

# AURORA LOGGER RESIDENTIAL AND COMMERCIAL

## INSTALLATION GUIDE

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VSN-MGR-RES SERIES  
VSN-MGR-CMML SERIES

BCM.00099.0AL REV AB

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This product has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer’s instruction manual, may cause harmful interference with radio communications. Operation of this product in a residential area may cause harmful interference, in which case you will be required to correct the interference at your own expense.

For the models that contain a cellular router:

- The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- To comply with FCC RF exposure compliance requirements established in the ANSI C95.1 standards, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.
- Changes or modifications not expressly approved by the manufacturer could void the user’s authority to operate the equipment.

This product contains FCC ID: QIPMC75I and IC: 7830A-MC75I.

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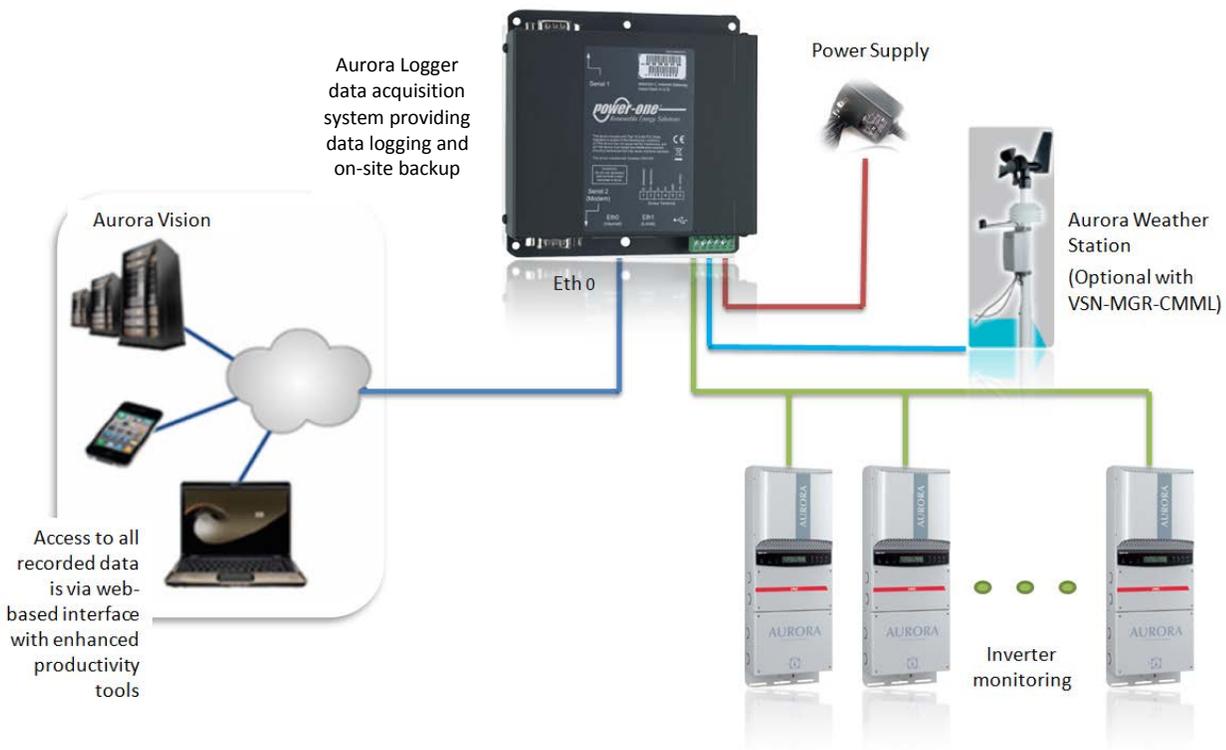
## 1 System Overview

The Aurora Logger is a lightweight solution for remote data acquisition, which enables PV system owners to benefit from advanced energy reports. The Aurora Logger collects and analyzes energy generation data from all connected Power-One inverters and optional weather station for commercial loggers. System performance and energy information are logged into a database on the Information Server, where it can be retrieved and used for analysis via any standard web-browser.

The Installer logs on to the website to register the Aurora Logger and ensures that the logger is correctly passing information to the servers. The Installer provides a URL to the end user for access to Aurora Easy View.

Aurora Logger in conjunction with the Aurora Vision solution brings the following benefits:

- Safeguard Your Investment and Maximize Your Return
- Improved Solar Energy System Efficiency
- Lower Life Cycle Costs
- Real-time and Historic Data Presented Using Web-based Devices
- Alarm Functions and Device Communication Failure
- Remote Access to all Data Using Internet Technology



The information in this document applies to all Aurora Logger Models for Residential and Commercial. This guide provides instructions for installing the Aurora Logger hardware to work directly with a Power-One inverter(s) and for setting up Aurora Vision Management system for remote data access.

The Aurora Logger consists of a Data Logger/Gateway and AC Power Supply adaptor. The data logger connects to the Local Area Network (LAN) with an Ethernet RJ45 connection (10Base-T). Typically it connects to a Digital Subscriber Line (DSL) or Cable router/gateway to get access to the Internet. In summary, any kind of Internet Protocol (IP) connection will work.

The Aurora Logger Residential model has the capability to monitor up to 5 Power-One single-phase string inverters. The Aurora Logger Commercial model has the capability to monitor up to 10 Power-One string inverters and one weather station. Inverters used with the commercial version can be single-phase or three-phase.

## 2 Installation

Qualified personnel with appropriate training and experience must perform Aurora Logger installation. Follow standard safety precautions during all procedures. Appropriate personal protection equipment (PPE), such as safety gloves and safety glasses is recommended.



### **WARNING!**

**During normal operation of the Aurora Logger, dangerous voltages flow through many parts of the system, including: terminals, all I/O Modules (Inputs and Outputs) and their circuits. All Primary and Secondary circuits can, at times, produce lethal voltages and currents. Avoid contact with any current-carrying surfaces.**

### 2.1 Preparation

Make sure you have the following tools and materials prior to starting installation.

#### Tools

- Standard Electrician's Toolkit
- Personal Protective Equipment (Gloves, Goggles, Clothing)

#### Materials and Test Equipment

- Twisted-Pair RS-485 Wire (Belden#3106A or eq.).  
**DO NOT USE CAT5/6 CABLE FOR THE RS-485 DATA WIRE.**
- Ethernet Cable to make Network Connection
- Laptop Computer with Internet Browser
- Crossover Ethernet Cable
- Mounting Screws and/or Brackets

It is also useful to know if you need to perform Asset Registration or final End-to-End Data Checks after physical installation is complete. If so, you will need a User ID/password to log in to Aurora Vision, and additionally you will need Administrator privileges to access the Aurora ADMIN tool. See the **Commissioning** section for details.

## 2.2 Aurora Logger Installation

### 1. Check packaging for all components:

- Aurora Logger
- Power Supply Adapter

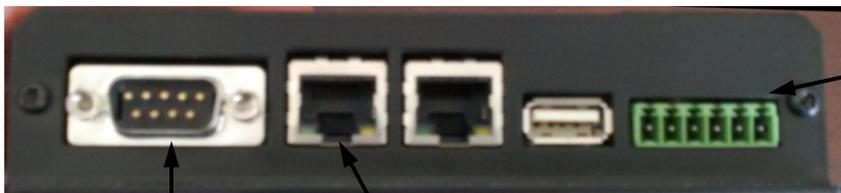


### 2. Determine the indoor location of the Aurora Logger. The suggested location is within 17m (50 ft.) of an Internet connection and within 100m (300 ft.) of your inverter(s).

### 3. Mount the Aurora Logger. The Aurora Logger Residential comes with flanges with pre-drilled holes for easy mounting. Both the residential and commercial versions require a weather protected site. The included power supply requires an ambient temperature between 0°C and 40°C but the logger can operate between -40°C and 85°C.

### 4. Connect shielded twisted-pair wire to the RS-485 terminals on the inverter(s). If there are multiple Power-One inverters, wire the inverters in a daisy chain configuration. Use a RS-485 data wire with one twisted pair, one ground conductor, and a shield with drain wire (Belden#3106A or equivalent). **DO NOT USE CAT5/6 CABLE FOR THE RS-485 DATA WIRE.**

### 5. Connect other end of shielded twisted-pair wire to RS-485 terminals on the Aurora Logger. Use the table below and the figure on the next page to make the proper connections.



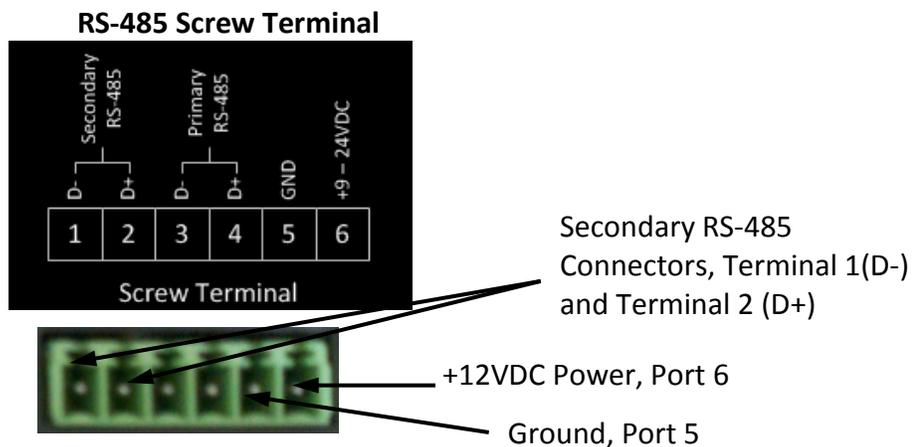
RS232 Serial Port 2

Eth0 -- For Internet Connection

RS-485  
Screw Terminal

### 6. Connect shielded twisted-pair wire to the RS-485 terminals on the weather/environmental station. Use a RS-485 data wire with one twisted pair, one ground conductor, and a shield with drain wire (Belden#3106A or equivalent). **DO NOT USE CAT5/6 CABLE FOR THE RS-485 DATA WIRE.**

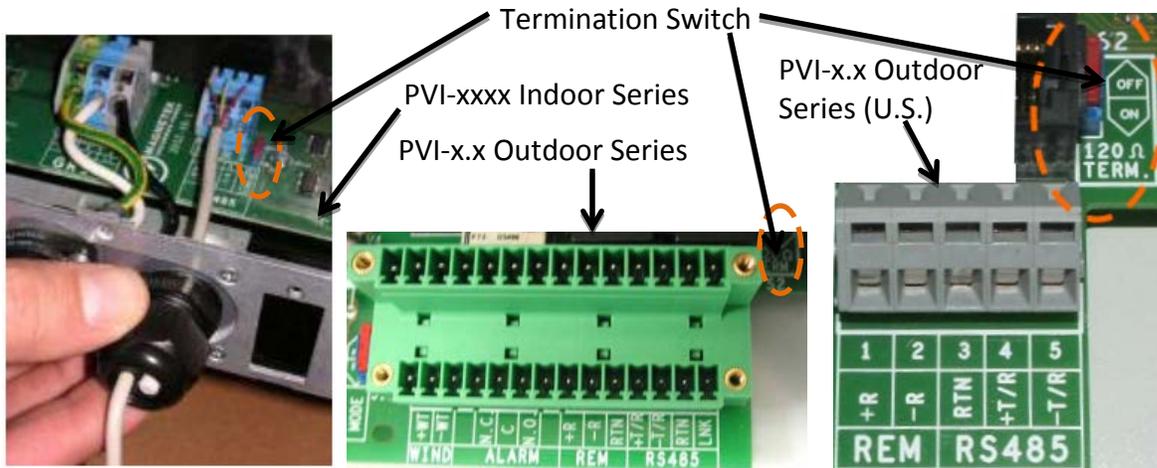
7. Connect other end of shielded twisted-pair wire to the Secondary RS-485 terminals on the Aurora Logger. Use the table below and the figure on the next page to make the proper connections. See Section 4 for more information on wiring the optional weather station to the Aurora Logger.



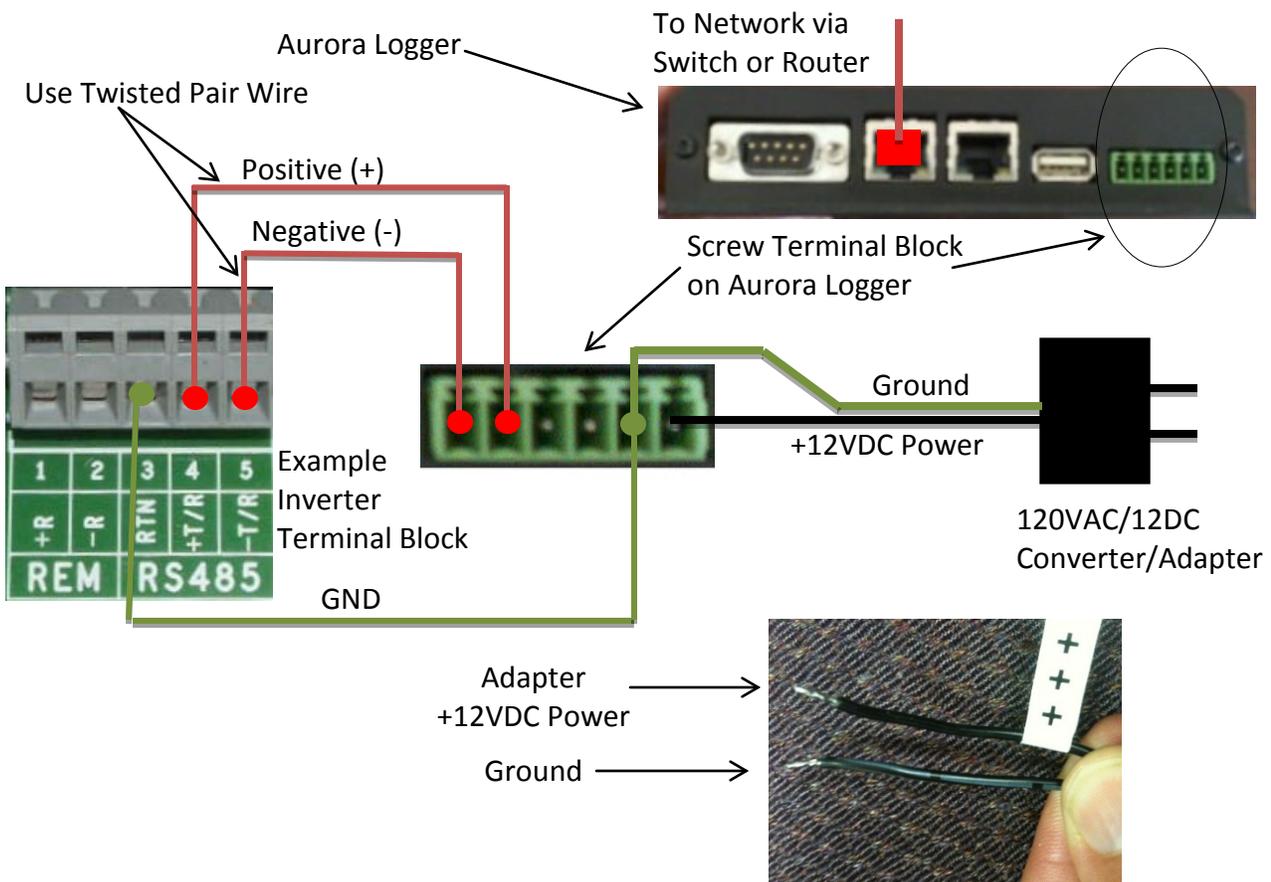
RS-485 Connection	Aurora Logger RS-485 Screw Terminal Connector	Example Aurora Inverter RS-485 Pin Label
RS-485 Negative (-)	1	-TR (Port 5)
RS-485 Positive (+)	2	+TR (Port 4)
RS-485 Negative (-)	3	-----
RS-485 Positive (+)	4	----
Ground	5	RTN (Port 3)
VDC Power Only	6	----

8. For systems with multiple Power-One inverters, the RS-485 network must be terminated at the final inverter by a switch near the RS-485 terminal block. The farthest inverter in the daisy chain must be terminated by setting the inverter termination switch to ON. For all other inverters in the daisy chain, turn OFF the termination switch. Below are pictures of RS-485 terminals in various Power-One inverters, as well as locations of the termination switch.<sup>1</sup>

<sup>1</sup> In some environments you may experience poor RS-485 signal strength due to noise. If signal strength is a problem, double-check that the last inverter in the chain is terminated and other inverters are not terminated. If problems persist, it may prove helpful to attach a 120 Ohm 0.5 Watt resistor across screw terminals 1 and 2 on the Aurora Logger.



- The Power Adapter comes packaged with your Aurora Logger with an Output Plug attached. Cut the Output Plug using standard wire cutter and strip the two conductors for connecting them to the Screw Terminal of the Aurora Logger. Attach the conductor with white label, which is a positive +12 VDC cable, to Port 6 of the Aurora Logger Screw Terminal. Attach the other solid black ground conductor to Port 5 of the Aurora Logger Screw Terminal. See the figure below.



- 10.** Connect the supplied power cord to the Aurora Logger and a standard 120VAC power outlet.
- 11.** Check the Aurora Logger power. There are a pair of light emitting diodes (LEDs) on the side of the logger, opposite the RS-485/DC power terminal block. The LEDs flash red during system boot and then one turns solid green when power is supplied and the system is ready.

### **2.3 Power One Inverter Address Configuration**

Power-One inverters use a proprietary RS-485 communication interface, and therefore must be daisy-chained to the Secondary RS-485 terminal connectors. **For system with multiple inverters, each inverter must be manually assigned a different RS-485 address.** Refer to the inverter manual(s) for instructions on how to set inverter addresses and exact inverter connection points. Write down the serial number and RS-485 address for each inverter so you can determine which inverter is which on the monitoring system.

## **3 Commissioning**

The following are the major steps required to make sure the system is operational and data is being passed to Aurora Vision servers:

1. Connect the Aurora Logger (data logger) to your Ethernet network.
2. Run the Aurora Logger Setup Tool to verify that your Aurora Logger is configured properly. The Setup Tool is the built-in web server of the logger.
3. Verify that you have a working Internet Connection to the Aurora Logger.
4. Perform Asset Registration using the Aurora ADMIN tool over the Internet.
5. Verify end-to-end data transfer using the Aurora Vision web portal.

Commissioning is not complete until you have performed the final two steps above over the Internet. However, these two steps do not necessarily need to be performed as part of the hardware installation.

### **3.1 Connect to the Internet**

Connect the Aurora Logger to the Internet through the local area network or directly. This is done by using a standard Ethernet cable (CAT-5/5e/6/6e) and connecting it to the Ethernet RJ-45 port marked **Eth0** on the front of the Aurora Logger. The Aurora Logger can connect through any switch or router in your network.

Verify that the Aurora Logger has an Ethernet connection. The **Eth0** LED can be used for detecting network link and network traffic:

- Eth0 LED = GREEN = Link
- Eth0 LED = GREEN BLINK = Traffic
- Eth0 LED = OFF = No network link

If no activity is seen on the LEDs, double-check all connections. <sup>2</sup>

Power-One recommends a wired Ethernet Internet connection because it is more reliable and requires less setup. If it is necessary to connect to a wireless network, a wireless network bridge with an Ethernet port is required. Purchase and configure the wireless network bridge that is compatible with the host wireless network. Ensure that the wireless connection is operational with a laptop before connecting it to the **Eth0** port of the data logger.

Power-One does not provide Internet service or the cables required to connect the Aurora Logger to the Internet.

### 3.2 Run the Setup Tool

The installer must use a laptop with a crossover Ethernet cable to communicate directly to the Aurora Logger and run the setup tool. The setup tool has many options and capabilities, but here we will only describe those necessary to get your system up and running. If your laptop is equipped with a Gigabit Ethernet interface, any Ethernet cable (straight or crossover) will work.

1. Configure the laptop's Ethernet port to obtain a Dynamic IP address automatically through DHCP; typically, laptops are already configured this way.
2. Connect the crossover Ethernet cable between the secondary Ethernet port marked **Eth1** on the Aurora Logger and the laptop computer.
3. Open up an Internet browser window on the computer and type in the following URL in the address bar.

**http://172.17.17.1**

4. The following **Home** page will appear:



<sup>2</sup> The Aurora Logger is by default set to DHCP and will try to acquire its IP-address from the DHCP server on your local network (LAN). The Aurora Logger is designed for use on an Ethernet network and must be assigned an IP address (DHCP or static) to make it accessible. If it is required to set a static IP for the Aurora Logger, your connection will not work until this address is set. If required, refer to the section below on setting a Static IP address. Normally no ports should need to be opened in the network firewall. The Aurora Logger will use ports 22 and 443 outbound to transmit the data.

Select the tabs across the top to perform configuration operations and select one of the ports in the **Devices** list to set up devices.

Verify all the icons for the Aurora Logger in the status area to the right are green. It may take some time for all the icons to turn green.



The MAC address (Logger ID) for the Data Logger is displayed at the top of the page. Be sure to write down the MAC address of the Data Logger. The MAC address will be needed later for Asset Registration.

### 3.3 Configure for Inverter Devices

The **Devices** list on the **Home** page will show all the different devices connected through all the ports on the Data Logger. **It is essential that the devices you set up here match how devices are physically connected to your Aurora Logger.**

By default, only the two RS-485 ports are set up. The primary RS-485 port is set to **Modbus RTU** and the secondary RS-485 is set to **Power-One**. The default supports hardware connections where all Power-One inverters are attached as an RS-485 daisy chain and connected to the **Secondary RS-485** port. Optional weather stations used with the Commercial Logger are connected to the **Primary RS-485** port. See Section 4 if you are adding a weather station.

For the Secondary RS-485 connection, once Power-One inverters are properly addressed and wired in the RS-485 daisy chain, inverters will automatically be discovered and displayed.

### 3.3.1 Set a Static IP Address

Setting a Static IP is only necessary if required by your network. In almost all cases you can skip this section.

1. Obtain Static IP address information for the site.
2. Select the **Network** tab. Set the **Type** (Network Connection Type) field to **Static**. The page will allow you to type in the following information:
  - **IP address**
  - **Subnet Mask**
  - **Gateway**
  - **DNS**
3. Press **Update** at the bottom of the page.

The screenshot shows the Aurora Universal web interface. At the top, the logo 'AURORA UNIVERSAL' is on the left and 'Logger Id: 00:06:eb:ee:03:d6' is on the right. Below the header is a navigation bar with 'Home', 'Network', and 'Advanced' tabs. The 'Network' tab is active. In the center, there is a configuration form for a network interface. The form has the following fields and values:

Interface	Ethernet (Eth0)
Type	Static
IP Address	192.168.3.127
Subnet Mask	255.255.255.0
Gateway	192.168.3.1
DNS (space separated)	10.10.20.5

At the bottom of the form are two buttons: 'Update' and 'Cancel'.

The Aurora Logger will restart with its newly configured address.

### 3.4 Verify Internet Connectivity

1. Verify that the Ethernet cable is connected between **Eth0** and your network.
2. The Aurora Logger acts as a router. From your laptop connected to **Eth1**, verify your internet connectivity by opening up an Internet browser window and connecting to an Internet address, such as www.yahoo.com.
3. Remaining steps for commissioning are performed via the Internet to check end-to-end communications. Proceed with one of the following steps:
  - a. If you are not responsible for these remaining steps, be sure to pass on the MAC address (Logger ID) information to the responsible party. Remove the cable from **Eth1**. Installation is complete.
  - b. If asset registration is already complete, proceed to the section on **End-to-End Data Check**.
  - c. If asset registration is not complete, proceed to the next section on **Asset Registration**.

### 3.5 Asset Registration

Asset registration is performed via the Aurora ADMIN Web tool. Asset registration assigns the MAC address of your logger to a specific plant in Aurora Vision. Asset Registration can be performed before or after the on-site installation is complete. When you register the Aurora Logger, all the assets (inverters) reporting data to the Aurora Logger are also registered. The plant must be created as an asset using Aurora ADMIN before the Aurora Logger can be assigned and registered.

From the Setup Tool, follow the link to the Asset Registration page of Aurora ADMIN. If you are not running the Setup Tool, go to <https://admin.auroravision.net/customeradmin>. Select **Services > Asset Registration** and type in the MAC address of the Aurora Logger. The Asset Registration page allows you to select the plant that the data will be associated with. Note that use of the Aurora ADMIN tool requires a User ID and password with Administrator privileges.

Select the **Services > Asset Registration** page in Aurora ADMIN to register the logger. Go to <https://partner.auroravision.net/display/en/Asset+Registration> on the partner portal for help in using the Aurora ADMIN tool for asset registration.

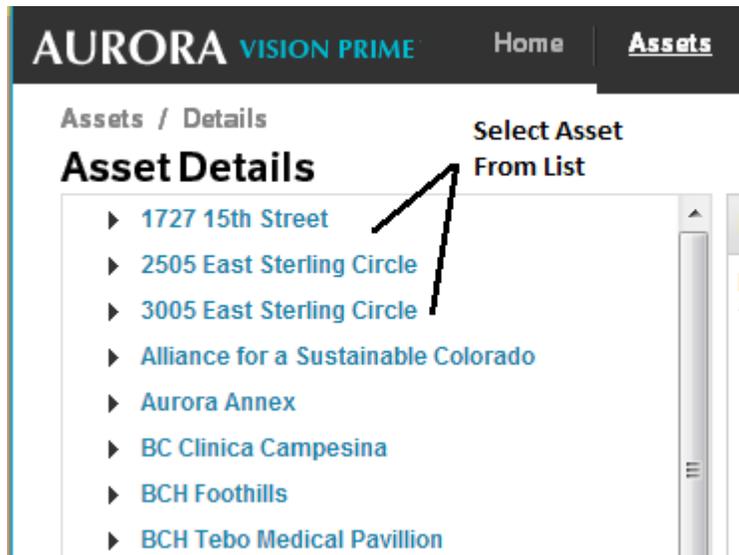
### 3.6 End-to-End Data Check

The last check is to make sure that data is actually being reported and is visible in the Aurora Vision portal. Wait 15 minutes and log on to [www.auroravision.net](http://www.auroravision.net) using a web browser on an Internet connected device. Within Aurora Vision, go to **Asset > Summary** page for the plant and open the **Device Status** panel. Verify that the energy readings agree with the inverter and that all of the monitored devices are communicating, as indicated by the **Last Reported** time.

### 3.7 Aurora Easy View Access for End User

The installer must supply the user with the Easy View URL so they access Aurora Easy View and monitor their system. To find the URL for a specific user site within Aurora Vision, follow these steps:

1. Log on Aurora Vision at [www.auroravision.net](http://www.auroravision.net) and go to **Asset > Details**.
2. Select the asset from the asset list in the screen area to the left.



3. Once the correct asset is displayed, select **Share** from the **Actions** menu.



4. A page displays to configure the Easy View display. Scroll down to the **Published View** section. The URL to provide to the customer is in the **Latest version** field.

### 3. Published View

URL for Easy View

Latest version (beta)

<https://share.auroravision.net/share/auroraEasyView/index.jsf?eid=35011>

```
<iframe style='padding:0px;margin:0px;border:none' height='1200'  
width='1000' frameborder='0' scrolling='no'  
src='https://share.auroravision.net/share/auroraEasyView/index.jsf?  
eid=35011'> </iframe>
```

Previous version of this view.

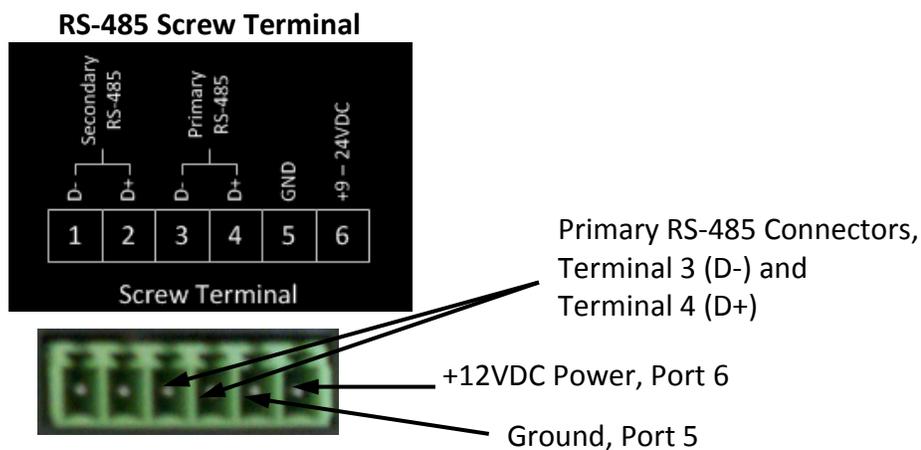
<https://share.auroravision.net/share/ecoVision/index.jsf?eid=35011>

```
<iframe style='padding:0px;margin:0px;border:none' height='1200'  
width='1000' frameborder='0' scrolling='no'  
src='https://share.auroravision.net/share/ecoVision/index.jsf?  
eid=35011'> </iframe>
```

## 4 Adding a Weather Station

Weather stations are wired to the **Primary RS-485** port on the Aurora Logger.

1. Connect shielded twisted-pair wire to the RS-485 terminals on the weather/environmental station. Use a RS-485 data wire with one twisted pair, one ground conductor, and a shield with drain wire (Belden#3106A or equivalent). **DO NOT USE CAT5/6 CABLE FOR THE RS-485 DATA WIRE.**
2. Connect other end of shielded twisted-pair wire to RS-485 terminals on the Aurora Logger. Use the table below and the figure on the next page to make the proper connections.



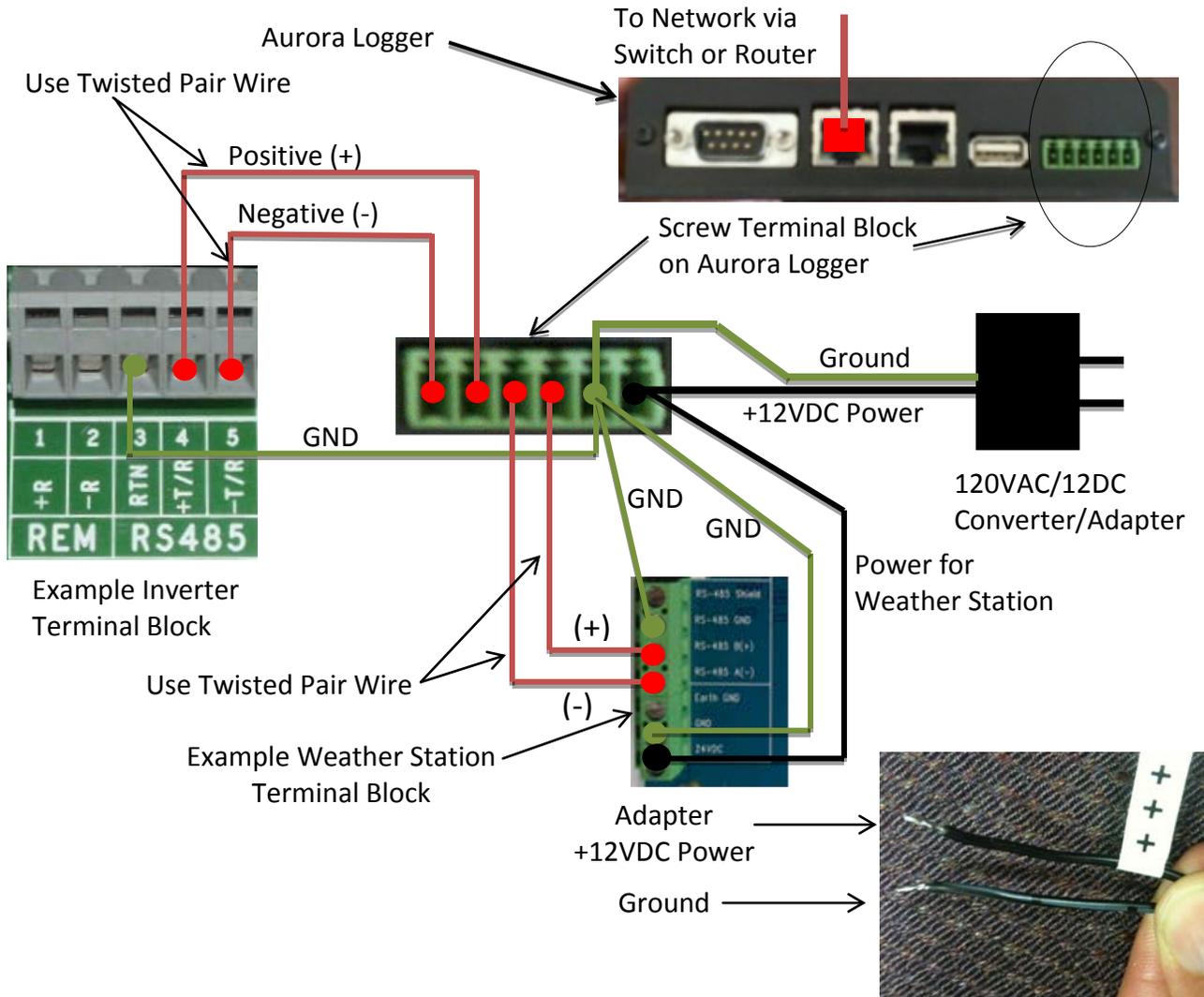
RS-485 Connection	Aurora Logger RS-485 Screw Terminal Connector	Example Aurora Inverter RS-485 Pin Label	Example Aurora Environmental RS-485 Pin Label
RS-485 Negative (-)	1	-TR (Port 5)	----
RS-485 Positive (+)	2	+TR (Port 4)	----
RS-485 Negative (-)	3	-----	RS-485 A(-)
RS-485 Positive (+)	4	----	RS-485 B(+)
Ground	5	RTN (Port 3)	RS-485 GND, GND
VDC Power Only	6	N/A	24VDC

Note that multiple weather stations can be supported if daisy-chained to the **Primary RS-485** port and each is given a unique Modbus address.

3. The Weather Station can tap the power terminals on the Aurora Logger for its power source. The VSN-ENVIRO-ENTRY and VSN-ENVIRO-CMML models (as well as most other commercial weather stations) can use +12VDC as the power voltage. Using the Aurora Logger as the power source is optional; any appropriate VDC power source that meets the specifications of the Weather Station may be used. To use the Aurora Logger as the power source for the Weather Station, connect shielded twisted-pair wire to the power terminals on the weather/environmental station. **DO NOT USE CAT5/6 CABLE FOR THE POWER WIRES.**

4. Connect other end of shielded twisted-pair wire to the power and ground terminals (terminals 6 and 5) on the Aurora Logger.

Wire the weather station to the Aurora Logger as shown in the figure below.



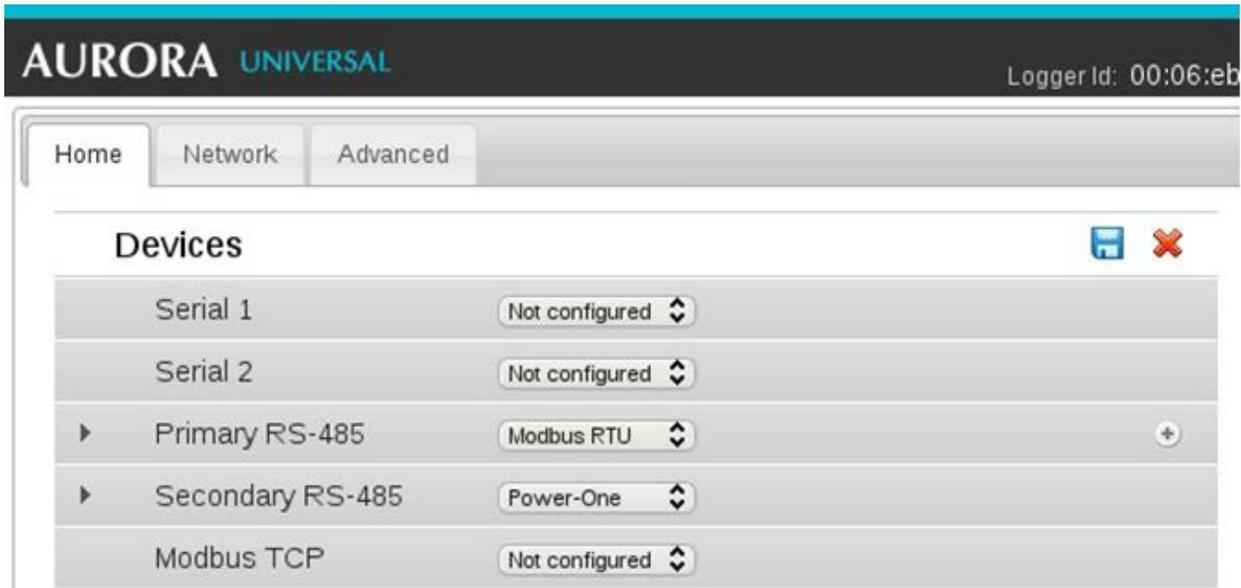
#### 4.1 Configuration for a Weather Station Device

The **Devices** list on the **Home** page will show all the different devices connected through all the ports on the Aurora Logger. **It is essential that the devices you set up here match how devices are physically connected to your Aurora Logger.**

The port configuration for the **Primary RS-485** port on the Aurora Logger must remain set to **Modbus RTU** (default value). Configuration of the **Primary RS-485** port only needs to be completed when using an optional weather station.

Configure the **Primary RS-485** port using the following procedure. Bring up the **Setup Tool** in the same manner as for configuring inverters (connect Aurora Logger directly to a laptop and go to <http://172.17.17.1>).

1. Go to the **Home** tab. Click on the Pencil  icon across from **Devices**. The following screen appears:

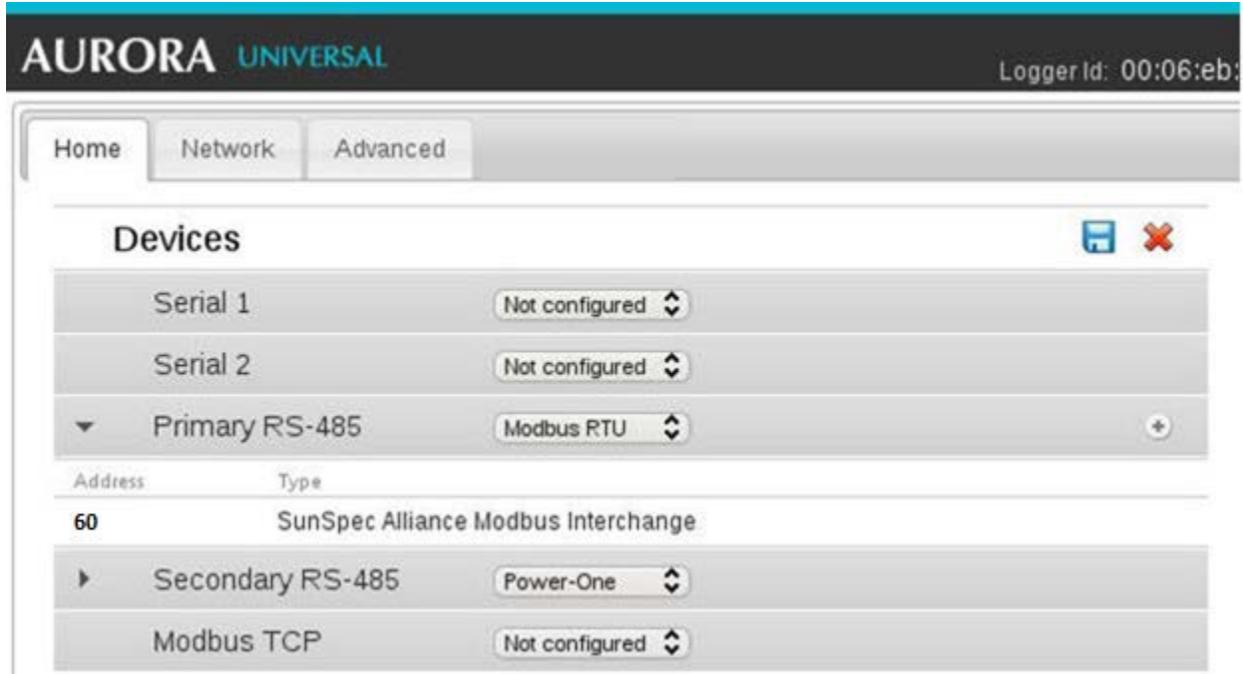


2. The screen shows the current configuration settings for each port. Select the Plus (+) button on the **Primary RS-485** bar to add a device. A window appears to enter device settings.

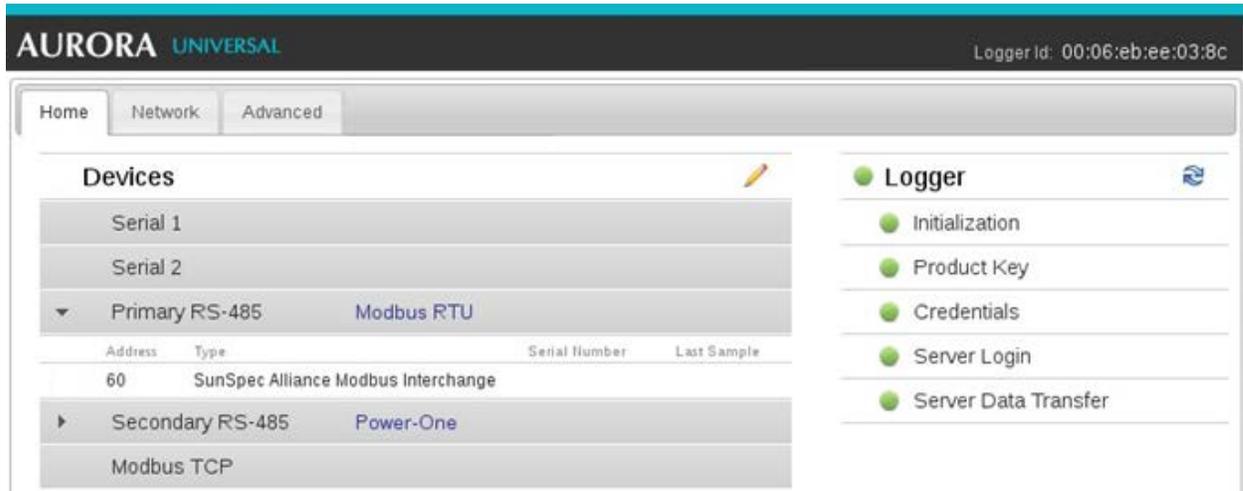


3. Select **SunSpec Alliance Modbus Interchange** as the **Device Type** from the pull-down menu.
4. Set the **Slave Id** field to the Modbus address of the weather station. Note that for the VSN-ENVIRO-ENTRY and VSN-ENVIRO-CMML weather station models the default Modbus address is 60.
5. Enter a **Description** to help you identify the device if you need to change configurations later.

6. Click the **Add** button.
7. The device will be added to the **Devices** page, listed under the **Primary RS-485** port.
8. Press the Save  icon at the top to commit changes.



9. After making changes, you are returned to the **Devices** page with the status indicators, as shown below.



## 5 Troubleshooting

### 5.1 Troubleshooting Guide

- 1) **Issue: Aurora Vision does not show recent information from the monitoring system.**
  - a. Verify the Aurora Logger is connected to power and the Aurora Logger POWER LED = GREEN.
  - b. Verify that the Aurora Logger has a network link, by checking that the **Eth0** LED on the Aurora Logger is green. If there is no network link then test the Ethernet (Cat5 or Cat6) cable with an appropriate data cable tester and verify the router, switch, or hub is operational.
  - c. Verify that you have a working Internet connection. This can be tested with a laptop by unplugging the Ethernet cable from Eth 0 and connecting it to the laptop and testing to see if the laptop can connect to the Internet using the dynamic or static TCP/IP configuration for this network.
  - d. If all of the previous steps are correct restart the Aurora Logger by unplugging and then supplying power to the Aurora Logger.
  - e. If all of the previous steps do not help this issue contact Power-One Support.
- 2) **Issue: I cannot connect directly to the web interface on the Aurora Logger.**
  - a. Verify the Aurora Logger is connected to power and the Aurora Logger POWER LED = GREEN.
  - b. Verify that you have a working Internet crossover cable. One end of the crossover cable should be connected to **Eth1** and the other to your computer's Ethernet port. You should see a link LED illuminated for both the Aurora Logger and the computer.
  - c. Verify that the Network settings on the computer. The Network settings for the Ethernet connection should be set to DHCP "Automatically obtain an IP address". Try to "Repair" the network connection on the computer.
  - d. If all of the previous steps are correct restart the Aurora Logger by unplugging the power cord, wait 30 seconds, and then resupply power. Also restart your computer.
  - e. Try using a different crossover cable; your cable may be defective.
- 3) **Issue: I do not see all of the Power-One inverters.**
  - a. After 3 minutes select refresh on your web browser.
  - b. Close your web browser and reconnect to the Aurora Logger web page and select the **Home** page (<http://172.17.17.1>).
  - c. If the Aurora Logger restarts then it received a new configuration which should have all the devices defined. Wait for another three minutes and check the changes.
  - d. If all of the previous steps do not help this issue contact Power-One Technical Support.
- 4) **Issue: I do not see recent data for a Power-One Inverter.**
  - a. Select refresh on your web browser.
  - b. Close your web browser and reconnect to the Aurora Logger **Home** page (<http://172.17.17.1>).
  - c. Check to make sure the Power-One inverter has power. Check the inverter's user/installation manual.

- d. Check to make sure the RS-485 communication wires are properly connected. Make sure the data conductors are not swapped. Measure the DC Voltage across D+ and D- at both the monitoring enclosure and at the data terminals of the remote device. If the measurement is 0 DC you have a short in the data wires. If the difference between the two measurements is greater than 3 DC then you may have an open circuit.
- e. If all of the previous steps do not help this issue contact Power-One Technical Support.

## **5.2 How to Contact Power-One Technical Support**

For most efficient technical support please e-mail Technical Support at [service.us@power-one.com](mailto:service.us@power-one.com) or call us at +1 877-261-1374. When requesting technical support, please provide the following information:

- a. Model #.
- b. Unit serial number.
- c. Site/project name.
- d. Problem description.

Be prepared to describe the problem you are experiencing including specific details of the application, installation, and any additional pertinent information.

In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material Authorization). Do not return items without an RMA# displayed on the outside of the package.

If you require an advance replacement to be shipped before the RMA unit has been received by Power-One, you will need to submit a valid purchase order for the replacement unit, referencing the RMA# on the P.O. When we receive the faulty unit, we will credit the cost of the replacement, if it is covered by the warranty.

Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure your shipment. Our warranty does not cover damage incurred during transit.

## **6 Aurora Logger Specifications**

### **6.1 Data Logger / Internet Gateway Specifications**

#### **Ethernet Network Connection**

- a. Primary Physical network connection on 10BaseT Ethernet or 100BaseTX Fast Ethernet networks using RJ45 twisted pair cable. (Port name - Eth 0)
- b. Secondary Physical network connection on 10BaseT Ethernet or 100BaseTX Fast Ethernet, but limited in speed to 12 MBit/s since it is connected through an internal USB port. (Port name - Eth 1)

### **Serial Connection**

- a. Two RS-232 serial ports terminated with 9 pin MALE D-SUB connectors. Support baud rates up to 230kbps.
- b. Two RS-485 serial ports supported on a single screw terminal block. Supports baud rates up to 115200 bps.
- c. Up to 5 Power-One single-phase inverters are supported by the Aurora Logger Residential.
- d. Up to 10 Power-One inverters and one weather station are supported by the Aurora Logger Commercial. Inverters can be single-phase or three-phase.

### **USB 2.0 Ports**

- a. The USB Ports are currently not used.

### **Hardware**

- a. CPU: Atmel AT91SAM9G20 @ 400MHz
- b. DRAM: 64 Mbytes
- c. Flash memory: 256 Mbytes  
(Normal storage capacity available for data logging is 30 days-worth of data)

### **Power Supply**

- a. Power: 9-24 DC
- b. Power consumption is typically between 2.8 VA and 3.2 VA. With load on USB bus, power consumption is between 5.0 VA and 7.2 VA

### **Operating Environment**

- a. Temperature: -40°C to +85°C
- b. Humidity: <80% storage, <85% operating (non-condensing)

### **Dimension**

- a. Height: 1.2" (31 mm)
- b. Width: 5.225" (133 mm)
- c. Length: 5.275" (134 mm)
- d. Weight: 13 oz. (363 gm.)

### **Compliance**

The Aurora Logger is compliant with both industrial and light industrial/commercial EMC standards for both emission and immunity.

### **Safety**

EN 60950-1, UL/CSA 60950-1 (US version)

## IP Network Services

The Aurora Logger is using the following IP Network Services:

Direction	Service/Port	Protocol	Description
Out	ssh/22	Tcp	For remote firmware upgrades, the Aurora Logger utilizes encrypted SSH Remote Login Protocol. To enable upgrades over the Internet, this port has to be opened in any firewall and forwarded to this device. (preferred)
Out	domain/53	Tcp/udp	Aurora Logger must be able to resolve domain names, to ensure scalability and dynamic changes on the Internet. (optional)
Out	http/443	Tcp	As an HTTP client, the Aurora Logger connects to the Aurora Vision® Information Server for data upload. (mandatory)

## 6.2 Remote Power Wire Sizing

If you are connecting a weather station to the Aurora Logger for power, this table will help you determine the minimum recommended wire size for the remote device power cable based on the one way distance along the wire run. If the remote device is farther away than 400' from the Aurora Logger, a separate 24 VDC power supply must be installed closer to the weather station, due to the voltage drop.

**Remote Device Power Wiring Sizes**

One way distance along wire run to the farthest remote device	Wire size is in AWG for stranded copper wire
0 to 50'	#20
50' to 100'	#18
100' to 150'	#16
150' to 200'	#16
200' to 250'	#14
250' to 300'	#14
300' to 350'	#12
350' to 400'	#12

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