



**24-hr noise or vibration monitoring for
animal research facilities.**

By Turner Scientific and ACO Pacific.

TURNER · · | · | · | · | ·
SCIENTIFIC
NOISE AND VIBRATION SERVICES

ACO
Pacific, Inc.



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Primary Operating Overview

What is a VivAlarm₂₄?

VIVALARM₂₄ is a versatile system for monitoring noise or vibration levels for applications related to non-human animal research environments. VIVALARM₂₄ works as both a real-time monitoring system and as a statistical monitoring system. * **VIVALARM₂₄ was adapted from the SLARM system developed by ACO Pacific for monitoring of human environmental noise. VIVALARM₂₄ includes a major modification to the SLARM system that filters out sounds below 200 Hz, which are not audible to lab mice and rats, allowing it to be used in the lab animal research environment without setting off unnecessary alarms. The user can choose to use this special filter setting or revert back to the human application by choosing that human filter as appropriate, for example, if one wants to monitor noise level to determine worker exposure in the cage washing area. The system can also be customized to measure vibration instead of noise, with the appropriate vibration transducer instead of a microphone and with a few small modifications to the system. There are some special sections of this manual that are different between the noise and vibration systems, and those will be noted where relevant throughout this document.**

A VIVALARM24 measures the sound (pressure) level (SPL) and Leq and sounds an alarm when it gets too loud. Two measures of sound level used by the VIVALARM24 are dB and Leq. The point at which it is too loud is called the threshold. For the vibration application, vibration levels are reported in dB but are converted with the aid of a table to a measurement in g (acceleration, in RMS), for the end user.

dB and Leq

dB and Leq are both measures of sound pressure used in sound level meters. Typical range of sound pressure is 40 to 150. dB and Leq are explained with greater detail in *Appendix B: Acoustics* on page 88.

What are Thresholds and Exceedances?

The two ALARM outputs are one of the significant features of the VIVALARM₂₄. The trigger points of these ALARMS are set by individual thresholds (alarm trigger (set) point). In addition, each ALARM may be defined as SPL or Leq (with an adjustable period)

SPL (Sound Pressure Level) and Leq are described with more detail in *Appendix B: Acoustics* on page 88. The settings are described on page 56.

“Exceedances” are points in time when the recorded level (either SPL or Short Leq) goes over a threshold and triggers an alarm.

What are VIVALARM₂₄ Users?

A high level of security is built into the VIVALARM₂₄ hardware and software. Besides an VIVALARM₂₄ administrator (who can access everything), unique individual accounts may be created to allow only selected access to VIVALARM₂₄ features and data. This access may be the ability to download data, and at higher levels set thresholds and other settings.

This enhanced security and multiple access levels protect the integrity of both the VIVALARM₂₄ operation as well as the stored history data.

See page 42 for details.

Recording

While operating, the VIVALARM₂₄ internally records the Slow SPL. It records several weeks of audio or vibration levels which may be downloaded and examined. The VIVALARM₂₄ also records all system events, such as account access, when a parameter is changed, and power loss.

Time Zones

The VIVALARM₂₄ internally works entirely in UTC (Coordinated Universal Time). For the user’s convenience, the VIVALARM₂₄ stores the time zone where it is located (see *Geo Reference Settings* on page 62) and automatically calculates the time zone offset (called “bias”), including daylight savings time if applicable. This is used to display the time in the VIVALARM₂₄’s time zone.

VIVALARM₂₄Watch automatically adds in the time bias to all its displayed times, making the use of time zones invisible to the user. This includes the graph and schedule.

Installation

Confirm the contents of the package as listed below.

Package Contents

- VIVALARM24 Unit
- VIVALARM24 Setup CD
- 12V DC, 500mA Power Supply
- VIVALARM24 Manual
- VIVALARM24 Microphone or accelerometer, with cable

Optional Accessories

- WS1-80T Weather Resistant Windscreen
- WS1 3" Windscreen
- VIVALARM₂₄ Light Pole
- Custom Cables
- VIVALARM₂₄ SPL Calibrator 521, 511ES124, 511E
- Blue232™ Bluetooth Module

Confirm that your computer has the standard system requirements.

System Requirements

- PC
- Windows™ 7/Vista/XP.
- Minimum Pentium III 850 MHz, Recommended Core 2 Processor
- 512 MB RAM or better.
- 1 USB 1.1 or higher port.
- 60 MB Free disk space
- USB "A" to "B" Device cable needed for USB support.
- Recommended Ethernet connection
- VIVALARM₂₄
- 110 VAC.
- Cool dry place with easy accessibility to the back panel. Most installations include a nema box that houses the unit(s) in the vivarium room or hallway.
- Ethernet connection with assigned IP. (Static IP recommended, but DHCP will work.)

Install the VIVALARM24 software on your computer.

Software Setup

This installation procedure requires basic knowledge of Windows.

Insert the SLARM/VIVALARM₂₄ setup CD. The setup screen should appear. If it does not, your system probably has Auto-Insert notification disabled, and you need to run SETUP from the CD. This may be done by typing “D:\Setup” (where D is the CD drive letter) from the Start/Run menu.

If you have an old version of the Windows Installer, it will be automatically updated at this point.



Figure 1: Setup: Start Screen

Click “Next”.

Now the setup folder screen will appear.

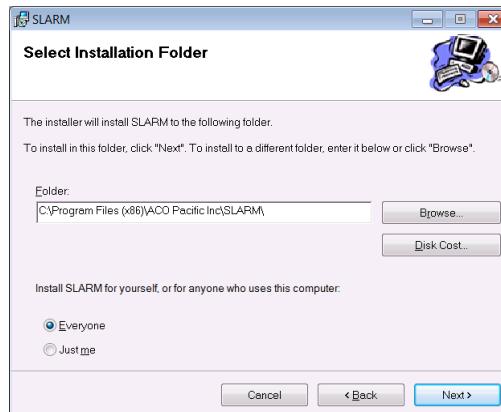


Figure 2: Setup: Folder Information

Click on “Next”.
Now the setup confirmation screen will appear.

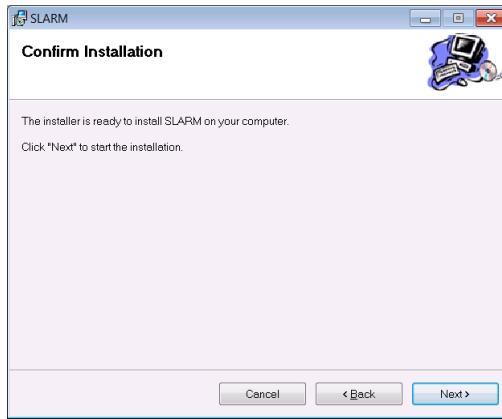


Figure 3: Setup: Folder Information

Click on “Next”.

Setup will show the installation screen while it installs SLARM/VIVALARM24.

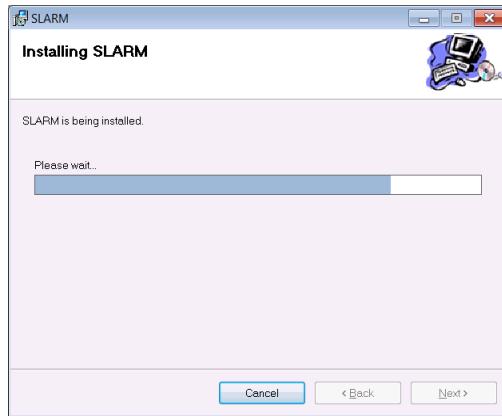


Figure 4: Setup: Install Screen

When complete, the Finish screen will be shown. Click on “Close” to exit.

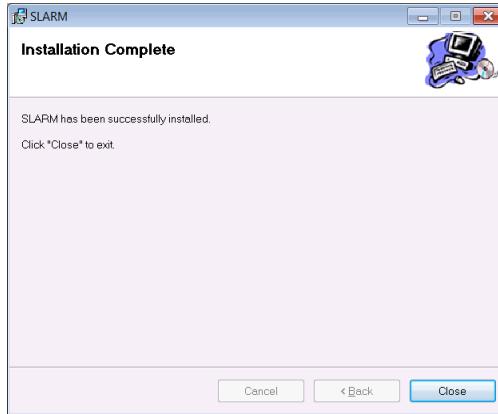


Figure 5: Setup: Finish Screen

When installation is complete, click on “Close”.
Install the VIVALARM24 hardware.

Hardware Setup

Your hardware will have come with a separate Hardware installation procedure. If you still have that procedure available, please use it. Otherwise follow the procedure here.

Familiarize yourself with the VIVALARM24.

VIVALARM24 Unit Panels



Figure 6: VIVALARM24 Front Panel

With normal operation the NORMAL indicator will be lit when the sound or vibration levels are below the threshold levels. When reaching the Alarm 1 threshold level the ALARM 1 (sometimes labeled ALERT) indicator will light up. Upon reaching the Alarm 2 threshold level, the ALARM 2 indicator will light up.

The CONNECT indicator remains lit while there is a serial connection.

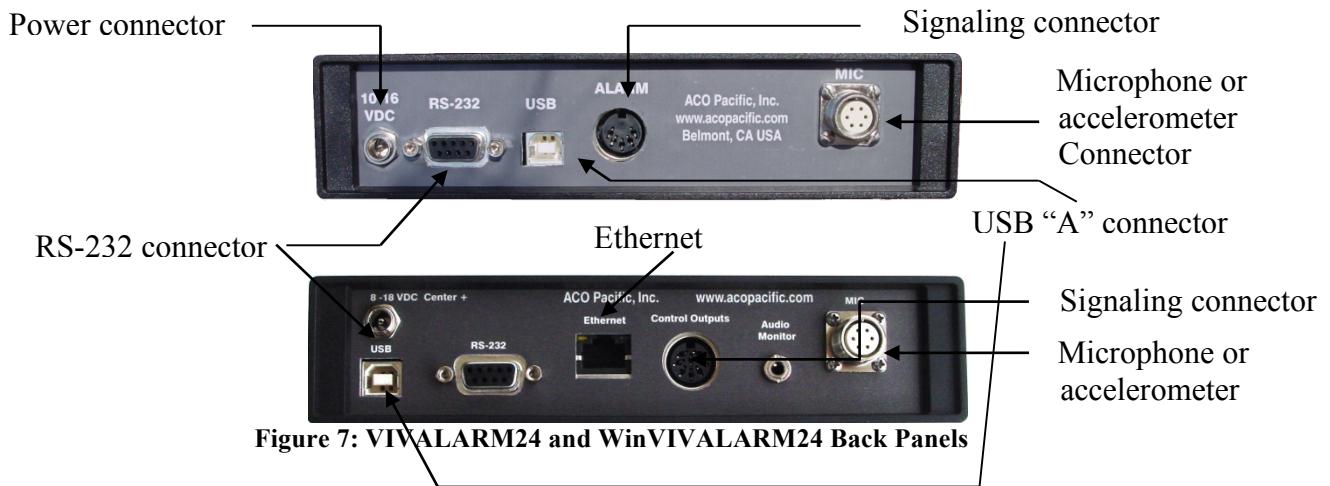


Figure 7: VIVALARM24 and WinVIVALARM24 Back Panels

Technical Note

Signaling pin out for Type A VIVALARM24
The signaling port is for external alarm connections.

Max Load: 50 VDC, 50 ma



1. Serial Connection Indicator (BLUE)
2. Normal Level Indicator (GREEN)
3. Alarm 1 (YELLOW)
4. Alarm 2 (RED)
5. Common (Ground)

Figure 8: Signaling pin outs

Technical
Note

Signaling pin out for Type B NetVIVALARM24
The signaling port is for external alarm connections.

Max Load: 50 VDC, 50 ma

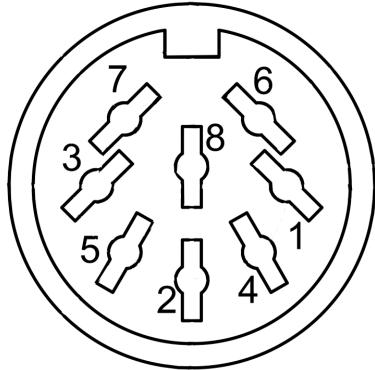
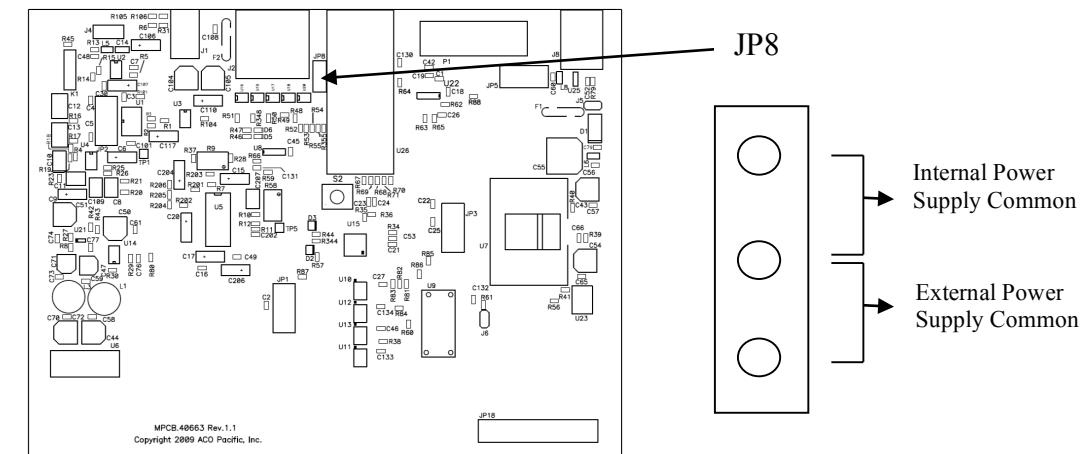


Figure 9: Signaling pin outs

1. Serial Connection Indicator (BLUE)
2. Normal Level Indicator (GREEN)
3. Alarm 1 (YELLOW)
4. Alarm 2 (RED)
5. Common* for External Power Supply
6. Internal Power Supply Common* (Ground)
7. Spare
8. +12 VDC, 0.25 A (50ma per line)

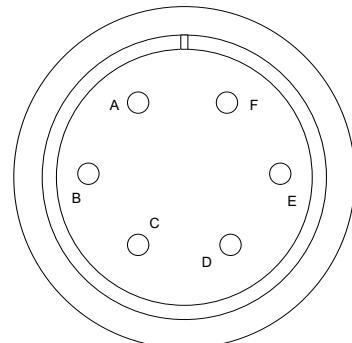
* Dependant on JP8 jumper setting.

Jumper JP8 assigned PIN5 for use with external or internal power supply. NetVIVALARM24s are factory preset for use with an External Power Supply.



Technical
Note

Microphone pin out
Female connector on back of VIVALARM24 unit.



V+
NC
Signal
NC
GND/V-
Shield

Figure 10: Microphone/accelerometer
pin outs

Front View.

Technical Note

Audio/vibration Monitor pin out
Female connector on back of VIVALARM24 unit.

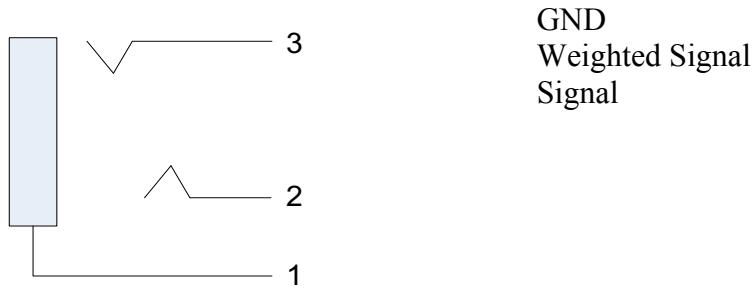


Figure 11: Audio/vibration Monitor pin outs

Side View.

Connect the VIVALARM24.

Connect the microphone or accelerometer.

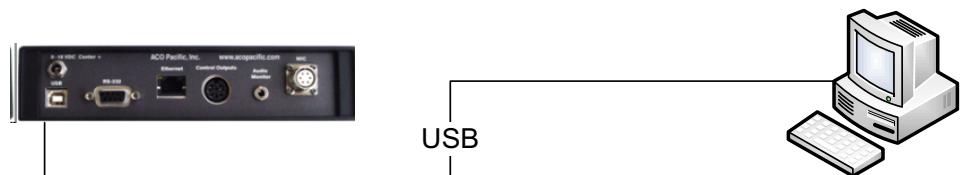
If you are using a NetVIVALARM24, connect the Ethernet.

Connect the power.

Initial SLARM/VIVALARM24 Connection

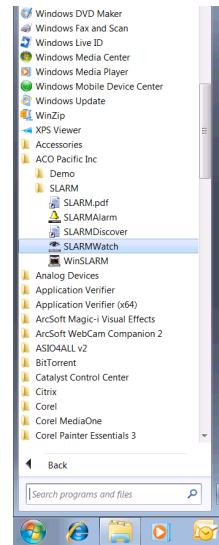
For the initial setup or if you are not using a network accessed connection, you will want to use the USB cable. Note that there are some issues with using the USB connection for setup or for 24-hr monitoring when using Windows 10 systems, so we recommend Windows 7/Vista/XP.

① Connect the USB cable and power cord.

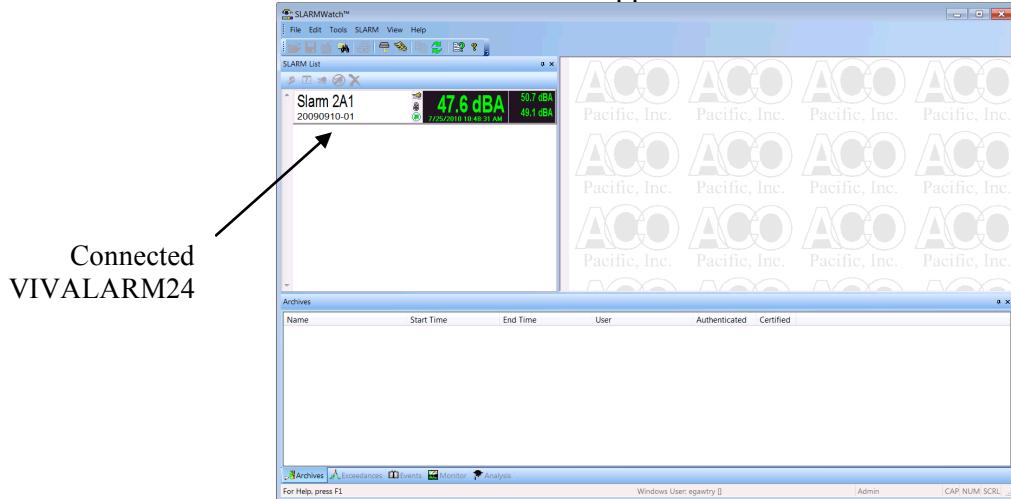


PC with SLARMSsoft™ program suite

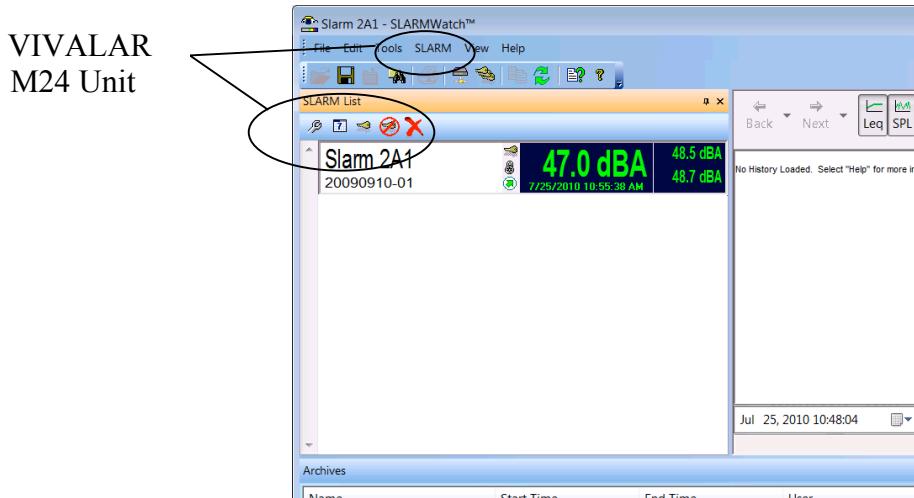
② Start VIVALARM24Watch on the PC.



The screen will appear, and a moment later, the connected SLARM/VIVALARM24 unit will also appear.



- ③ Click on the VIVALARM24 unit and several options will appear. The VIVALARM24 Unit may change color when selected.

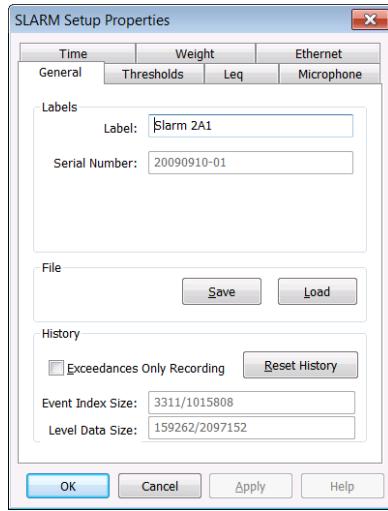


- ④ If you have used this unit before, there may be some saved Archives listed on the bottom. Ignore them. Otherwise choose “VIVALARM24 Preferences” from the VIVALARM24 menu (or click on the wrench). One of two things will happen, the VIVALARM24 Setup dialog window will appear, or you will see a Set VIVALARM24 Key window. If the Setup dialog window appears, skip this step.

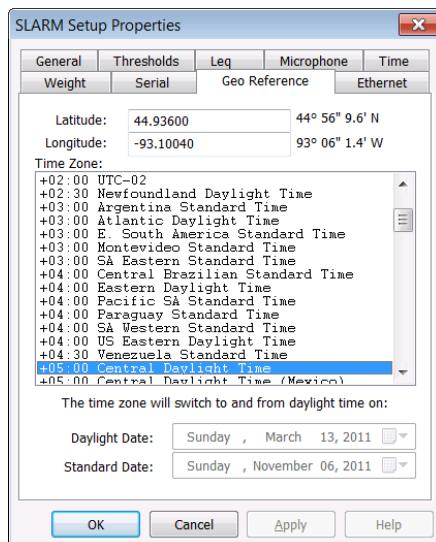


- ⑤ If you see the Set VIVALARM24 Key window, enter the main “administrative” key. That is “VIVALARM24” for the Key User Name and “admin” for the Key Password.

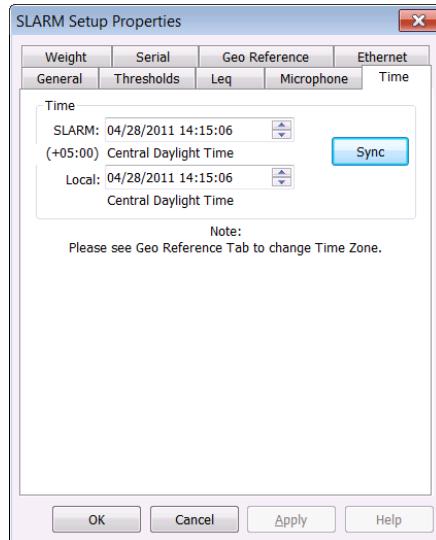
The VIVALARM24 Setup General screen will appear:



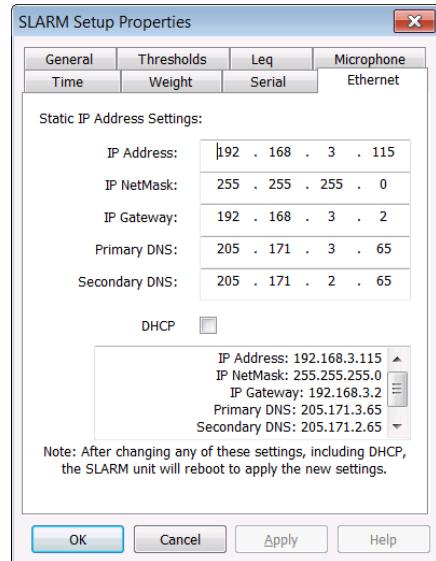
- ⑥ Shown will be the Label and Serial Number of the VIVALARM24 Unit. Leave those for now. Click on the “Save” button. You will be prompted with a standard Windows save dialog window. Enter a name for this setup configuration (it can be anything) and click on OK. That will save a copy of the current settings to your PC.
- ⑦ There will be some recorded history on your new VIVALARM24. If the VIVALARM24 is NOT new, then skip this step. Click on “Reset History”. When the confirmation dialog window appears, click on “OK”. This will reset the memory of the VIVALARM24 unit and begin recording all new information.
- ⑧ Click on the tab marked Geo Reference. Choose the Time Zone where your VIVALARM24 is located.



- ⑨ Click on the tab marked Time. Click on SYNC to synchronize the VIVALARM24 time to your computer.



- ⑩ If you do not have a networked VIVALARM24, skip this step. Click on the tab marked Ethernet. Enter the IP settings for your new VIVALARM24.



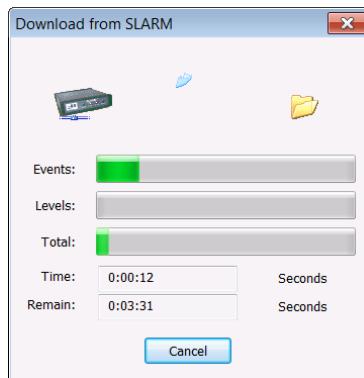
The rest of the VIVALARM24 unit's settings can be left for now. To change the settings after initial setup, please see *VIVALARM24 Setup* on page 54.

- ⑪ Click on “OK”. If you changed Ethernet settings, please wait a minute for the VIVALARM24 to reboot with the new IP settings.
- ⑫ Run the Preferences Wizard. This will setup all the settings to use in SLARM/VIVALARM24Watch. This wizard can be found on the Edit menu. Go

through the wizard, answering the questions and clicking on “Next” until complete.



- ⑬ To load the initial data from the VIVALARM24 unit (may be only a few minutes worth), click on the “Reload All” button. If asked if you want to delete the Cache, say “Yes”.



After three to ten minutes, the initial load will be complete.

- ⑭ From the file menu, click on Save Archive. You can also click on the floppy disk symbol from the toolbar. This will save a copy of the data so that it may be recalled later. This is called an “archive”.
- ⑮ You may now use the data on the graph. Using the mouse, highlight an area you are interested in, then click on “Plot”. The graph will zoom in on that area. See *Graph* on page 39 for details.

SLARM/VIVALARM24 Software

There are three main VIVALARM24 Software applications.

SLARM/VIVALARM24 Monitor (also known as WinVIVALARM24)

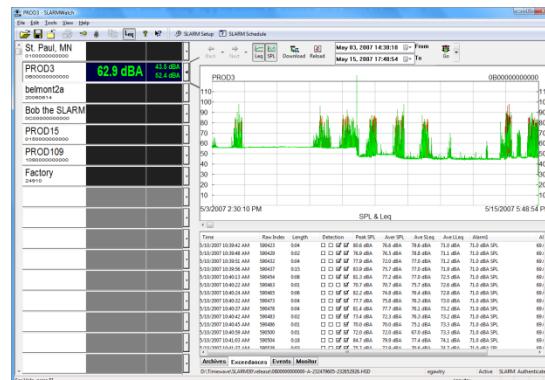
Detailed individual VIVALARM24 unit monitoring



SLARM/VIVALARM24Watch™ Manager

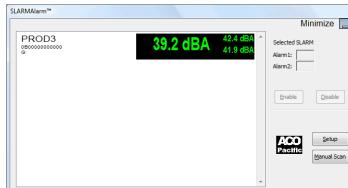
Multiple VIVALARM24 monitoring
VIVALARM24 history database support
VIVALARM24 unit configuration

Thresholds
Calibration
Scheduling
Weighting
Archiving



SLARM/VIVALARM24Alarm™

Multiple VIVALARM24 monitoring
Alarms
Notification
E-Mail
Text Messaging
Web Monitoring



To view History and see attached VIVALARM24 units, use SLARM/VIVALARM24Watch™. SLARM/VIVALARM24Watch™ allows the user to view and archive history, and to see what events have occurred (who last accessed the VIVALARM24, when the VIVALARM24 was last calibrated, etc.).

To set up alarms on a connected PC, use SLARM/VIVALARM24Alarm™.

Connecting to the VIVALARM24 via USB

When the VIVALARM24 is connected, it appears as a Hard Drive in a fashion similar to a Flash Drive.

Windows

When connected, Windows will mount it as a drive letter. Typically it appears as a new Explorer window. Close the window. When the VIVALARM24 software is started, it will detect the mounted VIVALARM24 drive.

To change the default behavior in Windows when the VIVALARM24 is inserted, hold down the “Shift” key when inserting the USB cable. Windows will then prompt for what to do.

Mac

When connected, a Mac will automatically recognize the VIVALARM24 and mount it. There is no software currently available for the Mac.

Linux

When connected, Linux will automatically recognize the VIVALARM24. Like a flash drive, it needs to be mounted. There is no software currently available for Linux.

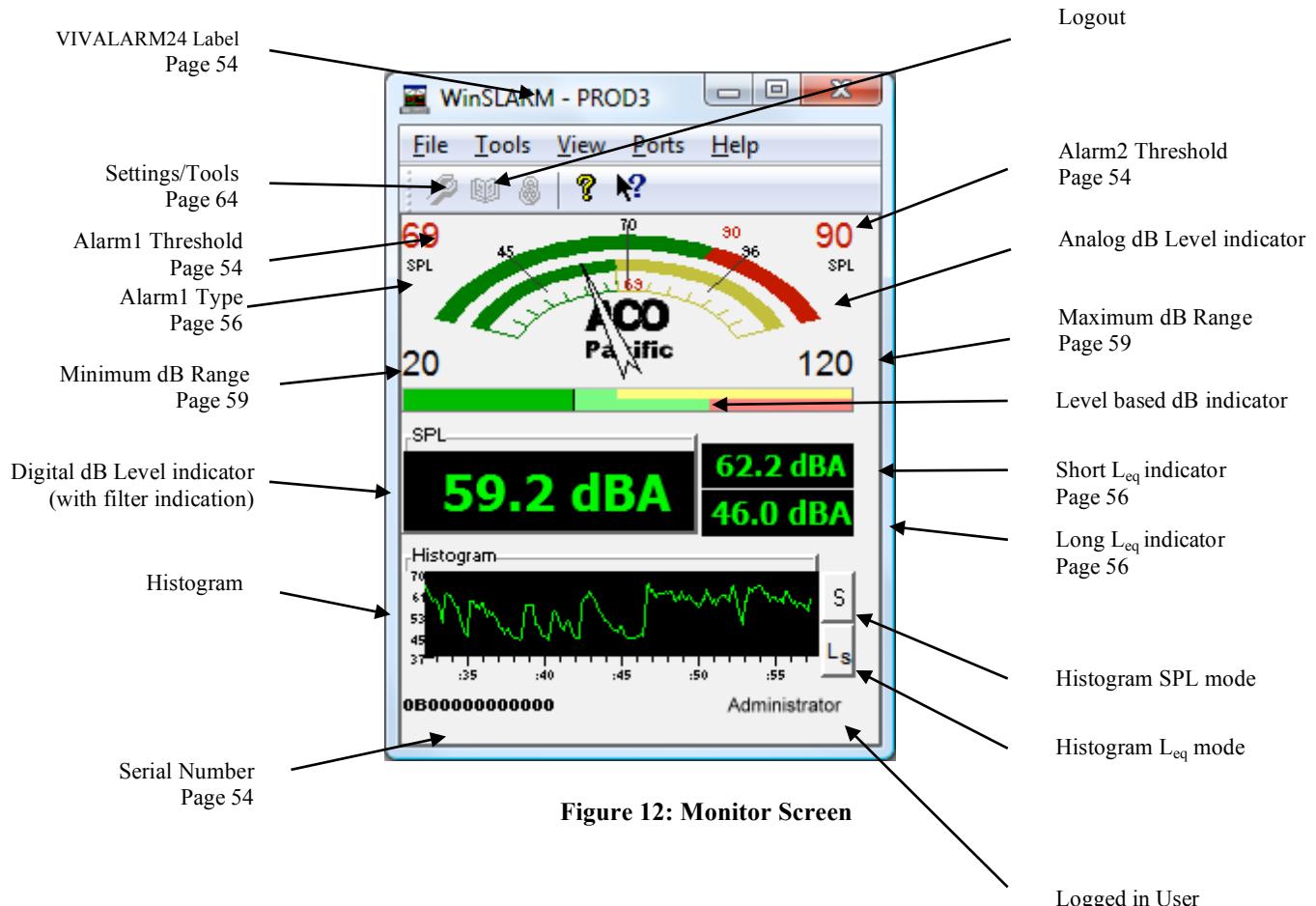
Connecting to the VIVALARM24 via Ethernet

Please see the section *Accessing VIVALARM24Net™ from VIVALARM24Watch* on page 74.

VIVALARM24 Monitor (WinVIVALARM24)

The standalone manual monitoring application (informally called WinVIVALARM24) on the PC is for the real-time monitoring of the VIVALARM24 unit.¹

The default screen:



¹ Many of the functions of this program have been expanded and moved to VIVALARM24Watch™ and are no longer available in this application.

To select a VIVALARM24 unit for Monitoring, click on the Ports menu and select one of the available VIVALARM24 units listed. If *Last Port* is selected, WinVIVALARM24 will automatically start using the VIVALARM24 unit that was in use last time WinVIVALARM24 was run.

Previously configured connections will appear below the current established connections. There may also be Bluetooth and Serial ports in this list. Bluetooth ports will be listed as BTCOMx. Standard COM (Serial) ports will be listed as COMx. USB connections will have the unit label with USB after it.

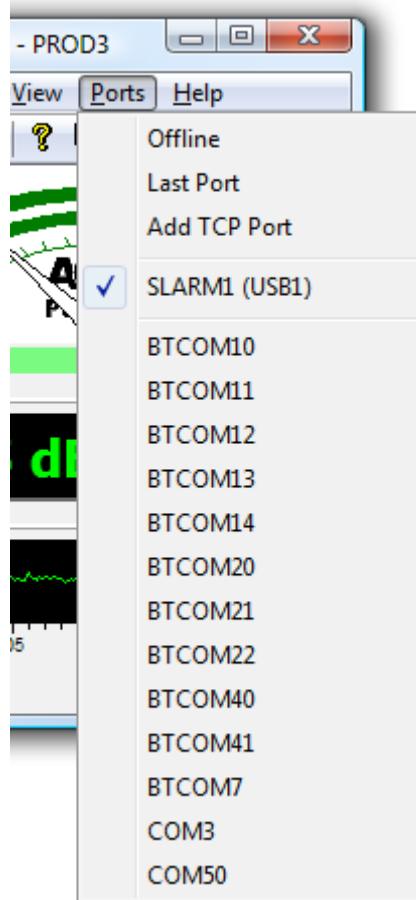


Figure 13: WinVIVALARM24: Selecting the VIVALARM24 unit to Monitor

Last Port will automatically reopen the selected port next time WinVIVALARM24 is activated.

See the section *VIVALARM24 Setup* on page 54 for VIVALARM24 unit configuration options.

VIVALARM24Watch™ Manager

The main control and setup application is called VIVALARM24Watch™.

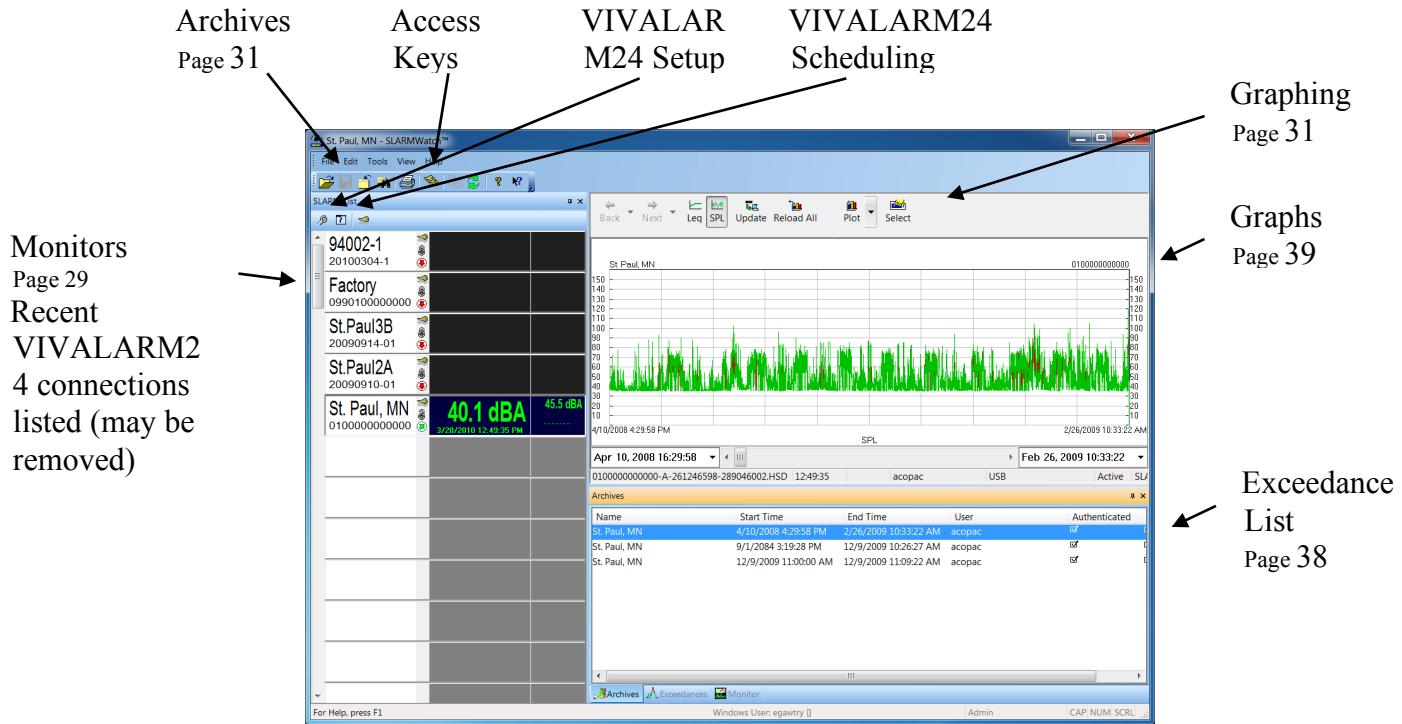
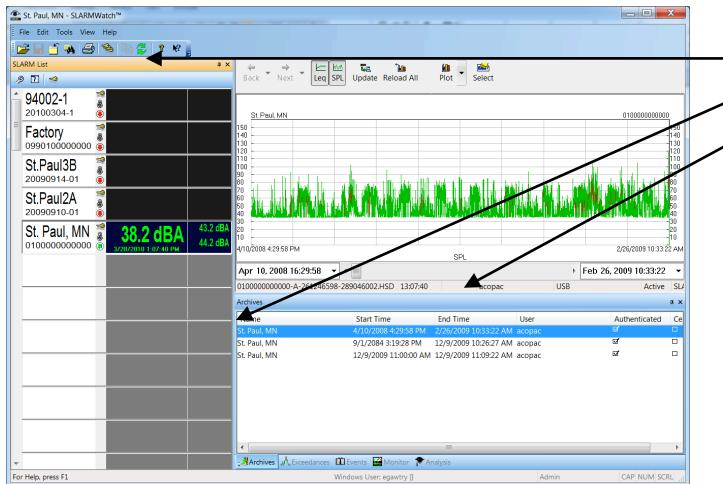


Figure 14: VIVALARM24Watch Screen

Display Layout

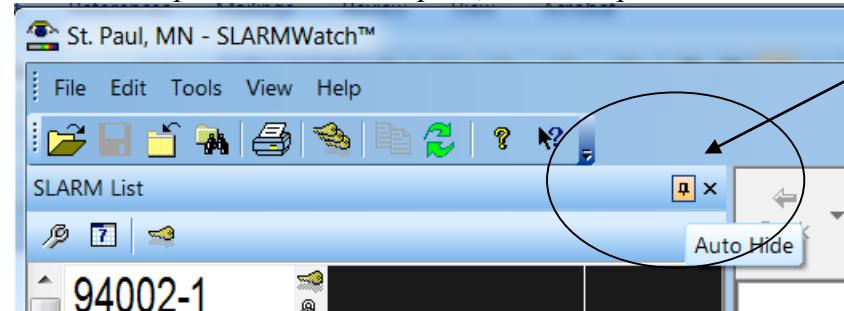
The default screen layout may be changed via simple drag a drop. This is similar to the Windows 7 desktop.

All panes are resizable by dragging on the edge.

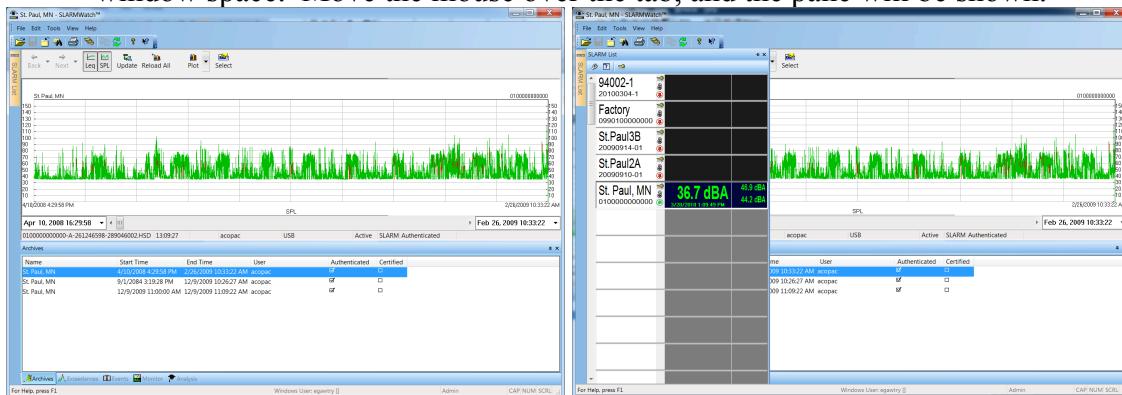


Dragable edge
for resizing

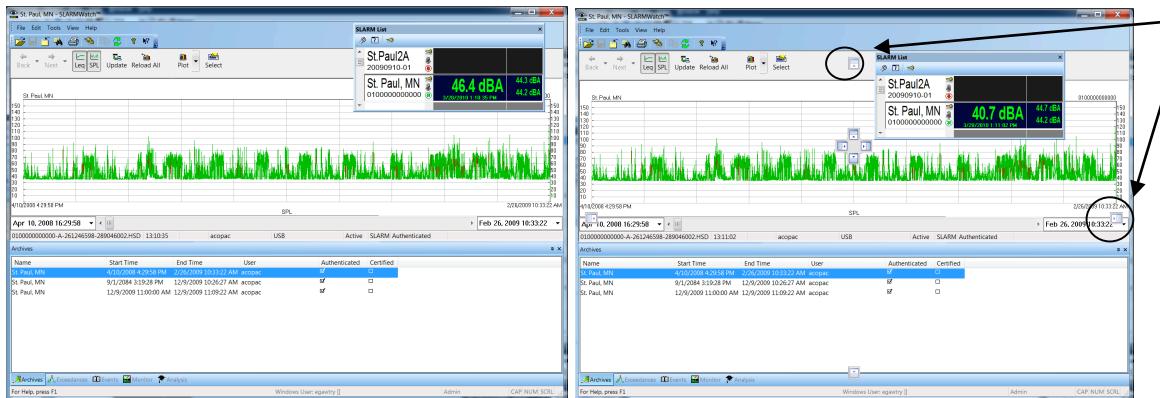
On the top of each movable pane, there is a pin.



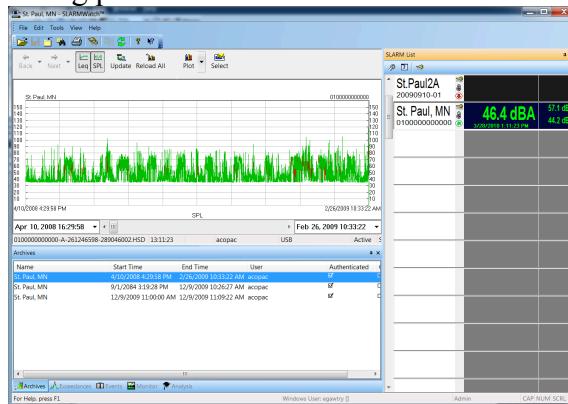
If this pin is clicked, it will slide the pane to the side so that it doesn't take up window space. Move the mouse over the tab, and the pane will be shown.



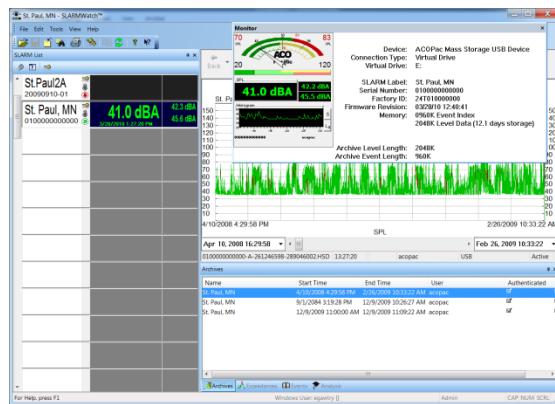
The caption bar (the bar with the pane name) can be dragged away from its original location to float freely. While dragging there will be position indicators for locking the pane back onto a side.



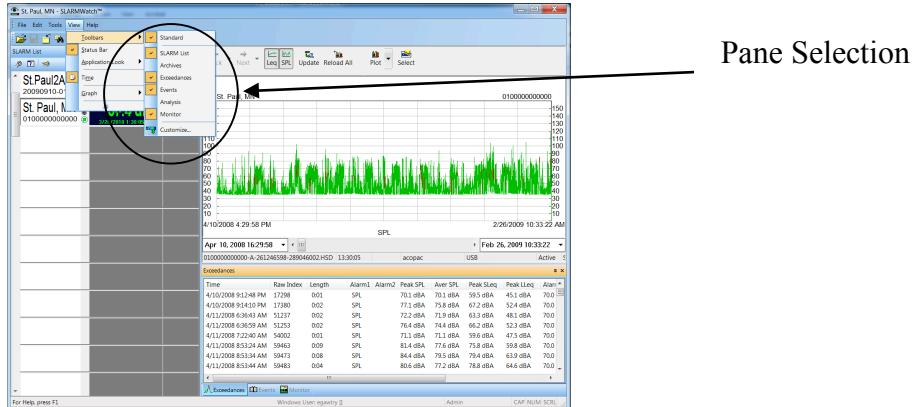
Move the floating pane to one of the indicators to lock it to that side.



The bottom panes may also be moved. Drag from the tab to separate from the other tabs.



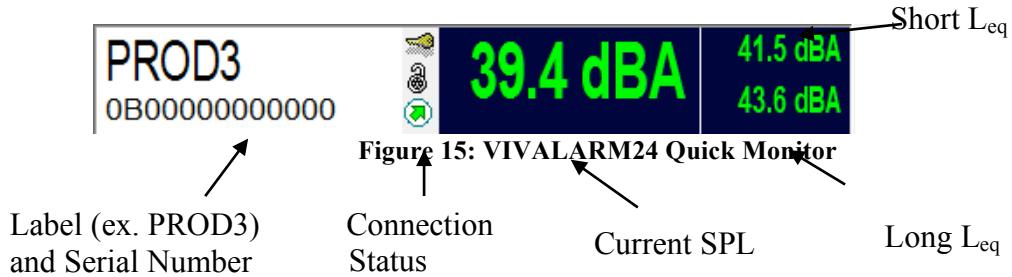
To turn specific panes on and off, select them from the menu.



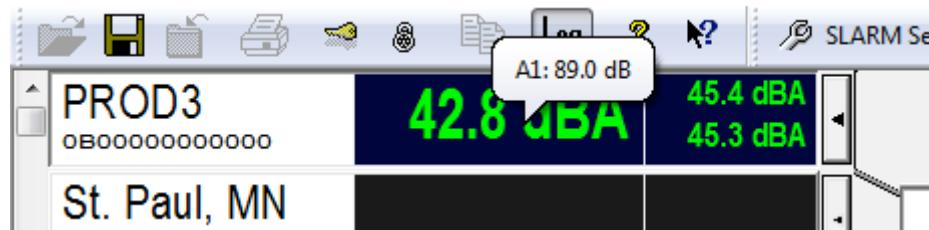
VIVALARM24 Monitors

The connected VIVALARM24s are listed by default down the left side of the screen.

There are five parts to the VIVALARM24 Quick Monitor display.



If the mouse hovers over one of the Leqs or the SPL, a tooltip will appear displaying the Alarm thresholds and Leq lengths. A tooltip is a small note that appears next to the mouse pointer with a word or two of text.



or



Figure 16: VIVALARM24 Quick Monitor Tooltip

The VIVALARM24 will remember previous connections and maintain a list of possible VIVALARM24 Monitors. This will allow the opening of saved archives. To rebuild this list, choose “Rebuild VIVALARM24 List” from the File Menu. Archives will be scanned and the list of VIVALARM24 Monitors will be recreated.

Next to the Label are three icons indicating connection to the VIVALARM24 box.

	Indicates that there is an Access Key available for that VIVALARM24 box.
	Indicates that the VIVALARM24 box has been unlocked or is still locked.
	Indicates that the VIVALARM24 box is connected or not connected.

There is also an icon indicating the type of connection to the VIVALARM24 box.

	Connected via USB
	Connected via Binary Ethernet
	Connected via XML Ethernet
	Connected via Serial Port (obsolete)
	Connected via Bluetooth (obsolete)

Startup

When started, VIVALARM24Watch™ will display the current version of VIVALARM24 and the status of VIVALARM24Net™ (see page 72).



Figure 17: VIVALARM24Watch™ Start Screen

This will disappear after 10 seconds. To recheck the versions, open the About dialog from the Help Menu.

When exiting any VIVALARM24 application, data needs to be archived for next time. The wait window will appear.



Figure 18: Exit Screen

VIVALARM24Watch™ Setup Wizard

Choose Edit/Setup Wizard. Make sure that the VIVALARM24 unit is connected. The wizard will go on to the next screen when the **Next** is pressed.



Figure 19: VIVALARM24 Wizard Start Screen

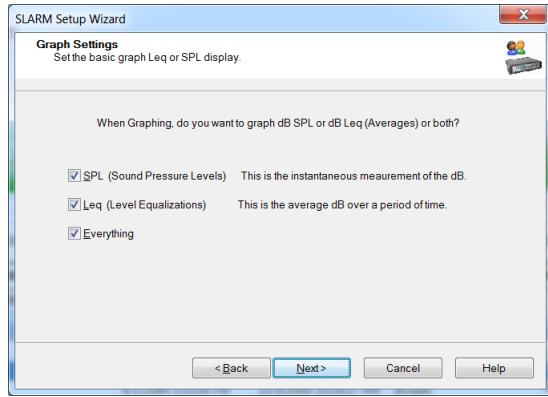


Figure 20: VIVALARM24 Wizard Graph Setup Screen

The wizard will ask for the graph type, either SPL or Leq. This is detailed on page 39.

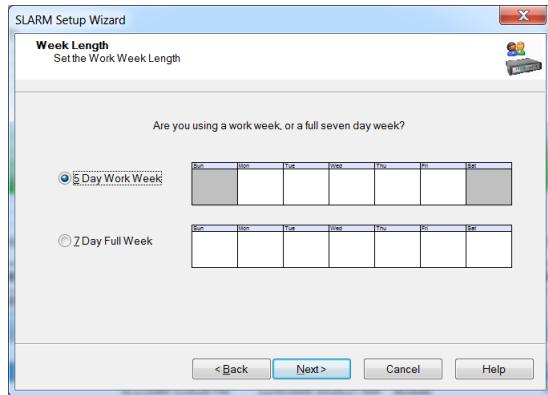


Figure 21: VIVALARM24 Wizard Week Selection Screen

Next is the week type. Either a standard work week may be used, or a seven day period.

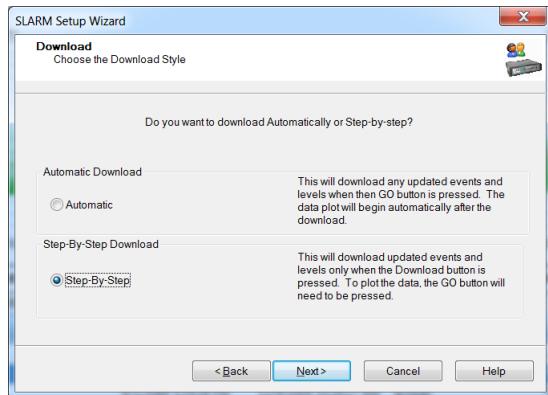


Figure 22: VIVALARM24 Wizard Plotting Setup Screen

The download type is then configured. Automatic will update the data every time the  is pressed. Otherwise the user has more control and only updates the data when needed and desired using the  or . See *VIVALARM24 History Data* on page 33 for more details.

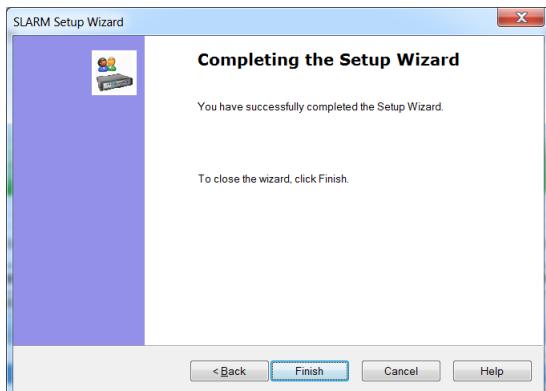


Figure 23: VIVALARM24 Wizard Finish Screen

VIVALARM24 Setup

When a specific VIVALARM24 Monitor is selected, the Setup for that VIVALARM24 is available.

Either select it from the Tools/VIVALARM24 Tools menu, or choose the  SLARM Setup from the toolbar.

See the section *VIVALARM24 Setup* on page 54 for VIVALARM24 configuration options.

VIVALARM24 Schedule

During the week, different events require different thresholds. To configure thresholds to automatically change use the VIVALARM24 Schedule. This allows changes 24/7.

Either select it from the Tools/VIVALARM24 Tools menu, or choose the  SLARM Schedule from the toolbar.

See the section *VIVALARM24 Schedule* on page 64 for VIVALARM24 schedule options.

VIVALARM24 History Data

When a specific VIVALARM24 Monitor is selected, information for that VIVALARM24 is shown on the right. This includes connection information, history, archived data, and other relevant information.

A user with permissions needs to be logged on to VIVALARM24Watch to enable the retrieval of new history. See *Logging In* on page 43 for details. Archived history does not require any special permission.

If the current User has permissions to download, to get the latest history, click on  . The VIVALARM24 will then download the data to the PC.

You may also click on  to make sure all data is current. This is necessary for authenticated archives. If a reload or download has already taken place,

 will update without reloading the entire memory. It will also preserve the authentication status.

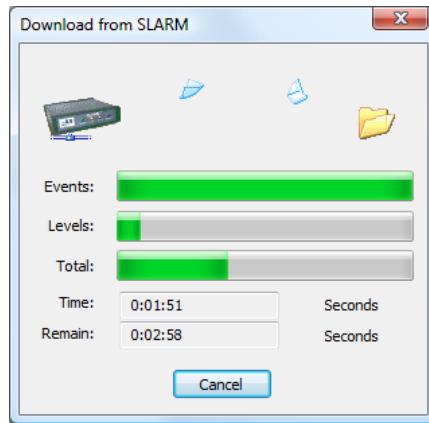


Figure 24: Download Screen



After downloading, be sure to click on  to plot the downloaded history data. “Go” may also be selected from the History submenu from the Edit menu. **F5** is the hot key.

Annotations

The history data may be annotated. That means that comments may be added for specific times.

Each VIVALARM24 has a list of matching annotations. When an archive is saved with the VIVALARM24, the annotations for the matching time period are saved with the archive. When an archive is opened, these annotations are merged back into the main list of annotations for that VIVALARM24.

Annotations					
	Start Time	End Time	Type	User	Annotation
⌚	9/22/2010 6:44:12 PM	9/22/2010 6:44:13 PM	Detected	PCegawtry	Missing 1 second .
⌚	9/23/2010 11:57:02 AM	9/23/2010 11:57:03 AM	Detected	PCegawtry	Missing 1 second .
⌚	9/23/2010 1:26:26 PM	9/23/2010 1:26:27 PM	Detected	PCegawtry	Missing 1 second .
⌚	9/23/2010 6:34:20 PM	9/23/2010 6:34:21 PM	Detected	PCegawtry	Reboot.
⌚	9/24/2010 10:29:26 AM	9/24/2010 10:29:27 AM	Detected	PCegawtry	Missing 1 second .
⌚	9/24/2010 12:56:36 PM	9/24/2010 12:56:37 PM	Detected	PCegawtry	Missing 1 second .
⌚	9/27/2010 11:49:30 AM	9/27/2010 11:49:31 AM	Detected	PCegawtry	Missing 1 second .
⌚	9/27/2010 4:54:34 PM	9/27/2010 4:54:35 PM	Detected	PCegawtry	Missing 1 second .
⌚	9/28/2010 12:13:37 PM	Manual	PCegawtry	“Junk and the Junkettes” performed on stage.	

Note that Annotations are kept on a per VIVALARM24 basis, not on a per archive basis. There very well may be Annotations that are outside of the range of the current history data.

There are several options for annotations:

	Annotate	Add a manual Annotation.
	Edit Annotation	Edit or View an Annotation.

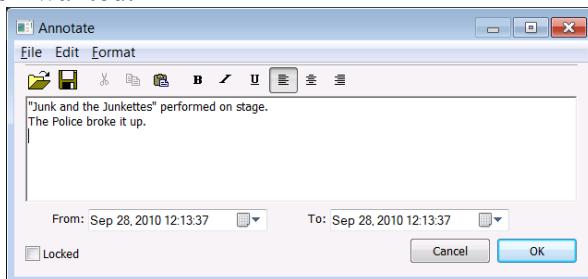
	Delete Annotation	Delete an unlocked Annotation. This will NOT delete a locked Annotation.
	Lock Annotation	Permanently lock an Annotation. This will prevent it from being deleted or edited.
	Find Annotation	Find the position on the graph of the selected Annotation.
	Check History	Check the History and report any irregularities.
	Remove Detected	Remove all the Automatic History Annotations. This will NOT remove any that have been locked.
	Save Annotations	Save the Annotations to a CSV file for use in Excel.
	Hot Track Annotations	As the cursor is moved over the graph, find the matching Annotation.

Adding a Manual Annotation

A manual Annotation is an Annotation that the user adds specifically to the list of annotations.

Method 1: Annotate an event on the graph.

Click on the graph or select a range on the graph. Click on the Annotate icon . The Annotation dialog will appear. Type the annotation wanted.

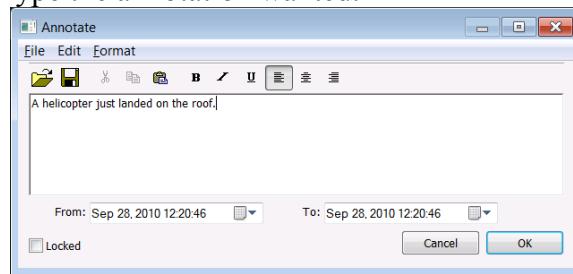


The annotation will have the date that was selected on the graph.

Method 2: Annotate something happening right now.

Make sure nothing is selected on the graph. You can close the graph by deselecting the VIVALARM24 and then reselecting it.

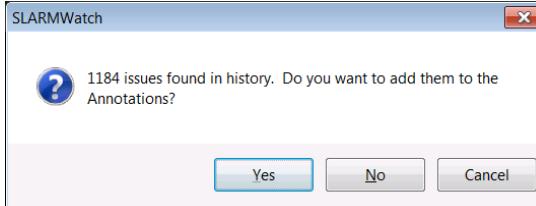
Click on the Annotate icon . The Annotation dialog will appear. Type the annotation wanted.



The annotation will have the current date. The annotation will automatically be included in any downloaded data with the current date.

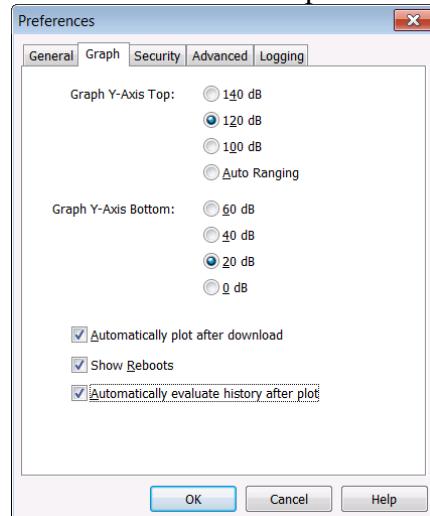
Automatic Annotations

After plotting, click on the Check History icon . The history will be scanned for any irregularities, such as a power loss and reboot or a clock synchronization correction. It will then ask if you want to add these as annotations.



If you choose "Yes", then the issues found will be annotated.

If desired, this can be done automatically following any plot by choosing it in preferences under the Graph tab.



Archives

The history data may be saved in an archive. These archives may be loaded and viewed at any time. To save an archive, choose File/Save or click on the . If an archive is Authenticated or Certified, it cannot be modified in any way without invalidating the archive.

Authentication

To create an authenticated archive, reload the data from the VIVALARM24 using .

If the data has been reloaded since the last time VIVALARM24Watch™ has started, it is not necessary to reload. To see if the current data is authenticated, look on the status bar.

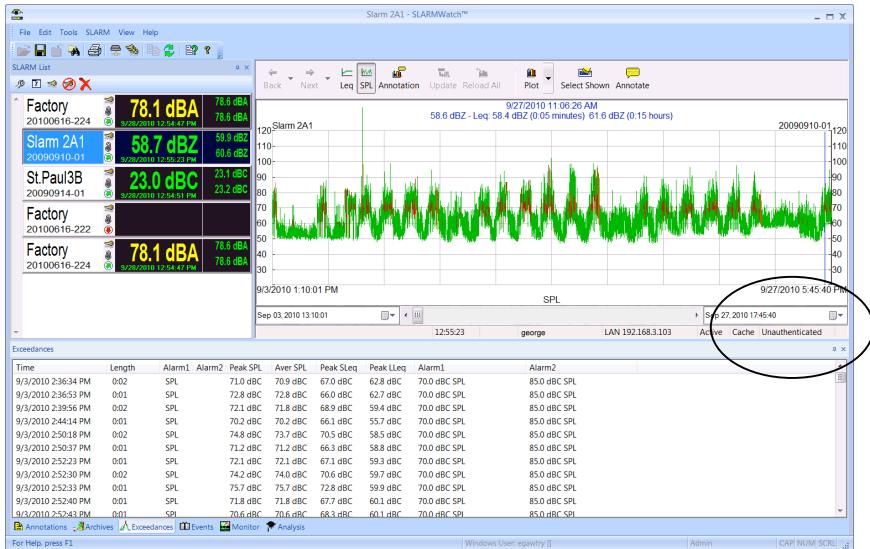


Figure 25: Status Bar

An unauthenticated archive can be saved at any time.

Certify

If a file is not authenticated, but a chain of custody is needed, it may be certified. To create a certified archive, select an unauthenticated archive by clicking on it. Select File/Certify from the File Menu or Context Menu. Once certified, the archive will detect all attempts to modify it.

Note: The current VIVALARM24 User will be listed in the archive as the certifying agent. An archive cannot be certified twice or when there is no user key selected.

Export/Import

An archive may be exported to an external file. Choose an archive and pick Export Archive from the File Menu or Context Menu. A window will appear asking for a destination location.

An archive file that has previously been exported can be imported to become part of the archive list. Pick Import Archive from the File Menu or Context Menu. A window will appear asking for the name of the file to import. If the archive is for a VIVALARM24 Box that has not been previously connected, the VIVALARM24 Box will be added to the VIVALARM24 Monitor list.

Technical Note

Internally, the VIVALARM24 Software saves the archives as files in a special reserved folder created by Windows™. These may be copied manually, but doing so may create problems with Windows permissions, especially with Windows Vista or Win7.

Exceedances

This is a list of all alarms in the known history.

Time	Raw Index	Length	Alar...	Alar...	Peak SPL	Aver SPL	Peak SLeq	Peak LLeq	Alarm1	Alarm2
10/25/2007 11:20:17 AM	3575	0:20	SPL	SLeq	91.5 dB	60.7 dB	81.2 dB	69.5 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
10/25/2007 12:00:14 PM	5966	0:22	SPL	SLeq	95.0 dB	60.6 dB	86.4 dB	74.7 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
10/25/2007 12:10:49 PM	6598	0:20	SPL	SLeq	91.8 dB	57.7 dB	86.4 dB	74.7 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
10/25/2007 3:45:38 PM	19452	0:01	SPL		89.2 dB	89.2 dB	86.4 dB	74.7 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
10/25/2007 3:46:40 PM	19514	0:20	SPL	SLeq	91.9 dB	52.6 dB	86.4 dB	74.7 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
10/26/2007 1:37:25 PM	97937	0:21	SPL	SLeq	97.7 dB	53.2 dB	86.5 dB	74.8 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/1/2007 2:51:36 PM	619288	0:21	SPL	SLeq	100.8 dB	56.2 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/2/2007 2:25:33 PM	703882	0:20	SPL	SLeq	96.1 dB	52.7 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/8/2007 2:18:16 PM	707031	0:20	SPL	SLeq	93.1 dB	54.2 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/9/2007 2:03:23 PM	795901	0:01	SPL		89.7 dB	89.7 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/9/2007 5:11:49 PM	807179	0:18		SLeq	83.6 dB	65.0 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/9/2007 6:42:54 PM	812631	0:20	SPL	SLeq	93.5 dB	49.4 dB	89.9 dB	78.1 dB	89.0 dB SPL	79.0 dB [0:20] SLeq
11/12/2007 10:58:01 AM	1043205	0:15		SLeq	76.2 dB	71.4 dB	89.9 dB	78.1 dB	86.0 dB SPL	76.0 dB [0:20] SLeq

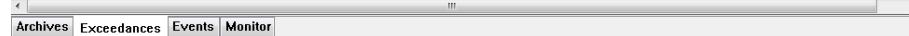


Figure 26: Exceedance List

Alarm 1 or 2 Type

This is the type of threshold exceeded.

Peak/Max SPL

This is the highest SPL dB level (or g level) that was reached during the Exceedance period.

Average SPL

This is the average SPL dB (or g level) level during the Exceedance period. Note that this is an average; the SPL may have been higher for part of the Exceedance period.

Peak/Max Short Leq (not applicable for g vibration measures)

This is the highest Short Leq dB level during the Exceedance period.

Peak/Max Long Leq (not applicable for g vibration measures)

This is the highest Long Leq dB level during the Exceedance period.

Alarm 1 and 2

This is the setting for the Alarms at the time of the Exceedance.

Events

Every time a variable is changed or a user logs in, it is recorded. Also contained in the events is the index for the dB/g levels. The settings at any

point in time may be determined by hovering over the time wanted and a tooltip will appear with the detailed settings at that point in time.

Monitor

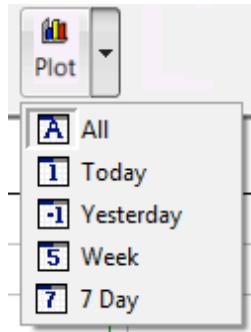
This is the real time monitor similar to the display in WinVIVALARM24. It also includes basic information on the VIVALARM24 unit.

Analysis

Closely tied in with the graph (see Graph on page 39), the history data may be analyzed for various trends. This is detailed under the Graph section.

Graph

The dB/g level history may be graphed. Select a range in the two boxes labeled *From* and *To*. Then click on  to plot the graph. If the drop arrow next to the  is clicked on, then a list of preset ranges is shown:



Display all the data.

Display only today's data.

Display only yesterday's data.

Display the current work week's data.

Display the last seven day's data.

Click on the  by itself to plot the range shown.



The graph will appear.

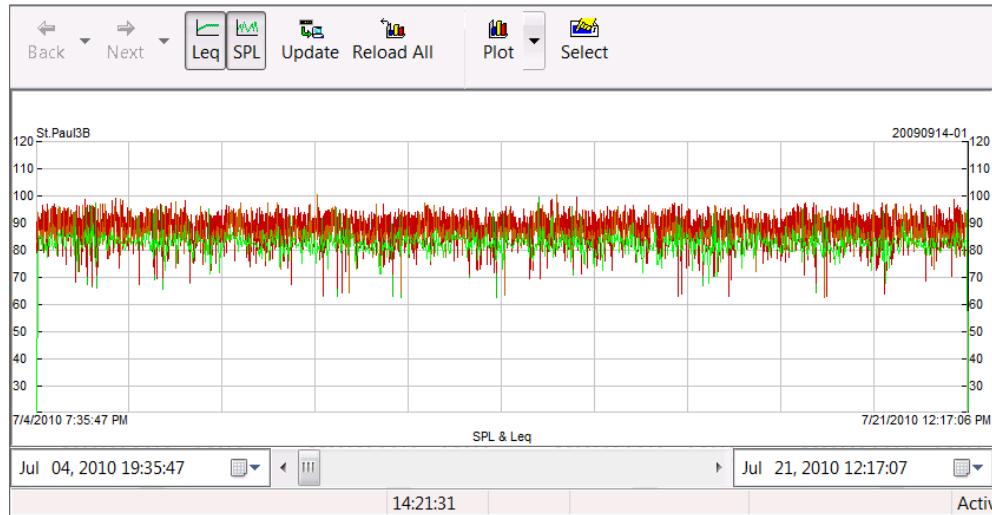
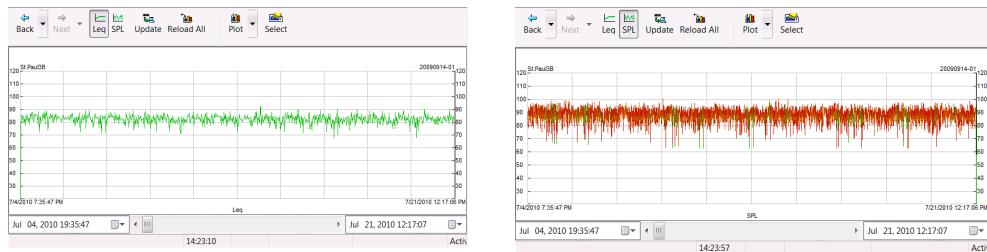
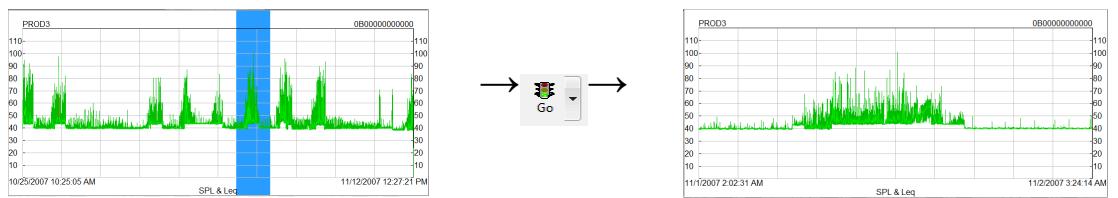


Figure 27: Graph

The graph may be separated into the individual SPL/g and Short Leq components by clicking on the and/or and re-plotting with .



By selecting a preset range or by highlighting a region then clicking on the , the graph will zoom to match the range.



If the range is inside of the stored graph data, then the graph may be scrolled via the scroll bar on the bottom of the graph.

Previous ranges may be selected by using the .

To see detailed information at any point on the graph, click on it. Use the mouse wheel control to fine-tune the selected point.

Analysis

Individual calculations may be done for the graphed data. When a specific point on the graph is chosen or a range is selected, selected formulas are calculated based on that selection.

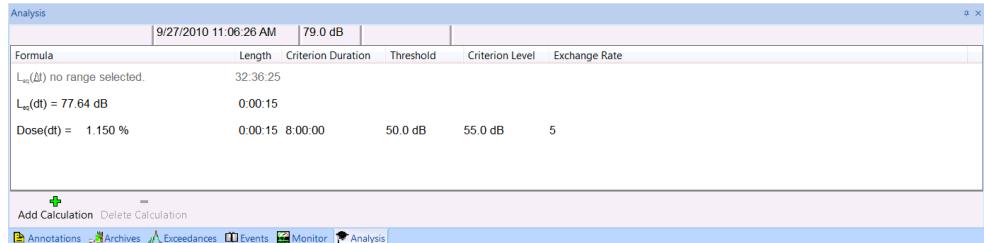


Figure 28: Analysis

A formula may be added to the list by clicking on “Add Calculation”. To remove a formula from the list, click on it and then click on “Delete Calculation”.

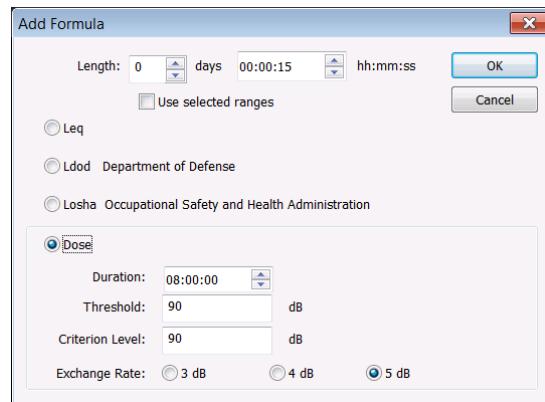


Figure 29: Add Analysis Calculation

L_{eq}	The standard unmodified time weighted value. (Not applicable for vibration)
L_{DOD}	The time weighted value used by the Department of Defense for military applications. (Not applicable for vibration)
L_{OSHA}	The time weighted value used for OSHA certifications. (Not applicable for vibration)
Dose	Dosage calculation based on exposure over a given time period. (Not applicable for vibration)

To always calculate a set time, set the length. For instance, many L_{DOD} and L_{OSHA} operations require a preset 8 hours. To dynamically calculate the time based on the graph selection, check the “Use selected ranges” box.

Dose has several extra parameters. These are preset to U.S. standards, but may be modified for other standards.

When calculating the formulas, VIVALARM24Watch uses very high precision calculations (90-bit) using the PC's math coprocessor. The result may be up to tenth of a dB off of the stored L_{eq} levels.

VIVALARM24 Administrators and Users

On a specific computer, anyone may use the VIVALARM24Watch software to monitor VIVALARM24 boxes and view existing graphs. To download (copy) the recorded history or any other VIVALARM24 box feature, a person needs to have permission. This permission is set by the "VIVALARM24 Administrator".

A VIVALARM24 Administrator may use **VIVALARM24 Accounts** to edit the list of people with Windows accounts that may also access the VIVALARM24 software as a VIVALARM24 User.

Account Keys

To access anything besides the monitor from a VIVALARM24 box, a person needs to have permissions to access the specific feature.

What are "Account Keys" and "Permissions"?

The VIVALARM24 has many capabilities that only certain people should be able to access for security purposes. Thus, there is a list of possible people that can access the VIVALARM24 unit. Each entry in the list is an "Account".² To access an account, the user needs a Key.³ For each of these account keys there is a list of things that a person may do (such as download, calibrate the system, set the thresholds, etc.). If what the person wants to do is not in their list, they cannot do it. This individual list is called the person's "Permissions".

When somebody wants to use a feature from the VIVALARM24 unit, they are asked for their Account Key which includes the account name and the personal password. If this has already been set, VIVALARM24Watch will use the previously set Key.

A special account key exists that can do everything. It is called "VIVALARM24", which is an "administrator". The password for this special key should be guarded.

² The person who uses an Account is called a "User".

³ A Key is also known as a login name or user name.

Example

A common place using users and passwords is a bank account. Each account at the bank has a PIN number that allows access to that account. This PIN is the same as a password. For that account all the information may be accessed by the account number and PIN, but that account only. The bank manager, however, can access his/her account and all the other accounts at the bank. They are an “administrator”.

Logging In



Figure 30: User Login Screen

The login screen works identically to the standard Windows login screen. Click on the box after the User Name, type the name of the user. Click on the box after the Password, and type the password for the user. Then click on OK. The VIVALARM24 comes with the account “SLARM” with the password “admin”.

Place new Logon in Access Key List automatically adds the new Account Key to the list of Account Keys.

Account Keys

Each person who uses VIVALARM24Watch has their own list of access keys for attached VIVALARM24 boxes. This list can be built automatically as each VIVALARM24 box is connected by checking the “Place new Logon in Access Key List” when prompted for a connection, or it may be preset by using Edit/Access Key List.

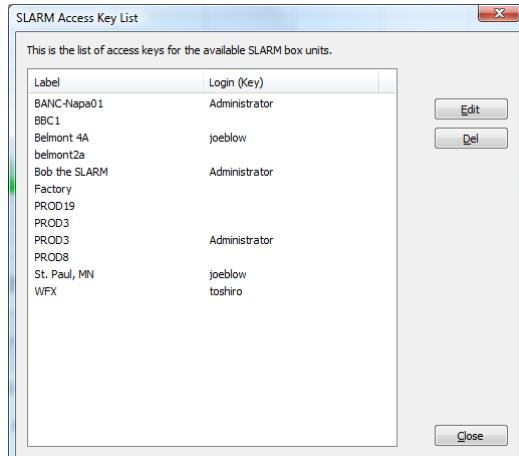


Figure 31: VIVALARM24Watch Access Key List

As can be seen from Figure 31, the current person has administrator access to BANC-Napa01, Bob the VIVALARM24, and PROD3. They also have Access Keys for “joeblow” and “toshiro” for three other VIVALARM24 boxes, and they cannot access the rest of the VIVALARM24 boxes (except for monitoring).

This list may be set to automatically erase itself from Edit/Preferences on the General Tab.

Account Management

The list of accounts for a specific VIVALARM24 may be accessed from VIVALARM24 Accounts. Only a VIVALARM24 Administrator may access this list.

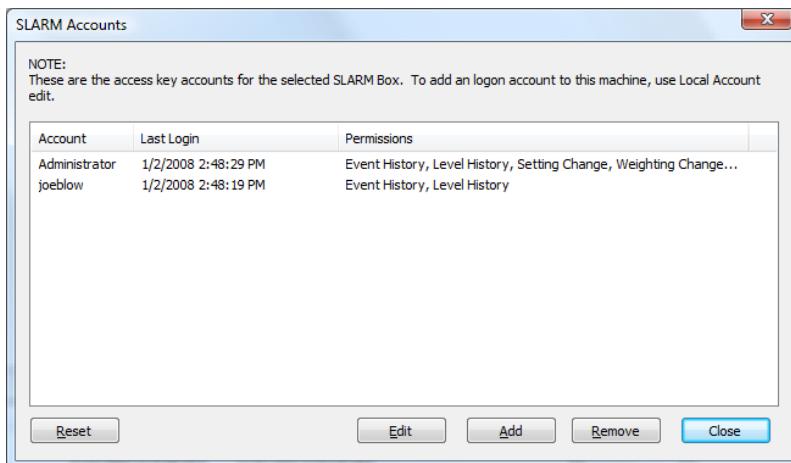


Figure 32: VIVALARM24Watch User List

There are several different sets of permissions for the VIVALARM24:

Downloading History. This person can download the level and event history from the VIVALARM24 box.

Thresholds. This person may change the thresholds and other similar settings.

Calibration. This person may calibrate the hardware.

These permissions may be combined. The person with administrator level Access Keys can access everything. The default account, “VIVALARM24”, is an administrator level account.

Note: Not everybody using the VIVALARM24 should have the ability to change calibration or thresholds. Only the person doing maintenance should be allowed to do that.

When a change is made to the VIVALARM24 the current user is saved in the event history.

To reset the accounts to the factory defaults, click on “Reset”. This will delete all the accounts and make sure the administrative account “VIVALARM24” with the password “admin” is present. It will also automatically log the current user into that account for further account editing. Note: Do not forget to change any keys that use the deleted accounts, they will be invalid.

Edit Users

When Add or Edit is pressed, the Edit Local User screen will appear.

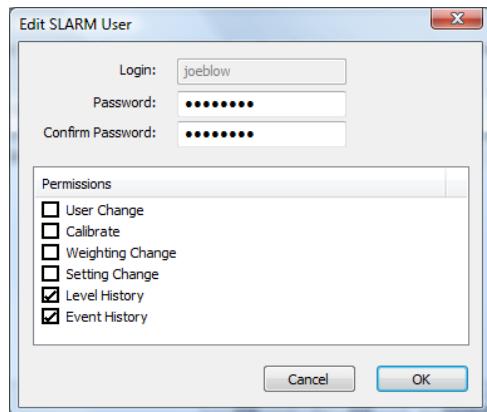


Figure 33: Add/Edit User

Fill in the information for the user. Use Tab or the Mouse to move between items to edit. When setting the permissions for the user, only set the permissions that the user needs. The user may later be edited to add more permissions.

In the example shown in Figure 33, *joeblow* can only download new VIVALARM24 Event and History data, but cannot change any system settings.

Preferences

From the Edit Menu, Preferences for the VIVALARM24Watch program may be set.

General Settings

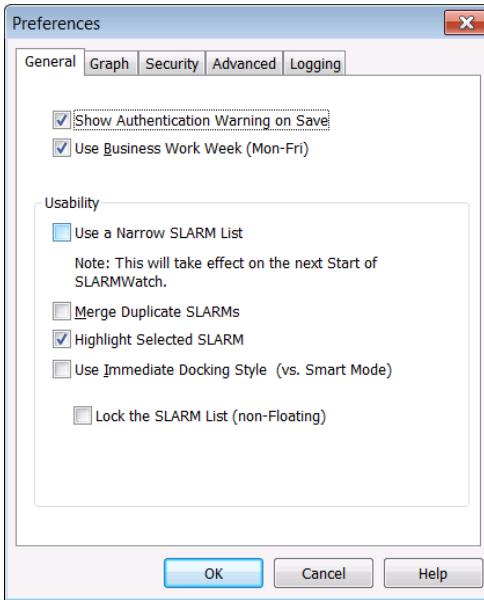


Figure 34: VIVALARM24Watch General Settings

Show Authentication Warning on Save

This will ask the user if they want to save the graph data when the data hasn't been reloaded. Non-reloaded data cannot be authenticated. See *VIVALARM24 History Data* on page 33.

Use Business Work Week

Use the current work week for weekly calculations. Otherwise the last seven days will be used.

Use a Narrow VIVALARM24 List

When checked, the VIVALARM24 List will have the Label above the Level. This is for monitors that have less real estate.

Merge Duplicate VIVALARM24s

If a VIVALARM24 is connected from both USB and Ethernet, this will only show the first connection made.

Highlight selected VIVALARM24

This will highlight the VIVALARM24 selected with the Windows Highlight Color (as seen on menus).

Use Immediate Docking Style

This will use the standard Window Docking Style similar to Visio™. Otherwise it will use “Smart Docking” which prompts for the connection type.

Lock the VIVALARM24 List

The list of VIVALARM24 connections will not be allowed to float. It will only auto hide if desired.

Graph Settings

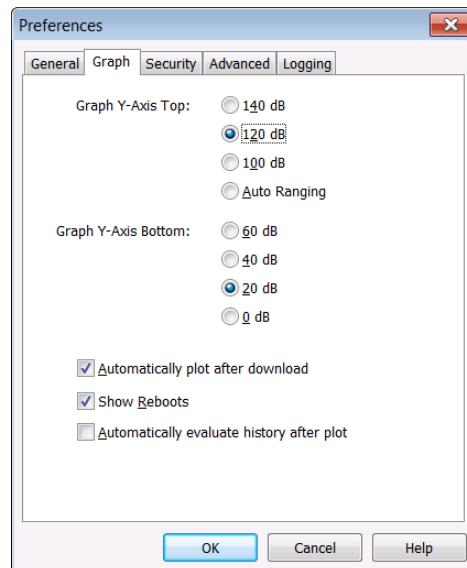


Figure 35: VIVALARM24Watch Graph Settings

Graph dB Range

The graph Y-Axis range. Set this to match what the weight is set for. See *Weighting* on page 60.

Automatically Plot after Download

Plot the graph after a download. This includes Update and Reload All.

Automatically evaluate history after Plot

Check for gaps, time changes and other occurrences after the plot is complete and mark as annotations.

Show Reboots

Show the position on the graph when the VIVALARM24 was rebooted or lost power.

Security Settings

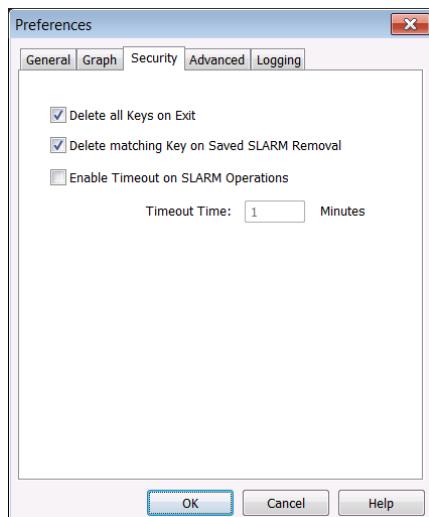


Figure 36: VIVALARM24Watch Security Settings

Delete all Keys on Exit

Automatically delete all saved Account Keys when VIVALARM24Watch Exits.

Delete Matching Key on Saved VIVALARM24 Removal

Automatically delete the matching Account Keys when a VIVALARM24 is removed from the list.

Enable Timeout on VIVALARM24 Operations

Automatically close VIVALARM24 Setup, VIVALARM24 Scheduler, or VIVALARM24 Accounts if they are left without being used.

Advanced Settings

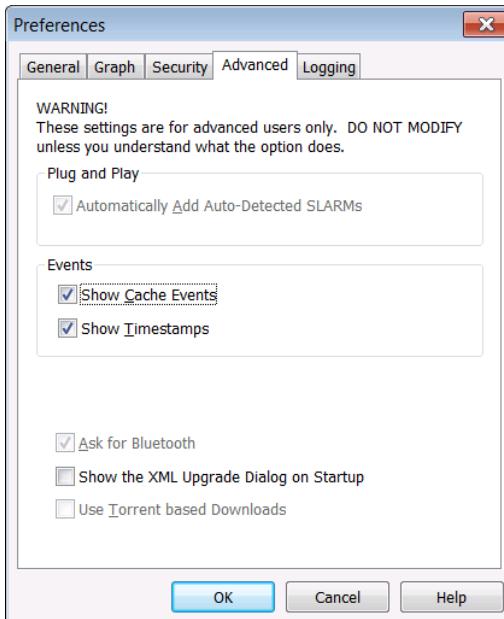


Figure 37: VIVALARM24Watch Advanced Settings

Warning! Do not change these settings unless it is necessary to do so! These settings deal with advanced concepts that disable many of the automatic features of the VIVALARM24. Please read the section on User Accounts on page 42 before attempting to change. If you do not understand the VIVALARM24 user accounts, DO NOT CHANGE THESE SETTINGS!

Automatically Add Auto-Detected VIVALARM24s

When a VIVALARM24 unit is connected via USB, detect the new connection and add the newly connected VIVALARM24 to the displayed list.

Show Cache Events

On the Event list, show the Cache events.

Show Timestamps

On the Event list, show the timestamps. Since a timestamp is recorded every five minutes, this will clutter up the display. For diagnostic purposes only.

Ask for Bluetooth

Obsolete.

Show XML Upgrade Dialog on Startup

Upon start of VIVALARM24Watch, test for old style binary connections for long distance Internet connections and prompt to change to XML.

Use Torrent based Downloads

Obsolete.

Log Settings

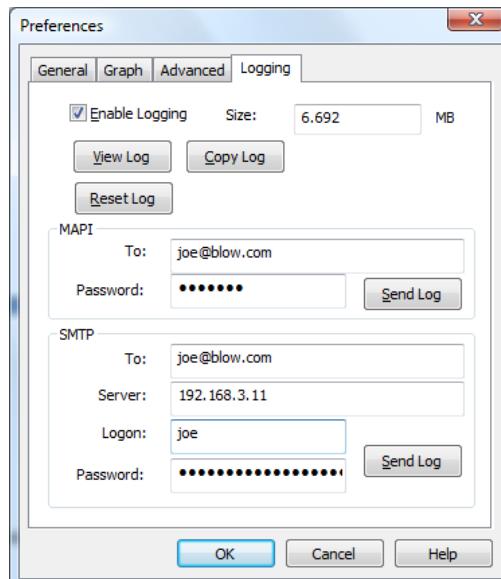


Figure 38: VIVALARM24Watch Log Settings

The VIVALARM24 software has a comprehensive internal log that may be used for diagnostic purposes with Turner Scientific/ACO Pacific

Technical Support. This log is entirely in English. Please do not change any of these settings without being instructed to do so.

Enable Logging

Turn on the logging.

View Log

Shows the log using WordPad.

Copy Log

Copies the log to a specified location.

Reset Log

Erases the log.

Send Log

Sends the log to an email recipient. The log is automatically zipped (compressed) for emailing. This requires that email accounts be previously set up.

MAPI

Internal Windows MAPI. This uses Outlook or Exchange to send the log. Other third party email programs (such as Eudora) may also be linked into MAPI and will work.

Set the destination user (To) and the MAPI password.

Note: MAPI will invoke the Windows security protocol (if present) and may reject the email and prompt the user several times during the send.

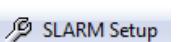
SMTP

SMTP will directly connect to an SMTP server (from an ISP) and send the log, bypassing any email program that may be present. This is the preferred method for non-corporate environments.

Note: This uses non-SSL/TLS SMTP connections on port 25 ONLY.

VIVALARM24 Setup

The VIVALARM24 unit itself has several configuration options. These are configuration options for the VIVALARM24 unit. These may be accessed from both VIVALARM24 Monitor and VIVALARM24Watch™. Many of these settings may not be available to all users because of permissions. These configuration options are stored in the VIVALARM24 itself, giving the VIVALARM24 the capability to operate standalone.

Select the VIVALARM24 wanted from the VIVALARM24 List. There are three ways to activate the VIVALARM24 Setup, click on  SLARM Setup, select VIVALARM24 Setup from the VIVALARM24 menu, or right click on the VIVALARM24 wanted from the list and choose VIVALARM24 Setup. The tabs indicate the settings available to the logged in user. The administrator assigns the permissions necessary for each tab.

After making a change, VIVALARM24 Setup will show that change. To make it permanent, click on OK or Apply. Apply will remain in the Setup Properties so that the changes can be immediately seen.

General Settings

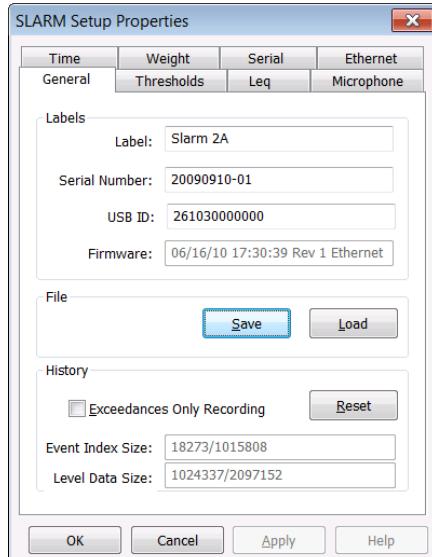


Figure 39: General Settings

File Save

Save the current VIVALARM24 configuration to a file.

File Load

Load the current VIVALARM24 configuration from a file. Note that the file is protected so that it will not allow changes to be loaded.

Label

The label is unique name for the VIVALARM24 unit. Set the label for easy identification of the VIVALARM24 unit. This may be up to 12 characters.

Serial Number

The Serial Number is set at the factory. This unique number associates the History Data Archive and Settings to the individual VIVALARM24 unit.

Firmware

This is the firmware version in the VIVALARM24 unit.

USB ID

This is a factory set unique identifier for the VIVALARM24 unit. This unique identifier is supplied so that multiple VIVALARM24 units may be connected without conflict.

Reset

This will reset the VIVALARM24's memory, erasing all level and event data.

Exceedances Only Recording

When selected, this will set the VIVALARM24 unit to only record history within 7 minutes before and after an Exceedance for a total of 14 minutes.

In VIVALARM24Watch™ a yellow separator in the history indicates the start of an Exceedance recording.

Threshold Settings

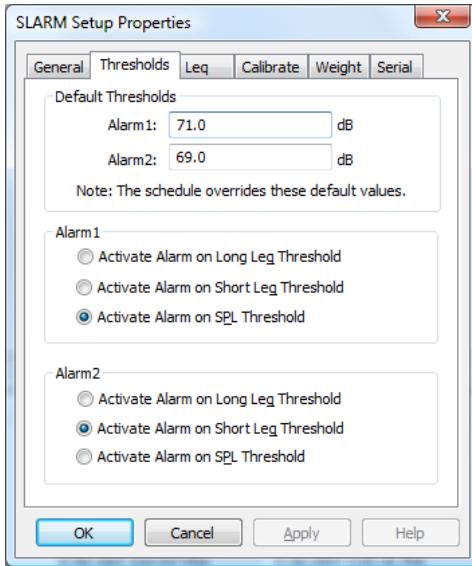


Figure 40: Threshold Settings

Please read the section *What is Leq?* on page 89 and *What are Thresholds and Exceedances?* in the *Primary Operating Overview* on page 8 before adjusting these settings.

Alarm Thresholds

These are the default thresholds used for scheduling when the Schedule is reset or the Schedule is not being used. See *VIVALARM24 Schedule* on page 64 for details on scheduling.

Alarm 1 and 2 Types

These are for choosing the alarm type for the threshold. For example, if *SPL Threshold* is selected, the alarm will trigger on the dB SPL reaching the threshold point.

Leq Settings (not applicable for vibration units)

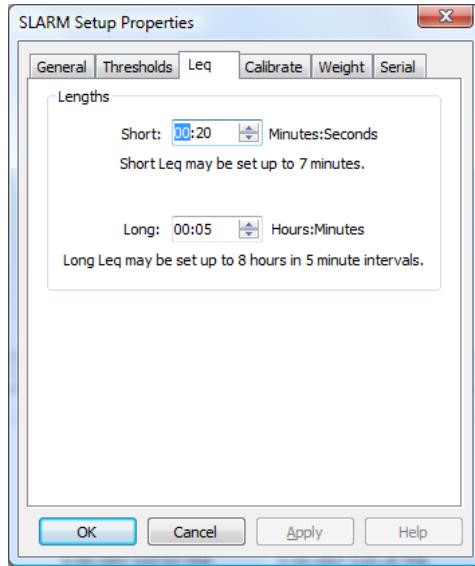


Figure 41: Leq Settings

Please read the section *What is Leq?* on page 89 before adjusting these settings.

Short Leq

This is the Short Leq length. It is settable up to 7 minutes and 0 seconds. The example in Figure 41 is set to 20 seconds.

Long Leq

This is the length of the Long Leq. This is set up to eight hours in multiples of five minutes. The example in Figure 41 is set to 5 minutes.

Microphone Calibration

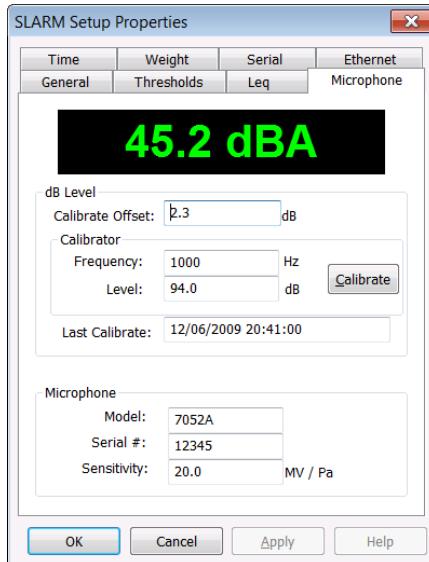


Figure 42: Microphone Calibration Settings

Calibrate Offset

This is the calibration offset. Use a Calibrator to set it.

Note: Calibrate Offset should not be larger than 5 or smaller than -5. If this number is larger or smaller then there is a problem with the microphone. Please contact technical support.

Calibrator

The Frequency and Level settings are for the calibrator. Connect the Calibrator to the microphone then press “Calibrate” to have the Calibrator compute the Calibrate Offset automatically. Make sure that the Calibrate Frequency and Level are set properly. Standard is 1000 Hz at 94 dB, 104 dB, or 114 dB for ACO Pacific Calibrators. Some older Calibrators use 250 Hz or 200 Hz.

Microphone Model

This is the model of the Microphone. Standard for lab rat and mouse work is the ACO 4156N with a wide frequency range of 10 Hz to approximately 100 kHz, with performance +/- 2dB in the 10-80 kHz range.

Microphone Sensitivity

The sensitivity of the Microphone. Standard for lab rat and mouse work is 3.55 mV/Pa for the 4156N, 2.69 mV/Pa including the preamplifier.

Time Calibration

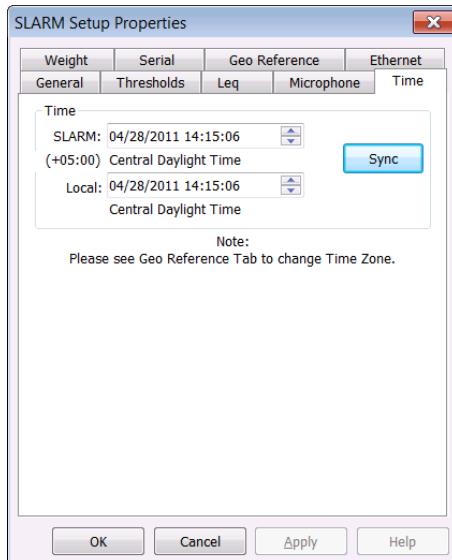


Figure 43: Time Calibration Settings

Sync

This will set the VIVALARM24 unit to exactly match the PC's clock. The VIVALARM24 will automatically adjust the time for the set time zone based on the Time Zone setting on the Geo Reference tab.

Important Notes:

1. The times may NOT match if the PC is not located in the same time zone as the VIVALARM24. The VIVALARM24 will show the time in the time zone where it is located, and the local time will be the current time on the PC.
2. Changing the time will create a gap in the recorded SPL data.

Please see the section on Time Zones (page 9) for a discussion on the use of Time Zones within the VIVALARM24.

Weighting

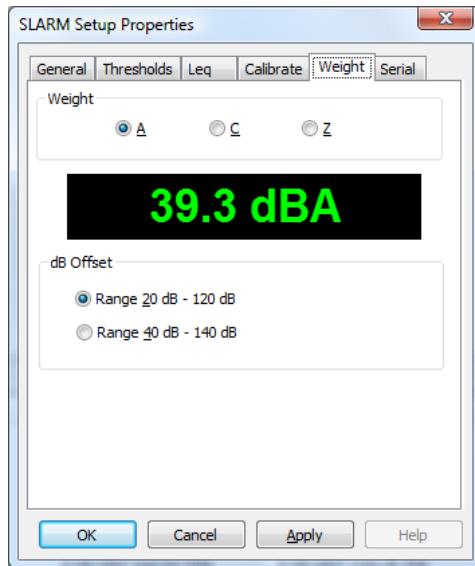


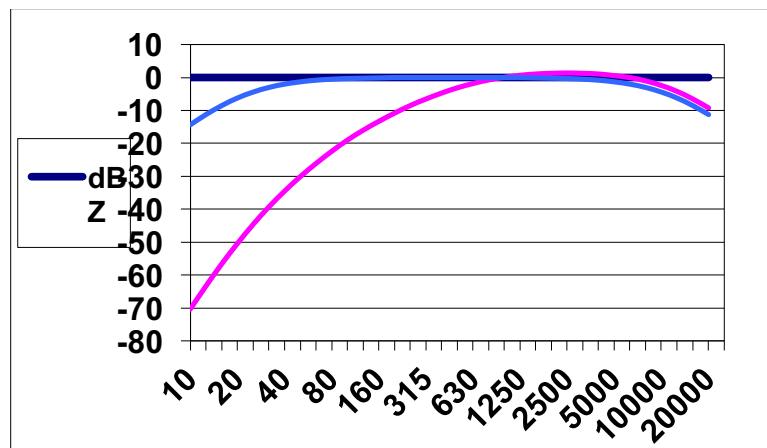
Figure 44: Weighting Settings

dB Offset

The VIVALARM24 has two measurement ranges which are standard: 20-120 dB SPL and 40-140 dB SPL. This allows the user to handle a wide range of community and industrial measurement applications.

Weight

The weighting for the audio. Weighting is an audio amplitude change made by shaping the audio at certain frequencies that allows for special situations. Common weightings are specified in ANSI S1.6-1967 and IEC 61672-1. There are more complex copyrighted private weighting techniques such as THX which are used for motion pictures. These are currently not available on the VIVALARM24.



Special Weighting

“Special” weighting is what you will use for rat or mouse work. For noise models, Special weighting cuts out low frequency sounds below 200Hz that are not audible to rats and mice, thereby preventing unnecessary alarms and providing a much more accurate picture of the overall noise level for rat and mouse work. For vibration models, Special weighting cuts out vibrations greater than 500Hz, which are not perceptible by the animal.

A Weighting

“A” weighting is used to shape the audio to be similar to human hearing. It lowers (rolls off) the low frequencies so that the harder to hear low frequencies don’t skew any noise calculations. This is typically used in human occupational safety work and may be helpful for measuring the noise levels in cage washing areas or other areas where humans would be working.

C Weighting

“C” weighting is used in specialized industrial applications. It leaves in the low frequencies. Most industrial applications still use “A” weighting.

Z Weighting

“Z” weighting means no weighting at all.

Serial Port Settings

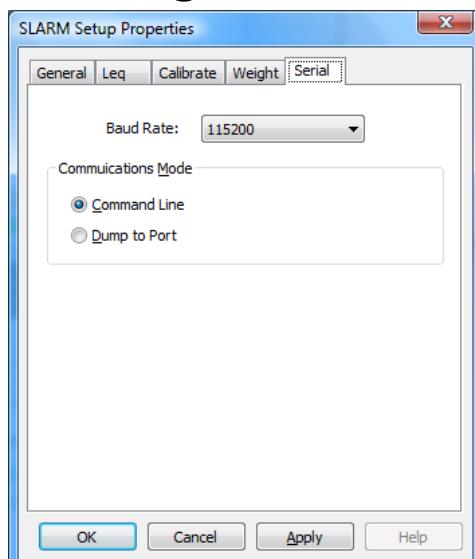


Figure 45: Serial Port Settings

Baud Rate

This is the serial communications baud rate. Standard rates such as 9600, 38400, 57400, and 115200 are selectable.

Communications Mode

The VIVALARM24 normally outputs a command line. It can be made to continually dump data to the port in Dump mode. Dump mode does not allow history downloads. Dump mode is only used for legacy VIVALARM24 operations (versions 1 and 2) and should not be selected unless told to do so by technical support.

Geo Reference Settings

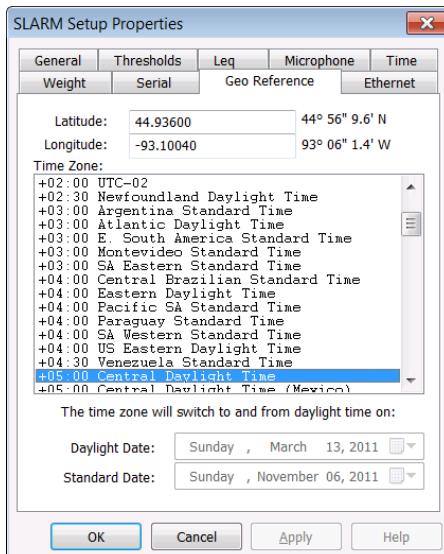


Figure 46: Geo Reference Settings

The Geo Reference settings specifically locate a VIVALARM24 unit. The Latitude and Longitude settings are optional. The Time Zone MUST be set. Scroll the list of Time Zones and pick the one where the VIVALARM24 is located. The list is shown in the format for the current time. If the two daylight dates are shown, they will display the day that the time changes in the current year. Some time zones do not have Daylight savings time, and the daylight dates will not be shown.

Please see the section on Time Zones (page 9) for a discussion on the use of Time Zones within the VIVALARM24.

Ethernet IP Settings

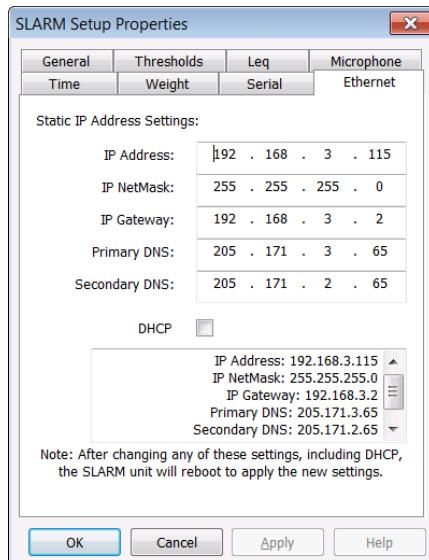


Figure 47: Ethernet IP Settings

The Ethernet settings are available for NetVIVALARM24s that are connected via USB. The standard Ethernet settings may be changed. After changing one of these settings the NetVIVALARM24 may need to be reset to implement the changes.

The box below the DHCP checkbox shows the current IP settings.

VIVALARM24 Schedule

The VIVALARM24 unit itself can hold a week's schedule, the whole 24/7. This is useful for events that require different thresholds.

First choose the VIVALARM24 from the VIVALARM24 List. Then there are three ways to get to the VIVALARM24 Schedule. Click on  SLARM Schedule, choose VIVALARM24 Schedule from the VIVALARM24 Menu, or right click on the VIVALARM24 wanted and choose VIVALARM24 Schedule from the context menu.

The schedule allows the user to set a time to use special thresholds, then a time to return to the defaults.

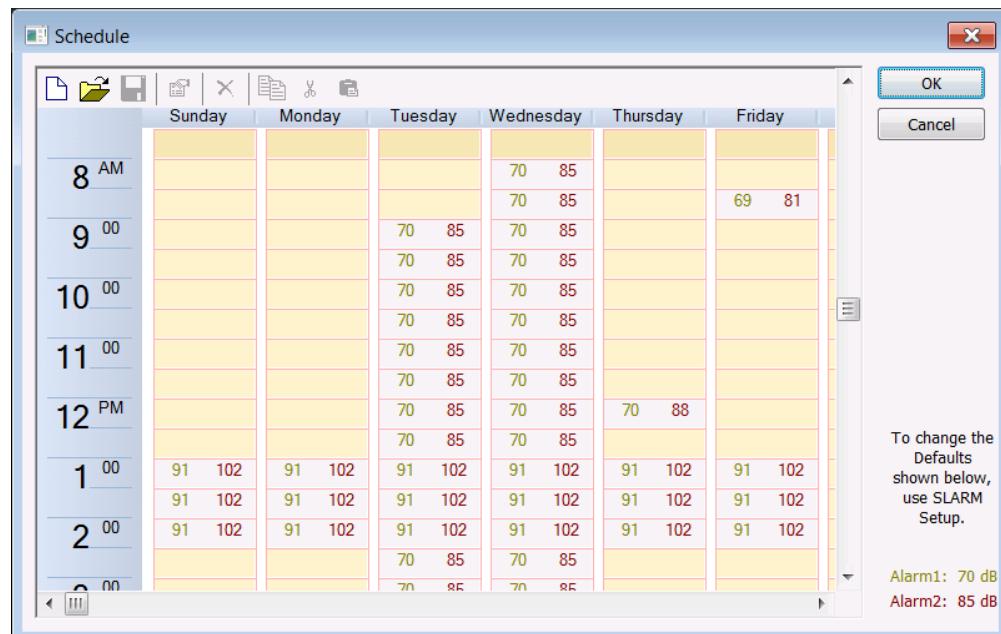


Figure 48: VIVALARM24 Schedule

The schedule will use the default thresholds unless set otherwise. To set a threshold, select an area by clicking the mouse and dragging it over the area wanted:

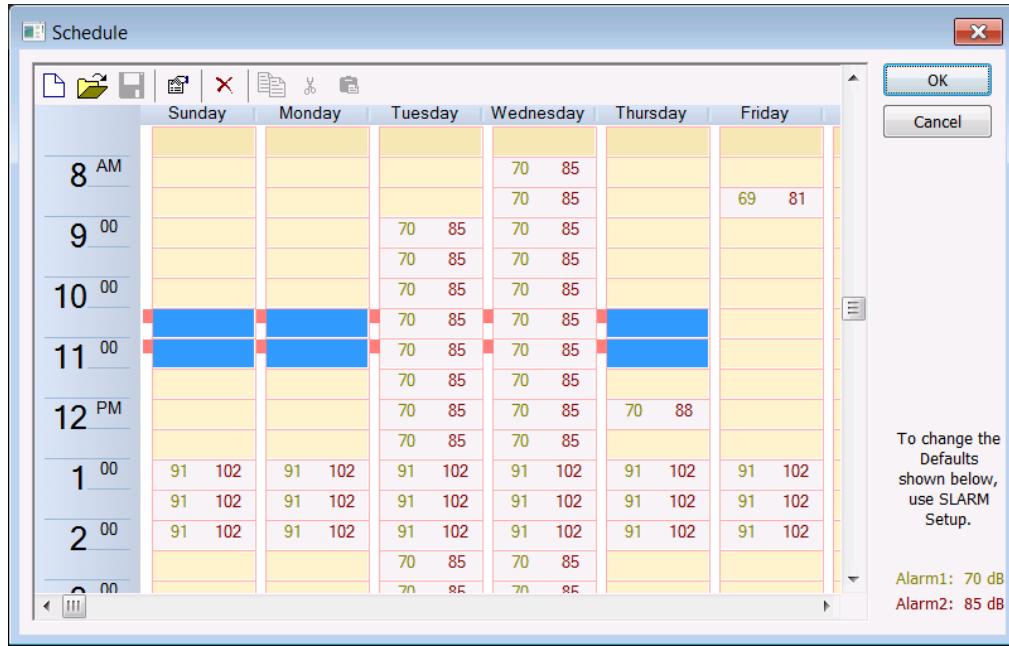


Figure 49: Set Schedule

Either choose the properties from the toolbar, or right click on one of the selected time slots and pick “Edit”.

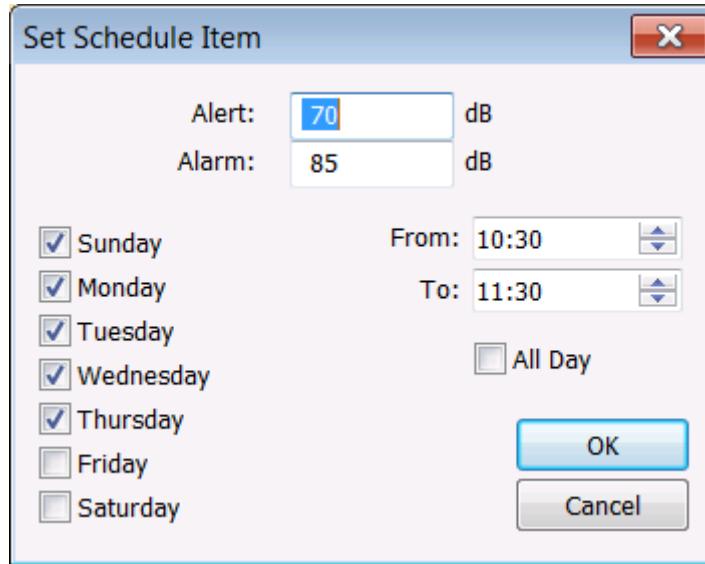


Figure 50: Edit Schedule

Adjust the schedule settings, then click on “OK”.

When all the changes are complete, click on “OK” and they will be implemented.

At any time the schedule may be saved or loaded from the local PC.

Unchecking all the days is identical to hitting cancel.

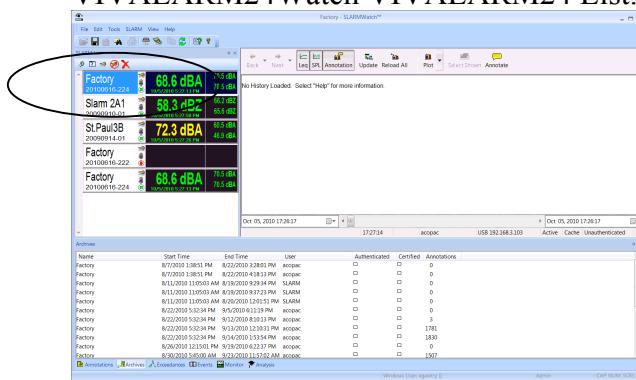
Firmware Updates

As ACO Pacific is always working on adding new features and improving existing features, the firmware in the VIVALARM24 units may need to be updated.

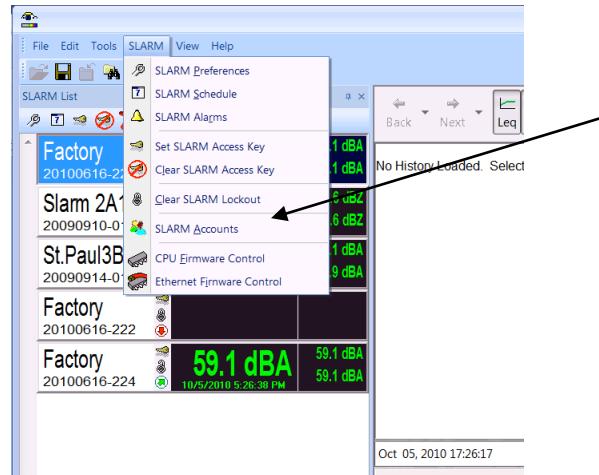
A VIVALARM24 has two parts, depending on if it is a Network-enabled VIVALARM24 or a standalone VIVALARM24 connected to a computer via a USB cable. All VIVALARM24s have the core CPU and the NetVIVALARM24s have an additional Ethernet processor. If there is no Ethernet connector on the back of your VIVALARM24 unit, then it is a standalone VIVALARM24. If it does have an Ethernet connection, then it is a NetVIVALARM24.

Updating VIVALARM24 Firmware

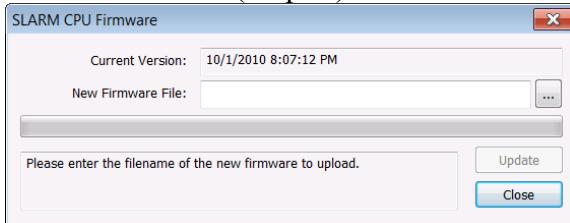
1. Connect to the VIVALARM24 via USB.
2. Make sure that the levels are showing correctly in the VIVALARM24Watch VIVALARM24 List.



3. Select “CPU Firmware Control” from the VIVALARM24 Control Menu.



- Click on the “...” (ellipsis) to browse for a HEX file.

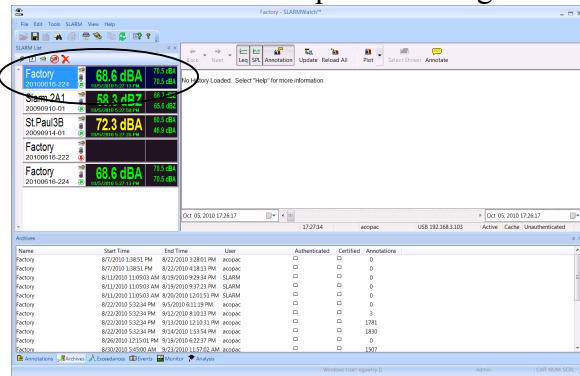


- Choose the HEX file with the appropriate version date. Make sure you choose a Version 3.0-3.4 for VIVALARM24 and Version 3.5-3.9 for NetVIVALARM24. Click on “Update”.
- The Firmware will be sent to the VIVALARM24 and verified. Then the VIVALARM24 will reset. DO NOT POWER DOWN THE VIVALARM24 AT ANY TIME DURING THIS PROCEDURE! The process may take a few minutes.
- When you see the USB connection reestablish itself, the update is complete. You may check the version on VIVALARM24 Setup’s general page.

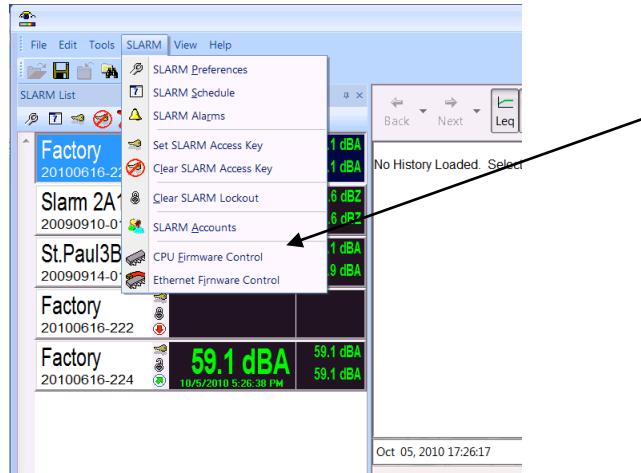
Updating NetVIVALARM24 Firmware

If you are updating the core CPU, follow the procedure for the VIVALARM24 outlined above in *Updating VIVALARM24 Firmware* on page 68

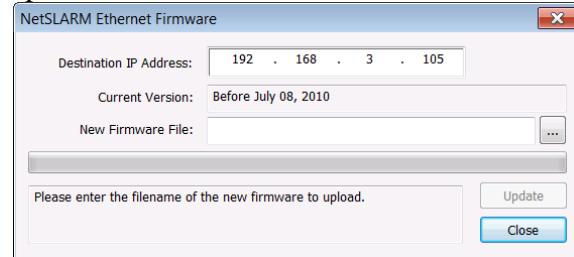
- To update the Ethernet, connect both your PC running VIVALARM24Watch and the NetVIVALARM24 to your local LAN.
- Make sure the VIVALARM24Net connection to the NetVIVALARM24 is up and running.



3. Select “Ethernet Firmware Control” from the VIVALARM24 Control Menu.



4. Use the browse “...” (ellipsis) to locate the BIN file for the firmware update.



5. Click on “Update”. The firmware will be sent via the LAN to the NetVIVALARM24. DO NOT DISCONNECT POWER OR THE LAN AT ANY TIME DURING THIS PROCEDURE!
6. When the firmware download is complete, the Ethernet part of the VIVALARM24 will reset and reestablish a connection. This reset may take a few minutes.

Note: If the NetVIVALARM24 has been running for more than a day or two, it may need to be rebooted before updating. Please reset the NetVIVALARM24 before updating. This is available from the VIVALARM24 menu.

VIVALARM24Net™

The VIVALARM24 may be connected remotely via Ethernet from another PC. This is done by the VIVALARM24Net™ Proxy Server or by directly connecting to a VIVALARM24 unit with Ethernet.

It is possible to connect to a VIVALARM24 unit using a Serial over Ethernet connection. That is NOT VIVALARM24Net™.

VIVALARM24Net™ Proxy Server

The VIVALARM24Net™ Proxy Server is a Windows service that relays all VIVALARM24 information to remote computers. This has been made obsolete by the NetVIVALARM24.

Remote VIVALARM24 Ethernet

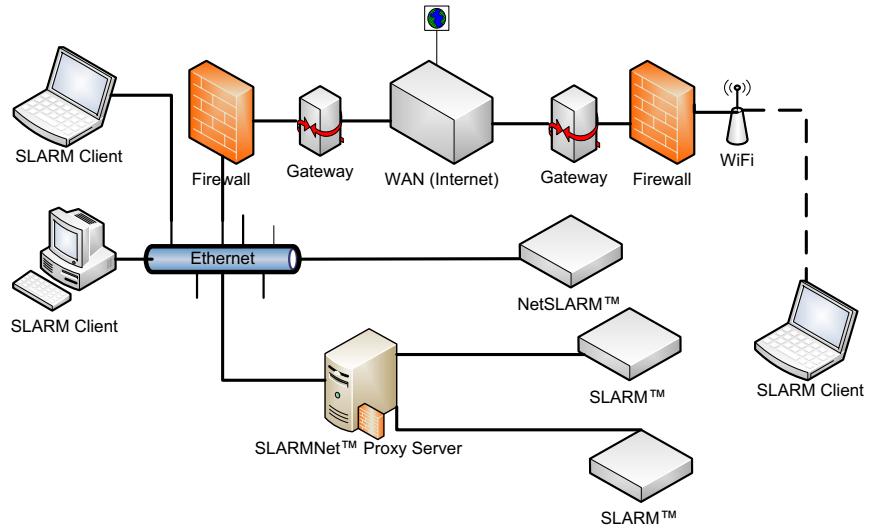


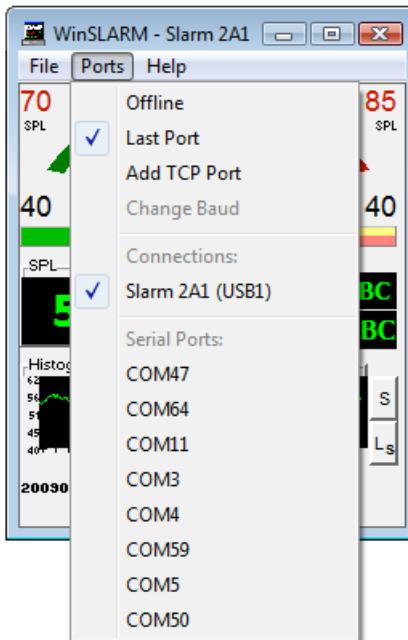
Figure 51: VIVALARM24Net™ Sample Layout

The VIVALARM24Net™ Ethernet server allows remote VIVALARM24 clients to directly connect and get information from the VIVALARM24 box. This is a full access connection and allows setting changes and the downloading of history.

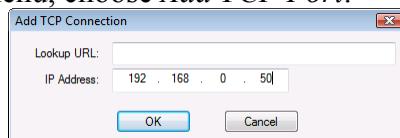
Because there is only one VIVALARM24 device in the VIVALARM24 box, there is only one VIVALARM24 listed from VIVALARM24Net™. This is in

contrast to the VIVALARM24Net™ proxy server which allows multiple VIVALARM24 boxes per VIVALARM24Net™ connection. See *VIVALARM24Net™ Proxy Server* on page 72 for details on the VIVALARM24Net™ proxy server.

Accessing VIVALARM24Net™ from WinVIVALARM24

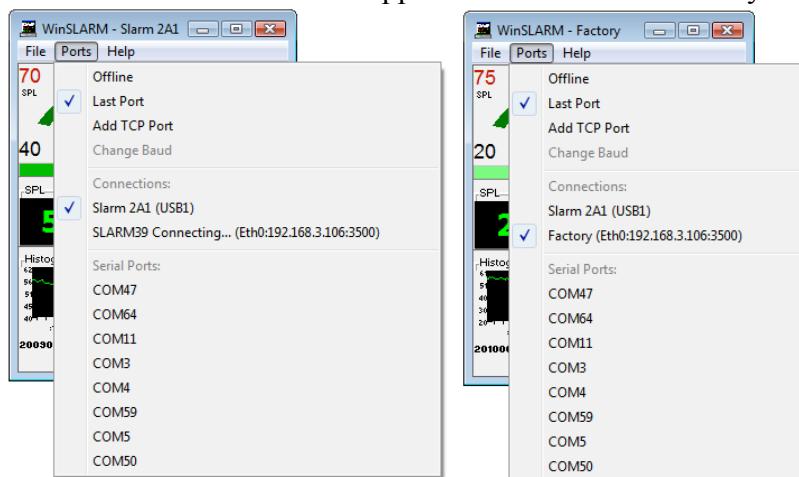


From the **Ports** menu, choose *Add TCP Port*.



Fill in the IP address. You may also enter a URL (ex. www.yahoo.com) which will be resolved to the IP address.

The new VIVALARM24 will appear on the menu. This may take a minute.



Choose the new connection. The VIVALARM24 software will connect after a few seconds.

Accessing VIVALARM24Net™ from VIVALARM24Watch

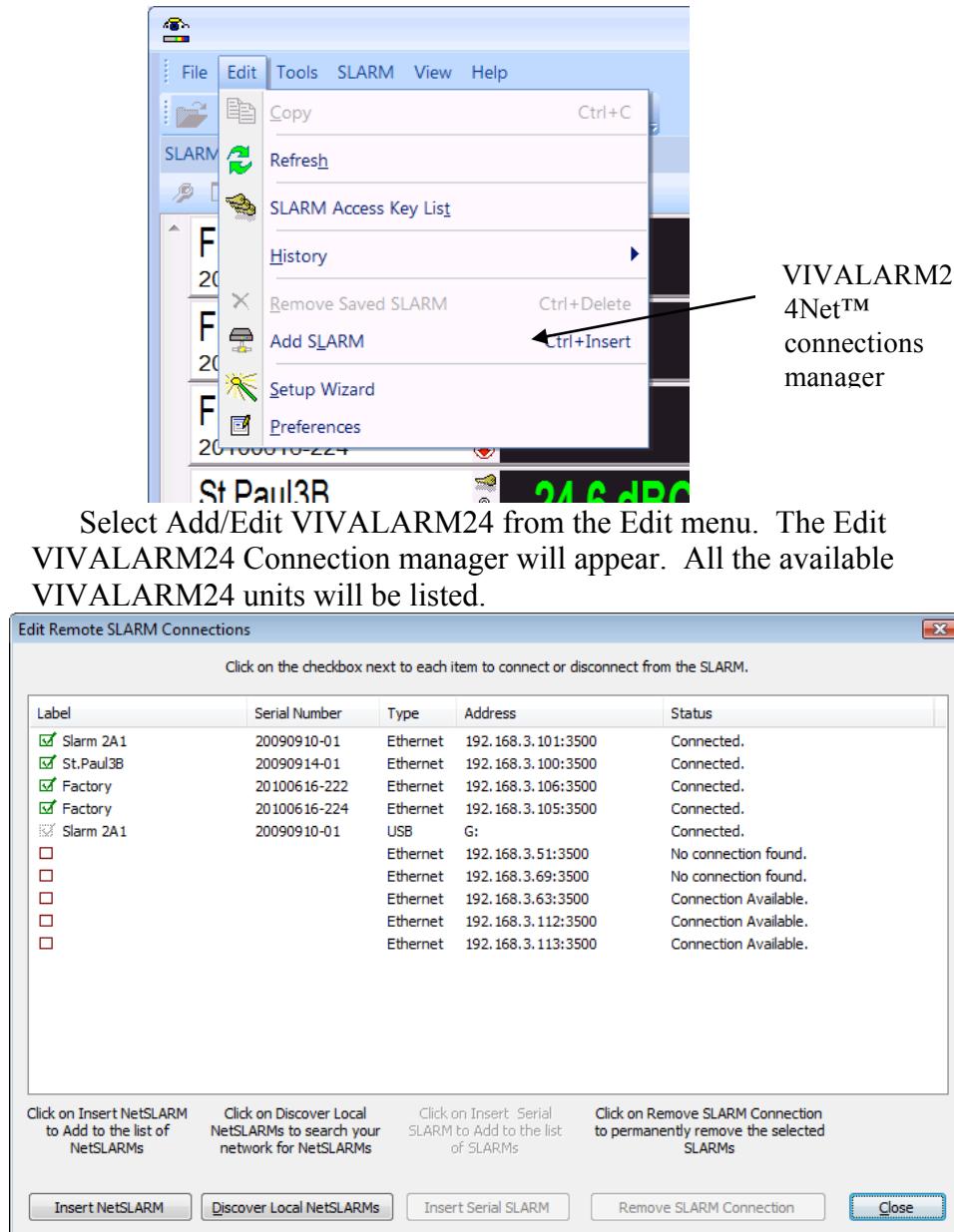
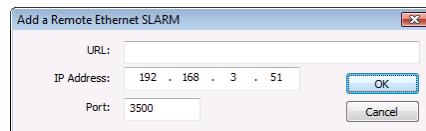


Figure 52: VIVALARM24 Connection Manager

If the NetVIVALARM24 is not listed, click on **Insert NetVIVALARM24** to add it.



You may type a URL for the device if one is provided via DNS or DDNS, otherwise enter the IP Address of the VIVALARM24. By default, VIVALARM24s use the port 3500. You may change this. Make sure that the

other end of the Ethernet connection on the VIVALARM24 unit is changed as well.

To activate a VIVALARM24 unit, click on the checkbox next to VIVALARM24 unit. Note that only Ethernet and Serial VIVALARM24s may be activated and deactivated. USB based VIVALARM24s are automatically activated.

On a LAN (the network inside your building) the connection to the NetVIVALARM24 will be tested to determine if it exists. If it does, “Connection Available.” will be shown for the status. If there is no tested connection, “No Connection Found.” will be shown. If the NetVIVALARM24 is out on the Internet, it will not test the connection. This is because many firewalls (Internet connections) block the connection test.

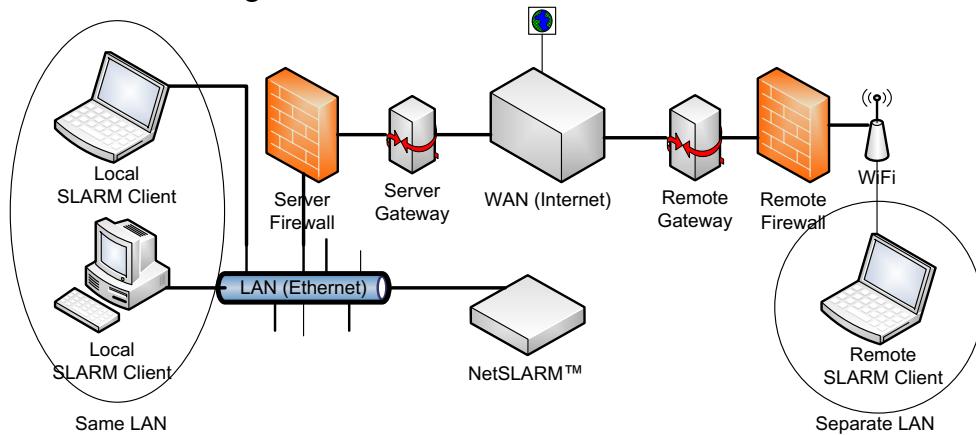
Note that if a VIVALARM24 on the list is checked, and it does not exist, the VIVALARM24 software will repeatedly attempt to connect anyway. If a VIVALARM24 unit doesn't connect in a reasonable amount of time, please uncheck it. Maintaining a connect attempt uses PC resources and may slow down the PC.

If you just added a NetVIVALARM24 to your network, and you don't know the IP address, you may click on “Discover Local NetVIVALARM24s” which will find the NetVIVALARM24s on your LAN and add them as unchecked entries in the list.

If you remove a VIVALARM24 from the VIVALARM24Watch VIVALARM24 List on the main VIVALARM24Watch screen, it will NOT be removed from the Connection Manager's VIVALARM24 List, it will just be unchecked. Please use “Remove VIVALARM24 Connection” to permanently remove a VIVALARM24 from the list. This prevents IP addresses from being lost.

Gateway/Firewall Setup

If the NetVIVALARM24 is placed outside the same LAN as the computer running the VIVALARM24 software, as shown in the diagram below, the network firewall needs to be configured to allow the VIVALARM24 connections through.



Linksys/Cisco Gateway Router

Note: These settings are typical. Please see your Network Administrator if your hardware differs.

1. Connect to the Gateway Router on the same LAN as the NetVIVALARM24. Typically this is done by entering the IP address of your gateway in a web browser. You will most likely be asked for a login and password.
2. The Single Port Forwarding is typically found on either the Firewall or Applications & Gaming tabs.
3. Select Single Port Forwarding.
4. Add two TCP ports, 3500 and 80. Note that port 3500 is for VIVALARM24 monitoring, port 80 is for browser access.
TCP Port 3500 is configurable and may be different on your VIVALARM24.
Check the examples below for details. If there is a web server on the same network, you may have to assign a different TCP port for the WAN connection. A typical secondary web server is port 8080.
Always leave the LAN TCP port at 80.
5. Put in the local network IP address of the NetVIVALARM24.
6. Activate the port forwarding connection. Usually by checkbox.
7. Save the setting changes. Some Gateway Routers may reboot and go offline for a minute when the settings are saved.

Example 1:

The screenshot shows the 'Applications & Gaming' section of the Linksys WRT160N router's web interface. The 'Single Port Forwarding' tab is selected. On the left, a table lists application names (NetSLARM, HTTP) with their corresponding external and internal ports, protocols, and IP addresses. A large oval highlights the row for 'HTTP' with external port 80 and internal port 80. On the right, a table lists multiple port forwarding entries, with the 'HTTP' entry also circled. The bottom of the screen features 'Save Settings' and 'Cancel Changes' buttons.

Application Name	External Port	Internal Port	Protocol	To IP Address	Enabled
NetSLARM	3500	3500	Both	192.168.80.60	<input checked="" type="checkbox"/>
HTTP	80	80	Both	192.168.80.60	<input checked="" type="checkbox"/>
	0	0	Both	192.168.80.0	<input type="checkbox"/>
	0	0	Both	192.168.80.0	<input type="checkbox"/>
	0	0	Both	192.168.80.0	<input type="checkbox"/>
	0	0	Both	192.168.80.0	<input type="checkbox"/>

Example 2:

The screenshot shows the Cisco Small Business RVS4000 4-Port Gigabit Security Router with VPN web interface. The left sidebar under the 'Firewall' section has 'Single Port Forwarding' selected. The main content area is titled 'Single Port Forwarding' and displays a table of port forwarding rules. Two rows in the table are circled with red ovals: the first row for 'HTTP' and the last row for 'SLARM2'. The table columns are Application, External Port, Internal Port, Protocol, IP Address, and Enabled.

Application	External Port	Internal Port	Protocol	IP Address	Enabled
HTTP	80	80	TCP	192.168.3.151	<input checked="" type="checkbox"/>
FTP	21	21	TCP		<input type="checkbox"/>
D300	3900	3900	TCP	192.168.3.60	<input checked="" type="checkbox"/>
SMTP	25	25	TCP		<input type="checkbox"/>
TFTP	69	69	UDP		<input type="checkbox"/>
SLARM3	3502	3502	TCP	192.168.3.60	<input type="checkbox"/>
SLARM4	3504	3504	TCP	192.168.3.60	<input type="checkbox"/>
POP3	110	110	TCP		<input type="checkbox"/>
D300B	3901	3901	TCP	192.168.3.60	<input checked="" type="checkbox"/>
SNMP	161	161	UDP		<input type="checkbox"/>
CVS	2401	2401	TCP		<input type="checkbox"/>
HTTPS	443	443	TCP	192.168.127.254	<input checked="" type="checkbox"/>
SMS-rmctl	2702	2702	TCP		<input type="checkbox"/>
SLARM	3500	3500	TCP	192.168.3.151	<input checked="" type="checkbox"/>
SLARM2	3501	3500	TCP	192.168.3.156	<input checked="" type="checkbox"/>

Save Cancel

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NetSLARM/NetVIVALARM24 Web Server

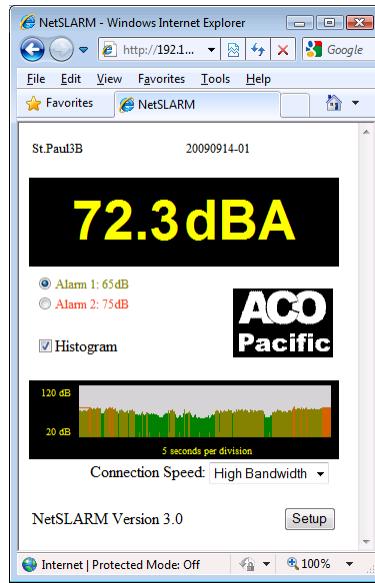
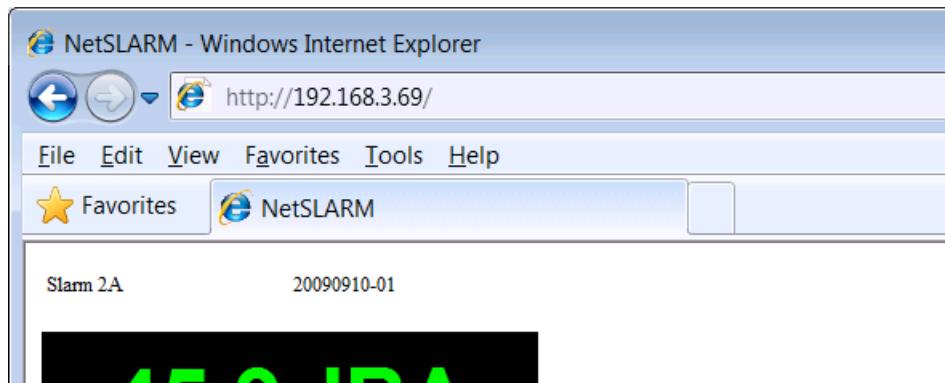


Figure 53: NetVIVALARM24 Web Server Full Display

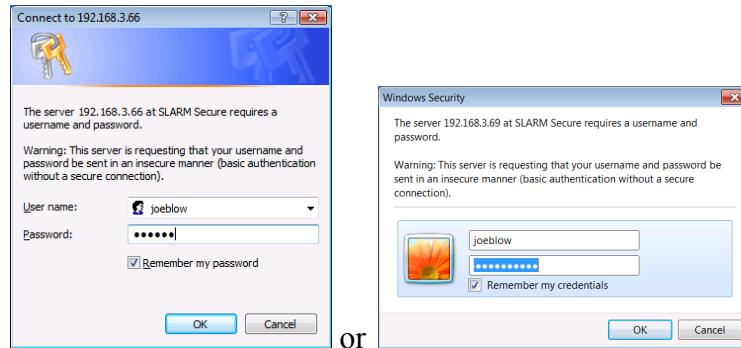
The NetVIVALARM24 (not to be confused with VIVALARM24Net™ on page 72) has a full Web Browser based interface for monitoring purposes. The default display updates every five seconds and does not have the option for changing the NetVIVALARM24 settings.



To see the NetVIVALARM24 level, enter the IP address on your browser. In this example it is 192.168.3.69.

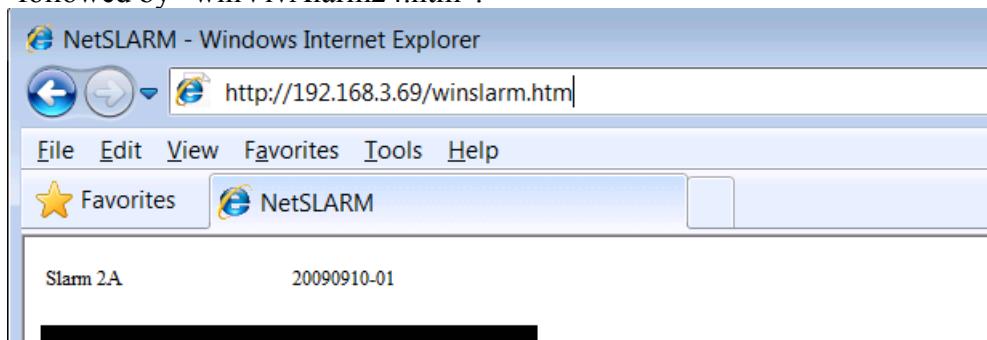


When connecting, you will be asked for a connection password. If this is the first time you have used NetVIVALARM24, the User name is “root” and the password is “acopacVivAlarm24”. On some versions, the password may be “password”.



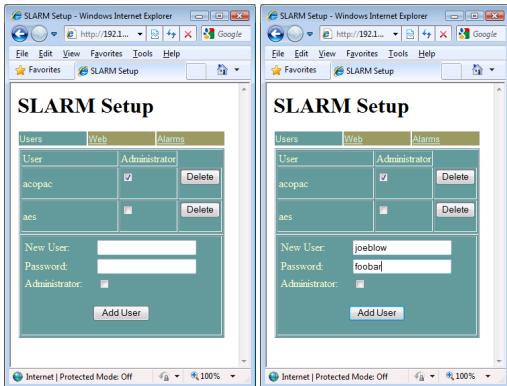
Note: This is separate from VIVALARM24 login accounts and key passwords.

To access the full NetVIVALARM24 display as shown in Figure 53 above (with the Setup button and speed selector), open the page “winVivAlarm24.htm” on the Web Browser by entering the IP address of the NetVIVALARM24 followed by “winVivAlarm24.htm”.



NetVIVALARM24 Users

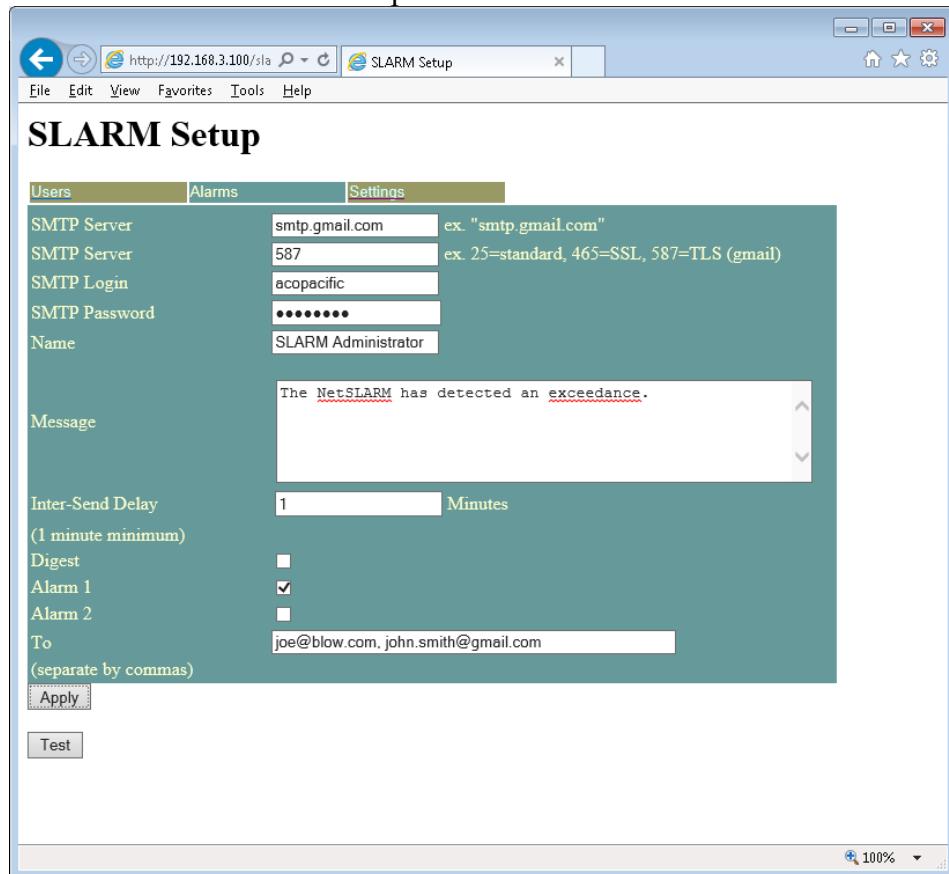
To add or change a User name, go to the Setup page. This may be done by accessing “VivAlarm24setup.htm”.



To add a user, fill in the New User box and the Password Box. If you want the user to be able to access the setup, click “Administrator”, then click on “Add User”.

NetVIVALARM24 Alarm Setup

There is an alarm set up in the NetVIVALARM24. It can send an email when the Sound Threshold has been passed.



Please contact your ISP for the SMTP settings. You MUST have set the DNS server in *Ethernet IP Settings* on page 63 in order to use URLs (the names for the web servers) as shown in the example above. If not, you need to put in an IP address. DHCP automatically sets the DNS.

The Inter-Send Delay is the amount of time between emails. If an alarm repeatedly goes off, this will force a delay before sending a second alarm. This is so the receiver doesn't receive hundreds of emails.

The "To" is formatted just like the "To" line in an email. It needs an email address or a full name with the matching email address in <> brackets following it. Separate email addresses by commas or semicolons.

Example:

joe@blow.com, Henry Jones <hjones@gmail.com>, Bill Gates
<billg@microsoft.com>

The **Apply** button saves the entered settings. The settings are NOT saved until the button is pressed.

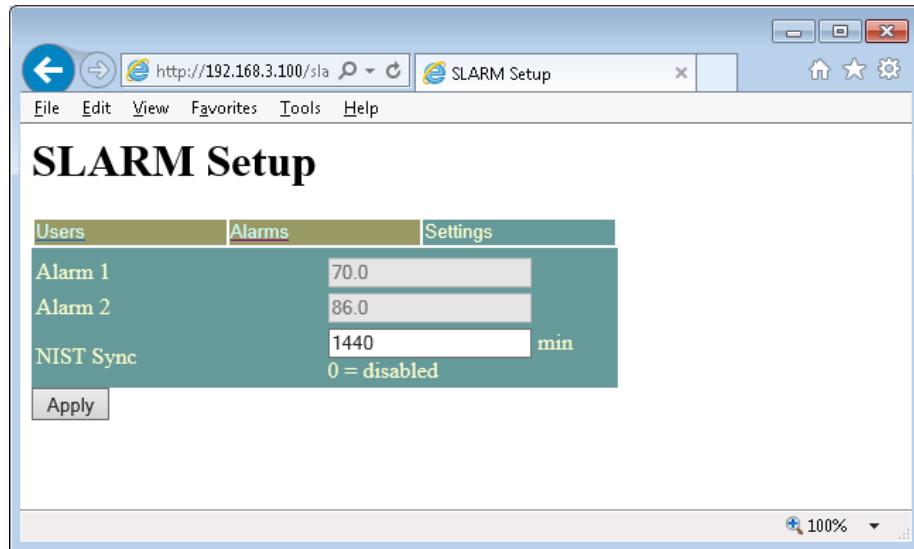
The **Test** button will send a test email. Note it will send the email using the last applied settings.

Note: On some ISPs (email companies), it is necessary to put the **From** email address into the **Name** box. This is done to prevent spoofing. Many ISPs will say that they sent the email, but do not send it if the **From** email address is not in the **Name** box.

Technical Note	A list of email addresses with text messaging access for each cell carrier can be viewed at: http://www.notepage.net/smtp.htm Remember: 140 characters max, if more are used, then multiple text messages may be sent, and the order is not preserved. Common text messaging email addresses: <table style="width: 100%; border-collapse: collapse;"><tbody><tr><td style="width: 30%;">T-Mobile</td><td><i>phonenumber@tmomail.net</i></td></tr><tr><td>Virgin Mobile</td><td><i>phonenumber@vmobl.com</i></td></tr><tr><td>Cingular</td><td><i>phonenumber@cingularme.com</i></td></tr><tr><td>Sprint</td><td><i>phonenumber@messaging.sprintpcs.com</i></td></tr><tr><td>Verizon</td><td><i>phonenumber@vtext.com</i></td></tr><tr><td>Nextel</td><td><i>phonenumber@messaging.nextel.com</i></td></tr><tr><td>AT&T</td><td><i>phonenumber@mobile.att.net</i></td></tr></tbody></table>	T-Mobile	<i>phonenumber@tmomail.net</i>	Virgin Mobile	<i>phonenumber@vmobl.com</i>	Cingular	<i>phonenumber@cingularme.com</i>	Sprint	<i>phonenumber@messaging.sprintpcs.com</i>	Verizon	<i>phonenumber@vtext.com</i>	Nextel	<i>phonenumber@messaging.nextel.com</i>	AT&T	<i>phonenumber@mobile.att.net</i>
T-Mobile	<i>phonenumber@tmomail.net</i>														
Virgin Mobile	<i>phonenumber@vmobl.com</i>														
Cingular	<i>phonenumber@cingularme.com</i>														
Sprint	<i>phonenumber@messaging.sprintpcs.com</i>														
Verizon	<i>phonenumber@vtext.com</i>														
Nextel	<i>phonenumber@messaging.nextel.com</i>														
AT&T	<i>phonenumber@mobile.att.net</i>														

NetVIVALARM24 Time Sync

To make sure that the time is correct, the NetVIVALARM24 can be set to automatically contact NIST and synchronize the clock.



Just set the delay between NIST synchronizations. Set “0” if you do not want this feature.

Appendix A: Serial Port Protocol

This is for advanced users only! Knowledge of command shells is required.

The Serial port communication operates by a standard ASCII text interface. There is a command shell that allows control of the VIVALARM24. This operates in a fashion similar to a UNIX style command shell. Note that several of the commands are not available unless the user does a login first. This login will block others from using the VIVALARM24 via USB or Ethernet, so when done, it is recommended that the user does a logout.

Technical Note	<p>The Serial Port command shell is provided for emergency use and historical purposes. ACO Pacific currently recommends that a NetVIVALARM24 be used with XML commands and XML data retrieval for remote operation via Ethernet.</p> <p>The XMODEM download command has been removed from the command shell.</p>
----------------	---

Shell Commands

ADDUSER <i>user</i>	Add a user.
DATE [-s <i>y:m:d:h:m:s</i>]	Show or set the date.
DELUSER <i>user</i>	Delete a user.
DUMP	Dump a set of variables. See <i>Status Dump</i> below.
HELP	List available commands.
LOGIN <i>user</i>	Login a user. Will also prompt for a password.
LOGOUT	Logout the current user.
PASSWD <i>user</i> <i>password</i>	Set the user's password.
PERMIT <i>user</i> <i>permissions</i>	Set the user's permissions.
SET [<i>x=y</i>]	Display or Set variables.
STATus	Show the VIVALARM24 status.
UPTIME	Show the time since the last login.
USER [-a]	Show the current user or optionally list all users.
VERsion	Show the VIVALARM24 version.

Status Dump from the VIVALARM24

These are sent either by the command “DUMP” or by setting the mode to “DUMP” with the command “mode DUMP”. Note: Leave the DUMP mode with a Ctrl-C.

Name	Command	Example	Description
Alarm1 Mode	A1	A1=1	Alarm Mode 1 = dB SPL 2 = Short Leq 4 = Long Leq
Alarm2 Mode	A2	A2=2	Alarm Mode 1 = dB SPL 2 = Short Leq 4 = Long Leq
Buffered	BF	BF=1	Buffered
Baud Rate	BR	BR=37	High Byte of the Baud Rate 37 = 9600 baud
Calibrate Scalar	CB	CB=1324	Calibrate Scalar (Multiplier). 1324=1.324
Audio	dB	dB=553	Audio dB level. 553=55.3 dB
L _{eq} High Threshold	DH	DH=834	Obsolete. Dynamic L _{eq} High Threshold 834 = 83.4 dB
L _{eq} Low Threshold	DL	DL=734	Obsolete. Dynamic L _{eq} Low Threshold 734 = 73.4 dB
Event Head	EH	EH=0	Event head pointer in memory
Event Max	EM	EM=4096	Maximum Events in Memory
Event Tail	ET	ET=500	Event tail pointer in memory
Value Head	VH	VH=0	Value head pointer in memory
Value Head	VT	VT=128342	Value tail pointer in memory
Label	LB	LB=Development	Label
Long L _{eq} Time	LL	LL=75	Long L _{eq} Time Setting. 75 = 1: 15 minutes
Long L _{eq}	LLeq	LLeq=567	Long L _{eq} 567 = 56.7 dB
Short L _{eq} Time	LS	LS=15	Short L _{eq} Time Setting. 15 = 15 seconds
Latch	LT	LT=15	LED latch settings.
Memory Used	ME	ME=16384	Memory used so far 16384 = 16384 Words
Microphone Model	MM	MM=7052	Microphone Model Setting.

Memory Size	MS	MS=16384	Total Memory on VIVALARM24 16384 = 16 MB
Microphone Power	MV	MV=20	Microphone Power Setting. 20 = 20 mV/Pa
Calibrate Offset	OF	OF=-32	Calibrate Offset -32 = -3.2 dB
Range	RG	RG=0	Range Setting 0 = 20-120 dB, 1 = 40-140 dB
Starting Audio Level	SD	SD=550	Preset dB level. (Deprecated) 550 = 55.0 dB
Short L _{eq}	SLeq	SLeq=573	Short L _{eq} 573 = 57.3 dB
Serial Number	SN	SN=100000000	Serial Number
Time	ST	ST=25436784	Time in seconds since January 1, 1970
High Threshold	TH	TH=850	High Threshold Setting. 850 = 85.0 dB
Low Threshold	TL	TL=650	Low Threshold Setting. 650=65.0 dB
Time Zone Bias	TZ	TZ=300	Time Zone Bias Setting. 300=300 minutes before UTC
User Name	UN	UN=Joe	Current logged in user.
User Permissions	UP	UP=255	User Permissions (Added) 01 = Read Events 02 = Read Levels 04 = Write Settings 08 = Change Weight 16 = Calibrate 64 = Change Users
Firmware Version	VN	VN=10/20/2003 13:14:15	Build time.
Weight	WT	WT=Z	Weighting

Variable List from the VIVALARM24

These are sent by the command “SET”. Follow “SET” with the variable to set and most may be changed.

Name	Example	Description
Alarm1	Alarm1 = 80.0 (75.0 default)	Alarm1 current level as set by schedule. The default level is in parentheses and may be set.

Alarm2	Alarm2 = 90.0 (80.0 default)	Alarm2 current level as set by schedule. The default level is in parentheses and may be set.
EventOnly	EventOnly = No	Event only mode.
LeqAlarms1	LeqAlarms1 = SPL	Alarm1 Mode. Either SPL, SLeq or LLeq.
LeqAlarms2	LeqAlarms2 = SPL	Alarm2 Mode. Either SPL, SLeq or LLeq.
Calibrate	Calibrate = 1.0	Microphone Calibration scalar.
Offset	Offset = 0.3	Microphone Calibration offset.
TimeCal	TimeCal = 0	Time Calibration scalar.
Weight	Weight = A	Weighing Type.
SerialNumber	SerialNumber = 20060614	The serial number of the VIVALARM24.
HistoryShort	HistoryShort = 15	The Short L _{eq} History Length in seconds.
HistoryLong	HistoryLong = 300	The Long L _{eq} History Length in seconds.
StartdB	StartdB = 56.0	Obsolete. L _{eq} preloader.
Range	Range = No	Extended Range (40-142 dB) selected. Normally 20-122 dB.
MicModel	MicModel = 7052	Decimal Microphone Version.
MicLabel	MicLabel = 7052H 20100302-1	Text Microphone Version and Serial Number. Must be 6 and 12 characters respectively separated by a " ".
MVperPa	MVperPa = 20.0	Microphone ^{MV} / _{Pa} scalar.
Label	Label = My VIVALARM24	The User set VIVALARM24 Label.
BaudRate	BaudRate = 9600	Baud Rate. 4800 – 230400.

Appendix B: Acoustics

What is Sound Pressure?

When a sound is made it creates waves in the air, similar to throwing a rock in a pond. These waves hit (crash against) receivers such as an ear or microphone creating pressure against a diaphragm, which, in turn, vibrates, passing on the sound.

What is dBx?

dB (decibels) is the a mathematical logarithmic adjustment to the sound pressure level (SPL), or more simply known as amplitude or volume. 20 dB is the ticking of a watch, 80 dB is common road noise, and 120 dB is the human pain threshold (it also is the common level at a rock concert).

Source	Decibels	Description
	0	Hearing Threshold
Normal Breathing	10	Barely Audible
Rustling Leaves	20	
Soft Whisper	30	Very Quiet
Library	40	
Quiet Office	50	Quiet
Conversation	60	
Busy Traffic	70	
Average Factory	80	
Niagara Falls	90	Constant Exposure
Train	100	Endangers Hearing
Construction Noise	110	
Rock Concert	120	Pain Threshold
Machine Gun	130	
Jet Takeoff	150	
Rocket Engine	180	

Source: Oracle ThinkQuest

The “x” in “dBx” is the weight for the sound pressure. “Weight” is an adjustment for specific applications when certain frequencies of sound are not as important. The most common is “A” which is based on the human hearing range (note the “based”). This drops off at low frequencies and high

frequencies that human hearing doesn't normally detect. See page 60 for details.

What are FAST and SLOW dB SPL?

Fast and Slow dB SPL refer to monitoring rate for sound level meters. Slow dB SPL is the most common and shows the running average every second. Fast dB SPL displays the running average 8 times a second. The VIVALARM24 history is recorded in Slow dB SPL.

Technical Note

The 125ms running average is calculated using the formula:

$$L_{p\tau}(t) = 10 \times \log\left(\frac{1}{\tau} \int_{-\infty}^t \frac{p^2(\xi)}{p_0^2} e^{-\frac{t-\xi}{\tau}} d\xi\right)$$

$L_{p\tau}$	the time averaged (τ) SPL
t	time
$p(\xi)$	instantaneous SP with weighting
p_0	reference sound pressure

Note that the running average is computed internally much, much faster than 128ms. The longer the sample length, the smoother the level. Consequently, there will be fewer spikes with SLOW dB SPL than with FAST dB SPL.

What is Leq?

Leq is a quantitative measurement of noise. It is a weighted sound level averaged over a period of time that is used to determine sound exposure.

Weighted Leq is commonly represented by two methods. “A” weighting is most often used.

dB LA _{eq}	<= Used in many government documents
dBA L _{eq}	<= Used in this document and academically

Technical Note

Leq is calculated using the formula:

$$L_{eq}(n) = 10 \times \log\left(\sum_n \frac{10^{\frac{S_n}{10}}}{n}\right)$$

n	total time
S _n	dBX level at time

Short Leq

This is a Leq that is calculated over a short period of time. It is useful in environments with random audio levels. This may be set up to seven minutes.

Long Leq

This is a Leq that is calculated over a long period of time. This is useful for determining OSHA noise requirements. This may be set up to eight hours. Because of hardware restrictions, the VIVALARM24 unit will only approximate the eight hour Leq, however the VIVALARM24 Software will give precise eight hour Leq.

What is Dose?

Dose is a measurement of noise exposure.

Technical Note

Dose is calculated using the formula:

$$D = 100 \times \left(\frac{T}{T_c} \right) \frac{1}{10^{\frac{L_c}{q}}} \left[\frac{1}{T} \int_0^T 10^{\frac{L}{q}} dt \right]$$

D	Dose
T _c	Criterion sound duration
T	Measured duration
t	Time
L	Slow SPL (Note: should be A weighted)
L _T	Threshold Sound Level
L _c	Criterion Sound Level
q	Exchange Rate (10=3dB, 16.61=5dB, 13.29=4dB)

Acoustics Glossary

Threshold	Preset sound pressure or Leq level that triggers an alarm.
Exceedance	When the Threshold is triggered.
User	The person currently logged into the VIVALARM24.
Slow SPL	The average dB Sound Pressure sampled every second.
Fast SPL	The average dB Sound Pressure sampled 8 times per second.
Short Leq	dB averaged over a short period of time.
Long Leq	dB averaged over a long period of time.
Index	The offset into the data memory.
Event	An occurrence such as login, logout, a variable change, or an index entry.
Max	Maximum average sound level over a given period.
Peak	Maximum instantaneous sound level over a given period.

Calibration Frequency The frequency used to calibrate the hardware (microphone).
Standard is to use 1000 Hz.

Appendix C: XML API

This is for advanced users only! Requires working knowledge of JavaScript and XML.

The NetVIVALARM24 has a standard XML interface on port 80.

Data Acquisition

Data may be accessed via a standard JScript XMLHttpRequest() command. The different reports from the NetVIVALARM24 are broken into smaller parts for speed. Many of these XML files only need to be retrieved once, so they are in separate files. **level.xml** is updated constantly and should be monitored in a loop.

Note that many of these fields are legacy, and the usage and meaning of the field may have changed since the field name was created. An example of this is the High/Low Thresholds in **GetVars.xml** which now represent Alarm 1 Threshold and Alarm 2 Threshold.

For parsing purposes, the fields listed here are in order.

level.xml

```
<xml version="1.0"?>
<choices>
    <item><label>Level</label><value>532</value></item>
    <item><label>Threshold1</label><value>650</value></item>
    <item><label>Threshold2</label><value>850</value></item>
    <item><label>Weight</label><value>dBc</value></item>
    <item><label>Label</label><value>MyVIVALARM24</value></item>
    <item><label>Serial</label><value>20120114-01</value></item>
    <item><label>Range</label><value>20</value></item>
    <item><label>LegShort</label><value>554</value></item>
    <item><label>LegLong</label><value>556</value></item>
    <item><label>VIVALARM24Time</label><value>331298432</value></item>
    <item><label>User</label><value>VIVALARM24</value></item>
    <item><label>Permissions</label><value>240</value></item>
</choices>
```

choices subblock

XML Label (label)	Example (value)	Description
Level	532	Current dB level ×10 (532=53.2)
Threshold1	650	Alarm 1 Threshold ×10 (650=65.0)

Threshold2	850	Alarm 2 Threshold $\times 10$ (850=85.0)																
Weight	dB C	Current weight																
Label	MyVIVALARM24	VIVALARM24 Label																
Serial	20120114-01	VIVALARM24 Serial Number																
Range	20	Low end of the 102 dB Range (ex. 20-122) May also be 40 for 40-142.																
LeqShort	554	Short L _{eq} $\times 10$ (554=55.4)																
LeqLong	556	Long L _{eq} $\times 10$ (556=55.6)																
VIVALARM24Time	331298432	Number of seconds since Jan 1, 2000																
User	VIVALARM24	Current VIVALARM24 User – blank if no user is logged in (not the http user)																
Permissions	240	<p>Permissions mask for the Current VIVALARM24 User</p> <table border="1"> <tr> <td>01H</td><td>Can download Event Index</td></tr> <tr> <td>02H</td><td>Can download Raw Level</td></tr> <tr> <td>04H</td><td>Can change Thresholds</td></tr> <tr> <td>08H</td><td>Can change Weighing</td></tr> <tr> <td>10H</td><td>Can change Calibration</td></tr> <tr> <td>20H</td><td>Reserved</td></tr> <tr> <td>40H</td><td>Can change Users</td></tr> <tr> <td>80H</td><td>Factory – Reserved</td></tr> </table>	01H	Can download Event Index	02H	Can download Raw Level	04H	Can change Thresholds	08H	Can change Weighing	10H	Can change Calibration	20H	Reserved	40H	Can change Users	80H	Factory – Reserved
01H	Can download Event Index																	
02H	Can download Raw Level																	
04H	Can change Thresholds																	
08H	Can change Weighing																	
10H	Can change Calibration																	
20H	Reserved																	
40H	Can change Users																	
80H	Factory – Reserved																	

getvars.xml

```
<?xml version="1.0"?>
<var>
    <item><name>threshold_high</name><data>85.7</data></item>
    <item><name>threshold_low</name><data>70.3</data></item>
    <item><name>default_high</name><data>85.7</data></item>
    <item><name>default_low</name><data>70.3</data></item>
    <item><name>serialnumber</name><data>20120114-01</data></item>
    <item><name>calibrate</name><data> 1.0000</data></item>
```

```

<item><name>offset</name><data>2.4</data></item>
<item><name>weight</name><data>A</data></item>
<item><name>history_short</name><data>5</data></item>
<item><name>history_long</name><data>600</data></item>
<item><name>mic_model</name><data>200</data></item>
<item><name>mv_per_pa</name><data>1000.0</data></item>
<item><name>label</name><data>MyVIVALARM24</data></item>
<item><name>range</name><data>200</data></item>
<item><name>eventonly</name><data>0</data></item>
<item><name>leg_alarm1</name><data>1</data></item>
<item><name>leg_alarm2</name><data>1</data></item>
<item><name>cal_time</name><data>0</data></item>
<item><name>cal_micmodel</name><data>4072H|20110826-01</data></item>
<item><name>cal_lastcal</name><data>360002044</data></item>
</var>

```

var subblock

XML Label (name)	Example (data)	Description
threshold_high	85.7	Current Alarm 2 Threshold setting (determined by schedule)
threshold_low	70.3	Current Alarm 1 Threshold setting (determined by schedule)
default_high	85.0	Default Alarm 2 Threshold setting (set by user)
default_low	65.0	Default Alarm 1 Threshold setting (set by user)
serialnumber	20120114-01	NetVIVALARM24 Serial Number
calibrate	1.000	Calibration Scaler
offset	2.1	Calibration dB Offset
weight	Z	Current weight – Note that this does NOT have the dB in front of it.
history_short	5	Short L _{eq} length in seconds
history_long	600	Long L _{eq} length in seconds
mic_model	7052	<i>Obsolete – see cal_micmodel</i>
mv_per_pa	20.0	Microphone Millivolts per Pascal
label	MyVIVALARM24	NetVIVALARM24 Label
range	200	Low end of the 102 dB Range ×10 (ex. 20-122) May also be 400 for 40-142.
eventonly	0	0 or 1 to indicate if the Event Only is enabled 0 – Disabled (Normal Operation) 1 – Enabled

leq_alarm1	1	Alarm 1 Type 1 – SPL 2 – Short L _{eq} 4 – Long L _{eq}
leq_alarm2	2	Alarm 2 Type 1 – SPL 2 – Short L _{eq} 4 – Long L _{eq}
cal_time	5	Clock Calibration in PPM <i>Factory use only.</i>
cal_micmodel	4072H 123456-01	Microphone Model Number and Serial Number separated by a bar
cal_lastcal	360002044	VIVALARM24 Time of when the last Calibration was made

getvars2.xml

```
<?xml version="1.0"?>
<var>
    <item><name>net_port</name><data>3500</data></item>
    <item><name>net_ip</name><data>192.168.3.162</data></item>
    <item><name>net_mask</name><data>255.255.255.0</data></item>
    <item><name>net_gateway</name><data>192.168.3.2</data></item>
    <item><name>net_dns1</name><data>0.0.0.0</data></item>
    <item><name>net_dns2</name><data>0.0.0.0</data></item>
    <item><name>net_dhcp</name><data>0</data></item>
    <item><name>dhcp_ip</name><data>192.168.3.162</data></item>
    <item><name>dhcp_mask</name><data>255.255.255.0</data></item>
    <item><name>dhcp_gateway</name><data>192.168.3.2</data></item>
    <item><name>dhcp_dns1</name><data>0.0.0.0</data></item>
    <item><name>dhcp_dns2</name><data>0.0.0.0</data></item>
    <item><name>firmware</name><data>Nov 13 2011 07:00:31</data></item>
    <item><name>CPUVersion</name><data>880</data></item>
</var>
```

var subblock

XML Label (name)	Example (data)	Description
net_port	3500	Selected TCP port for binary Default is 3500 for legacy purposes.
net_ip	192.168.1.100	Set IP address
net_mask	255.255.255.0	Set IP mask
net_gateway	192.168.1.1	Set IP of LAN gateway
net_dns1	63.1.2.3	Set IP of DNS 1
net_dns2	63.1.2.4	Set IP of DNS 2
net_dhcp	1	1 or 0 to indicate DHCP setting 0 = Disabled 1 = Enabled

<code>dhcp_ip</code>	192.168.1.100	Selected IP address - This will be the assigned address if DHCP is enabled
<code>dhcp_mask</code>	255.255.255.0	Selected IP mask
<code>dhcp_gateway</code>	192.168.1.1	Selected IP of LAN gateway
<code>dhcp_dns1</code>	63.1.2.3	Selected IP of DNS 1
<code>dhcp_dns2</code>	63.1.2.4	Selected IP of DNS 2
<code>firmware</code>	10 12, 2011 13:12:11	Firmware identification string.
<code>CPUVersion</code>	3	<i>Reserved</i>

getgeo.xml

```

<?xml version="1.0"?>
<var>
    <item><name>longitude</name><data>0.00000</data></item>
    <item><name>latitude</name><data>0.00000</data></item>
    <item><name>tz_standardname</name><data>Central Standard Time</data></item>
    <item><name>tz_daylightname</name><data>Central Daylight Time</data></item>
    <item><name>tz_standarddate</name><data>16777739</data></item>
    <item><name>tz_daylightdate</name><data>33554947</data></item>
    <item><name>tz_standardbias</name><data>0</data> <datahex>00000000</datahex></item>
    <item><name>tz_daylightbias</name><data>-60</data> <datahex>FFFFFC4</datahex></item>
    <item><name>tz_bias</name><data>360</data></item>
    <item><name>bias</name><data>360</data><datahex>00000168</datahex></item>
</var>

```

var subblock

XML Label (name)	Example (data)	Description
<code>longitude</code>	13.4567	Longitude (Future Use)
<code>latitude</code>	-90.3243	Latitude (Future Use)
<code>tz_standardname</code>	U.S. Central Standard Time	Time Zone's "Standard" Name
<code>tz_daylightname</code>	U.S. Central Daylight Time	Time Zone's "Daylight" Name
<code>tz_standarddate</code>	16777739	VIVALARM24Time Encoded Standard Time Start. Does not directly translate into a date. Format: Month = month Day = week of month Weekday = weekday Hour/Min/Sec = Time of day All other fields are invalid.

<code>tz_daylightdate</code>	33554947	VIVALARM24Time Encoded Daylight Time Start. Does not directly translate into a date. See Standard Date for encoding.
<code>tz_standardbias</code>	0	Number of minutes delta from GMT for Standard Time
<code>tz_daylightbias</code>	-60	Number of minutes delta from GMT for Daylight Time
<code>tz_bias</code>	-360	Number of minutes delta from GMT Currently
<code>bias</code>	-360	Number of minutes delta from GMT Currently

history.xml

The history xml represents the head and tail of the history data represented in *index.dat* and *levels.dat*.

history subblock

XML Label (label)	Example (value)	Description
<code>HeadEvent</code>	263168	Head pointer of the Event Index
<code>TailEvent</code>	262144	Tail pointer of the Event Index
<code>MaxEvent</code>	524288	Maximum size of the Event Index
<code>SetMaxEvent</code>	0	<i>Reserved</i>
<code>Head</code>	0	Head pointer of the Raw Levels
<code>Tail</code>	1048592	Tail pointer of the Raw Levels
<code>Max</code>	1048592	Maximum size of the Raw Levels
<code>SetMax</code>	0	<i>Reserved</i>

showhistXX.bmp

This is NOT a XML file. This is a bitmap file.



Download this file to get the histogram bitmap. XX may be any number or letter; this is for browsers that cache the bitmap image.

Each tick mark is five seconds. The two tick marks on the left are the two Alarm Thresholds.

index.dat and levels.dat

These are NOT XML files. These are binary files.

index.dat	List of all events and index for the levels.dat
levels.dat	The Slow SPL levels. Indexed by index.dat.

Special considerations when retrieving these files:

1. May only retrieve a maximum of 2048 bytes per read.
2. Make sure to specify the byte range wanted inside of the http header.
3. The VIVALARM24 user MUST be logged in or else all data will be zeros.

WARNING! Do not attempt to retrieve the entire file at one time.
This will have unpredictable results.

File layout

All data is Little Endian.

levels.dat

levels.dat is a series of 16-bit WORDs. This file is indexed by the Time Stamps in the ***index.dat*** file. Note that if the Z and C Weight bits are not set, then it is A Weight.

Bits	Description
0-10 (07FFH)	dB Level $\times 10$. 7FFH is a reboot or error.
11 (0800H)	Alarm 1
12 (1000H)	Alarm 2
13 (2000H)	Z Weight (see note above)
14 (4000H)	C Weight (see note above)
15 (8000H)	Undefined. Must be Zero.

index.dat

index.dat is a series of 16-bit WORDs with specific data after each word. Note, the “Stamps” are a snapshot of the settings at the point where they are recorded.

To decode for usage, step through the data, finding events, updating the time when a time stamp is recorded.

Each level sample following a time stamp is one second elapsed until the next time stamp.

Key WORD	Add Size	Description
FEF1H	0	System was Reset
FEF2H	0	Variable Change
FEF3H	0	Tampering Detected
FEF4H	0	Time Change
FEF5H	0	Calibration
FEF6H	0	Reboot
FEF7H	0	Login
FEF8H	2	Extended Event
0010H	68	GeoRef Change/Stamp
		LONG Longitude
		LONG Latitude
		CHAR[20] Standard TZ Name
		DWORD Standard Date (Encoded)
		LONG Standard Bias
		CHAR[20] Daylight TZ Name
		DWORD Daylight Date (Encoded)
		LONG Daylight Bias
		LONG Current Bias
0008H	0	Ethernet Cable Removed
0004H	0	Ethernet Cable Inserted
0002H	0	Ethernet Reboot
0001H	0	Firmware Updated
FEF9H	0	Caching Started for Download
FEFAH	0	Caching Ended for Download
FEFBH	0	Schedule was Changed
FEFCH	0	Schedule was Updated
FEFDH	16	Variable Stamp

		WORD	Alarm 2 Threshold ×10	
		WORD	Alarm 1 Threshold ×10	
		WORD	Calibrate Offset ×10	
		WORD	Calibrate Scaler ×1000	
		WORD	Short L _{eq} Time	
		WORD	Long L _{eq} Time	
		WORD	Weight Char	
		WORD	wFlags	
FEFEH	8	Time Stamp		
		DWORD	VIVALARM24Time	
		DWORD	Level Index	

Settings Modification

Available upon request.

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Troubleshooting

- I see a lot of really high dB spikes in the history.
 - This is the result of a system interruption of some sort, usually a power loss.
- The start of the history has funny dates like January 0, 2000.
 - On initial startup the VIVALARM24 unit may have the incorrect time. Set the time and do a history reset. If you need to save the data, count back from where the date is correct by seconds.
 - Make sure the Time Zone is set correctly.
- I can see noises less than 1 second, but they are not recorded.
 - This is a result of the averaging. Switch to peak recording instead of RMS recording. A common problem with Slow dB SPL is the loss of peak events (such as a car backfire or hands clapping) due to averaging.
- There are no Leqs listed in the Exceedance list.
 - A Leq cannot be calculated before its time. Make sure there have been no interruptions for at least the Leq time before the test point.
- I keep getting prompted to log into the VIVALARM24 unit, and it is really annoying.
 - The VIVALARM24 unit does not have a matching account to the one you are using. Either log out and then log in with a matching account, or use the Local Accounts manager to add your account to the VIVALARM24 unit.
- I forgot my password.
 - If you are not the Administrator, please have the Administrator reset your password using *Account Management* on page 44.
 - If you are the Administrator, please contact technical support.
- I want to change my password.
 - Have the Administrator change your password using *Account Management* on page 44.
- I changed my IP address and now I cannot access the NetVIVALARM24.
 - If you set the IP address to a value not recognized by your network, you will be unable to access the NetVIVALARM24 from the network. To reset the IP address, see *Ethernet IP Settings* on page 63.
- My IP settings are grayed out.
 - You need to have a USB connection to change the Ethernet address.

- The time is always off by a few hours.
 - Make sure that the Time Zone is set correctly in the Geo Reference settings.
 - If you are doing a time sync, check to see if you are in the same time zone as the VIVALARM24.

Hardware Specifications

Dynamic Range	102.3 dB
USB Specification	USB Full Speed USB2.0 Compatible USB Mass Storage Device (FAT32)
VIVALARM24 unit Processor Speed	50 MHz, 48 MIPS
Ethernet unit Processor Speed	75 MHz
USB Speed.....	12 Mbps
Serial Speed	9600-230400 baud (115200 default)
Ethernet Speed	10/100 Base-T
Monitor dB SPL Equivalent Speed.....	Fast (8/sec)
Stored dB SPL Equivalent Speed.....	Slow (1/sec)
FLASH Memory.....	3008 K (6080K optional)
Storage	12 days constant slow SPL recording Approx. 85,000 events
Power	+5 to +18 VDC @200 mA (5.5 mm x 2.1 mm coaxial power jack, center +)
Size (not including microphone).....	7.6" wide x 8.5" deep x 1.9" high
Time	Lithium Battery backed calibrated Clock Calendar