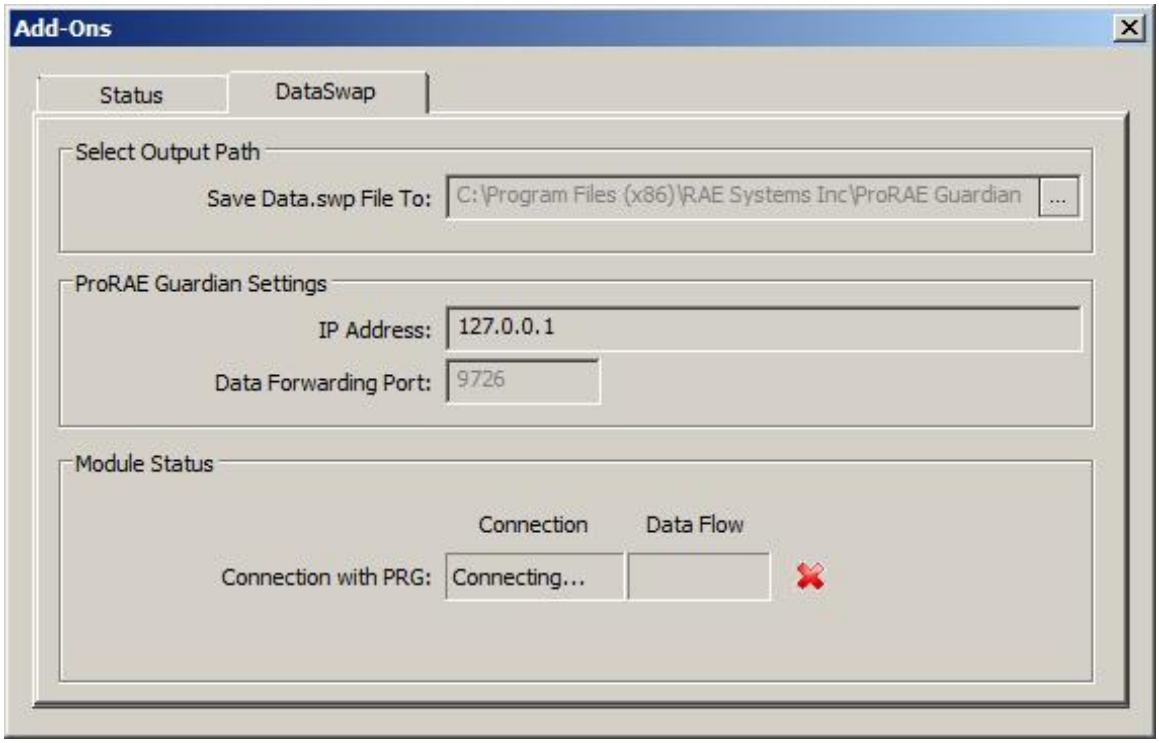
Click the Add-Ons button to show the Add-Ons Dialog/Control box to load or unload the module, or to start or stop the module.



- Click the "Started" button to stop the module and configure the setting of the module under the"DataSwap" tab.
- Uncheck the "DataSwap" box to unload the module. ProRAE Guardian V1.6 will *not* load the module when restarted.

The "DataSwap" module is shipped with ProRAE Guardian. The DataSwap module is for backward compatibility with ProRAE Remote and saves real-time instrument data to a text file named "data.swp". This file is used for sharing data with other software such as PlumeRAE.

Check the box if you want to load the module automatically when ProRAE Guardian starts.



In the module configuration window, select the folder for the output file named data.swp, and change the "Data Forwarding Port." The default value of 9726 is also the default Data Forwarding port in ProRAE Guardian.

Important!
Beginning with ProRAE Guardian V1.6, you can run the program without local administrator privileges. On some windows operating systems (such as Windows7 or Vista), the OS prevents you from writing to the file in some protected folders such as "C:\Windows" and "C:\Program Files." During installation, *do not* change the datalogging folder to a folder that requires administrator privileges, if you do not want to run the ProRAE Guardian with administrator privileges. Choosing the default folder provided by the installer is recommended. The default folder is typically "C:\RAE Systems Inc\ProRAE Guardian Datalog\".

Make sure you enable the "Data forwarding" function on the ProRAE Guardian. (Refer to the section labeled "Data Forwarding," page 50, on how to configure Data Forwarding on ProRAE Guardian.)

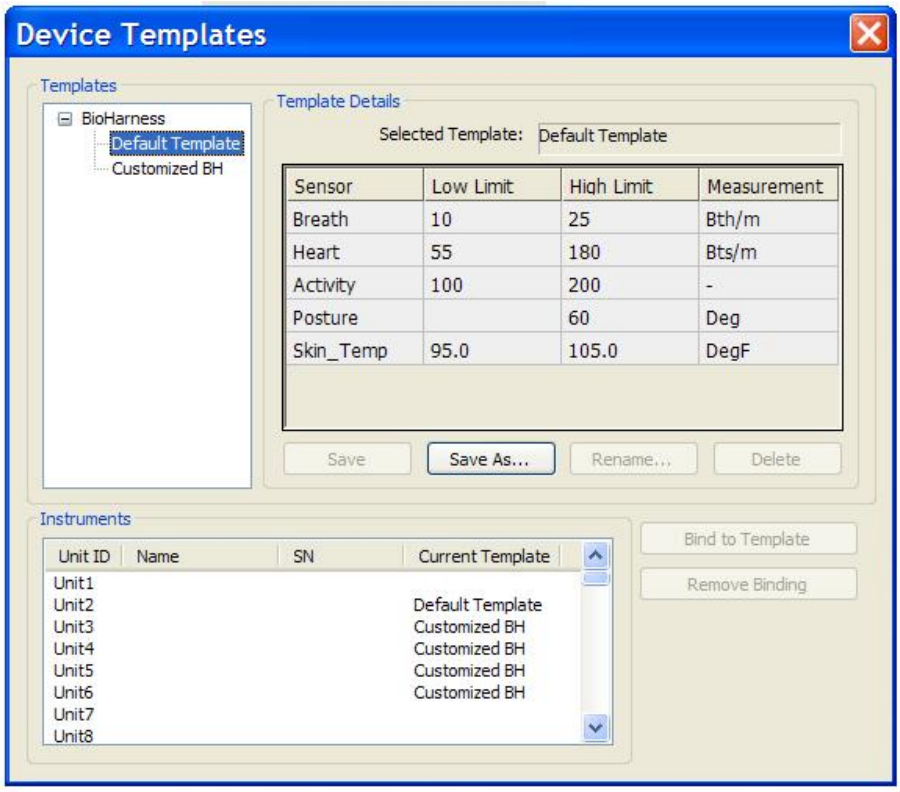
Click "Start" to start the module processing. Check "Auto Start" to start the module process automatically after the module is loaded.

9.1.5.2 Device Templates

Devices in the network that need different alarm points for different applications, times of day, etc., can be grouped into Templates that are stored and later used with ProRAE Guardian.

Note: Initial support for Device Templates is limited to the BioHarness product.

Note: Access requires administrator privileges and a password.



Creating a Template

1. Create a Template by clicking "Save As…"
2. Name the template (do not use any of the invalid characters, which include < > / | \ " ' , . ; : ~ ! @ # $ % ^ * ? =).
3. Click "OK."

The new template name shows up in the Templates list.

Add instruments to the Template:

1. Select one or more instruments to bind into a template by clicking on it in the Instruments list. Select multiple instruments by using Control-Click on each one in the list you want to bind to a template.
2. Click a Template name in the list (this directs which Template to bind to).
3. Click "Bind To Template."

When you select a template, you can choose "Save," "Save As…," "Rename…" or "Delete." In each instance (except "Save"), a pop-up dialog will come up when you click the button.

Note: If you delete a Template, it is permanently erased.

Note: The default template cannot be edited or deleted. However, you can edit the default template and then save your edits to a new template using the "Save As" function.

You can edit parameters in the Template Details.

1. Click the name of a template.
2. In any of the boxes showing parameters (such as Low Limit), you can click and highlight a number and then type a new number.
3. Save the changes to the Template by clicking "Save."

Note: You cannot edit the Default Template nor any of its settings.

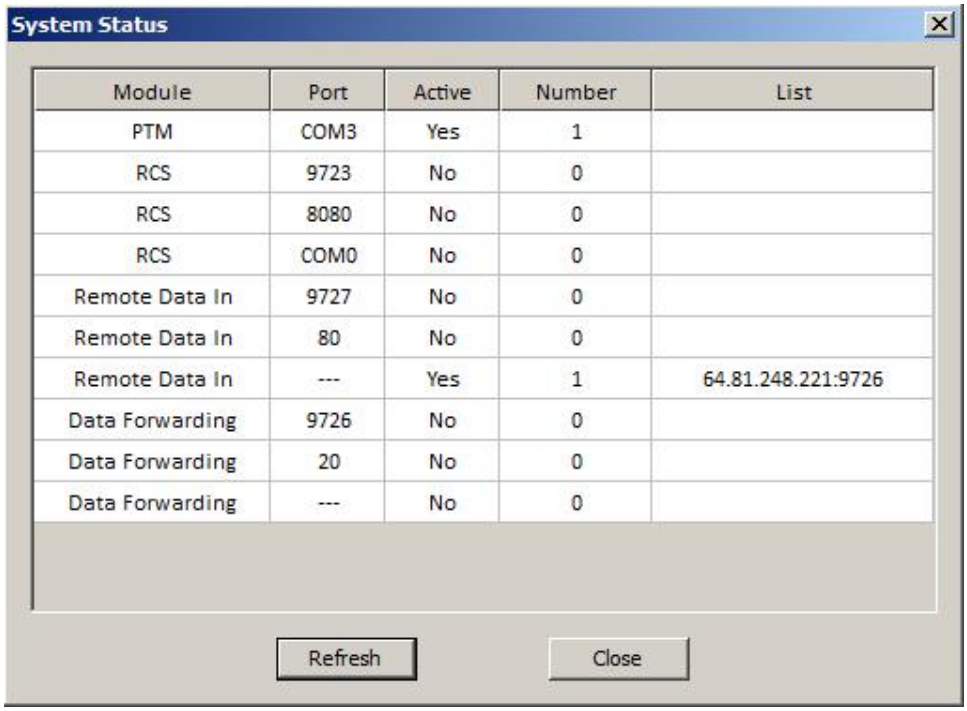
Removing an instrument from a Template

You can unbind an instrument from a template very simply.

1. Click on the name of the Template so that it is highlighted.
2. Click on the instrument's name. (Select multiple instruments by using Control-Click.) The entire row containing the instrument and the Current Template name is highlighted.
3. Click "Remove Binding."

9.1.6 Status

The System Status dialog box acts as a control panel to show details of your system. This information is useful when setting up and diagnosing problems with ProRAE Guardian systems.



The upper portion includes columns for each of the following:

- Module
- Port
- Active
- Number
- List

9.1.6.1 Module

Each module of the system is listed in this column. The data in the other columns is referenced to this column.

9.1.6.2 Port

This lists the data port assigned to each module.

9.1.6.3 Active

This tells whether the port is active.

9.1.6.4 Number

Number of connections connected to ProRAE Guardian. The connection is a logical or physical connection from the modem to ProRAE Guardian. For example, a serial port cable from a RAELink3 modem to ProRAE Guardian is one connection; a TCP link from an FMC2000 controller to ProRAE Guardian is one connection.

9.1.6.5 List

The IP addresses and ports for connected clients are shown here.

9.1.7 Display

This group of parameters governs the number of displayed records, date and time format, and measurement units.

When you are done making changes, click "Set" to implement them and to close the dialog box. If you wish to exit without implementing the changes, click "Cancel." No changes are made, and the dialog box closes.

9.1.7.1 Reset Panes

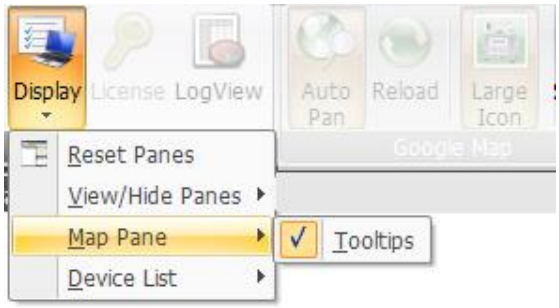
When you click "Reset Panes," the panes are reconfigured to their default sizes and locations.

9.1.7.2 View/Hide Panes

When you click "View/Hide Panes," you can show or hide the Device Information and/or System Information panes.

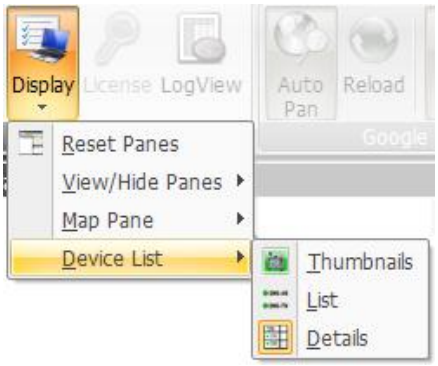
9.1.7.3 Map Pane

You can turn tooltips on and off for the Map Pane.



9.1.7.4 Device List

You can select any of three ways for the Device Display to be presented, as Thumbnails (small images), a List (just the serial numbers), or Details (expanded information about each listed item):



Thumbnails

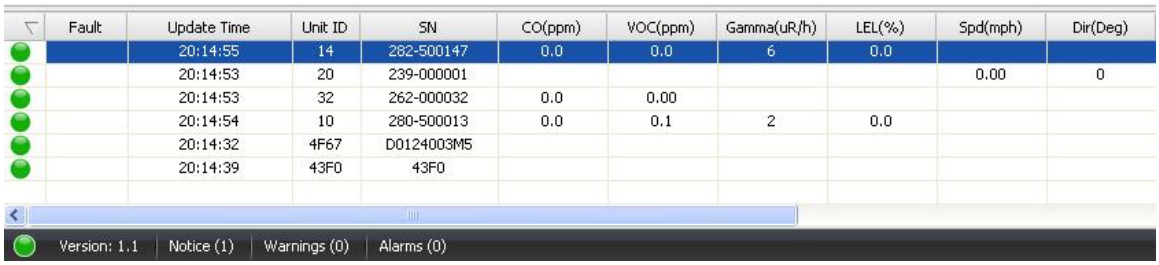
Thumbnail view shows images of the monitors that are part of the ProRAE Guardian network, along with their identification information:

List

List view provides a list of all the monitors in the ProRAE Guardian network, accompanied by their status (shown here in green to indicate they are operational):

Details

Details view expands upon the List view by providing columns with location, time of last report from each monitor, and readings from each sensor:

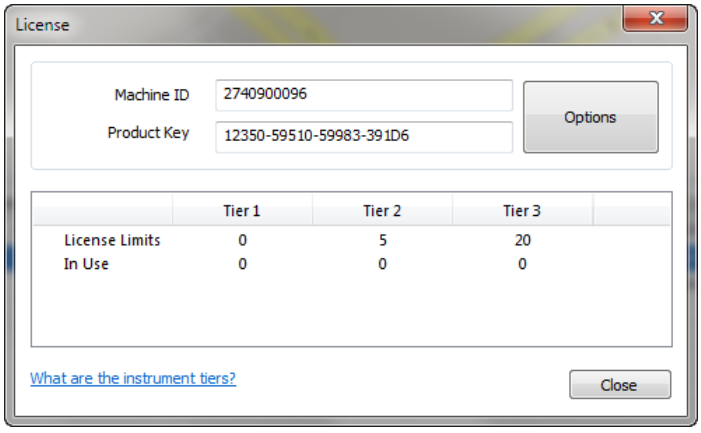


9.1.7.5 License

License management in ProRAE Guardian provides a way to download the latest license information for your Product Key from the ProRAE Guardian license management service or to deactivate your licenses and release Product Key for use on another computer. Registration/activation is covered on page 10.

Click the "License" icon:

The license information box appears:



This is where you can view your Product Key and manage it.

When you click the "Options" button, the ProRAE Guardian License Wizard appears, and it provides two options:

- I want to refresh my license
- I want to deactivate and release my license for use on another computer

Except when you need to renew or move a license, you will not need to use this feature. If you do need to renew or deactivate/release a license, follow each of the steps outlined by the ProRAE Guardian License Wizard.

For information on which instruments are included in each tier, click "What are the instrument tiers?" A chart shows the instruments supported in each licensed tier. When you are done viewing the chart, click "Close."

Important! If you deactivate your license on this computer, then ProRAE Guardian will not run again until you reactivate it or activate it with another license number.

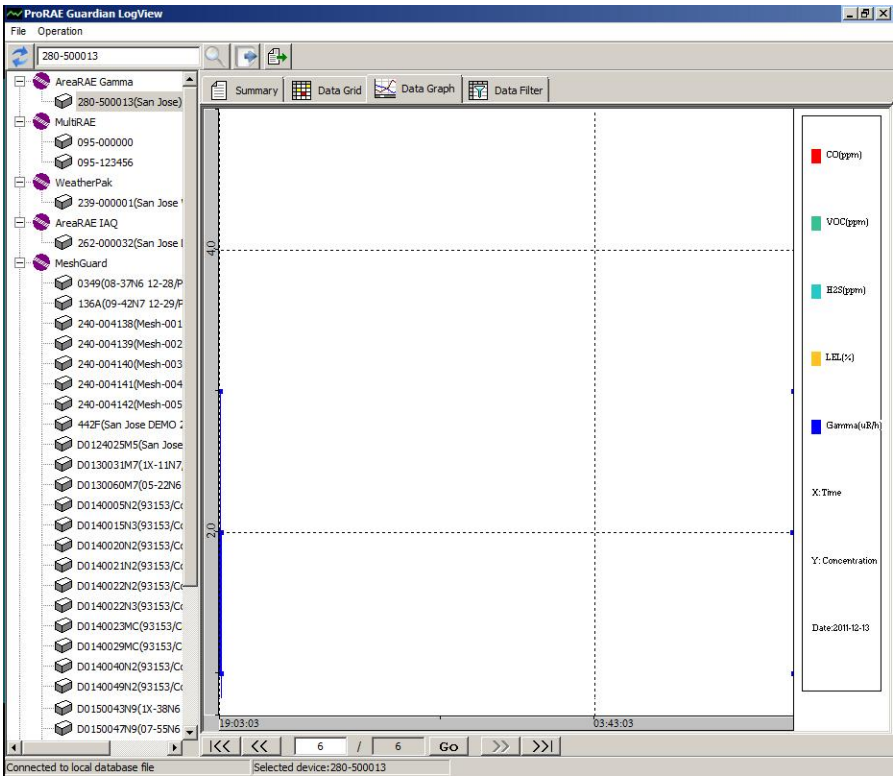
9.1.8 Log View

Log View provides a very detailed view of all of the sensors on the network and data from each one.

When you click the Log View button, a window with two panes appears:

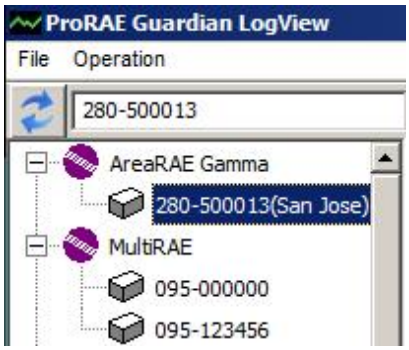
Left Pane: Navigation of the monitors/nodes
Right Pane: Query, Export (actions)
Summary, Data Grid, Graph, Filtered Grid (with controls)

When you select Log View, this is the main window that opens:

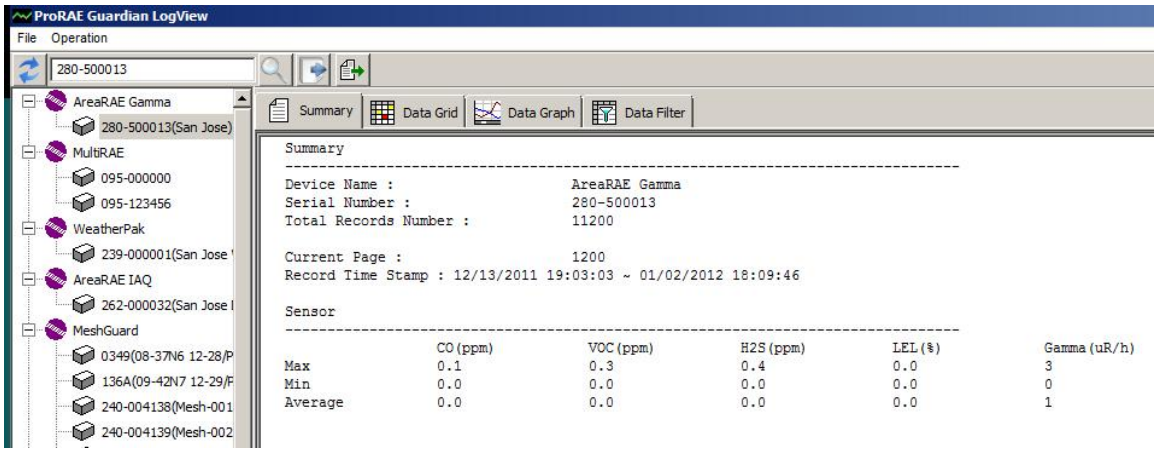


9.1.8.1 Viewing An Instrument's Information

To view information about a specific instrument, double-click on the instrument serial number that appears below the name of the type of device:



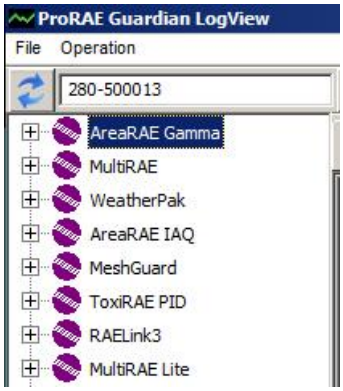
After a few seconds, the right pane is filled with datalog information from that instrument, which is shown in summary form under the Summary tab:



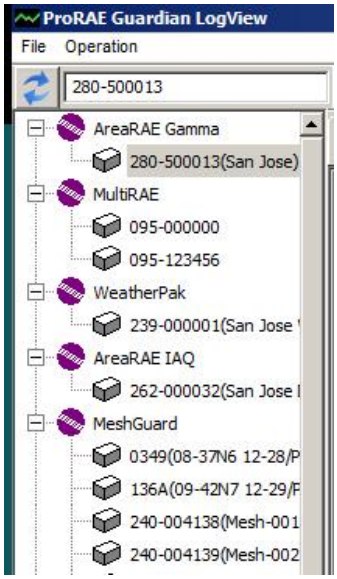
Note: If there is more than one of any device included in the left pane's list, they are organized by device type (MeshGuard, AreaRAE, etc.), with each individual device of that type below it. In this example, there are many MeshGuards, so they are organized under the "MeshGuard" heading."

9.1.8.2 Compacting/Expanding/Updating The Device List

The list of instruments can be compacted by clicking on the "-" sign to the left of each instrument's name. When they are compacted, only the device name is shown (each of the devices of that type are hidden), and a "+" sign appears to the left.



Open each of them again by clicking on the "+" sign.



To refresh the Instrument List, click this icon:

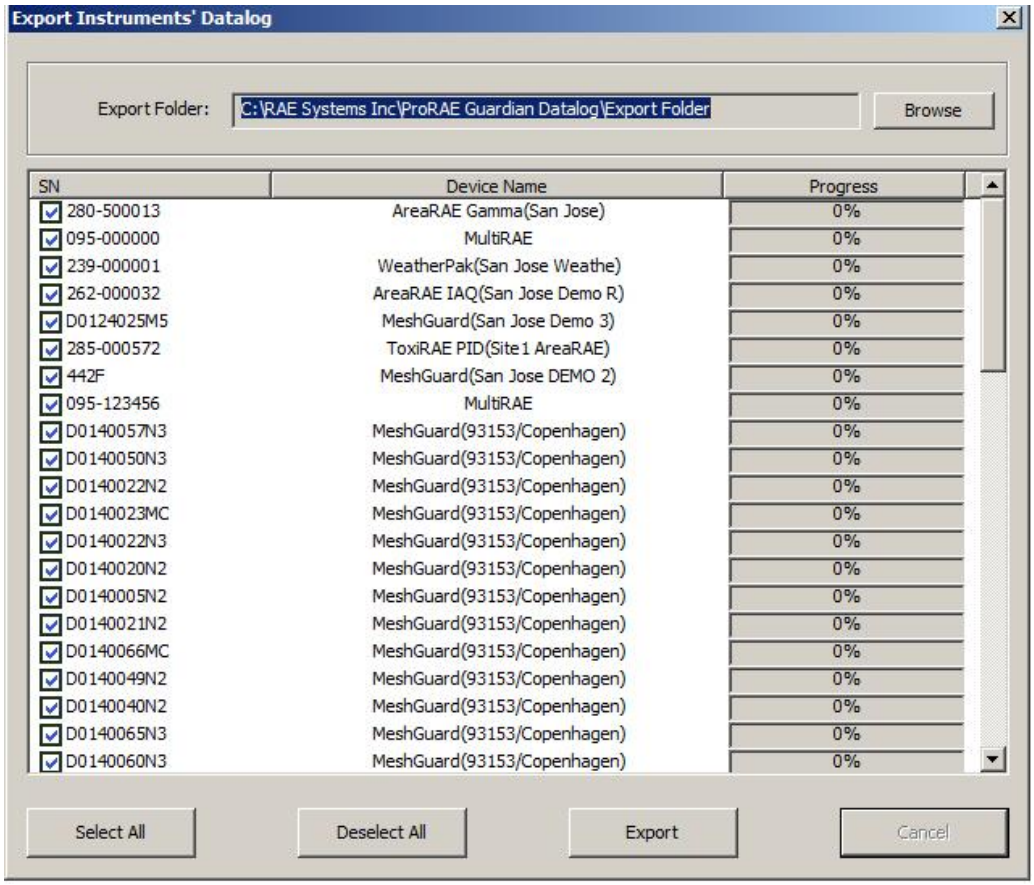
9.1.8.3 Using The Query Button

Click this button instead of double-clicking the instrument in the stack on the left side. Either way grabs the data.

9.1.8.4 Export Multiple Instruments' Datalog

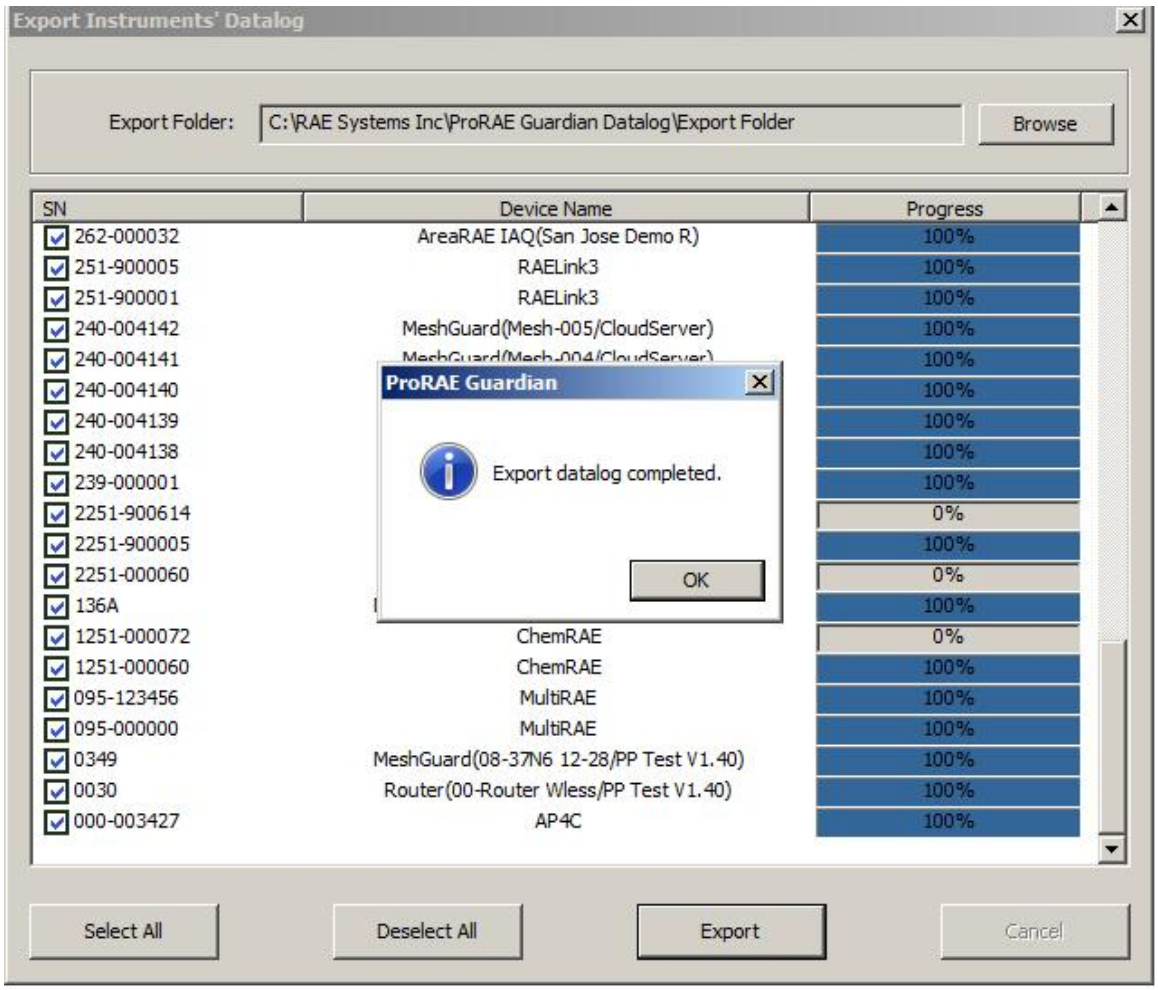
Clicking the "Export Multiple Instruments' Datalog" button saves saves the data from all the instruments in the list as CSV (comma-separated value) text files. The data in the files can then can be viewed in a spreadsheet or edited by using software such as Microsoft Excel, etc.

By default, all logs are selected, but you can use the buttons to deselect all and/or individually select log files. You can also set the destination where you would like all the log files to be saved.



Once you have made the selections, click "Export."

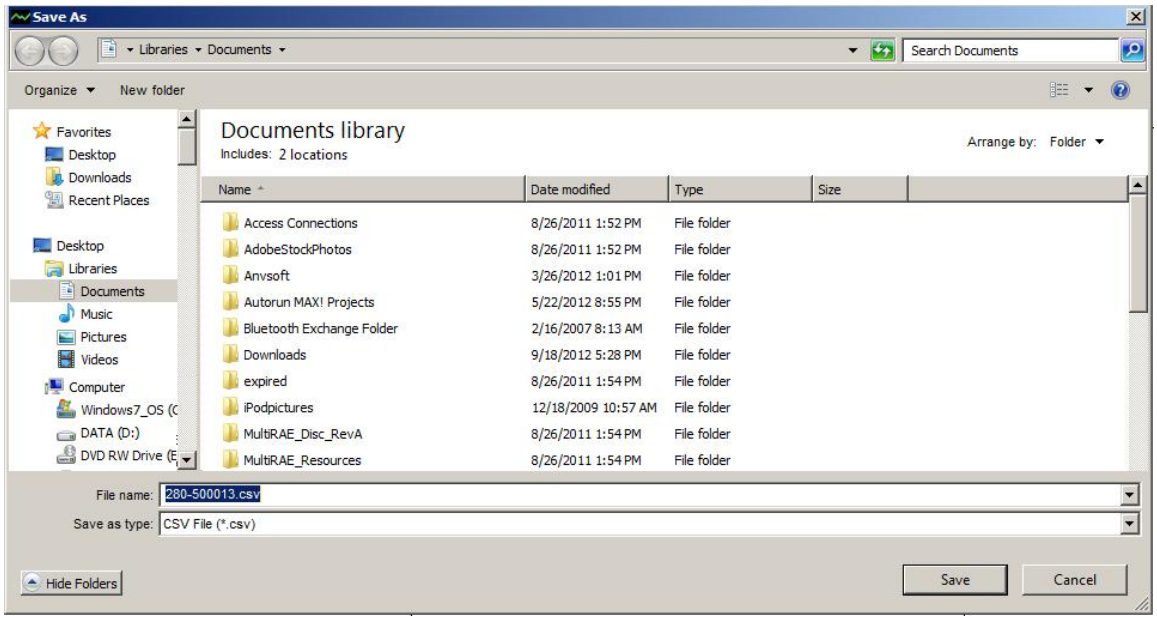
The progress bars show that the files are being saved. When all the files have been saved, you see a dialog box that says, "Export datalog completed." You may now exit from the Export windows.



9.1.8.5 Export Current Selected Instrument's Datalog

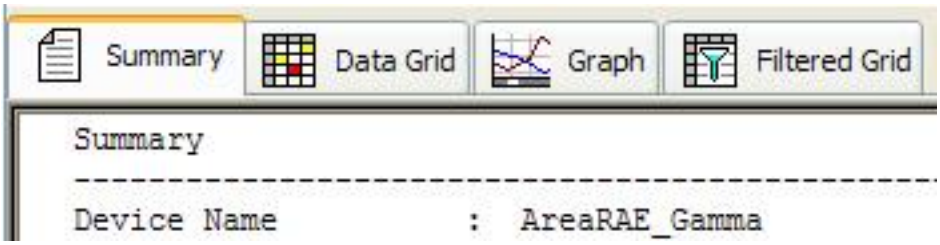
Clicking the "Export Current Display" button saves the currently displayed data as a CSV (comma-separated value) text file. The data in the file can then can be viewed in a spreadsheet or edited by using software such as Microsoft Excel, etc.

After you click the button, input the file name and then click the "Save" button to export the data file.

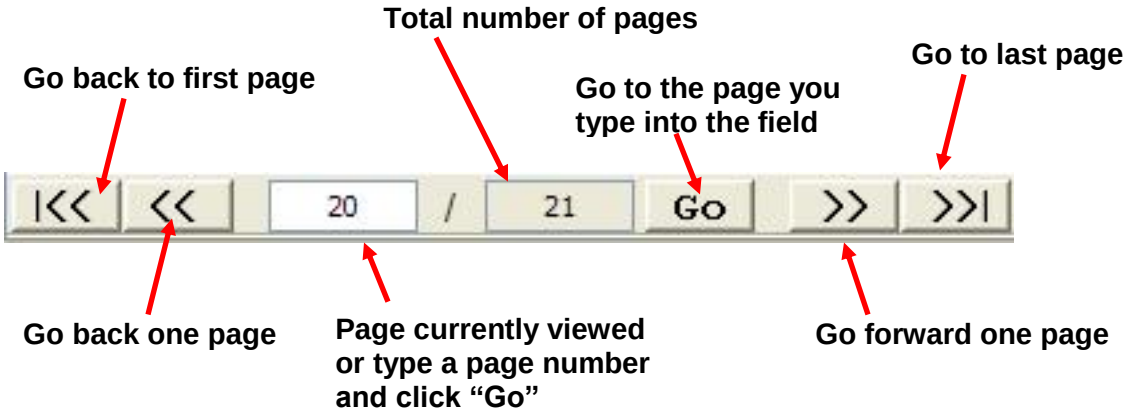


Note that one "page" of the datalog is not equal to one screen on your display. Datalog page size is set in the "Data Options/Datalog" dialog box. The default is 2,000 records/page.

9.1.8.6 Summary



The Summary tab provides a summarized view of a specific device's data. These summaries are organized by pages. You can navigate them by using the navigation buttons along the bottom of the page:



9.1.8.7 Data Grid

Data Grid shows all data in a datalog as a multi-page table, showing individual sensor readings at each interval. Use the same navigation described on the Summary tab to go from page to page.

9.1.8.8 Graph

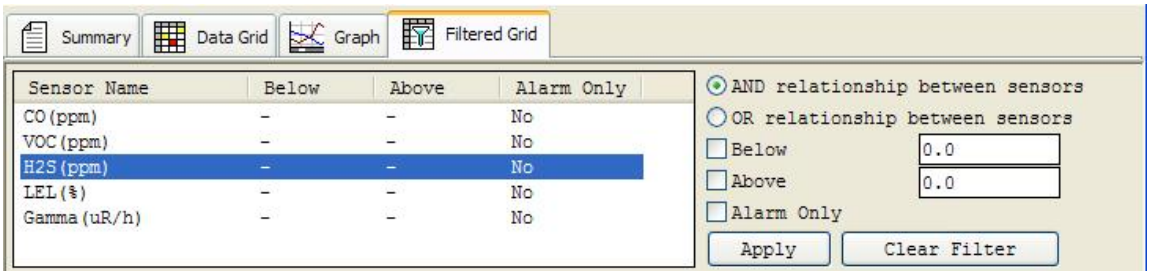
The Graph tab provides an interactive graph display of data and uses colors to show individual sensor readings, with concentrations (or other values) plotted against time. Use the same navigation described on the Summary tab to go from page to page.

9.1.8.9 Filtered Grid

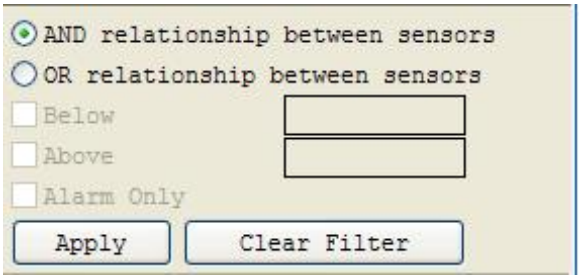
Filtered Grid allows you to create and use "and/or" relationships and level-detection filters to customize which data appears in the grid. It also allows you to select only entries in which an alarm was triggered.

Here is an example of how you can use this tool to tailor what you see in your data grid.

1. Click on one of the sensors in your list.



2. Choose "AND relationship between sensors" or "OR relationship between sensors."

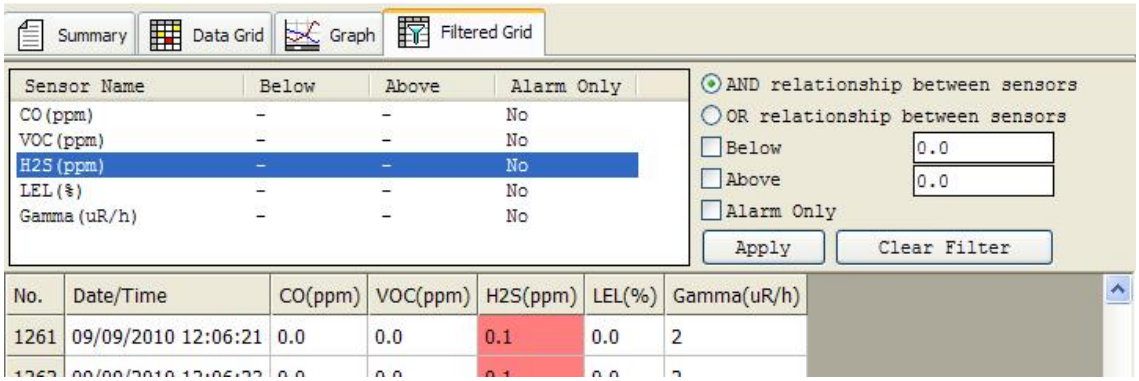


3. Now select "Below," "Above" by clicking in the checkbox. If you select "Below" or "Above," you must supply a value by typing it into the box to the right of the appropriate checkbox. Note that the units are the same as those shown in parentheses after the name of the sensor. A choice of "Alarm Only" tells the filter that you only want data that occurs during an alarm.

Important! When using both "Above" and "Below" values, check your values carefully. If you are looking for values between two specific points, make sure the "AND" button is selected and that the "Below" value and "Above" value reflects a range. For instance, if you want to look for all entries with an H_2S sensor reading between 0.3 and 0.6, select "AND" and set the value for "Above" to 0.3 and "Below" to 0.6.

If you are looking for values outside a range, such as anything below 0.3 and higher than 0.6, select "AND" and set "Above" to 0.6 and "Below" to 0.3. This excludes any values

between 0.3 and 0.6. If you only want to see entries in the datalog from when alarms were tripped, click the checkbox labeled "Alarm Only."



Remember: An "AND" relationship dictates that the requirement set by both "Below" and "Above" must be satisfied for the data to be shown in the table. An "Or" relationship requires a minimum of only one must be satisfied for data to be shown.

Once you have set the parameters, click "Apply" to apply them. The grid will be repopulated according to your values.

Note: the filter applies to the current page of Data Grid.

9.2 Google Map

The tab labeled "Google Map" has buttons for settings that control appearance of the Google Map and devices overlaid on it. The Maps are served on line from Google, thus to get the map, the computer on which ProRAE Guardian is running must be connected to the Internet.

9.2.1 Auto Pan

If devices on your network are located in different places, activating Auto Pan by clicking the Auto Pan button can save time when you want to view it on the map. When Auto Pan is activated, it tells ProRAE Guardian to move the map and center any device selected in the Device List.

Auto Pan off

Auto Pan on

9.2.2 Reload

Clicking this button reloads the map and refreshes the image locations of everything on the network that is represented on the map.

9.2.3 Large Icon

There are two types of representation for each physical device in the network: Large Icon and Small Icon. The large icon is a graphic representation of the instrument, such as an AreaRAE, which accompanies a small icon (a dot) that indicates its status.

On the map, the large icons look like this:

Note: The red flag with the black dot inside indicates the monitor selected in the Device List (when you mouse over the red flag, a tool tip appears, saying, "Current Selected Device").

9.2.4 Small Icon

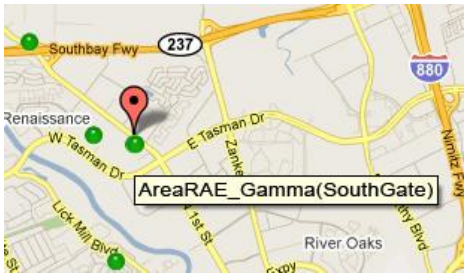
A Small Icon uses just a dot instead of a graphic representation.

Important! The Small Icon acts as a status indicator and is therefore color-coded. It can be one of three colors:

Green	Monitoring and communicating normally
Gray	The device is offline (not communicating)
Red	The device is in an alarm state

On the map, small icons look like this:

Note: Whether you have selected "Large Icons" or "Small Icons," you can see the name of the monitor by mousing over it:



9.2.5 Proxy Server

Many organizations use web proxy servers to route their Internet traffic through them for security reasons, and also for controlling Internet access. So, if your organization uses a web proxy server, then ProRAE Guardian needs to know the server information. Otherwise, ProRAE Guardian will not be able to access Google Maps via the Internet.

There are a few quick ways to check whether your ProRAE Guardian requires web proxy server settings:

1. ProRAE Guardian cannot access Google maps, even when the PC is connected to the Internet.

2. In your Internet Explorer, go to Tools > Internet Options > Connections > LAN Settings, and look for Proxy server settings. These are shared settings that ProRAE Guardian automatically uses if they are set here.

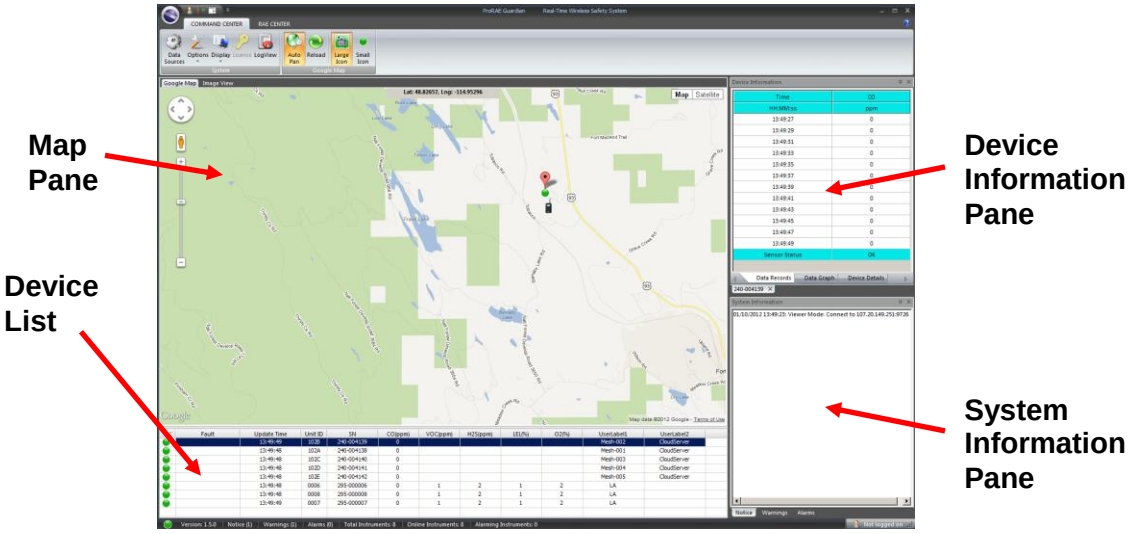
   If you typically have a problem viewing external sources, such as Google Maps, then consult with your I.T. department so that they can configure your Proxy Server settings. Otherwise, you likely do not need to use Proxy Server settings.

9.3 RAE Center

This takes you to the RAE Center website, which contains information about RAE Systems software and gas-detection equipment.

10 Panes

The ProRAE Guardian window is divided into panes, which can be rearranged, resized, minimized, or hidden from view. These, in addition to the Device List, provide the primary user interface for ProRAE Guardian.



10.1 Map Pane

The Map Pane provides a visual reference that can be either a Google Map or an Image View. In addition, ESRI MXD and Tiger maps can optionally be used.

Note: As you mouse over, the latitude and longitude coordinates track the map location as selected by the cursor.

10.1.1 Google Map

Google Map is the default Map View of ProRAE Guardian. Refer to section "7.2 Google Map" (page 74) for operation buttons on Google Map.

10.1.1.1 Latitude And Longitude

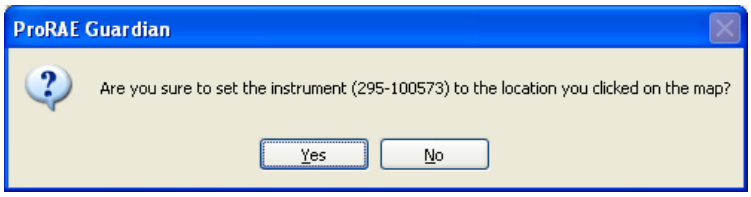
When you move the mouse from one location to another, the latitude and longitude change is reflected:

10.1.1.2 Set instrument GPS location manually

After clicking the instrument in the Device List (Refer to "Device List View," page 84), you can locate the instrument on the map by manually set its GPS coordinates. It is a useful feature for instruments without GPS information.

Note: You can only set GPS coordinates and place instruments on a map if the instruments are locally connected.

Move the mouse on the map to the location of the instrument. Right-click on the map, and a message box pops up. Click "Yes" to set the instrument on the map.



If you manually set the GPS coordinates (by right-clicking on the Google map or ESRI map) for the instrument, the button "Reset GPS Setting" is enabled. Clicking the button clears the manual GPS setting, and the instrument is then shown on the map with the GPS coordinates from the instrument (if it is equipped with a GPS sensor). Otherwise (if it does not have a GPS sensor), it will not show on the map.

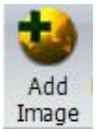
10.1.2 Image View

Image View enables the use of a map or layout of a facility within ProRAE Guardian. . This gives you the flexibility to show locations of devices inside a facility, or on an annotated map delineating specific hazard zones, etc.

When you click on the Image View tab, the Image View toolbar appears along the top of the screen:

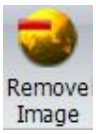
The Image View toolbar acts as a control panel for configuring and monitoring everything in the Map pane when in Image View.

10.1.2.1 Add Image

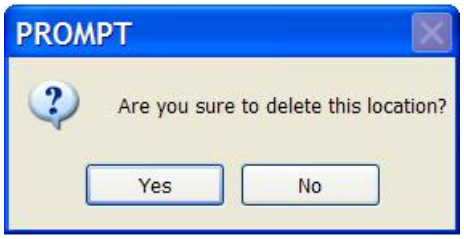


In this case, "Image" refers to a graphic instead of a Google map. This means that you can import a JPEG, BMP, or PNG image such as a photograph, a blueprint, or a scanned image of a map that suits your needs. It also allows you to place devices on the image so that you can put them into a useful context (for example, placing MeshGuards around the perimeter of a facility and in certain enclosed structures—something that would not be possible with a standard map). Refer to the "Set Background" section (page 74) for details of importing a background image.

10.1.2.2 Remove Image



When you click on this button, a dialog box pops up. It asks if you would like to delete the current location:

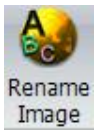


If you click "Yes," then the location and its contents (background image and device locations) are deleted.

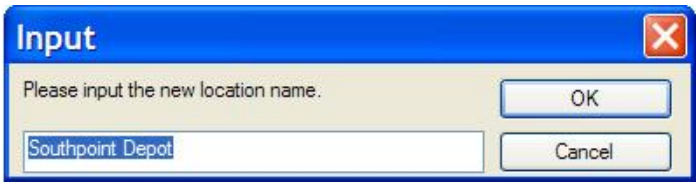
If you click "No," then the location and its content remain and the dialog box closes.

Important! If you remove the current location, the action cannot be undone.

10.1.2.3 Rename Image



When you click on this button, a dialog box pops up with a field already populated with the current image name:



Type in a new name and click "OK" to change it.

Note: If you have saved this layout previously, then this new image name will not be stored until you save the layout again or save it as a new layout.

10.1.2.4 Add Device

Once you have created a new image and have imported a graphic for a background (refer to the "Set Background" section, page 60, for details of importing a background image), you can place the devices on the image.

1. Click the "Add Device" button.
2. Move your mouse and locate the circle with the crosshairs in the middle exactly where you want a device located on the image.
3. Click the mouse once to set the location.

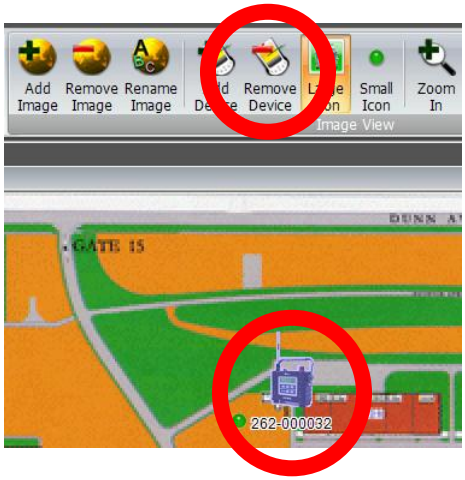
When the dialog box comes up, you can choose the device you want by its serial number:

10.1.2.5 Remove Device

If you want to remove a device, click on the device in the image, and then click "Remove Device."

Note: If no device is selected, the "Remove Device" button is grayed out and does not function.

When a device is selected, it changes color to indicate that it is selected:



The "Remove Device" button is now active:

When you click "Remove Device," a dialog box appears, asking you to confirm that you want to delete the device. If you want to delete it, click "Yes." If you decide to keep the device on the image, click "No."

10.1.2.6 Large Icon

There are two types of representation for each physical device in the network: Large Icon and Small Icon. The large icon is a graphic representation of the instrument, such as an AreaRAE, which accompanies a small icon (a dot) that indicates its status.

10.1.2.7 Small Icon

A Small Icon uses just a dot instead of a graphic representation. **Note:** If you choose small icons instead of large ones, be careful to use a background image that provides enough contrast.

10.1.2.8 Zoom In

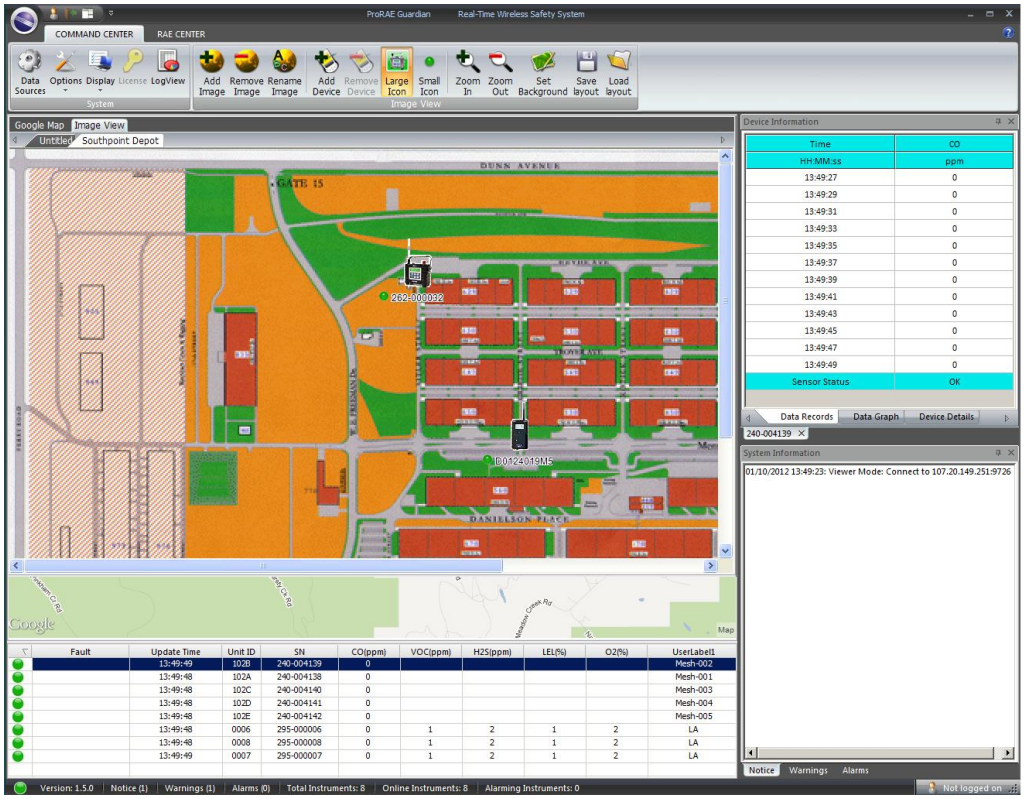
If you need a closer view, or if multiple devices appear in a clutter, click "Zoom In" to make the graphic larger.

10.1.2.9 Zoom Out

If you want a wider view, click "Zoom Out" to expand the graph.

10.1.2.10 Set Background

Note: If you plan to use the "Small Icons" view, it is a good idea to either use a black-and-white image, a blueprint, or an image with reduced green and red content so that the locations of the dots representing the sensors is easier to see against the background.



10.1.2.11 Save Layout

Once you have created a new image, added a background, and then placed devices on it, you should save it if you want to use it again. Click the "Save Layout" button. When the dialog box appears, name the file and click "Save." The layout is saved as a unique file with the suffix ".ivl," which stands for "image view layout."

10.1.2.12 Load Layout

You can load a stored layout by clicking the "Load Layout" button and then selecting a layout file (which has an ".ivl" suffix). Then click "Open."

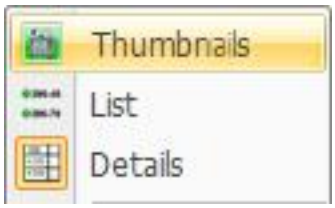
10.2 Device List View

Any devices on the network that are connected with the computer running ProRAE Guardian are included in this list.

The Device List can be viewed three ways:

- Thumbnails
- List
- Details

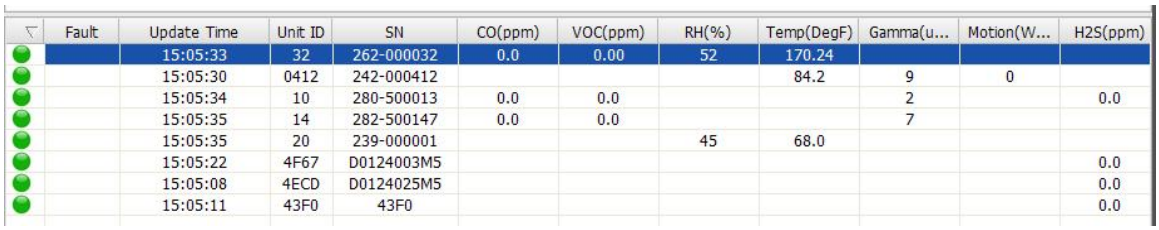
Right-click anywhere in the pane to see this window for selecting the view:



Thumbnail view shows images of the monitors that are part of the ProRAE Guardian network, along with their identification information:

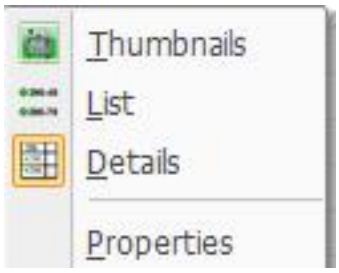
List view provides a list of all the instruments being monitored in the ProRAE Guardian network, accompanied by their status (operational, shown in green):

Details view expands the List view by providing columns with monitor status, monitor fault, time of last report from each monitor, unit ID, monitor SN, and readings from each sensor:

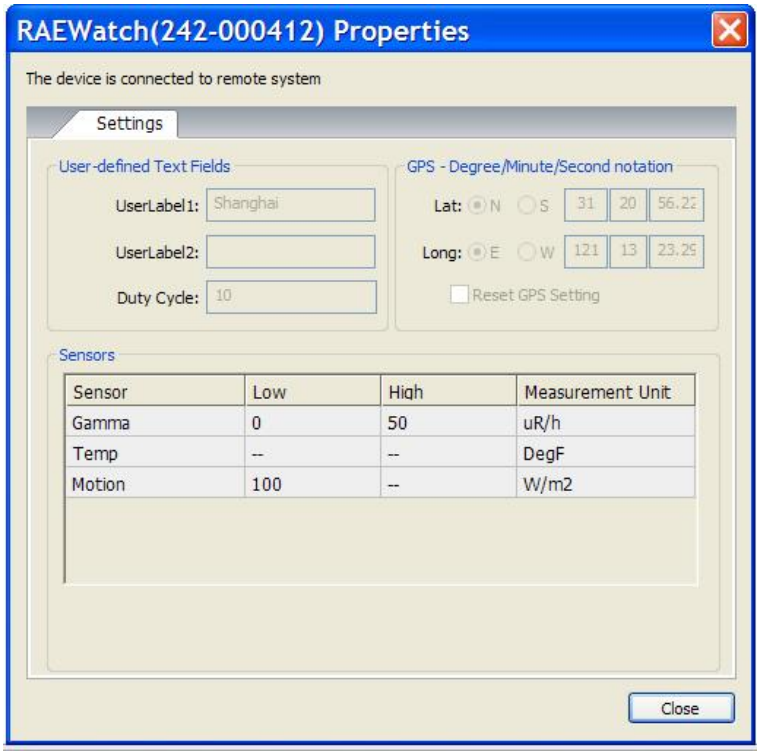


Fault	Update Time	Unit ID	SN	CO(ppm)	VOC(ppm)	RH(%)	Temp(DegF)	Gamma(u...	Motion(W...	H2S(ppm)
	15:05:33	32	262-000032	0.0	0.00	52	170.24			
	15:05:30	0412	242-000412				84.2	9	0	
	15:05:34	10	280-500013	0.0	0.0			2		0.0
	15:05:35	14	282-500147	0.0	0.0			7		
	15:05:35	20	239-000001			45	68.0			
	15:05:22	4F67	D0124003M5							0.0
	15:05:08	4ECD	D0124025M5							0.0
	15:05:11	43F0	43F0							0.0

Greater detailed information about an instrument is accessible by selecting Properties. Right-click on any instrument's line in the Device List pane and then click "Properties" for detailed information. Alternatively, you can double-click the instrument line to get detailed information for each instrument.



When "Properties" is clicked, detailed information fills a pop-up window with details of the currently selected instrument (the name of the instrument is shown at the top of the window):



Click "Close" to dismiss the window. For more information on Properties, see page 96.

10.3 System Information Pane

System Information, as its name implies, monitors activities at the system level, such as the opening and closing of ports, establishment of connections and so forth.

There are 3 tabs in the System Information Pane

- Notice
- Warnings
- Alarms

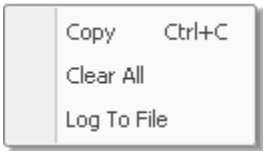
The "Notice" tab logs the event of normal system operations, such as open or closed ports, etc.

The "Warnings" tab logs the event of system operation errors, such as failures to open a port.

The "Alarms" tab logs the instrument alarm history (for example, a sensor low alarm).

Notes:

1. Each tab is limited to 500 events. If the event number in the tab exceeds the limit, the first event is removed from the tab, and the latest event is added to the last line of the tab. This rule applies separately to each of the three tabs.
2. Right-click in the tab to show a pop-up menu (Copy, Clear All, Log To File) to copy the information in the tab, or clear the information, or log to a text file. This operation applies to the selected tab, not all three tabs.



10.4 Device Information Pane

Device Information has tabs along the bottom for showing Data Records, Data Graph, and Device Details. Below that set of tabs is another that is generated when you click on the devices listed in the Device List pane. These tabs are identified by the SN (serial number) of each device in the Device List. Any of these tabs (and its data) can be removed from this display area by clicking the "X" on the upper right corner of the tab. To include data (and produce a tab) again, click the device in the Device List pane.

Note: The order of all tabs (left to right) can be changed. Simply click and hold the left mouse button to select a tab, and then drag it right or left to reposition it.

Data Records consists of time and sensor readings in a chart.
Data Graph shows the sensor readings on a graph, with colors indicating the different sensors.
Device Details can be compacted by clicking on the "-" to the left of each major item (Device, GPS, or Sensor) or sub-item (each sensor has information and can be compacted, too.).

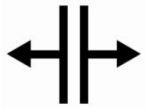
Note: The order of all tabs (left to right) can be changed. Simply click and hold the left mouse button to select a tab, and then drag it right or left to reposition it.

11 Managing Panes

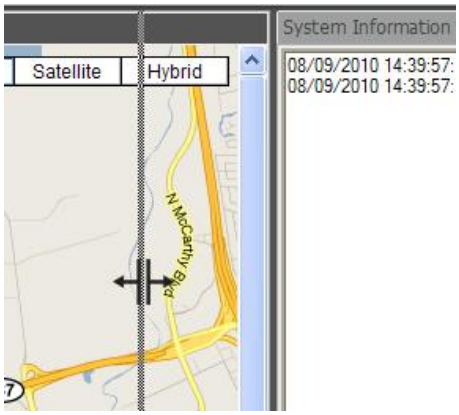
The Device Information Pane and System Information panes on ProRAE Guardian are detachable from the main user interface, making it possible to "park" them anywhere on your computer desktop. In addition, ProRAE Guardian supports multiple displays, so you can, for example, have the main window on one display and locate one or both of the detachable panes on another display.

11.1 Resizing Panes

To resize the panes, move your mouse over the "seam" between two panes. This sizing icon appears:



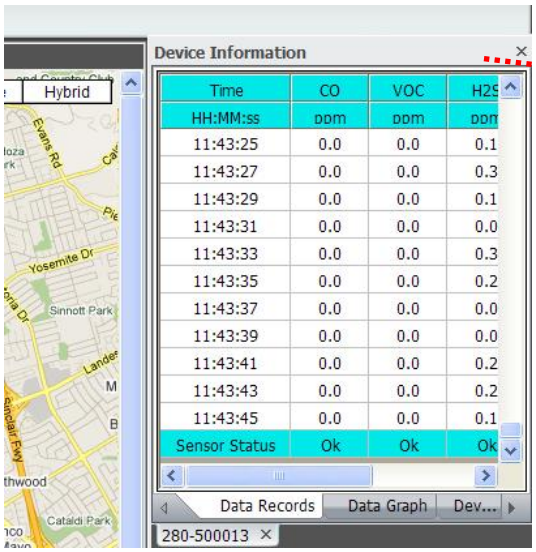
Press and hold the left button on your mouse and move the "seam" to resize the panes. When you re done, release the button.



11.2 Rearranging Panes

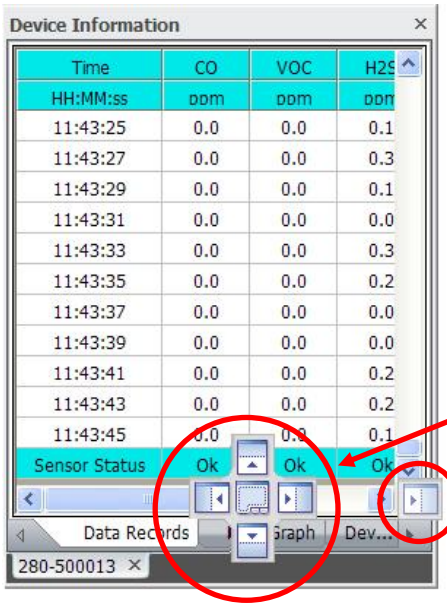
You can change the arrangement of the panes by using a "drag and drop." Point to the top of a pane and then click the left mouse button. While holding down the button, drag the pane away from the main window or to another part of the window.

Note: You can also break out a pane by double-clicking on the top gray bar of that pane. If it is docked, then it breaks away when you double-click. If it is undocked, it redocks itself when you double-click the gray bar.



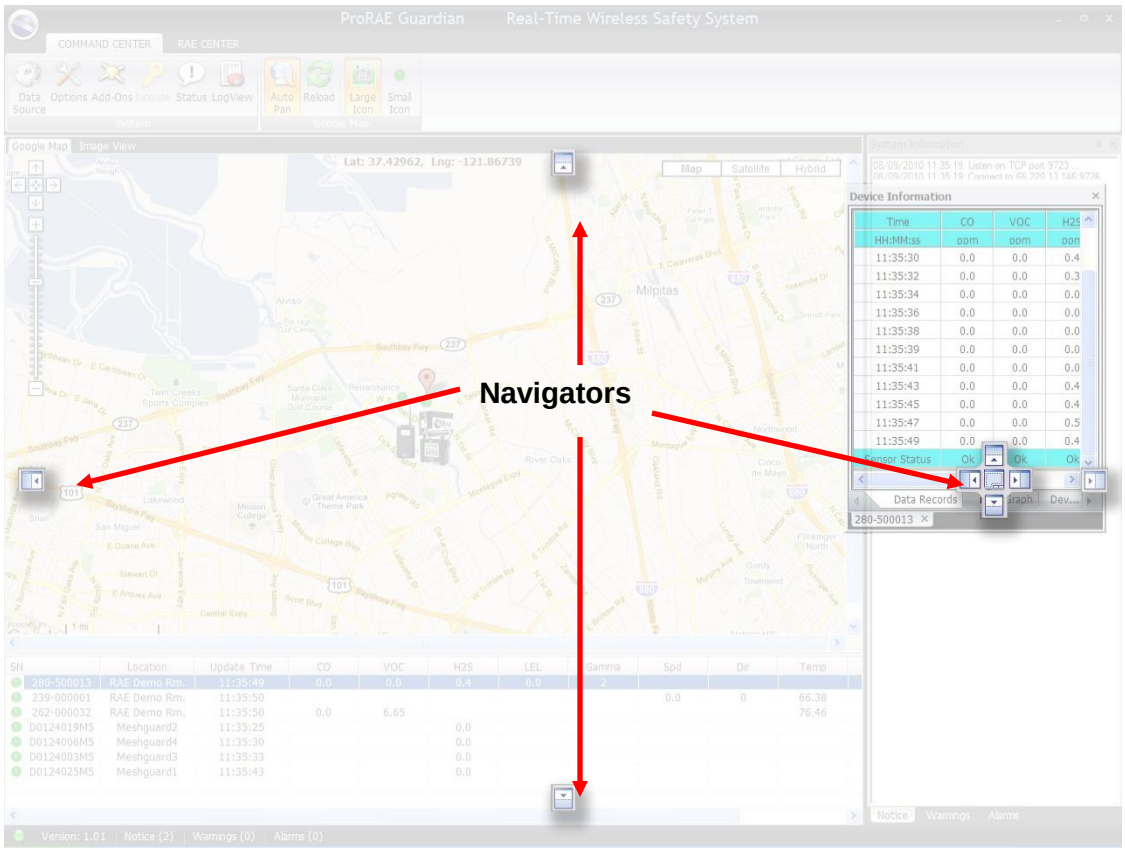
Grab the top of the pane and pull it away from its "dock."

As you move the pane, small "navigators" appear. Drag the pane to the blue block at the outer edge of any of these navigators to dock the pane on that portion of the main window. Otherwise, just drag it off the main window to your desktop. Then release the button.

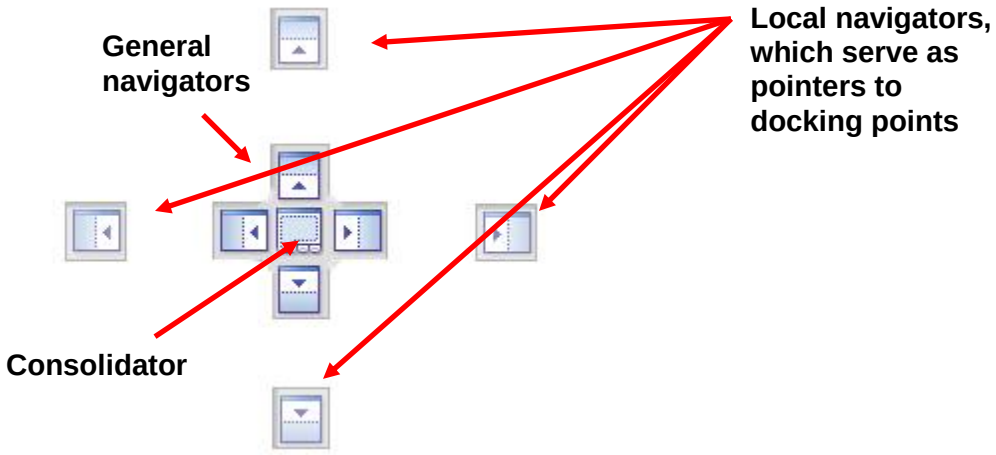


As you move the pane, "navigators" appear.

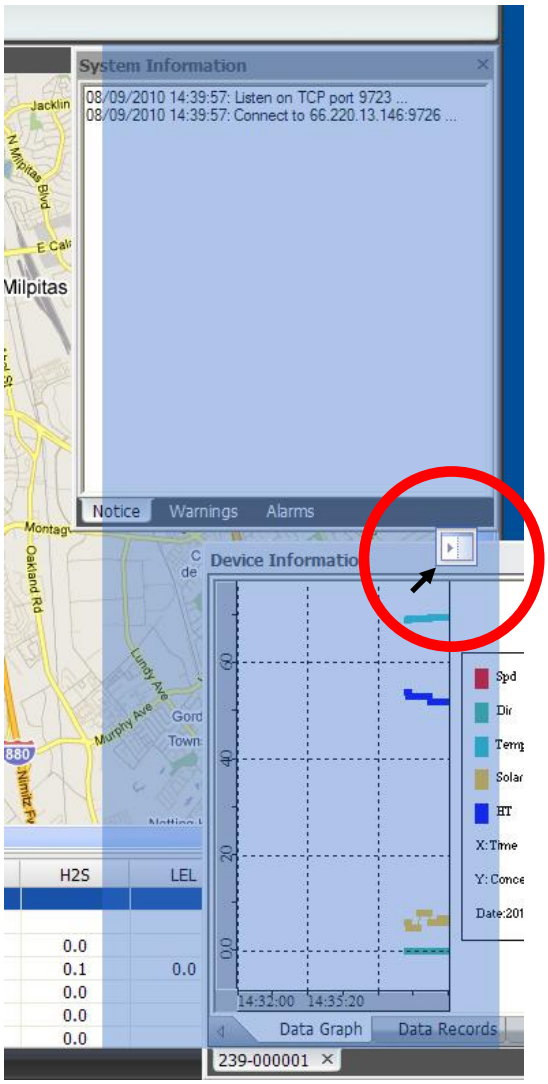
In the case of a full screen, the navigators can be spread across the entire screen's view.



In addition to the directional navigators, there is a "consolidator," which if you drag a detached or separate System Information or Device Information pane on top of the other, ProRAE Guardian consolidates the two into a single pane with multiple tabs (see page 92 for details).



As you move a pane by pointing to one of the navigators, the area where it will dock is highlighted with a blue overlay.



Again, when you are satisfied with the placement, release the mouse button.

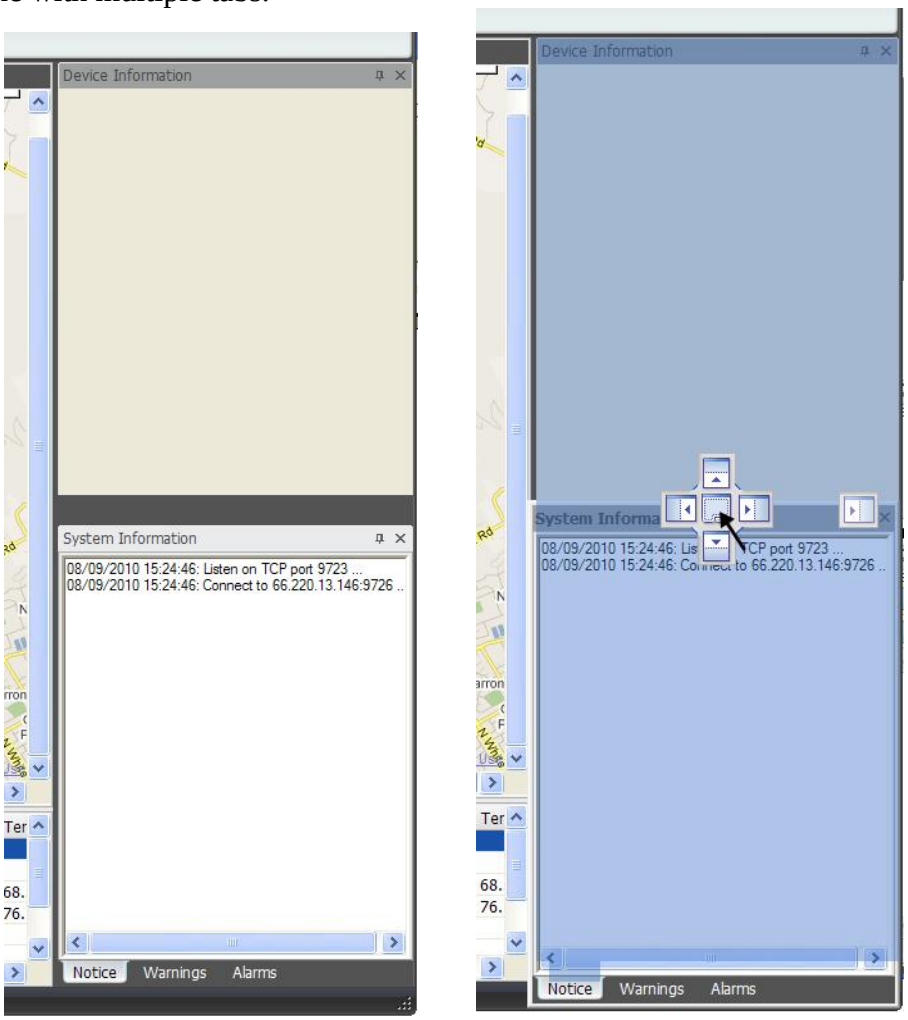
Note: Once you relocate a pane, it will remain there, even when you close the program and open it again. The exception is if you removed the pane from the main window. When you reopen the program, the pane floats over the main window.

11.2.1 Resetting Panes

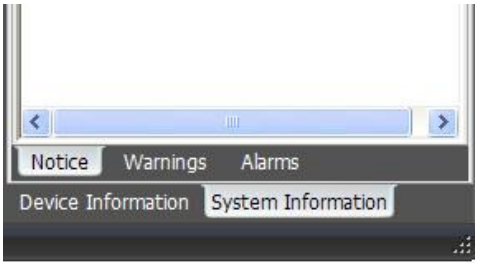
If you have relocated the panes and want to set them back in the same locations (and sizes) as they appeared when the program was installed, click the "Reset Panes" icon in the Quick Access Toolbar.

11.2.2 Consolidating System Information and Device Information Panes

If the Device Information pane or System Information pane is detached or shown as a separate pane, you can drag it on top of the other pane and consolidate the two into a single pane with multiple tabs.



The pane you dragged disappears and tabs appear along the bottom, representing the System Information and Device Information panes, which can be toggled for viewing.

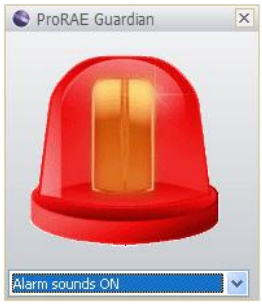


Note: The order of all tabs (left to right) can be changed. Simply click and hold the left mouse button to select a tab, and then drag it right or left to reposition it.

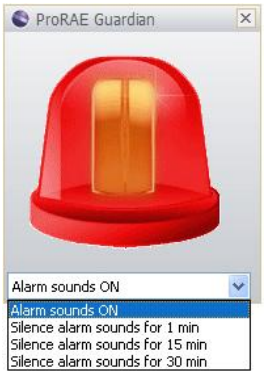
12 Alarms

12.1 Main Alarm

When any sensor on the network exceeds its alarm trigger point, or if a device goes offline or a port or connection closes, ProRAE Guardian alerts you with a loud alarm and a dialog box with a flashing beacon.

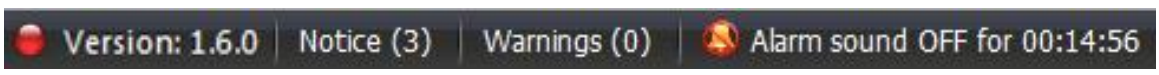


ProRAE Guardian gives you the option of suppressing the alarm sound. If it is set to "Alarm sounds ON," then anytime an alarm state is triggered, the alarm sounds immediately. You can select to disable the audible alarm for 1 minute, 15 minutes, or 30 minutes. This can be useful if you are performing maintenance and testing and do not want to set off the audible alarm each time you make a change.

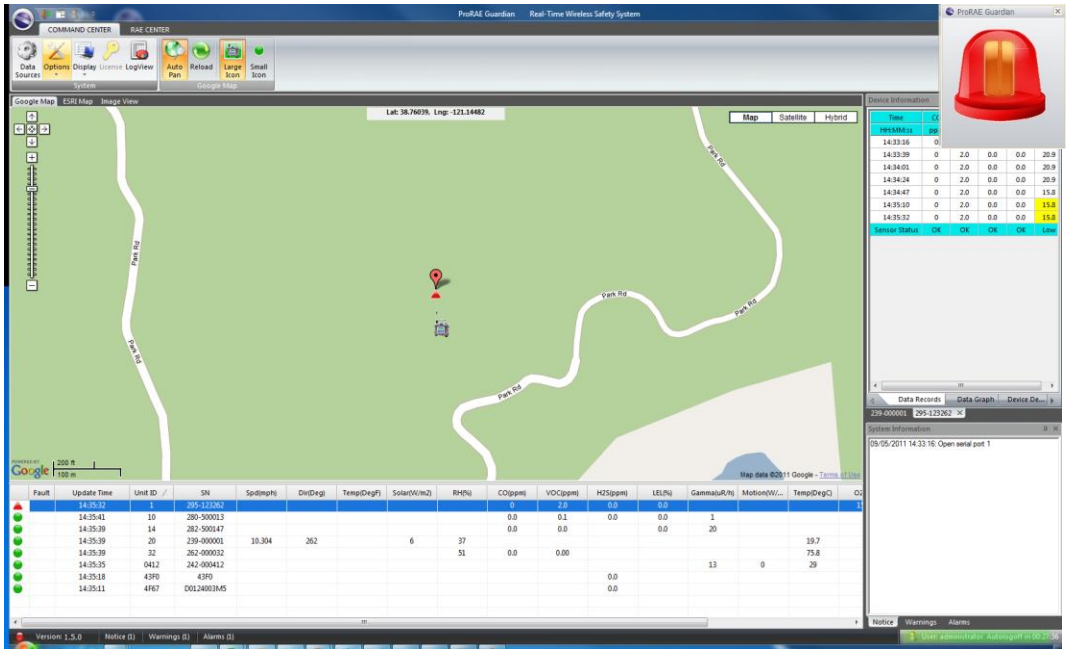


If you choose to silence an alarm for a period, you see different flashing-light image that indicates the sound is turned off:

In addition, while the alarm sound is off, the System Status bar has a message that tells you it is off, plus it has a countdown that tells how long the sound will be off:



To silence the alarm during the current alarm event, click the "X" in the upper right corner of the image. The image is dismissed, and the sound stops. However, the red triangle in the left column of the Device List and a flashing red triangle in the System Status Bar remain, indicating the alarm.



There are four states indicated by a color/shape combination:

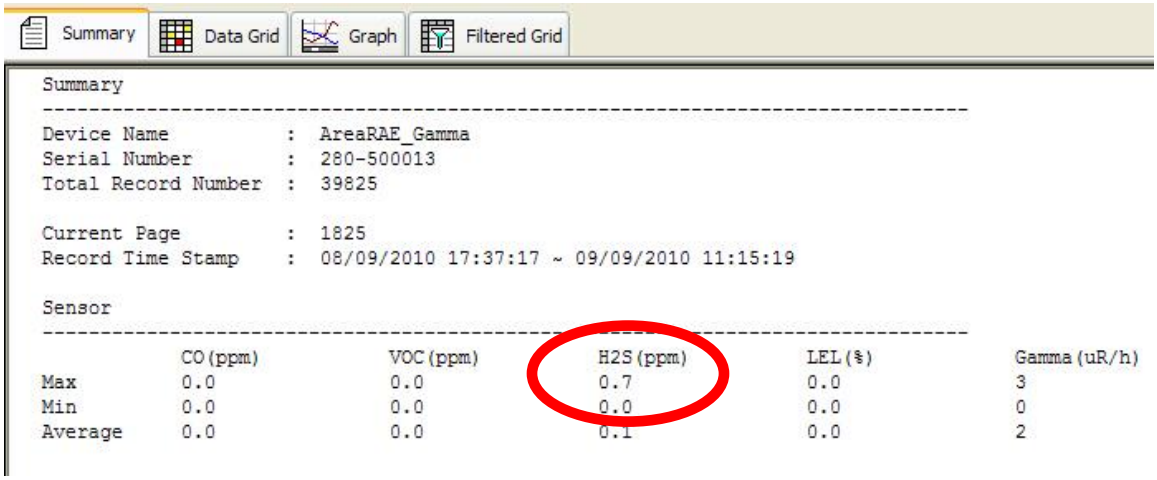
- Lost contact/no contact with device
- Device is functioning and ProRAE Guardian is receiving data
- Fault indication (pump stall, etc.)
- Device is in alarm
- License exceeded

When a device produces an alarm or fault, that device moves to the top of the Device List. Sometimes the monitor, but not the sensor, will be indicated in an alarm situation (such as if a battery fails).

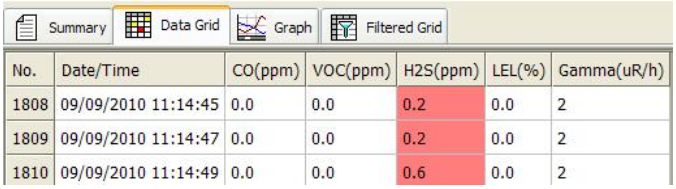
Note: If the number of instruments covered by the license is exceeded, any instrument over the licensed number is accompanied by a "lock" icon in the device list, and no readings from that instrument are shown. If an instrument that is within the range of the license goes offline, another instrument that exceeded the license's number is now within the licensed number, and the icon changes from the "lock" to an active-status icon, accompanied by readings (if data is received).

Details can be viewed in several ways. To view details, click Log View.

In the Summary tab, you can see the maximum for one of the sensors, which tells you the highest level measured:



In addition, you can review the Graph or Filtered Grid screens. The column for the sensor that triggered the alarm is highlighted.



12.2 Fault Alarm

A second alarm type, a fault alarm, has been added. Like the standard alarm, it pops up a small window with a flashing icon. The icon looks like this:

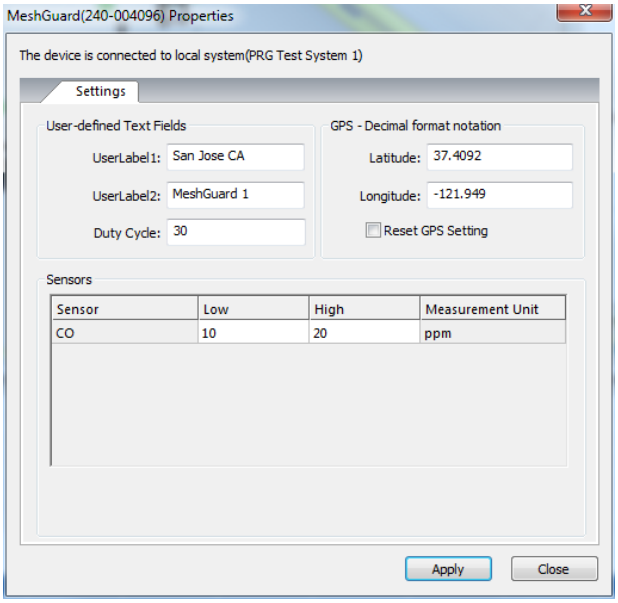
It indicates a fault, such as a pump stall, dead battery, etc. Its sound is different than the main alarm, providing secondary audio cueing. Like the main alarm, the window can be dismissed and the sound silenced or set to intervals. When the fault alarm is present, the icon in the Device List and the "Alarms" text in the System Status Bar blink, as well.

12.3 Offline Alarm Feature

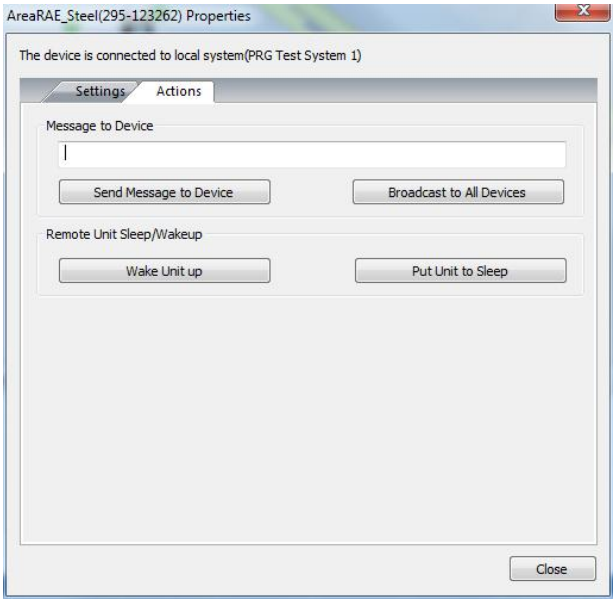
There is also an "Offline Alarm" feature. It can be configured to be enabled/disabled, plus its threshold set. If ProRAE Guardian detects an "Offline Alarm" status, it shows the "Fault Alarm" icon and makes the corresponding alarm sound.

13 Device Properties

If you double-click on any instrument's row in the Device List, a Device Properties window opens, with details of readings (if any). This can be done at anytime (not just when there is an alarm state). If you are logged in as an administrator, the fields' backgrounds are white, and depending on the type of device, there are settings you can edit. If you are not logged in, then the fields and their text are grey, indicating that you cannot edit them.



If the device is a locally attached PTM instrument, you see a second tab called "Actions." Like the "Settings," your options are determined by the device's capabilities and editable functions:



In some cases, such as with a BioHarness, you can select a template, or make other changes. In addition, if your ProRAE Guardian is in a network with another ProRAE Guardian, it shows the device is connected to a remote system, as well as identification information about the device (its name and serial number). In such cases, all the settings on the device property dialog are greyed out. You need to the ProRAE Guardian that the device is attached locally to change the settings for that device.

14 Configuring ProRAE Guardian Data Communication

Before starting ProRAE Guardian to monitor your network, make sure that the network's controller and monitors are communicating properly and that each is uniquely identified. Check the controller's display to ensure that all monitors are reporting data.

It is necessary to configure the software before operation on the host PC. Before the first operation, have the following information available:

- The serial port number (COM1, COM2, COM3, etc.) for the modem cable connected between your computer and the wireless modem (RAELink3 or RAEMesh Reader).

- For Email alarm notification, make sure the host PC is connected to the Internet via a LAN. Also make sure the IP address of the mail server (SMTP) is correct. If your SMTP server requires authentication, check that your username and password are valid before inputting them into ProRAE Guardian. (For example, install e-mail client software such as Outlook Express, Foxmail, etc., on your PC and test the username and password for the SMTP server).

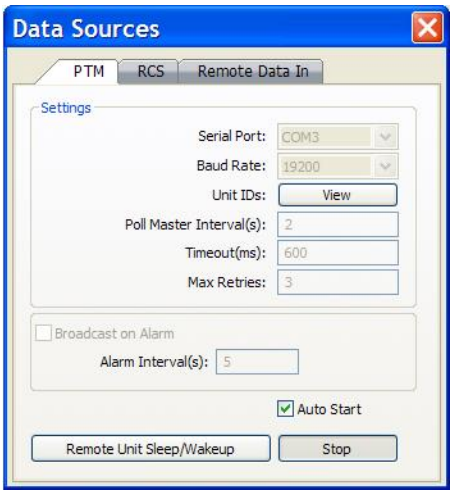
14.1 Configure ProRAE Guardian to retrieve instrument data

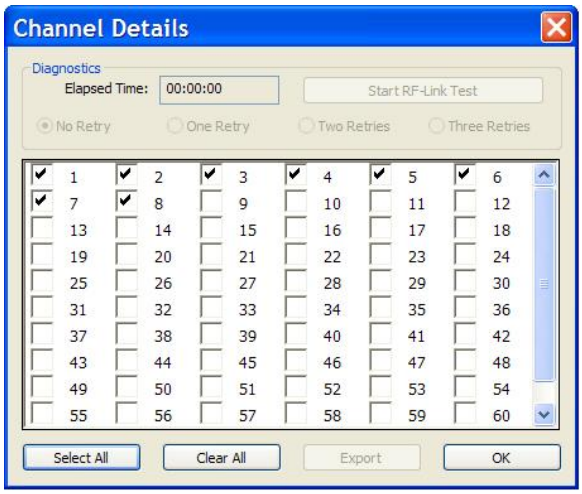
All communication settings for ProRAE Guardian to get instrument data are in the "Data Sources" dialog:

14.1.1 PTM

This tab is for communication with AreaRAE instruments.

For most of the applications, you must configure the COM port and select the channels:





Then click "Start" to start the PTM function. Checking "Auto Start" is recommended.

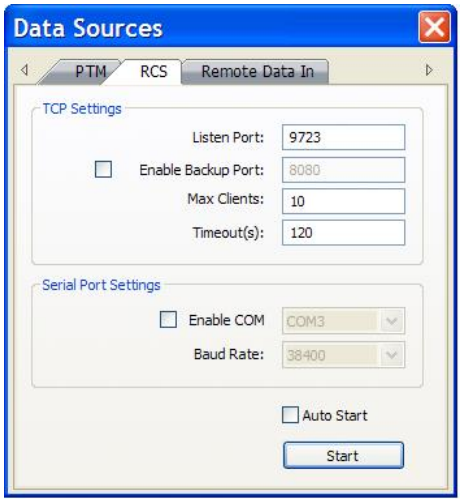
If you do not have RCS instruments or retrieve data from remote systems, click "X" to close the "Data Sources" dialog box. The PTM instruments should show on the ProRAE Guardian.

14.1.2 RCS

This tab is for communication with MeshGuard instruments.

For most of the applications, you must:

1. Select whether to enable the COM port.
2. Select the COM port if enabled.



Click "Start" to start the RCS function. Check "Auto Start" is recommended.

If you do not retrieve data from a remote ProRAE Guardian, click "X" to close the "Data Sources" dialog box. The RCS instruments should show on the ProRAE Guardian.

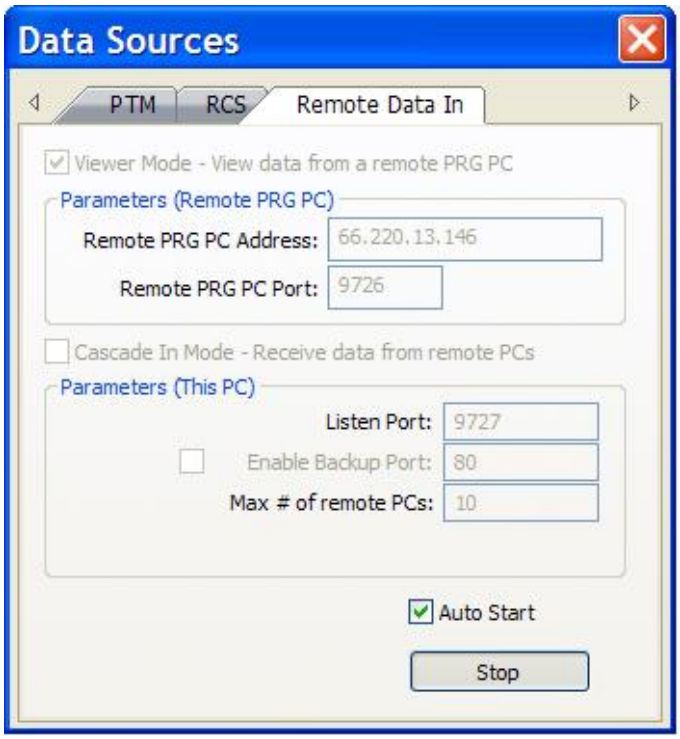
14.1.3 Remote Data In

This tab is for communication with remote ProRAE Guardian Full Version (and other software with the same interface).

For most of applications, what you must:

1. Check "Viewer Mode."
2. Input the "Remote PRG PC Address."

Note: You must start "Data Forwarding" in the remote ProRAE Guardian Full Version.



Click "Start" to start the "Remote Data In" function. Checking "Auto Start" is recommended.

Click "X" to close the "Data Sources" dialog box. The instruments from remote ProRAE Guardian should show in the ProRAE Guardian dialog box

14.2 Configuring ProRAE Guardians To Share Real-Time Data

ProRAE Guardians can share real-time device data via the network interface. However, you must configure both ProRAE Guardians to allow them to work together.

There are two schemes to share real-time data between ProRAE Guardians. To simply the explanation, we will call the ProRAE Guardian Full version with instrument data as the "Source" ProRAE Guardian, and call the other end of ProRAE Guardian the "Destination" ProRAE Guardian.

The Viewer scheme sets the Source ProRAE Guardian as a TCP server and sets the Destination ProRAE Guardian as TCP client. In this scheme, the Source ProRAE Guardian must be the Full version, the Destination ProRAE Guardian can be Full version or Viewer.

The Cascade scheme sets the Destination ProRAE Guardian as a TCP server and sets the Source ProRAE Guardian as TCP client. This scheme is for special cases that the Destination ProRAE Guardian cannot connect to the Source ProRAE Guardian, but they can do it in the reverse. For example, the Source ProRAE Guardian has a GPRS modem to which the IP address is dynamically assigned, and the Destination ProRAE Guardian is with a fixed IP address.

In this scheme, both ProRAE Guardians must be Full Version installations.

The following are two schemes for configuring both ProRAE Guardians.

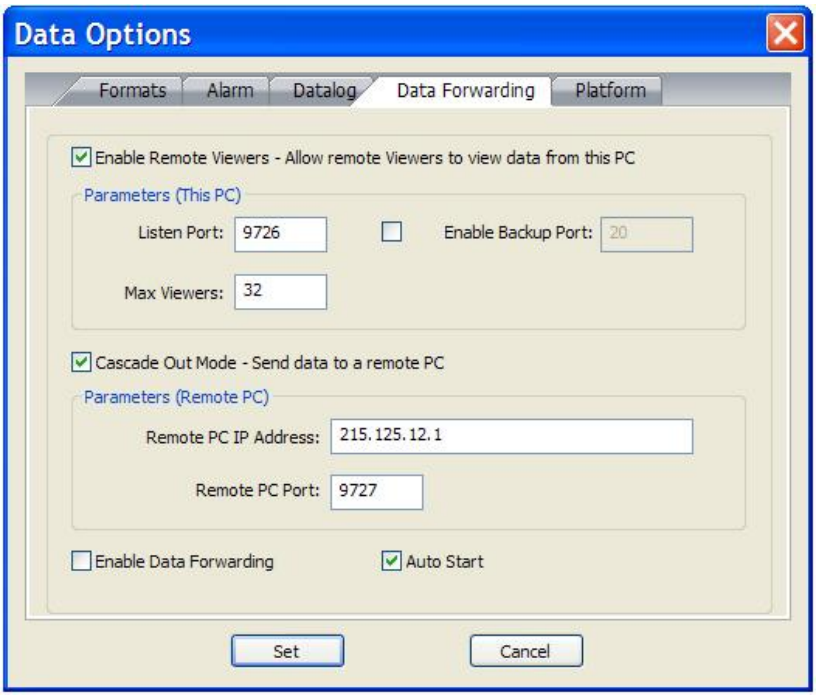
14.2.1 Viewer Scheme

You must configure both on the Source ProRAE Guardian and Destination ProRAE Guardian properly to let them work together.

Note: If the "source" ProRAE Guardian has "Remote Access Control" enabled, the "destination" ProRAE Guardian *must* have "Remote Access Control" enabled and be set to use the same access code.

14.2.1.1 Source ProRAE Guardian

Configure "Data Forwarding" on the Source ProRAE Guardian to enable "Remote Viewer" mode:

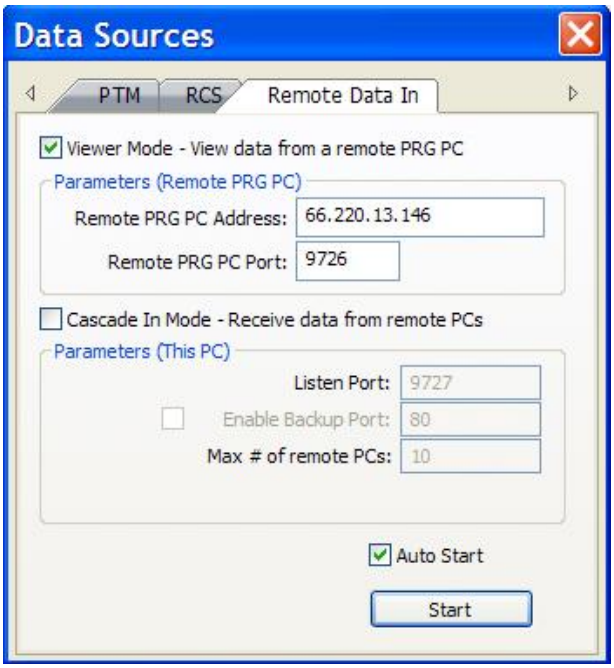


Check "Enable Data Forwarding" and click "Set." Checking "Auto Start" is recommended.

Check the computer with the Source ProRAE Guardian for its IP address. If there are several IP addresses, choose the one that can communicate with the Destination ProRAE Guardian. Alternatively, you can get the computer's domain name if it is available.

14.2.1.2 Destination ProRAE Guardian

Configure the "Remote Data In" on the Destination ProRAE Guardian to enable the "Viewer" mode:



Input the IP address of the domain name of the Source ProRAE Guardian.

Make sure the "Remote PRG PC port" is the same as the "Listen Port" of Source ProRAE Guardian (or the "Backup Port" if enabled).

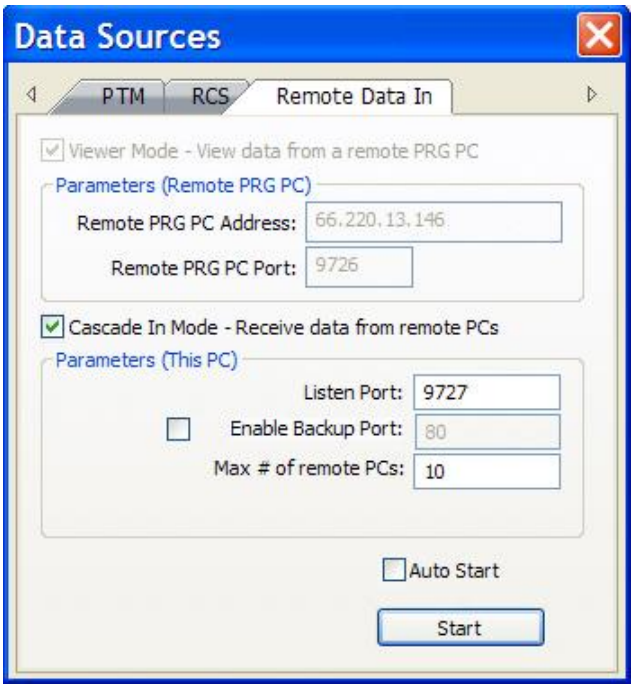
Click "Start" to start connection. Checking "Auto Start" is recommended.

14.2.2 Cascade Scheme

You must configure the Source ProRAE Guardian and Destination ProRAE Guardian properly so that they can work together.

14.2.2.1 Destination ProRAE Guardian

Configure the "Remote Data In" on the Destination ProRAE Guardian to enable the "Cascade In" mode:

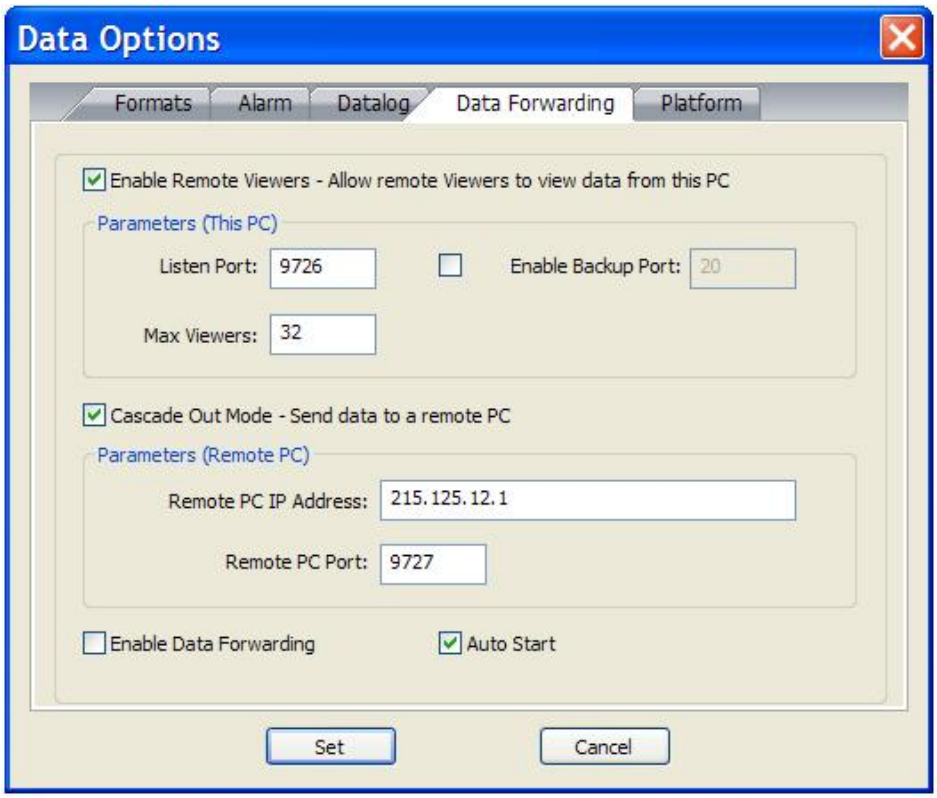


Click "Start" to start the connection. Checking "Auto Start" is recommended.

Check the PC with the Detstination ProRAE Guardian for its IP address. If there are several IP addresses, choose the one that can communicate with the Source ProRAE Guardian. Or you can get the computer's domain name if it is available.

14.2.2.2 Source ProRAE Guardian

Configure the "Data Forwarding" on the Source ProRAE Guardian to enable "Cascade Out" mode as shown here:



Input the IP address of domain name of the Destination ProRAE Guardian in the "Remote PC IP Address" field.

Make sure the "Remote PC port" is the same as the "Listen Port" of the Destination ProRAE Guardian (or the "Backup Port" if enabled).

Check "Enable Data Forwarding" and click "Set." Checking "Auto Start" is recommended.

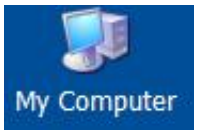
15 Communications Port Configuration

It is unlikely that you will need to configure your computer's communication (COM) port, but if it is necessary, follow the instructions below.

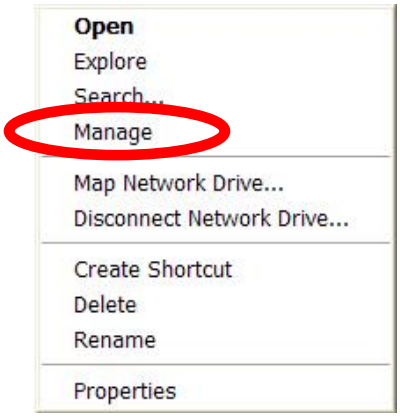
15.1 Determining The Port Number

In order for the computer and a host modem to communicate via the serial port (or virtual serial port, in the case of a USB connection), you must supply the port number to the terminal emulation program. The port number is not obvious, so you must find it in the computer. Follow this procedure:

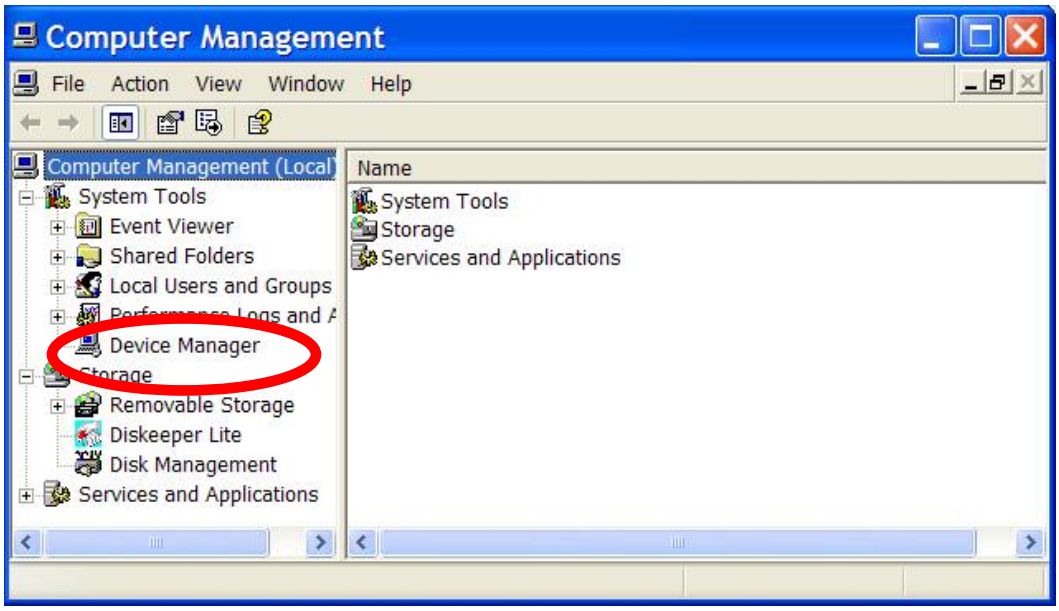
1. With the mouse, right-click the "My Computer" icon.



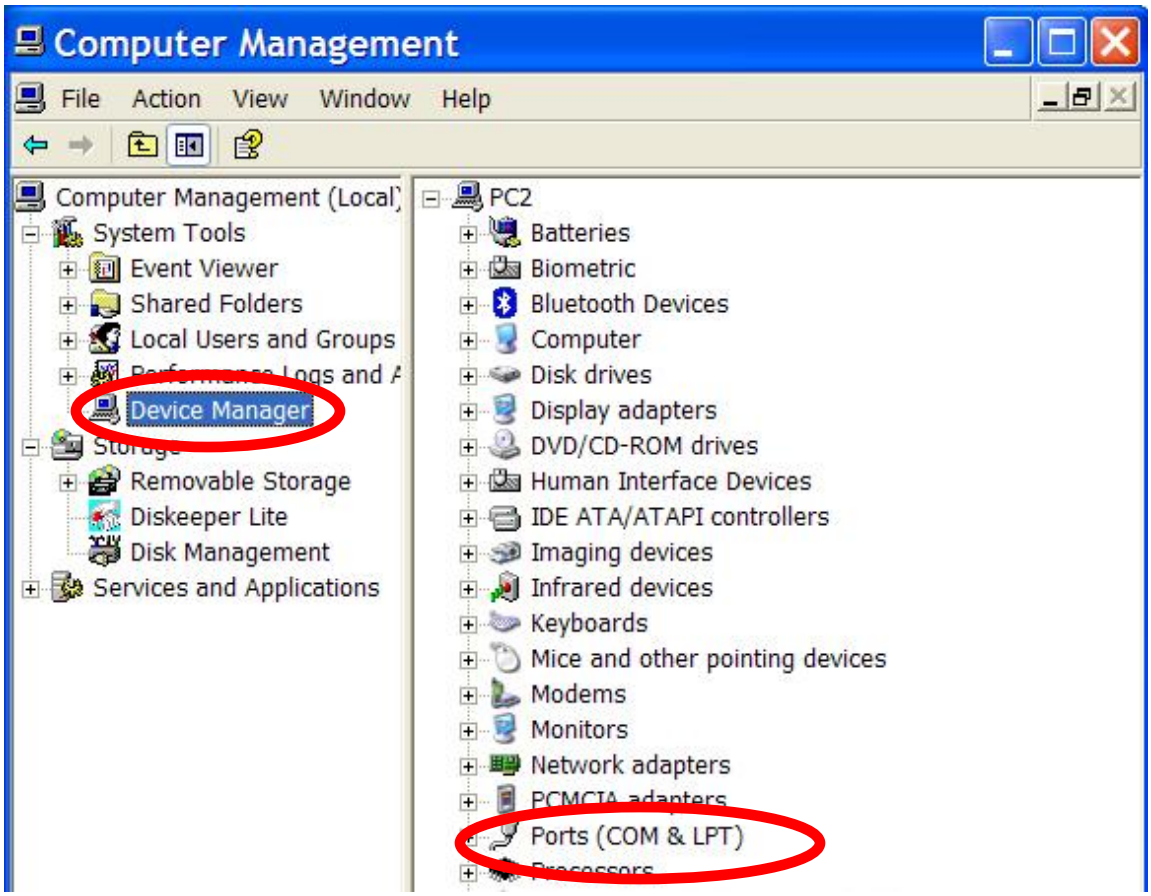
2. Select "Manage."



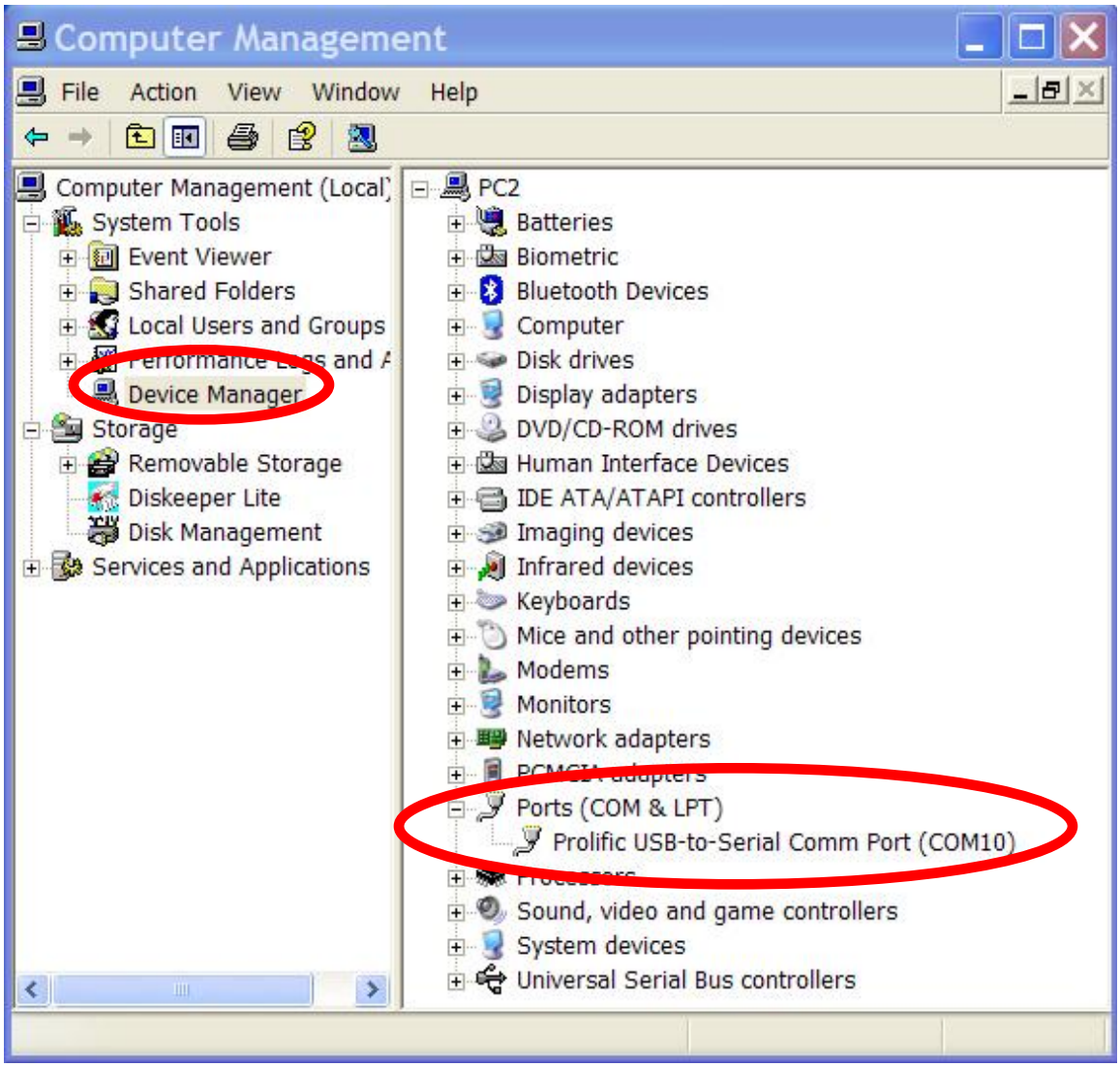
3. Under "System Tools," select "Device Manager."



4. Click "Device Manager." A list appears in the right pane, including "Ports (COM & LPT)."



5. In the right pane, select "Ports (COM & LPT)."



If the computer has built-in serial ports, they are listed as "Communications Port (COM1)", or are similarly named.

If a Serial-To-USB controller is used, its entry looks similar to this:

Prolific Serial-To-USB Comm Port (COM10)

Note: If you want more details about the Serial-To-USB converter, double-click on its name. This pops up a dialog box with details. The "General" tab gives an overview, and the Port Settings tab tells you the details of the port configuration.

You will need the port number later, so write it down. Also, if you unplug the Serial-To-USB converter and plug it in again, it is possible that the computer will assign a different port number to it. Therefore, each time you plug it in, check the port number.

16 Technical Support

To contact RAE Systems Technical Support:

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ProRAE Guardian

User's Guide

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