Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.

With a variety of industry-leading features, Venco Products' HVLS controls are the easiest way to operate and monitor high volume, low speed (HVLS) ceiling fans. Designed for maximum convenience and versatility, the control is an excellent choice for providing essential control features for functional operation with a minimal footprint. And, like all products in Venco Products' HVLS family, installation and set-up are a breeze thanks to a unique plug-and-play system with automatic fan detection.

General Safety Information

Only qualified personnel should install this product. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. If more information is needed, contact a licensed professional engineer before moving forward.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electrical Code (CEC) and ULC-S650 if installing this product in Canada.
2. Verify that the power source is compatible with the equipment.

Receiving

Upon receiving the product, check to ensure all items are accounted for by referencing the delivery receipt or packing list. Inspect each crate or carton for shipping damage before accepting delivery. Alert the carrier of any damage detected. The customer will note damage (or shortage of items) on the delivery receipt and all copies of the bill of lading which is countersigned by the delivering carrier. If damaged, immediately contact your local representative. Any physical damage to the unit after acceptance is not the responsibility of the manufacturer.

Unpacking

Verify that all required parts and the correct quantity of each item have been received. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the bill of lading.

Storage

Controls are protected against damage during shipment. If the control cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the control during storage. The user assumes responsibility of the control and accessories while in storage. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user.

Indoor

The ideal environment for the storage of controls and accessories is indoors, above grade, in a low humidity atmosphere that is sealed to prevent the entry of blowing dust, rain or snow. Care must be taken to protect controls and accessories from dirt, moisture, and extreme temperature during storage.

NOTE: Improper storage which results in damage to the product will void the warranty.

Control Components

Verify that all of the following parts and hardware have been received prior to beginning installation. Contact your local representative or the manufacturer if replacement parts are required.

NOTE: Additional parts (provided by others) may be required to complete the control installation, including additional wiring and hardware for mounting the control to the building structure.
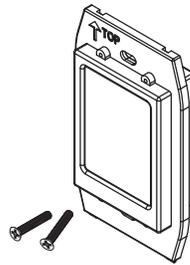
**Standard Touchscreen Control (1) and Installation Screw (2)**
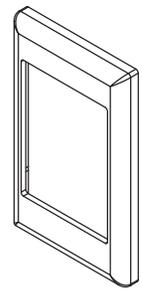
Cover Plate (1)

Installation

Using a 2 inch deep single gang outlet box, secure the control to the outlet box via the top and bottom mounting holes, which are behind the cover plate of the control.

1. Identify desired mounting location for the touchscreen control and mount a 2 inch deep, single gang junction box (by others) in accordance with the manufacturer's instructions.

2. Route a shielded, twisted pair CAT-5e communication cable from the HVLS fan to the junction box and secure appropriately.

3. Plug the shielded, twisted pair CAT-5e cable into the RJ45 port on the back of the touchscreen control, then place the control inside the junction box.

4. Secure the touchscreen control to the junction box using the provided installation screws.

5. Once the control is securely mounted, snap the cover plate onto the front of the control. Make sure the top side of the cover plate is aligned with the top side of the control (refer to alignment labels on control and cover plate).

IMPORTANT: Controls and HVLS fans must be installed with the supplied CAT-5e communication cable or shielded, twisted pair CAT-5e (by others) that complies with the following specifications. Cable must be twisted pair, shielded 26 ga. CAT-5e cable with a drain wire and must be compliant with ISO 11801. Cable must use shielded RJ45 connectors with a soldered drain and wiring configuration must follow EIA/TIA T568B wiring pinout. Individual CAT-5e cable lengths must not exceed 200 ft. in order to prevent network communication issues.

NOTE: Control is powered via shielded, twisted pair CAT-5e communication cable from the HVLS fan(s). No additional power source is required.

JUNCTION BOX (BY OTHERS)

TOUCHSCREEN CONTROL

INSTALLATION SCREW

COVER PLATE

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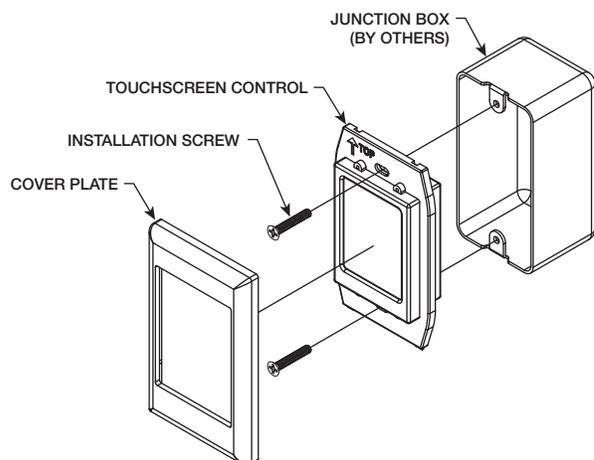
Pre-Start-Up Checks

If one control will be used to operate multiple fans, verify that the following fan networking steps have been completed prior to control start-up. Otherwise, turn to page 5 to continue with control operation.

Daisy-Chain Communication Wiring

For proper network communication, HVLS fans must be daisy-chained together using the following instructions.

NOTE: All communication wiring must be installed in compliance with NEC 800-52 or similar. All communication wiring needs a minimum separation of 2 inches from high voltage unless installed in separate raceways/conduit. When possible, maintain 24 inches of separation.

1. Connect the first HVLS fan in the daisy-chain to the control using the shielded, twisted pair CAT-5e communication cable that was provided with the HVLS fan. CAT-5e cable can be plugged into any open receptacle on the RJ45 splitter located at the top of the fan's downtube.

IMPORTANT: Controls and HVLS fans must be installed with the supplied CAT-5e communication cable or shielded, twisted pair CAT-5e (by others) that complies with the following specifications. Cable must be twisted pair, shielded 26 ga. CAT-5e cable with a drain wire and must be compliant with ISO 11801. Cable must use shielded RJ45 connectors with a soldered drain and wiring configuration must follow EIA/TIA T568B wiring pinout. Individual CAT-5e cable lengths must not exceed 200 ft. in order to prevent network communication issues.

2. Plug an additional shielded, twisted pair CAT-5e control cable into the 2-way RJ45 splitter located at the top of the downtube on the first fan. Connect the other end of this CAT-5e cable into the 2-way splitter on the next fan.

3. Repeat step 2 for subsequent fans until all fans in the chain are connected in series, as shown in the drawing below.
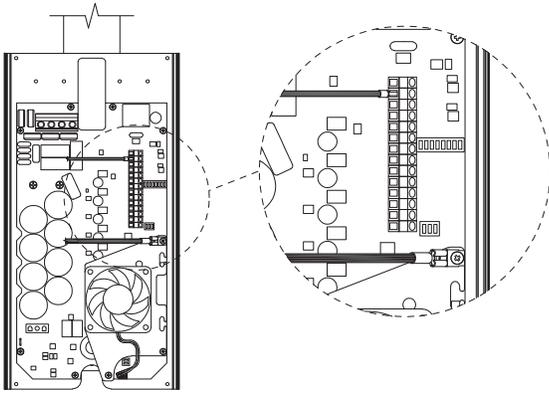

FAN 1   FAN 2
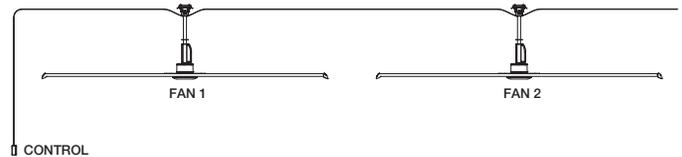
CONTROL

Fan Networking

If networking multiple fans to run using a single control source, the dipswitch settings on each fan's VFD circuit board may need to be adjusted. Follow the instructions on page 4 to adjust settings for the First Fan and All Remaining Fans.
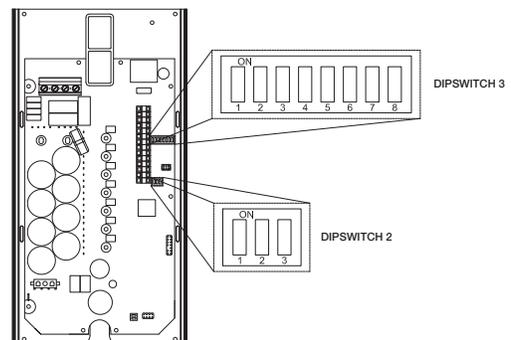
First Fan

1. Determine the first fan in the network daisy-chain by identifying the fan that is connected directly to the control source.

2. Remove the front VFD cover from the first fan in the network using a phillips screwdriver.

3. Dipswitch 2 is used to set parameters that improve network function. Verify that each of the switches on dipswitch 2 are set as follows:

    Position 1 – Off

    Position 2 – On

    Position 3 – On

4. Verify that each of the switches on dipswitch 3 are set as follows. Positions 1 – 5 are used to set the Modbus address of the fan and should be set as shown below from the factory (Modbus address #2).

IMPORTANT: Positions 6-8 are used to set parameters needed for fan operation and should not be adjusted.

    Position 1 – On

    Position 2 – Off

    Position 3 – Off

    Position 4 – Off

    Position 5 – Off

    Position 6 – On

    Position 7 – Off

    Position 8 – Off

5. Reinstall the front VFD cover.

All Remaining Fans
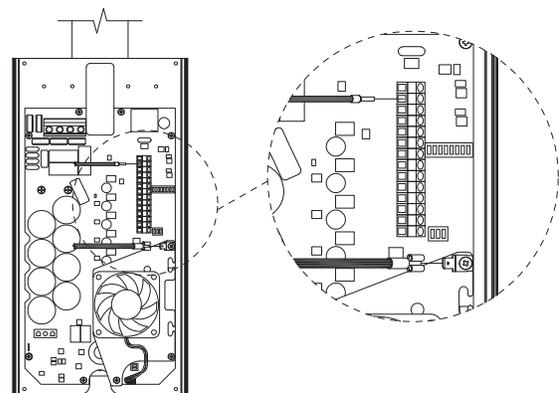
1. Remove the front VFD cover using a phillips screwdriver.

2. On the communication wiring terminal strip, remove the 24V (brown-white) wire and cap with a wire nut or heat shrink. Additionally, remove the drain wire that is attached to the circuit board mounting screw and isolate from all circuit board components using heat shrink.

3. Set dipswitch 2 as shown below. Dipswitch 2 is used to set parameters that improve network function and will need to be adjusted for all fans in the network except for the first fan.

    Position 1 – Off

    Position 2 – Off

    Position 3 – Off

4. Adjust positions 1-5 on dipswitch 3 so that each successive fan has a unique Modbus address. A table with possible Modbus addresses is shown below.

IMPORTANT: Positions 6-8 are used to set parameters needed for fan operation and should not be adjusted.

NOTE: It is good practice to use successive Modbus addresses for networked fans, but this is not necessary for proper functioning of the network.

5. Reinstall the front VFD cover.

Modbus Address Settings - Dipswitch 3					
Modbus Address	Position 1	Position 2	Position 3	Position 4	Position 5	Position 6, 7, 8
2	On	Off	Off	Off	Off	
3	Off	On	Off	Off	Off	
4	On	On	Off	Off	Off	
5	Off	Off	On	Off	Off	
6	On	Off	On	Off	Off	Do Not Modify
7	Off	On	On	Off	Off	
8	On	On	On	Off	Off	
9	Off	Off	Off	On	Off	
10	On	Off	Off	On	Off	
11	Off	On	Off	On	Off	

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Operation

Initial Setup

Before applying power to control, confirm Modbus addresses of the fans. (If used in a networked application.)

1. Apply power to the HVLS control. The control will display "Initializing Control" and "Setting up Firmware".

2. Once the control initializes, it will begin searching for fans. The control will display its searching progress at the bottom of the screen.

3. Once fan searching is complete, the control will indicate the number of fans discovered on the network. If the correct number of fans is found, tap the "Next" button. Otherwise, verify all electrical and shielded CAT-5e connections to HVLS fans and tap the "Retry" button to search for fans again.

4. After the number of fans is confirmed, the control will ask the user if a passcode is desired. To set up a passcode, tap the yes button, type a four digit passcode on the pop-up keyboard, and tap save. To skip this step, tap the no button.

5. The subsequent screen will show each of the fans discovered. Each fan will have a Modbus address, followed by a default name.

6. Tap on any of the fans to configure them. The available configuration options are explained below.

NOTE: It is recommended that each fan be configured correctly during initial setup. Individual fans will not operate until configuration has been fully completed.

- **Fan Name**

  To change the default fan name, tap the "Fan Name" button. Enter the desired fan name using the pop-up keyboard, then tap "Enter" to save.

- **Blade Count**

  Tap the "Blade Count" button to cycle through the available options until the correct blade count is shown for the chosen fan.

- **Fan Diameter**

  Tap the "Fan Diameter" button to cycle through the available options until the correct diameter is shown for the chosen fan.

- **Rotation**

  Tap the "Rotation" button to toggle between forward (downward airflow) and reverse (upward airflow) fan operation.

- **LED Light**

  Tap the "LED Light" button to toggle between yes and no answers. Yes indicates that an LED light is installed on the chosen fan, no indicates that an LED light is not installed.

6. After all fans have been configured, tap the "Next" button to finish initial setup.

Fan Operation Mode

After completing initial setup, the control will display a menu with the following functions:

Fan Control

Use this menu to select and control each fan individually or as a single group using the global power button.

- **Global Power**

  Tap the global power button to turn all fans on or off depending on their current status. The fans will power up to their individual speed setting programmed on the individual fan control page.

- **Individual Fans**

  Tap the button for each individual fan to adjust single fan operation and brightness of the LED light (if applicable). The available control functions on the subsequent screen are explained below.

  Fan / Light Bulb Icons – Tap the fan or light bulb icon shown on the top right side of the screen to toggle between fan and LED light control modes. When the fan button is shown, all other buttons on screen will control fan operation. When the light bulb icon is shown, all other buttons on screen will control LED light operation (if applicable).

  Power Button – Tap the power button to turn the selected fan or LED light on or off (if applicable). The power icon will turn green to indicate that power is on, black to indicate that power is off, or red to indicate a fault.

  Up and Down Arrows – Tap the up and down arrows to adjust fan speed or LED light brightness. A green indicator bar will display the current setting in 10% increments.

  Left and Right Arrows – Tap the left and right arrows to change the fan or LED light that is being controlled.

Fan Settings

If adjustment is needed after initial setup, use this menu to change individual fan settings using the following steps.

- **Fan Name**

  From this menu, tap the fan name button. Change the name of the fan using the pop-up keyboard. Once the desired fan name is showing correctly, press enter to save.

- **Rotation**

  To change the fan rotation direction, tap the rotation button to toggle between forward and reverse.

- **Blade Count**

  If the displayed blade count does not match the actual blade count of the fan, tap the blade count button until the correct number appears.

- **Fan Diameter**

  If the displayed fan diameter does not match the actual diameter of the fan, tap the fan diameter button until the correct value appears. Numbers represent nominal fan diameters in feet.

- **LED Light**

  If the displayed answer is incorrect, tap the button to toggle between yes and no until the appropriate answer is selected.

- **Save**

  After adjusting fan settings, tap the save button. Tapping the arrow in the top left corner of the screen will also save.

Fan Info

Use this menu to display fan diagnostics that can be useful for reference or troubleshooting. The available diagnostics are explained below.

- **Modbus Address**

  Displays the Modbus address of the selected fan.

- **Drive Firmware**

  Displays the firmware version that is installed on the VFD of the selected fan.

- **Op. Status**

  Displays the operating status of the selected fan. Refer to the table below for text descriptions of each status code, or tap the Op. Status button for a pop-up description.

OpStatus Code	Meaning
0	System is functioning normally
1	Comm CRC errors
2	Drive (VFD) fault
3	Motor temperature warning
4	Drive (VFD) warning
5	Fire relay input is active (VFD is inhibited)
6	Wind shut down is active

NOTE: Turning the fan off and on at the Individual Fan screen will initiate a check to see if the fault status has cleared.

- **Fan Speed**

  Displays the RPM of the selected fan.

- **Operating Hours**

  Displays the total hours of operation for the selected fan.

Global Settings

Use this menu to change settings for the control itself.

- **Display Settings**

  Tap the Display Settings button to open a sub-menu with options for adjusting display brightness and timeout as shown below. After setting the desired brightness and timeout, tap the back arrow in the top left corner to save the settings.

    Brightness – Change the brightness of the display by tapping the brightness button. The screen will change accordingly in 10% increments.

    Timeout – Change the display's timeout duration by tapping the timeout button. Timeout options are 10 sec., 20 sec., 30 sec., 1 min., 2 min., or none.

    NOTE: If a passcode has been set by the user, the control will lock after the timeout duration. The user will be prompted to enter their passcode in order to continue operation of the control.

- **Help**

  Tap the help button to access the manufacturer's customer support phone number.

- **Manufacturer Settings**

  This menu is used to reset the user's passcode, reset the control to factory settings, and access additional features of the control. The menu is locked with a passcode to prevent unnecessary access to these features. Please contact the manufacturer using the customer support phone number on the help menu for the required passcode.

- **Firmware**

  Tap to display the current firmware version that is installed on the control. The user may be asked to provide this information during troubleshooting calls.

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Fault Code Causes and Possible Solutions

CODE	FAULT	DESCRIPTION
0	No Fault	
1	Modbus Timeout	No activity on Modbus (check control connection)
2	Impact Detection	Unexpected change in speed and/or torque indicates impact
3	Motor Over Temperature	Motor temperature exceeds 110°C
4	Drive Over Temperature	Drive components over 110°C
5	Bus Over Voltage	DC Bus voltage is greater than 385v
6	Bus Under Voltage	DC Bus voltage is less than 140v
7	Phase Over Current	Phase Current is greater than 6A RMS
8	Microcontroller High Temp	Microcontroller Unit Temperature is greater than 110°C
9	Overspeed Fault	Blade Speed is greater than 300 rpm

Our Commitment

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