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## Introduction

The VIS Reader is designed to connect your AcuRite USB Console weather station to your PC, and obtain data from the console that you can use to monitor weather conditions, the state of the batteries in the sensor, and generate charts and a report that lists the readings obtained over a period of time ranging from about one hour to three days; this period of time is defined by options.

In addition, there are reporting options that allow you to share your data with Acu-Rite's My Backyard Weather, Weather Underground, PWS Weather and WeatherBug, making your data available to the wider community.

The VIS Reader saves console-created data every 12 minutes to a comma-separated values file (CSV) and you can use that data in your own analysis. *This is distinct from the 18-second data the Reader generates, which is more timely and accurate.*

Other Reader options include the ability to switch between Imperial and Metric units for the charts, and report, as well as the values in the CSV file. There are notification options, allowing you to send email on certain kinds of weather events and when limits you define are exceeded, and even a severe storm alert that can help you avoid trouble.

For advanced users, there's a built-in web server designed for mobile use that allows you to get the current conditions, charts and even a screenshot of the reader remotely.

Valley Information Systems, Inc. develops the VIS Reader, and we make it freely available to the community. There are advanced, subscription-based features as well; these require the payment of a small subscription fee which entitles you to support on these features.

Premium subscription features available today include:

### 18-second data to CSV or SQL Server

This allows you to save the most accurate data available at the shortest interval available, every time data is read from the sensors (normally every 18 seconds.) This feature gives you access to the greatest amount and quality of data available from the Reader.

### CWOP (Citizen's Weather Observation Program) Reporting

This feature allows you to share your data with the Citizen's Weather Observation Program, and ultimately with the National Oceanographic and Atmospheric Administration (NOAA). This data is picked up by NOAA's Global Systems Division from FindU, where your data is actually sent, and is added to the Meteorological Assimilation Data Ingest System (MADIS), merged with more than 25,000 other surface observations, and forwarded to other NOAA work centers including some weather forecast offices. That means your data can be used to assist forecasters, and may help to improve forecast models over time.

### Enhanced Notification (with SQL subscription)

Enhanced Notification is one of the best features of the Reader. With it, you can set up an almost unlimited number of Email addresses, each of which can have its own settings for notification, and each of which can be configured to only send notifications during a given time interval each day.

But certainly one of the most compelling things you can do with Enhanced Notification is to send Email notifications on **National Weather Service Alerts** (advisories, watches and warnings) for up to five counties -- whenever they occur. *When properly configured, the Reader will send these alerts within two minutes of their release, offering you time to respond to a developing weather emergency.*

### Arbitrary Program Execution (with SQL subscription)

This feature gives you the capability to run nearly any program whenever a weather event occurs; for example, when the temperature indoors drops too low, you can have your computer run a program that controls pipe heaters to turn them on and keep your pipes from freezing.

This capability requires additional software and hardware not provided; we do intend to create an open-hardware project that would allow this capability to be exploited to its fullest, but users with X10 systems and a PC control interface can take advantage of it today.

## Subscribers' Perks

In addition, all subscribers get the following additional features in the Reader:

### *Trend Arrows*

Temperature, humidity and pressure trend arrows will appear to the right of these outdoor values in the main display. They have five positions, representing falling rapidly, falling slowly, steady, rising slowly and rising rapidly. The trends are continuously re-evaluated and the arrows are adjusted as needed.

### *NWS Alert Monitoring for one county*

All subscribers are entitled to have the Reader display National Weather Service alerts in the marquee display in the Reader's main window. These are updated every two minutes. *This perk is available to all subscribers, but does not offer Email notification.*

*Additional subscription features will be added in future versions of the Reader, which is under constant development. These subscriptions help offset the cost of development, and will allow us to purchase new hardware, which will eventually result in supporting more and different kinds of weather stations.*

# Important Things Required by VIS Reader

## Minimum Computer Requirements

The VIS Reader requires Windows 7 or 8, running on a 32- or 64-bit multicore or hyperthreaded processor at a clock speed of at least 2.4 GHz for full support. *It will run on slower or less-capable processors, but may not perform well or may have issues related to performance. We will support those installations on a best-effort basis only. Most modern machines meet these requirements.*

VIS Reader is a very reliable way to get data from your AcuRite USB Console. However, in order for it to work properly, there are a few things that you must be sure are set up correctly on your PC.

## Power Management and USB Selective Suspend Options

The most important of these is to ensure that USB Power Management is completely disabled. The reason for this is a bug in the AcuRite consoles; they do not handle USB Disconnect properly, and as a result, will fail to communicate with the PC if power saving kicks in. You must ensure that not only is USB Selective Suspend completely disabled, you must also disable all power management on each of the USB hubs that your PC can see. To do this on Windows 7, right click on the Computer icon on the desktop and choose “Manage”, then click on Device Manager in the left-hand pane. You will see a screen similar to the following:

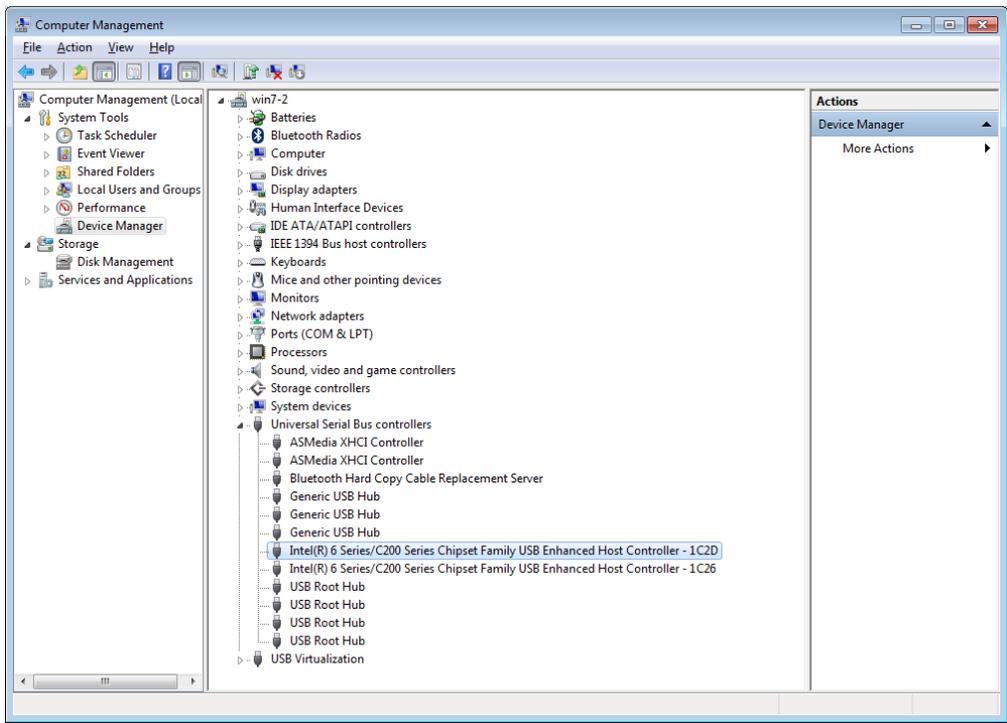
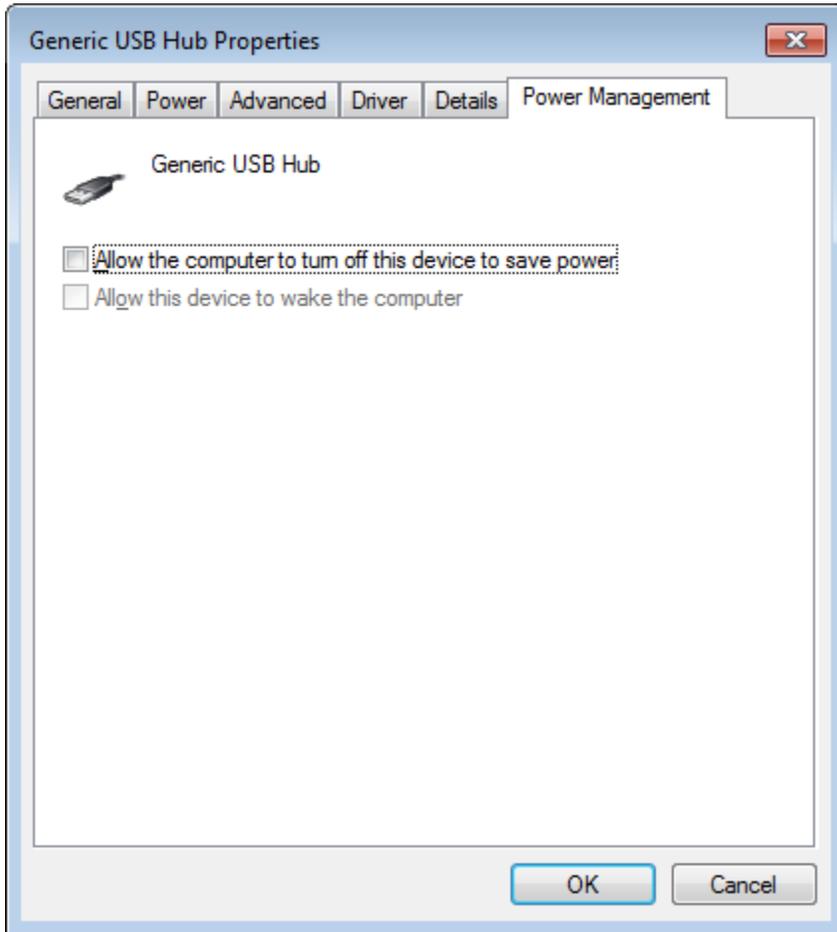


Figure 1: Device Manager showing the USB Hubs

Note that we’ve expanded the view of the Universal Serial Bus controllers. In here, we can see three Generic Hubs and four USB Root Hubs. For each of these, you will need to disable power management.

Right click on each one, and select Properties, and then choose the Power Management tab. You will see something similar to this:

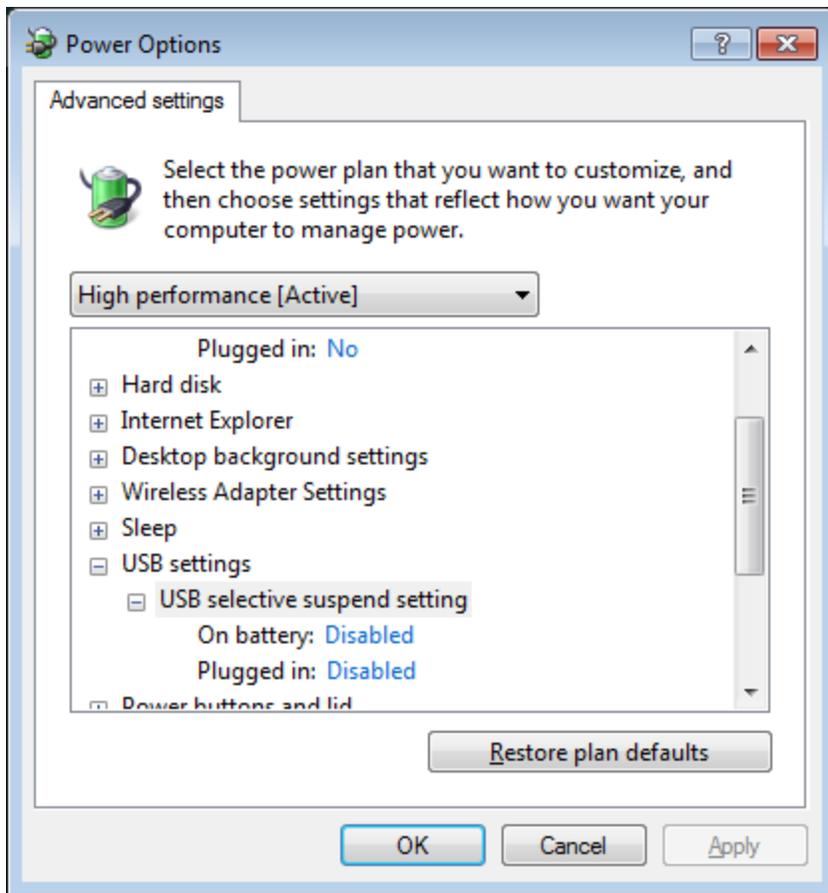


**Figure 2: USB Hub Properties, Power Management Tab**

Be certain that the checkbox for “Allow the computer to turn off this device to save power” is unchecked, and then click on OK.

***Do this for each USB Hub, both the Generic ones and the Root hubs.***

In addition, you will need to disable USB Selective Suspend. To do this, go to the Power Options in the Control Panel. Whichever power plan you have selected, click on the “Change plan settings” link, and then click on the “Change advanced power settings” link. The Power Options dialog that opens has a list of items; find “USB Settings” and click on the “+” to expand it, followed by the “USB selective suspend settings” and expand that as well. You will see something similar to the following:



**Figure 3: USB Selective Suspend in the Power Options**

Be sure that for both “On battery” and “Plugged in”, you have disabled power management, just as you see it here.

***With these settings, you will avoid the problems that are created by power management.***

## Settings on the AcuRite Console

The console requires a few specific settings to be done as well. First and foremost, you must set the clock on the console.

In addition, we **strongly** recommend that you set **USB Mode 4** on the console. If you’re running PC Connect, be sure that it’s also set to USB Mode 4. Experience has shown that this will result in far more reliable operation, and will most likely eliminate a potential longer-term issue with console reliability.

***In USB Mode 4, you will not have access to the indoor humidity value from the console, and we need to calculate the indoor temperature rather than read it directly; this is unavoidable.***

## New Features in this Release

***New in version 3.5.9: We have changed our recommendation regarding the USB Mode for all AcuRite consoles; we strongly recommend operating in USB Mode 4. This should eliminate longer-term concerns regarding a potential for FLASH memory wear in the consoles, and make them far more reliable. See our forum articles regarding this change, and why we're making this recommendation.***

## Installing the VIS Reader

To install the VIS Reader, download a copy of the reader from our Community Forum. You can find this at <http://forum1.valleyinfosys.com>.

Copy the installer to the directory in which you want it installed. If you're already running Weather Display or AcuRite's PC Connect software, you will want to copy the installer to one of those locations. For Weather Display, the default installation directory is usually C:\wdisplay. For PC Connect, the default installation directory is usually C:\Acurite.

Run the installer by double-clicking on the VISReader.exe file. This will extract the VIS Reader, and open the README.TXT file in Notepad so that you can catch up on the latest changes in the Reader. We encourage you to read this file each time you update your Reader, as it will fill you in on the most important changes you need to know about.

The VIS Reader has a built-in update facility, and once you've installed version 3.5.9, you will not have to manually download and install updates again. See the Update section for details.

The VIS Reader is started automatically by PC Connect and Weather Display, but you can run the reader without either of those packages. A desktop shortcut to the Reader will be created when you use the installer; double-clicking on this desktop shortcut will start the reader.

*Note that for some reader functions you must be a member of the Forum; no cost is associated with membership in our Forum, and we encourage you to join. You'll get the opportunity to participate in the conversations, and even suggest improvements or new features. As a Forum member, you'll be able to share your experience and gain insight from others.*

# Understanding the VIS Reader Display

**Sensor ID 1**      Current Status / Date / Time      Time remaining to next read      Next read scheduled

USB MODE 3      R1 OK 7/31/2014 6:20:42 PM      7/31/2014 6:21:00 PM  
 BATTERY OK      R2 OK 7/31/2014 6:20:42 PM      7/31/2014 6:21:42 PM  
 RF SIGNAL      R3 OK 7/31/2014 6:20:08 PM      7/31/2014 6:24:10 PM

Console Time is OK about 00:51 fast      Current Time 7/31/2014 6:20:55 PM

---

**TRANSLATED DATA**      OFFSETS APPLIED 18      SQL EN AP CW      PWS WB WU

<b>OUTDOOR</b> 80.2F 62% 30.091 inHg	<b>WIND</b> 202.5 SSW 0.00mph	<b>RAIN</b> TODAY None MONTH 6.51in YEAR 39.00in	<b>WS MiniWeb Hits</b> 0 <b>INDOOR</b> 69.3F 40%
---	--	---	---

There are no active watches, warnings or advisories

Options Report Charts Adjust Rain VIS Forum Hide Reader ^

12M RECORDS 3      6:19:15 PM      18S RECORDS 14854      Up Time 0/0:02:23

7/31/2014 6:18:41 PM Enabling Weather Underground reporting  
 7/31/2014 6:18:41 PM Enabling PWS Weather reporting  
 7/31/2014 6:18:41 PM Enabling WeatherBug reporting  
 7/31/2014 6:18:41 PM Starting MiniWeb on port 8080 with logging

7/31/2014 6:20:08 PM Console clock sync: OK about 00:51 fast  
 7/31/2014 6:20:08 PM Next sync at 6:02 AM

---

**RAW DATA**

R1 01 C4 04 78 00 09 32 3E 03 FF

R2 02 00 00 4E 39 0E 88 01 32 02 8E 7F D9 18 19 09 C4 07 29 06 09 7E 7C 99 17

R3

```

03 AA 55 01 00 00 20 20 FF FF
03 FF FF FF FF FF FF FF FF 00 3C 00 38 00 3C 00 3D 00 7C 02 03 00 CE 0E 07 1F 0D 11 04
03 00 00 0E 07 1F 00 00 04 FF FF
03 FF FF
03 F7 0E 07 1F 00 00 04 0E AC 0E 07 1F 06 18 04 06 66 0E 07 1F 06 1D 04 09 10 0E 07 1F 0F 06 04
03 08 02 0E 07 1F 05 33 04 00 3A 0E 07 1F 08 07 04 00 22 0E 07 1F 11 38 04 00 58 0E 07 1F 04 37 04
03 00 38 0E 07 1F 0C 35 04 09 10 0E 07 1F 0F 06 04 08 02 0E 07 1F 05 33 04 09 38 0E 07 1F 0F 06 04
03 08 02 0E 07 1F 05 33 04 08 7A 0E 07 1F 0F 08 04 07 E4 0E 07 1F 05 33 04 09 10 0E 07 1F 0F 06 04
03 08 02 0E 07 1F 05 33 04 AA 55 02 00 00 20 21 00 26 0E 03 0C 12 00 03 00 26 0E 03 0C 12 00 03
03 09 4C 0E 07 1F 0F 0F 07 07 E4 0E 07 1E 05 31 03 09 74 0E 07 02 0E 2D 03 07 E4 0E 07 1E 05 31 03
03 02 84 0E 04 0F 0A 15 02 00 00 0E 03 0C 12 32 03 FF FF
03 FF FF
03 04 17 0E 03 00 16 30 04 03 E3 0E 04 06 06 0C 02 09 10 0E 06 10 12 06 01 07 E4 0E 05 12 05 33 07
03 09 74 0E 07 02 0E 2D 03 06 5E 0E 03 19 04 23 02 00 45 0E 05 0F 0A 25 04 00 10 0E 03 00 10 02 04
03 00 63 0E 03 1E 00 37 07 00 14 0E 04 15 0E 18 01 09 74 0E 07 02 0E 2D 03 05 FA 0E 03 00 07 29 04
03 0A 64 0E 07 02 0E 2D 03 06 5E 0E 03 19 04 23 02 08 FC 0E 07 02 0E 2D 03 05 E6 0E 03 00 12 3A 04
03 FF FF
03 AA 55 04 00 00 00 03 AA 55 05 00 00 00 0L 05 52 08 0E 07 1F 12 15 94 AA 55 06 00 00 00 04 09
4, 099877 + 7/31/2014 6:21:00 PM 7/31/2014 6:20:08 PM 00:00:51, 4253913
  
```

Figure 4: The VIS Reader Display, fully expanded

Here you can see what the VIS Reader displays when it's up and running. We'll take a look at each part of the display, and what it does.

## VIS Reader Status Area

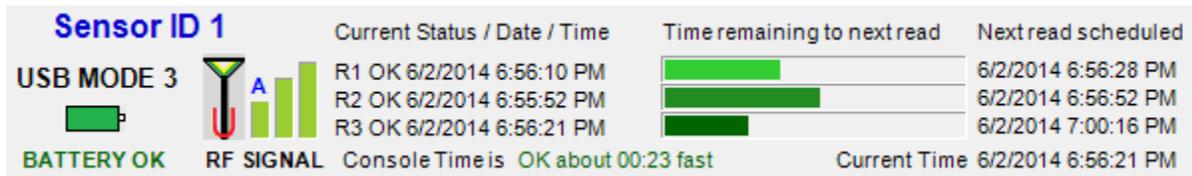


Figure 5: VIS Reader Status Area

The status area tells you a lot about what's going on with the Reader, as well as the status of your 5-in-1 sensor.

On the left, you can see the Sensor ID. This is unique to your 5-in-1 sensor, and your console uses this ID to determine which sensor it's receiving data from. We display it here only as a matter of information; it's not really important, but it does tell you that the console was successful in connecting to your sensor.

Under that, you can see the USB Mode. *It should be set to 4, not 3 as shown here.*

Under the USB Mode, you can see the battery status. It will tell you when the sensor batteries need to be replaced.

To the right of these is the RF Signal display. There's a lot going on here. First, the antenna icon has a red "U" on it. That's a reminder that this is where you click in order to force the Reader to do an update check. When you click on the antenna, the Reader contacts our server to see if an update to the Reader software is available. If an update is available, the reader will tell you that. See the Update section for more details. There are also the signal strength bars, which tell you how strong the signal from the sensors is; the sensors transmit their data to the console using a VHF transmitter, and the console receives that data and decodes it for display. Finally, there's a small "A" that you can see above; that's actually the channel indicator, and tells you what channel your sensors and console are set to, whether channel A, B or C.

Under "Current Status / Date / Time", we can see three lines. These start with R1, R2 and R3. The most important of these is the R1 line, but all three tell you when the last successful read of the data sets occurred. A status of "OK" means that the Reader received data from the console. Other statuses can appear here; for example, if the console is doing internal processing, you may see a status of "ND" for R1. This is normal, but if you see this often, you should check the clock on the console to be sure that it's set about one to two minutes fast. R1, R2 and R3 refer to the RAW DATA section of the display, which shows you what was actually read from the console; this data is encoded, so you won't be able to tell what's going on just by looking at it. (You have the option of hiding the RAW DATA display, and we'll tell you how soon.)

The last thing in this column is an optional feature that attempts to synchronize to the console display's clock and warn you when it's in need of being adjusted. This is a feature you can choose to enable if you like, but it requires that you set up Email notification.

The green bars to the right of these statuses are a visual indication of the time remaining until the next read occurs, and to the right of those, the read schedule is shown.

## The Status Indicator Areas



Figure 6: Status Indicators

**All of the optional indicators are shown above. Not all of these will be present on all readers, because many depend on the options set or on premium subscriptions.**

These status indicators give you additional insight into what the Reader is doing at any given time, as well as the results of certain operations. We'll look at each of them briefly.

### 18-Second Data to CSV (Subscription)

At the top, the "18" is one of the premium subscription features. This status indicator tells you that you've licensed the 18-second data to CSV option. When gold in color, the license is present but it's not enabled. When it's enabled, it will turn green. When the subscription will expire within ten days, it will flash red. *The indicator will not be shown if no license is present.*

### SQL Server Connectivity (Subscription)

We've got a status indicator on the display for another premium feature, the ability to save data to a SQL Server. It writes the same data as the 18-second subscription to a database, enabling much more powerful features. Clicking on SQL runs the VIS Analyze program, allowing you to visualize and report on the data you've collected.

### Enhanced Notification (Subscription, with SQL Subscription)

The EN status indicator indicates that Enhanced Notification has been subscribed; when enabled, all of the extended notification features of the Reader including unlimited Email addresses and National Weather Service Alerts are available.

### Arbitrary Program Execution (Subscription, with SQL Subscription)

The AP status indicator indicates that Arbitrary Program Execution has been subscribed; when enabled, any program can be selected to be run when a weather value exceeds selected limits or when an event occurs. An example of this is the Severe Storm alert, which triggers when the barometric pressure is less than 29.800 inHg and is falling rapidly.

## Data Reporting Services

These five status indicators represent the data reporting services. The first, CW, is the indicator for CWOP, the Citizen's Weather Observation Program and a premium subscription feature; the remaining four are part of the base license for the reader. Like the 18-second data status indicator, the CW will be gold when a license is present, green when it's enabled, flash red when it's going to expire within ten days and not be visible at all if no license is present. *This reports data every ten minutes only, except for amateur radio operators with a valid validation code – your updates will go every five minutes instead.*

The second, third, fourth and fifth indicators are for My Backyard Weather, PWS Weather, WeatherBug and Weather Underground, respectively. These will be present when those features are enabled in the options, and show their status as green for successful updates, gold when performing an update and red when an update fails. *Data is reported to all four of these services every time new data is available, which is normally every 18 seconds.*

Clicking on any of the Data Reporting Services status indicators will take you to the website for that service. For most, you'll immediately see your weather page and data; you will need to log into My Backyard Weather to see your data there.

## MiniWeb Services

The MiniWeb is the built-in web server. Two status indicators exist for it; the first, "WS", is shown when the MiniWeb server is enabled. It will turn green if logging is enabled for it, and turn gold each time a web request comes in. The second, "WCG", will show up when the Reader is generating the charts for the MiniWeb server. It will flash on briefly, about seven seconds after new data is available.

## Email Notification

This status indicator tells you that you've enabled Email notification. It will turn green briefly when notification processing is occurring, but this often happens so fast you won't notice it.

## Chart Generation

If you have a chart window open and you're viewing a chart, then about seven seconds after new data is available this indicator will flash on briefly and the chart you're viewing will update right before your eyes. *This indicator will otherwise not be displayed at all.* The indicator is a small green "CG" that overlays the right side of the Charts button.

## Debug Logging

The DEBUG indicator, the only one that's always red, tells you that you've enabled the debug log option. This is useful for diagnosing problems, and we'll ask you to generate a log and send it to us as part of the support package if you ask us for help. ***You should not normally leave this running, as it consumes a large amount of disk space very quickly.*** *Enable it only when you need to, and only for as long as you must.* The debug log indicator overlays the right side of the log window.

## Translated Data Area

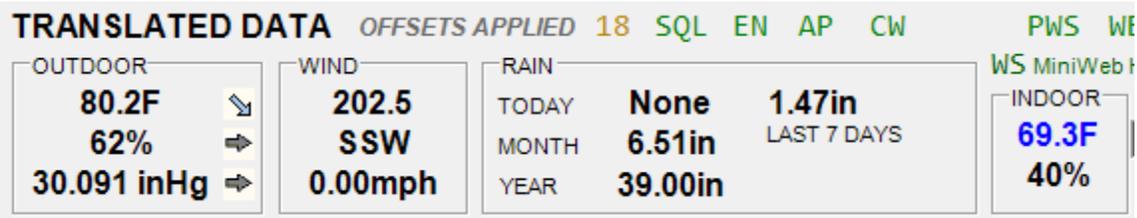


Figure 7: Translated Data Area

The translated data is what you're really interested in. This shows you the current weather conditions, as reported by your 5-in-1 sensor. The outdoor temperature, humidity, wind and pressure, as well as the indoor temperature and humidity, are all displayed here. Units of measure are selectable in the options, including Fahrenheit and Celsius temperatures, miles per hour and kilometers per hour for wind, and the barometric pressure.

The translated data is what is represented by the RAW DATA display, but properly decoded so that you can understand it. It's updated every time the sensors transmit new data and we read it.

There are a few things to know about this display.

The barometer value can be adjusted. Clicking on the value brings up a dialog that looks like this:

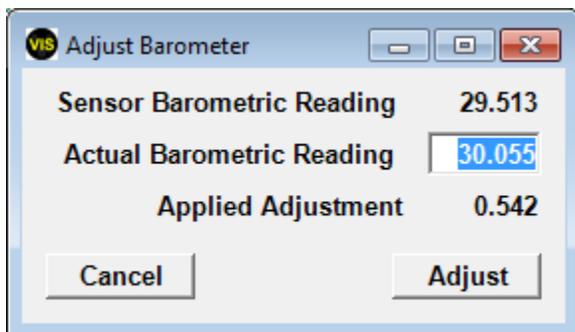


Figure 8: Barometer Adjustment

Enter the actual reading and click "Adjust" to save the updated reading. *We recommend that you adjust it to agree with a known good reading from a local National Weather Service site; to make it as accurate as possible, adjust it slightly lower if you're at a higher altitude than the NWS site, or slightly higher if you're at a lower altitude.*

Other values that may be adjusted include the outdoor temperature and outdoor humidity. *Note that these adjusted values are what get reported to the weather services, such as CWOP, My Backyard Weather, PWS Weather, etc.*

There are a number of buttons on the display as well. Let's look at the buttons now; we'll deal with the status indicators in the next section.

## The Options Button

This button opens the options dialog, where you set all of the options for the reader, including those for the premium subscriptions. See the Reader Options section for details.

## The VIS Forum Button

The VIS Forum button will normally open a browser and take you directly to our community forum where you can get support, share your experiences with others, ask questions and tell us what you think. We encourage you to participate regularly, as you'll find that your experience will be better and you'll get more from your use of the Reader.

*This button serves a second purpose, though.* When a software update is available, the button will change and show a red "UPDATE" on it instead. When it displays a red "UPDATE", clicking on it will schedule the reader's update process, which will download a software update, install it and restart the reader. See the Update section for more details.

## The Charts Button

Charts are one of the most powerful features of the reader. They give you the ability to visualize the data you've collected over time.

The charts will display up to three days' worth of data, depending on how you've set up the options. See the Options section for more details.

When you open the charts, you will see something similar to the following:

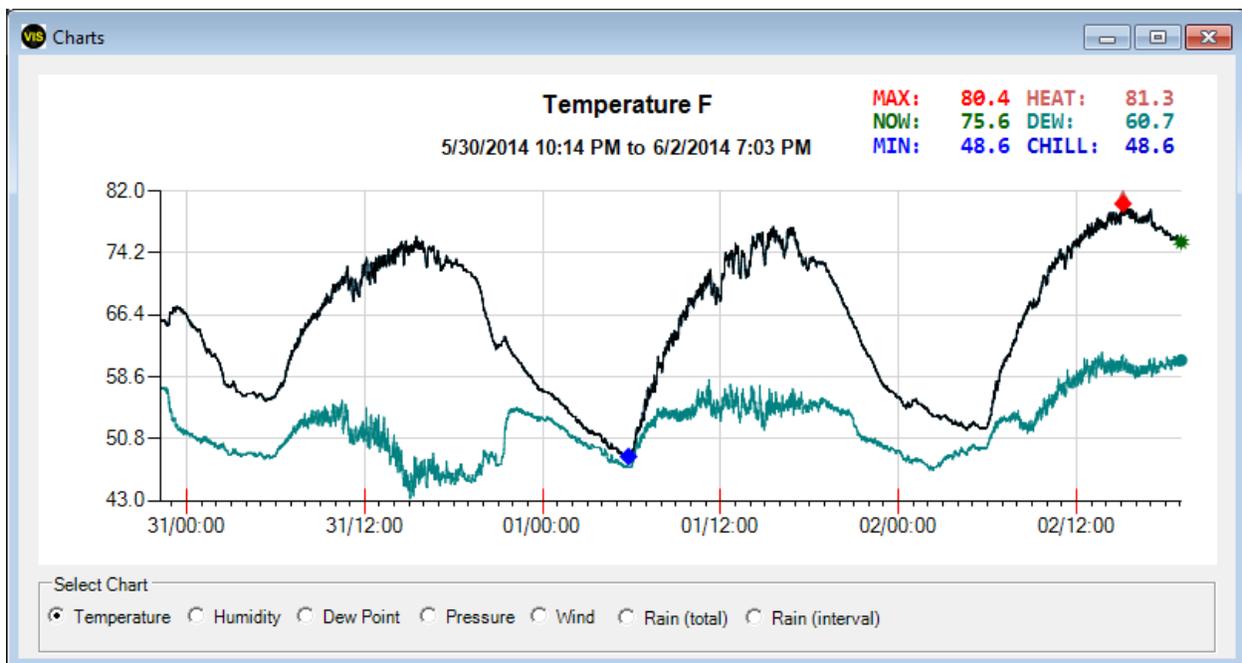


Figure 9: The Charts

There are seven chart types. They are:

- Temperature
- Humidity
- Dew Point
- Pressure
- Wind
- Rain (total)
- Rain (interval)

The temperature chart is the busiest, and shows the most data. The black line represents the actual temperature over time. The temperature scale is on the left, and time is across the bottom. In this chart, three days' worth of data is shown. The low temperature over this time is shown in blue, and the high temperature over this time is shown in red. The green value at the right is the current temperature, and the heat index and wind chill maximums are also shown. The teal line represents the dew point. Heat indexes and wind chills are shown as vertical lines from the temperature line. *Note that wind chill values are only defined below 50F, and with wind speeds greater than 3mph. Heat index values are only defined above 80F.*

The rain charts bear a brief explanation, but the rest should be self-explanatory. The Rain (total) chart has an option to display the total rain over the entire period, or the total rain daily. See the Reader Options section for details. The Rain (interval) chart shows you how much rain fell in each 36-second period over time.

*In all charts, the highest and lowest values are picked out and highlighted in red and blue, respectively.*

## The Report Button

The Report button produces a report of all data that the Reader has stored internally. This report contains the readings taken from the sensors each time they're read, and displayed in a table.

The columns in the report are:

- **When:** The date and time of the reading
- **OutdoorTemp:** The outdoor temperature
- **OutdoorHum:** The outdoor humidity
- **IndoorTemp:** The indoor temperature
- **IndoorHum:** The indoor humidity
- **WindSpeed:** The wind speed
- **Pressure:** The barometric pressure
- **RainInterval:** The rain during the last 36 seconds (only every other reading is taken)

Here's what the report looks like:

When	OutdoorTemp	OutdoorHum	IndoorTemp	IndoorHum	WindSpeed	Pressure	RainInterval
3/27/2014 7:30:04 PM	37.4	61	69.0	22	1.66	30.279	0.00
3/27/2014 7:30:22 PM	37.4	61	69.0	22	2.17	30.279	0.00
3/27/2014 7:30:40 PM	37.4	61	69.0	22	1.66	30.279	0.00
3/27/2014 7:30:59 PM	37.4	61	69.0	22	1.14	30.279	0.00
3/27/2014 7:31:17 PM	37.4	61	69.0	22	0.00	30.279	0.00
3/27/2014 7:31:35 PM	37.4	61	69.0	22	2.17	30.279	0.00
3/27/2014 7:31:53 PM	37.2	61	69.0	22	3.71	30.279	0.00
3/27/2014 7:32:12 PM	37.2	61	69.0	22	2.17	30.279	0.00
3/27/2014 7:32:30 PM	37.2	62	69.0	22	2.17	30.279	0.00
3/27/2014 7:32:48 PM	37.2	62	69.0	22	4.74	30.279	0.00
3/27/2014 7:33:06 PM	37.2	62	69.0	22	3.20	30.279	0.00
3/27/2014 7:33:25 PM	37.2	62	69.0	22	2.17	30.279	0.00
3/27/2014 7:33:43 PM	37.2	62	69.0	22	1.14	30.279	0.00
3/27/2014 7:34:01 PM	37.2	62	69.0	22	1.14	30.279	0.00
3/27/2014 7:34:19 PM	37.0	62	69.0	22	2.17	30.279	0.00
3/27/2014 7:34:38 PM	37.0	62	69.0	22	3.20	30.279	0.00
3/27/2014 7:34:56 PM	37.0	62	69.0	22	3.20	30.279	0.00
3/27/2014 7:35:14 PM	37.0	62	69.0	22	3.20	30.279	0.00
3/27/2014 7:35:32 PM	37.0	62	69.0	22	3.20	30.279	0.00
3/27/2014 7:35:51 PM	37.0	62	69.0	22	7.31	30.284	0.00
3/27/2014 7:36:09 PM	36.9	63	69.0	22	4.74	30.284	0.00
3/27/2014 7:36:27 PM	36.9	63	69.0	22	3.20	30.284	0.00
3/27/2014 7:36:45 PM	36.9	63	69.0	22	3.71	30.284	0.00
3/27/2014 7:37:04 PM	36.9	63	69.0	22	2.68	30.284	0.00
3/27/2014 7:37:22 PM	36.9	63	69.0	22	3.71	30.284	0.00
3/27/2014 7:37:40 PM	36.9	63	69.0	22	3.20	30.284	0.00
3/27/2014 7:37:58 PM	36.9	63	69.0	22	2.68	30.284	0.00
3/27/2014 7:38:17 PM	36.9	63	69.0	22	2.68	30.284	0.00
3/27/2014 7:38:35 PM	36.9	63	69.0	22	2.68	30.284	0.00
3/27/2014 7:38:53 PM	36.9	63	69.0	22	4.23	30.284	0.00
3/27/2014 7:39:11 PM	36.7	64	69.0	22	4.74	30.284	0.00
3/27/2014 7:39:30 PM	36.7	64	69.0	22	4.23	30.284	0.00

Figure 10: The Report

You can browse the report using the scroll bars. This data is read-only; you can view it, but it won't accept changes and this data is not stored in a way that you can access it on disk. It's stored in the Reader's memory only.

The report honors the settings for units of measurement; see the Options section for details. If you've selected Metric units, then degrees Celsius, wind speed in kilometers per hour, pressure in hectopascals (millibars) and rain in millimeters will be shown instead.

### The Rainfall Status Area

RAIN			0.000in RATE PER HOUR 10M INTEGRATION
TODAY	<b>None</b>	<b>1.47in</b>	
MONTH	<b>6.51in</b>	LAST 7 DAYS	
YEAR	<b>39.00in</b>		

or

Figure 11: Rainfall Status

The rainfall status area is exactly what it sounds like. Rainfall today will only appear when rain has fallen today; otherwise they tell you the total rain that's fallen today, this month and this year respectively.

SQL subscribers get the LAST 7 DAYS indication when no rain has fallen today.

## The Adjust Rain Button



Figure 12: The Adjust Rain Button

This button allows you to directly adjust rainfall totals for today, this month and this year. When you click on it, a dialog box will open that looks like this:

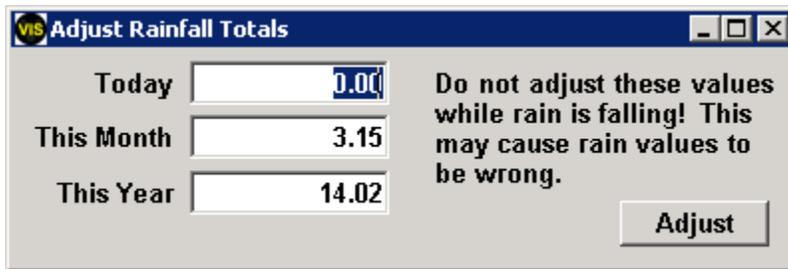


Figure 13: Adjusting Rainfall

Type in the actual values for rainfall that you want displayed, and then click Adjust to set them. They will be updated on the Reader's display, and will be used for any reporting.

## The Marquee



Figure 14: The Marquee

The Marquee appears just over the buttons. It displays news, miscellaneous weather data, and (for subscribers) National Weather Service Alerts for a selected County Warning Area. The Marquee will normally rotate between each display item about every five seconds, however, whenever an important alert is detected (watch or warning) the Marquee will display ONLY those alerts. The other types of messages will be suppressed when watches and warnings are detected.

## Miscellaneous Status Areas

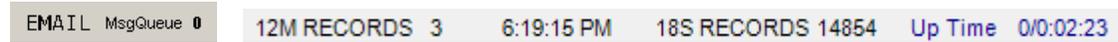


Figure 15: Miscellaneous Status Indications

These areas give you some information about what the reader is doing with data internally. It's probably not something you'll refer to, as we use it primarily for debugging purposes, but it shows you a few things.

The **EMAIL** indicator indicates that Email notification is enabled. When it's enabled, the **MsgQueue** is the number of Email notifications waiting to be sent. This number will increase when notification processing is occurring, and go back to zero once Emails are sent.

The **10M RECORDS** number is the number of 10-minute records waiting to be written to CSV. The CSV file, named **weatherdata.csv**, is located in the same directory as the reader and is available to all reader users. *This will read 12M RECORDS if the console and Reader are operated in USB Mode 3, and the data will be supplied by the console itself rather than by the VIS Reader. We strongly recommend operating in USB Mode 4, because you'll get an extra reading every hour, and because it will eliminate some potential issues.*

The **18S RECORDS** indicates the number of 18-second records that are used for the report and charts.

## Miscellaneous Buttons



Figure 16: Miscellaneous Buttons

*These buttons control a few things; all of them may not be displayed on your reader.*

### Display Shrink Button

The first, which looks like a caret (^), is the display shrink button. Clicking on it will shrink the display, hiding the RAW DATA section first, and then hiding the log window next. Clicking again will restore the original view.

### Hide Button

This button causes the reader to hide its display entirely; it leaves a notification icon in the system tray, and any important messages will be displayed as balloon pop-ups there. Clicking on the tray icon restores the Reader's display.

## The Log Window

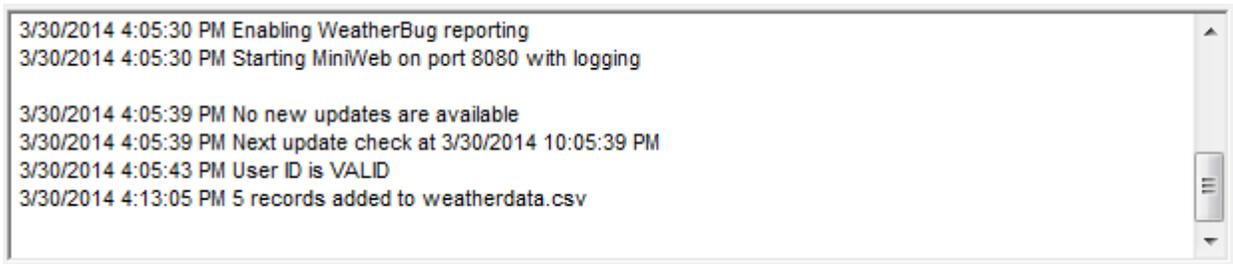


Figure 17: The Log Window

The log window is a constantly updated status log for many of the Reader's functions and features. Many different kinds of messages may be displayed here, with nearly all of them date and time stamped. There are far too many kinds of messages to document here; however, most of them will be self-explanatory.

Two messages which bear explanation, however, are **RF LOS** and **RF AOS**. These mean "Radio Frequency Loss Of Signal" and "Radio Frequency Acquisition Of Signal" respectively. The frequency used by the sensors is in a band that is subject to numerous sources of interference; it can, and will, drop out periodically. The Reader logs these occurrences, and they will occur more often under certain conditions. Optional notification is also available if you have email notification set up. If you see this happening frequently, you can try reorienting your console, placing it nearer a window where it has a direct line-of-sight to the sensors, or moving it away from other electronic equipment such as monitors. Be sure that no metallic objects are between the console and the sensors if at all possible. Solar events, such as flares, X-ray events and radio frequency events in the 10cm band can also cause interference, as can triboelectrification of the atmosphere (as caused by helicopter rotors nearby, for example.) Some older wireless home phones also use the same band as the sensors; try a newer phone that uses the 2.4GHz range if you have one of them.

Another message you might see is **Synchronizing Console**. When a read error occurs while the Reader is attempting to get data from the console, it will attempt to resynchronize. It's normal to see this message occasionally, or even see it happen several times in a row, but if you start to see it happening frequently or continuously, check the clock on your console first, then try restarting the Reader. While the Reader can recover in most cases, it sometimes requires a restart to get the read timing right.

*We also know about a bug in the console firmware that can result in the USB hardware actually deadlocking. Sometimes unplugging the console for about 30 seconds and plugging it back in restores communication. If that doesn't work, you might need to uninstall the device from Device Manager, unplug the console from the PC and then plug it back in. In extreme cases, the console is so badly locked up that it needs to be completely reset; see our forum for tips on how to handle these situations.*



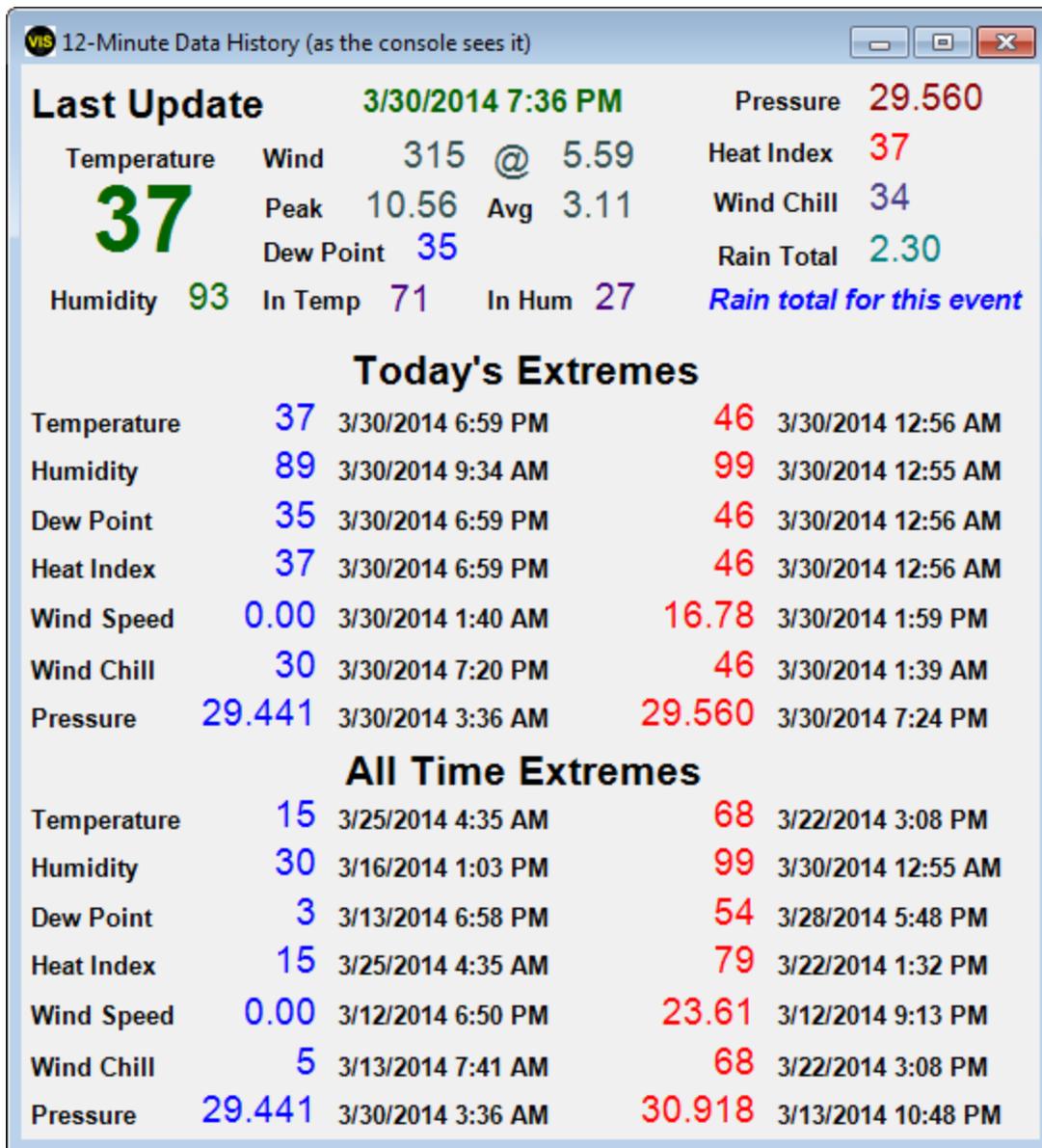


Figure 19: 12-Minute Data History as reported by the Console

This window shows the daily and all-time records (as far as the console is concerned) as well as the most recently-read 12-minute record at the top. The date and time of the record are shown at the top. Highs are displayed in red, and lows in blue. The date and time of each record reading is also shown.

*Resetting the console clears these values. If a console reset is required in order to correct a communications problem, all of these values will be reset and will only fill in once new data is received from the sensors and processed in a 12-minute interval. You will have to wait until at least one new 12-minute console record is created to view these values in that case. Note that a long-term problem with FLASH memory may develop in the console if used in USB Mode 3.*

## System Tray Icon



**Figure 20: System Tray Icon**

The system tray icon will display current conditions if you hover over it with the mouse. It's also used to restore the display if you hide the Reader, and it'll display pop-up balloon messages when the Reader is hidden.

## Reader Options

The Reader options dialog is accessible from the Options button on the main display. Clicking on the Options button opens the options, and allows you to set up many of the Reader's features.

**Options**

**VIS Forum** [Use login ID, not email](#)

User ID

Password

**Units of Measure**  
for Charts, Reports, Notification and MiniWeb

Units

Imperial (F, MPH, inHg)

Metric (C, KPH, hPa/mb)

**Mail Notification**

**Notify Events** *No events selected*

Weather Events and Limits

Updates / Licenses

Console Clock

LOS/AOS

NWS County Alert Code

**Weather Reporting**

Enable My Backyard Weather

Enable PWS Weather

Enable WeatherBug

Enable Weather Underground

**MiniWeb**

Run MiniWeb Server on port

Log MiniWeb Requests

Weather Page Title

**Indoor Temperature**

Use Alternate Method

**Charts/Report**

Keep  Hours' data  
[Set from 3 to 72](#)

Use Daily Rain, not total

**12-Minute Data**

CSV Options

**Diagnostics**

Debug Log

*Generate Debug Log First*

Figure 21: Reader Options

We'll look at each section of the options, as there are many of them.

## VIS Forum

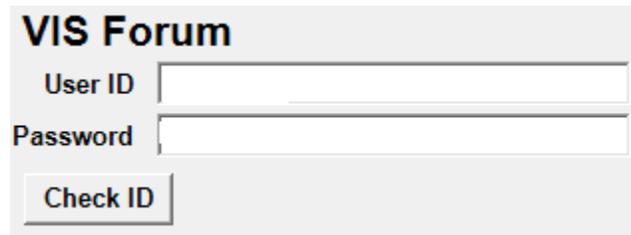


Figure 22: VIS Forum Setup

The VIS Forum setup is required to use some reader features. *You'll be told which ones by the Reader if you're not already set up as a Forum user.*

Set your Forum User ID and Password here, and click on Check ID. You'll see "ID is VALID" come up in green if the Reader was able to verify your user name and password, and this will enable the features that require Forum membership. *If it says it's not valid, check your user ID and password.*

## Mail Notification Server Setup

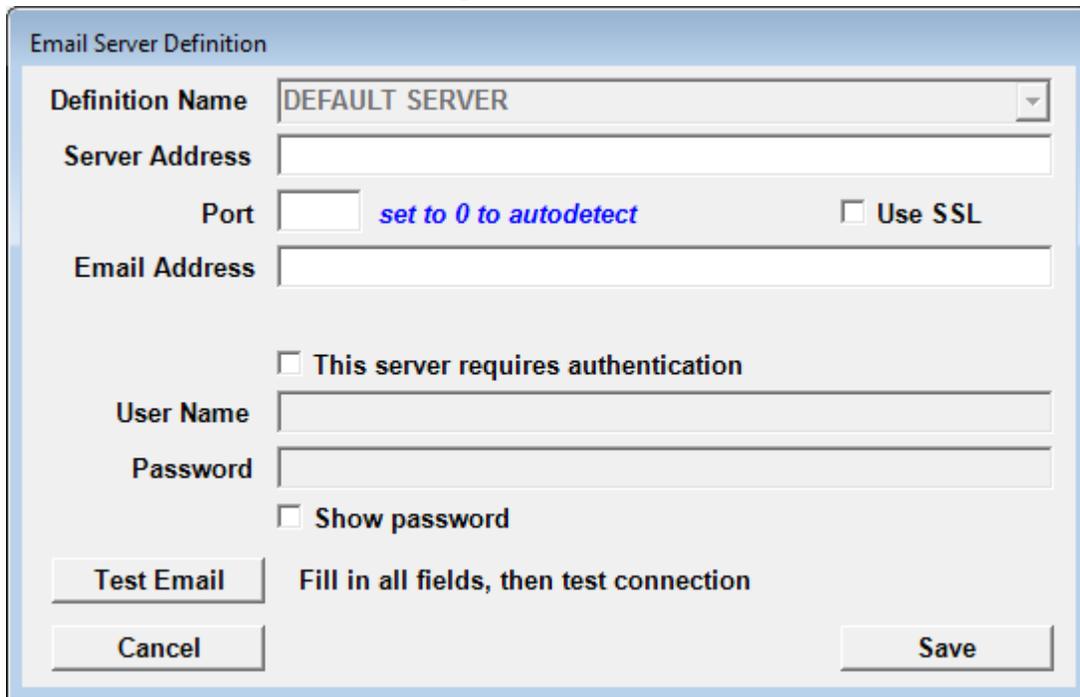


Figure 23: Mail Notification Server Setup

This section deals with telling the Reader how to deliver Email notification. There are several blanks to fill in to set it up.

**You must specify the server address.** This can be a name, such as [smtp.gmail.com](mailto:sntp.gmail.com), or an IP address like [10.1.230.57](http://10.1.230.57).

**You must specify a port number on the server to connect to.** Setting this to “0” will tell the Reader to attempt to automatically detect the server’s settings for port and SSL. *If the reader cannot automatically detect the settings, you will need to set these correctly yourself.*

If the server requires SSL for connections, check the Use SSL box.

**You must specify the Email to address.** This is an Email address where you want to receive the notifications, like [myemail@gmail.com](mailto:myemail@gmail.com).

**The subject is optional, and is normally ignored.** It is used for the Email test, however. We suggest putting something like “[Reader Email Test](#)” in here.

**If the mail server you want to send mail to requires it, you must fill in the Username and Password that the Reader will use to connect to the server.** Many do, so check with your Email service provider or network administrator.

*The **Show Password** checkbox can be used to verify that you’ve typed a password correctly.*

Once you have everything filled in, click on the Test Email button. The reader will tell you if it was able to connect and successfully deliver a test message. Check your email and be sure that you got it. Save the settings when you’ve successfully completed the test.

The “Show Password” checkbox can be used to verify that you’ve typed a password correctly.

*If you have problems, some solutions are available in our forum in the Documentation section. There you’ll find some of the more common settings for some popular Email services.*

*Note that this setup is for the default notification capability in the Reader. This is NOT the Enhanced Notification setup, which is documented later.*



*Enhanced Notification subscribers have the ability to specify more than one Email server – in fact, they can specify a virtually unlimited number of them, and assign a virtually unlimited number of Email addresses to any of the defined servers. This allows for tremendous flexibility.*

## Notify Events

**Notify Events** *No events selected*

Weather Events and Limits **Settings**

Updates / Licenses

Console Clock

LOS/AOS

NWS County Alert Code **Select**

Figure 24: Notification Events

### Weather Events

Checking the box for Weather Events and Limits turns on notification for a large number of possible weather events, limits and warnings, once they're set up. The Settings button takes you to the notification setup. You must have at least one type of event, limit or warning set in order to turn on notifications. If you have not selected any events, then clicking on the checkbox will open the notification setup for you to select the events for which you want notifications sent. Once set up, you can check the box to enable notification. Unchecking it disables notification, but leaves the settings in place.

### Software Updates and Licenses

Checking the box for Updates / Licenses turns on notification when a new software update is available or when a premium subscription license will expire within ten days. When an updated version of the VIS Reader is available, the log window will also display a brief description of the update; you may need to scroll back to see it if you haven't looked at it in a while.

### Console Clock

The console clock notification attempts to synchronize to the console's time, comparing it to the time on the PC, and letting you know when you might need to adjust the console's clock. The console's clock is entirely independent of the PC, and will drift. It should be set slightly fast, i.e. about 1 to 2 minutes fast, in order to ensure the best performance in the Reader. This is due to the way that the console operates, and we need to avoid performing reads when the console is doing internal processing. *Clock notification requires that email be set up correctly.*

### LOS/AOS

When the console loses the signal from the sensors, or reacquires that signal, the Reader can notify you about it. This was a feature requested by one of our subscribers, and we've added it.

### NWS/Environment Canada County Alert Code (Subscribers only)

Subscribers to any subscription support option receive this feature as a perk; the Reader can monitor, and display, alerts from the National Weather Service or Environment Canada for the county selected. Clicking on "Select" opens a dialog that gets a full list of possible counties from the National Weather Service, allowing you to select one. Alerts, when received, are displayed in the marquee (documented earlier.)

US Alerts are provided by the US National Weather Service. Canadian alerts are provided by Environment Canada.



*We do our best to accommodate requests for features whenever possible. Subscribers' requests are taken first, because they're supporting the development of the software, however any good ideas submitted by users of the VIS Reader are considered. If your suggestion is implemented, we'll give you credit for it in the README if you ask us to do that.*

## Weather Events for Notification

The following are screenshots of the event notification setup dialogs, and a brief explanation of each.

Category	Limit Type	Unit	Value	Enable
Temperature	is less than	F	0.0	<input checked="" type="checkbox"/>
	is greater than	F	80.0	<input checked="" type="checkbox"/>
	changes by or more in one hour	F	15.0	<input checked="" type="checkbox"/>
Dew Point	is less than	F	0.0	<input checked="" type="checkbox"/>
	is greater than	F	70.0	<input checked="" type="checkbox"/>
	changes by or more in one hour	F	15.0	<input type="checkbox"/>
Apparent	is less than	F	32.0	<input type="checkbox"/>
	is greater than	F	89.9	<input type="checkbox"/>
	changes by or more in one hour	F	10.0	<input type="checkbox"/>

Figure 25: Temperature, Dew Point and Apparent Temperature Notification Limits

Temperature, Dew Point and Apparent Temperature notifications are all limit-based. Setting a limit can be done using the up/down arrows or by highlighting a number and typing a new value. Checking the Enable box enables the notification for that limit.

*Limit notification works the same way for all notification types. If the current value exceeds the set value for notification, a notification Email is sent if notification for that limit is enabled.*

**All settings honor the units of measurement selected in the options.** Units are displayed above the values; in figure 19, the units of measurement for temperature are “F”, or degrees Fahrenheit.

**Note that change rates are set as being “in one hour.” The Reader actually checks these limits over ten minutes, so the actual change value is 1/6 of these values.** For these settings, shown above in figure 19, a temperature change of more than 2.5F in ten minutes will trigger the notification.

*We do this to catch short-term trends more quickly. Set a higher or lower value if you find you're being notified more often than you like.*

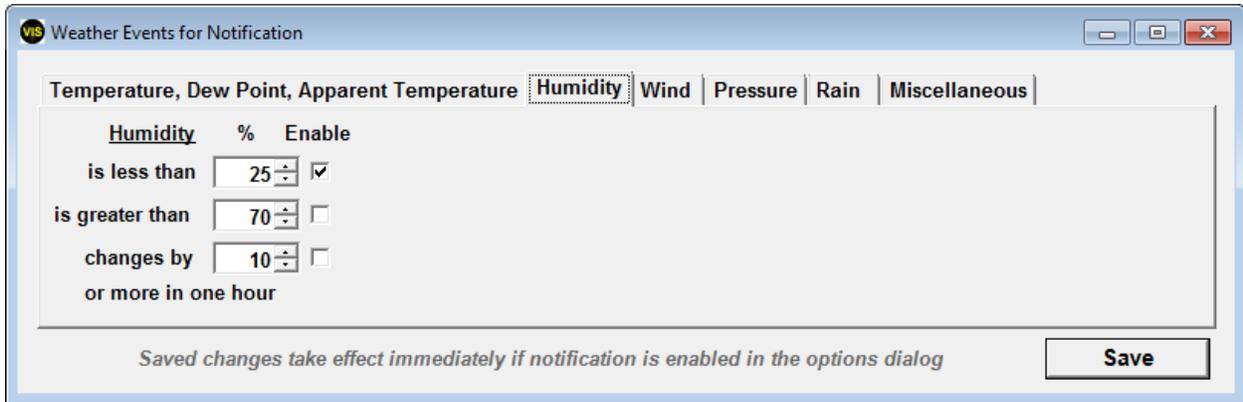


Figure 26: Humidity Limits

Humidity limits and change rate work exactly as they do for temperatures.

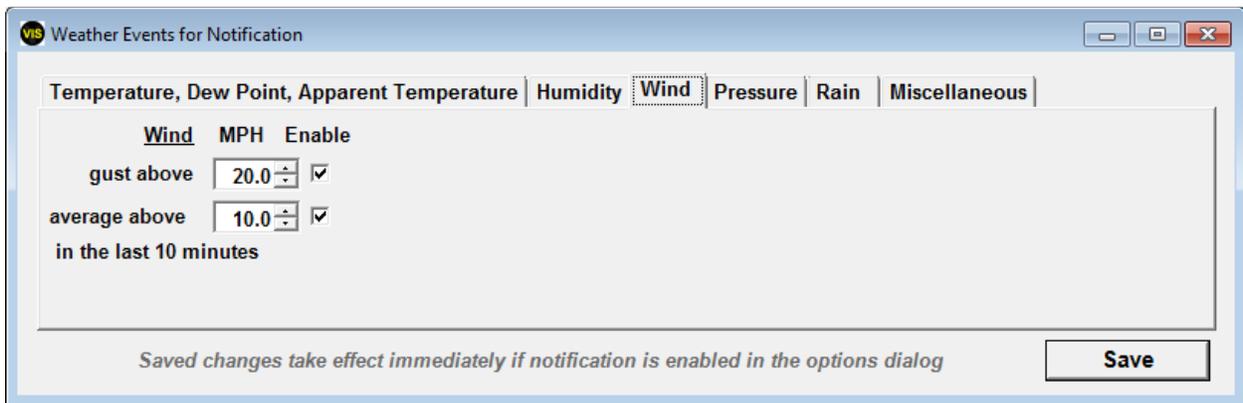


Figure 27: Wind limits

Wind limits will notify when a gust or average value over 10 minutes exceeds the set limit.

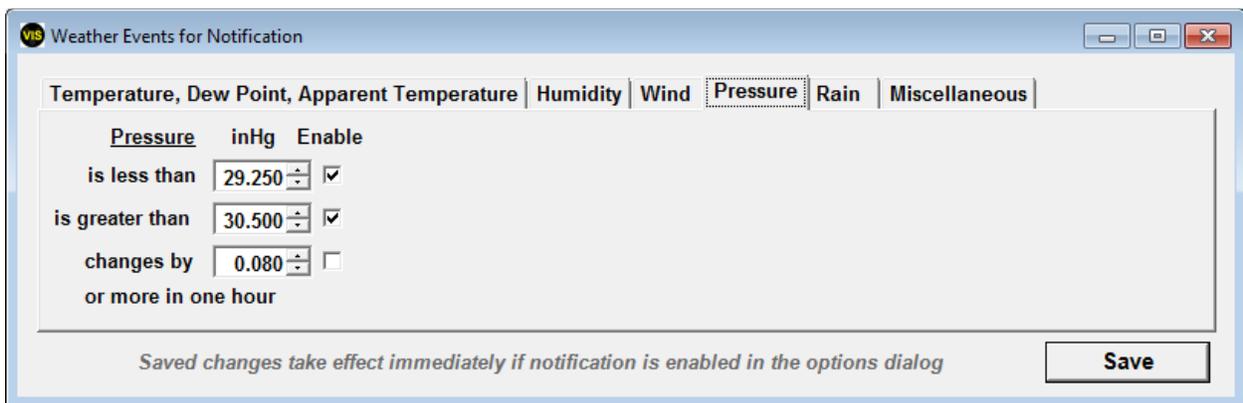
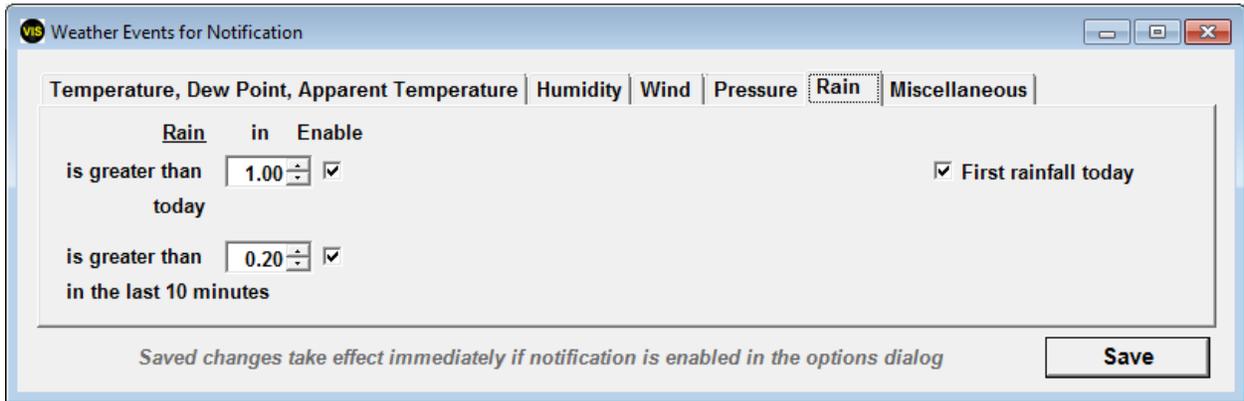


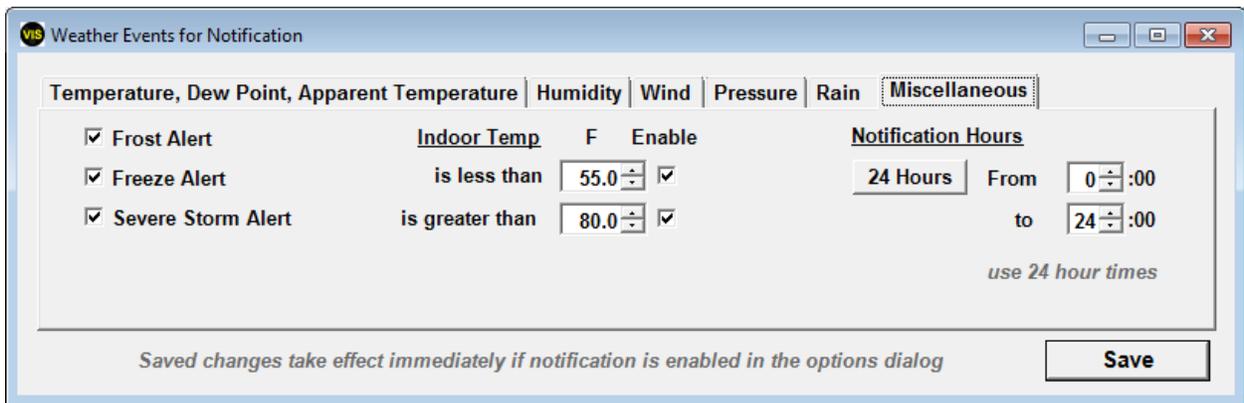
Figure 28: Pressure Limits

Pressure limits work the same way as well. *The pressure change rate is also tested over 10 minutes, so the change rate tested is 1/6 of the set value.*



**Figure 29: Rain events and Limits**

Rain limits will notify when exceeded. The first rainfall event notifies once when the first rain of the day is detected.



**Figure 30: Miscellaneous Events, Warnings and Limits, and Notification Hours**

The first three events are warnings. These occur when frost might first form, when temperatures fall below 30F, and when the barometric pressure is below 29.800 inHg and falling rapidly, respectively. *These warnings work whether Imperial or Metric units are selected, and use appropriate values.*

Indoor limits work the same way as all limits do.

Notification hours determine when the Reader can send email notifications. Clicking on “24 Hours” sets the values as shown, and allows the Reader to send Email any time of day or night. Setting “From” and “To” hours limits notification to occur between those hours; this is useful to prevent Emails from being sent at night, when you’re asleep.

**Note: Email must be properly set up in order to use notification; the server, email address and subject as well as the port number must be properly filled in. We strongly recommend testing email before enabling any notifications.**

## Weather Reporting



Weather Reporting	
<input type="checkbox"/> Enable My Backyard Weather	Settings
<input type="checkbox"/> Enable PWS Weather	Settings
<input type="checkbox"/> Enable WeatherBug	Settings
<input type="checkbox"/> Enable Weather Underground	Settings

**Figure 31: Weather Reporting Setup for Base License features**

These four reporting services are included in the base license for the Reader. They require that you have already set up an account with these services, which you will need to provide the information for in the Settings for each one you want to enable.

Clicking on the Settings button allows you to set up the service, and then you can check the boxes to enable the ones you've set up. Unchecking a box disables reporting, but leaves the settings intact.

Enabling reporting to these services sends your weather data to them, which they then use to create a weather page for you as well as to provide that data to others.

The following show the settings for each service.

## My Backyard Weather (Acu-Link)

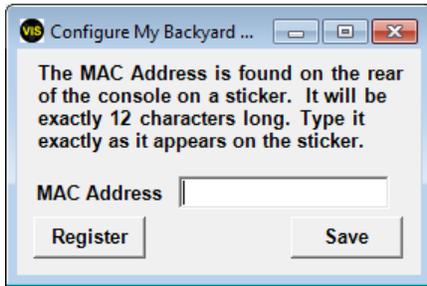


Figure 32: My Backyard Weather Settings

My Backyard Weather requires only the MAC Address from the sticker on the back of the console. Enter it exactly as it appears on the sticker and save the setting.

If you've never registered your console with Acu-Link before, you will need to click on the "Register" button once – and only once – to register it before going to the My Backyard Weather website. ***It's critical that you do not register your console more than once unless directed to do so by Acu-Rite.***

You'll receive this warning as a reminder when you click on "Register":

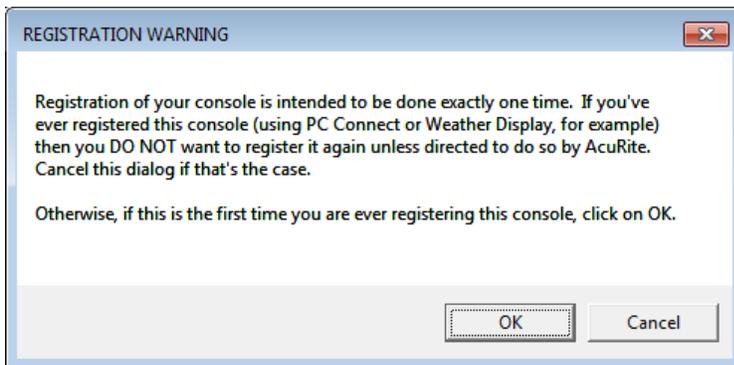


Figure 33: Registration Warning for My Backyard Weather

## PWS Weather Setup

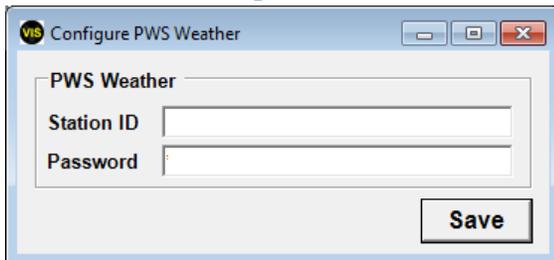
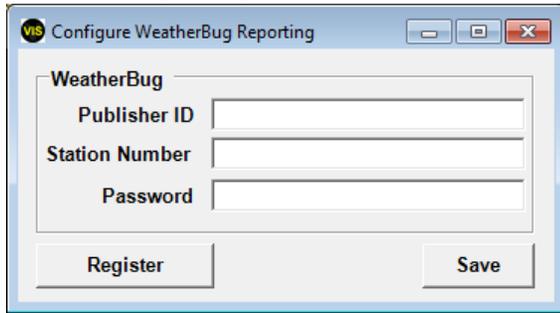


Figure 34: PWS Weather Settings

Enter your PWS Weather Station ID and Password, and click on Save.

## WeatherBug Setup

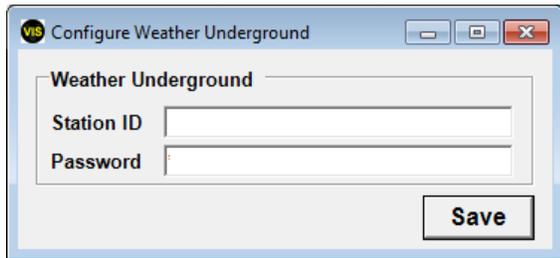


The screenshot shows a window titled "Configure WeatherBug Reporting". Inside the window, there is a section labeled "WeatherBug" containing three text input fields: "Publisher ID", "Station Number", and "Password". Below these fields are two buttons: "Register" on the left and "Save" on the right.

**Figure 35: WeatherBug Settings**

Enter your Publisher ID, Station Number and Password, and click on Save. *Clicking on Register will take you to the WeatherBug Registration Page so that you can create an account if you need to do that.*

## Weather Underground Setup

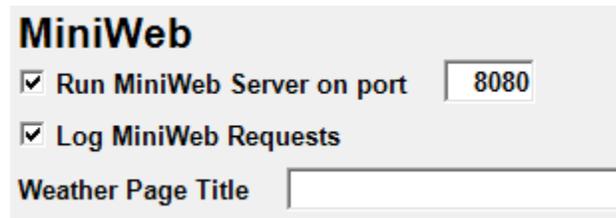


The screenshot shows a window titled "Configure Weather Underground". Inside the window, there is a section labeled "Weather Underground" containing two text input fields: "Station ID" and "Password". Below these fields is a single button labeled "Save".

**Figure 36: Weather Underground Settings**

Enter your Station ID and Password, and click on Save.

## MiniWeb



**MiniWeb**

Run MiniWeb Server on port

Log MiniWeb Requests

Weather Page Title

Figure 37: MiniWeb Settings

**The MiniWeb is one of the most desired features of the Reader.** It's a tiny web server, built right into the Reader, that allows you to get your weather station's readings from anywhere on a mobile device.

*While intended for mobile phones, it'll work with desktop browsers too – but the fonts and displays will be a bit large. The MiniWeb requires HTML5 support, so it will work with most modern browsers. It does require at least Internet Explorer 11 to function properly, but Firefox, Chrome and most others support it just fine.*

**You must be running the Reader as a user with Administrator privileges on the PC, or do some additional setup to enable it to work.** Windows Security requires that, and while we've documented a method to make it work on our Forum, you will need to do this setup on your own. We cannot support the setup of the MiniWeb on your PC. We will also not be providing support for opening firewall ports, or routers. Once you have it set up and working, we're happy to help you with any trouble you have from there.

**All MiniWeb pages will automatically refresh periodically, as new data becomes available.**

### MiniWeb Setup

To set up the basic options, choose an unused port on your PC for the MiniWeb to listen on; we use 8080, but you can use any unused port. Checking the box tells the reader to try to start the MiniWeb. If everything is set up properly, it will start. If there's a problem starting the MiniWeb, you will need to take a look at our Forum article located at <http://forum1.valleyinfosys.com/index.php/topic,180.0.html> for further troubleshooting and setup details. **Again, we can't help you with this setup.**

If you'd like to log MiniWeb requests (these show up in the Log Window, and also in the Debug Log if it's enabled) check that box.

You should set up a Weather Page Title. It will default to "VIS Weather", but you can set any title you like that's 15 characters or less.

To open the MiniWeb locally on the PC running the Reader, click on the "WS" status icon. This will open your default browser and load the MiniWeb Weather page. When the page is loaded, and if you shrink the displayed page size in the browser, it should look similar to this:

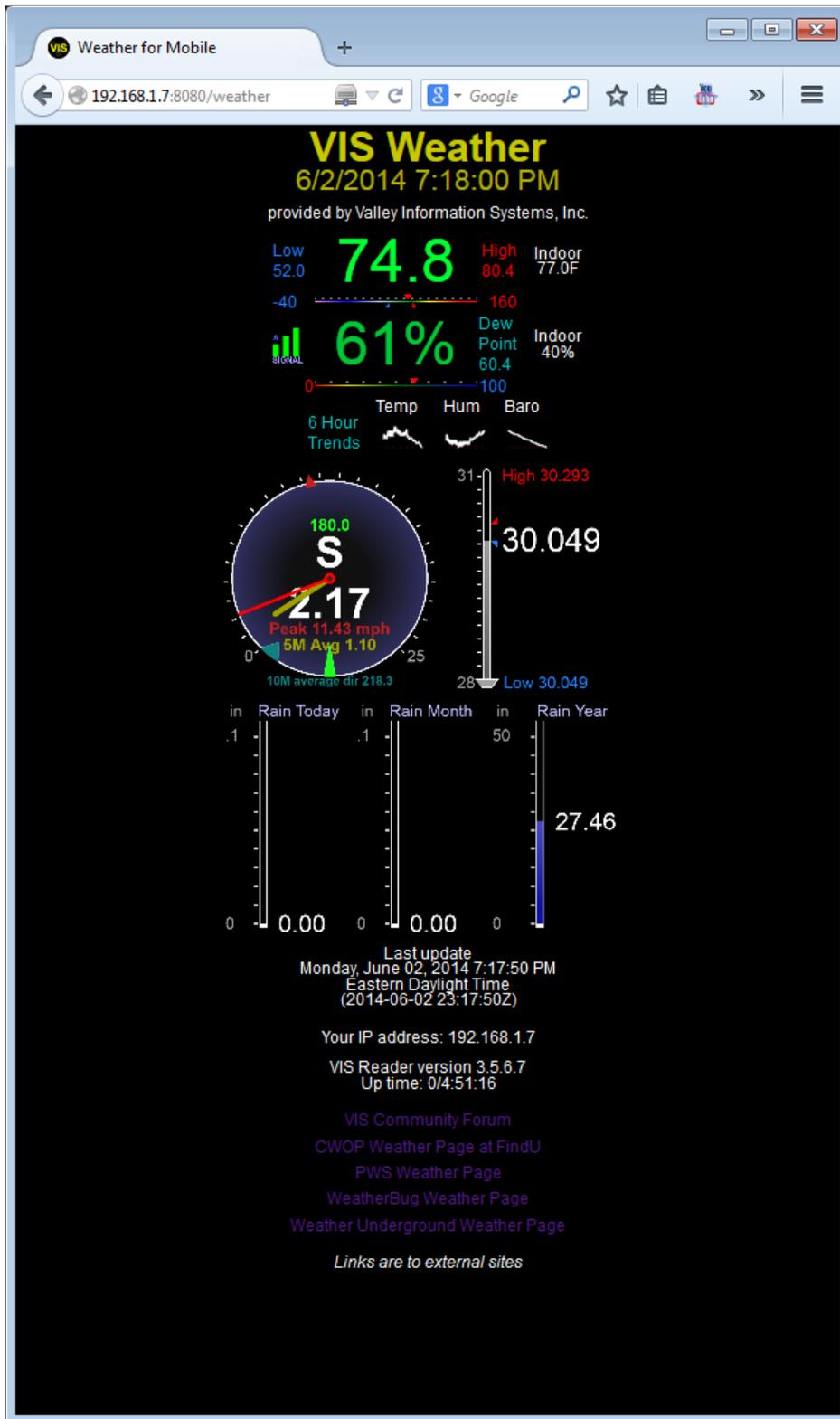


Figure 38: MiniWeb Weather Page

There's a lot going on here. Most of it should be immediately obvious; however, there are hotspots you can click on to bring up some graphs. The temperature, humidity, wind, barometer and rain today all link to graphs like the ones in the reader that you can click on and see.

In addition, there are other features of the MiniWeb available from different URLs. The following URLs are defined:

### MiniWeb Pages

*/*

The MiniWeb Root page: a menu of available pages. (*NOTE: This is only available locally, and not from the Internet, for security reasons.*)

*/weather*

The Weather page, as you've already seen above.

*/sc*

Takes a screenshot of the reader and displays it in your browser.

*/charts*

This displays all seven available charts in the browser.

### Units of Measure

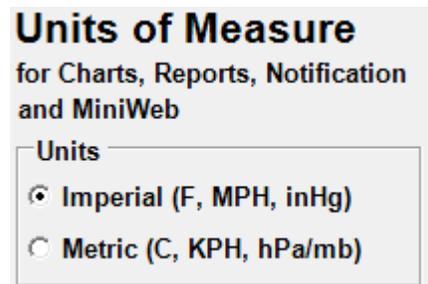


Figure 39: Units of Measurement

For many Reader features, you can set the units of measurement used here. Choose the units you prefer.

## Indoor Temperature

### Indoor Temperature

Use Alternate Method

Figure 40: Indoor Temperature Calculation Method

The indoor temperature is normally retrieved from the console every 12 minutes. This is an averaged value over that time, and the Reader displays this and uses this value.

If you prefer, you can ask the reader to use an alternate method for calculating the temperature from the barometric sensor data; it uses a compensation factor that includes the indoor temperature. This makes it a bit more precise (one decimal place) but a bit less accurate (it jumps around a bit.)

## Chart and Report Options

**Charts/Report**  
Keep  Hours' data  
[Set from 3 to 72](#)  
 Use Daily Rain, not total

Figure 41: Chart and Report Data Options

These options control the amount of data saved by the Reader in memory to generate the charts and report, as well as which display method to use on the Rain (total) chart.

Set the value in hours for which you wish to keep data available. A value of 24 equals one day; the maximum of 72 hours is three days' data. The minimum value is 3 hours.

Checking the box for "Use Daily Rain" makes the Reader reset the rain totals at midnight local time in the chart, giving you a view of the daily rain. Unchecking it totals the rainfall over the entire chart interval.



*Subscribers to SQL 18-second data have the capability to chart and report on far more than just the 72 hours of data that you can see in the Reader's charts. Using VIS Analyze, SQL subscribers can analyze and chart data that goes back as far as their subscriptions go; as long as you've been saving data, that data is available for reporting and charting if you've enabled SQL.*

## 10/12-Minute Data Options



Figure 42: 12-minute Options

This button takes you to the options for the console's 12-minute data, shown here:



Figure 43: CSV Options

“Dump to CSV at” specifies the number of 12-minute data records to save to the [weatherdata.csv](#) at one time. Setting this value to 1 will force the Reader to dump every record as it's been read. Setting to 5, as shown here, dumps five records once per hour.

*Note that these records are stored in the Windows Registry. Setting this to too high a value could affect the performance of your PC; for this reason, the maximum value allowed is 120, or one day's data. Setting a higher value will have no effect, as the Reader resets it to 120 before saving it.*

A reference to the columns contained in this file is on our Forum documentation section, but it's identical to the format used by the original version of AcuRite's PC Connect software. That's what the “Original” CSV format is, and it'll be used when selected.

*If you prefer to have Metric units in your [weatherdata.csv](#), then you must select Metric units of measurement, and also select “Respect Selected Units” here.*

Use Universal Time replaces the timestamps in the CSV file with Universal Time instead of local time, which eliminates any ambiguity regarding when readings were saved.

## Diagnostics

### Diagnostics

Debug Log

Support ZIP

Figure 44: Diagnostics and Support Package Creation

The reader has a debug logging facility built in. When enabled, it writes log entries to a file named [acu35log.txt](#) in the Reader's directory. ***This log file contains a lot of information, and can fill up disk quickly; only enable it when needed, and only for as long as is needed, to capture a problem.***

The correct way to request support is to first enable debug logging, then make an effort to cause the problem to occur. Once the problem has occurred, debug logging can be disabled and the Support ZIP can be generated.

Once a debug log has been generated, clicking on the "Support ZIP" button will create a support package we can use to help you. If you have Email notification set up, the support package will be sent directly to us automatically, otherwise, you'll need to attach it to a support request yourself in the Forum. The support package will be named starting with [VISR](#), and will contain your Machine ID in it; it should be immediately recognizable. *The Machine ID will be visible in the Licenses dialog, shown on the next page.*

Please note that in most cases, requests for support will require you to generate a debug log and submit a Support ZIP. ***Don't wait for us to ask you to do this; doing so will delay resolution of your issue.*** Start with doing this unless there's something preventing you from accessing the log or Support ZIP button.



***While problems with the Reader are rare, they do occasionally happen. We use the built-in diagnostic logging, exception reporting and automated support ticket creation to make getting help as quick and easy as it can possibly be.***

## Licenses Button



Figure 45: Licenses Button

The Licenses button takes you to the subscription features licensing dialog. From there, you can request trial licenses for the premium subscription features of the Reader, and check on the expiration dates for support licenses you've paid for and use.

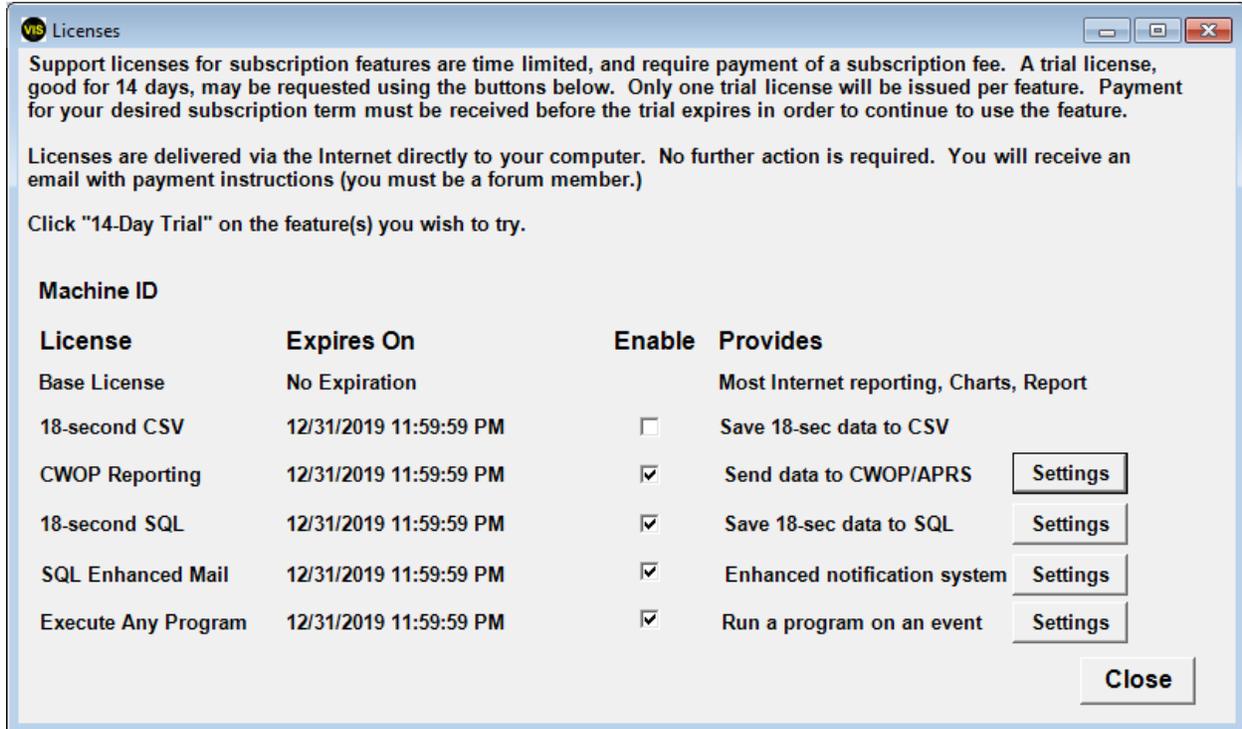


Figure 46: Licenses Dialog

### Important Things to Know about Licenses

You must be a VIS Forum member, with a valid Email address we can reach, to subscribe to premium features.

Your PC is identified by the Machine ID. This will appear in blue to the right of "Machine ID" in the Licenses dialog. Licenses are tied to this Machine ID. **Licenses are good for use on one (and only one) PC.** *If you choose to use subscription features on multiple PCs, you will need a subscription and license for each feature on each PC that will use that feature.*

Each premium subscription feature has a "14-Day Trial" button associated with it. To get a trial license, you click on the button for the feature you want to try out. The Reader will request a license for you, right over the Internet, and it will be delivered directly to the Reader.

Once a trial license is installed, it will expire in exactly 14 days from the time it was requested. Only one trial license will be issued per feature, and it cannot be extended. Do not license a feature that you do not intend to try out immediately, because you won't get a second chance!

We will Email you within three days with details on how to pay for your subscription, if you choose to continue to use it. When we receive your payment, we'll extend your license for the period of time you've chosen to subscribe to the feature. The updated license will be delivered to your Reader automatically; the Reader periodically contacts our server to request updated license information.

Licenses are encrypted, and stored locally on your computer once they're received from the server.

*Some features (like CWOP Reporting) will require information that you need to get by setting up an account with a third party, and this could take some time to complete. **Do not request a trial license until you've completed that setup and have all of the required information!** The Reader will warn you about this if you try to request a license for a feature that requires a third party to set an account up for you.*

The following sections detail the premium subscription features available, and their setup.



***Trials of our subscription features are offered so that you can get a feel for what they can do for you, and so that you can make sure that you will be happy with what you get before you subscribe. We offer you 14 days to “kick the tires” on each of our subscription features; to continue to use the features after the trial period, you must purchase a support subscription.***

## Licensed Subscription Features (requiring Support Subscriptions)

### 18-Second Data to CSV

The 18-second CSV license does not require any setup. Once a trial license is issued, it can immediately be turned on. When enabled by checking the box that will appear under “Enable” in the licenses dialog, the reader will immediately begin writing data to the file [vis18s.csv](#) in the Reader directory.

#### CSV File Format

Column	Description
1	Date and Time (in Universal Time, MySQL Format)
2	Outdoor Temperature
3	Outdoor Humidity
4	Dew Point
5	Indoor Temperature
6	Indoor Humidity
7	Wind Direction (degrees)
8	Wind Speed
9	Heat Index
10	Wind Chill
11	Rainfall (in the last 36-seconds)
12	Pressure
13	Signal Strength from sensors

Figure 47: 18-Second CSV Column Definition

This file is written to every time new data is acquired from the sensors. Normally, this is every 18 seconds. No data is written to this file when the signal from the sensors is lost; the reason is that data is not changing, and there’s no point in writing unchanging data until the next signal is acquired. *All units of measurement in the 18-second CSV file honor the setting chosen in the Reader Options.*

#### Using the 18-second CSV File

To make use of the 18-second CSV data in your own software, you should observe a specific way of accessing the data. As long as you avoid colliding with the Reader for access to the file, everything will work out well. *If you do collide with the Reader, the results are unpredictable.*

#### To avoid collisions:

- 1) Watch for the existence of the [vis18s.csv](#) file, or watch for the date and time information on the file to change.
- 2) Wait two seconds. *This is critical to ensure that you do not collide with the Reader.*
- 3) Rename the file to any name you like. *This gets it out of the way of the Reader, which will create a new file next time it needs to save data.*
- 4) Read and process the renamed file in your own software.
- 5) Go back to step 1.

By accessing the [vis18s.csv](#) file in this way, you will have good results.

## CWOP Reporting

The CWOP (Citizen's Weather Observation Program) Reporting premium subscription feature requires some information that you must get from a third party; do not request a trial license for the feature until you are already set up with CWOP.

When you request your trial license for CWOP Reporting, you will be presented with the following warning dialog:

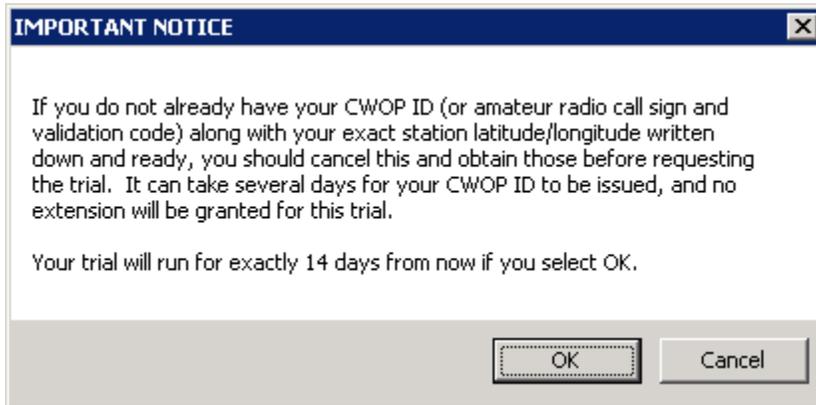


Figure 48: CWOP Reporting Warning

**Please do not click on OK if you do not have your CWOP ID.** If you aren't sure of your station's latitude and longitude, that's okay – you'll get the opportunity to figure that out during the setup of the feature.

When the reader gets your license, it will display this:

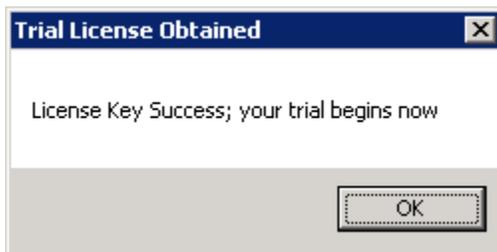


Figure 49: Trial License Success

The expiration date for your trial license will fill in on the Licenses dialog, and a new Settings button will appear. Click on this Settings button to set up CWOP Reporting.

The settings are shown below:

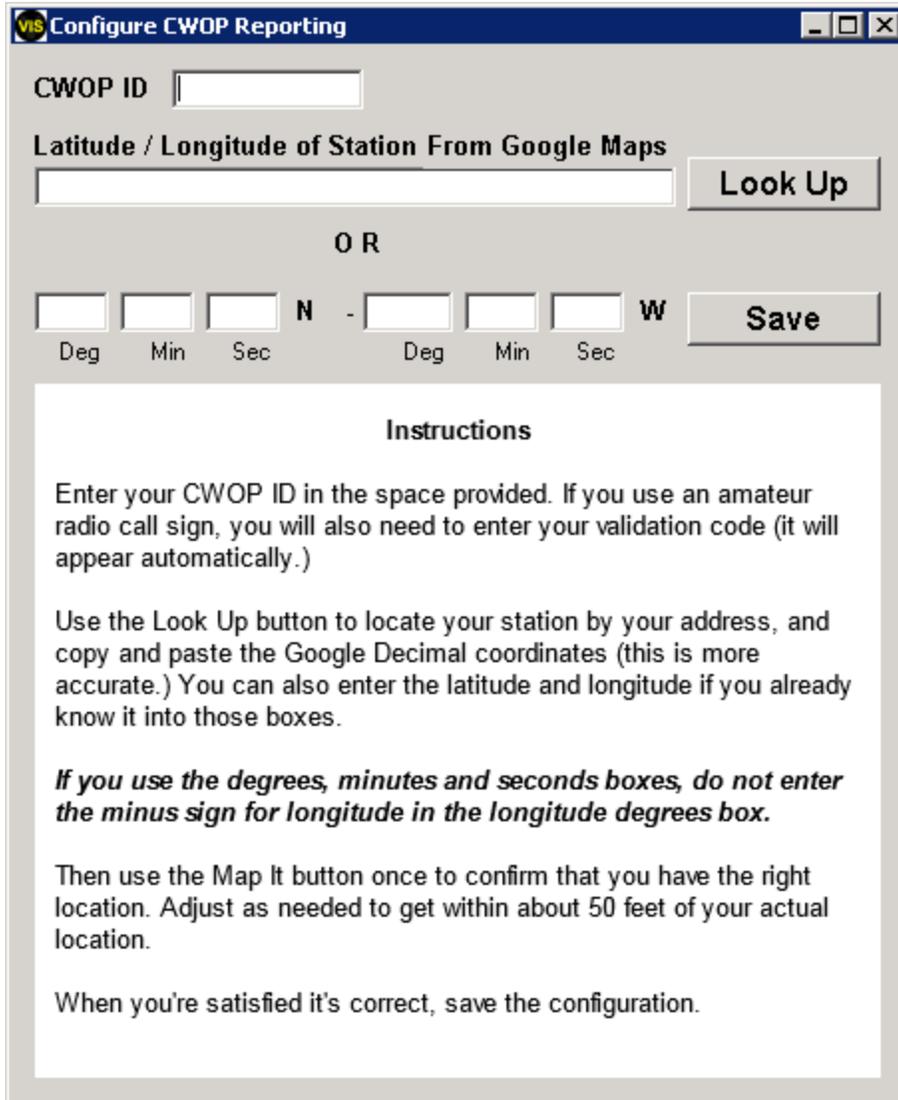


Figure 50: CWOP Settings

Some instructions are included here to remind you of what you need to do, but we'll explain it a bit better here.

**You will need to fill in your CWOP ID in the first box.** If you're using an Amateur Radio license and validation code, the Reader will recognize that your ID is an Amateur Radio license and the validation code box will appear.

**Next,** if you don't know your station's exact latitude and longitude (or you just want it to be as accurate as possible,) **click on the Look Up button to open a browser and go to Google Maps.** Find your address in Google Maps, and right click on the map at the exact location of your 5-in-1 sensor. From the menu, select "What's Here?" and depending on the version of Google Maps you're using, the latitude and longitude (expressed as decimal numbers) will appear in either the search bar (old Google Maps) or in a tile in the upper left corner of the map (new Google Maps.) It will look something like this:

**39.32168175, -75.3516813**

**Highlight these numbers and copy them to your clipboard with Ctrl-C.**

**Now go back to the Configure CWOP Reporting dialog, and paste those numbers into the large box under “Latitude / Longitude of Station from Google Maps” using Ctrl-V.** You will see the other boxes get filled in, and the “Look Up” button will change to a “Map It” button.

*If you’re okay with it just being close (within about 50 feet) then you can enter the latitude and longitude using the lower set of boxes in degrees, minutes and seconds instead. However, we strongly recommend using Google Maps to get it right. Once these boxes are filled in, the “Look Up” button will change to a “Map It” button.*

**Click once on “Map It”**, and the instructions will be replaced with a map; a marker will appear at the exact location you specified. If it points to the location of your station, you’re done – click “Save”. Otherwise, check your location and be sure that you’ve copied it correctly and try again.

Once you’ve saved the settings, the Enable checkbox will appear in the Licenses dialog. Checking this box enables the Reader to start reporting your data to CWOP; unchecking it will disable reporting, but your settings will remain in place.

Clicking on the “CW” status indicator in the Reader’s main display will take you to your weather page at FindU. There, you can verify that your data is being received, and see what data you’re actually sending to CWOP. *Please allow about 30 minutes for a few data points to be sent before checking after initially setting up CWOP Reporting.*

*If you’re curious about what’s being sent to CWOP, you can enable the debug log for about 12 minutes, and then take a look inside. You’ll find a line starting with **DEBUG APRS**; this line contains the actual string of data being sent to CWOP.*

CWOP reporting uses a very aggressive method to ensure the delivery of the observations to the APRS servers. This method will try to send to a server, and if it fails for any reason, choose another server and try sending the data to it. It will keep on going until either the data is properly sent or it runs out of servers to try.

## 18-Second Data to SQL Server

SQL Server connectivity is available in the Reader. With it, you can save data about every 18 seconds to a database, which you can then use in your own software to generate reports and analyze the data; we're also enabling you to visualize the data in enhanced charting and report features just for subscribers with our VIS Analyze program.

The SQL Server subscription works with SQL Express Server 2014, using the LocalDB option, or with your own existing SQL Server.

*We only support SQL Server 2012 and SQL Server 2014 for the VIS Reader. LocalDB has a 10GB data limit, but it's free to use. That will give you the capability of storing up to about ten years' worth of data. If you have your own SQL Server, the limits are based on your particular server.*

When you've licensed the SQL Support Subscription, the Reader will enable a Settings button in the Licenses dialog; clicking on this button will download the database installation utility and run it. This utility is not part of the Reader, but a separate program designed to install the components needed for SQL LocalDB and configure the database, or allow you to set the connection settings for your own SQL Server. *It will also configure the Reader to make use of the database.*

### System Requirements

SQL Server connectivity in the Reader requires that you have approximately 11GB of free disk space on your C: drive if you intend to use the SQL LocalDB option. This is enough space for the database, the programs that the Reader will install, and the report templates.

The Reader, SQL Server LocalDB and the VIS Analyze program work best on a relatively fast processor. Any 32- or 64-bit processor running at a speed of at least 2GHz should work well. Slower computers can still run the Reader and SQL Server LocalDB, but VIS Analyze performance will suffer somewhat on these slower machines.

### Installation and Configuration

First, be sure that your computer meets the requirements noted above. Most importantly, you must have sufficient free space on your C: drive. If you do not, move or delete some files or programs first.

Clicking on the "Settings" button downloads the SQL Installation utility and runs it.

Setup probably couldn't be easier, or simpler to complete, especially if you're using the LocalDB option. We recommend this option for nearly everyone. Simply select LocalDB, click Next, and then click "Test Connection". The installation program will install the necessary software, build and validate the database, and let you know that it's configured and ready to go. Then all you need to do is enable the Reader to start writing data to the database by checking the box in the Licenses dialog. To stop the Reader from writing to the database, uncheck that box.

If you have your own SQL Server, then you will be presented with the connection options. You must fill these in correctly in order for the installation program to successfully connect and configure the new

database on your server; we presume that if you have your own SQL Server, you understand enough to do this.

If at any time you need to reconfigure the Reader's SQL connection, simply click on the Settings button to run the installation utility again.

### Database Definitions

The database is named **visreader**, and the installation program creates a number of tables; the most important one is the WeatherData table. This table contains the 18-second records.

#### WeatherData Table

Column	Data Type	Description/Details
<b>EventTime</b>	Datetime2	Stored as Universal Time
<b>Units</b>	Bit	0=Metric, 1=Imperial
<b>OutTemp</b>	Numeric(4, 1)	Outdoor Temperature
<b>OutHum</b>	Tinyint	Outdoor Humidity
<b>InTemp</b>	Numeric(4, 1)	Indoor Temperature
<b>InHum</b>	Tinyint	Indoor Humidity
<b>WindDir</b>	Numeric(4, 1)	Degrees (N=0)
<b>WindSpeed</b>	Numeric(5, 2)	Wind Speed
<b>HeatIndex</b>	Numeric(4, 1)	Heat Index
<b>WindChill</b>	Numeric(4, 1)	Wind Chill
<b>Pressure</b>	Numeric(7, 3)	Barometric Pressure
<b>Rain</b>	Numeric(5, 2)	Rainfall since last reading
<b>RSSI</b>	Tinyint	Signal Strength from sensor

Figure 51: WeatherData Table defined on SQL Server

The data is stored in the units of measure that have been selected in the options. Note that **Universal Time** is used; this is done to avoid ambiguity created by Daylight Savings Time/Standard Time switches. The data will always refer to a particular moment in time as a result. A new row is created each time data is read from the sensors.

*Note that the units of measure are saved with the data; this means that if you choose to change them, your data can still be interpreted properly.*

The WeatherData table has a primary key set on the **EventTime** field.

We also provide a second table that stores daily data, including highs and lows. This table, named `DailyData`, is updated whenever needed. A new row in the table is created for each day.

*The `DailyData` table, unlike the `WeatherData` table, uses Local time and not Universal Time, but only for the `Date` field. This keeps the daily data relevant to your locale, and makes more sense; any ambiguity is less important in this context. The remaining times are stored as Universal Time. `Date` is a primary key.*

### DailyData Table

Column	Data Type	Description/Details
<code>Date</code>	<code>Datetime2</code>	Stored as Local Time (with hours, minutes and seconds set to 0)
<code>Units</code>	<code>Bit</code>	0=Metric, 1=Imperial
<code>OutTempHigh</code>	<code>Numeric(4, 1)</code>	High Daily Temperature
<code>OutTempHighTime</code>	<code>DateTime2</code>	Time High Temperature Reached
<code>OutTempLow</code>	<code>Numeric(4, 1)</code>	Low Daily Temperature
<code>OutTempLowTime</code>	<code>DateTime2</code>	Time Low Temperature Reached
<code>InTempHigh</code>	<code>Numeric(4, 1)</code>	High Indoor Temperature
<code>InTempHighTime</code>	<code>DateTime2</code>	Time High Indoor Temperature Reached
<code>InTempLow</code>	<code>Numeric(4, 1)</code>	Low Indoor Temperature
<code>InTempLowTime</code>	<code>DateTime2</code>	Time Low Indoor Temperature Reached
<code>OutHumHigh</code>	<code>Tinyint</code>	High Outdoor Humidity
<code>OutHumHighTime</code>	<code>DateTime2</code>	Time High Outdoor Humidity Reached
<code>OutHumLow</code>	<code>Tinyint</code>	Low Outdoor Humidity
<code>OutHumLowTime</code>	<code>DateTime2</code>	Time Low Outdoor Humidity Reached
<code>InHumHigh</code>	<code>Tinyint</code>	High Indoor Humidity
<code>InHumHighTime</code>	<code>DateTime2</code>	Time High Indoor Humidity Reached
<code>InHumLow</code>	<code>Tinyint</code>	Low Indoor Humidity
<code>InHumLowTime</code>	<code>DateTime2</code>	Time Low Indoor Humidity Reached
<code>DewPointHigh</code>	<code>Numeric(4, 1)</code>	High Dew Point
<code>DewPointHighTime</code>	<code>DateTime2</code>	Time High Dew Point Reached
<code>DewPointLow</code>	<code>Numeric(4, 1)</code>	Low Dew Point
<code>DewPointLowTime</code>	<code>DateTime2</code>	Time Low Dew Point Reached
<code>HeatIndexValid</code>	<code>Bit</code>	A Heat Index Was Recorded
<code>HeatIndexHigh</code>	<code>Numeric(4, 1)</code>	Highest Heat Index
<code>HeatIndexHighTime</code>	<code>DateTime2</code>	Time Highest Heat Index Reached
<code>WindChillValid</code>	<code>Bit</code>	A Wind Chill Was Recorded
<code>WindChillLow</code>	<code>Numeric(4, 1)</code>	Lowest Wind Chill
<code>WindChillLowTime</code>	<code>DateTime2</code>	Time Lowest Wind Chill Reached
<code>PressureHigh</code>	<code>Numeric(7, 3)</code>	High Pressure
<code>PressureHighTime</code>	<code>DateTime2</code>	Time High Pressure Reached
<code>PressureLow</code>	<code>Numeric(7, 3)</code>	Low Pressure
<code>PressureLowTime</code>	<code>DateTime2</code>	Time Low Pressure Reached
<code>WindSpeed</code>	<code>Numeric(5, 2)</code>	Highest Wind Gust
<code>WindSpeedTime</code>	<code>DateTime2</code>	Time Highest Wind Gust Recorded
<code>RainTotal</code>	<code>Numeric(6, 2)</code>	Total Rain This Day
<code>RainRateMax</code>	<code>Numeric(4, 3)</code>	Highest Rain Rate This Day
<code>RainRateMaxTime</code>	<code>DateTime2</code>	Time Highest Rain Rate Recorded

Figure 52: `DailyData` Table defined on SQL Server

There are additional tables defined in the database, however, these are used internally by the Reader and are not meant to be touched by any other software. **We strongly discourage you from attempting to make use of those tables in your own software, and we will not support any access to them.**

### VIS Analyze

A separate program, **VIS Analyze**, is also provided. This program allows you to visualize and report on the data you've collected in SQL Server.

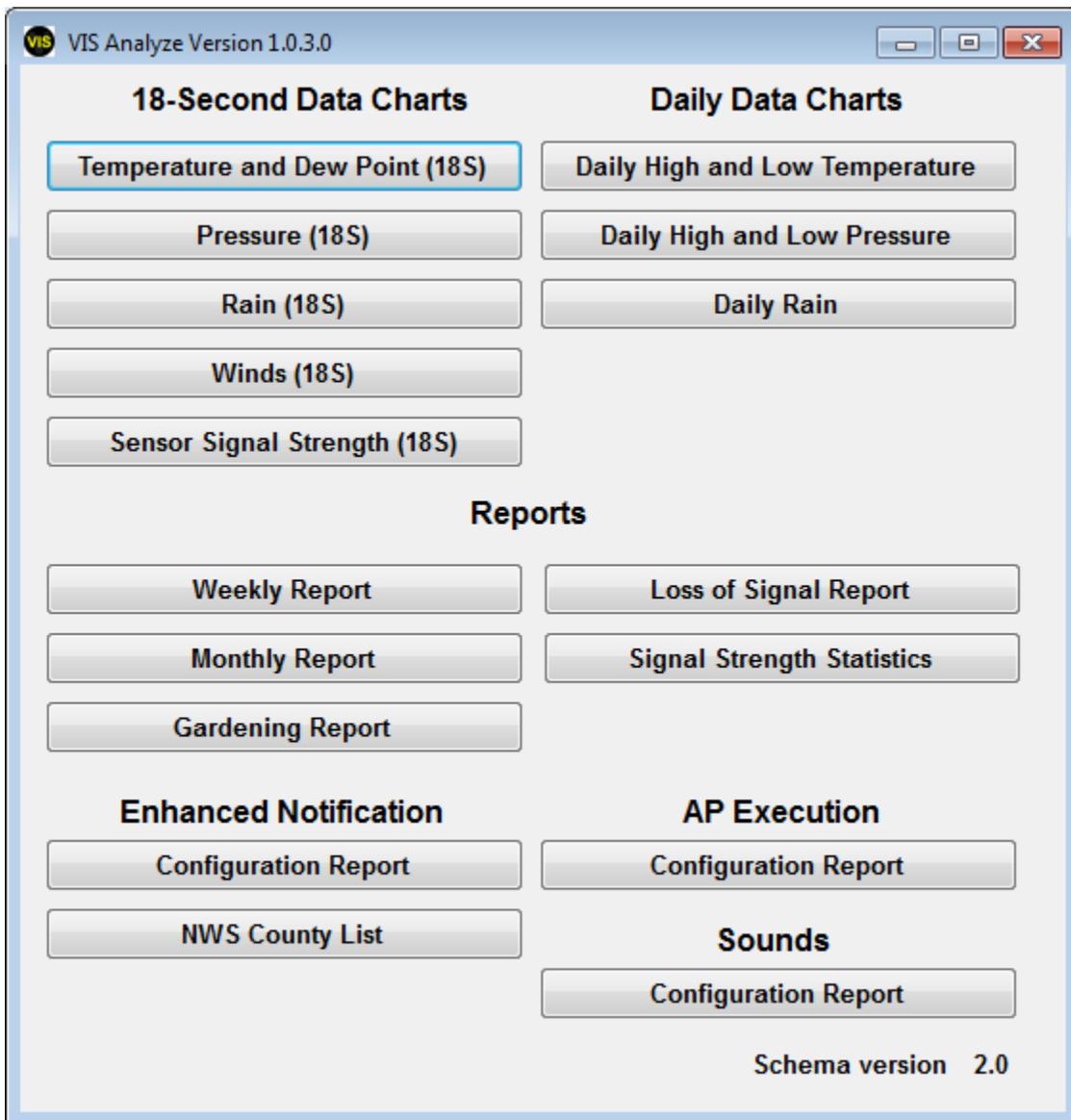


Figure 53: VIS Analyze

There are a number of chart and report options here. For most, you can select from several quick charts or choose a customized time frame on which to report data.

In all cases, VIS Analyze knows what data you have in your database, and will only allow you to select time periods that correspond to times when you've actually collected data, i.e. the earliest record in the database to the end of today.

Not all of the charts and reports are documented here. We're sure that you can figure them out on your own. We provide a sampling of those here, along with brief explanations.

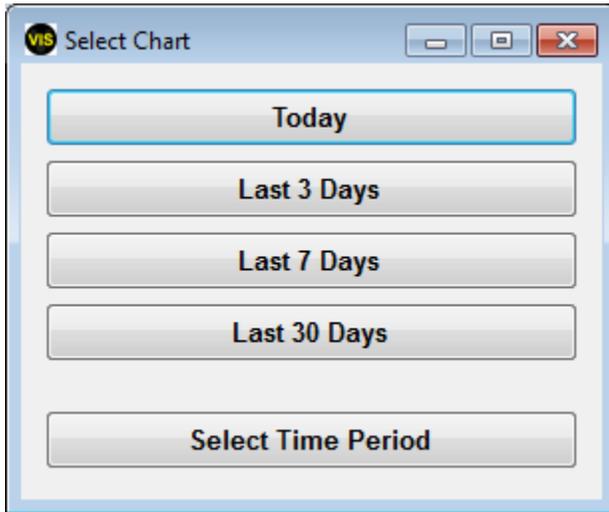


Figure 54: Chart time frame selection

Some charts and reports offer a “quick select” feature that allows you to bring up a pre-defined time frame in the report or chart. An example is shown here in figure 52.

Some charts also offer a cursor feature that shows the value of a given data point, as seen here in this three-day Temperature and Dew Point chart:

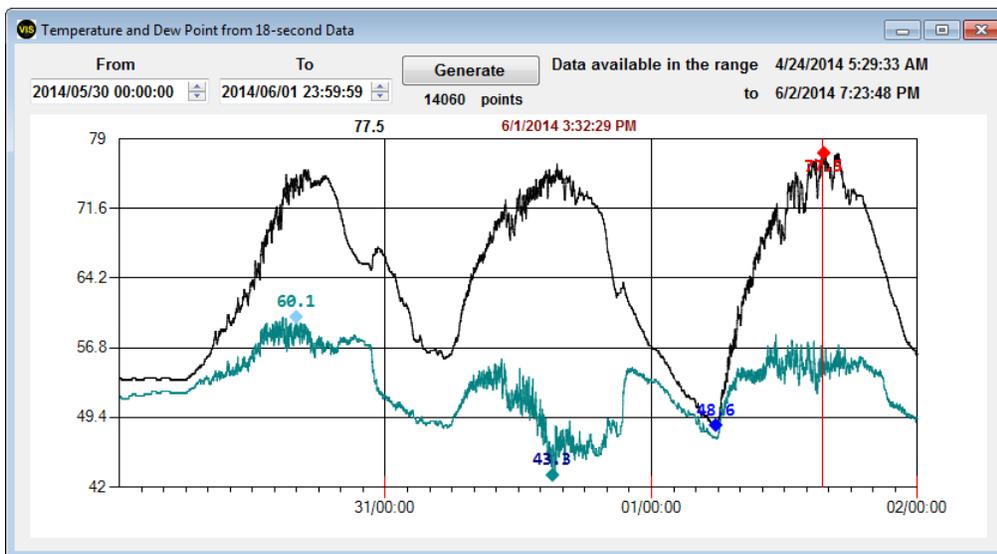


Figure 55: Temperature and Dew Point chart showing cursor and value at cursor

Note that the high and low values for both temperature and dew point are picked out with markers. Hovering over a data point shows the value and the date and time that value was taken; the cursor is shown as long as the pointer is within the chart area. The color of the value indicates which line you're hovering over.

A more complicated chart is the wind chart, shown below:

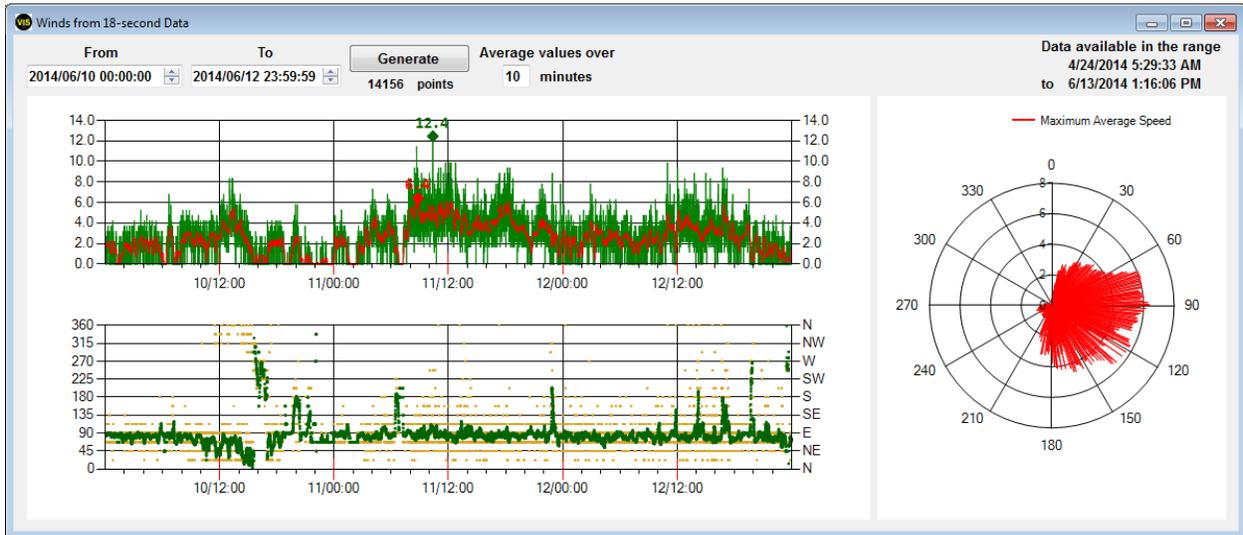


Figure 56: Wind charts

The wind chart is actually three charts, with speed in the upper chart and direction in the lower chart, and a polar chart showing the maximum average wind speed in all 360 degrees of direction.

There are also reports that you can view; these include weekly and monthly reports, some of which can be customized if you like.

The weekly report covers a seven-day period of your choice, from Sunday to Saturday. Quick reports are also available for the last three weeks, as well as the current week:

# Weekly Weather Report

Week of May 25 - May 31, 2014

Date	Temp		Dew Point		Humidity		Chill Heat		Pressure		Wind	Rain	
	High	Low	High	Low	High	Low	Low	High	High	Low	Gust	Total	MxRate
25	81.5	49.8	60.5	46.8	96	33			30.162	30.075	9.37	0.00	0.00
26	85.6	55.9	62.3	50.2	82	36	85.6		30.135	29.953	11.43	0.00	1.48
27	88.0	61.5	71.1	55.4	94	55	93.4		29.970	29.821	14.51	0.32	1.00
28	76.6	54.9	69.5	52.3	94	78			30.135	29.823	11.43	0.23	0.87
29	56.7	52.2	52.7	48.7	93	80			30.225	30.133	8.34	0.02	0.06
30	75.7	53.4	60.1	51.4	95	53			30.165	30.022	8.85	0.01	0.06
31	76.3	55.6	55.6	43.3	88	33			30.291	30.096	11.94	0.00	0.00
7	88.0	49.8	71.1	43.3	96	33	93.4		30.291	29.821	14.51	0.58	1.48

Figure 57: Weekly Report

The monthly report contains a couple of additional columns:

# Monthly Weather Report

May, 2014

Date	Temp		Dew Point		Humidity		Chill Heat		Pressure		Wind	Rain		Degree	Days
	High	Low	High	Low	High	Low	Low	High	High	Low	Gust	Total	MxRate	Heat	Cool
1	78.3	56.7	68.3	47.4	99	46			29.862	29.709	10.91	0.25	1.00	2.1	4.6
2	67.8	51.3	47.4	40.4	71	42			29.890	29.775	14.51	0.00	0.00	6.2	0.7
3	70.3	45.1	51.7	40.1	90	43			29.903	29.746	12.97	0.03	0.19	8.6	1.3
4	63.3	44.2	48.4	33.7	96	40			29.896	29.770	15.54	0.00	0.00	11.3	0.0
5	68.0	45.0	42.2	34.3	71	34	41.3		30.002	29.886	13.48	0.00	0.00	9.3	0.8
6	72.0	44.4	43.1	34.2	75	31	43.3		30.093	29.900	10.40	0.00	0.00	8.5	1.8
7	66.9	41.5	47.6	33.6	76	38			30.251	30.093	8.85	0.00	0.00	11.3	0.5
8	77.4	52.7	63.5	45.4	90	60			30.199	30.036	7.31	0.00	0.00	3.1	3.1
...[lines omitted]...															
31	88.0	39.6	71.1	33.6	99	31	39.6	93.4	30.301	29.709	18.11	4.39	4.50	154.8	100.6

Figure 58: Monthly Report

Heating and Cooling Degree Days are a standard measure that is related to energy use; the report is based on a standard of 65F being the baseline temperature for which these are calculated.

## *Customizing Report Templates*

Most reports allow customization; you can change fonts, colors and add your own text and images. These reports use template files (.RTF) that can be edited. You should use WordPad to do that editing, and save your report with the same name, but with "C-" added in front. For example, the Gardening Report (which we'll show next) is named garden.rtf. If you choose to customize it, you should save the custom report as C-garden.rtf. By naming it this way, VIS Analyze will recognize that you've customized the report, and will use it instead of the stock template.

Template files may be overwritten at any time, which is the main reason we ask you to rename your custom report templates.

*When editing templates, be sure not to change anything in [SQUARE\_BRACKETS]. Those are the keys that VIS Analyze looks for to replace with the report data. They can be moved, or rearranged, but do not delete them. If you find that you've made a mistake, and the report breaks, you can simply copy the original template back into place as a custom template and edit it again.*

As new reports are added to VIS Analyze, report templates will also be added. All templates are stored in the C:\VIS directory. Your custom templates should also be stored here, and you'll find the SQL database and programs in this directory as well.

A special report, the Gardening Report, gives those with a green thumb the data they need when they need it; here we show the report with customization, including an image, changed fonts and colors.



Figure 59: Gardening Report

This report defaults to displaying the last seven days' data, but can cover any range you choose. Growing Degree Days are a standard measure of plant growth by temperature. A baseline temperature of 50F/10C is used in calculating this value.

There are also reports that relate to the sensor's signal strength. These reports, the Loss of Signal Report and the Signal Strength Statistics, can help you determine if there's a repetitive source of interference in your area, as well as let you know how good the quality of your data is with respect to time. These templates are not customizable at this time, but will be in the future.

LOS Report  
Week of May 25, 2014

Start	End	Duration
5/25/2014 10:28:01 AM	5/25/2014 10:33:02 AM	05:01
5/25/2014 4:28:42 PM	5/25/2014 4:33:43 PM	05:01
5/26/2014 2:13:45 PM	5/26/2014 2:18:58 PM	05:12
5/26/2014 5:33:29 PM	5/26/2014 5:38:30 PM	05:01
5/27/2014 3:47:03 PM	5/27/2014 3:47:37 PM	00:33
5/28/2014 4:30:56 AM	5/28/2014 4:36:08 AM	05:12
5/28/2014 1:57:22 PM	5/28/2014 2:02:35 PM	05:12
5/28/2014 2:14:11 PM	5/28/2014 2:16:14 PM	02:02
5/28/2014 9:33:49 PM	5/28/2014 9:38:41 PM	04:52
5/28/2014 10:07:23 PM	5/28/2014 10:09:03 PM	01:40
5/29/2014 2:28:08 AM	5/29/2014 2:33:21 AM	05:12
5/29/2014 7:11:22 AM	5/29/2014 7:13:03 AM	01:40
5/29/2014 9:19:11 AM	5/29/2014 9:24:23 AM	05:12
5/29/2014 12:08:41 PM	5/29/2014 12:09:47 PM	01:06
5/29/2014 12:14:43 PM	5/29/2014 12:19:55 PM	05:12
5/30/2014 1:29:29 PM	5/30/2014 1:34:30 PM	05:01
5/31/2014 1:46:26 PM	5/31/2014 1:51:39 PM	05:12
5/31/2014 5:18:52 PM	5/31/2014 5:23:54 PM	05:01
5/31/2014 7:03:52 PM	5/31/2014 7:09:05 PM	05:12
Total Duration		01:18:40
Percent of total reported time in LOS		0.780%
Percent time in signal strength 1		0.079%
Percent time in signal strength 2		0.095%
Percent time in signal strength 3		99.045%

Figure 60: Loss of Signal Report

The Loss of Signal Report details each occasion when signal from the sensors was lost, when they were reacquired, and how long the signal was lost for. It also summarizes the percent of total time in each of the signal states.

Signal Strength Statistics Report  
 5/1/2014 12:00:00 AM through 5/31/2014 11:59:59 PM

Hour	LOS Count	Duration	%LOS	%SS1	%SS2	%SS3
00-01	1	00:08:33	0.469	0.897	0.206	98.429
01-02	0	00:00:00	0.000	0.907	0.102	98.991
02-03	1	00:05:12	0.288	0.326	0.020	99.366
03-04	0	00:00:00	0.000	0.879	0.054	99.067
04-05	1	00:05:12	0.289	0.326	0.037	99.349
05-06	0	00:00:00	0.000	0.000	0.000	100.000
06-07	0	00:00:00	0.000	0.656	0.110	99.234
07-08	1	00:01:40	0.093	2.211	0.143	97.552
08-09	0	00:00:00	0.000	0.306	0.054	99.640
09-10	2	00:10:01	0.562	1.237	0.244	97.956
10-11	1	00:05:01	0.205	26.976	0.143	72.676
11-12	0	00:00:00	0.000	0.938	0.140	98.921
12-13	3	00:11:31	0.600	6.223	0.227	92.949
13-14	3	00:12:49	0.691	1.442	0.320	97.546
14-15	2	00:09:51	0.529	0.910	0.136	98.425
15-16	1	00:00:33	0.030	1.578	0.239	98.153
16-17	2	00:08:11	0.437	0.553	0.130	98.880
17-18	3	00:15:14	0.822	1.302	0.550	97.326
18-19	2	00:09:07	0.490	0.618	0.068	98.824
19-20	1	00:05:12	0.280	0.035	0.104	99.581
20-21	0	00:00:00	0.000	0.314	0.033	99.653
21-22	1	00:04:52	0.262	0.372	0.068	99.298
22-23	1	00:01:40	0.090	0.602	0.084	99.224
23-24	1	00:00:33	0.030	0.019	0.016	99.935
ALL	27	01:55:18	0.258	2.420	0.135	97.187

Figure 61: Signal Strength Statistics Report

The Signal Strength Statistics Report breaks down the signal strength from the sensors as a function of time of day over a given period of days. It can help you identify a specific time of day when there might be interference in your signal. The number of times signal was lost, the duration of the outage, and the percent of time spent in each of the signal states is detailed for each hour of the day, and summarized.

## Enhanced Notification

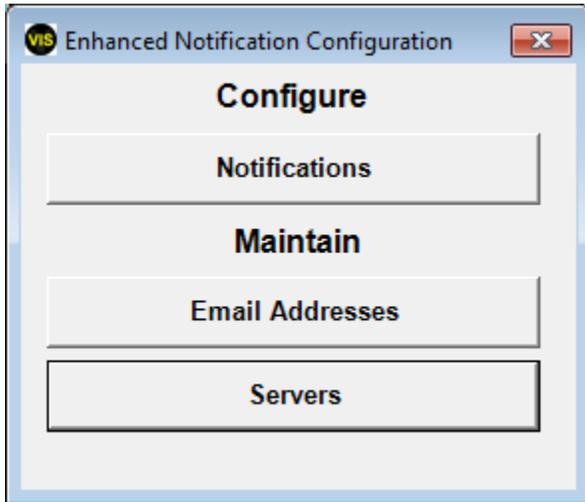


Figure 62: Enhanced Notification Configuration

Selecting the “Settings” button on SQL Enhanced Mail in the Licenses dialog brings you to the configuration choices for Enhanced Notification. From here, you can directly configure notification, or maintain either Email Addresses or Email Servers.

*The Reader will support a virtually unlimited number of both Email Addresses and Email Servers. Very few people will need more than one Email Server, however, the configuration for it is there for those that might have a use for it. Each Email Address is then assigned to one of the configured servers, and the notifications are sent via that server.*

### Configuring Email Addresses

Choosing “Email Addresses” from the configuration menu brings up the Email Address Definition dialog:

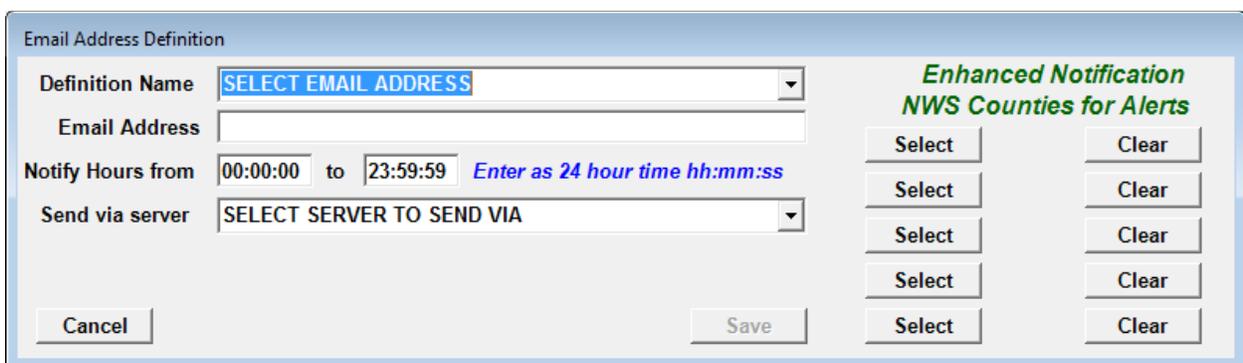


Figure 63: Email Address Definition

The Definition Name is a drop-down which will list all configured Email Addresses, as well as an option to add a new Email Address.

When adding a new Email Address, you must choose a Definition Name for it. We suggest choosing a friendly name, such as the person’s real name; this will be the name you see when configuring notification.

The Email address must have the form user@domain.com.

Notify Hours are set in 24-hour time (where 1:00pm is 13:00:00, and one minute before midnight is 23:59:59.) Clicking in either the start time (the one on the left) or the end time (the one on the right) and typing will replace the existing time entry. All six digits must be typed.

The server to associate with this email address is then selected from the Send via server drop-down. You can also add a new email server from this point; see the next section for details on this.

On the right, there are five select and clear buttons; these are used for configuring up to five National Weather Service or Environment Canada Warning Areas for Enhanced Notification. Clicking on “Select” brings up the selection dialog:

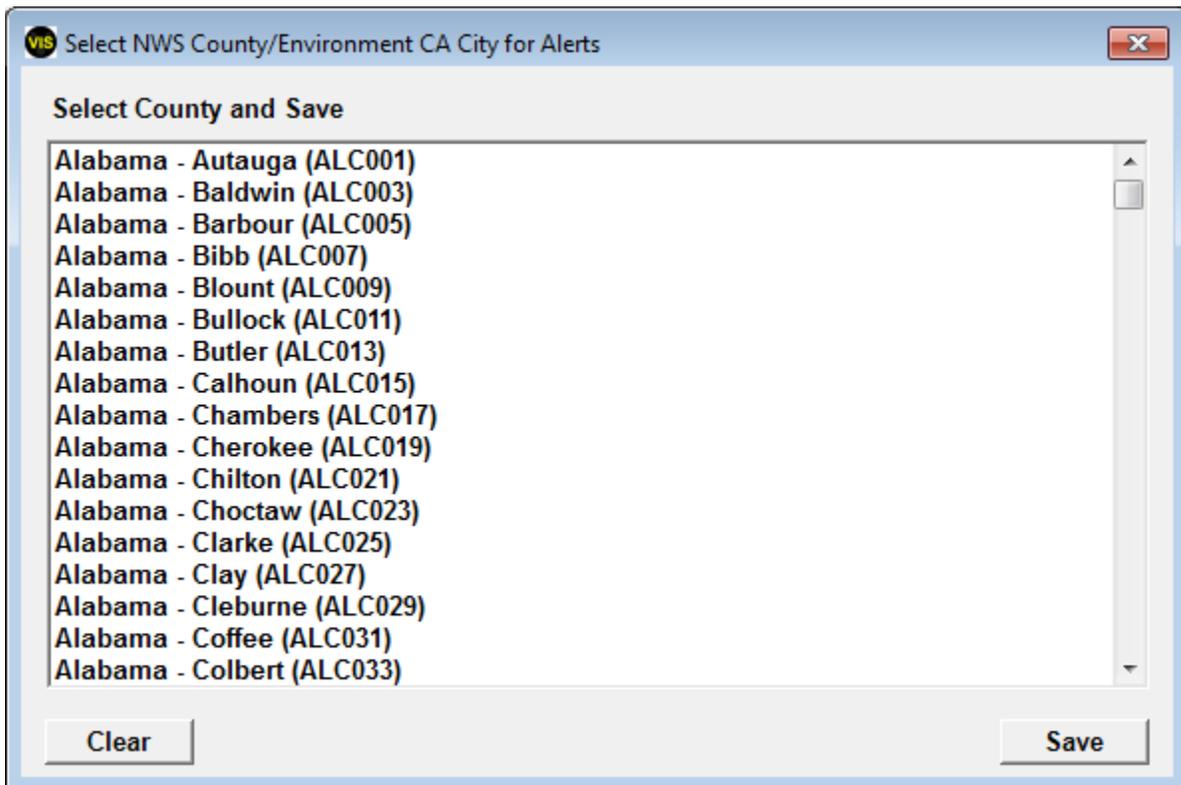


Figure 64: County Selection Dialog

Scroll through the list, or type the first letter of the state or province you’re looking for to jump directly to that point in the list. Then scroll to find the county or city you wish to select, click on it and click Save. This will fill in the selected county code in the Email Address Definition dialog.

Clicking on “Clear” will clear that selection.

When an Email Address Definition is complete, the Save button will be enabled and the definition can be saved.

### Configuring Servers

The screenshot shows the 'Email Server Definition' dialog box. The 'Definition Name' dropdown is set to 'SELECT SERVER'. The 'Server Address' field is empty. The 'Port' field is set to '0' with the text 'set to 0 to autodetect'. The 'Use SSL' checkbox is unchecked. The 'Email Address' field is empty, with a note below it stating 'This email address is not saved, only used for testing'. The 'This server requires authentication' checkbox is unchecked. The 'User Name' and 'Password' fields are empty. The 'Show password' checkbox is unchecked. The 'Test Email' button is active, and a green status message 'Server address OK' is displayed next to it. The 'Cancel' and 'Save' buttons are also visible.

Figure 65: Email Server Definition Dialog

You'll notice this dialog looks almost identical to the standard Email Server configuration, with one important change: the Definition Name is not "DEFAULT SERVER" and it can be used to select an existing definition or add a new one. When creating a new server definition, you must choose a Definition Name for it. We suggest a friendly name, like Gmail or MyServer.

*See the section on the Options dialog for details on how this works.*

## Configuring Notifications

Enhanced Notification Event Email Configuration

Select an Email address first. Then select events for which notifications are desired and add them. For each event, a description and appropriate settings will appear on the right. Changes must be saved to take effect, but take effect immediately when saved.

**Enhanced Notification Configuration**

Email:

Events:

Events Added:

Add Notification

Remove Notification

Event Description:

Save Changes

Figure 66: Notification Configuration

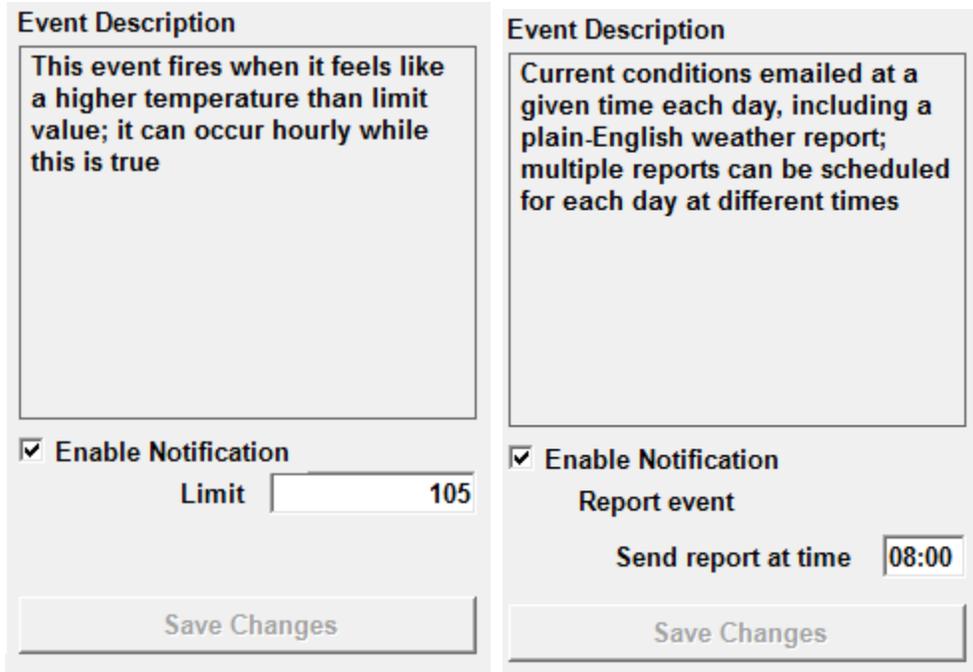
When configuring notifications, we've done our best to make it easy to do. First, choose an Email Address (or add a new one from here; see the section on Email Addresses for details on this.)

After selecting an Email address, any existing configuration is retrieved from the database and added to the "Events Added" list. For example, after choosing an Email address that already has a configuration, you might see something similar to this:

Events Added	Apparent Temperature Greater Than
	Apparent Temperature Less Than
	Arbitrary Program Execution
	Console Clock
	Current Weather Report-08:00
	Current Weather Report-12:00
	Current Weather Report-15:00
	Current Weather Report-17:00

Figure 67: Events already configured for a given Email address

These are selectable, and when selected, the configuration for the event will be displayed as shown in the examples on the next page.



**Figure 68: Example Notification Configurations**

In the first example, an event with a limiting value is selected (Apparent Temperature Greater Than.) The notification is enabled, and the limiting value is set to 105. *The value honors the units of measurement you've selected, but is not updated if you change them.*

In the second example, an event that is time-triggered is selected; this is a weather report, sent at 8:00:00, or 8:00 AM. (Note that the seconds value is not displayed, or even settable here.) Again, this is 24-hour time, so a report sent at 5:00pm would be set to 17:00.

Some events, particularly those that have fixed values like the Storm Alert or First Rain Today, neither display a limit nor a time. These can simply be enabled.

***Any changes to the settings enable the Save button. You must save your changes for them to take effect.***

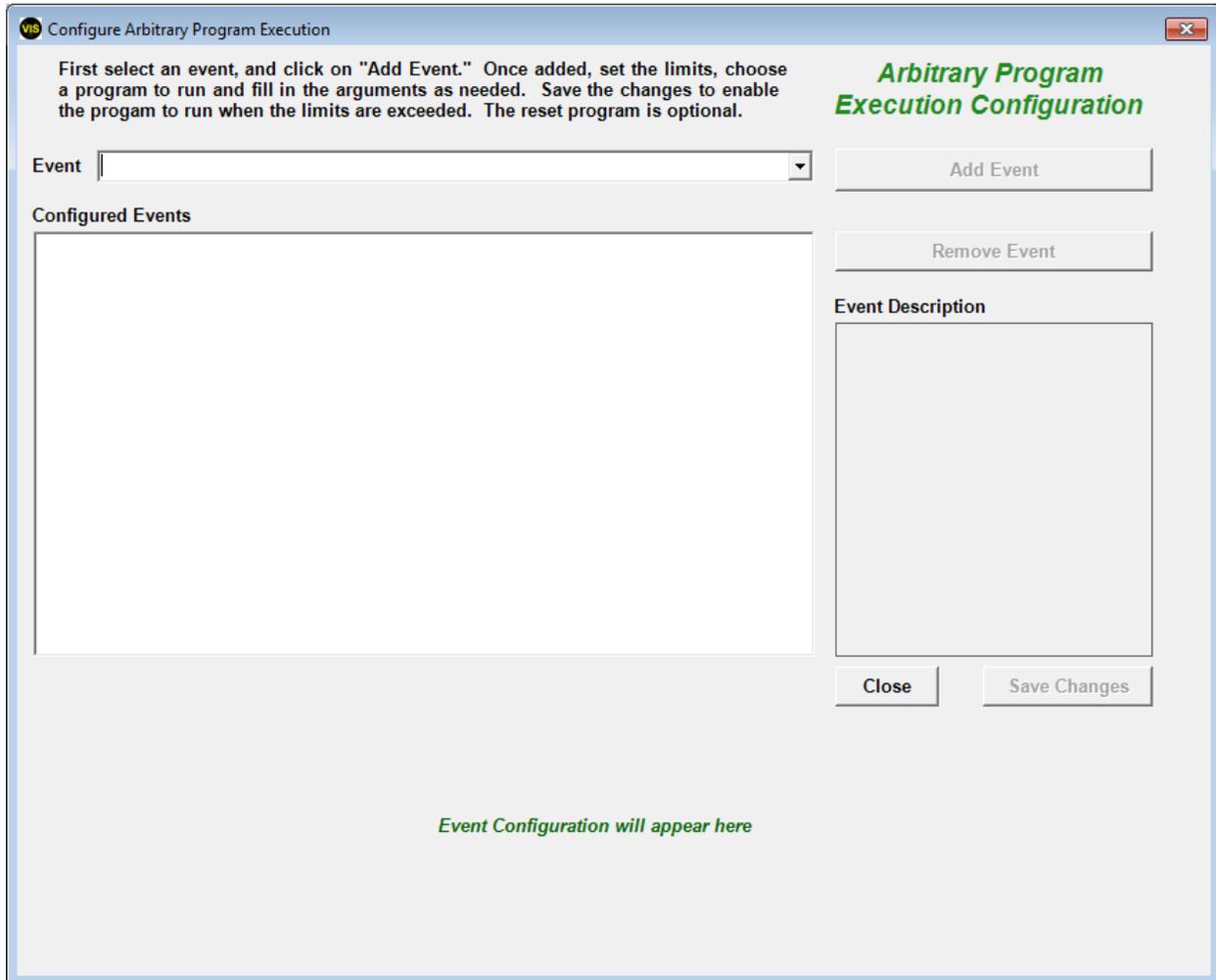
*Weekly Weather Summaries for the previous week are sent on Sunday at the selected time. Monthly Weather Summaries are sent on the 1<sup>st</sup> of the month for the previous month and are sent at the selected time.*

To add a new notification for an event, choose it from the “Events” drop-down and click on “Add Notification”. Set the notification settings as desired and Save it.

To remove an existing notification, select it from the “Events Added” list and click on the “Remove Notification” button.

*When you're done configuration, just close the dialog using the close box in the upper right corner.*

## Arbitrary Program Execution



**Figure 69: Arbitrary Program Execution Configuration**

Selecting the "Settings" button next to "Run Any Program" in the Licenses dialog brings you to the Arbitrary Program Execution configuration dialog.

Configuring programs to run requires that you understand a few things.

First, almost any program you can select can be run, including some things you might not expect. For example, you can configure it to open a web page by selecting a web browser and configuring the arguments with the URL to open, or select a batch file (.CMD or .BAT) to be run. Of course, executable programs of all kinds (.EXE) can be selected too.

Second, you will set unique values that may be different from notification values as trigger values for the programs to be run. Some events also include reset values, which affect when the program can be triggered again. As an example, we'll choose "Apparent Temperature Greater Than" to configure; we'll have it run Notepad and open the file C:\VIS\test.txt when the temperature feels greater than 95 degrees. We'll set it up to reset when the temperature falls back below 80 degrees.

Select “Apparent Temperature Greater Than” from the Event drop-down. Click on “Add Event”.

The configuration fills in below, and we’ve already entered the appropriate values here:

Triggers  Enabled  Notify when triggered Cancel Save Changes

When greater than  and the event has not triggered,

run  ...

with arguments

When less than  and the event has triggered,

run  ...

with arguments

Figure 70: Program to run, along with values

The triggers are set to Enabled by default. *If you have the support license for Enhanced Notification, the “Notify when triggered” checkbox will appear; checking this will send an Email notification when the program is run.*

The “greater than” box has the temperature we wish to check: 95 degrees. When the temperature is higher than 95, the program will be run.

Clicking on the ellipses button (...) brings up a file selection dialog. Use this to find and select the program to be run. Clicking on “Open” selects that program and fills in the “run” box.

The “with arguments” box allows you to type in arguments that will be supplied to the program selected to run; in this case, it would be like typing “start notepad.exe c:\vis\test.txt” at a command prompt.

The “less than” box is set to 80, which is the temperature at which we wish to reset the trigger; this means that the program cannot be run again until the temperature first falls below 80 degrees. Another program can also be selected to be run when the reset limit is exceeded; if selected, it is run and the trigger is reset. If not, no program is run, but the trigger is still reset.

You must click on “Save Changes” to save your work and enable the program to run.

*Note that different events may have differing configurations; some will not allow a reset program, and some do not have settable limits. An example of this is the Severe Storm Alert:*

Triggers  Enabled  Notify when triggered Cancel Save Changes

When true and the event has not triggered, Program is required

run  ...

with arguments

Figure 71: Severe Storm Alert Arbitrary Program configuration

In this case, no limit can be set, and no reset program is available. This is because these limits are hard-coded in the software.

***Pay close attention to the prompts in the configuration;*** sometimes, the limits are reversed. If you choose an event with a “less than” in the name, then the first limit is the low limit and the second is the high limit.

The status indicator on the main display, AP, is also clickable; when clicked, it will display all currently triggered events. *You can use this to determine what events are currently in triggered status.*

## MiniWeb Elements

MiniWeb Elements is an extension to the MiniWeb, allowing you to use your own HTML files and customize your MiniWeb to your own tastes and needs. Most of the functionality of the MiniWeb is available in MiniWeb Elements, including scalable versions of the temperature bar, the humidity bar, the wind rose, barometer and even the rain gauges. All of the full-sized charts can also be used.

MiniWeb Elements is enabled in the Licenses dialog. When disabled, the standard MiniWeb functionality is available instead. In either case, the MiniWeb server must be enabled for it to work.

*NOTE: MiniWeb Elements is a separate code base, and does not use or provide the standard MiniWeb functionality. For this reason, the standard MiniWeb Weather page, screen shots of the Reader and the charts page are all unavailable unless you provide your own HTML files to recreate them.*

A test page is provided by the updater, and when accessing the MiniWeb Elements test page, all of the functionality of the MiniWeb Elements server can be verified to be functional.

*Our support policy on MiniWeb Elements is limited to ensuring that it properly behaves in well-written, syntactically-correct HTML5 web pages. We do not provide support on writing HTML files, nor will we troubleshoot problems with your files. We'll ask you to verify that the test page works, and if it does, then you will need to resolve any further issues on your own.*

The following sections detail the MiniWeb Elements server, and how to use it.

### HTML Files and JPG/PNG Images

Place your HTML files in the `C:\VIS\MiniWeb` directory. The MiniWeb Elements server will look in this location for all HTML files.

File names are case-sensitive, and are used in the URLs for the MiniWeb Elements server. For example, let's say that you create a file named `Weather.html`. You put this in the `C:\VIS\MiniWeb` directory, and your MiniWeb server is configured to listen on port 8080. The URL to get to this page, assuming your IP address is 192.168.1.100, would be `http://192.168.1.100:8080/Weather.html`.

*Because names are case-sensitive, `weather.html` would not work, nor would `weather.HTML`; you must make the URL the same as the file name.*

Your HTML files can contain any standard HTML5 language elements. The contents of the file are mostly ignored by the MiniWeb Elements server; in fact, we only pay attention to the replaceable parameters that you specify in your files, and that we recognize. Those are replaced with the Elements, the actual values or graphical elements that are provided by MiniWeb Elements.



*The MiniWeb Elements server now supports serving JPG and PNG file types in addition to HTML.*

## Replaceable Parameters

The heart of MiniWeb Elements is its ability to fill in, or replace, certain keywords in your HTML files with the appropriate elements or values you've requested. This is done in real-time, as pages are requested, so the latest data is always served by the MiniWeb Elements server.

Parameters are named, and named parameters are used by placing them inside curly braces in your HTML code where you want the element to appear. Most elements can only appear once inside of a given HTML file; exceptions are noted where appropriate.

An example is appropriate at this point. Let's look at the simplest possible example of how to use MiniWeb Elements; we'll simply show how you can get the current temperature to be filled in.

We'll start by creating some HTML. Into it, we add the parameter for current temperature, and we put it exactly where we want the current temperature to appear, as follows:

```
<head></head><body>The current temperature is {TEMP}.</body>
```

When processed by the MiniWeb Elements server, this will actually appear as:

```
<head></head><body>The current temperature is 71.8F.</body>
```

Note a couple of things here. First, the curly braces and the keyword TEMP are replaced by the temperature, along with the units of measurement that have been selected in the Reader's options. Second, nothing else is touched – it's all copied to the output exactly as it appears in the HTML file. Anything that isn't recognized by the MiniWeb Elements server as a keyword is ignored and copied directly to the output.

There are replaceable parameters that describe all of the available data that the Reader provides in real time, along with most of the graphical elements available in the standard MiniWeb – but with the added bonus that those graphical elements are fully scalable! The graphical elements take arguments that describe the scaling factor, along with color information so that you can customize the appearance of the elements.

*All of the arguments for a graphical element must be supplied in order for the element to be properly returned and displayed. If any of the required arguments are syntactically incorrect or missing, an error message is returned in the element's place in the HTML output instead. This makes diagnosing problems a lot easier.*

## Graphical Element Parameter Syntax

All graphical elements share a common syntax; the name of the replaceable parameter is followed by a space, and then all of the arguments, each of which is separated from the others by a pipe symbol. All of this is then enclosed in curly braces. An example, taken from the MiniWeb Elements Test Page:

```
{SSMETER 1|#800000|#000040|#000080|#ff0000|#808000|#008000}
```

This breaks down as follows.

The first thing to appear is an opening curly brace. This is immediately followed by the parameter name **SSMETER**, which tells MiniWeb Elements that you're asking for the Signal Strength meter.

Next, after a space, is the scaling factor; this is a number that represents the factor by which to multiply the size of the standard element. A factor of 1 returns the element exactly as it's displayed in the standard MiniWeb; numbers less than 1 shrink the element, and numbers greater than 1 magnify it. Using 0.5, for example, returns the element at half its normal size; using 2 would double its size.

After the scaling factor, a pipe symbol is used. This separates each argument from every other argument, and must appear between all arguments in every Element.

After this, each of the color arguments for the various elements within the signal strength meter are listed. Some elements have more arguments, some less; the syntax for each is documented in the next section. Colors are specified in standard **#rrggbb** syntax, and only this syntax is accepted.

After the last argument, a closing curly brace is used.

*The syntax for elements is rigid; it must be followed exactly or the MiniWeb Elements server will not process it correctly, if at all.*

Elements can appear anywhere in the HTML file. You can use them in tables, surround them with links, use Cascading Style Sheets to specify styles, and almost anything else you can think of to do with them. One element in particular is used in the <head> section of the HTML file, and schedules a browser refresh to synchronize the browser with the Reader. This ensures that the browser always has the latest available data.

## MiniWeb Elements Parameter Reference

### *Time Elements*

#### OBSTIME

The **OBSTIME** parameter is replaced with the local time of the latest observation, in 12-hour format, as in **12:34:56 PM**.

#### OBSDATE

The **OBSDATE** parameter is replaced with the local date of the latest observation, in the culture-specific format set in Windows. In the US, this would appear as **9/3/2014**.

#### OBSUTIME

The **OBSUTIME** parameter is replaced with the universal time of the latest observation. This would appear as **03 Sep 2014 04:30:15 GMT**.

#### TZNAME

The **TZNAME** parameter is replaced with the time zone name. This would appear as **Eastern Daylight Time**.

## *Temperature Elements*

### TEMP

The **TEMP** parameter is replaced by the current observed temperature, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### TEMPTREND

The TEMPTREND parameter is replaced by a plain-English representation of the trend direction, as in falling, falling slowly, steady, rising slowly or rising.

### DEWPT

The **DEWPT** parameter is replaced by the current observed dew point, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### APPARENT

The **APPARENT** parameter is replaced by the current observed apparent temperature (feels like), in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### HEATINDEX

The **HEATINDEX** parameter is replaced by the current observed heat index temperature (or the current observed temperature, if lower than the minimum defined heat index), in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### WINDCHILL

The **WINDCHILL** parameter is replaced by the current observed wind chill (or the current observed temperature, if higher than the maximum defined wind chill), in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### TEMPHIGH

The **TEMPHIGH** parameter is replaced by the daily high temperature), in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

### TEMPLOW

The **TEMPLOW** parameter is replaced by the daily low temperature), in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **70 . 0F**.

## *Humidity Elements*

### HUM

The **HUM** parameter is replaced by the current observed humidity, with a percent sign added. This would appear as 67%.

### HUMTREND

The **HUMTREND** parameter is replaced by a plain-English representation of the trend direction, as in falling, falling slowly, steady, rising slowly or rising.

## *Pressure Elements*

### BARO

The **BARO** parameter is replaced by the current observed barometric pressure, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **29.920inHg**.

### BAROTREND

The **BAROTREND** parameter is replaced by a plain-English representation of the trend direction, as in falling, falling slowly, steady, rising slowly or rising.

## *Rain Elements*

### RAINTODAY

The **RAINTODAY** parameter is replaced by the current observed daily rain total, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **1.79in**.

### RAINMONTH

The **RAINMONTH** parameter is replaced by the current observed monthly rain total, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **3.27in**.

### RAINYEAR

The **RAINYEAR** parameter is replaced by the current observed yearly rain total, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **42.80in**.

### RAININS

The **RAININS** parameter is replaced by the current instantaneous rain rate.

### RAININT

The **RAININT** parameter is replaced by the current 10-minute integration of rain rate.

## *Wind Elements*

### WINDTXT

The **WINDTXT** parameter is replaced by the current observed cardinal wind direction. This would appear as **NNE**.

### WINDDIR

The **WINDDIR** parameter is replaced by the current observed wind direction in degrees. This would appear as **247.5**.

### WINDSPD

The **WINDSPD** parameter is replaced by the current observed wind speed, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **1.66mph**.

### WINDPEAK

The **WINDPEAK** parameter is replaced by the peak daily wind speed, in the units of measurement selected in the Reader's options, with the units of measurement appended. For Imperial units, this would appear as **10.20mph**.

## *Current Conditions*

### CONDS

The **CONDS** parameter is replaced by a descriptive text of the current conditions at the weather station. This would appear as **Dry, comfortable, with a gentle breeze**. There are a fair number of descriptive terms used, depending on the precise conditions, and they change based on rainfall, temperature, humidity and wind.

### CLOUDBASE

The **CLOUDBASE** parameter is replaced by the current estimated cloud base in the selected units of measurement. This would appear as a number like **1020**.

## *Sun Elements*

### SUNRISE

The **SUNRISE** parameter is replaced by the time of sunrise, in local time, accurate to the minute.

### SUNNOON

The **SUNNOON** parameter is replaced by the time of solar noon, in local time, accurate to the minute.

### SUNSET

The **SUNSET** parameter is replaced by the time of sunset, in local time, accurate to the minute.

### SUNTIME

The **SUNTIME** parameter is replaced by the total time of sunlight illumination, in hours and minutes, accurate to the minute.

## *Moon Elements*

### MOONPHASE

The **MOONPHASE** parameter is replaced by the plain-English name of the Moon phase, as in **Waxing Gibbous**.

### MOONAGE

The **MOONAGE** parameter is replaced by the age of the Moon since New Moon, in days, to three decimal places. This would appear as **8.610**.

### MOONPCT

The **MOONPCT** parameter is replaced by the percentage of the Moon's surface that is currently illuminated by the Sun, to two decimal places. This would appear as **58.32**.

### MOONNEXTNEW

The **MOONNEXTNEW** parameter is replaced by the short-format date of the next new moon, as in **10/23/2014**.

### MOONNEXTFULL

The **MOONNEXTFULL** parameter is replaced by the short-format date of the next full moon, as in **10/8/2014**.

## *National Weather Service Alerts*

### NWSALERTS

The **NWSALERTS** parameter is replaced by zero or more lines containing valid HTML links, captioned by the titles of any currently valid alerts, for the county configured in the Reader's options. These links are fully active and the resulting HTML yields clickable links to the alerts at the National Weather Service. If no alerts are currently active, the text **No current alerts** is returned instead.

## *Weather Page Link Elements*

### CWOPLINK

The **CWOPLINK** parameter is replaced with a link for the configured CWOP ID in the Reader's options, captioned by the text **CWOP Weather Page**. This link is fully active and the resulting HTML yields a clickable link to the page at FindU.

### PWSLINK

The **PWSLINK** parameter is replaced with a link for the configured PWS Weather ID in the Reader's options, captioned by the text **PWS Weather Page**. This link is fully active and the resulting HTML yields a clickable link to the page at PWS Weather.

### WBLINK

The **WBLINK** parameter is replaced with a link for the configured WeatherBug ID in the Reader's options, captioned by the text **WeatherBug Weather Page**. This link is fully active and the resulting HTML yields a clickable link to the diagnostic page at WeatherBug.

## WULINK

The **WULINK** parameter is replaced with a link for the configured Weather Underground ID in the Reader's options, captioned by the text **Weather Underground Weather Page**. This link is fully active and the resulting HTML yields a clickable link to the page at Weather Underground.

## *Miscellaneous Elements*

### REMOTEIP

The **REMOTEIP** parameter is replaced by the IP address of the computer requesting the web page. This appears as **192.168.100.110**.

### VISLINK

The **VISLINK** parameter is replaced with a link to the Valley Information Systems Community Forum, captioned by the text **VIS Community Forum**. This link is fully active and the resulting HTML yields a clickable link to the forum main page.

### REFRESH

The **REFRESH** parameter is replaced with appropriate HTML code to cause the browser to automatically refresh the page on a schedule synchronized with the Reader. This gets the latest data and displays it as soon as it's available. It is placed in the **<head>** section of the HTML.

We recommend using this parameter as part of the following code in your HTML:

```
{REFRESH}<META HTTP-EQUIV='Pragma' CONTENT='no-cache'><META HTTP-EQUIV='Expires' CONTENT='-1'>
```

*Using it this way ensures that fresh data is always obtained, and nothing is cached.*

### *SQL Subscriber Elements*

Subscribers to SQL Server support get a few additional elements; these elements require SQL data to be enabled.

#### *Monthly Records*

MONTHLYHIGHTEMP, MONTHLYHIGHTEMPDATE

These elements are replaced by the highest daily temperature and the date that temperature was recorded, respectively.

MONTHLYLOWTEMP, MONTHLYLOWTEMPDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

MONTHLYHIGHBARO, MONTHLYHIGHBARODATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

MONTHLYLOWBARO, MONTHLYLOWBARODATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

MONTHLYHIGHWIND, MONTHLYHIGHWINDDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

MONTHLYHIGHRAIN, MONTHLYHIGHRAINDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

*All-Time Records*

ALLTIMEHIGHTEMP, ALLTIMEHIGHTEMPDATE

These elements are replaced by the highest daily temperature and the date that temperature was recorded, respectively.

ALLTIMELOWTEMP, ALLTIMELOWTEMPDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

ALLTIMEHIGHBARO, ALLTIMEHIGHBARODATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

ALLTIMELOWBARO, ALLTIMELOWBARODATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

ALLTIMEHIGHWIND, ALLTIMEHIGHWINDDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

ALLTIMEHIGHRAIN, ALLTIMEHIGHRAINDATE

These elements are replaced by the lowest daily temperature and the date that temperature was recorded, respectively.

## Graphical Elements

### ACLOCK

The **ACLOCK** parameter takes six arguments, and is replaced by a representation of an analog clock that displays the current time. Several of the elements that make up the clock are customizable by specifying a color.

#### Syntax

```
{ACLOCK SCALE | TICKCOLOR | BGCOLOR | HCOLOR | MCOLOR | SCOLOR | DATE | DATECOLOR}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **TICKCOLOR**, specifies the color of the scale ticks for hours and minutes.

The third argument, **BGCOLOR**, specifies the background color of the clock.

The fourth argument, **HCOLOR**, specifies the color of the hour hand.

The fifth argument, **MCOLOR**, specifies the color of the minute hand.

The sixth argument, **SCOLOR**, specifies the color of the second hand.

The seventh argument, **DATE**, specifies whether to display the date.

The eighth argument, **DATECOLOR**, specifies the color for the date text.

#### Example

```
{ACLOCK 0.5 | #c0c0c0 | #000000 | #808080 | #c0c0c0 | #ff0000 | TRUE | #ffd700}
```



The resulting clock is scaled to half size, as specified in the example.

*Note: At scales below 0.7, the one-minute ticks are not displayed; only the 5-minute, or hour ticks, are displayed at smaller scales. One-minute ticks fill in at larger scales.*

## TEMPBAR

The **TEMPBAR** parameter takes five arguments, and is replaced by a representation of the temperature bar that appears under the temperature in the standard MiniWeb. Several of the elements that make up the temperature bar are customizable by specifying a color.

### *Syntax*

```
{TEMPBAR SCALE | TICKCOLOR | HTCOLOR | LTCOLOR | CTCOLOR}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **TICKCOLOR**, is the color used for the tick marks along the bar's scale.

The third argument, **HTCOLOR**, is the color used for the high temperature marker underneath the bar and to the right.

The fourth argument, **LTCOLOR**, is the color used for the low temperature marker underneath the bar and to the left.

The fifth argument, **CTCOLOR**, is the color used for the current temperature marker above the bar.

Markers are placed along the bar at the appropriate locations to indicate the actual values. The scale, in Imperial units, runs from -40F on the left to 160F on the right.

### *Example*

```
{TEMPBAR 1 | #000000 | #800000 | #000080 | #ff0000}
```



The indicated values are all 69.8F.

## TEMPCOLOR

The **TEMPCOLOR** parameter can be used in CSS to set the color of a font to the color of the color band where the marker for current temperature is pointing.

### *Example*

```
h2 {color: {TEMPCOLOR};}
```

## THERMOMETER

The **THERMOMETER** parameter takes nine arguments, and is replaced by a representation of one of the rain gauges that appear on the standard MiniWeb. Seven of the arguments specify colors that customize the appearance of the rain gauge. *This element can appear multiple times in an HTML file.*

Syntax:

```
{THERMOMETER SCALE | WHICH | OUTLINE | GRDH | GRDL | EMPTY | SCOL | HDR | VAL}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **WHICH**, selects which gauge to represent. This takes one of the values **TEMP**, **DEWPT**, **APPARENT**, **INTEMP**, **HEAT** or **CHILL**.

The third argument, **OUTLINE**, specifies the color of the outline and scale ticks of the gauge.

The fourth and fifth arguments, **GRDH** and **GRDL**, specify a gradient color (high to low) that is used to fill in the gauge based on the actual value.

The sixth argument, **EMPTY**, specifies the color of the empty part of the gauge.

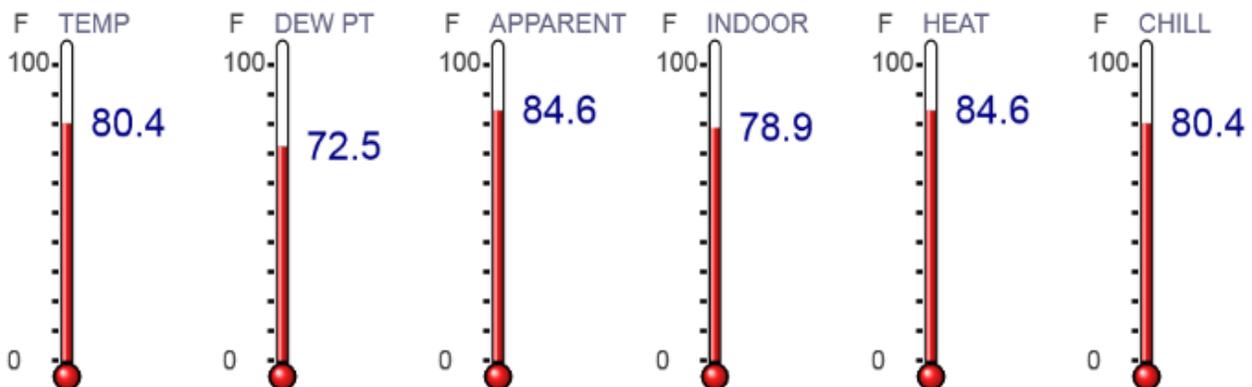
The seventh argument, **SCOL**, specifies the scale limit label colors.

The eighth argument, **HDR**, specifies the header color for the text over the gauge.

The ninth argument, **VAL**, specifies the color used for the actual value label.

Example

```
{THERMOMETER 0.5 | TEMP | #000000 | #a0a0f0 | #1010a0 | #ffffff | #404040 | #606080 | #000080}
```



The resulting thermometers are scaled to half size, as specified in the example.

## HUMBAR

The **HUMBAR** parameter takes three arguments, and is replaced by a representation of the humidity bar that appears under the humidity in the standard MiniWeb. Two of the elements that make up the humidity bar are customizable by specifying a color.

### *Syntax*

```
{HUMBAR SCALE | TICKCOLOR | MARKERCOLOR}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **TICKCOLOR**, is the color used for the tick marks along the bar's scale.

The third argument, **MARKERCOLOR**, is the color used for the current humidity marker above the bar.

The marker is placed along the bar at the appropriate location to indicate the actual value. The scale runs from 0% on the left to 100% on the right.

### *Example*

```
{HUMBAR 1 | #000000 | #ff0000}
```



The indicated value is 93%.

## HUMCOLOR

The **HUMCOLOR** parameter can be used in CSS to set the color of a font to the color of the color band where the marker for current humidity is pointing.

### *Example*

```
h2 { color: {HUMCOLOR}; }
```

## METER

The **METER** parameter takes two arguments, and is replaced by a representation of an analog meter that shows either inside or outside humidity. Color customization is not provided at this time.

### *Syntax*

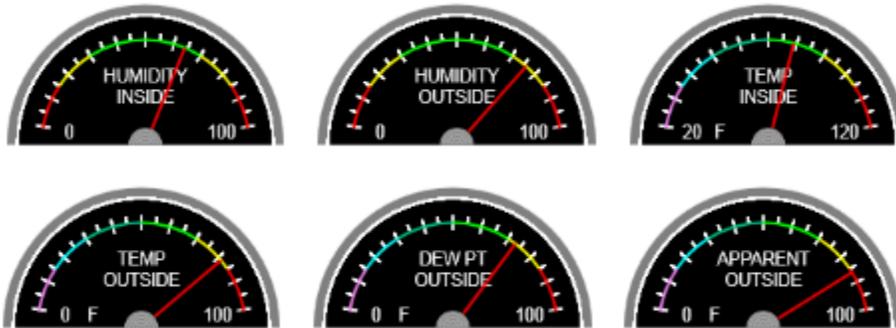
**{METER SCALE | WHICH}**

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The second argument, **WHICH**, selects which meter to display, and can be either **INHUM**, **OUTHUM**, **INTEMP**, **TEMP**, **DEWPT** or **APPARENT**.

### *Example*

**{METER 0.6 | INHUM}**



## DUALMETER

The **DUALMETER** parameter takes two arguments, and is replaced by a representation of an analog meter that shows either inside or outside humidity. Color customization is not provided at this time.

### *Syntax*

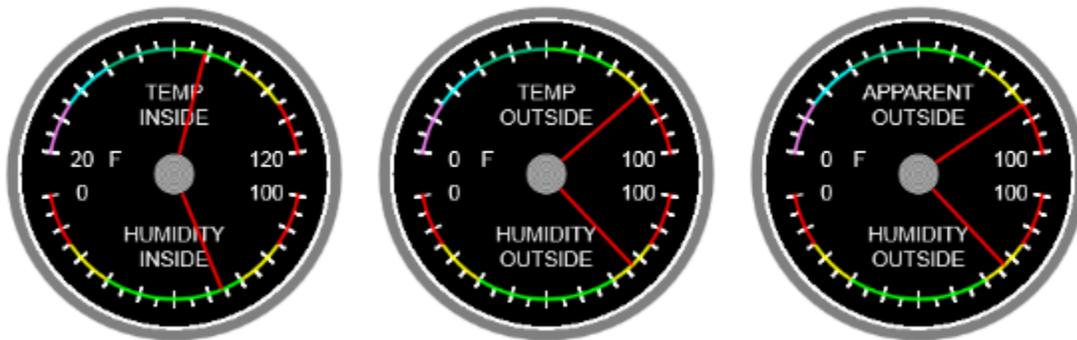
**{DUALMETER SCALE|WHICH}**

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The second argument, **WHICH**, selects which meter to display, and can be either **IN**, **OUT** or **APPARENT**.

### *Example*

**{METER 0.75|OUT}**



## SSMETER

The **SSMETER** parameter takes seven arguments, and is replaced by a representation of the Signal Strength meter that appears in the standard MiniWeb. All of the elements that make up the Signal Strength meter are customizable by specifying a color.

### *Syntax*

```
{SSMETER SCALE | LOSCOLOR | TXTCOLOR | CHANCOLOR | SS1 | SS2 | SS3 }
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **LOSCOLOR**, is the color used for the text LOS when a loss of signal occurs.

The third argument, **TXTCOLOR**, is the color used for the text that appears at the bottom of the Signal Strength meter. This normally is the word SIGNAL, but will change to WAITING when LOS occurs.

The fourth argument, **CHANCOLOR**, is the color used for the channel indicator above the first bar in the meter.

The fifth through seventh arguments (**SS1**, **SS2** and **SS3**) are the colors used for 1 bar, 2 bars and 3 bars respectively.

### *Example*

```
{SSMETER 1 | #800000 | #000040 | #000080 | #ff0000 | #808000 | #008000 }
```



The indicated value is three bars, or full signal strength.

## BATT

The **BATT** parameter takes two arguments, and is replaced by a representation of a battery indicator that shows whether the sensor batteries are okay. The outline of the battery indicator is configurable with a color selection. The battery indicator shows full green if the batteries are okay, and a partial fill of red if the sensor batteries are in need of replacement.

### *Syntax*

```
{BATT SCALE | OUTLINE}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The other argument is a color, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **OUTLINE**, is the color used for the outline of the battery indicator.

### *Example*

```
{BATT 0.35 | #ffffff}
```



The indicated value is that the batteries in the sensor are okay.

## WINDROSE

The **WINDROSE** parameter takes a total of seventeen arguments, and is by far the most complicated of the graphical elements. It is replaced by a representation of the wind rose as shown on the standard MiniWeb page. All of the elements that make up the wind rose are customizable by specifying a color.

Syntax:

```
{WINDROSE SC|TC|GO|GM|GI|SL|WSD|WP|WDD|WADS|WADF|WADT|WGS|WGF|W5MA|WPG|WGA}
```

The first argument, **SC**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

**TC** Scale ticks, the outer band of the rose

**GO, GM, GI** A gradient (outer to inner) for the center of the rose

**SL** Scale numeric indicators

**WSD** Wind speed and cardinal direction

**WP** Wind Peak

**WDD** Wind Direction in degrees

**WADS, WADF, WADT** The colors of the stroke (line on the outside) and fill of the 10-minute average wind direction indicator, and the text color for 10 minute average wind

**WGS, WGF** The colors of the stroke and fill of the current wind direction

**W5MA** The color of the 5-minute wind average text and pointer

**WPG** The color of the Peak Gust text

**WGA** The color of the current wind speed pointer arrow, radiating from the center of the rose

*Example (this must all appear on one line with only one space after WINDROSE)*

```
{WINDROSE  
0.5|#000000|#303060|#101010|#101010|#000080|#ffffff|#c02020|#20FF20|#80c0c0|#108080|#1  
08080|#ff0000|#c02020|#a0a000|#c02020|#ff0000}
```



The resulting rose is scaled to half size, as specified in the example.

## BAROMETER

The **BAROMETER** parameter takes a total of seven arguments, and is replaced by a representation of the barometer as shown on the standard MiniWeb page. Six of the elements that make up the barometer are customizable by specifying a color.

### *Syntax*

```
{BAROMETER SCALE | TICKCOLOR | SCALECOLOR | EMPTYCOLOR | HPCOLOR | LPCOLOR | VALCOLOR }
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **TICKCOLOR**, specifies the color for the scale ticks and the outer lines of the barometer itself.

The third argument, **SCALECOLOR**, specifies the color for the text scale limit labels.

The fourth argument, **EMPTYCOLOR**, specifies the color for the empty part of the barometer.

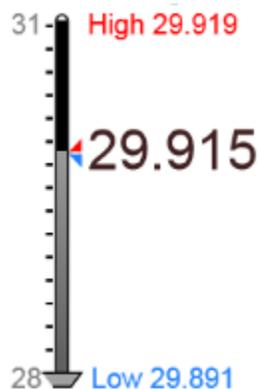
The fifth argument, **HPCOLOR**, specifies the color for the high pressure label.

The sixth argument, **LPCOLOR**, specifies the color for the low pressure label.

The seventh argument, **VALCOLOR**, specifies the color for the current pressure label.

### Example

```
{BAROMETER 0.5 | #000000 | #808080 | #000000 | #ff0000 | #2080ff | #402020 }
```



The resulting barometer is scaled to half size, as specified in the example.

## ABARO

The **ABARO** parameter takes a total of seven arguments, and is replaced by a representation of an analog barometer gauge. Six of the elements that make up the barometer are customizable by specifying a color.

### *Syntax*

```
{ABARO SCALE | TICKCOLOR | BGCOLOR | HPCOLOR | LPCOLOR | PCOLOR | TCOLOR}
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **TICKCOLOR**, specifies the color for the scale ticks and the outer lines of the barometer itself.

The third argument, **BGCOLOR**, specifies the color for dial background.

The fourth argument, **HPCOLOR**, specifies the color for the high pressure pointer.

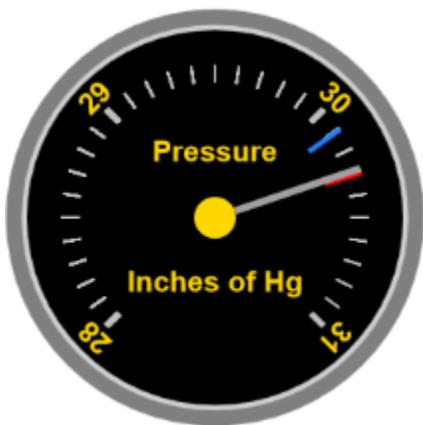
The fifth argument, **LPCOLOR**, specifies the color for the low pressure pointer.

The sixth argument, **PCOLOR**, specifies the color for the current pressure pointer.

The seventh argument, **TCOLOR**, specifies the color for the text on the dial.

### Example

```
{ABARO 0.75 | #c0c0c0 | #000000 | #ff0000 | #2080ff | #a0a0a0 | #ffd700}
```



The resulting barometer is scaled to 3/4 size, as specified in the example.

## RAINGAUGE

The **RAINGAUGE** parameter takes nine arguments, and is replaced by a representation of one of the rain gauges that appear on the standard MiniWeb. Seven of the arguments specify colors that customize the appearance of the rain gauge. *This element can appear multiple times in an HTML file.*

Syntax:

```
{RAINGAUGE SCALE | WHICH | OUTLINE | GRDH | GRDL | EMPTY | SCOL | HDR | VAL }
```

The first argument, **SCALE**, is the scaling factor. This factor specifies a multiplier that can increase or decrease the size of the resulting element. It must be a positive real number greater than zero. Using 0.5 would result in shrinking the element to half its normal size, while 2 would double its size.

The remaining arguments are colors, specified in standard web RGB notation using the syntax **#rrggbb**.

The second argument, **WHICH**, selects which rain gauge to represent. This takes one of the values **DAY**, **MONTH** or **YEAR**.

The third argument, **OUTLINE**, specifies the color of the outline and scale ticks of the gauge.

The fourth and fifth arguments, **GRDH** and **GRDL**, specify a gradient color (high to low) that is used to fill in the gauge based on the actual value.

The sixth argument, **EMPTY**, specifies the color of the empty part of the gauge.

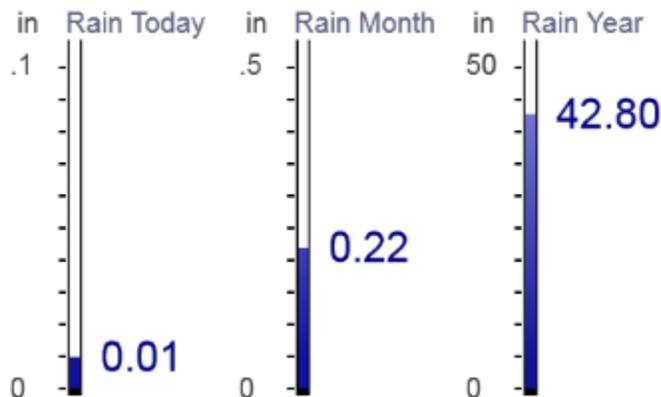
The seventh argument, **SCOL**, specifies the scale limit label colors.

The eighth argument, **HDR**, specifies the header color for the text over the gauge.

The ninth argument, **VAL**, specifies the color used for the actual value label.

Example

```
{RAINGAUGE 0.5 | DAY | #000000 | #a0a0f0 | #1010a0 | #ffffff | #404040 | #606080 | #000080 }
```



The resulting rain gauges are scaled to half size, as specified in the example.

### *Chart Elements*

All of the charts available in the standard MiniWeb can be used with replaceable parameters as well.

#### TEMPCHART

The **TEMPCHART** parameter is replaced with the current Temperature and Dew Point chart.

#### HUMCHART

The **HUMCHART** parameter is replaced with the current Humidity chart.

#### DEWCHART

The **DEWCHART** parameter is replaced with the current Dew Point chart.

#### BAROCHART

The **BAROCHART** parameter is replaced with the current Barometric Pressure chart.

#### WINDCHART

The **WINDCHART** parameter is replaced with the current Wind chart.

#### RAINCHART

The **RAINCHART** parameter is replaced with the current Rain Total chart.

#### RAINICHART

The **RAINICHART** parameter is replaced with the current Rain Interval chart.

## Updating the Reader

The VIS Reader has a built-in update facility. When a newer version of the reader is available, several things will happen.

First, the title bar of the reader will change to indicate that an update is available, and tell you what version is available. Second, a log entry will appear in the log window; this log entry will have a short description of the update and details on how to update. Third, the Forum button will change from displaying “VIS Forum” to displaying “**UPDATE**”.

To update your reader to the latest available version, click on the “**UPDATE**” button. This will schedule the update at the next idle time in the Reader’s schedule.

*We wait for an idle moment for several reasons, not least of which is that we find that the AcuRite consoles behave better when we do.*

The Reader will download the updated version, and run the updater. It will wait for the Reader to shut down, extract the new version of the Reader, and restart the Reader. ***It will also open the README.TXT notes in a Notepad window; we encourage you to read these notes as they often contain important details about the changes in the Reader software.***

Update checks occur about every six hours, and are logged in the log window. You can force an update check at any time by clicking on the antenna in the signal strength display. The red “**U**” on the antenna is meant to remind you of that.

***For VIS Analyze, updates are automatic and do not require you to do anything at all except run it. If a newer version is available, it will be downloaded before it is started. Any report templates that have been updated are also automatically updated.***

**On very rare occasions, a mandatory update may be released.** These updates are required because of significant feature changes that might break earlier versions of the Reader, or because we have identified and fixed a security issue. (We’ve only had one security issue in the history of the Reader, but it could certainly happen again.) If a mandatory update is released, the Reader starts a 23-hour timer that will immediately begin counting down. When this timer expires, the update will be downloaded and applied without any intervention on your part. You can, of course, also immediately apply the update by clicking on the “**UPDATE**” button. ***We strongly recommend that you not try to avoid mandatory updates, because they could break your ability to get updates, support or features of the Reader. There’s always going to be a very good reason for a mandatory update when it’s released, and we may deny support to anyone who hasn’t applied a mandatory update.***

## Troubleshooting

While our software is quite reliable, and should run trouble-free over long periods of time, there are occasions when you'll need to troubleshoot something that's gone wrong. Nearly all of the support tickets we respond to fall into two broad categories:

- 1) Problems getting data from the console
- 2) Problems with a feature or function of the software itself

We endeavor to respond to software issues as quickly as possible, often making a fix available within an hour of a problem being reported; we can't promise that will always be the case, but we're committed to providing the most reliable product we possibly can.

However, it's far more likely that you'll encounter the first problem. This is because there are timing issues associated with the firmware in the console that can't be dealt with in software; we do our very best to avoid them, and nearly always do. If you have this problem, it will most likely show up as a failure to read R1, R2 and R3 data, or restarts of the Reader. It can also cause the Reader to hang on startup. The symptom appears as a failure of Windows to properly communicate with the HID device interface in the console, and is nearly always caused by the console timing issue.

Dealing with this particular problem is a matter of trying several things, in order, to find the least intrusive way to fix it.

Start by unplugging the USB cable coming from the console to the PC. Wait about 30 seconds, then plug it back in and restart the Reader. This clears up most issues.

If the problem remains, then you'll need to do a bit more work. Open Device Manager and expand Human Interface Devices. In there, right click on each HID-compliant device and select Properties, one at the time. On the Details tab, drop down the property selection and choose Hardware Ids. One of these devices will have the values shown here:

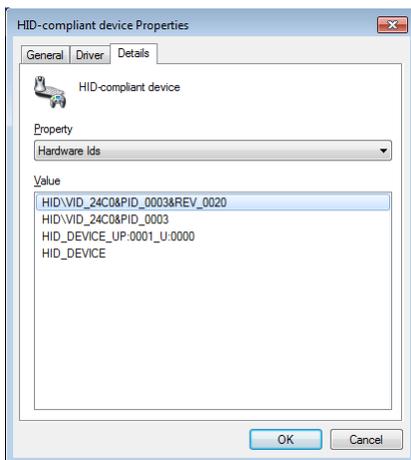


Figure 72: Device Properties

*Note that you're looking for the device with VID\_24C0&PID\_0003.*

Once you've found this device, close this window by clicking on Cancel. You'll return to Device Manager. Now, right click on the device you found and select Uninstall. Make sure that the USB cable is unplugged, and uninstall the device.

Again, wait about 30 seconds, then plug the USB cable back in. Your PC should recognize the console, and you should hear the USB insert sound. The driver should be installed automatically. Once the computer tells you the device was installed successfully, restart the Reader. This clears up nearly all of the remaining kinds of issues.

If, however, you still can't get the Reader to talk to the console, a hard reset of the console may be needed.

*Some consoles also have a timing issue that causes wildly inaccurate readings to be received. You'll know it if you see it – this is a synchronization issue, and once again, requires a reset of the console to correct.*

The way to do this is outlined in the documentation that came with your console, however, under the cover on the back there's a small hole you can push a paper clip into to cause a full hardware reset, or a reset button you can press and hold for at least ten seconds (on newer consoles.) Unplug the USB and remove the batteries from the console. Unplug the AC Adapter from the console as well. Wait about 30 seconds. Plug the power back in, and push a paper clip gently into the reset hole until you feel a small "click", or hold the reset button down for at least 10 seconds until the console restarts. Replace the batteries, close the cover, and be sure that the console has found your sensors.

Then you must set the time and date on the console (we recommend setting it about one minute fast) and set the correct USB mode on the console. **Failure to do any of these will ensure you still have a problem.**

Finally, plug the USB back into the PC, restart the Reader, and it will almost certainly be fine.

## Getting Support

We offer support for the VIS Reader via our Forum, at <http://forum1.valleyinfosys.com>.

See the section on Diagnostics under Reader Options for more information. We may require you to submit a Support ZIP, which is created under the Reader's Options. If you have notification email set up and enabled, the ZIP file containing your logs and settings will be sent automatically to us when you create it; in addition, a support ticket will be created for you in the Forum.