PARTICLE VIEW RT
OPERATORS MANUAL

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Operators Manual Particle View RT 1.0

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Overview

Particle View RT software includes all of the functions required for recording real time data, viewing data (both real time and history), and producing tabular and graphic reports needed by most users of an air quality or other environmental monitoring system. It is designed for use with the Met One Instruments, Inc. line of hand held and bench mounted particulate counting products and is compatible with the following models: BT-610, BT-620, or any device using the 7500 protocol.

This software provides an easy to use interface for viewing data from each of the various products. It then archives the data and allows the user to generate and print reports, charts, and set independent alarm conditions.

Archived data can be reviewed in a dynamic tabular format, or as typical line charts displaying either a single or multiple parameters. Users can even export data in standard comma separated (*.csv) format.

Just follow the simple onscreen installation instructions and you will be ready to download your collected data in just a few minutes!

System Requirements

Disk Space:	10MB for Particle View 1GB for SQL Server Express 2008 50MB for .NET 4
Operating Systems:	Windows XP Service Pack 3 or newer Windows Vista (32-bit and 64-bit systems) Windows 7 (32-bit and 64-bit systems) Windows 8 (32-bit and 64-bit systems)

Minimum System Requirements:

Processor Speed:	2GHz or faster
Memory:	2GB minimum

Recommended System Requirements:

Processor Speed:	2GHz or faster for 32-bit and 64-bit systems
Memory:	4GB or more

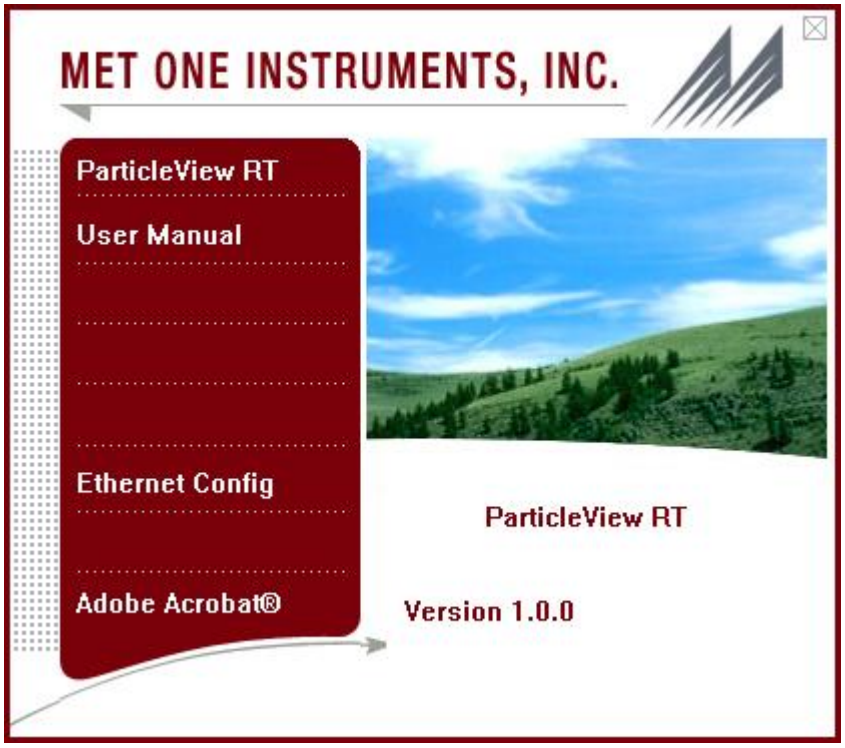
1 Installation

All of the necessary installation files are supplied on a standard CD-ROM.

1.1 Getting Started

Insert the CD-ROM into your computer and the Auto-run program will automatically begin the software installation process. If the installation program does not automatically launch when inserting the CD-ROM, you may manually begin the installation process. Press the Windows START button and select "Run…" Press the "Browse…" button and select your CD-ROM drive. Open the "Software" folder, select the file labeled "setup.exe" and press the "Open" button. Press the "OK" button to begin the installation process.

1.2 Installation Options



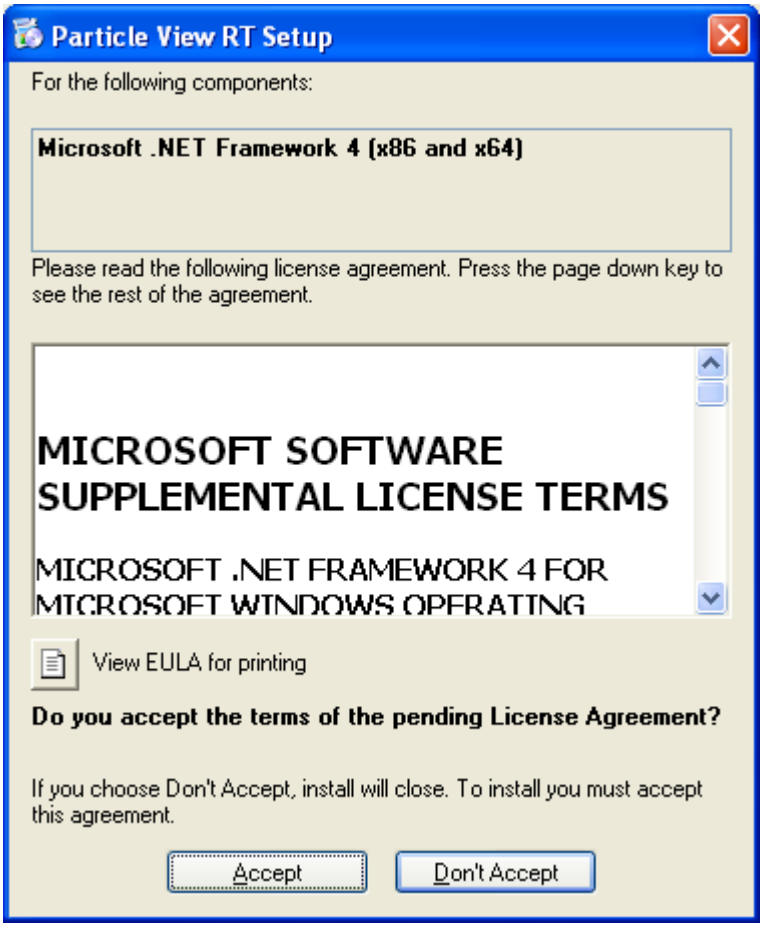
ATTENTION:

The Particle View RT installation CD includes the USB drivers necessary to communicate with all Met One Instruments, Inc. particle counters via the USB port of your computer. These drivers must be installed *before* connecting one of them to the USB port on your computer. If the supplied drivers are not installed first, Windows may install generic drivers that are not compatible with the counters. These drivers are also included with all Met One Instruments, Inc. particle counters able to communicate via USB. If you already have them installed on your computer, you do not need to install them again now.

To install the USB drivers, click on the "USB Drivers" menu selection on the splash screen. These drivers may be installed either before or after the installation of Particle View.

1.3 .NET 4 Framework Installation

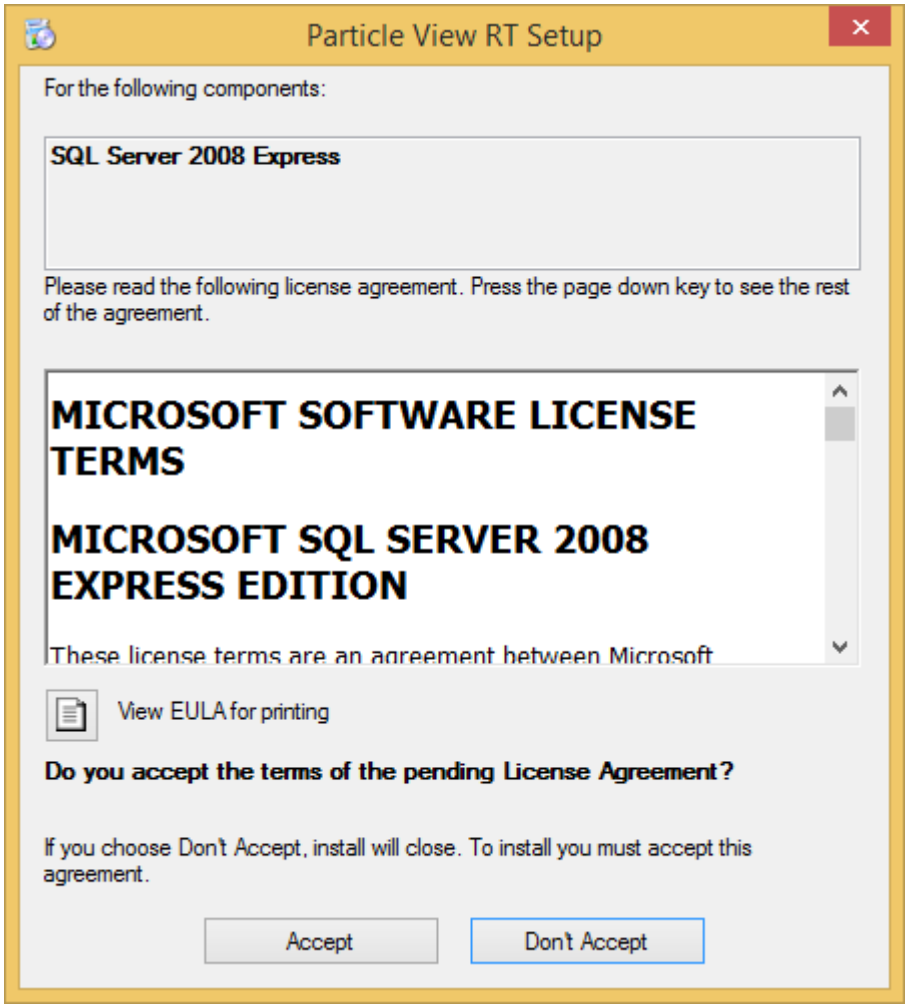
Particle View RT uses the .NET 4 framework. The installation process will detect if you meet the requirements. If your computer does not meet these requirements, you will be prompted to install the necessary files for Particle View RT to run properly.



It will take a few minutes for .NET Framework 4 to install. Once completed, the setup may ask you to reboot your computer. Once rebooted, the installation of Particle View RT will continue.

1.4 SQL Server 2008 Express Installation

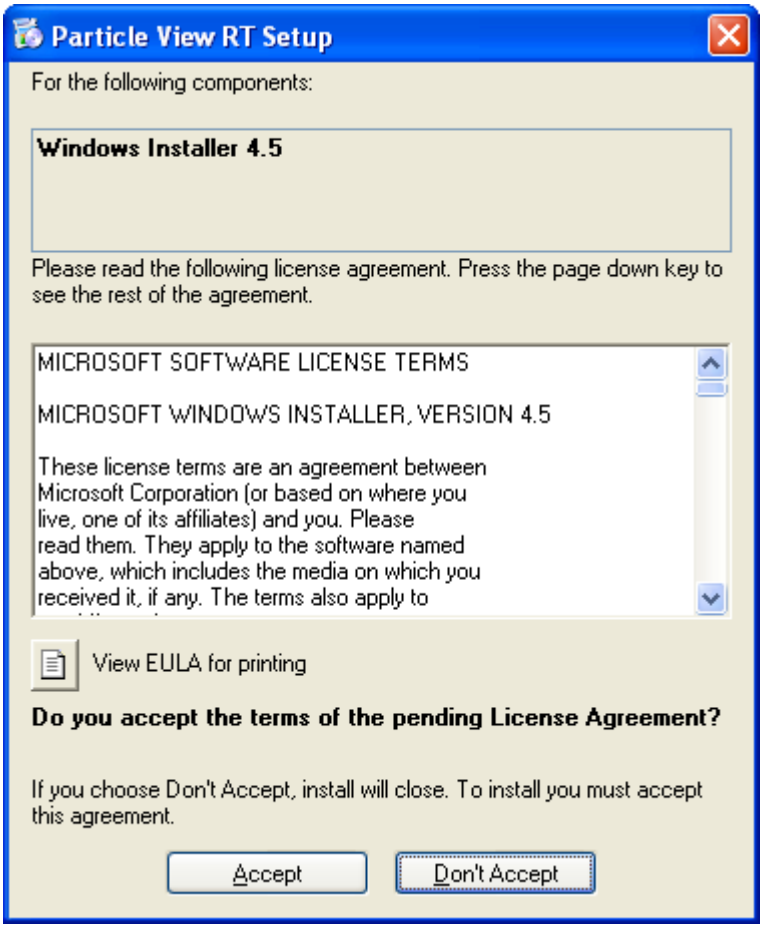
Particle View RT uses SQL Server 2008 Express to store all data from the particle counters. The installation process will search your computer to verify you have it loaded. If not, the Particle View installer will install it before installing Particle View RT.



It will take a few minutes for SQL Server 2008 Express to install. Once completed, the setup may ask you to reboot your computer. Once rebooted, the installation of Particle View RT will continue.

1.5 Windows Installer 4.5

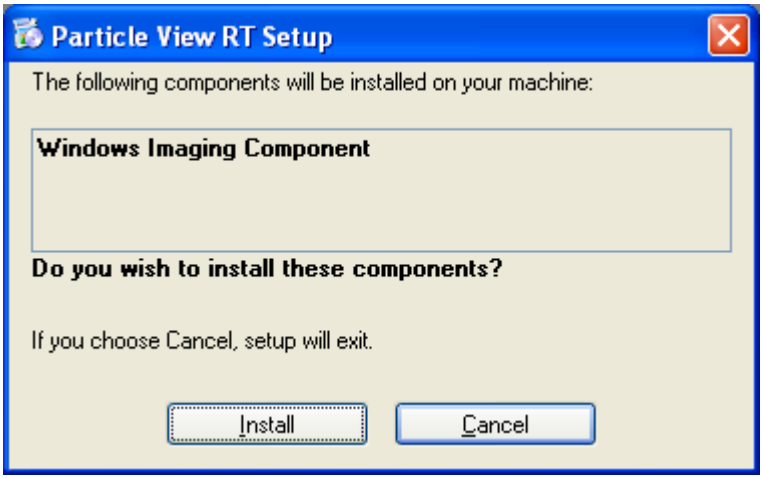
Particle View RT uses the newest version of windows installer, 4.5, for setting up Particle View RT properly. The installation process will detect if you meet the requirements. If your computer does not meet these requirements, you will be prompted to install Windows Installer 4.5.



It will take a few minutes for .NET Framework 4 to install. Once completed, the setup may ask you to reboot your computer. Once rebooted, the installation of Particle View RT will continue.

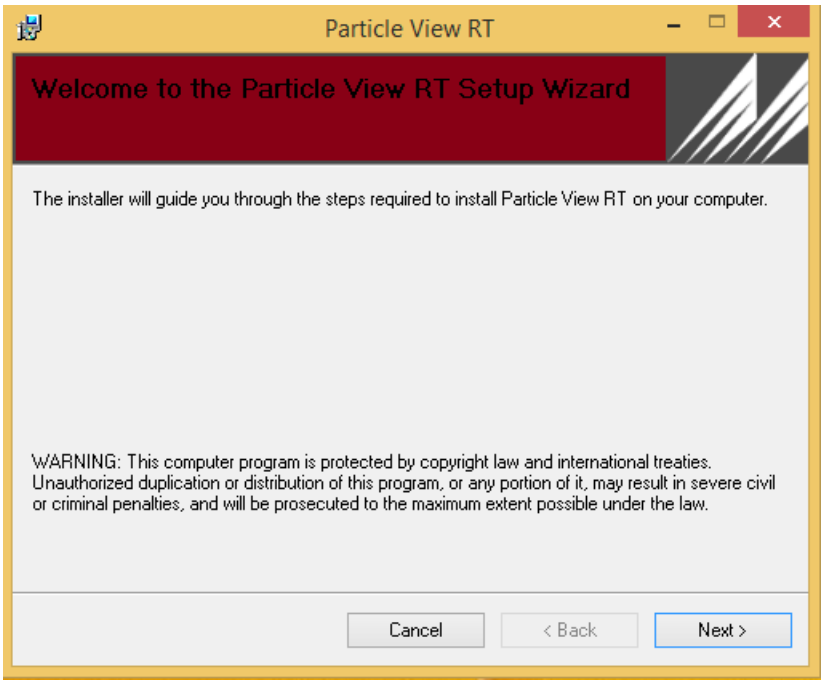
1.6 Windows Imaging Component (Windows XP Only)

On Windows XP machines, in order to properly install the .NET 4 Framework, Windows Imaging Component may be needed. The installation process will detect if you meet the requirements. If your computer does not meet these requirements, you will be prompted to install Windows Imaging Component.

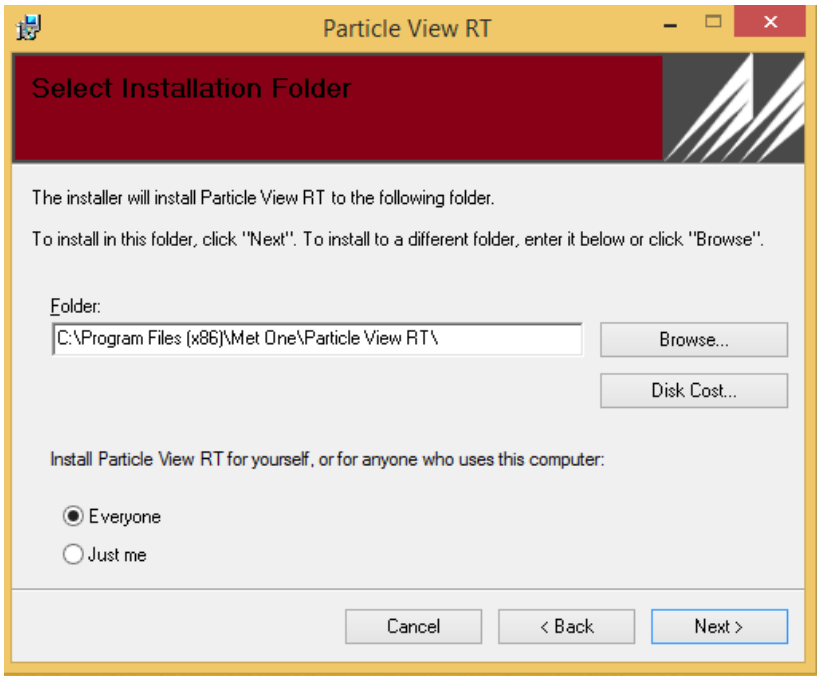


It will take a few minutes for Windows Imaging Component to install. Once completed, the setup may ask you to reboot your computer. Once rebooted, the installation of Particle View RT will continue.

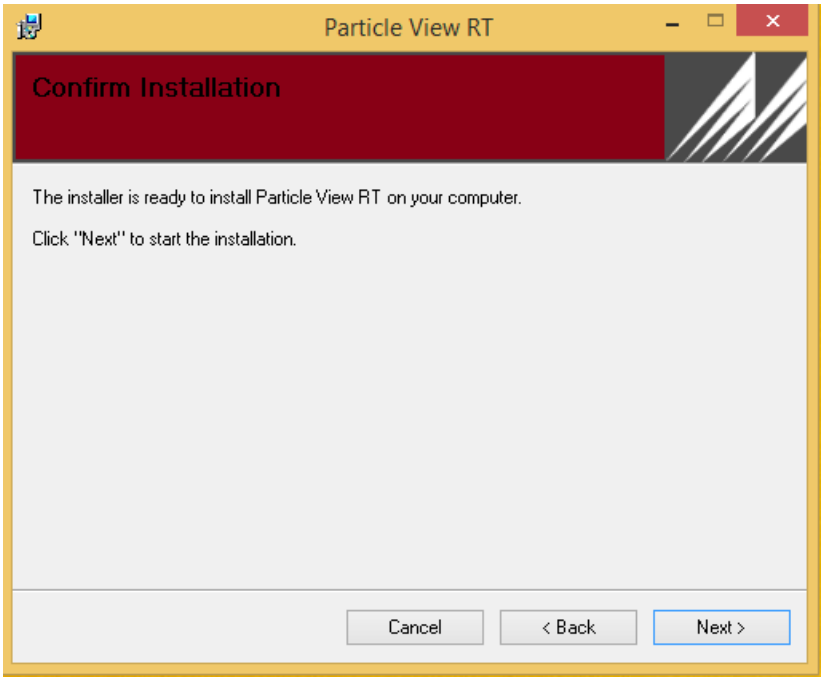
1.7 Particle View RT Installation



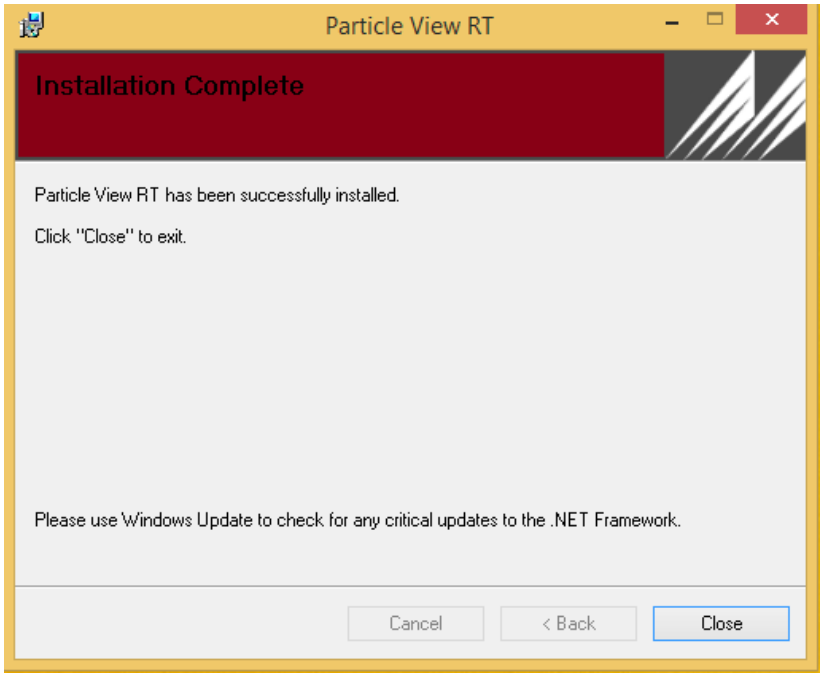
Determine where the program files will be loaded and decide whether all users will have access to Particle View RT or just the current computer user.



You will then need to confirm that you wish to install Particle View RT.



Once confirmed, Particle View RT will be installed on your computer with the options you have chosen. After the installation has finished, the installation wizard will confirm the process was successful.

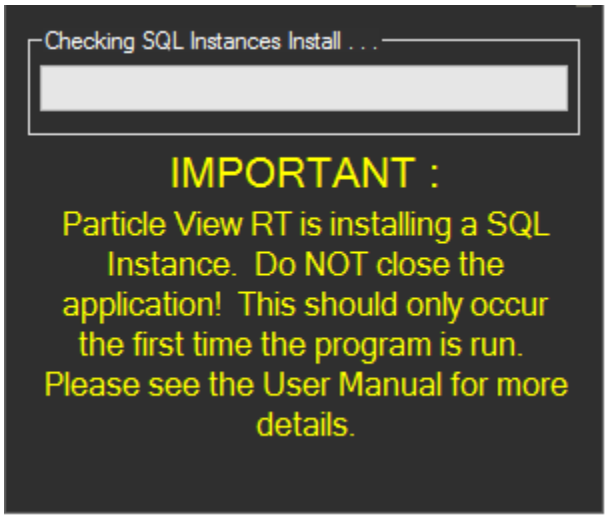


Particle View is now installed. If needed, be sure to install the USB drivers at this time.

IMPORTANT: ***Once installation is complete, it is important to run Windows Update and download all critical updates.***

2 Logging In

2.1 Connecting to the database

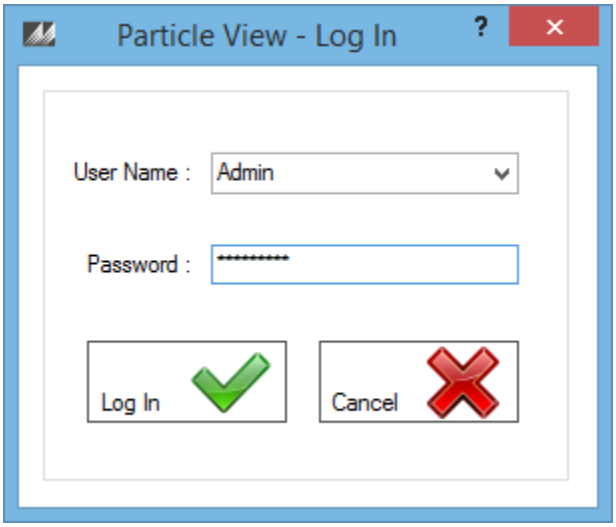


Some users may see this show up the first time Particle View RT is run. This means that the installer found an instance of SQL Express already installed on the computer and the Met One SQL instance was not created. This window attempts to create Met One's SQL Instance that Particle View RT uses. Once completed, the window will go away and users will be able to log in. Note that this can take a long period of time to complete.

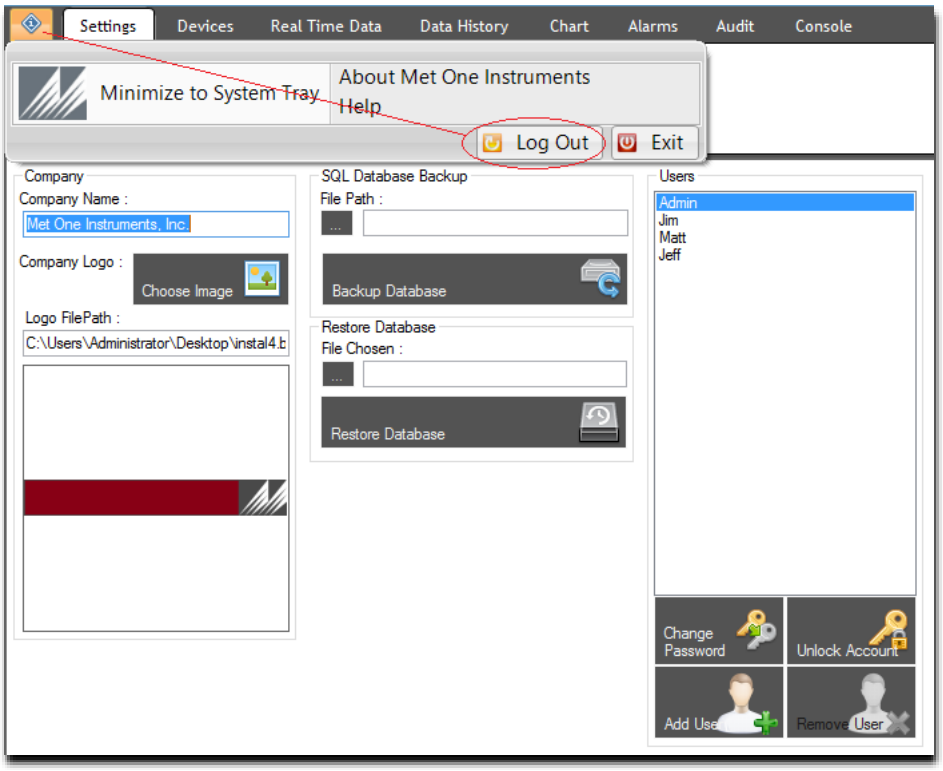
IMPORTANT: ***Do not close the program or shut off the computer! Particle View RT is installing a SQL Instance.***

2.2 The Login Interface

When starting the Particle View RT software, the login menu will automatically pop up. The default administrator profile password is *admin*.



Select the appropriate profile from the dropdown list, enter the associated password, and press Log In. Entering incorrect passwords will give you only 5 failed login attempts before an account becomes locked. Only administrators and super users can unlock accounts.



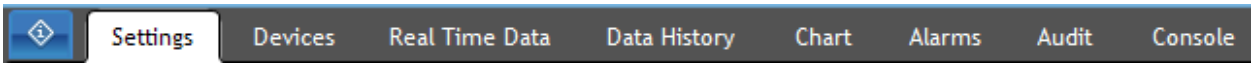
To log out and switch users, you can press the button in the top left corner and log out of the program by pressing the “Log Out” button.

3 Settings Tab

Particle View RT provides the ability to have multiple login profiles. This allows users to have a single master administration profile and as many user logins as necessary. This eliminates the need for password sharing as each login can be provided with a unique password. All users will have access to the same database, regardless of whether they use the same Windows Login or not.

3.1 Profiles

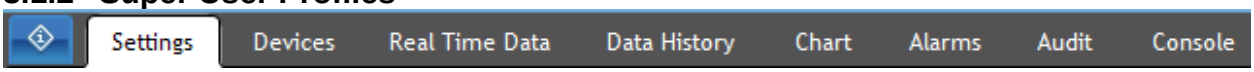
3.1.1 The Administrator Profile



Upon installation, there will be only one profile to select, the administrator. This profile is unique in that it has access to all of the features of the software package. In addition to the standard features accessible by all users, the administrator can also add/remove additional login profiles, edit all user profiles (including changing passwords, unlocking accounts), backup and restore the database, configure devices, configure alarms, access the console window, and see audit trails.

The default administrator profile password is *admin*. It is recommended that this password be changed to prevent unauthorized access. Careful consideration should be given to those users granted access to the administrator profile.

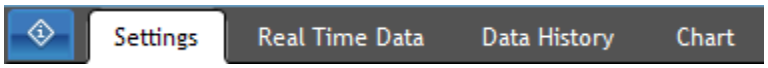
3.1.2 Super User Profiles



When adding a new user, the administrator profile has the option to make that specific user a Super User. Granting a user Super User access allows them to have the same permissions as the administrator account. They can add/remove users, change passwords, unlock accounts, setup and configure devices, configure alarms, see the console window, and see audit trails.

Careful consideration should be given to those users granted super user access.

3.1.3 Other User Profiles



All additional profiles created for users by the administrator will only have the ability view the real time data, view the data history, and chart the data history. These tabs also include many features, such as exporting data and printing data. More information about these tabs can be found in later sections of this manual.

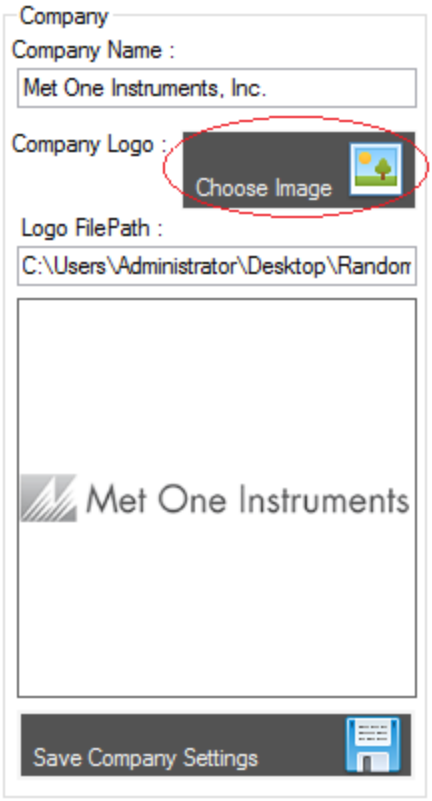
3.2 Settings Management

By selecting the “Settings” tab, you will be able to edit the company name and logo, manage the user profiles, and backup or restore the database. Note that only the administrator/super user profiles can add users, remove users, edit all profiles, backup the database, or restore the database. Individual users may edit their own Particle View RT profile only.

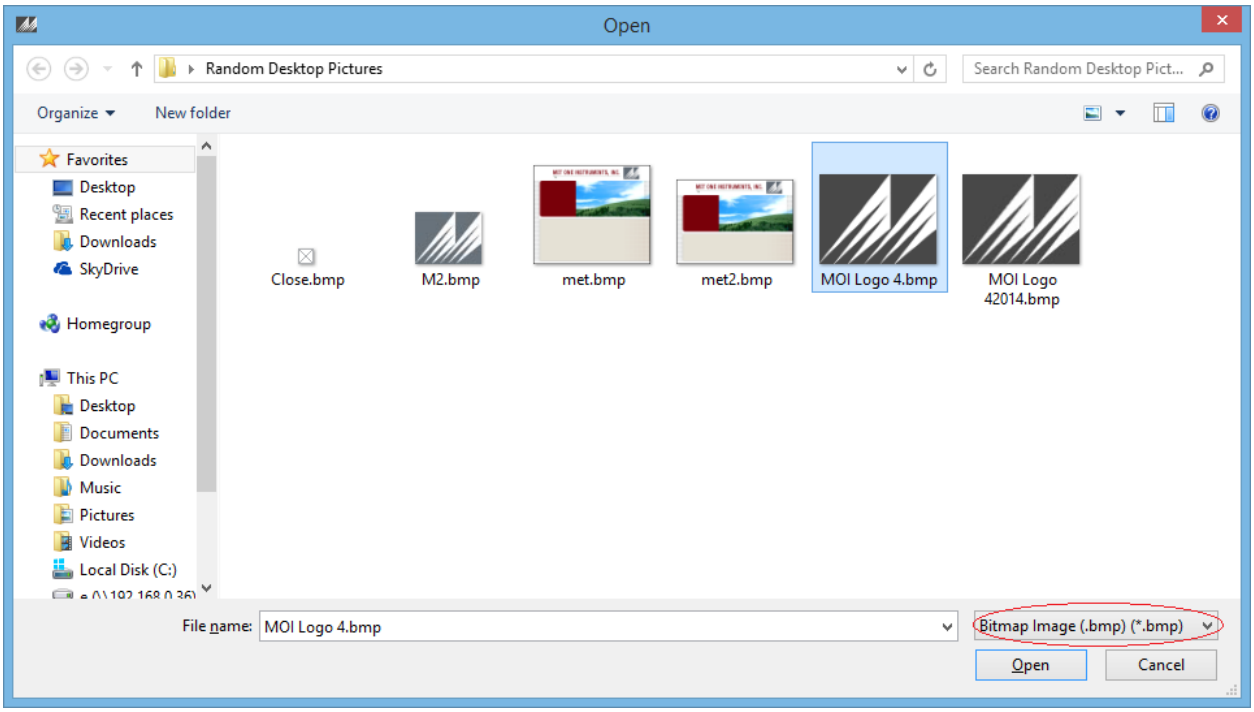
3.3 Editing the Company Profile

The company group box will allow you to edit the company name and company logo. The name entered here will appear at the top of all reports and graphs that are generated. Company logos are only shown on reports (not charts).

In the text field for Company Name you may type the name of your company and have it appear on reports and graphs that are generated. Setting this to a blank value will remove it from all reports and graphs.



Press the “Choose Image” button to select an image for the company logo.

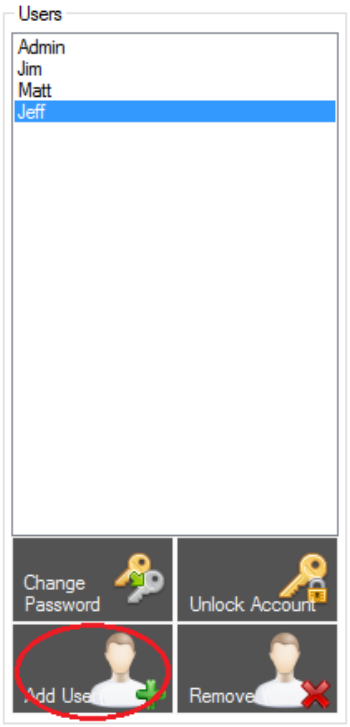


If the picture being selected for the company logo doesn’t appear, make sure you have the correct file filter selected. The image above shows how to change the filter to the correct format.

Once a logo is selected it should appear in the picture box shown above. Also the path to the logo will appear in the textbox. Setting this path text to blank will remove the logo and it will no longer appear on reports and graphs. Selecting a very large image will cause it to be scaled down on reports. It is recommended you use an image with a size no bigger than 400x400.

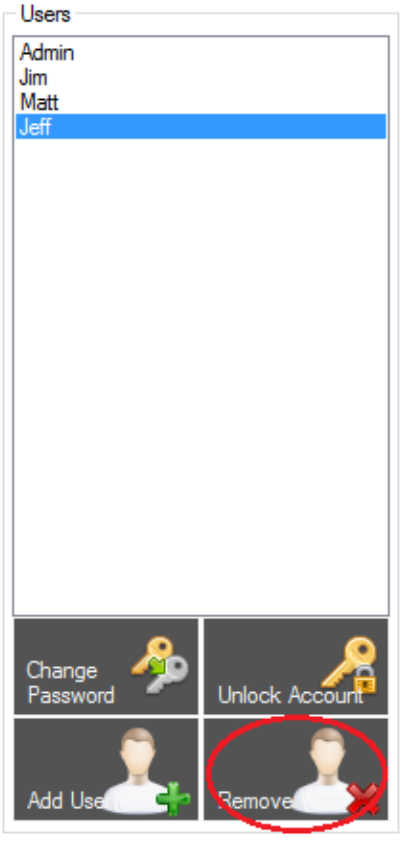
You must press the “Save Company Settings” button to save any changes made!

3.4 Managing User Profiles

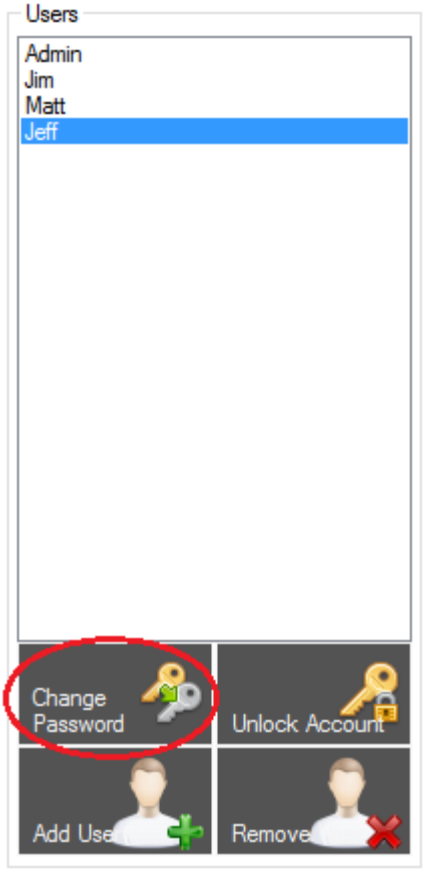


To add additional users, press the “Add User” button near the bottom of the users’ window and the following Add New User interface will appear.

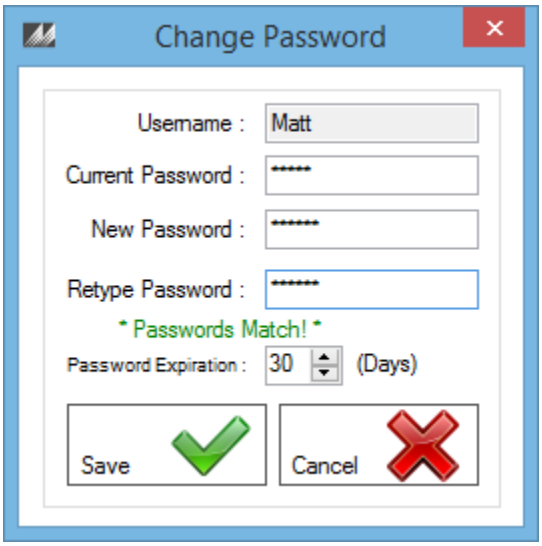
User name field is the desired profile's username. The password field and the retype password field must match to be able to add a user. Setting the password expiration will put a password expiration on that account. Accounts with expired passwords will become locked until an administrator or super user changes it for them. Checking the Super User checkbox will make this user a super user.



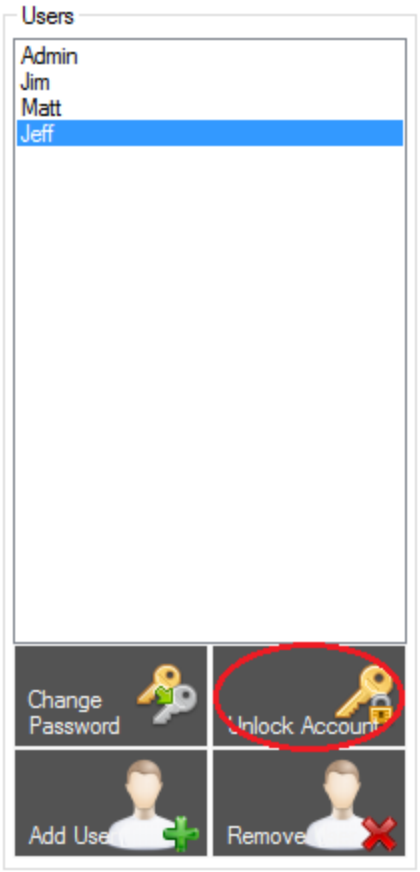
To remove users, select the user you want to remove and press the "Remove User" button near the bottom of the users' window. A prompt will appear confirming that you want to remove the selected user. Selecting yes will completely delete that user from the database.



To change your password or the password of another user, select the user you want to change and press the “Change Password” button located at the bottom of the Users window and the following Change Password window will appear. Note: Only super users and administrators can change other user’s passwords. Normal users can only change their own password.

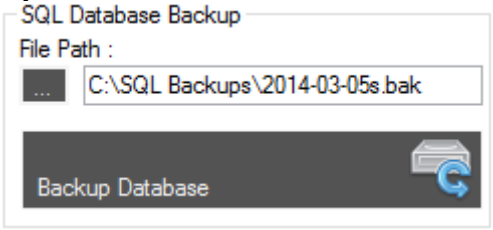


You must type your current password, a new password, and a retyped new password to change your password. Administrators and super users don’t need to type the current password to change a user’s password.

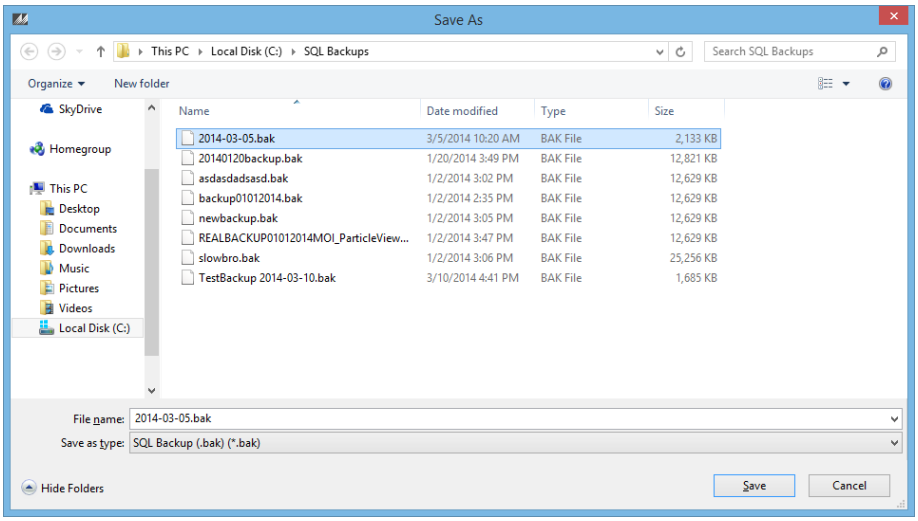


To unlock a locked account, press the “Unlock Account” button found at the bottom of the users’ window. Only administrators and super users can unlock accounts.

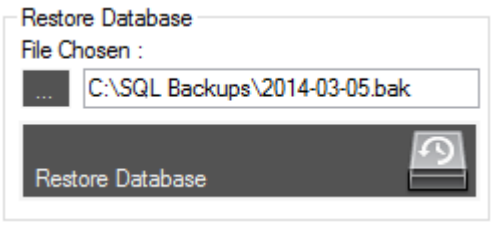
3.5 SQL Database Backup



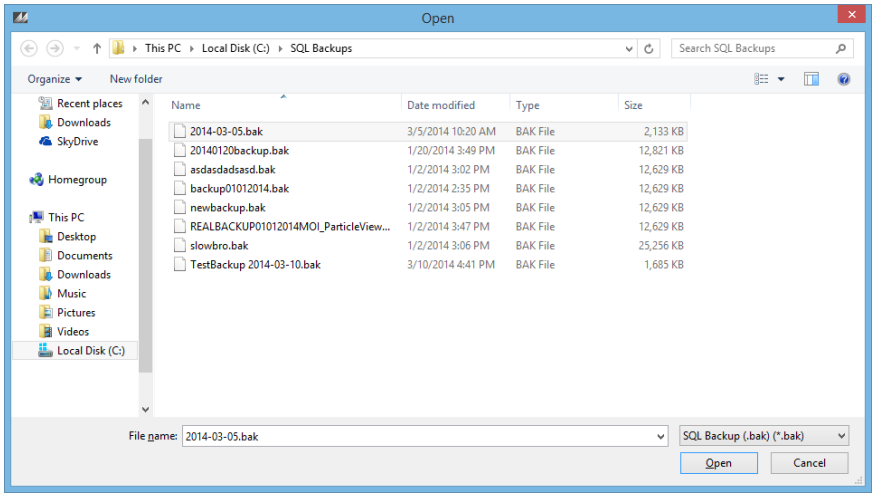
Click the ... button to select the location and name of the backup you are about to make. Press the “Backup Database” button once you have chosen a file path. This will create a .bak file which contains a complete back up of the ParticleView RT database.



3.6 Restore SQL Database



Press the ... button to select a .bak file from your computer. After a file is selected the file path will show up in the textbox. Press the “Restore Database” button to restore the current database to the .bak file you chose.



Note: Generally you do not want to restore the database from a .bak file because you will lose your current data. It’s always a good idea to make a backup before you choose to restore it. The .bak file chosen has to be a ParticleView RT backup file or it will not work.

4 Device Setup

4.1 Ethernet Network Setup

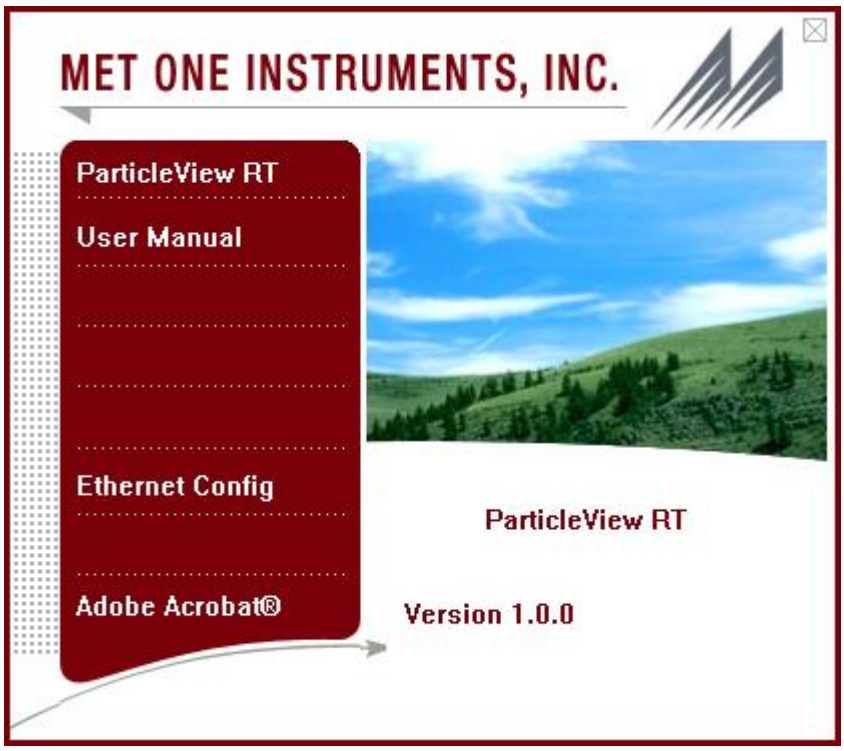
There are currently two ways to connect Met One Instrument devices together into a network. The first method is using Ethernet to make a TCP/IP connection to the device. To put multiple devices on the same network using TCP/IP, plug in the Ethernet cord from the same network into the Ethernet port on the Met One device. See the image in the section "Connecting the Devices" for a better illustration. Below is are the instructions on how to configure the Ethernet port for each device.

4.1.1 Ethernet Port Setup and Configuration

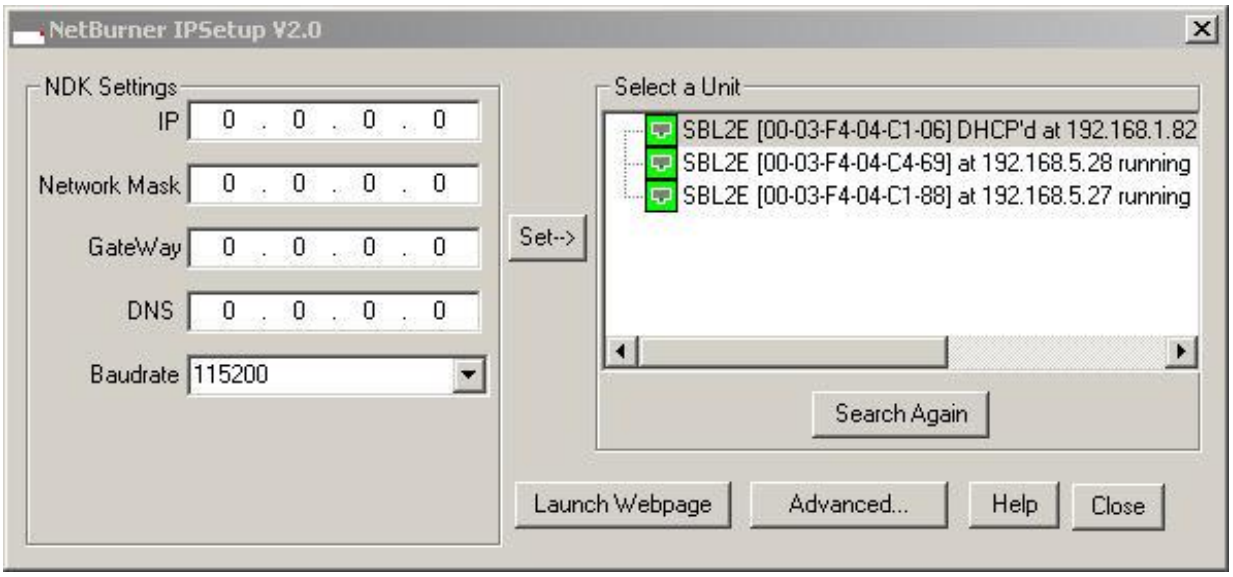
The BT-610 and BT-620 Ethernet ports must be configured with drivers before the user can connect via TCP/IP.

4.1.1.1 Setting the Static IP Address of the device:

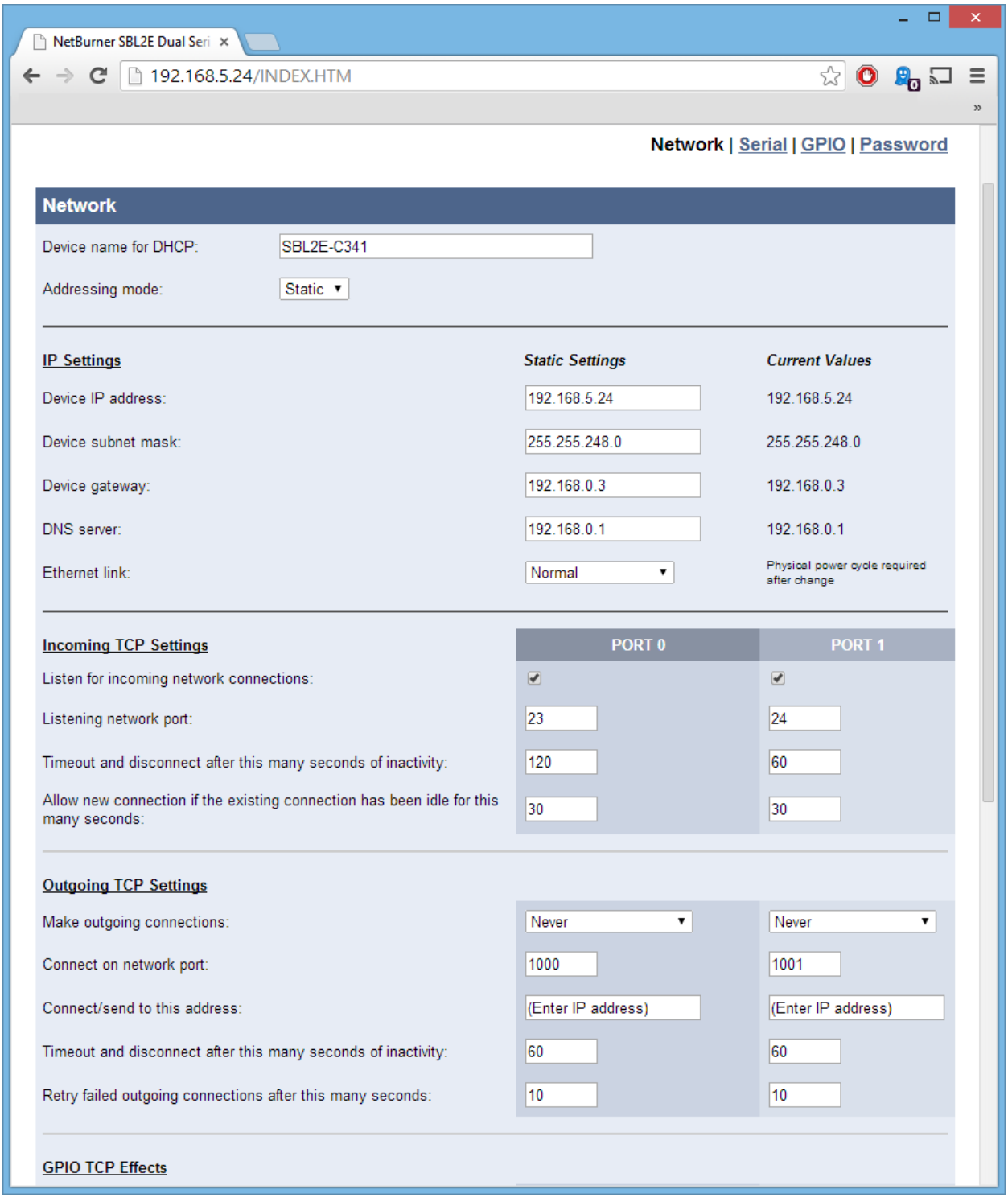
1. Turn on the Met One Device. Set the baud rate to 9600 in the SETUP menu.
2. Connect CAT5 Ethernet cable between the local network and the Ethernet connector on the back of the device.
3. Inset the supplied ParticleViewRT Installation CD into your PC. The following menu window should appear:



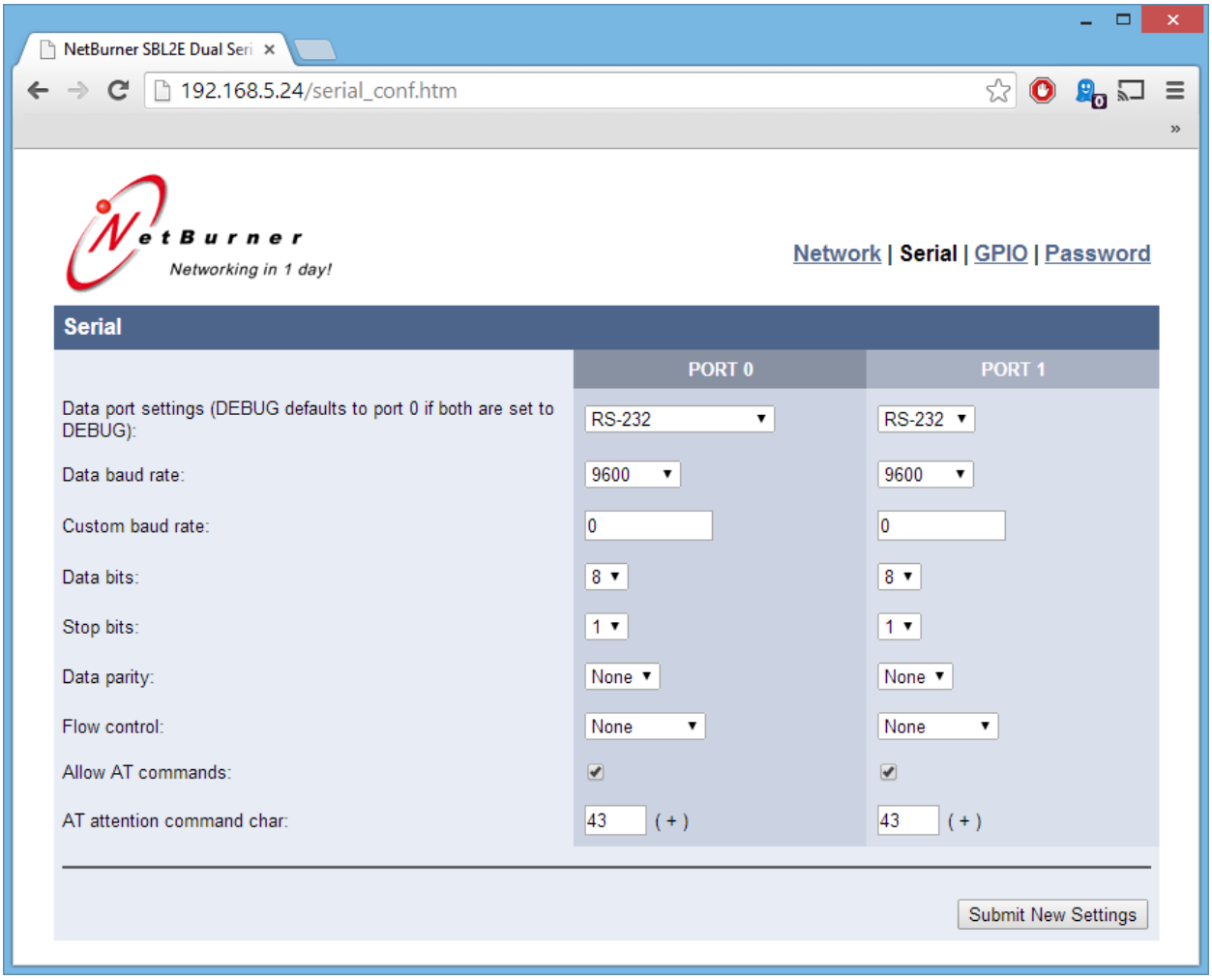
4. Click on the Ethernet Config button. The following screen will appear:



5. Click on the “Select a Unit” line that shows a DHCP’d in the title.
6. Type in your static IP address in the IP window. Be sure to write this number down as you will need it later.
7. Type in a Network Mask in the Network Mast window.
8. Set the baud rate to 9600.
9. Press the Set→ button to change the IP address of the device
10. Click the “Launch Webpage” button.

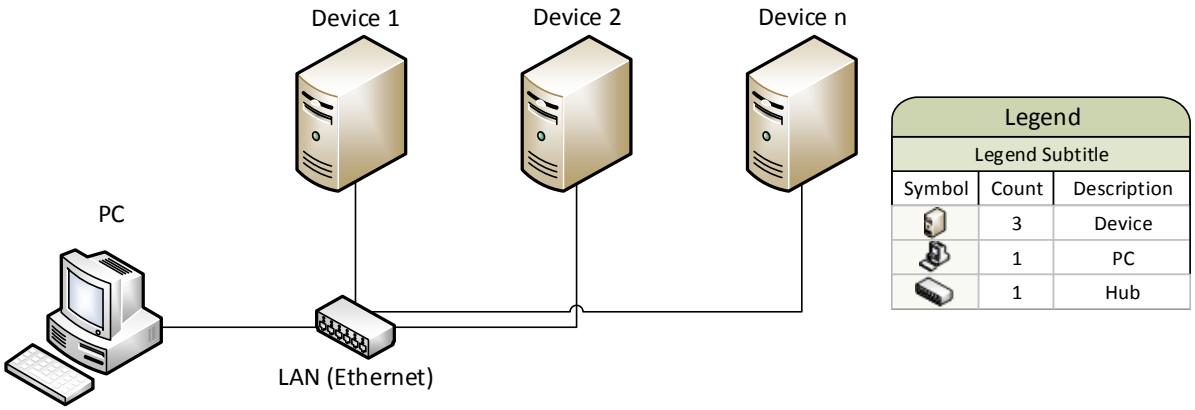


11. The page should reflect your static ip and port.
12. Press the “Serial” link at the top of the webpage.



13. Use the following options: Data Port Settings = RS-232, Baud Rate = 9600, Custom Baud Rate = 0, Data Bits = 8, Stop Bits = 1, Parity = None, Allow AT Commands = true, Command Char = 43
14. Press “Submit New Settings”
15. Close the webpage. Remember this instrument will always be accessed by the Com Port you chose.

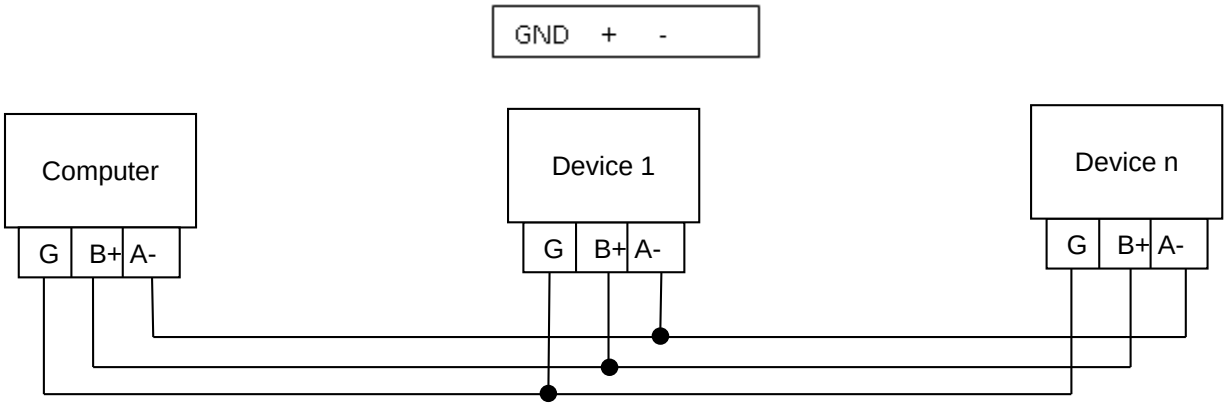
4.1.2 Connecting the devices



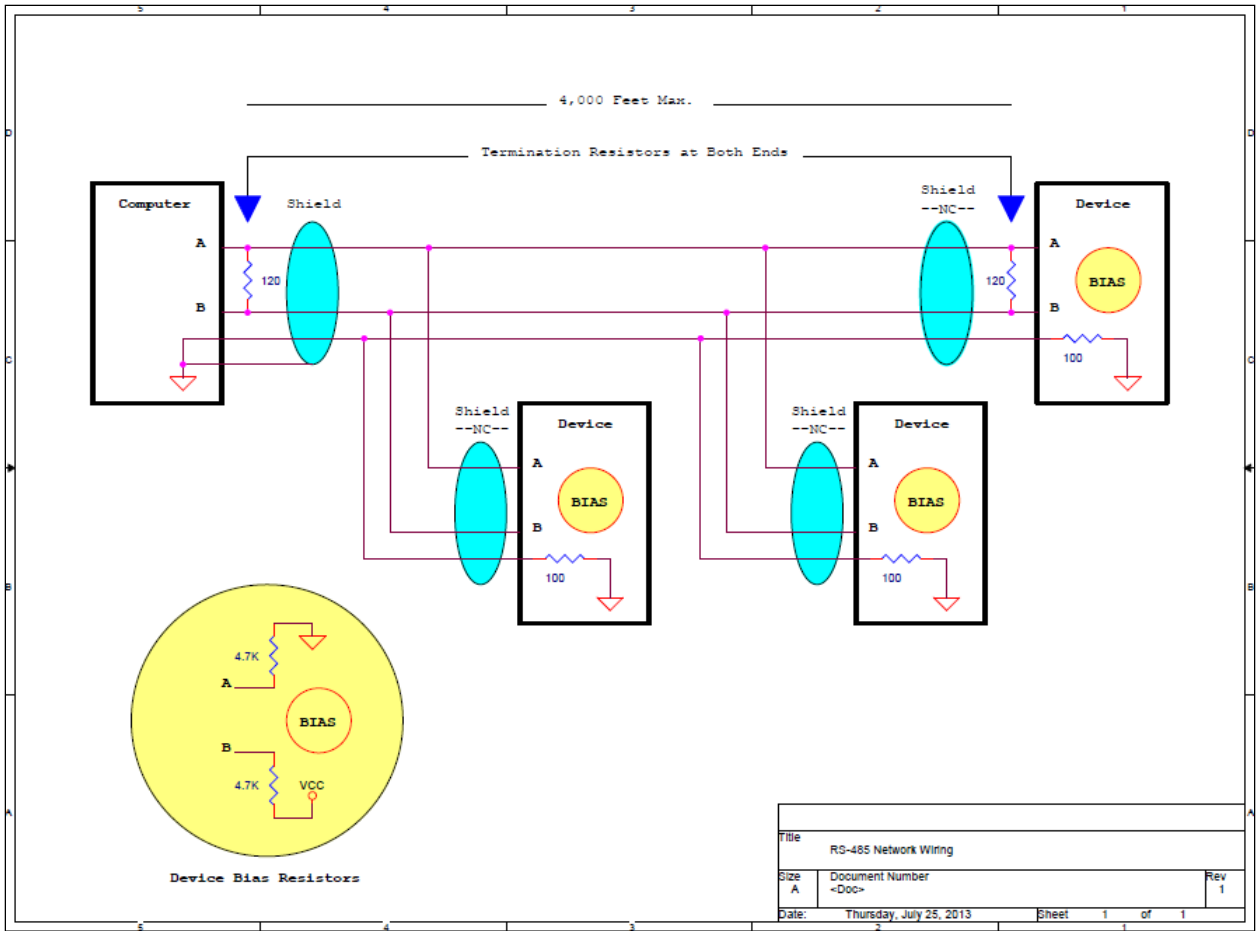
4.2 RS-485 Multi-Drop Network Setup

The second method for connecting the Met One devices in a network is by connecting the devices with wires, creating a Multi-Drop RS-485 network. In the image above, circled in red, is the RS-485 connection where users will wire the devices together. Below are detailed instructions for wiring the devices together.

4.2.1 RS-485 Physical Setup

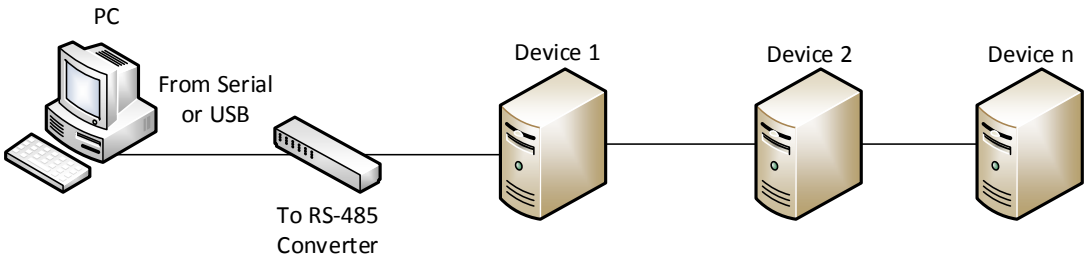


To connect the devices via RS-485, you must run cable wiring between all units so that they are on the same network. We recommend 22 AWG shielded 1.5 pair with 120Ω nominal impedance and 16 pF/ft. (or less) shunt capacitance. The 1.5 pair cable provides two twisted wires for data and one wire for a common mode ground connection. The ground connection requires a 100Ω ½ watt series resistor to reduce ground currents as shown below.

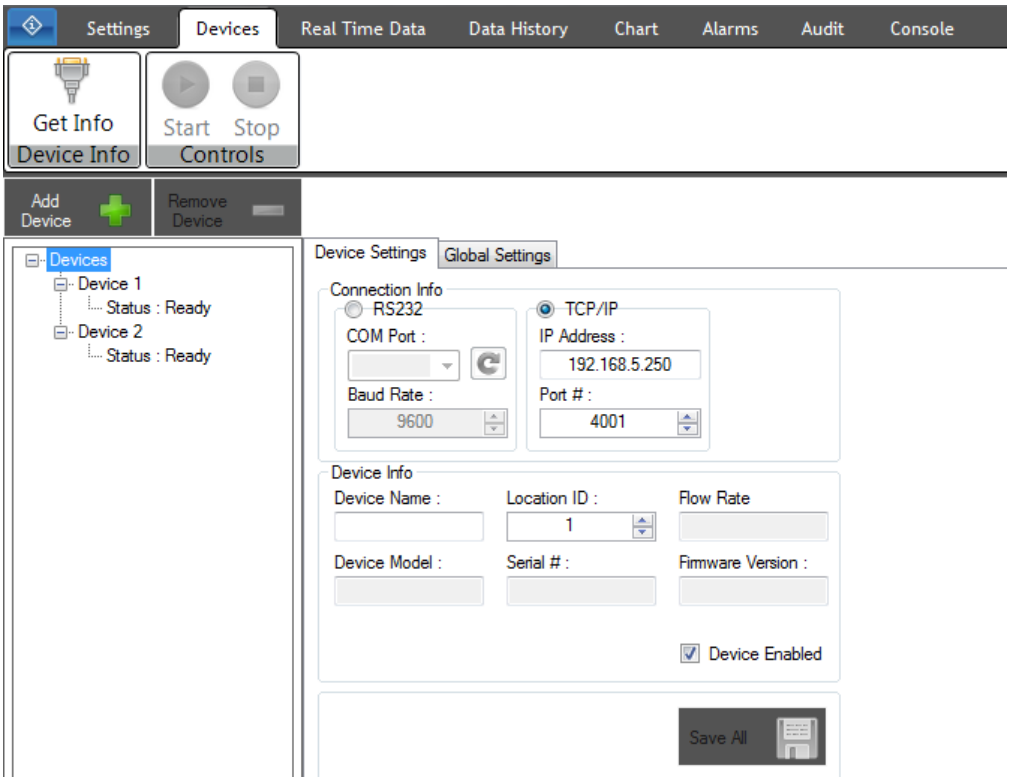


4.2.2 Connecting the Devices

Legend		
Legend Subtitle		
Symbol	Count	Description
	3	Device
	1	Converter
	1	PC.6

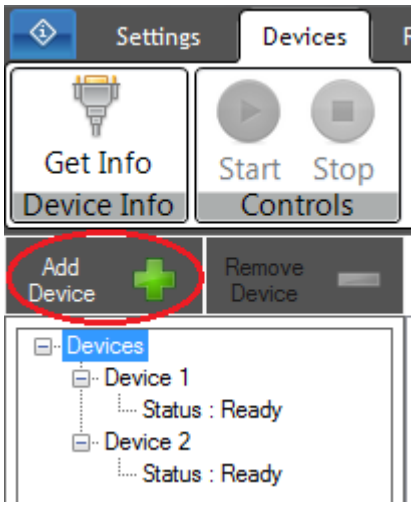


5 Device Tab

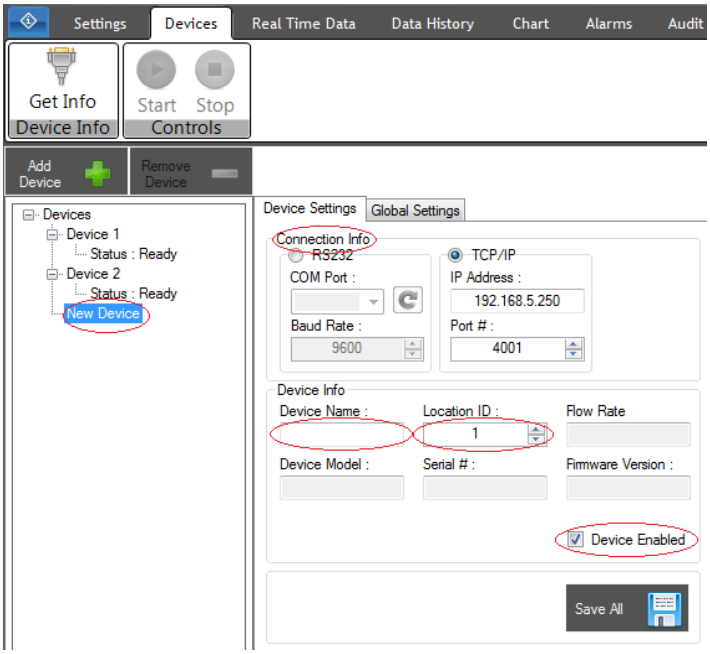


The device tab is the page where the administrator or a super user can configure devices that will run and collect real time data. In this tab you can add a new device, remove a device, update devices, change global settings, and start running the devices.

5.1 Adding a Device



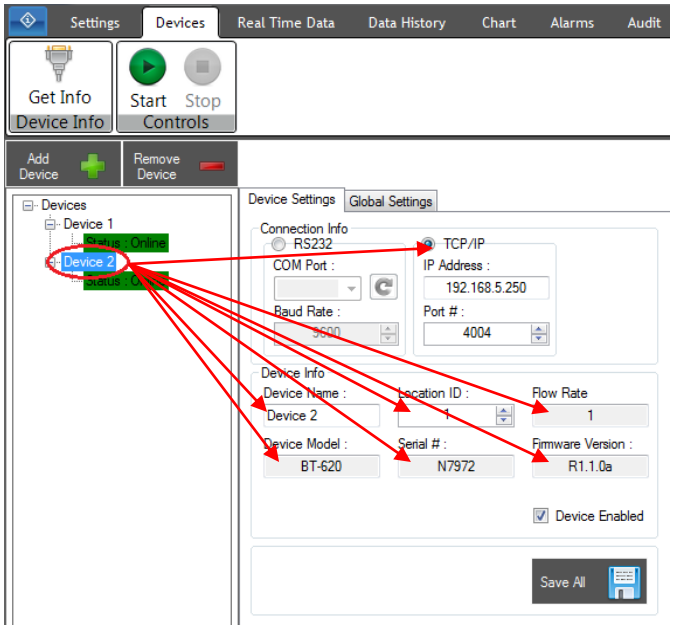
Press the “Add Device” button to begin adding a new device.



A new device will appear on the tree and be selected. Here you will need to fill out the required information for that specific device. Required fields are: Device Name, Location ID, and the connection information. Click “Save Device” when you are done adding that device.

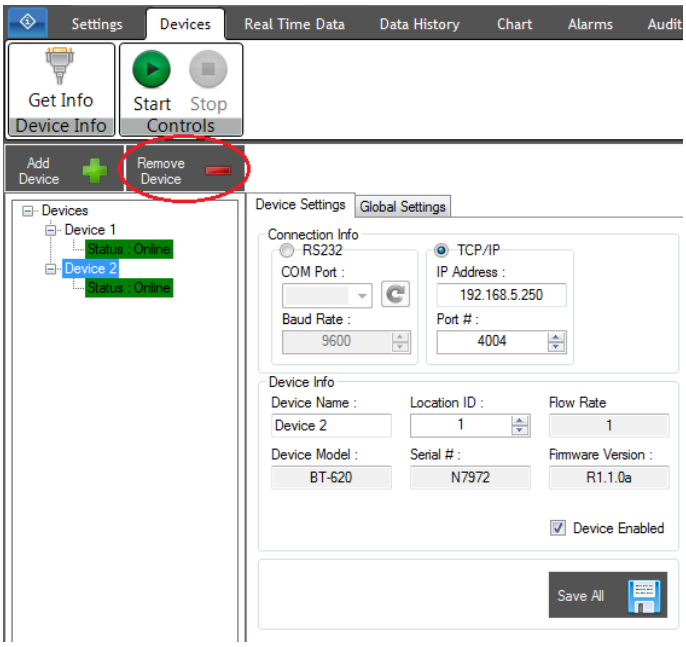
Note: Location ID’s must be unique! Data grids are ordered by device name, so if you want to change the order of how devices are displayed, you must change the Device Name.

5.2 Updating a Device



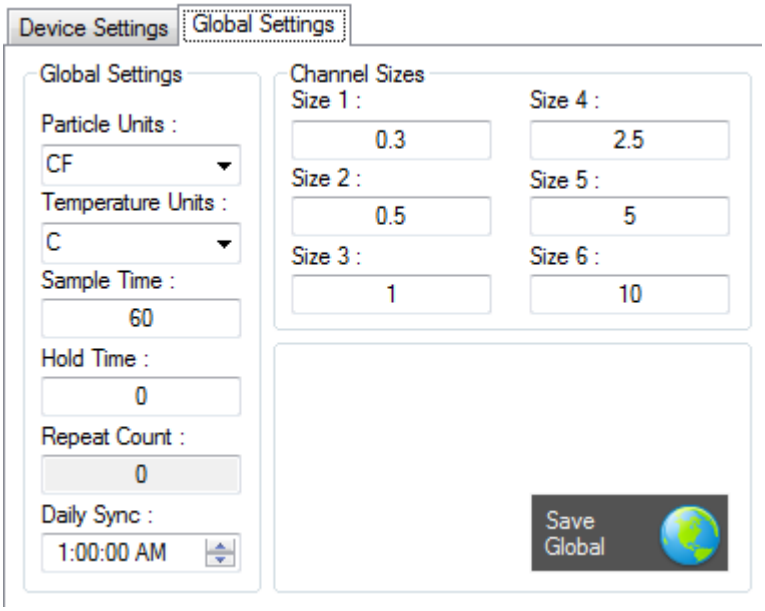
Clicking an already configured device will load the saved configuration for that device. As shown above, we have clicked on Device 2 and we can see all of the information associated with that device. To update a device, click on it from the tree on the left, update the values that need to be updated, and press “Save Device”. Now clicking on that device should reflect your changes.

5.3 Removing a Device



To remove a device, select the device you would like to remove, and press the “Remove Device” button. This will prompt the user if they are sure they want to remove the selected device. Pressing ‘Yes’ will permanently delete that device and all of its data from the program and the database.

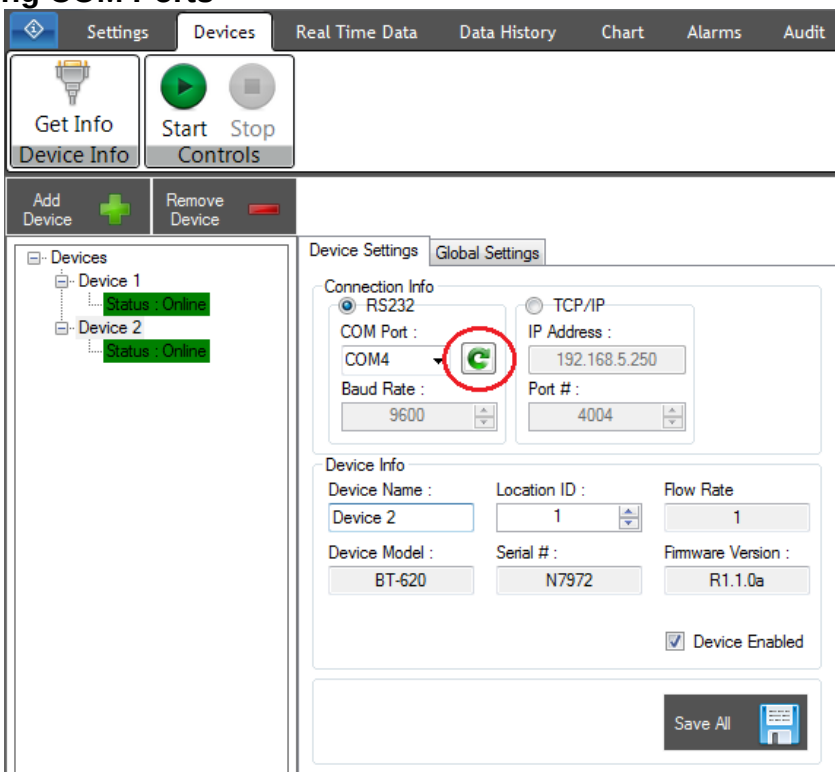
5.4 Updating Global Settings



Global settings are the device settings that must be shared across all devices in order to run properly. Changing these settings will update the settings for all configured devices. Below is a list of each global settings and a description of what that setting is for.

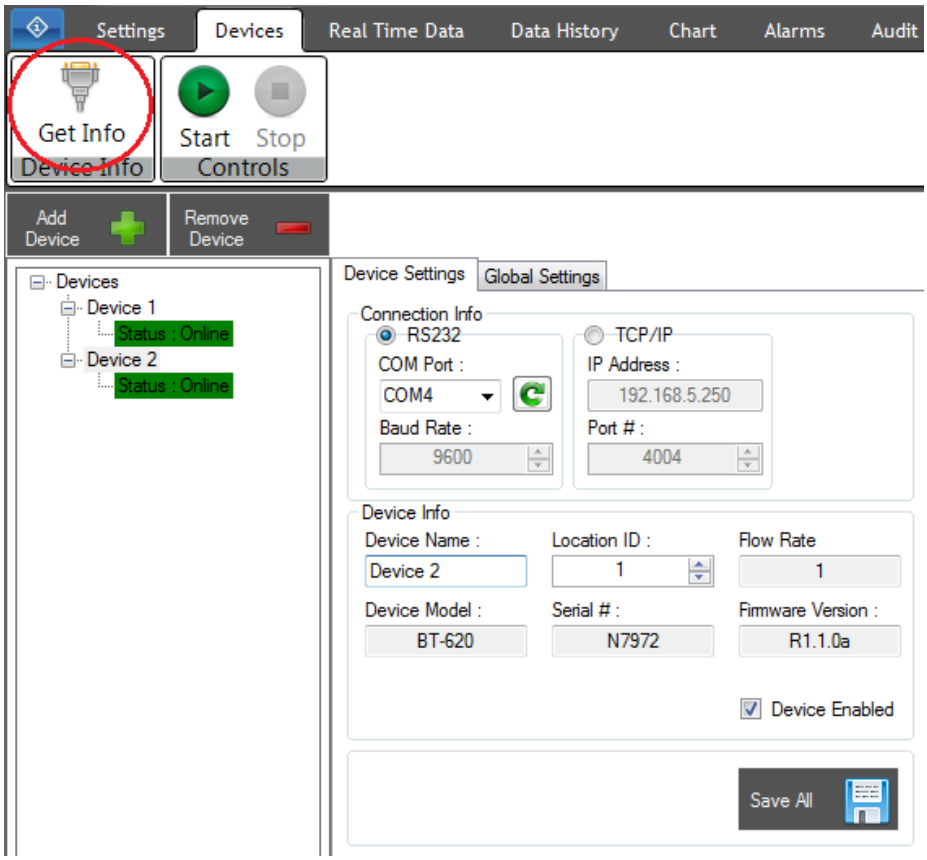
Setting	Description	Min Value	Max Value
Particle Units	Allows the user to set the units for all devices. Current options are : Cubic Feet, Cubic Meters, per Liter, and Total Counts	N/A	N/A
Temperature Units	Allows the user to set the units for temperature. Options are Celsius or Fahrenheit	N/A	N/A
Sample Time	How long the devices will sample for. If you set this value to 60, it will take a sample every minute.	30	3600
Hold Time	The amount of time the device holds until the next sample	30	3600
Repeat Count	The number of times the device will run before shutting off. This is forced to 0 for real time.	0	0
Daily Sync	This is the time set when all the device clocks are re-synced	0	24
Size 1	The first channel size	0.3	10
Size 2	The second channel size	0.3	10
Size 3	The third channel size	0.3	10
Size 4	The fourth channel size	0.3	10
Size 5	The fifth channel size	0.3	10
Size 6	The sixth channel size	0.3	10

5.5 Refreshing COM Ports

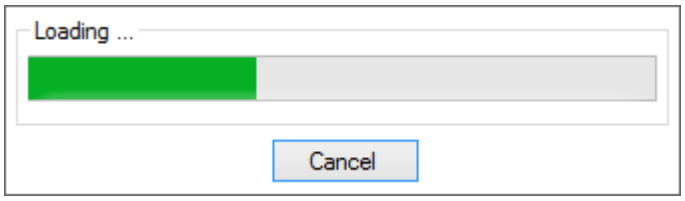


Pressing the COM button will refresh the list of COM ports available.

5.6 Get Info



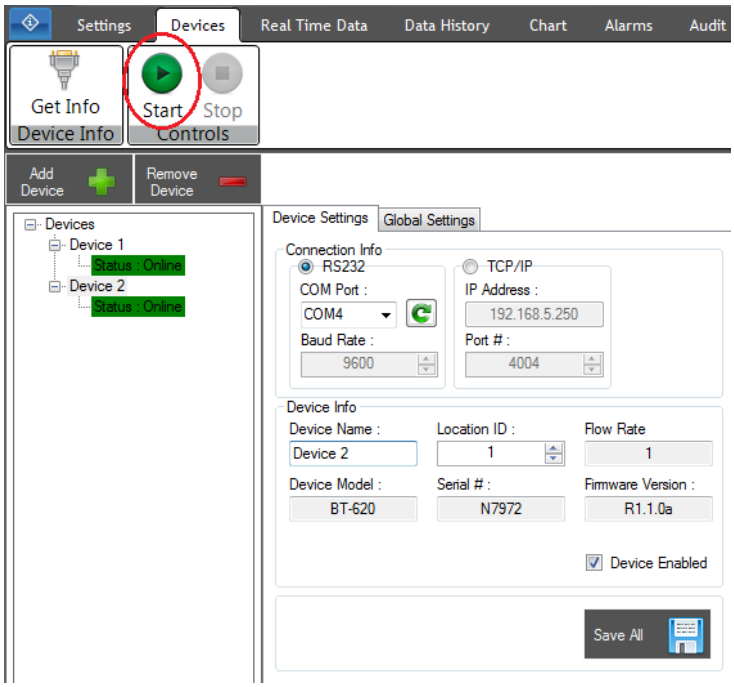
After you have added all the devices you plan on running, you will notice that there are some non-editable boxes that are blank. That is because we have only configured the devices and have not tried to communicate to them yet. Pressing the “Get Info” button will take the current list of devices and attempt to communicate with them. Once communication is successful, these blank fields will be populated with information from the device.



A busy bar will appear when you click the “Get Info” button. Particle View RT is discovering the configured devices and getting important information from them. Administrators and super users can go to the console tab and see what commands are being sent/received (more information about the Console tab can be found later in this document). Once Particle View RT has discovered all the devices, it will put them in an “Online” status and now clicking on a device will show the Device Model, Flow Rate, Serial #, and Firmware Version. Once all the configured devices are in an “Online” or “Offline” status, the “Start” button will become enabled.

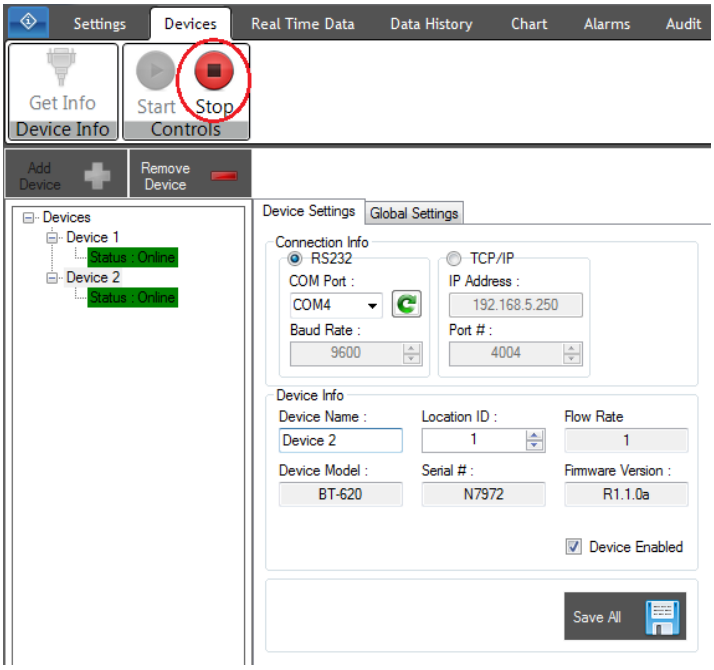
Note: After discovering all configured devices, making changes, or adding new devices will disable the start button and you will have to “Get Info” again to discover new devices and/or any changes that were made.

5.7 Starting Devices



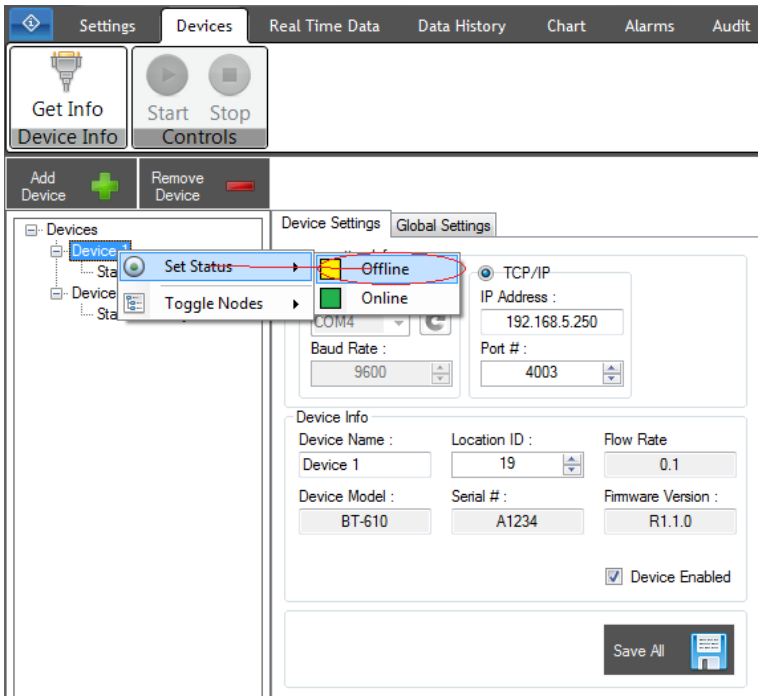
To enable the “Start” button, all devices must be in an “Online” or “Offline” status. If there are any devices in an error or ready state you will not be able to start. Once all devices are in an “Online” or “Offline” status, press the “Start” button to start collecting data. All devices should go into a standby mode until the next sample time, in which they will start sampling.

5.8 Stopping Devices

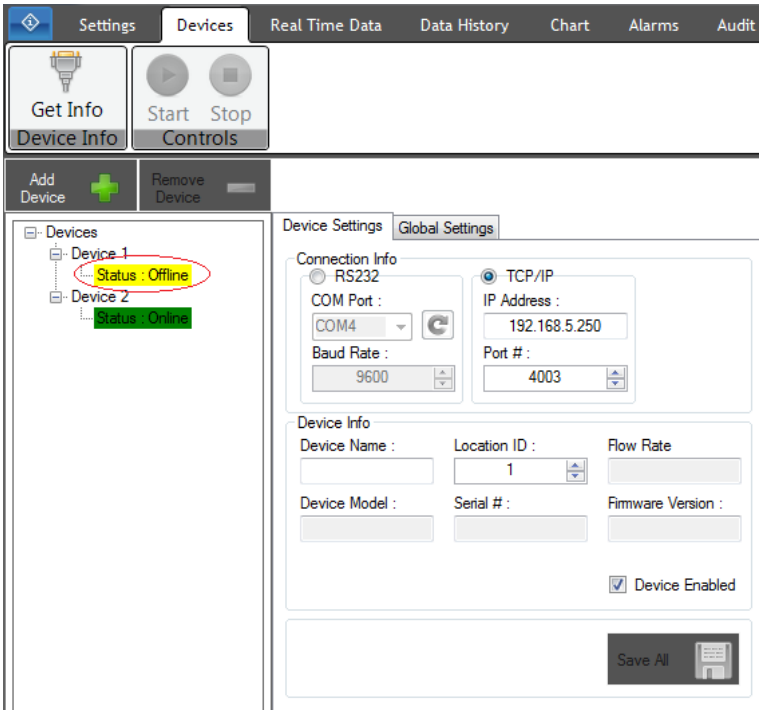


To stop collecting data and stop all devices from sampling, press the “Stop” button at the top of the Devices tab. The stop will only be enabled if devices are currently sampling.

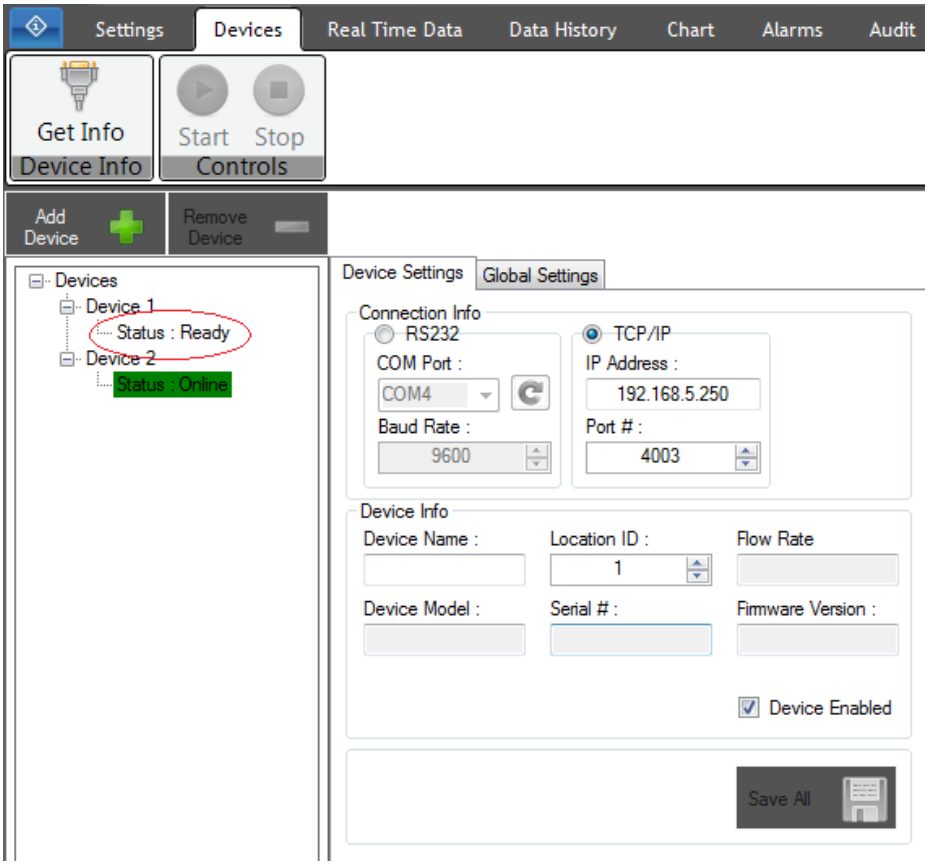
5.9 Setting Devices Online/Offline



To set a device Online or Offline, just right click the device you want to set and choose “Set Status” then select “Offline” or “Online”.



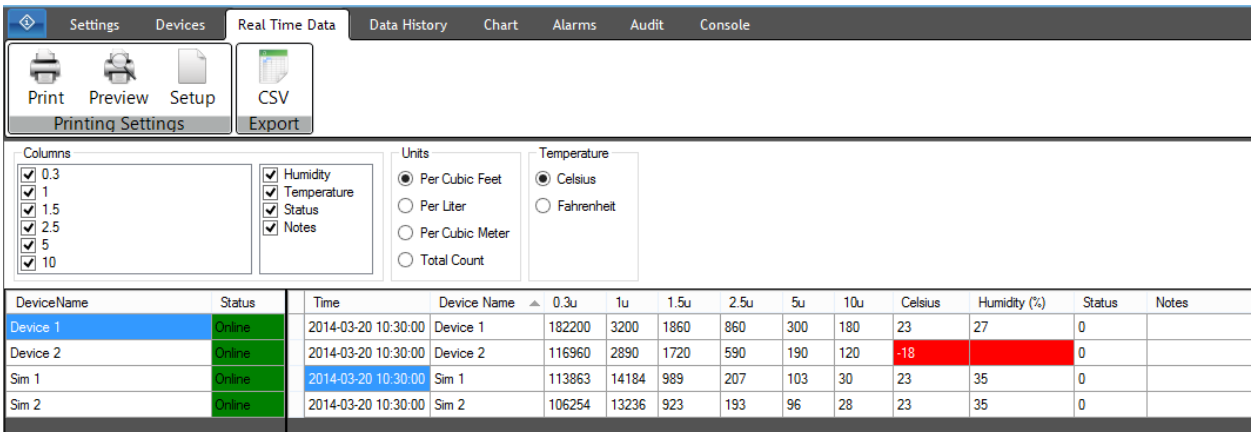
Setting a device “Offline” will stop that device from collecting data and it will no longer be sent commands. If a device goes into an “Error” status, you can set it “Offline” and attempt to fix the problem while “Online” devices continue to collect data. Once the issue is fixed you can attempt to set the device back to “Online”.



Setting a device “Online” will take the device out of a stopped state and Particle View RT will attempt to re-discover the device to make sure all of that devices settings are correct (Ready status). If all settings are correct, the device status will become “Online” and the device will go into standby and begin sampling at the start of the next sample.

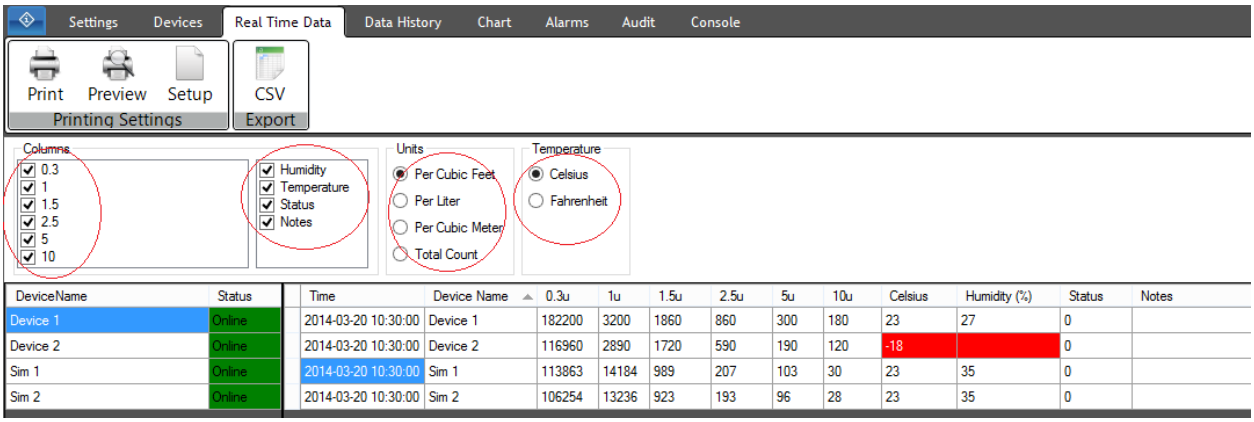
Note: While sampling, once you set a device “Offline” or “Online”, you cannot toggle the status again until that operation has completed.

6 Real Time Data Tab



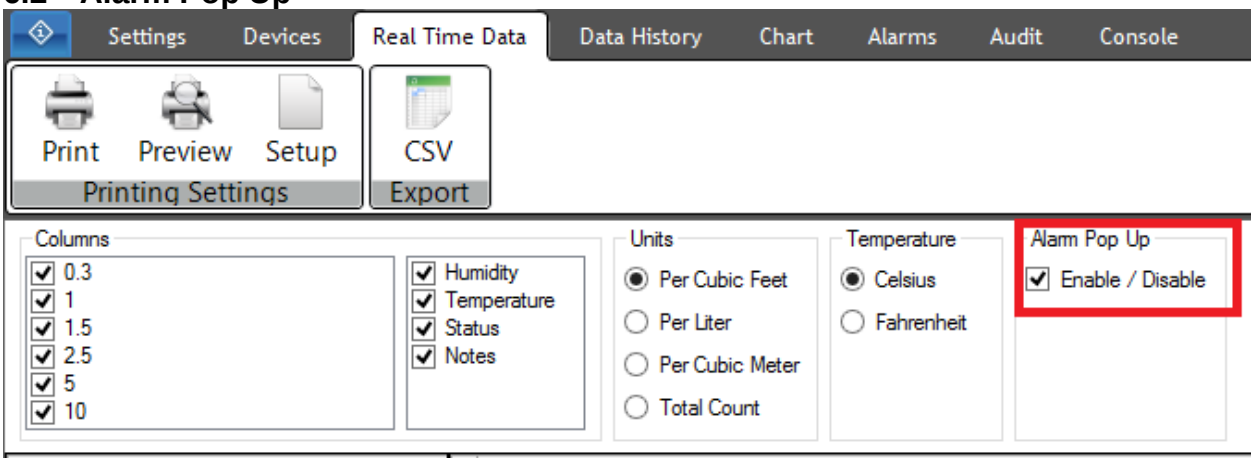
The Real Time Data tab is the tab where device data is displayed in real time as the devices collect and sample data.

6.1 Filters

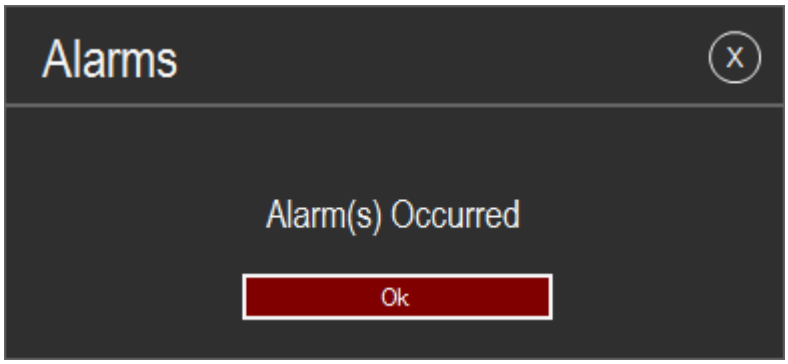


Particle View RT allows the user to filter their data in real time to make the viewing of data easier for the user. Currently you can filter the real time display by particle size, humidity, temperature, status, notes, particle units, and temperature units. Selecting a filter will affect the real time display immediately.

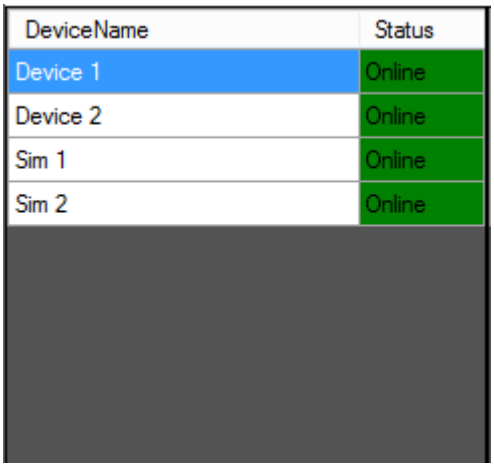
6.2 Alarm Pop Up



Particle View RT allows the user to show a pop up notification for alarm. This pop up will occur even if you are not on the real time tab. This allows users who want to know if an alarm occurred while they are looking at the data history or another tab. Checking the box in the "Alarm Pop Up" panel will enable the pop up. To disable the pop up notification, uncheck the box. The example below shows the alarm pop up notification.

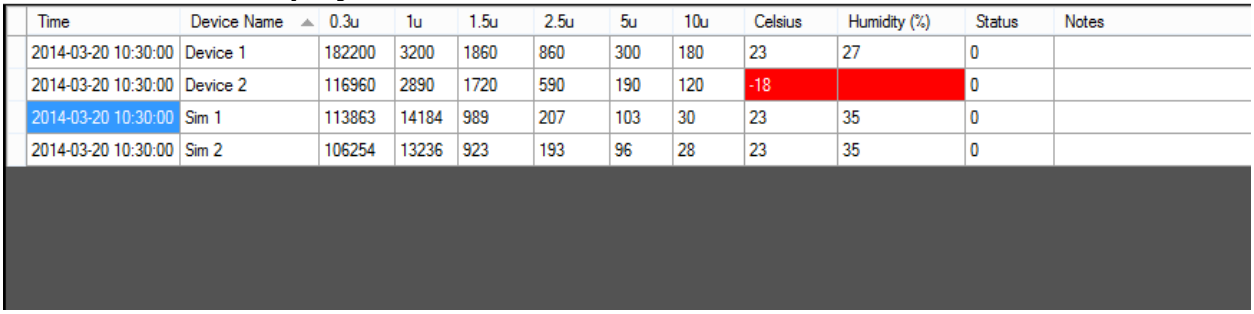


6.3 Device List

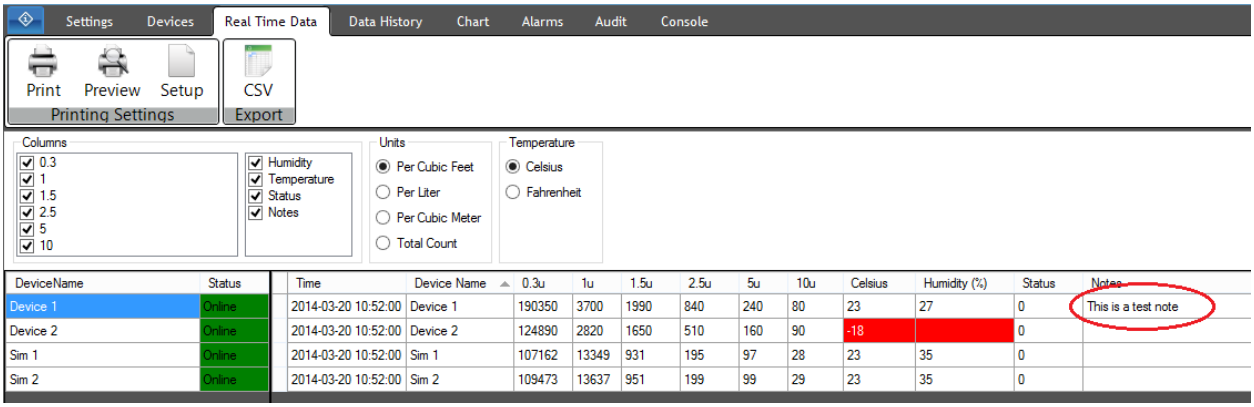


The Device List will display the list of all currently configured devices and show the current status of this device. Current status's are: Online (Green), Offline (Yellow), Error (Red), Ready (None).

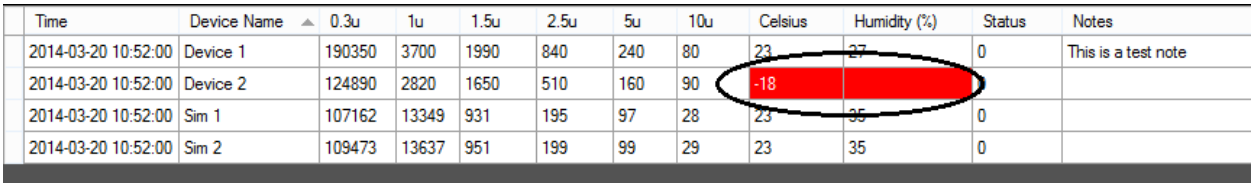
6.4 Real Time Display



The Real Time Display is a grid that displays the last set of data collected from all devices. When a new sample begins collecting, the old data will be cleared and the newest data samples will be displayed on the screen.



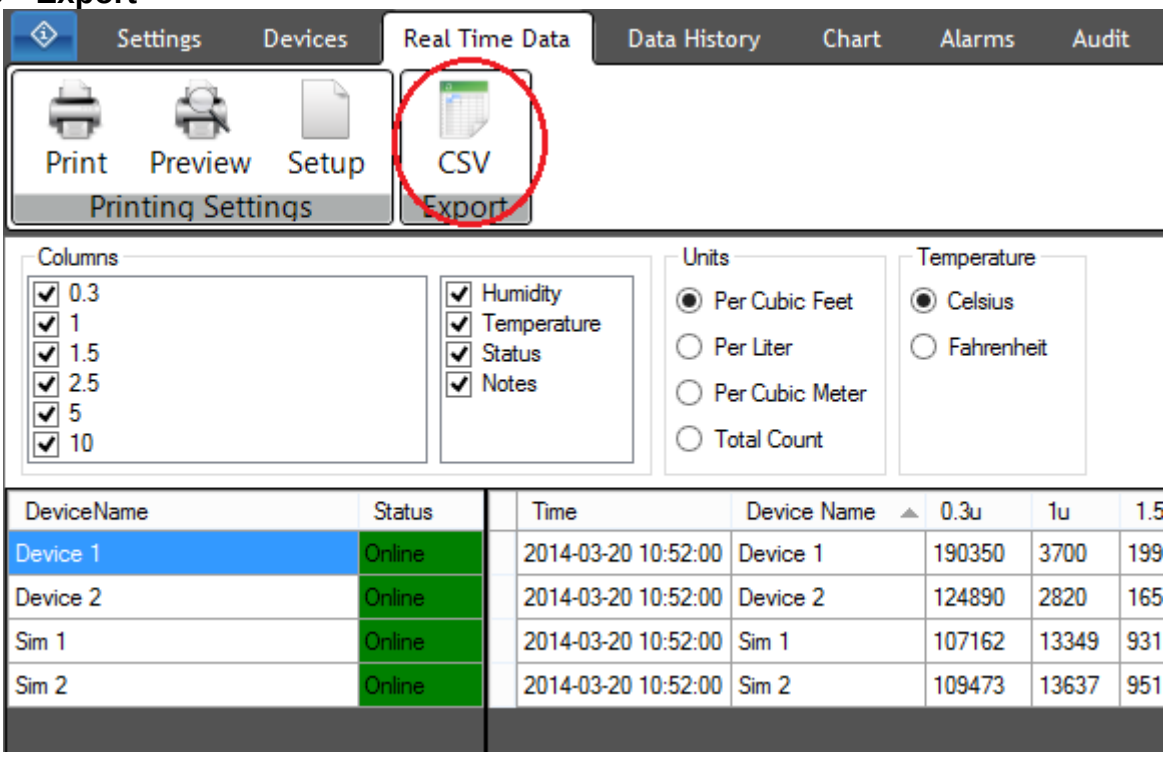
To set a note for a specific sample, click on the notes field and begin typing your note. Any changes made to the notes field are automatically saved to the database and will appear in the data history.



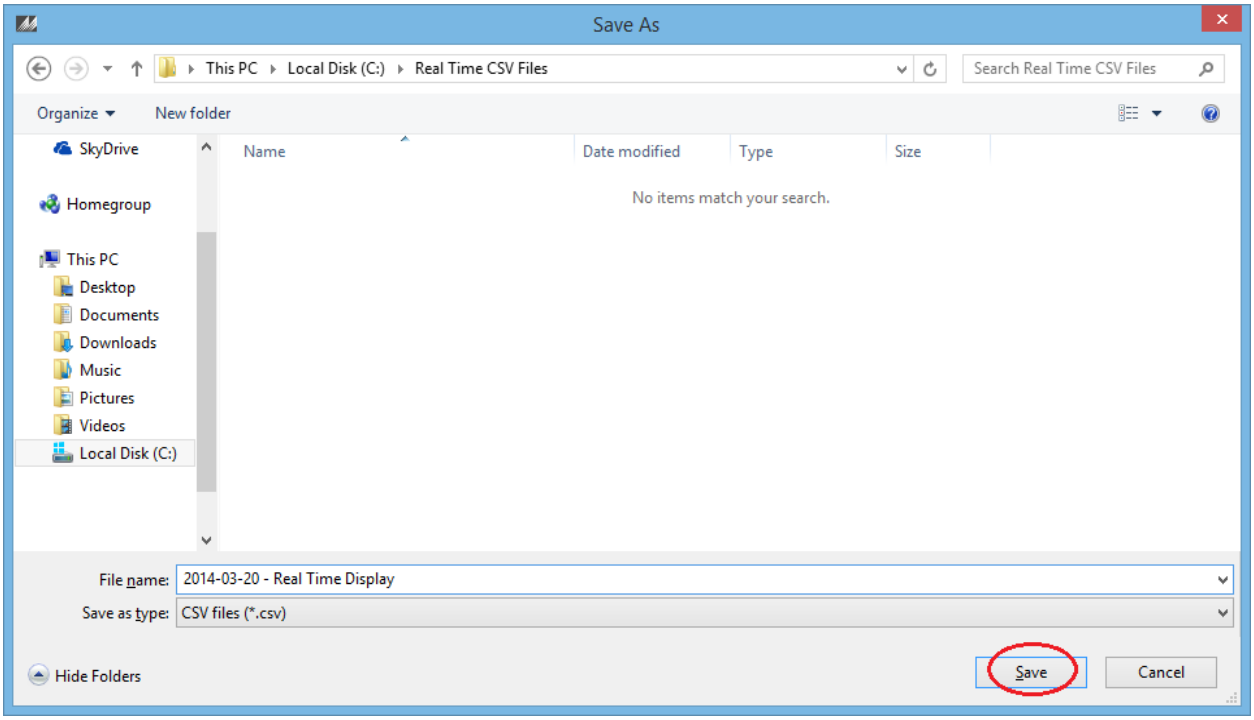
Time	Device Name	0.3u	1u	1.5u	2.5u	5u	10u	Celsius	Humidity (%)	Status	Notes
2014-03-20 10:52:00	Device 1	190350	3700	1990	840	240	80	23	27	0	This is a test note
2014-03-20 10:52:00	Device 2	124890	2820	1650	510	160	90	-18			
2014-03-20 10:52:00	Sim 1	107162	13349	931	195	97	28	23	35	0	
2014-03-20 10:52:00	Sim 2	109473	13637	951	199	99	29	23	35	0	

The real time display also will display configured alarms in real time. In the example above, there is an alarm set for humidity and temperature when their values are less than zero. Alarms can be configured in the Alarms tab. More information about setting alarms can be found in the Alarms Tab section later in this document.

6.5 Export



To export the real time display data as a CSV file, press the “CSV” button in the Export panel.

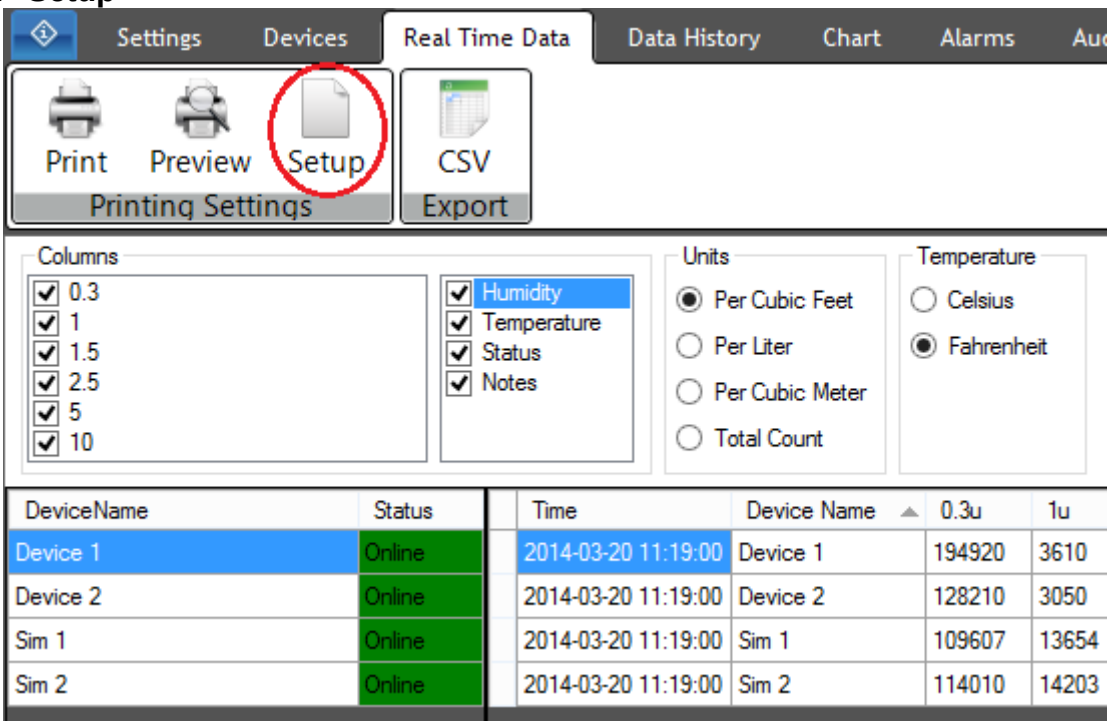


Choose a name and press the “Save” button to export the data as a CSV formatted file to the location chosen.

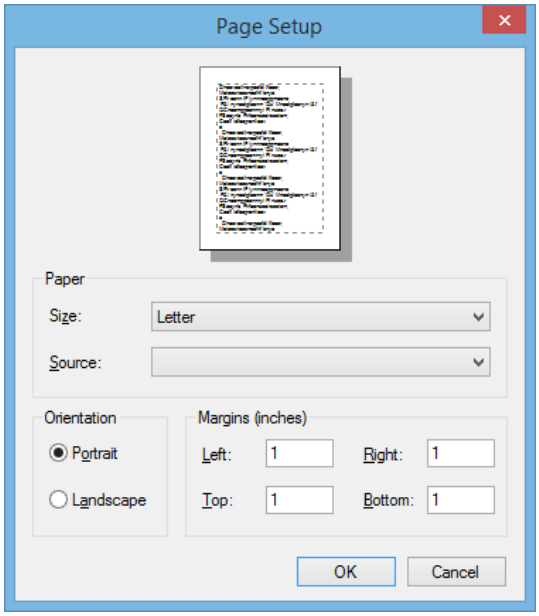
6.6 Printing Settings

To setup and print the data displayed in the real time display, use the buttons found in the Printing Settings panel.

6.6.1 Setup

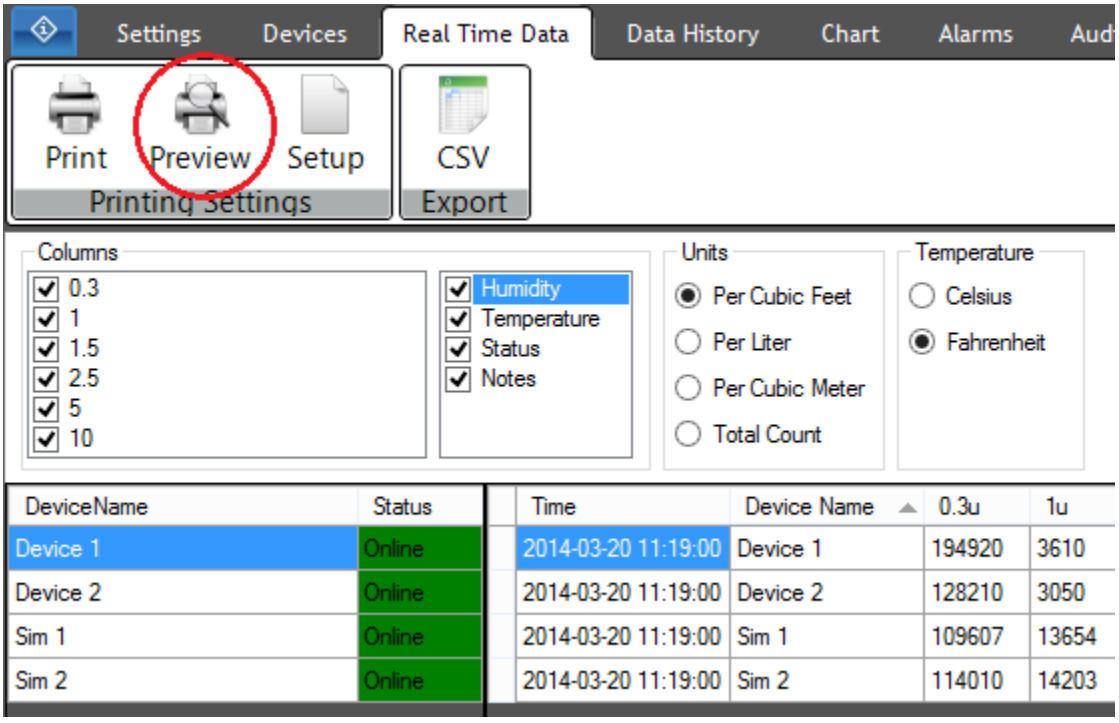


To setup the print preview and print, press the setup button.

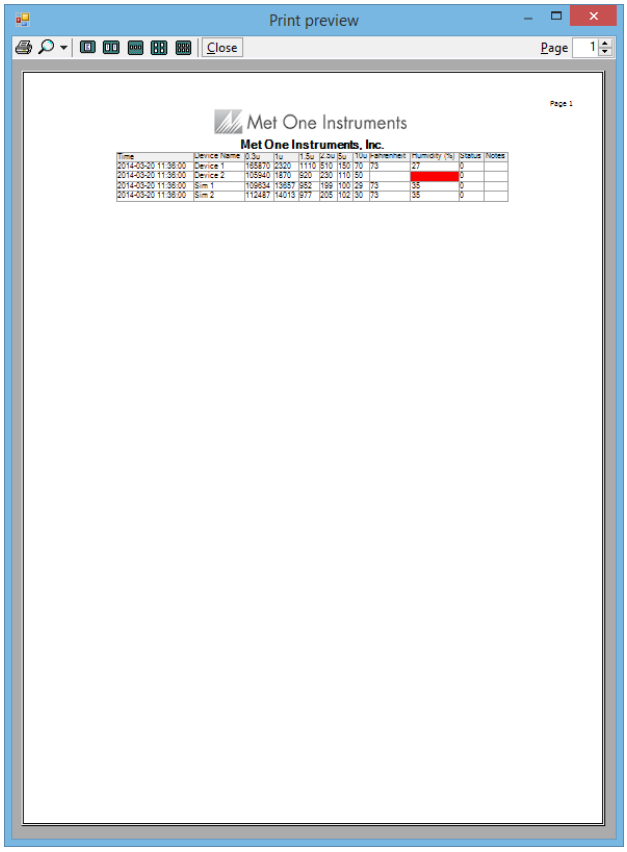


Page Setup allows the user to set the paper size, the paper source, the page orientation, and the page margins. Press “Ok” to save your changes.

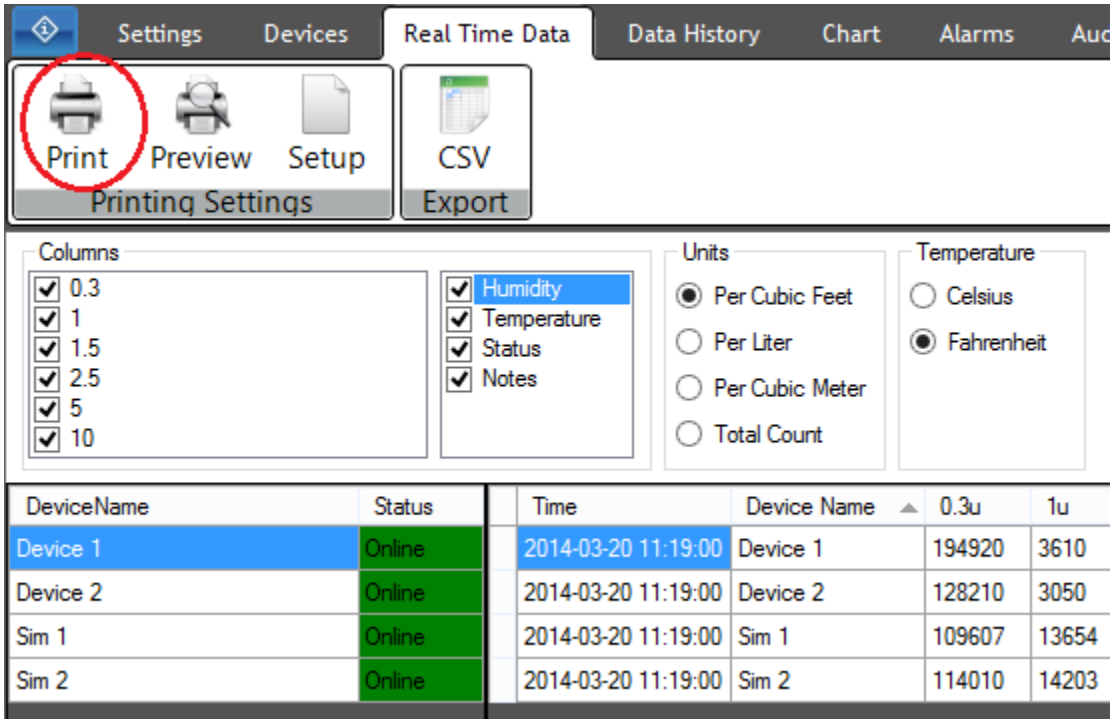
6.6.2 Preview



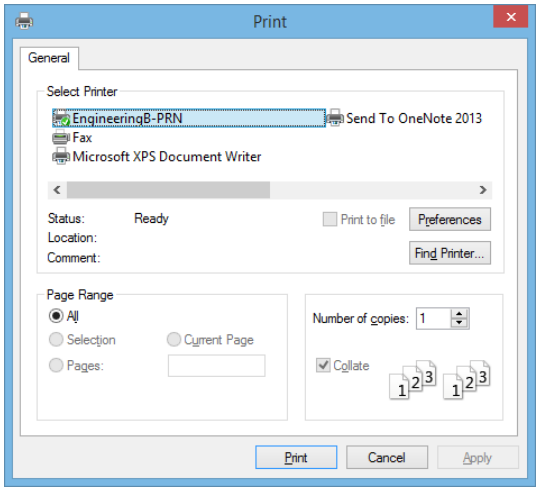
To preview what your print will look like, press the “Preview’ button. An example of the print preview dialog can be seen below.



6.6.3 Print

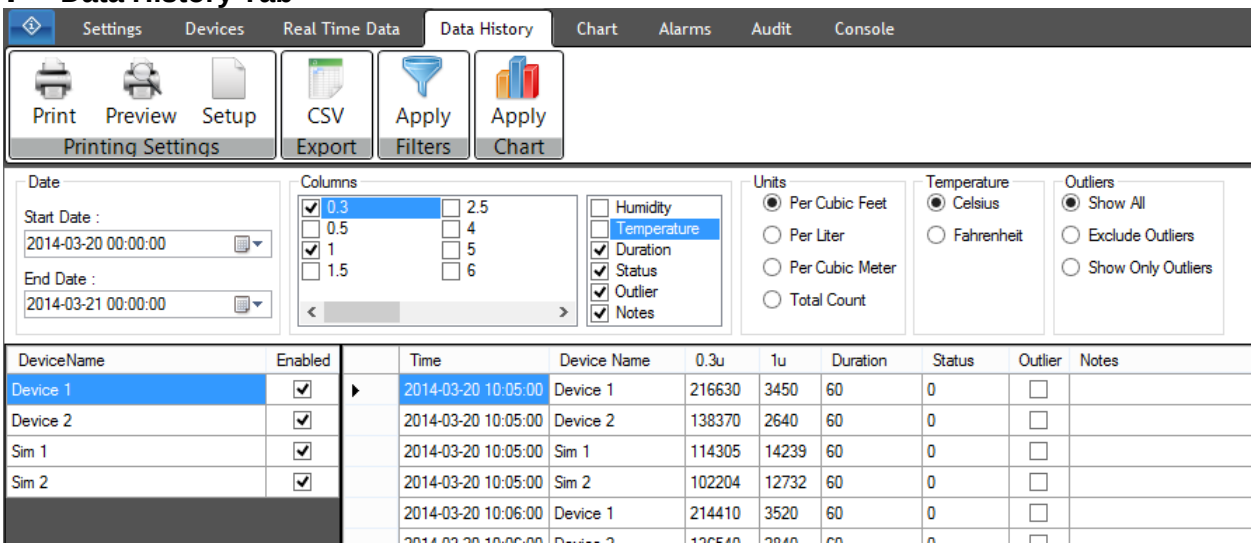


To print the data in the real time display, press the “Print” button found in the Printing Settings panel.



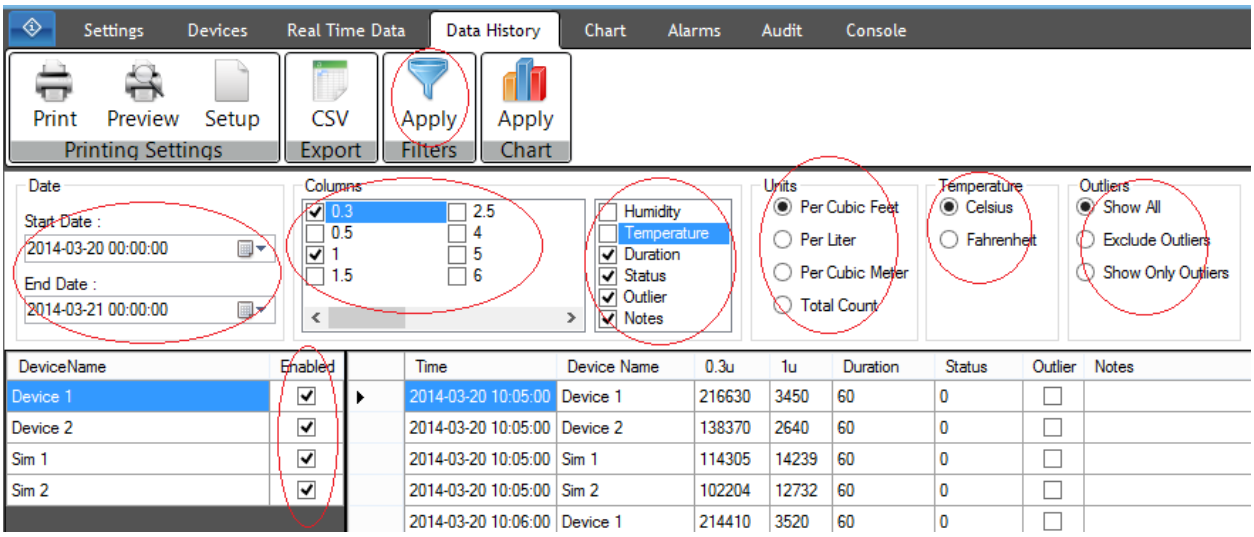
After the “Print” button is pressed, the print dialog will be displayed. The print dialog allows the user to configure the print settings and actually print the data from the real time display.

7 Data History Tab



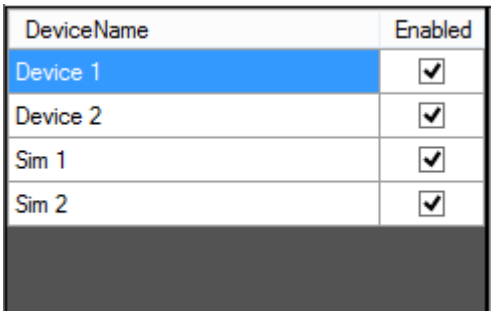
To see past data collected, navigate to the Data History tab. The data history tab will let you select data from a date range and filter the data for custom reports and charting. Also, users can make notes or mark outliers for specific data.

7.1 Filters



Initially the data history display will be blank. To display the data history, you must first select a date range and any filters that you would like. Pressing the “Apply” button in the Filters panel will apply selected filters and data will display. Changing any filters requires the user to press the “Apply” button to see the updated data results. Current filters include filtering by date, particle size, humidity, temperature, duration, status, outlier, notes, particle units, temperature units, and outliers.

7.2 Device List



The device list will display the current list of devices configured in the database. Users may filter devices from the data history display by enabling or disabling a device (Hide/Show). To apply the filters the user must press the “Apply” button in the filters panel located at the top of the screen.

7.3 Data History Display

Time	Device Name	0.3u	1u	Celsius	Duration	Status	Outlier	Notes
2014-03-20 10:05:00	Device 1	216630	3450	22	60	0	☐	
2014-03-20 10:05:00	Device 2	138370	2640	-18	60	0	☐	
2014-03-20 10:05:00	Sim 1	114305	14239	23	60	0	☐	
2014-03-20 10:05:00	Sim 2	102204	12732	23	60	0	☐	
2014-03-20 10:06:00	Device 1	214410	3520	22	60	0	☐	
2014-03-20 10:06:00	Device 2	136540	2840	-18	60	0	☐	
2014-03-20 10:06:00	Sim 1	107418	13381	23	60	0	☐	
2014-03-20 10:06:00	Sim 2	112685	14038	23	60	0	☐	
2014-03-20 10:07:00	Device 1	207730	3630	22	60	0	☐	
2014-03-20 10:07:00	Device 2	135130	2760	-18	60	0	☐	
2014-03-20 10:07:00	Sim 1	111372	13874	23	60	0	☐	
2014-03-20 10:07:00	Sim 2	113181	14099	23	60	0	☐	
2014-03-20 10:08:00	Device 1	206690	3480	22	60	0	☐	
2014-03-20 10:08:00	Device 2	136000	2690	-18	60	0	☐	
2014-03-20 10:08:00	Sim 1	113604	14152	23	60	0	☐	
2014-03-20 10:08:00	Sim 2	102728	12797	23	60	0	☐	
2014-03-20 10:09:00	Device 1	207030	3750	22	60	0	☐	
2014-03-20 10:09:00	Device 2	133850	2940	-18	60	0	☐	
2014-03-20 10:09:00	Sim 1	100605	12533	23	60	0	☐	
2014-03-20 10:09:00	Sim 2	105806	13181	23	60	0	☐	

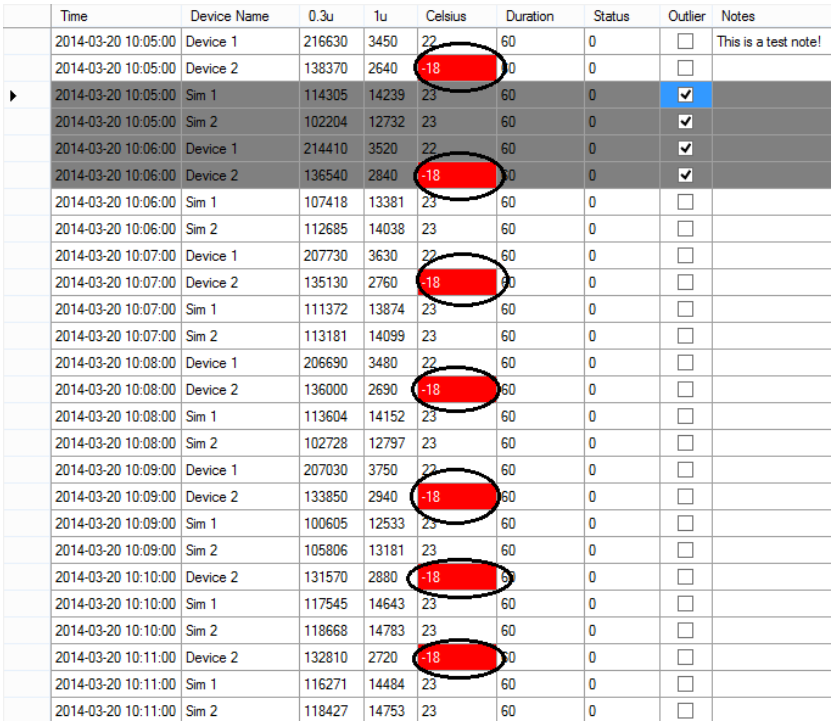
The data history display will show the filtered data from the user selected date range. As you can see in the image above, the time stamps show data from each minute from each device for the date range of 2014-03-20.

Time	Device Name	0.3u	1u	Celsius	Duration	Status	Outlier	Notes
2014-03-20 10:05:00	Device 1	216630	3450	22	60	0	☐	This is a test note!
2014-03-20 10:05:00	Device 2	138370	2640	-18	60	0	☐	
2014-03-20 10:05:00	Sim 1	114305	14239	23	60	0	☐	
2014-03-20 10:05:00	Sim 2	102204	12732	23	60	0	☐	
2014-03-20 10:06:00	Device 1	214410	3520	22	60	0	☐	
2014-03-20 10:06:00	Device 2	136540	2840	-18	60	0	☐	
2014-03-20 10:06:00	Sim 1	107418	13381	23	60	0	☐	

Users may set notes for specific data samples. To set a note, simply click the notes field and begin typing your note. Any characters typed are automatically saved to the database.

Time	Device Name	0.3u	1u	Celsius	Duration	Status	Outlier	Notes
2014-03-20 10:05:00	Device 1	216630	3450	22	60	0	☐	This is a test note!
2014-03-20 10:05:00	Device 2	138370	2640	-18	60	0	☐	
2014-03-20 10:05:00	Sim 1	114305	14239	23	60	0	☑	
2014-03-20 10:05:00	Sim 2	102204	12732	23	60	0	☑	
2014-03-20 10:06:00	Device 1	214410	3520	22	60	0	☑	
2014-03-20 10:06:00	Device 2	136540	2840	-18	60	0	☑	
2014-03-20 10:06:00	Sim 1	107418	13381	23	60	0	☐	

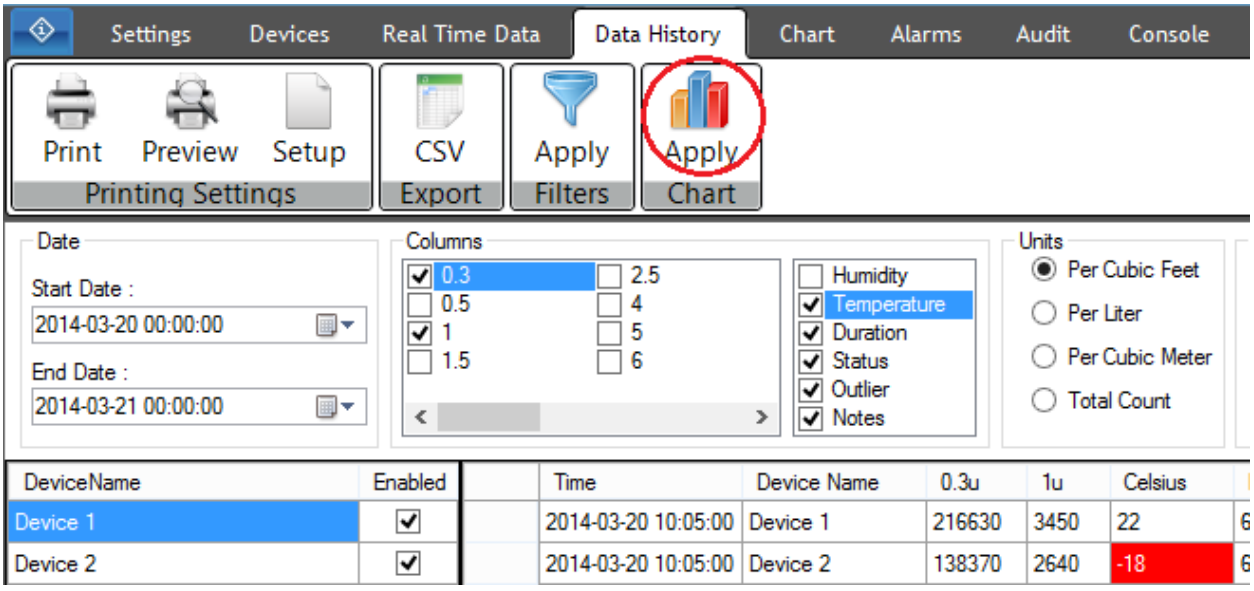
Particle View RT allows users to set specific data samples as outliers. Some records that are stored may be invalid for a variety of reasons. Users may wish to mark these data points as outliers to be ignored when evaluating data. When graphing the data history, outliers will be ignored and will not be graphed. Simply check the outlier box, as shown above, to mark/unmark that data sample as an outlier.



Time	Device Name	0.3u	1u	Celsius	Duration	Status	Outlier	Notes
2014-03-20 10:05:00	Device 1	216630	3450	22	60	0	☐	This is a test note!
2014-03-20 10:05:00	Device 2	138370	2640	-18	60	0	☐	
2014-03-20 10:05:00	Sim 1	114305	14239	23	60	0	☑	
2014-03-20 10:05:00	Sim 2	102204	12732	23	60	0	☑	
2014-03-20 10:06:00	Device 1	214410	3520	22	60	0	☑	
2014-03-20 10:06:00	Device 2	136540	2840	-18	60	0	☑	
2014-03-20 10:06:00	Sim 1	107418	13381	23	60	0	☐	
2014-03-20 10:06:00	Sim 2	112685	14038	23	60	0	☐	
2014-03-20 10:07:00	Device 1	207730	3630	22	60	0	☐	
2014-03-20 10:07:00	Device 2	135130	2760	-18	60	0	☐	
2014-03-20 10:07:00	Sim 1	111372	13874	23	60	0	☐	
2014-03-20 10:07:00	Sim 2	113181	14099	23	60	0	☐	
2014-03-20 10:08:00	Device 1	206690	3480	22	60	0	☐	
2014-03-20 10:08:00	Device 2	136000	2690	-18	60	0	☐	
2014-03-20 10:08:00	Sim 1	113604	14152	23	60	0	☐	
2014-03-20 10:08:00	Sim 2	102728	12797	23	60	0	☐	
2014-03-20 10:09:00	Device 1	207030	3750	22	60	0	☐	
2014-03-20 10:09:00	Device 2	133850	2940	-18	60	0	☐	
2014-03-20 10:09:00	Sim 1	100605	12533	23	60	0	☐	
2014-03-20 10:09:00	Sim 2	105806	13181	23	60	0	☐	
2014-03-20 10:10:00	Device 2	131570	2880	-18	60	0	☐	
2014-03-20 10:10:00	Sim 1	117545	14643	23	60	0	☐	
2014-03-20 10:10:00	Sim 2	118668	14783	23	60	0	☐	
2014-03-20 10:11:00	Device 2	132810	2720	-18	60	0	☐	
2014-03-20 10:11:00	Sim 1	116271	14484	23	60	0	☐	
2014-03-20 10:11:00	Sim 2	118427	14753	23	60	0	☐	

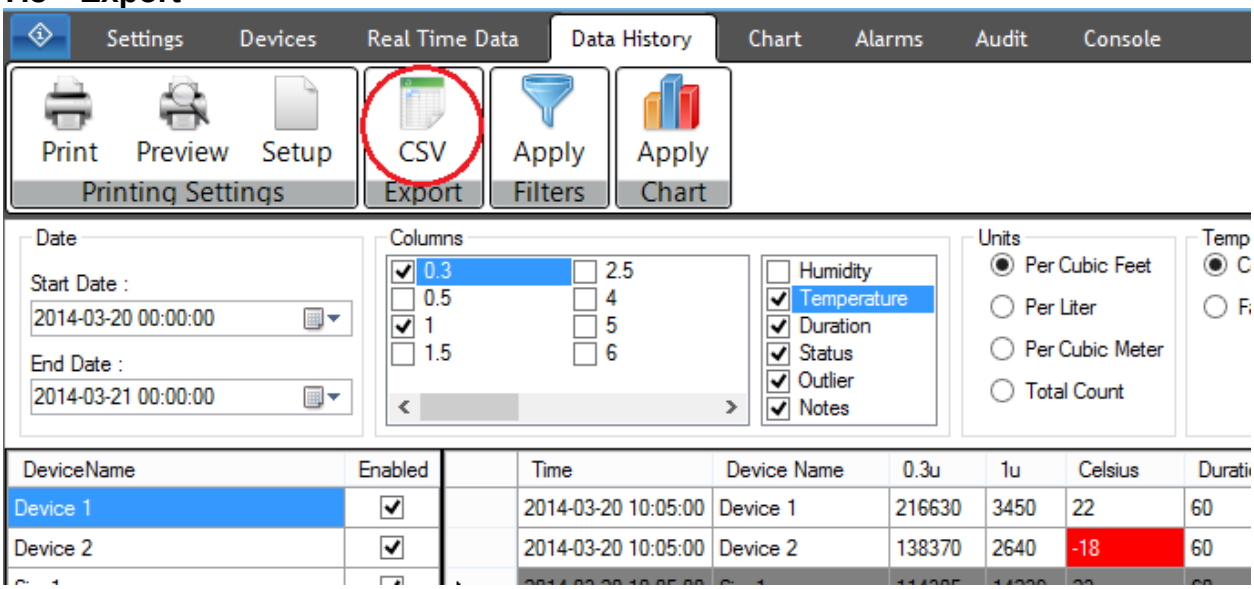
The data history display also will display configured alarms. In the example above, there is an alarm set when the temperature is below 0. Alarms can be configured in the Alarms tab. More information about setting alarms can be found in the Alarms Tab section later in this document.

7.4 Chart

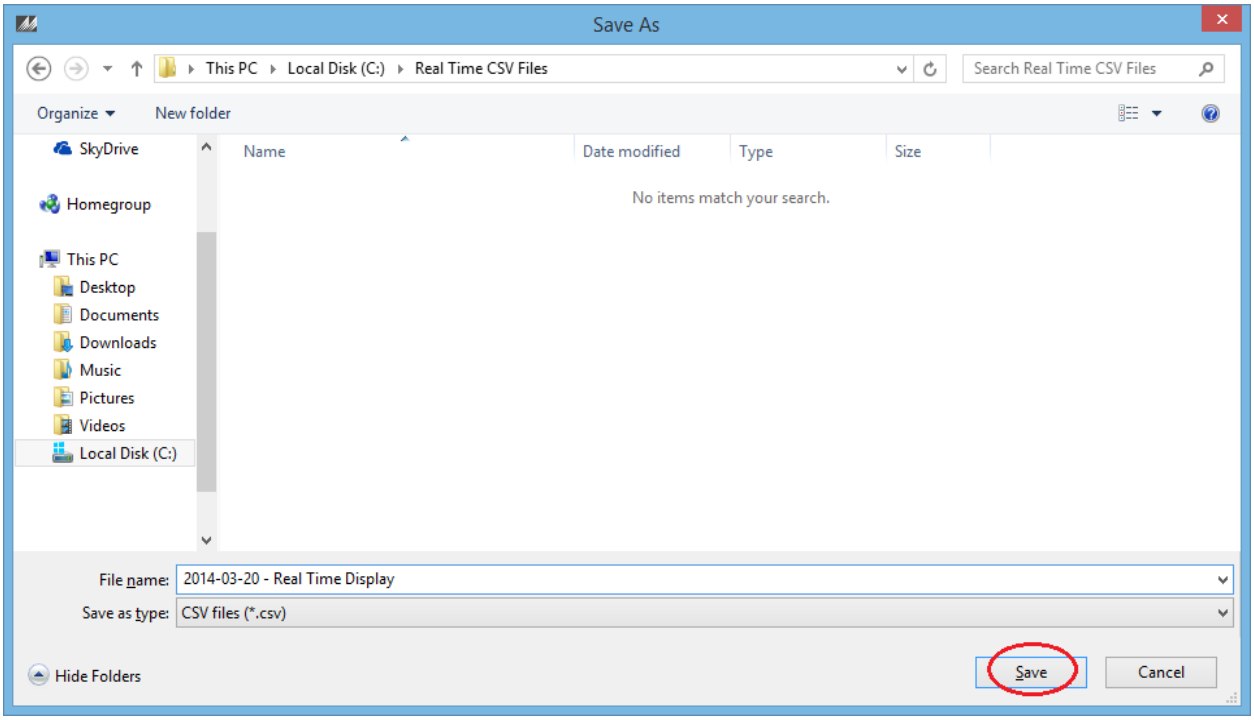


To chart the current data history displayed, press the “Apply” button in the chart panel located at the top of the screen. This will take you to the Chart tab. More information about charting/graphing data can be found in the Chart Tab section later in this document.

7.5 Export



To export the data history display data as a CSV file, press the “CSV” button in the Export panel.

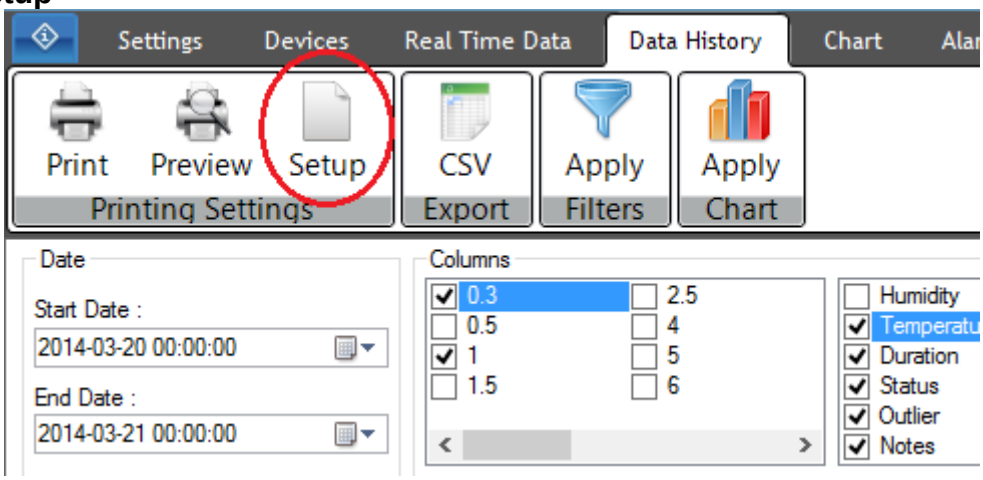


Choose a name and press the “Save” button to export the data as a CSV formatted file to the location chosen.

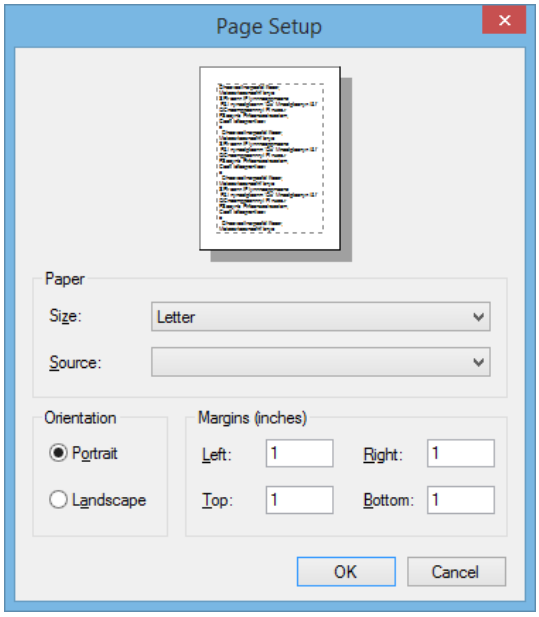
7.6 Printing Settings

To setup and print the data displayed in the data history display, use the buttons found in the Printing Settings panel.

7.6.1 Setup

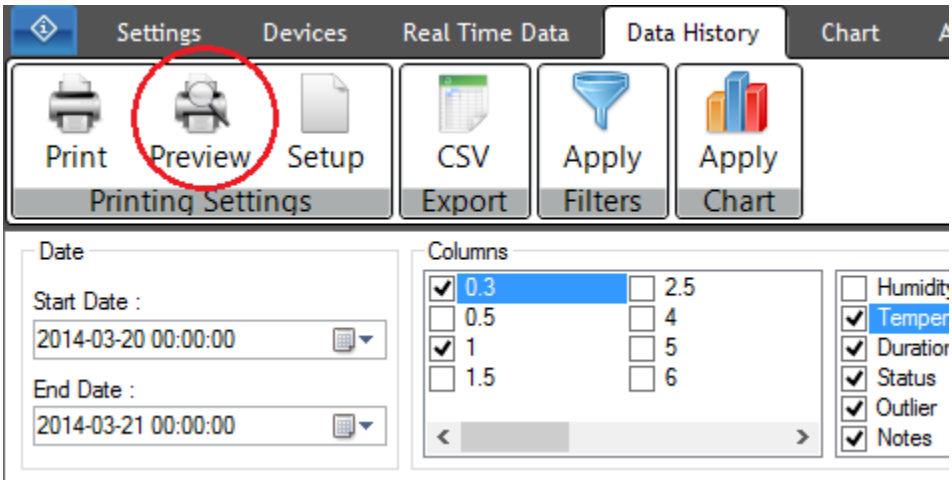


To setup the print preview and print, press the setup button.

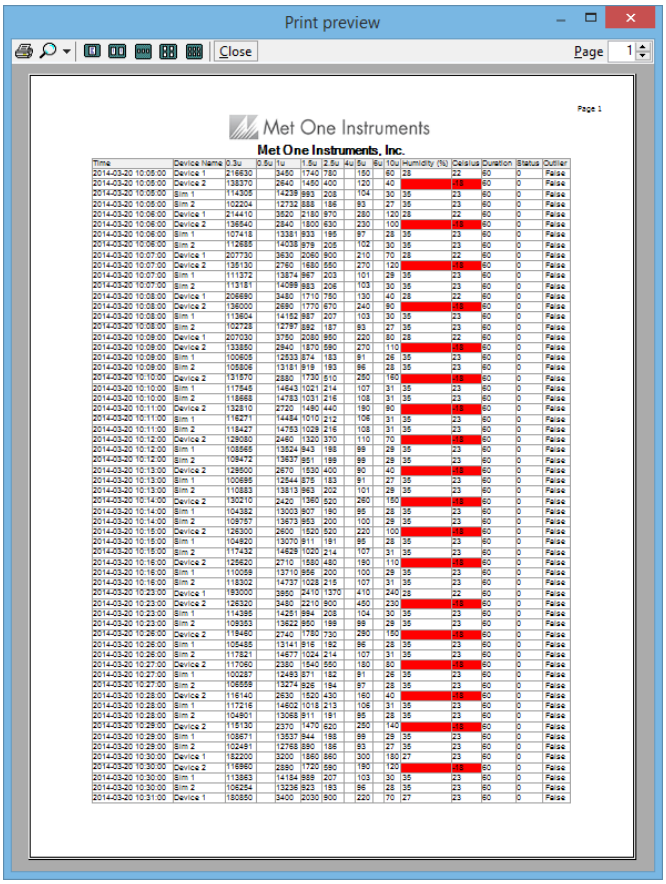


Page Setup allows the user to set the paper size, the paper source, the page orientation, and the page margins. Press “Ok” to save your changes.

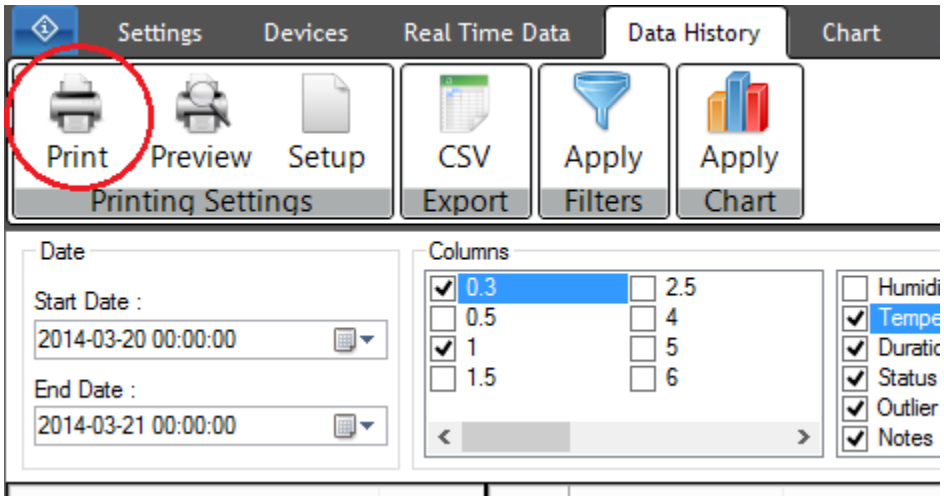
7.6.2 Preview



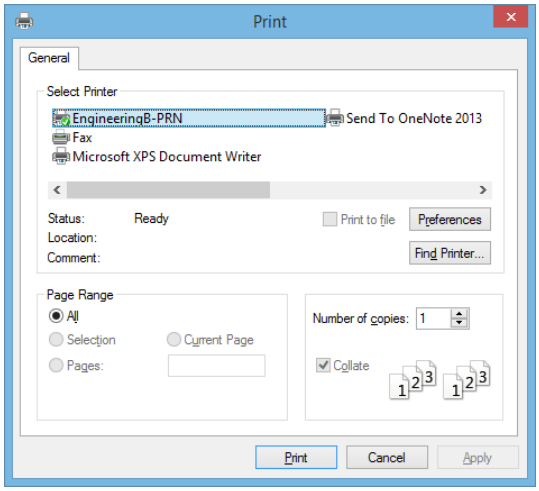
To preview what your report will look like, press the “Preview’ button. An example of the print preview dialog can be seen below.



7.6.3 Print

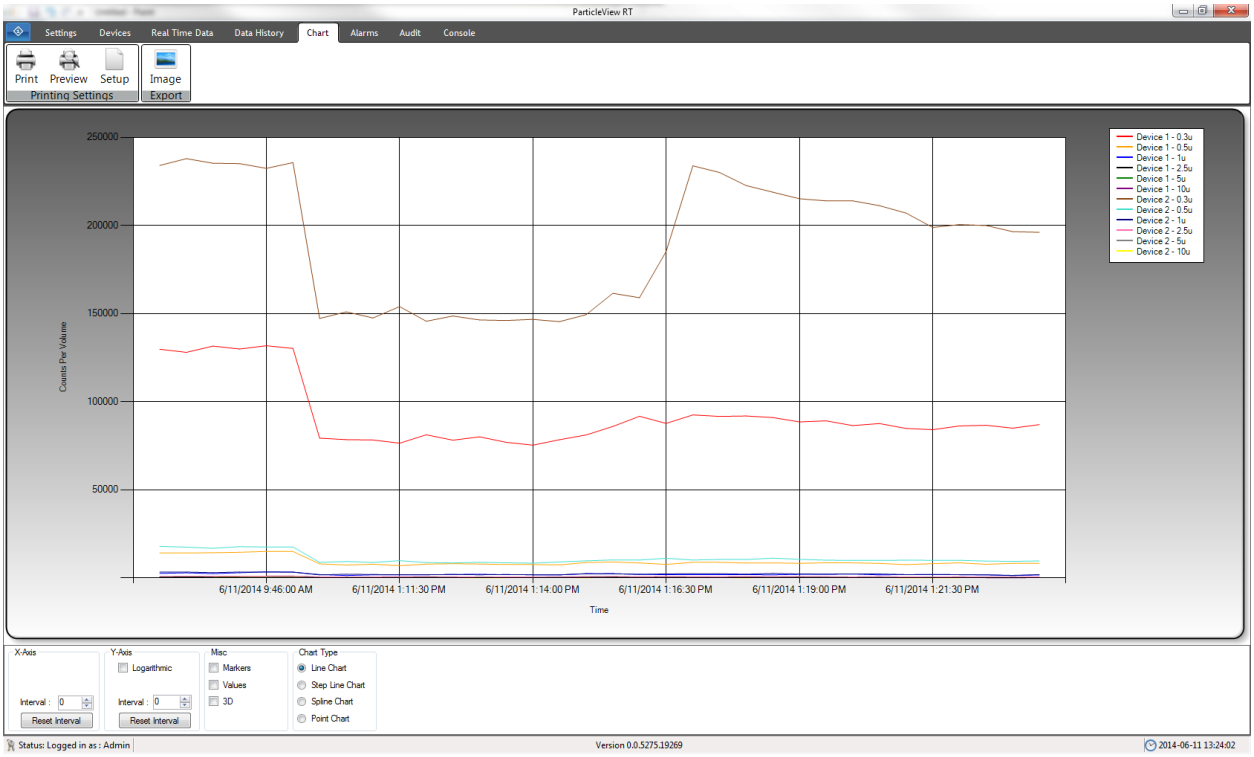


To print the data in the real time display, press the “Print” button found in the Printing Settings panel.



After the “Print” button is pressed, the print dialog will be displayed. The print dialog allows the user to configure the print settings and actually print the data from the data history display.

8 Chart Tab



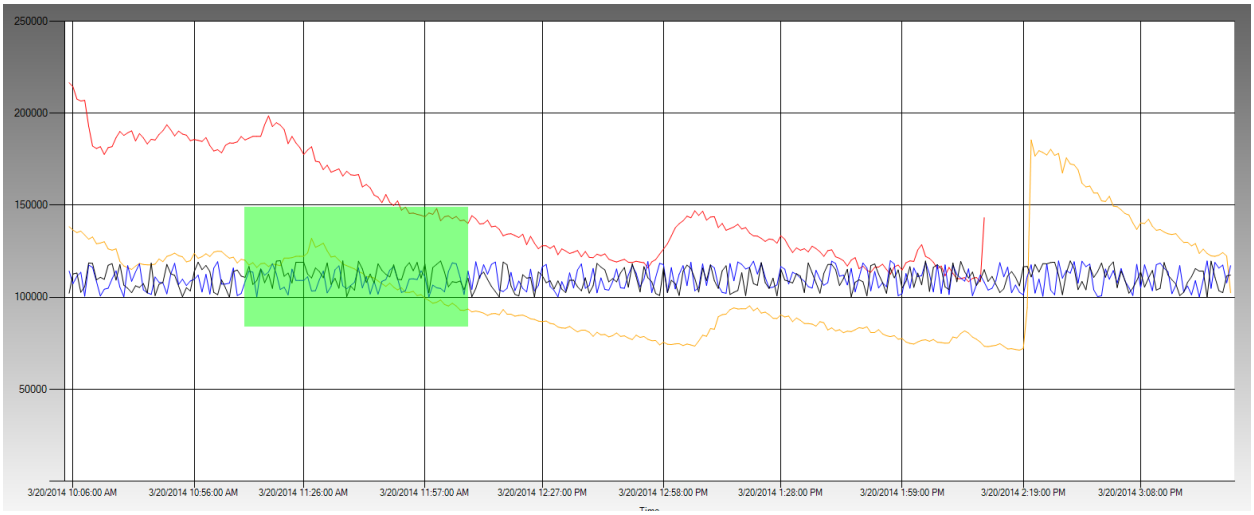
To graph your data history samples, navigate to the Chart tab. Particle View RT provides charting capabilities to represent your data sets visually. Selecting the Chart tab will display the data set that has been established and displayed on the Data History tab in a multi-line (if multiple parameters are chosen) chart.

8.1 Filters

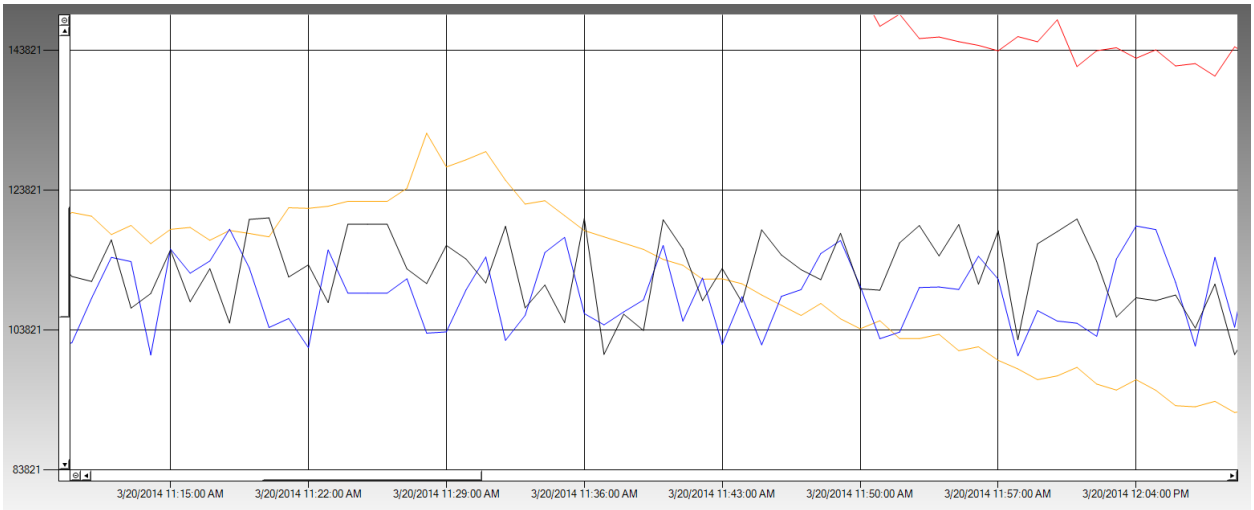
Particle View RT allows the user to customize their graphs by filtering the data to the user's desire. The data graphed is taken from the current data displayed on the data history display. This means the data graphed is displayed by the filters set on the data history display. If you reorganize the columns by date descending then it will graph the data by time descending and vice versa for organizing the time by ascending order.

8.1.1 Controls

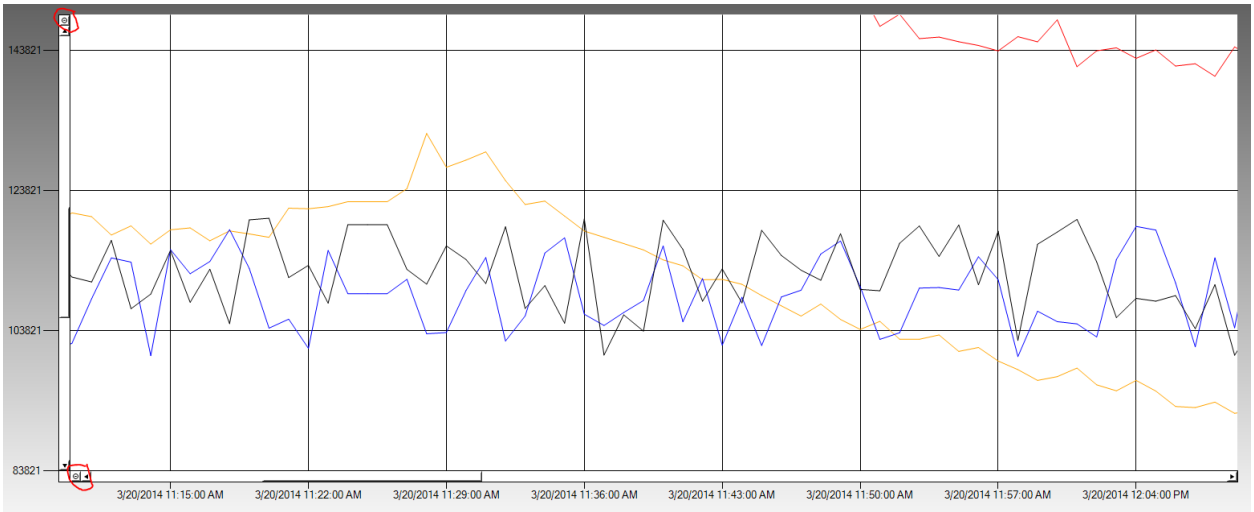
8.1.1.1 Zoom In



To zoom in on the chart, hold the left mouse button down and drag it over the area you would like to zoom. Below is the zoomed in area from the chart above.



8.1.1.2 Zoom Out



Users may click the round circle boxes on the x and y axis to zoom out or right click anywhere on the chart to zoom out.

8.1.1.3 Panning

User the scroll bars on the x and y axis to pan the current chart view.

8.1.2 X-Axis

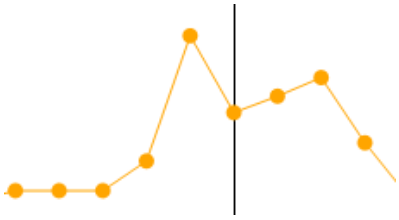
Currently, users can set their own X-Axis intervals by setting an interval value in the numeric up down box in the X-Axis panel. Also, for convenience, there is a “Reset Interval” button to reset the X interval to auto. Users may also organize the X-Axis data by time or by the number of samples for this data set.

8.1.3 Y-Axis

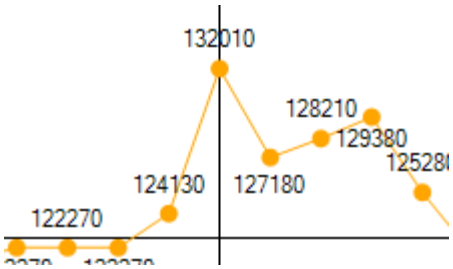
Users may set their own Y-Axis intervals by setting an interval value in the numeric up down box in the Y-Axis panel. Also, for convenience, there is a “Reset Interval” button to reset the Y interval to auto. Users may also organize the Y-Axis by a logarithmic scale or default values.

8.1.4 Miscellaneous

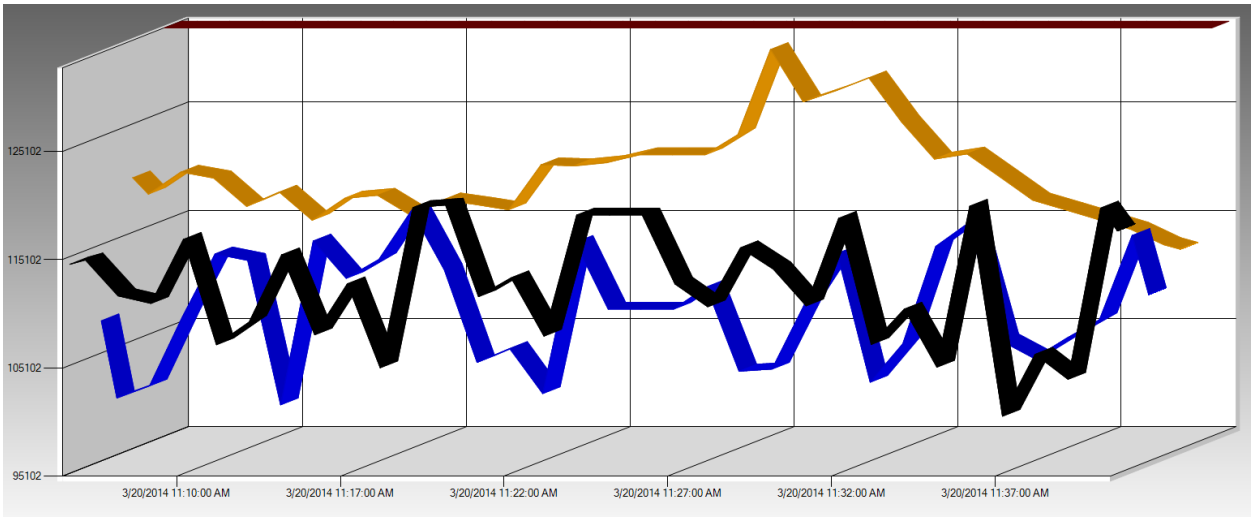
Currently there are 3 miscellaneous options that users can use for enhancing the read-ability of their charts.



Markers – Allows the user to turn marks on. Mouse over a point to display its x and y values.

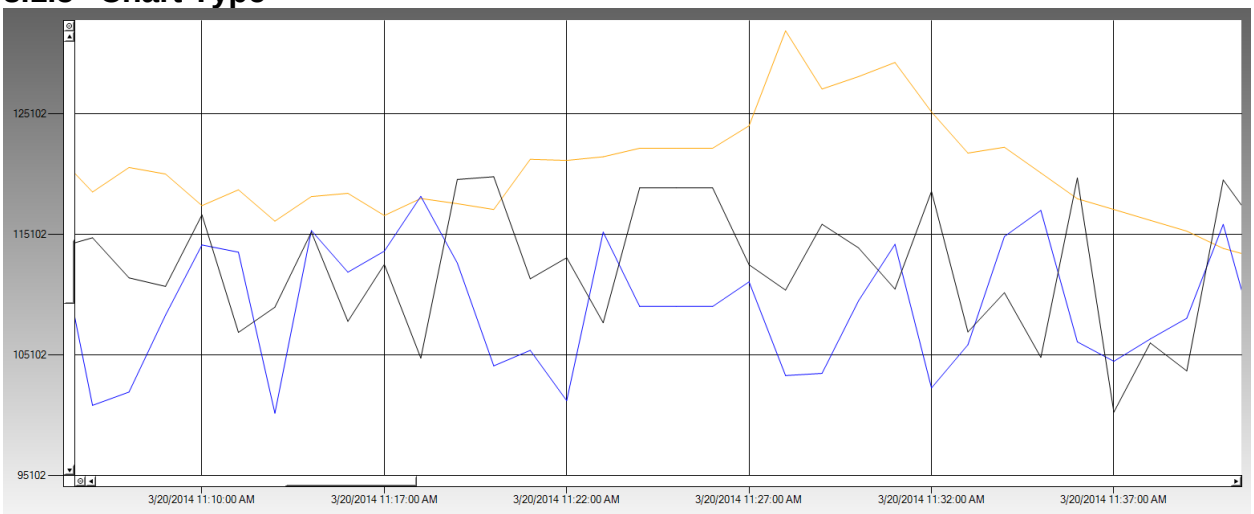


Values – Allows the user to display the y value by each point on the chart.

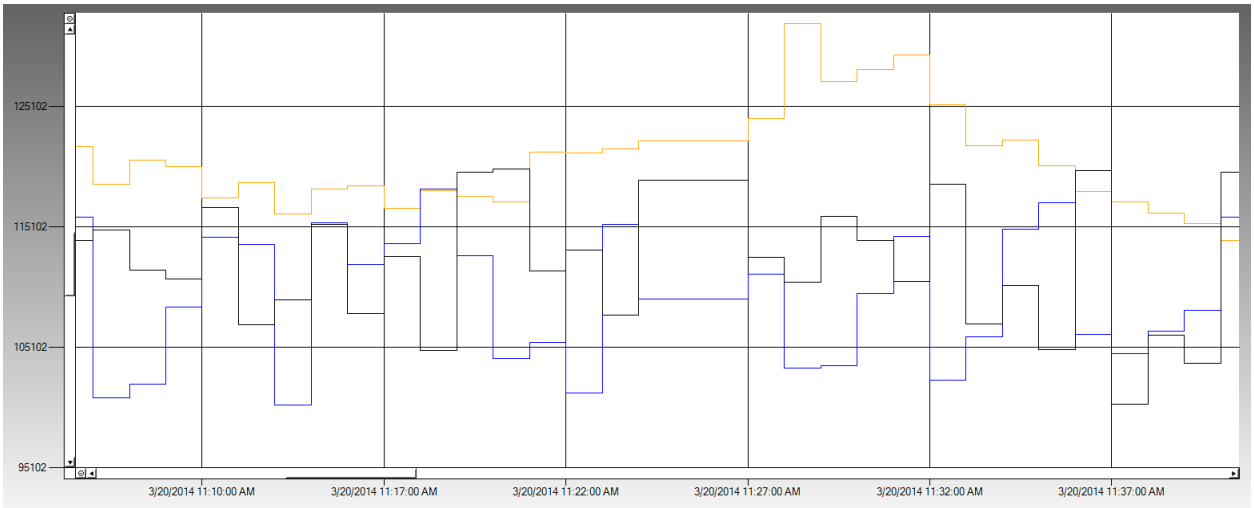


3D – Allows the user to turn the 2D chart into a 3D chart.

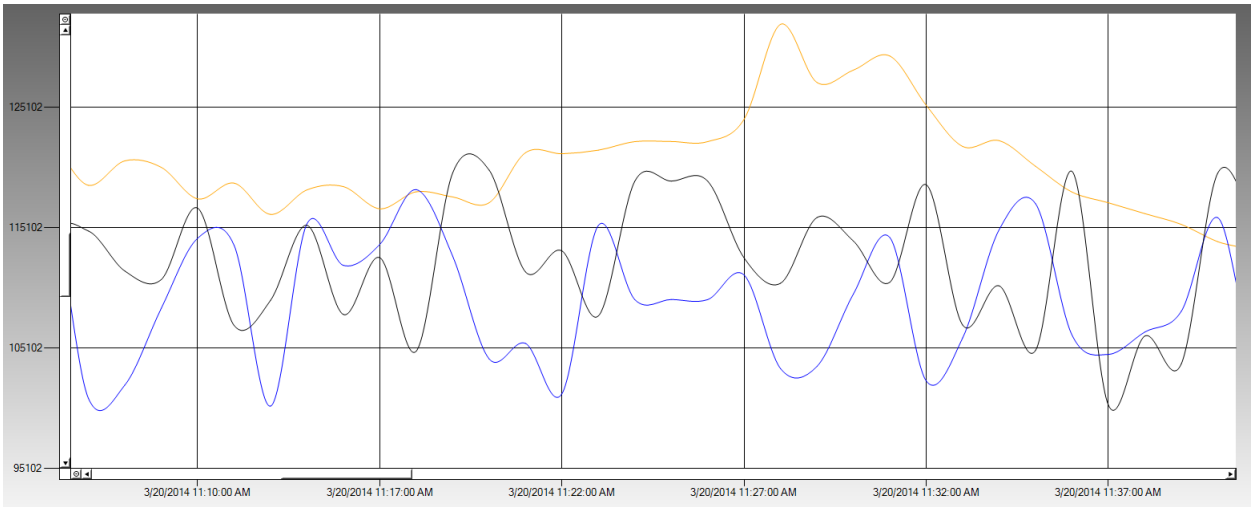
8.1.5 Chart Type



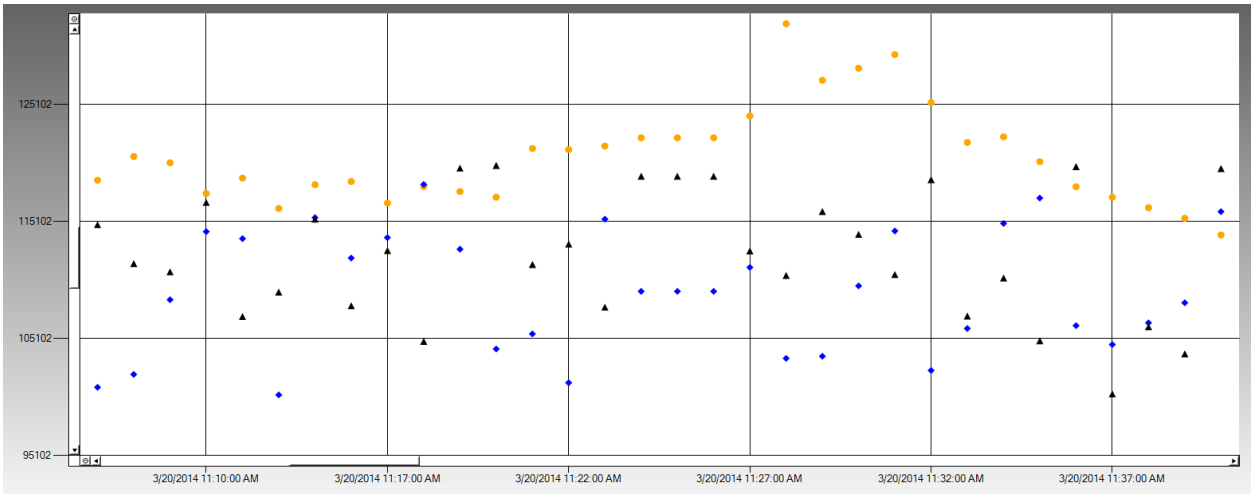
Line Chart – Displays the current data set on a line chart.



Step Line Chart – Displays the current data set on a step line chart.

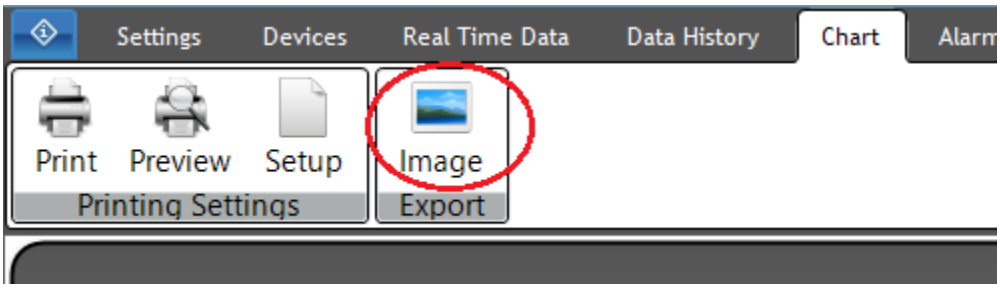


Spline Chart – Displays the current data set on a spline chart.

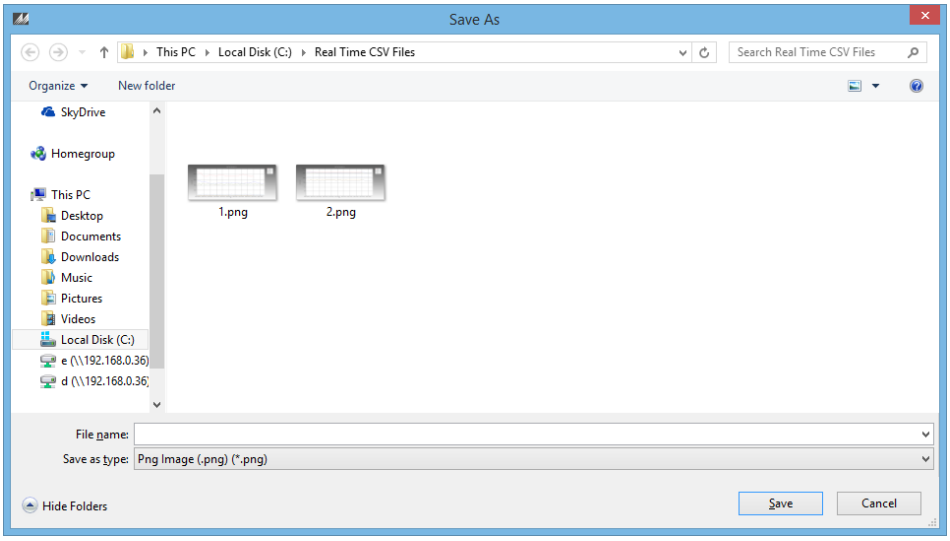


Point Chart – displays the current data set on a point chart.

8.2 Export



Users may export the current chart as an image. To save the chart as a .png file, press the "Image" button in the export panel located at the top of the screen.

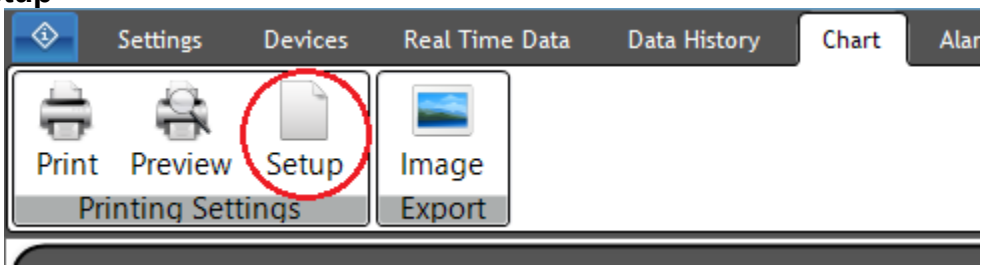


Chose a name and a folder and click the "Save" button to export your chart as a image.

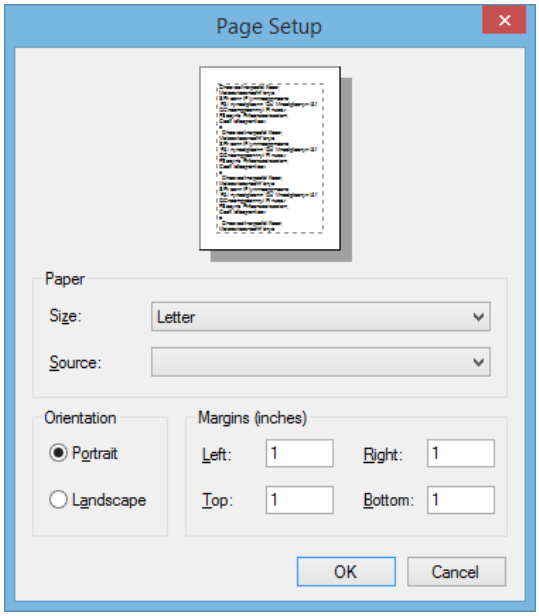
8.3 Printing Settings

To setup and print the chart displayed, use the buttons found in the Printing Settings panel.

8.3.1 Setup

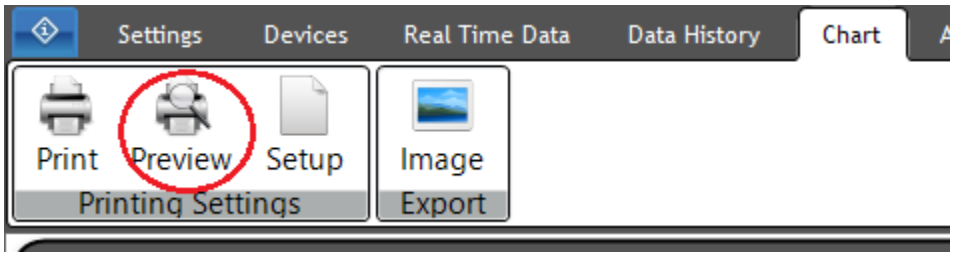


To setup the print preview and print, press the setup button.

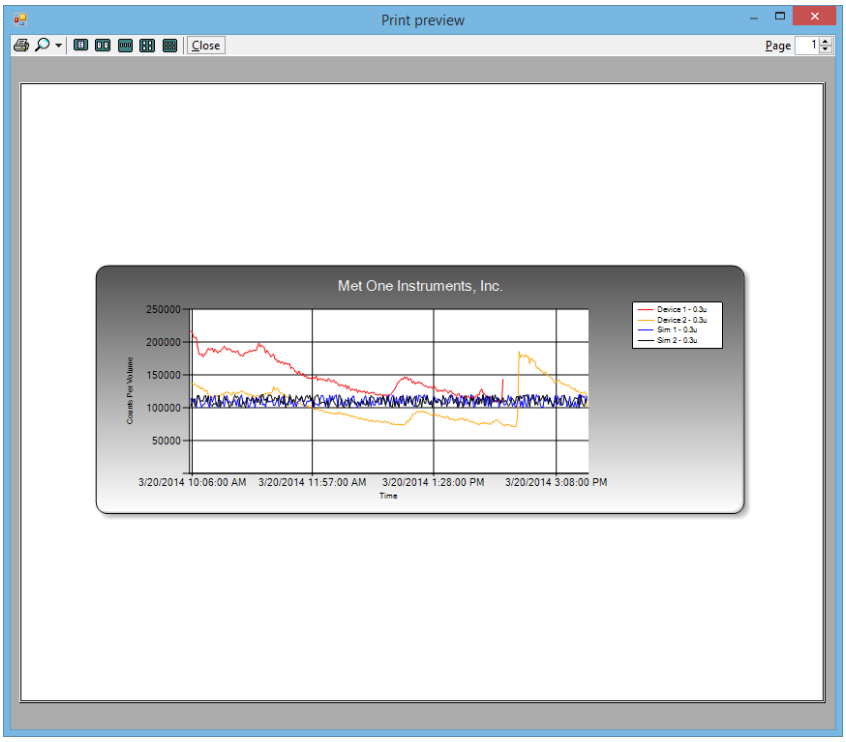


Page Setup allows the user to set the paper size, the paper source, the page orientation, and the page margins. Press “Ok” to save your changes.

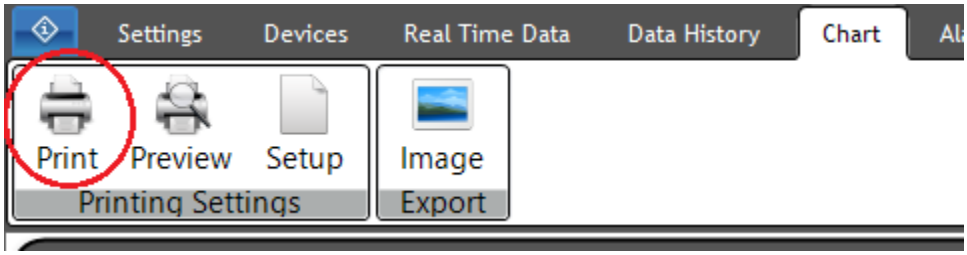
8.3.2 Preview



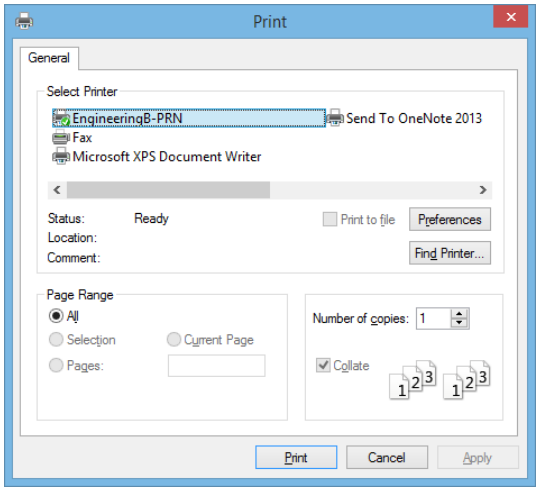
To preview what your print will look like, press the “Preview’ button. An example of the print preview dialog can be seen below.



8.3.3 Print



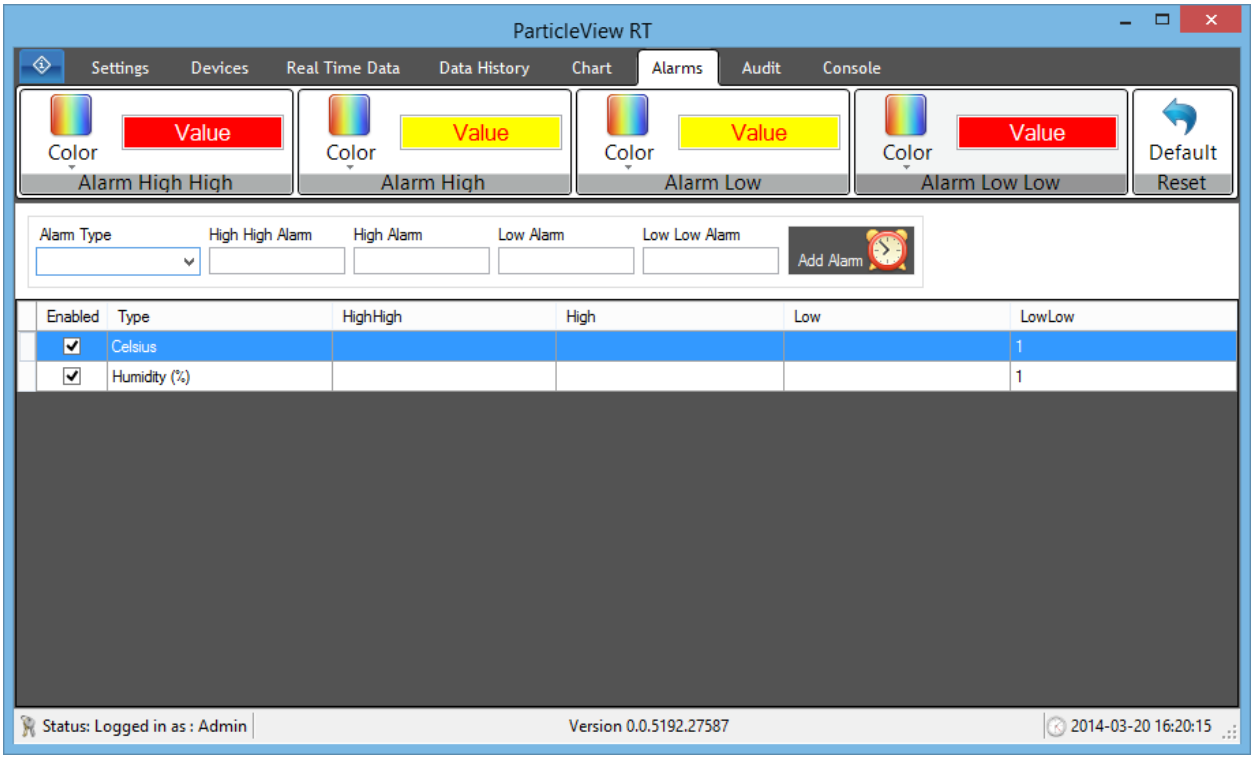
To print the chart, press the “Print” button found in the Printing Settings panel.



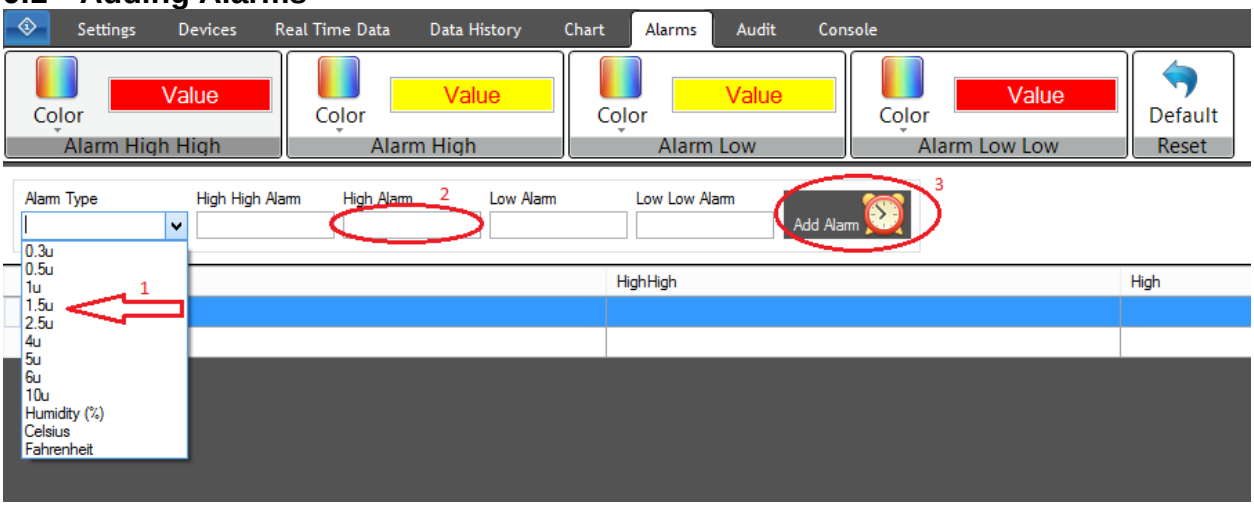
After the “Print” button is pressed, the print dialog will be displayed. The print dialog allows the user to configure the print settings and actually print the data from the data history display.

9 Alarms Tab

Particle View RT provides a versatile alarm indication interface. It has four alarm types that can be configured to each parameter. These are High High, High, Low, and Low Low alarms. You can configure as many alarms as you need for each parameter, change their indication colors, and even decide whether or not to have the alarms enabled. This allows you to set multiple alarm conditions for a single parameter based on differing criteria and only enable them as needed. Note that only the administrator and super user profiles may edit the alarm colors and indicator character.



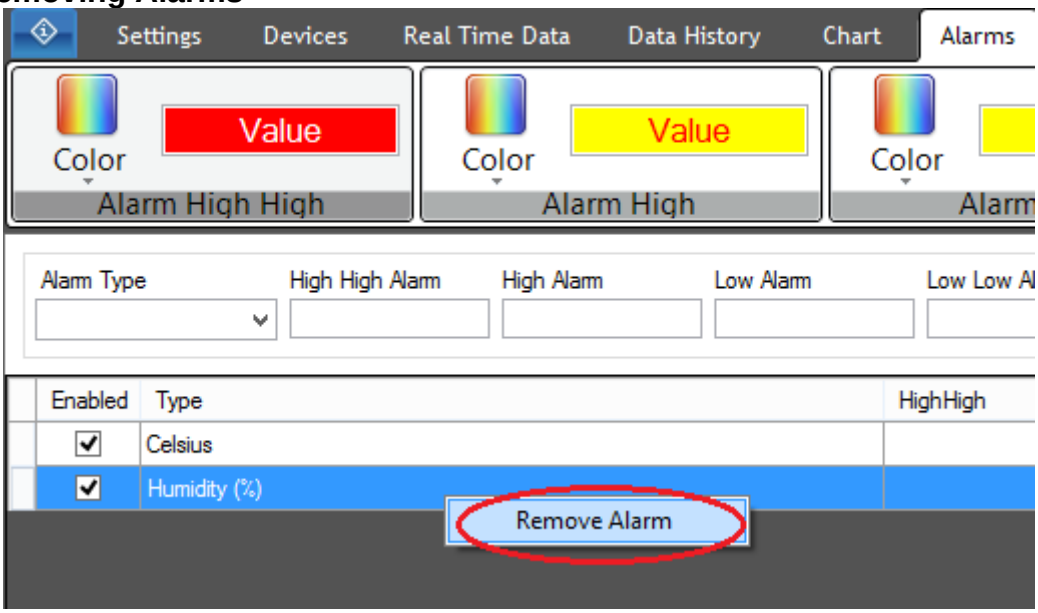
9.1 Adding Alarms



To add an alarm, first you must select an alarm type from the drop down list (1). Then you must enter at least one alarm value (High High, High, Low, or Low Low) (2). Finally, click the “Add

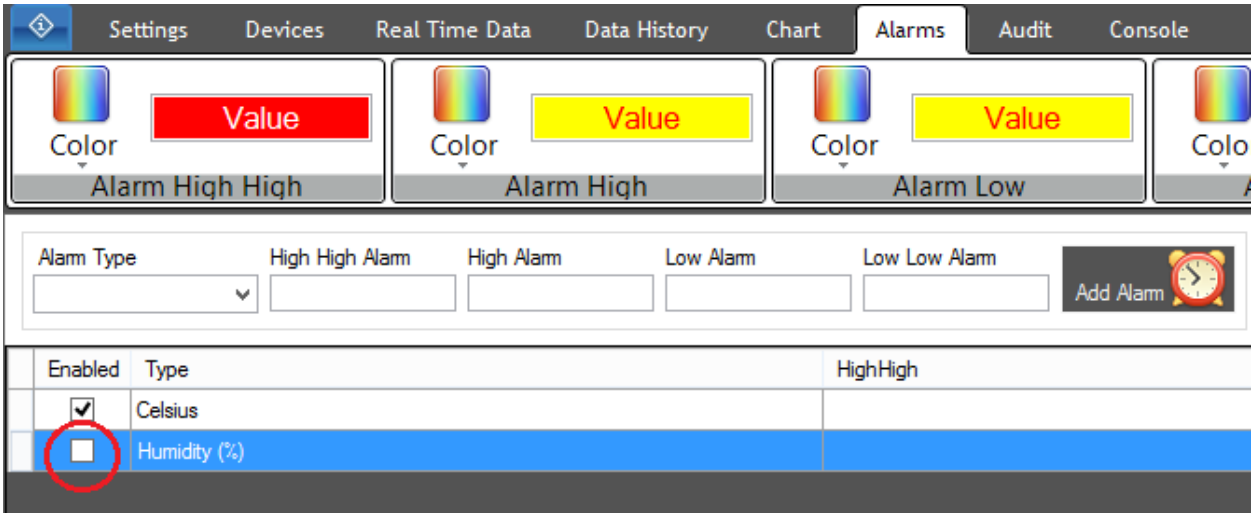
Alarm" button to add your configured alarm (3). If the alarm was configured correctly, it will show up in the alarm grid at the bottom of the screen.

9.2 Removing Alarms



To remove an alarm, right click on the configured alarm in the grid and press the "Remove Alarm" button. If successful, the alarm will no longer be listed in the alarm grid.

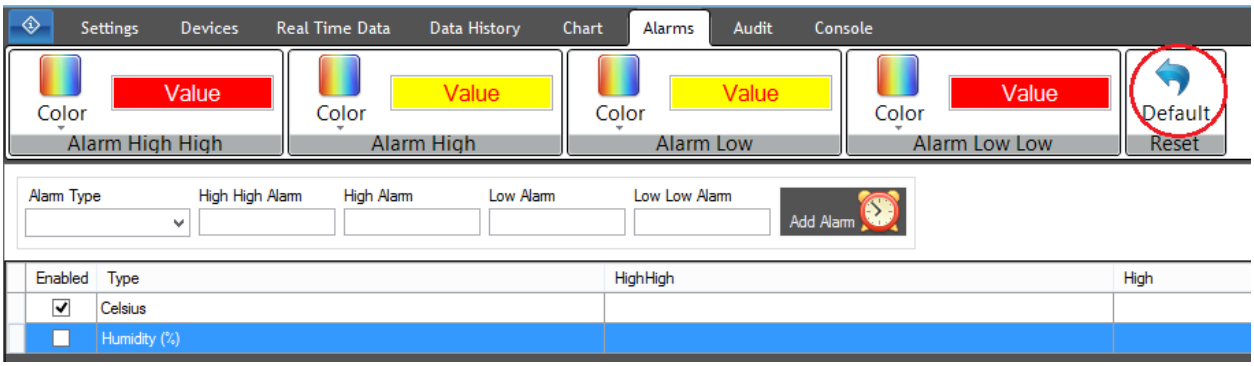
9.3 Enable/Disable Alarms



To enable or disable an alarm, simply check/uncheck the Enabled button next to the alarm in the alarm grid. Once it is checked or unchecked, it will automatically be saved and configured.

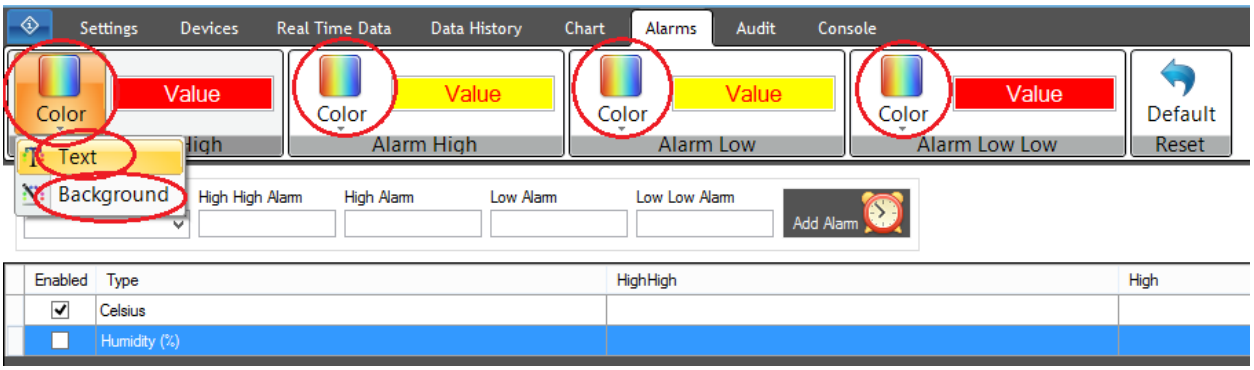
Note: If you are already sampling/running, the alarms will not show until the newest sample is displayed.

9.4 Reset

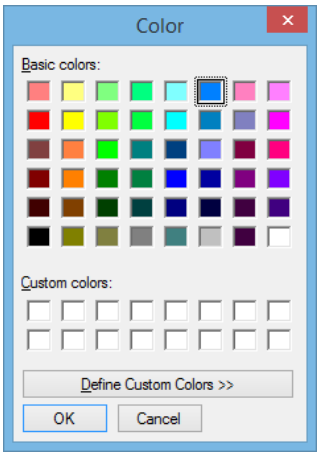


To restore the alarm colors to Particle View RT's default colors, press the "Default" button in the reset panel located at the top of the screen.

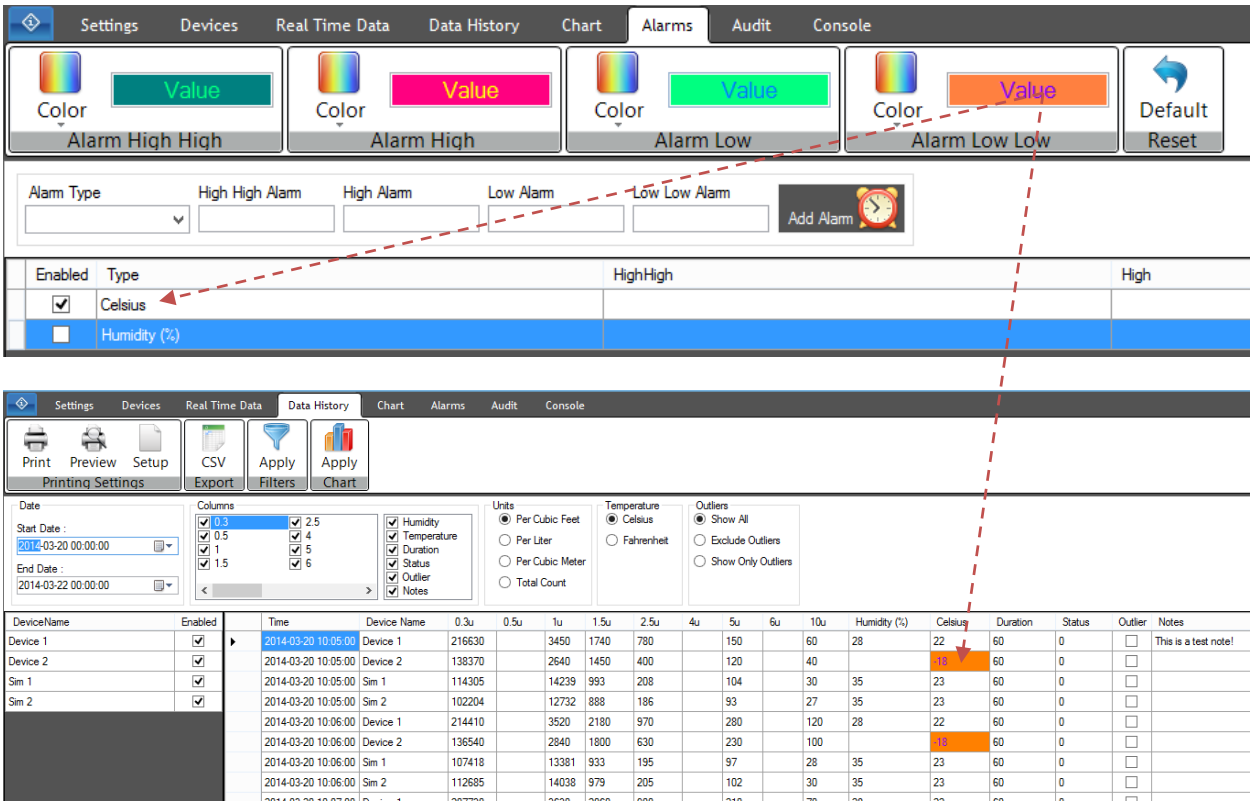
9.5 Alarm Colors



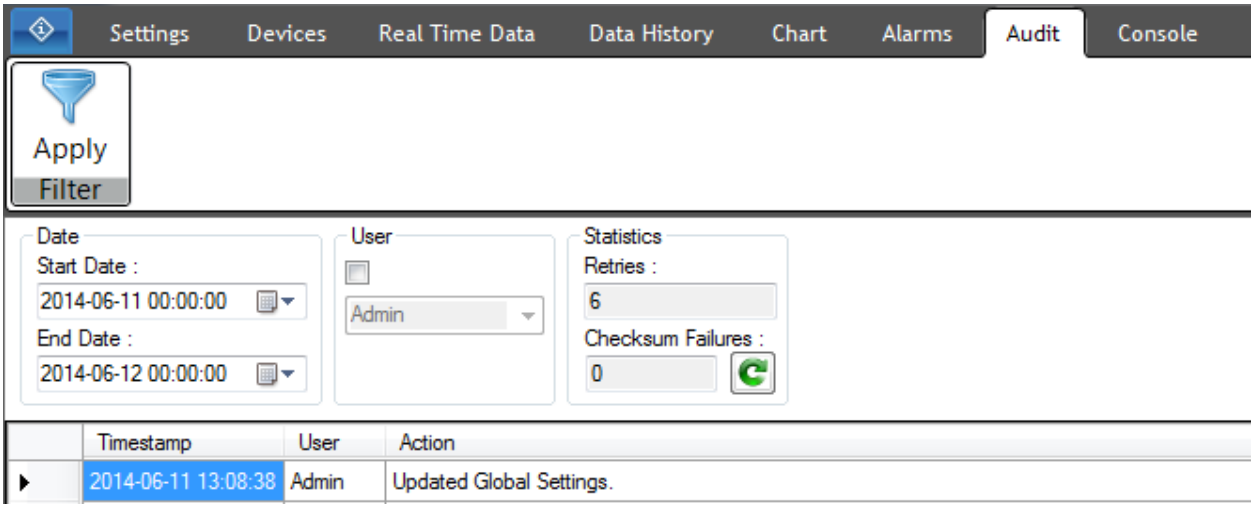
To customize the alarm colors for High High, High, Low, Low Low alarms, press the "Color" button for the appropriate panel and select either "Text" or "Background".



Selecting "Text" will prompt you to choose a color. Choosing a color will change that alarm's text color. Selecting "Background" will prompt you to choose a color. Choosing a color will change that alarm's background color. See the example below for custom colored alarms.



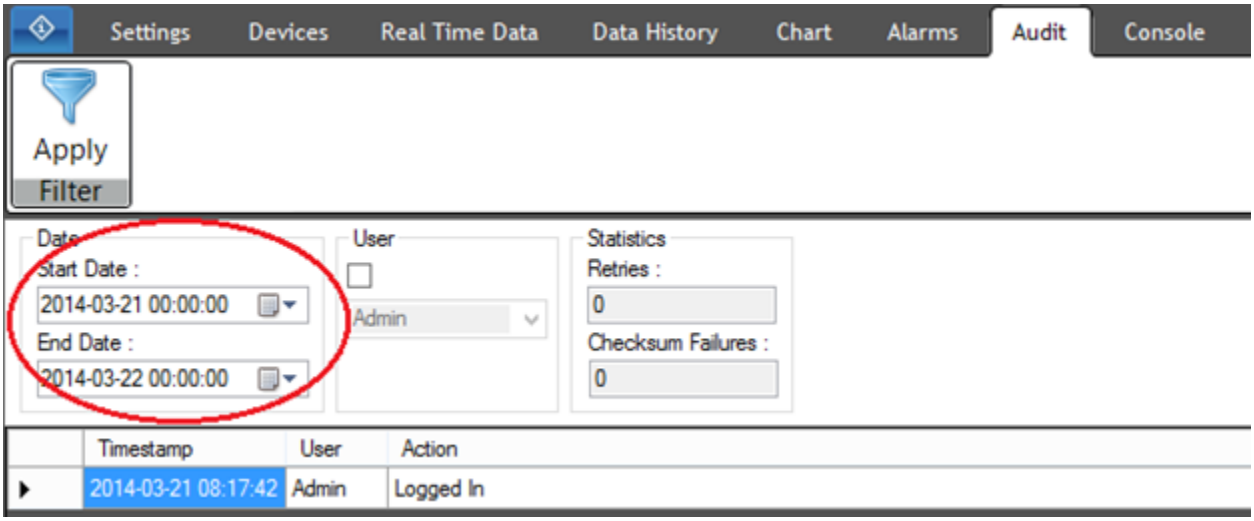
10 Audit Tab



Particle View RT keeps a security-relevant chronological record of any user action made in the program. This is a great was to provide documentary evidence of the sequence of activities that users have taken that affect the program and the devices. Currently, records contain the timestamp from when the action occurred, the user who performed the action, and the action performed. Only administrators and super users can view the audit tab. To see the audit trail, navigate to the “Audit” tab.

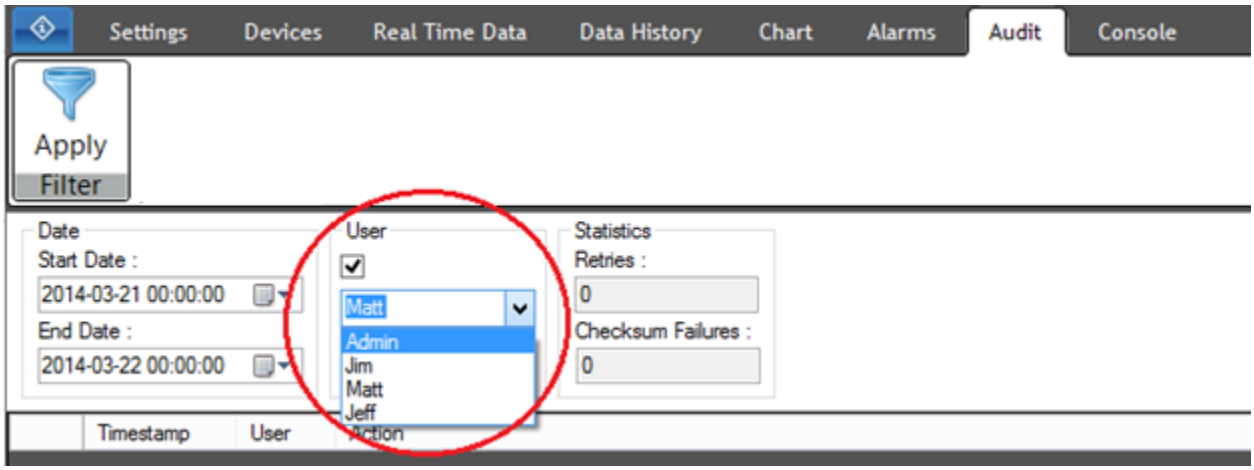
10.1 Filters

10.1.1 Date



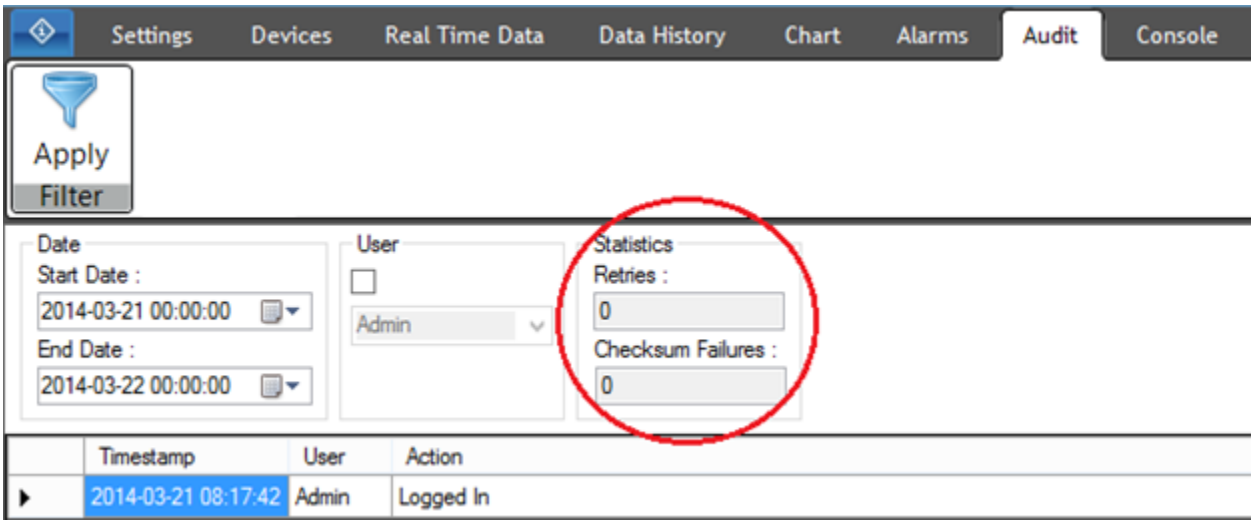
Audit trails are kept in chronological order by when the action occurred. Filtering by date is the best option when trying to figure out what happened during a certain time frame. To filter by date, set the “Start Date” and “End Date” in the date picker boxes. Once you have selected your date range, click the “Apply” button found in the filter panel at the top of the screen.

10.1.2 User



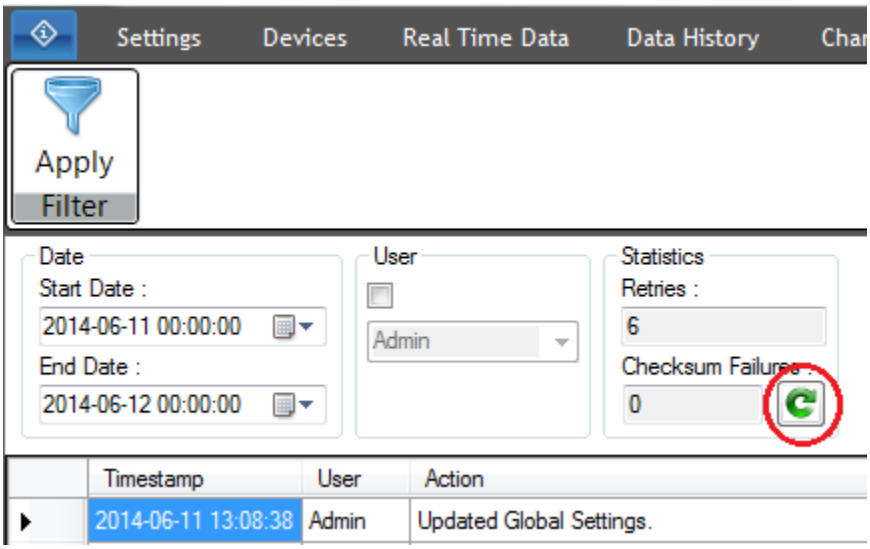
Filtering by users is another option supported by Particle View RT for audit trails. To filter by user, enable the “User” group box by checking the check box shown above. Once enabled, you may select a user from the drop down list. To apply your filters, press the “Apply” button located in the filter panel at the top of the screen.

10.2 Statistics



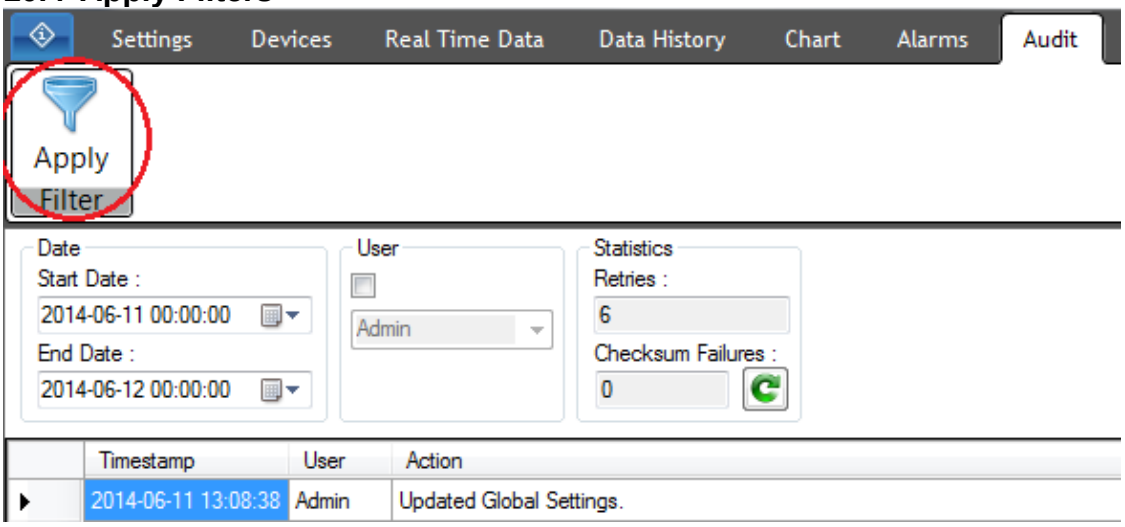
The statistics panel contains the information related to important statistical evidence recorded while the program is collecting data. Currently, the only statistics displayed are the amount of retry attempts that have occurred and the amount of check sum failures that have occurred while the program is collecting data from the devices. Generally, these numbers should be zero, but busy networks can induce more errors to occur.

10.3 Refresh



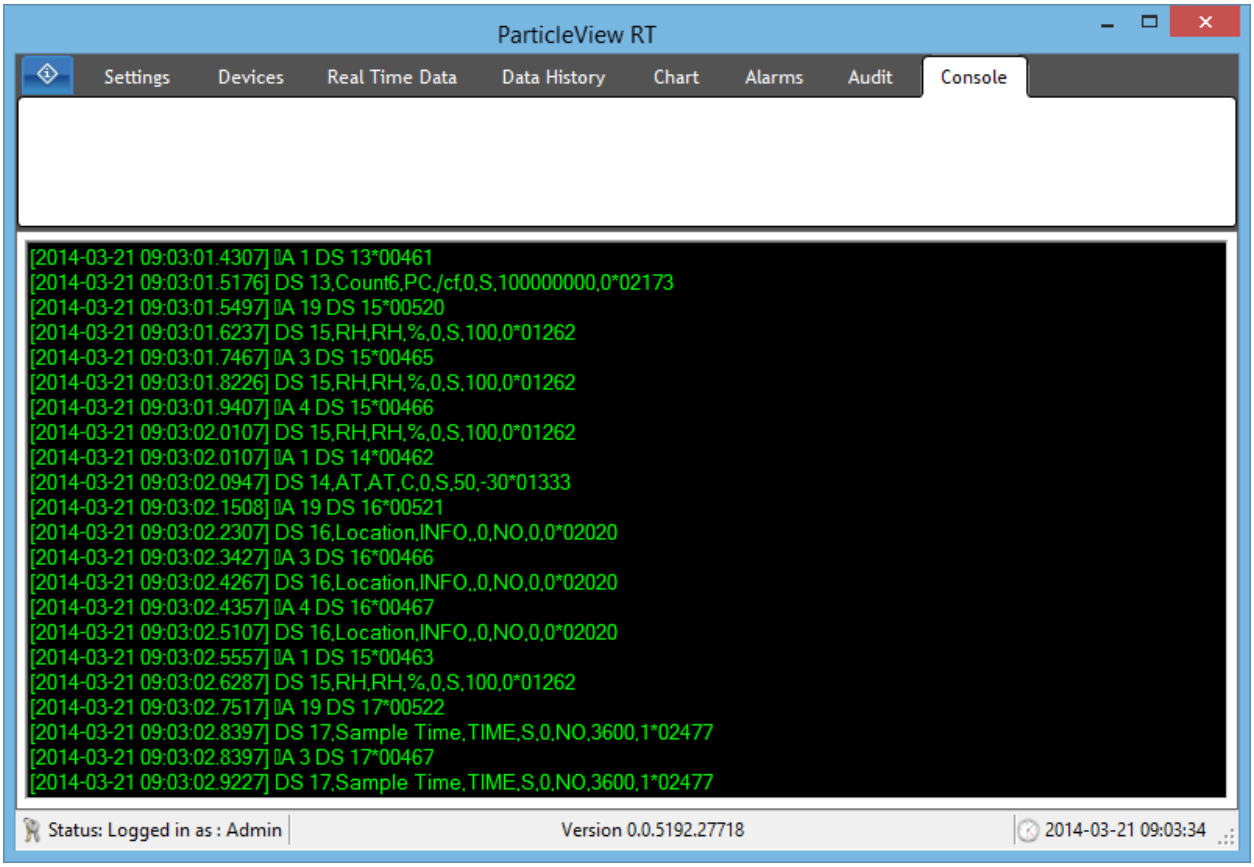
The Audit tab is refreshed every time you visit the tab. However, for ease of use, to refresh the statistic data without changing tabs, press the refresh button located in the statistics panel at the top of the screen. If there have been any retries or check sum failures since visiting this tab, pressing this button will refresh the statistic data and display the most recent values.

10.4 Apply Filters



To apply any new filters that the user set, press the “Apply” button located in the filter panel at the top of the screen.

11 Console Tab



The console tab is an administrator/super user only tab. The console tab displays all commands sent and received from all configured devices. This is a great troubleshooting tool. Typically, there should be no need to access it, but it may be necessary should you seek factory support for any reason.