Ellington Valley Technologies, Inc.

DryVue™ Sahara Startup Guide

September 30, 2026
Rev C

REVISION BLOCK

Rev	Change Description	ECO	Date
A	Initial release.	ECO-16	07/15/26
B	Added Table 1, administrative changes.	-	07/24/26
C	Added support email, formatting changes.	ECO-40	09/30/26

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About this Guide

This guide provides instructions for safe installation, set-up, and operation of the equipment. Before installation or operation of the equipment, please read the entire guide and observe all hazard notices, symbols, and labels on the equipment and in the guide.

Technical Support and Contact Information

Safe and reliable operation of this equipment is conditional on all installation, operation and maintenance procedures being carried out in accordance with the appropriate manuals, by personnel having appropriate qualifications, experience, and training. Failure to observe the requirements of the manual may result in the user being held responsible for the consequences and may invalidate any warranty.

Customer Support	+1 (860) 661-1424 support@EllingtonValley.com

Manufacturer Address

DryVue™ Sahara Manufacturing Site
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East Windsor, CT 06088
U.S.A.

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1. Safety Information

The chapter identifies potentially hazardous conditions which may be present during installation, operation, and serving of the equipment.

Hazard Notices Used

The equipment poses potential hazards during installation, operation, and service. In this guide, there are four levels of safety precautions and importances that conform to ANSI Z535 and ISO 3864. These hazard notices identify the hazard, explain how to avoid the hazard, and identify probably consequences of not avoiding the hazard. These notations are provided primarily in the procedural sections and are intended to complement the ANSI and/or ISO safety labels physically located on the equipment.

DANGER	**Avoid hazard.** Danger notifications indicate a hazardous situation which, if not avoided, **will** result in serious injury or death. The hazard is imminent.
WARNING	**Avoid hazard**. Warning notifications indicate a hazardous situation which, if not avoided, **could** result in serious injury or death. The hazard is possible.
CAUTION	**Avoid hazard.** Caution notifications indicate a hazardous situation which, if not avoided, could result in minor to moderate injury and/or equipment damage.
NOTICE	Notice notifications provide information to follow to avoid damaging system hardware or losing data.

Symbols Used on the Equipment

	ON (Power) *IEC 60417, No. 5007*
	OFF (Supply) *IEC 60417, No. 5008*
	Protective Earth Terminal (Ground) *IEC 60417, No. 5019*
	Warning: Risk of Electric Shock *ISO 7010, W012*
	Warning: Hot Surface *ISO 7010, W017*

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Equipment Safety Precautions

This section lists the hazards that could be encountered when installing, operating, and/or servicing the equipment. More specific hazards are listed throughout the guide in the relevant sections.

⚠WARNING	**Personal Protective Equipment (PPE).** When handling/using chemicals for preparation or use within the equipment all applicable local and national laboratory safety practices must be followed. This would include, but is not limited to, following general laboratory and chemical handling safety practices, use of all relevant engineering controls such as ventilation hoods and, appropriate selection and use of PPE. Failure to adhere to laboratory safety practices could lead to injury or death.
	Application Suitability: It is the customer's responsibility to determine the suitability and hazards of the equipment for a given application. Ellington Valley Technologies makes no representation that the potential hazards presented in this guide are the only hazards associated with this system and its installation, operation, and maintenance.
⚠CAUTION	Only trained and experienced operators should perform maintenance and repairs. Contact Ellington Valley Technologies for service and/or training.
	Do not substitute parts or modify equipment. Do not install substitute parts or perform any modifications to the hardware that have not been authorized by Ellington Valley Technologies.
	Use the proper power cord. Use the proper power cord. Only use a detachable power cord that is rated for the voltage and current specified on the equipment nameplate. The power cord should have a minimum cross-sectional area of 0.75 mm2 (18AWG). The power cord should be certified by an appropriately qualified agency such as UL, VDE, or Semko.

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2. DryVue™ Sahara Introduction

DryVue™ Sahara Technology

The DryVue™ Sahara technology couples high pressure piston pump compression and Peltier cooling to reduce the moisture to levels and flow rates not achievable by other technologies. If coupled with EVT DryLink™ sample lines, the system can be monitored continuously at the analytical instrumentation location via ethernet communication.

The DryVue™ Sahara is designed to condition environmental samples by reducing moisture from percentage levels to less than1,000 ppm. This is an approximate dew point of -20°C and ~8x lower than traditional chiller technology operating at 4°C.

The Sahara is designed in an enclosed case for both indoor and outdoor utilization. When utilizing outdoors, the environmental sample can be conditioned at the source so the need for heated sampling equipment is eliminated. The design of the technology allows for deployment in almost all potential sampling locations.

The sampling system can deliver 10 LPM of conditioned gas to any analyzer. Additionally, sample delivery distances can be up to 250 feet or more with no loss of flow, even with ¼ in O.D. HDPE sample lines.

The piston pump can achieve pressures of above 110 psig with flows of up to 8 LPM. Much higher flow rates can be achieved at lower pressures.

The Peltier cooling device can operate between 2°C and 25°C depending on the moisture requirements of the method. Certain compounds that might condense at cooler temperatures can still be analyzed by operating the Peltier device near room temperature. Due to the high pressure of the technology, the remaining moisture will still be significantly less than a traditional chiller operated at 4°C.

As the system is operated at pressures above atmospheric, peristaltic pumps are not required to remove the moisture like in a traditional chiller. PLC actuated valves allow for periodic or continuous draining of condensed moisture.

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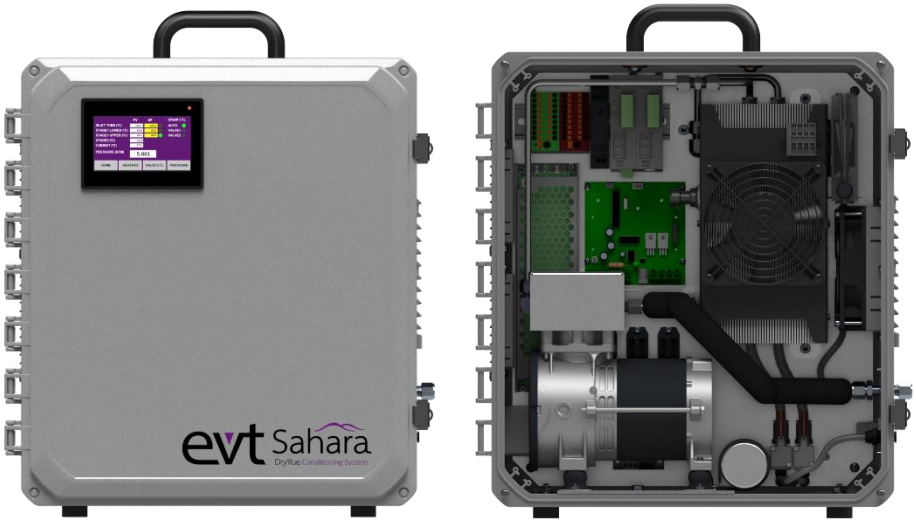
3. DryVue™ Sahara Startup

The Sahara technology is simple to start up and operate. This chapter covers how to initialize and operate the technology.

To Start

- Plug the Sahara into a 110VAC outlet.
- Confirm the three ¼ inch connection lines on the right side of the enclosure are not restricted.
    - Sample Inlet (¼" Swagelok)
    - Sample Outlet (¼" Swagelok)
    - Drain (¼" Pushfit)
- ***Optional.*** Connect standalone ethernet cable or cable from DryLink transfer line to Sahara.
    - **IP Address of Sahara is 192.168.254.51**
    - **Install Real VNC Viewer** – *see instructions in Appendix A*
- Toggle the switch to the **ON** position.

NOTICE The system will turn on but the pump will remain off (to prevent backpressure).



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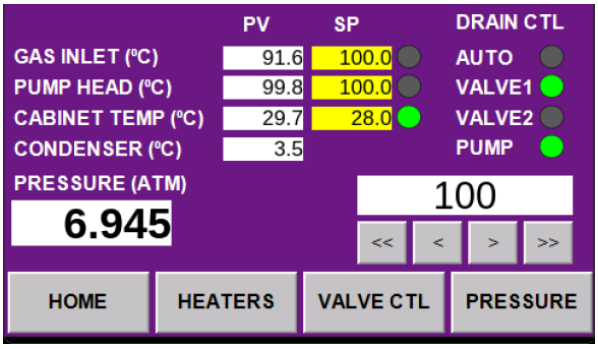
DryVue™ Sahara Home Screen

When the Sahara is turned on, it will take about 1 minute to initialize the device. Once initialized, the DryVue™ Sahara Home Screen will be visible.

To assist the user, the system is preconfigured with startup conditions. The temperatures can be modified by clicking on the **Heaters** button.



- The **Gas Inlet (°C)** heater is set to 100°C.
  - This is the line between the inlet connection and the sample pump.
  - This heater is used for preventing gas condensation before the pump head.
- The **Pump Head (°C)** heater is set to 100°C.
  - The pump head has a cartridge heater to maintain desired temperature.
- The **Cabinet Temperature (°C)** is set to 28°C.
  - The cabinet fan will turn on when this temperature is exceeded.
- The **Condenser (°C)** temperature is preset to 4°C.
  - The value is the current condenser temperature.
- The **Pressure (ATM)** is controlled by the flowmeter valve, initially set at 5 ATM.
  - The flowmeter gauge is the valve for total sample outlet flow and pressure control.
  - Increasing the pressure decreases the total flow of the system and vice versa.
  - We need an upper limit (Do Not Exceed Value). It should be BOLD and Bright!
  - See Table 1 for expected sample flow rates and dry moisture concentration based on inlet moisture and pressure set point.

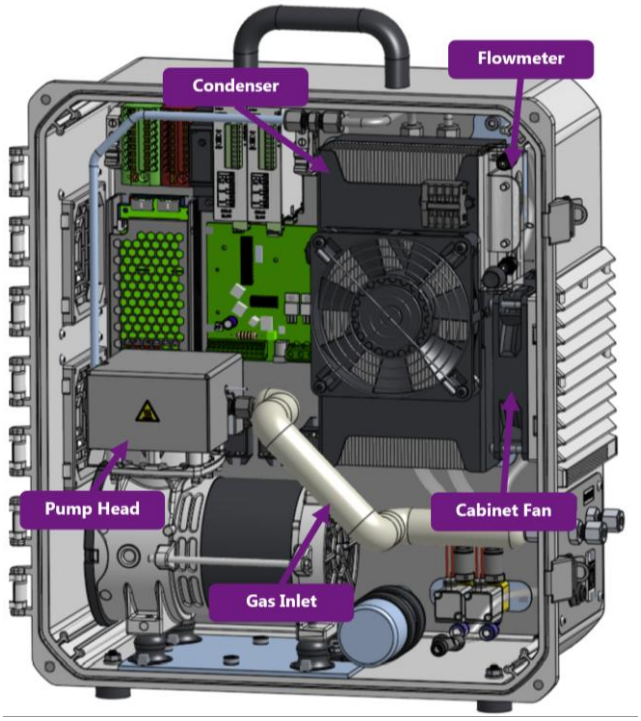


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Table 1. Approximate Flow Rates and Expected Exiting Moisture Content*

Inlet Sample Water Conc. (%)	Sahara Pressure (ATM)	Sample Flow Rate (LPM)	Sahara Outlet Water Conc. (%)
1	1.5	> 10	0.67
	2.5	> 10	0.32
	5	> 10	0.16
	7.5	6.5	0.11
5	1.5	> 10	0.67
	2.5	> 10	0.32
	5	9.5	0.16
	7.5	6	0.11
10	1.5	> 10	0.67
	2.5	> 10	0.32
	5	9	0.16
	7.5	5	0.11
15	1.5	> 10	0.67
	2.5	> 10	0.32
	5	8	0.16
	7.5	4.5	0.11
20	1.5	> 10	0.67
	2.5	> 10	0.32
	5	7.5	0.16
	7.5	3.5	0.11
25	1.5	> 10	0.67
	2.5	> 10	0.32
	5	6.5	0.16
	7.5	3.5	0.11
30	1.5	> 10	0.67
	2.5	10	0.32
	5	6	0.16
	7.5	2	0.11

** Determined using 50', ¼" sample tubes on the inlet and outlet of the Sahara.*

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DryVue™ Sahara Interface Panel



- The **Inlet** port can be connected directly to a heated or unheated sample line.
    - The line should be between 125 – 150°C when the sample contains moisture above ambient levels.
- The **Outlet** port can be connected to any standard ¼” tubing to provide a conditioned sample to an analytical instrument.
- The **Ethernet** port can connect to a computer or the **EVT DryLink** if remote operation is desired.
- The **Drains** are factory set in automatic mode, every 15 minutes for 200 milliseconds.
    - Internally Drain 1 and 2 are tied together to the **Drain** outlet port located on the interface panel.
    - Automatic mode periodically opens the valve at set intervals for condensate draining. This results in a brief burst of water and a temporary decrease in system pressure. A drain hose can be connected to direct excess water removed.
    - The parameters of this can be adjusted in the Valve Control screen.

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DryVue™ Sahara Sub-Panels

There are 2 sub-panels on the DryVue™ Sahara HMI Home Page.

- Heaters
- Valve Control (VALVE CTL)

Heater Control Panel

There are three control temperatures in the DryVue™ Sahara.

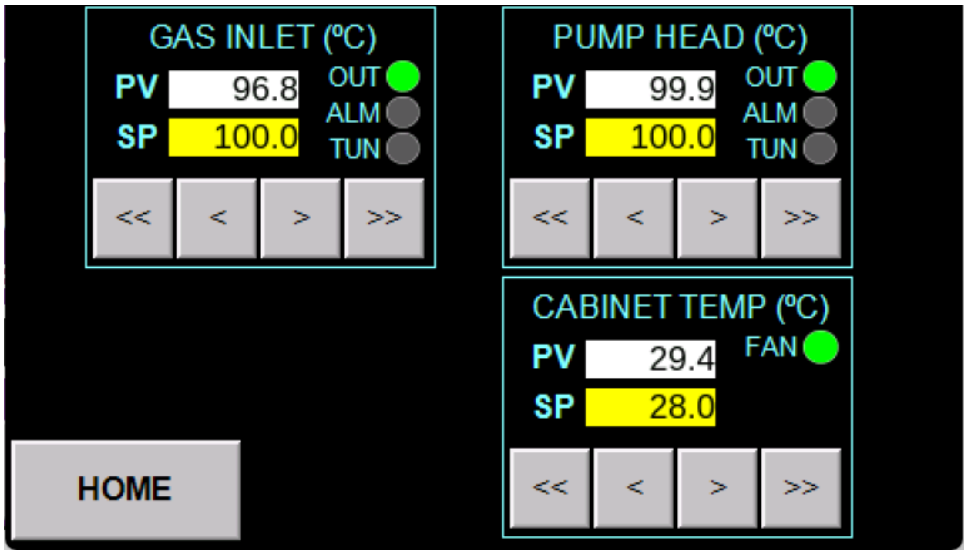
- Gas Inlet Temperature
- Pump Head Temperature
- Cabinet Temperature

Each can be changed by using the arrow keys.

<< is equivalent to 10 units
< is equivalent to 1 unit
<< and < buttons decrease the setpoint
>> and > buttons increase the setpoint

NOTICE Setpoint limit on both the Gas Inlet and on Pump Head is 120°C. Cabinet temperature maximum setpoint is 50°C.

The enclosure temperature should be set between 25 and 35°C so the Peltier cooler can properly function. The enclosure fan will turn on when the cabinet setpoint temperature is exceeded.



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Valve Control Panel

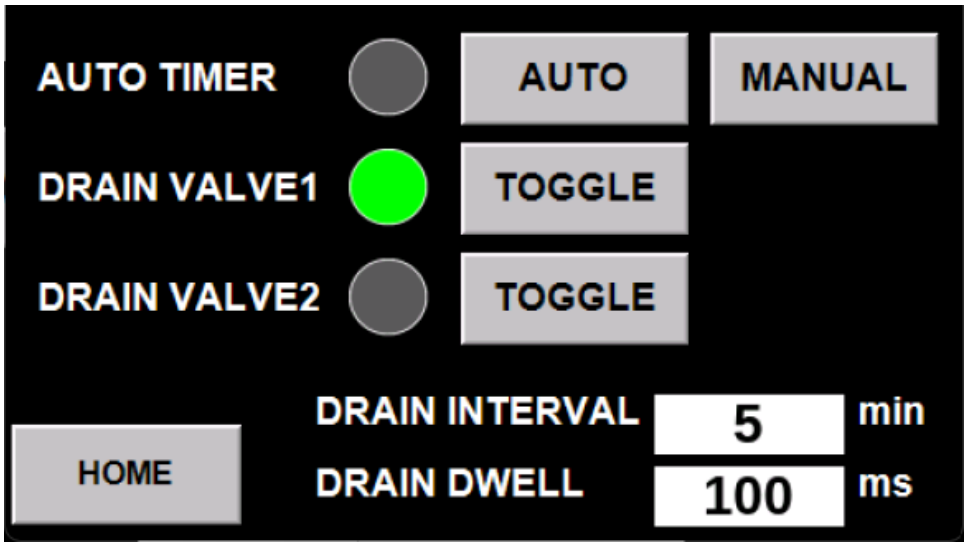
There are two Drain Valves (1 and 2) in the DryVue™ Sahara.

- In **Auto** mode, the drains will open one at a time at the drain interval for the specified dwell time. The table below provides recommended drainage intervals based on expected moisture level of the sample while running in Auto mode.
    - Drain interval should be no more than about 15 minutes on a wet sample.
    - Drain dwell time should be between 100 to 200 ms.
    - The opening of Drain 1 and 2 is staggered so no condensate is pushed back into the chamber.

Table 12. Recommended Drainage Intervals (Auto Mode)

Expected Moisture (%)	Drain Interval (min)	Drain Dwell (ms)
0-2	15	200
2-5	10	200
5-10	8	200
10-20	5	200
20-30	3	400

- In **Manual** mode, the drains will remain in their set state.
    - The **Toggle** buttons open and close the valves.
    - **Manual** mode will provide the most stable pressure and water readings but will result in buildup of condensate if not drained regularly.



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Appendix A. Real VNC Viewer

Real VNC Viewer

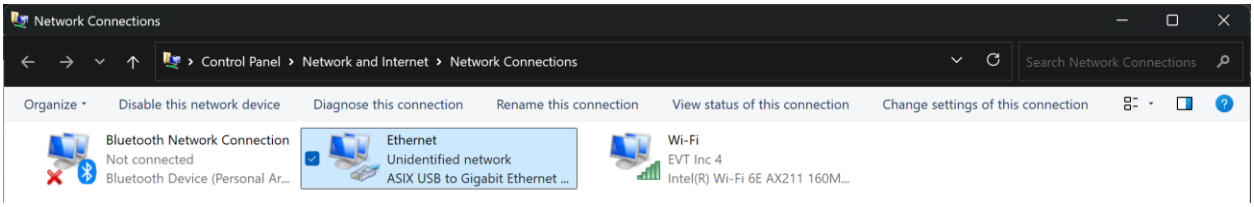
To remotely communicate with the DryVue™ Sahara, the user must install **RealVNC Viewer**.



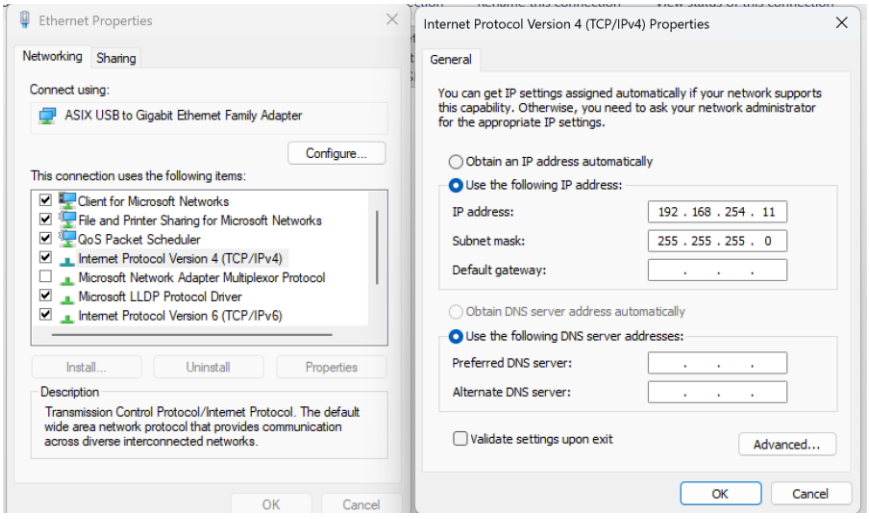
The user must also set their computer IP ports so that communication with the DryVue™ Sahara can be achieved.

Set the computer IP address:

- Go to **Control Panel**.
- Go to **Network and Internet**.
- Go to **Network Connections**.
- Right click on appropriate **Ethernet** port.



- Click on **Properties**.
- Select Internet **Protocol Version 4**.
- Click on **Properties**.
- Click on **Use the following IP address**.
- Set the **IP address** (as shown), click **Tab** (and the **Subnet mask** should populate) .
- Click **Ok**.



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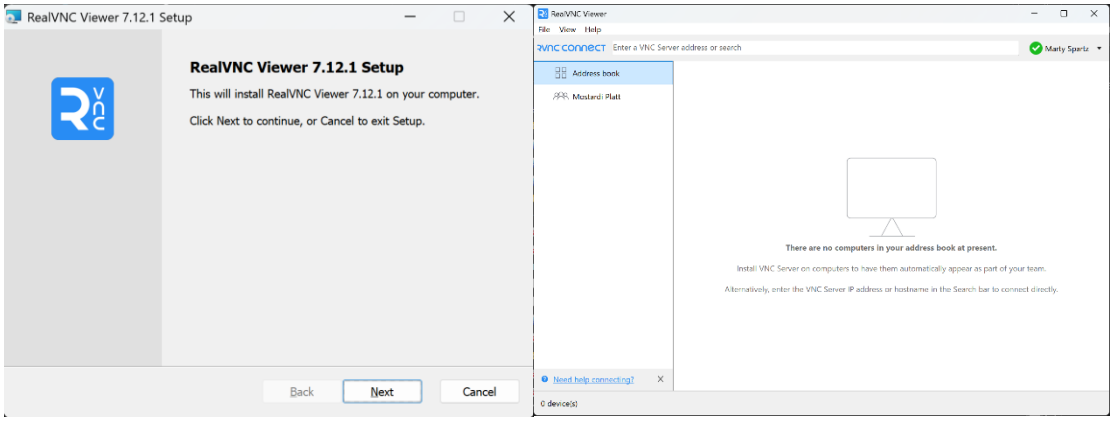
RealVNC Viewer Setup

To set up **RealVNC Viewer**, the user must run the RealVNC executable.

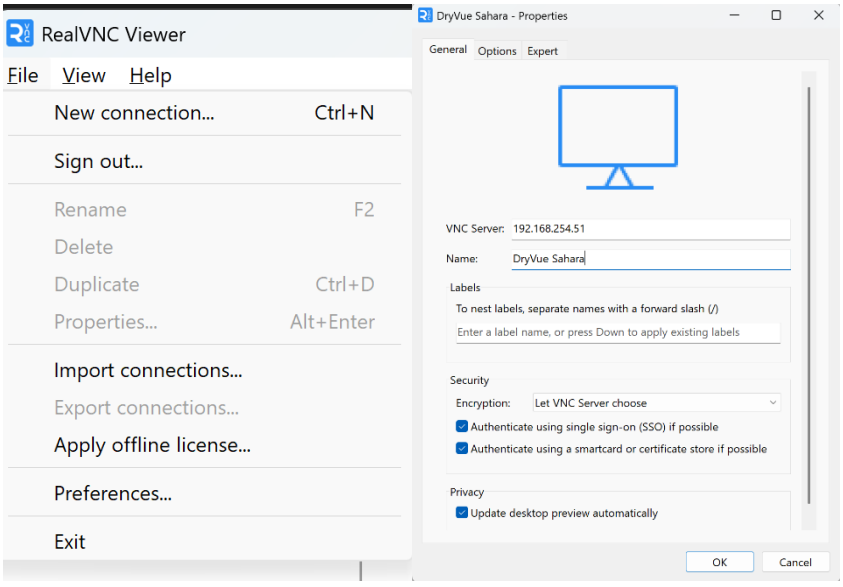


VNC-Viewer-7.12.1-Windows.exe

When running the .exe, the following screen will appear. Follow the installation instructions prompts. Once completed, the user will see the **RealVNC Viewer** screen.



- Click on **File**.
- Click on New **Connection**.
- Populate the properties window with the **IP address** and **Name**, as shown below.
- Click **OK**.



Once the IP address information is provided the user should see the following screen.

- Click on **DryVue™ Sahara Icon**.
- **RealVNC** will then attempt to connect to the **DryVue™ Sahara**.

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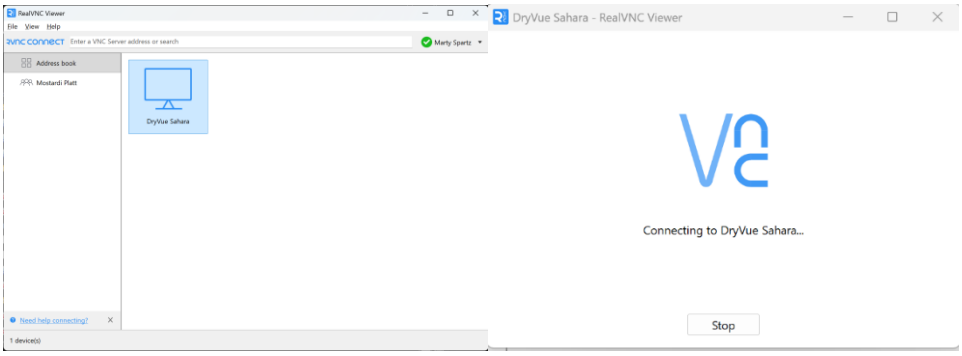
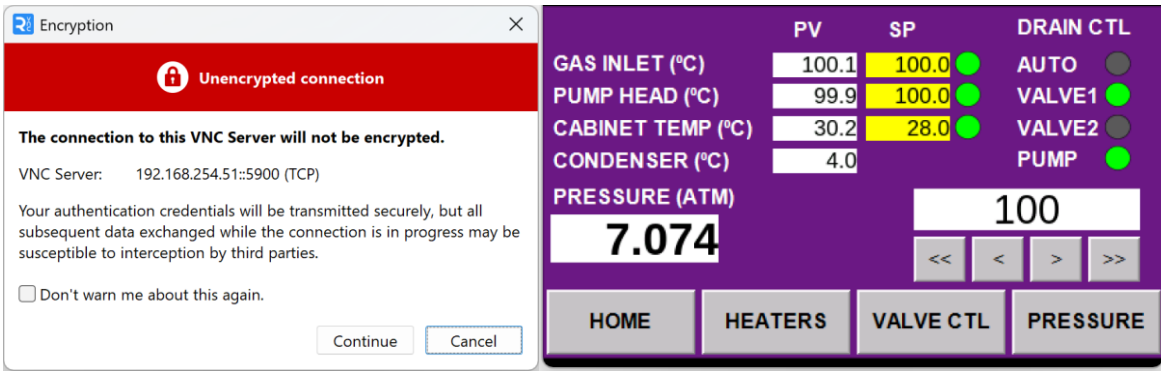


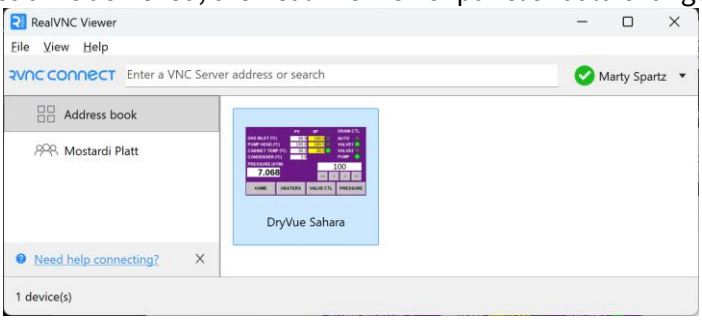
If the **IP addresses** are configured properly for the **computer port** and the **DryVue™** and the **ethernet** connection between the computer and the DryVue™ Sahara is set, the computer should be able to communicate with the DryVue™ Sahara.

If the system is communicating properly, the user will see the following connection warning.

- Click **Continue**.
- The **DryVue™ Sahara HMI** screen should appear on the screen.
    - Scale it to fit user needs.
    - The DryVue™ Sahara can be controlled by this panel.



Once the initial connection is achieved, the RealVNC Viewer panel should change to the following Icon.



Pressure testing is completed as part of equipment checkout, contact Customer Support for instructions on how to perform this test in the field.

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