

Smart Air Control Valve

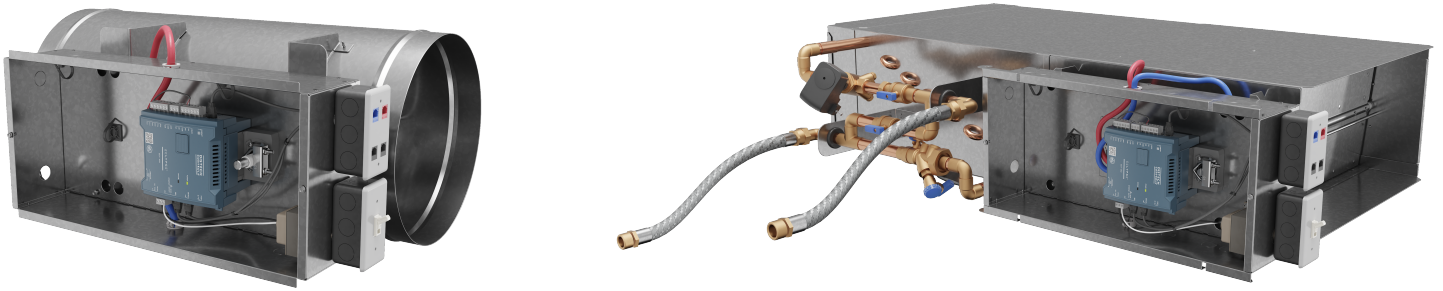



Figure 1: Smart Air Control Valve Round and Rectangular Commercial Models

Product Description

The Distech Controls' Smart Air Control Valve is a highly accurate, fully dynamic, pre-assembled air control valve solution. It has a superior turndown ratio and measures airflows as low as a few CFM. With this low airflow design, the same Smart Air Control Valve model can be used to control the airflow required for various applications and at a much wider range of space occupancy levels. It offers a breakthrough air flow measurement technology that results in energy efficiency and low EUI (Energy Use Intensity), superior IEQ (Indoor Environmental Quality) and IAQ (Indoor Air Quality).

 The Smart Air Control Valve is designed for low-pressure and low-velocity operation under 2"WC of inlet static pressure. Appropriate measures should be taken to reduce the operating static pressure when this is above 2"WC.

Related Documentation

For more information on the Smart Air Control Valve or graphical programming tools, refer to the following:

- [Smart Air Control Valve Spec Sheet](#)
- [Smart Air Control Valve User Guide](#)
- [Builder User Guide](#)

Related documentation is available for download on the Distech Controls Documentation and Resources portal.

General Installation Requirements

For proper installation and subsequent operation of each controller, pay special attention to the following recommendations:

- Upon unpacking the product, inspect the contents of the carton for shipping damages. **Do not install damaged modules.**
- Ensure that all equipment is installed according to local, regional, and national regulations.



Any type of modification to any Distech Controls product will void the product's warranty.



Operating, handling, or servicing this product should be ensured by a qualified operator. Turn off the power before any kind of servicing.



Take reasonable precautions to prevent electrostatic discharges to the controller when installing, servicing or operating the controller. Discharge accumulated static electricity by touching one's hand to a well-grounded object before working with the controller.

Pre-Installation Instructions

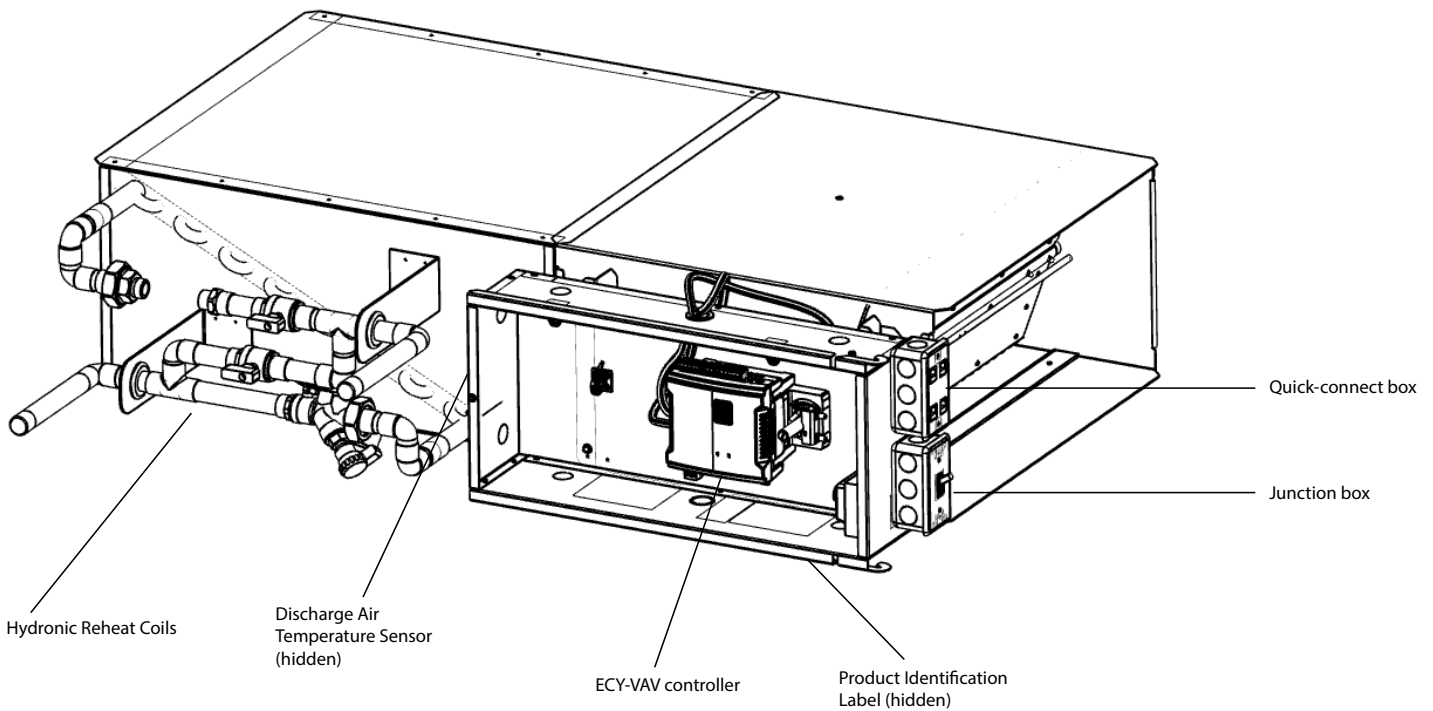
Receiving and Handling

Smart Air Control Valve (SACV) units are shipped completely assembled.

Upon receiving the equipment, complete the following:

- Locate the product identification label on the underside of the controller cabinet, and refer to the model and sales order number to check that the correct units have been delivered.
- Upon unpacking the product, inspect the contents of the carton for shipping damages, such as dents in the control enclosures or punctures in the air valve casing.
- Verify that all options have been included, such as filters, controls, heating coils and water valves. Locate the Warning label on the door of the control cabinet and check that the unit voltages thereon agree with the building parameters.
- For units with hydronic coils, check the coil fins for any damage.
- Locate and verify that the correct zone sensors have been delivered. Store in a secure location until needed. Accessories lost at the jobsite are not covered by Distech Controls' warranty.
- Claims for in-transit damage must be filed immediately with the delivery carrier.
- Refer to the bill of lading to ensure all equipment and accessories have been received. If a discrepancy occurs between what was ordered and what is received, contact your local Distech Controls representative immediately.

SACV Components



SACV Identification Label

Locate the product identification label on your SACV as it contains important information specific to your unit. The DISTECH # corresponds to the Distech Controls Product Number for the given SACV. For more information about options included in your SACV, refer to the *Model Selection* section in the *Smart Air Control Valve Spec Sheet*.

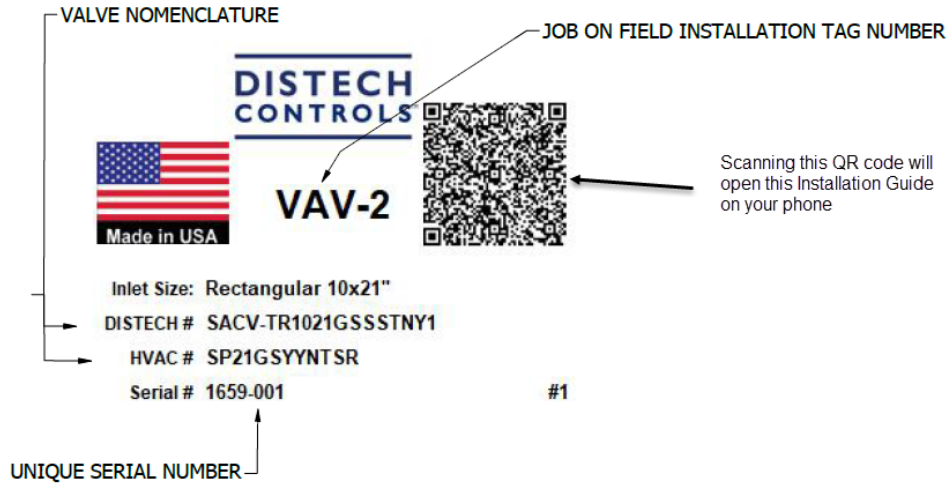


Figure 2: Product Identification Label

Unit Installation

Due to their weight, the SACV terminal units should be suspended from the structural deck above, independent of the false ceiling grid. Factory-installed aircraft hangers are provided to securely support the SACV units to the ductwork and should not pierce the valve body during installation. For cooling-only units or units with hot water coil, the unit may be rotated 180° for opposite side connections. Units must be installed level and upright and are not designed to be installed vertically. Failure to level the unit properly may prevent proper operation of the controls and/or terminal unit. Consequently, this will also void the UL ratings and any warranty on the unit.

Clearances

For proper service, it is recommended that at least 36" of side clearance be provided to service and access units. It is also recommended that 6" of clearance be provided to the top and bottom of all the units.

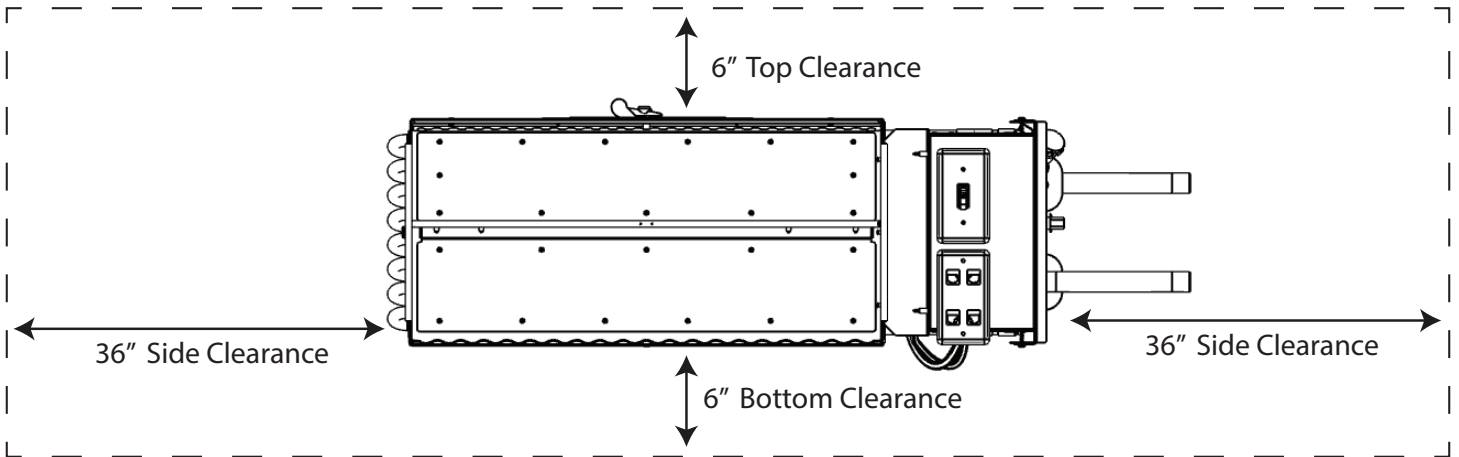


Figure 3: Clearances required for Smart Air Control Valve

- The minimum clearance for controls and heater controls should be 36" for all models.

Duct Connections



It is recommended that all SACV units be provided with a minimum of:

- 3-duct diameters of straight duct prior to the inlet of the unit, and
- 3-duct diameters of straight duct from the discharge of the units prior to any take-offs or transitions.



The Smart Air Control Valve is designed for low-pressure and low-velocity operation under 2"WC of inlet static pressure. Appropriate measures should be taken to reduce the operating static pressure when this is above 2"WC.

After all connections have been made, ensure that the entire ductwork system is airtight. In some high pressure systems, duct sealer may be necessary. Provide insulation around the entire unit.

Use caution when making ductwork connections or insulating so as not to damage the flow tubes.

Cut "slits" in the insulation for the flow tubes and secure with duct tape.

If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.

Water Coil Connections

Water coil piping connections are 7/8" in diameter.

Always connect the inlet piping to the bottom connection of the coil regardless of handling.

Carefully support the water coil piping connections while connecting the adjoining pipe. Drain bids are available to collect any water drip from the coils.

It is recommended that piping to the water coil be done after field-mounted controls, external insulation, and ductwork connections have been completed.

Do not connect water valve or pipe extensions to the water coil connections unless supported.

General Wiring Recommendations



Risk of Electric Shock: Turn off power before any kind of servicing to avoid electric shock.

- All wiring must comply with electrical wiring diagrams as well as national and local electrical codes.
- To connect the wiring to the controller, use the terminal connectors. Use a small flat screwdriver to tighten the terminal connector screws once the wires have been inserted (strip length: 0.25" (6 mm), maximum tightening torque 0,4 Nm (3.45 in-lb)).
- Comply with all network and power supply guidelines outlined in the *Network Guide*.
- Keep wiring separate according to their function and purpose to avoid any ambient noise transmission to other wires. Use strapping to keep these wires separated. For example, keep power, hazardous voltage, SELV, PELV, network, and input wiring separate from each other.
- Power cables must be between 18 and 14 gauge (0.82 to 2.1mm² cross-sectional area). When connecting one wire to a controller's terminal block clamping cage (pole), the wire must be between 22 and 14 gauge (0.33 and 2.1mm² cross-sectional area). When connecting two wires to a controller's terminal block clamping cage, both wires must be the same thickness, both wires must be between 22 and 16 gauge (0.33 to 1.3mm² cross-sectional area), and both wires must be of the same type (solid or stranded). Twist the wires together and insert then into the controller's terminal block clamping cage. For any other wiring combination (mixed wire thickness, mixed solid and stranded conductors, more than three wires, wire thickness is out of range), twist the wires together and use a wire nut and a pig tail to connect to the controller's terminal block connector as show below.

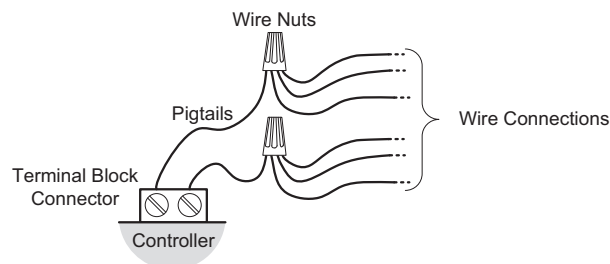


Figure 4: Using a Wire Nut and Pigtail to Wire the Controller

- Keep input and output wiring in conduits, trays or close to the building frame if possible.
- Always use unshielded cabling with a minimum Category 5 (CAT5) cable for ethernet communications.
- Do not connect the universal inputs, analog/digital outputs or common terminals to earth or chassis ground (unless stated otherwise and/or using shielded Ethernet cable).

Power Wiring

Wire the transformer as per the power wiring given in Figure 4.

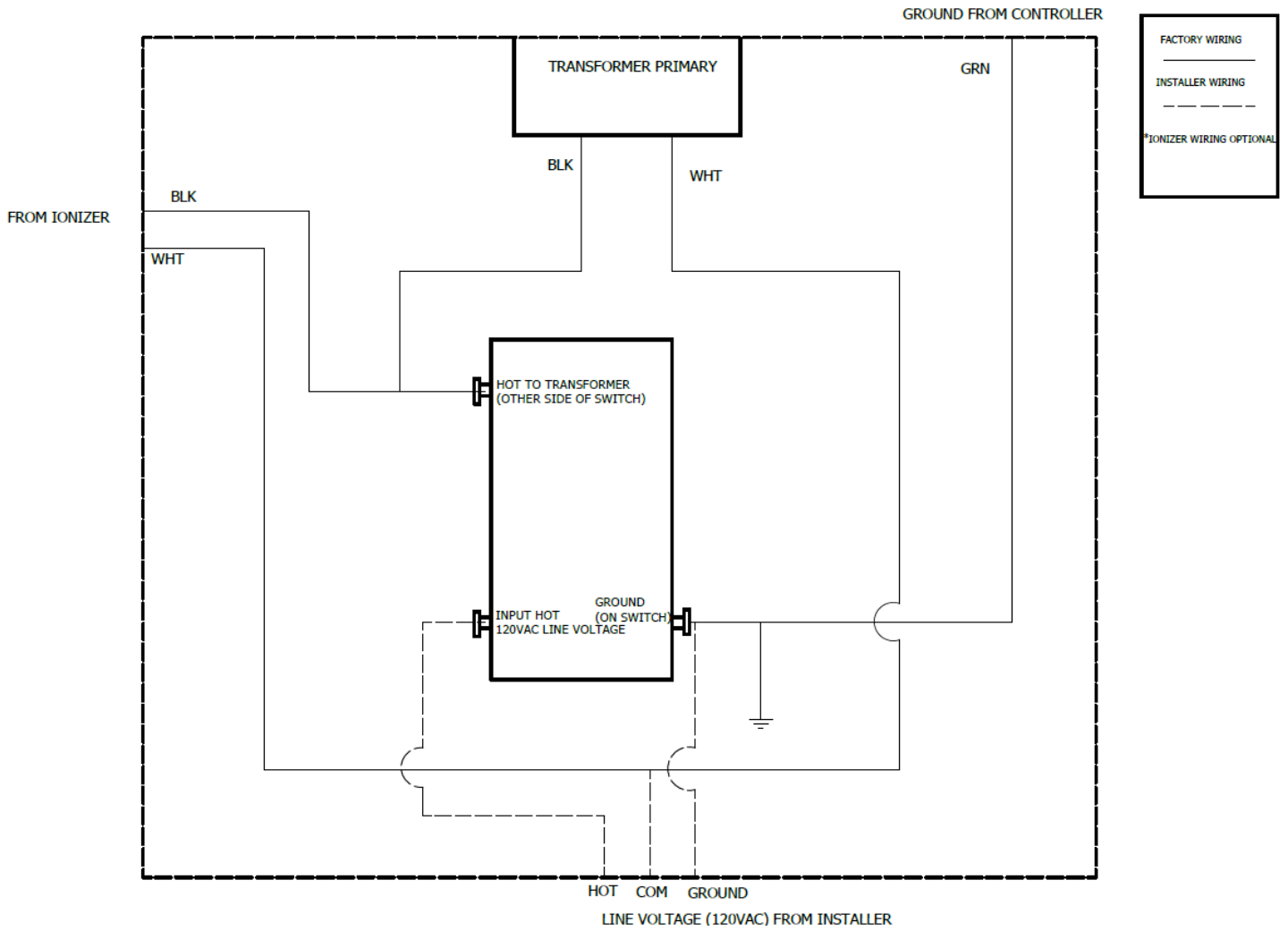


Figure 5: Power wiring for junction box

Make the power connections inside the electrical junction box, which is also equipped with a shut-off switch (120V, 15A). Use copper conductors only and ensure to connect the unit to ground.

Field Installation

Duct Clearance

It is recommended to keep at least 3 duct diameters upstream and downstream of the SACV to allow fully developed flow into the valve and ensure its unobstructed operation.

Discharge Air Temperature (DAT) Sensor

A discharge air temperature (DAT) sensor is supplied with the Smart Air Control Valve and can be connected to the controller using the UI2 and COM ports. Please follow installation recommendations with care when connecting the DAT sensor to avoid any damage to the SACV.

The DAT sensor is secured to the SACV upon delivery as shown in the figure below and can be detached for installation at the appropriate location.

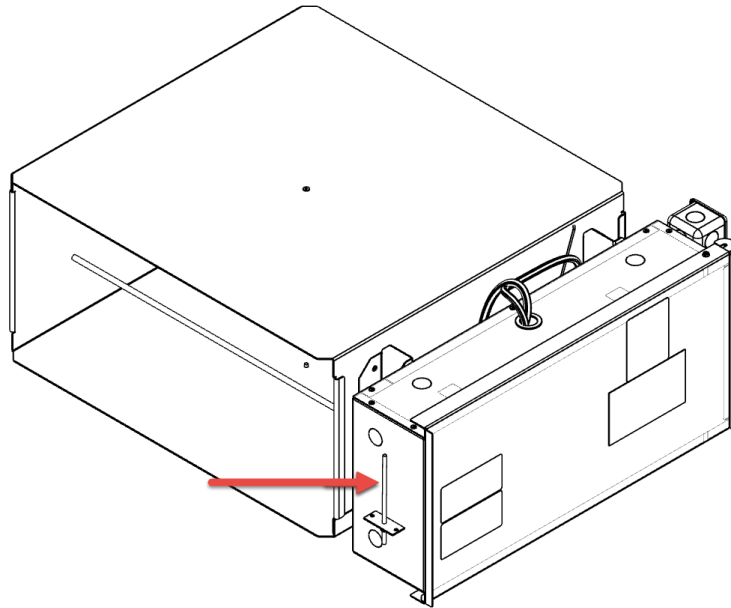


Figure 6: Discharge Air Temperature sensor location



Install with care: Install the DAT sensor on ductwork downstream of the SACV. Do NOT attempt to install the sensor on the SACV itself.



Mount the sensor on the top or sides of duct work; mounting on the bottom risks damage due to moisture.



The sensor should be mounted in the middle of the duct where air circulation is well mixed (no stratification), and not blocked by obstructions. Stratification and obstructions can cause sensing errors. An example of incorrect position is downstream from a heating or cooling coil.

1. Drill a 3/8" hole in the duct and insert the probe through the hole until the foam pad is tight to the duct. Drill pilot holes for the (2) mounting screws. Use the enclosure flange as a guide, or use the dimensions listed below to measure out.
2. Fasten and insert (2) screws #8 x 3/4" TEK (provided and recommended) through the mounting holes in the flange and tighten until the unit is held firmly to the duct. Make sure the foam pad is tight to the duct to eliminate any possible air leaks.

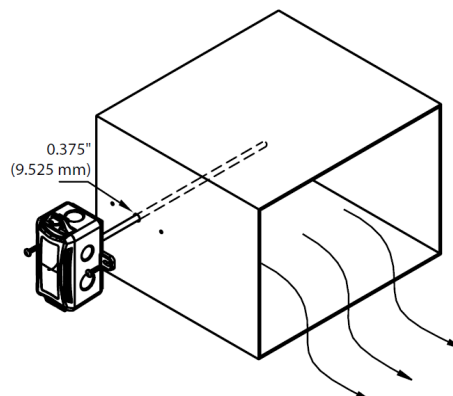


Figure 7: DAT sensor mounting on ductwork

Subnet Wiring

Supported Allure Series communicating sensors may be connected to the **SUBNET** port modular connector of the controller with a standard Category 5e Ethernet patch cable fitted with RJ-45 connectors.

The [ECLYPSE User Guide](#) provides extensive information and requirements for the connection of an Allure series communicating sensor. It contains information about network topology and length, cable type, setting the Subnet ID, etc. It can be downloaded from our website. See also the Hardware Installation Guide supplied with the Allure series communicating sensor.

Communications Wiring

The [ECLYPSE User Guide](#) provides extensive information and requirements to implement a BACnet IP network. It contains information about network topology, wire length restrictions, cable type, device IP addressing, radio path planning (when the ECLYPSE Wi-Fi Adapter is connected to the controller), etc. It can be downloaded from our website. For optimal performance, use Distech Controls category 5e network cable or refer to the [ECLYPSE User Guide](#) for cable specifications.

There are two methods to connect to the controller: wired (Ethernet connection) or wireless (when the ECLYPSE Wi-Fi Adapter is connected to the controller).

Wired Connection

Network connections can be daisy-chained. Using the color-coded scheme on the external quick connect box, connect the SUBNET (BLUE) and Ethernet ports (BLACK) as shown in Figure 5.

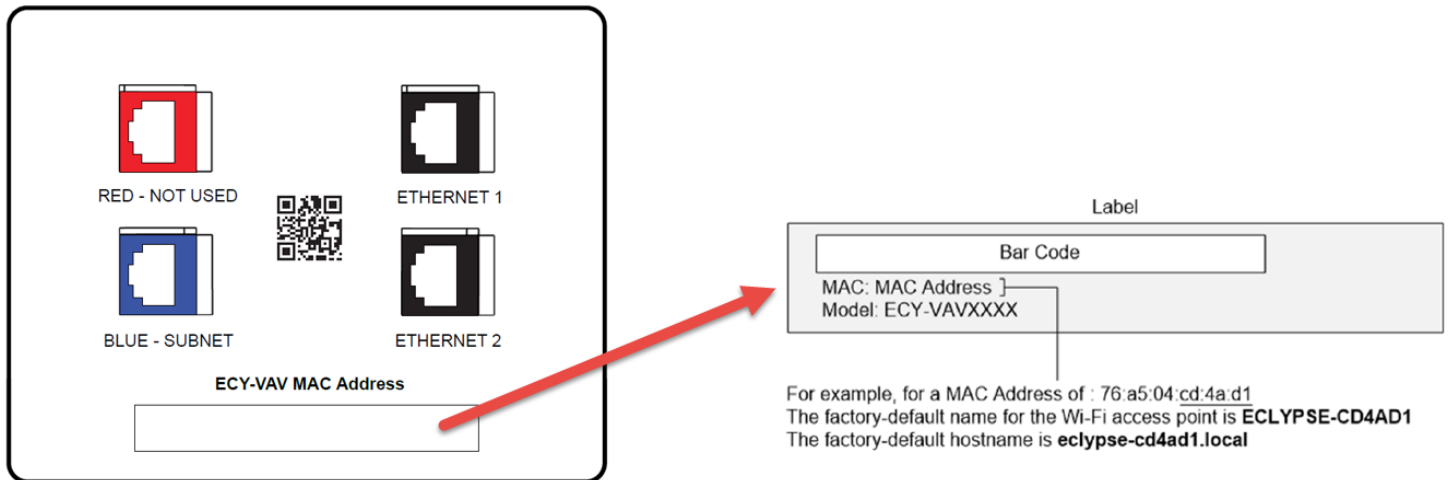


Figure 8: Label of the color-coded quick connect box

The QR code on the quick connect box label, located on the controller cabinet's door, encodes the SACV's MAC address and host ID. You can scan it with the *XpressNetwork* Companion mobile app to configure the controller. See [Configuring the Controller \[pg. 8\]](#) for more information.

A default Allure UNITOUCH sensor is provided separately and can be wired to the external subnet connection port in field.

Wireless Connection

Once the optional ECLYPSE Wi-Fi Adapter has been connected to the controller, a Wi-Fi hotspot becomes available that allows you to connect to the controller's configuration Web interface with your PC.

On your PC's wireless networks, look for an access point named **ECLYPSE-XXYYZZ** where **XXYYZZ** are the last 6 hexadecimal characters of the controller's MAC address (see above). The default password for the wireless network is: **eclipse1234**

Configuring the Controller

Any of the following methods can be used to connect to the controller's interface in order to configure it:

- Using the XpressNetwork Utility
- Using the controller's factory-default Hostname in the Web browser
- Using the controller's IP address in the Web browser

Using the XpressNetwork Utility

The XpressNetwork Utility is a software application that runs on a PC that allows you to discover all ECV Series controllers and the SACV units connected to an IP network's subnetwork or Wi-Fi network and to perform a range of operations on many controllers at once: you can set each controller's Hostname and IP address, launch EC-gfxProgram to program the controller, or you can access the controller's configuration Web interface. See the [XpressNetwork Utility User Guide](#) for more information.

XpressNetwork Companion mobile app can be installed on your smartphone and it works with the QR code marked on the SACV's quick-connect box's faceplate which encodes the controller's MAC address and host ID. By scanning the QR code, the app records this information to which you assign a hostname. Once the QR codes for all controllers have been read in, the app's information is transferred to the XpressNetwork Utility where it is used to populate the relevant data fields. See the [XpressNetwork Utility User Guide](#) for more information.



Using the Controller's Factory-default Hostname in a Web Browser

Controllers have a factory-default hostname that you can use instead of an IP address to connect to it. The hostname can be used in a Web browser's address bar or in the EC-gfxProgram's **Connect to** screen. When installing the latest version of EC-gfxProgram and your PC does not have the Bonjour service installed, a link to install the Bonjour service is provided. The Bonjour service must be installed on your PC to allow your PC to discover controllers by their hostname.

If your PC is unable to resolve the controller's hostname, you must connect your PC to the controller through Ethernet or Wi-Fi so that your PC only sees the controller network. For example, in this case, your PC must be disconnected from all other networks such as a corporate network or the Internet. If necessary, temporarily disconnect your PC's network cable from its Ethernet port.

The controller's factory-default hostname is **eclipse-xxxxxx.local** where **xxxxxx** is the last 6 characters of the MAC address printed on a sticker located on the side of the controller. See above.

For example, the sticker on the side of a controller shows that its MAC address is 76:a5:04:cd:4a:d1. Connect to the controller's Web interface as follows:

1. Open your Web browser.
2. In the Web browser's address bar, type **https://eclipse-cd4ad1.local** and click go.
3. Log in to the controller. Use the following default credentials:
 - **Username:** admin
 - **Password:** Password1
4. Set the controller's configuration parameters in the controller's configuration Web interface. See [Connecting to the Controller's Configuration Web Interface](#).

Using the Controller's IP Address in a Web Browser

Connect to a controller through its IP address as follows:

For a Wi-Fi Network Connection:

1. Open your Web browser.
2. In the Web browser's address bar, type **https://192.168.0.1** (the controller's factory-default wireless hotspot IP address) and click go.
3. Log in to the controller. Use the following default credentials:
 - **Username:** admin
 - **Password:** Password1
4. Set the controller's configuration parameters in the controller's configuration Web interface. See [Connecting to the Controller's Configuration Web Interface](#).

For an Ethernet Network Connection: You must know the controller's current IP address (from the DHCP server for example).

1. Open your Web browser.
2. In the Web browser's address bar, enter the controller's IP address and click go.
3. Log in to the controller. Use the following default credentials:
 - **Username:** admin
 - **Password:** Password1
4. Set the controller's configuration parameters in the controller's configuration Web interface. See [Connecting to the Controller's Configuration Web Interface](#).

Connecting to the Controller's Configuration Web Interface

At the first connection to an ECLYPSE Controller you will be forced to change the password to a strong password for the admin account to protect access to the controller.

In Network Settings, configure the controller's network parameters so that they are compatible with your network. See the [ECLYPSE User Guide](#) for more information about network settings and how to secure the controller. It is important to create new user accounts with strong passwords to protect the controller from unauthorized access. Remove the factory default admin account as this is a commonly known security breach (only the password for this user account needs to be compromised).

Field Adjustment

The SACV Graphical Web Interface, similar to the figure below, opens when accessing an SACV (graphics and information may vary depending on the SACV model). For more information on accessing this page, see the [Smart Air Control Valve User Guide](#).

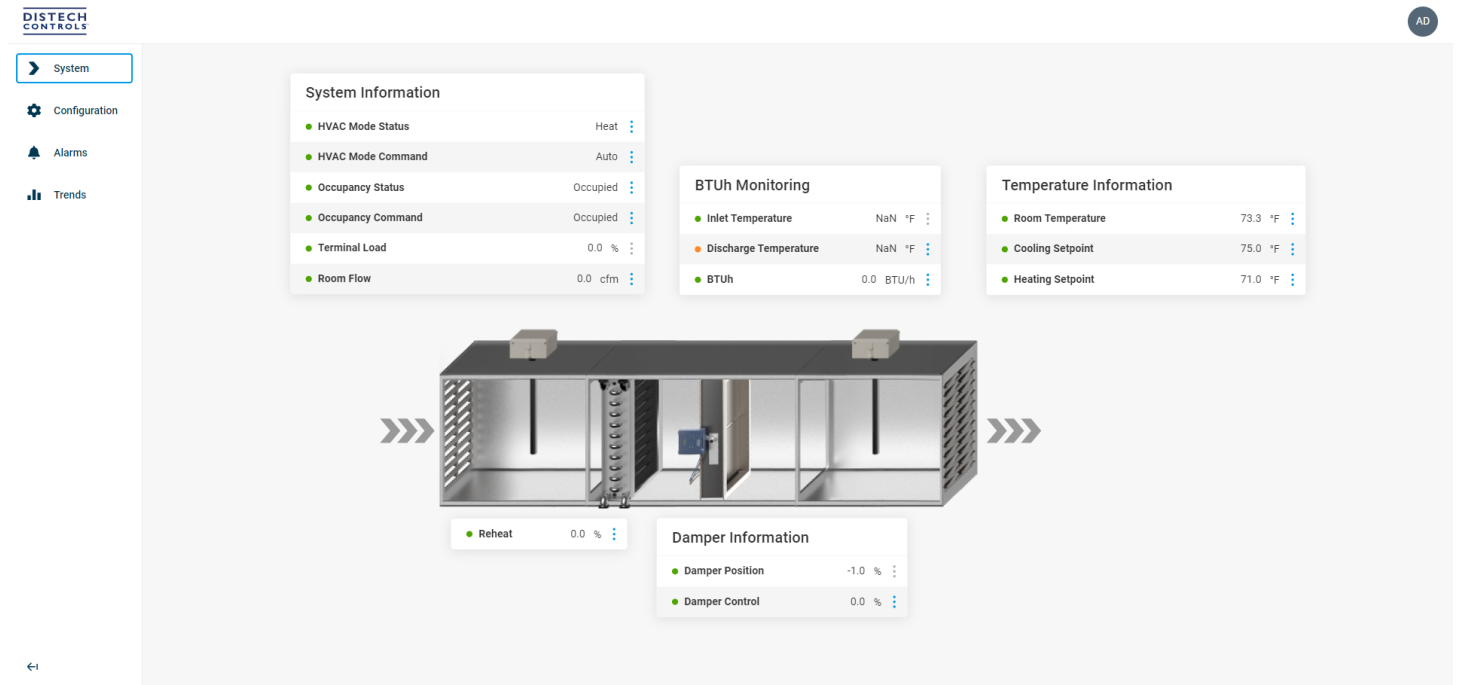


Figure 9: SACV Graphical Web Interface (Graphic Page view)

Room Flow Adjustment

The SACV's room flow calibration can be set from the configuration group of tables in the **Configuration** page. This page can easily be accessed from the ECY-VAV navigation menu located at the top of the system view page.

The screenshot shows the Distech Controls interface with a sidebar menu containing System, Configuration, Alarms, and Trends. The Configuration page is active, displaying three tables:

| Temperature Setpoint | |
|--------------------------|---------|
| Unoccupied Cool Setpoint | 80.0 °F |
| Standby Cool Setpoint | 78.0 °F |
| Occupied Cool Setpoint | 75.0 °F |
| Occupied Heat Setpoint | 71.0 °F |
| Standby Heat Setpoint | 68.0 °F |
| Unoccupied Heat Setpoint | 66.0 °F |

| Flow Setpoint | |
|----------------------------------|-----------|
| Cooling Minimum Flow Setpoint | 100.0 cfm |
| Heating Minimum Flow Setpoint | 100.0 cfm |
| Cooling Maximum Flow Setpoint | 500.0 cfm |
| Heating Maximum Flow Setpoint | 300.0 cfm |
| Standby Minimum Flow Setpoint | 50.0 cfm |
| Unoccupied Minimum Flow Setpoint | 0.0 cfm |

| Room Flow Calibration | |
|-----------------------------|------------------|
| Balancing Override | Normal Operation |
| Room Offset At Minimum Flow | 0.0 cfm |
| Room Offset At Maximum Flow | 0.0 cfm |
| Room Flow | 0.0 cfm |
| SACV Flow | 0.0 cfm |

To adjust the flow into the room and to account for any duct leakage:

1. Set the SACV in Balancing mode.
2. Balance the SACV at minimum flow and set the offset between the flow hood and the SACV.
3. Balance the SACV at maximum flow and set the offset between the flow hood and the SACV.
4. Validate that the actual SACV flow is equal to the flow hood reading.


For more information, see the [Smart Air Control Valve User Guide](#).

Disposal

The Waste Electrical and Electronic Equipment (WEEE) Directive sets out regulations for the recycling and disposal of products. The WEEE2002/96/EG Directive applies to standalone products, for example, products that can function entirely on their own and are not a part of another system or piece of equipment.

For this reason Distech Controls products are exempt from the WEEE Directive. Nevertheless, Distech Controls products are marked with the WEEE



symbol , indicating devices are not to be thrown away in municipal waste.

Products must be disposed of at the end of their useful life according to local regulations and the WEEE Directive.

North American Emissions Compliance

United States



Changes or modifications not expressly approved by Distech Controls could void the user's authority to operate the equipment.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential and commercial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Canada

This Class (B) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (B) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Specifications subject to change without notice.

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