

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's HVLS controls are the most effective means of operating and monitoring high volume, low speed (HVLS) ceiling fans. Designed for maximum versatility, the Standard Touchscreen Control is an excellent choice for providing complete functionality with a minimal footprint. Our auto-detect fan feature and shielded CAT-5e cable with RJ connectors make setting up a fan network a breeze.

NOTE: The Standard Touchscreen Control is capable of controlling up to 1, 3, 5 or 10 fans depending on the factory programmed configuration. For assistance or if additional controls are needed, contact your local sales representative.



General Safety Information

IMPORTANT SAFETY INSTRUCTIONS

Only qualified personnel should install this fan. 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. Other considerations may be required if high winds or seismic activity are present. 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 (ANSI/NFPA 70), where applicable. Follow the Canadian Electric Code (CEC) in Canada.
2. Verify the power source is compatible with the equipment.

DANGER

Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury.

CAUTION

When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing.

DANGER

Pour écarter les risques d'incendie, de choc électrique ou de blessure grave, veiller à toujours débrancher, verrouiller et étiqueter la source de courant avant l'installation ou l'entretien.

ATTENTION

Lors de toute intervention sur la soufflante, le moteur peut être suffisamment chaud pour provoquer une douleur voire une blessure. Laisser le moteur refroidir avant toute maintenance.

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 make a notation of 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. Due to availability of transportation and truck space all items for the unit may not be shipped together. 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, take precautions to prevent deterioration during storage. The user assumes responsibility for the control while it is in storage. The manufacturer is not responsible for damage during storage. These suggestions are provided solely as a convenience to the user.

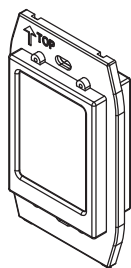
The ideal environment for storing controls is indoors, above grade, in a low-humidity atmosphere that is sealed to prevent the entry of blowing dust, rain, or snow. Care must be taken to protect the control from dirt, moisture, and extreme temperatures during storage.

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

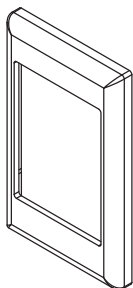
Control Components

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.



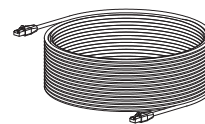
Standard Touchscreen Control (1)



Cover Plate (1)



#6 - 32 x 7/16 in. Phillips
Head Screw (2)



Shielded CAT-5e
Control Cable (1)

Installation

Required Loose Components (Not Included):

- 2x4 in. Single Gang Junction Box (1)

Hardware/Tools Needed (Not Included):

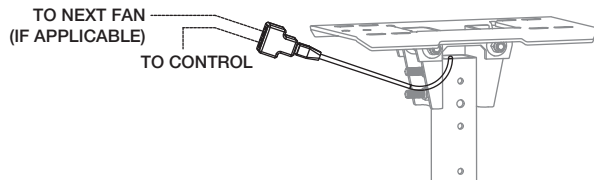
- #2 Phillips-head screwdriver
- 1/8 in. Phillips-head screwdriver

IMPORTANT: Do not apply power until the mechanical installation, fire-alarm relay installation, communication wiring, and fan control installation are complete.

NOTE: Before installing the controller, confirm commissioning mode has been run successfully to verify the fan components are in working order. Refer to the fan Installation, Operation, and Maintenance (IOM) Manual for the commissioning sequence.

1. Identify mounting location for the controller junction box per the building plans.
2. Route the shielded CAT-5e cable from the junction box on the floor to the RJ-45 splitter at the top of the fan.
3. Plug one end of the communication cable into the 3-way RJ45 splitter located at the top of the downtube.

SHEILED CAT-5e CONNECTION



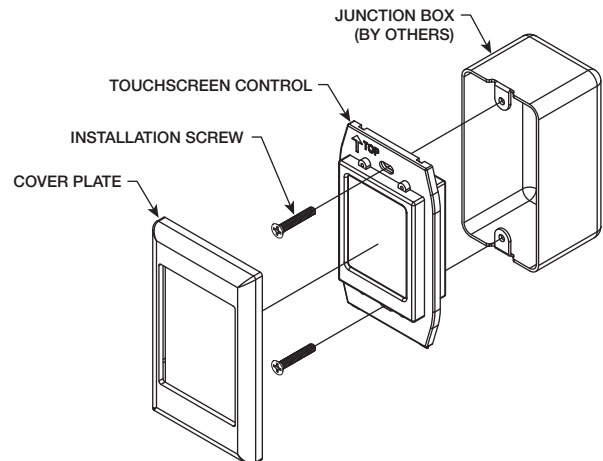
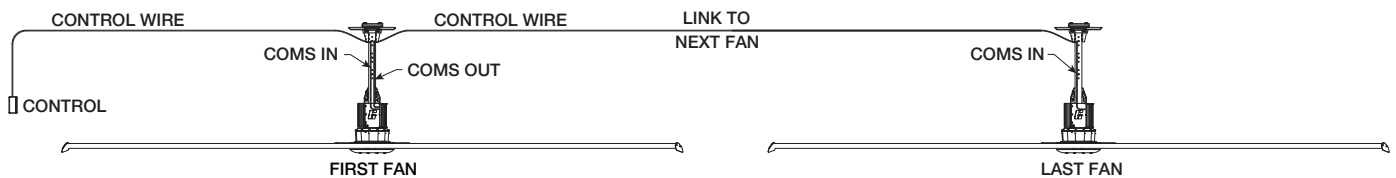
4. Confirm factory installed drive terminations are landed in accordance with the fan IOM.
5. When controlling multiple fans with a single control, plug a shielded CAT-5e cable into the remaining receptacle on the first fan and run the cable to the next closest fan on the line. Repeat this “point-to-point” or “daisy-chain” network connection until all fans are linked together.

IMPORTANT: The fan will arrive pre-wired with the control wires in the appropriate terminals, the installer should verify the wiring connections are terminated properly. In a Modbus RTU fan network, a unique fan address must be set on the rotary dials or dipswitches. Reference the appropriate fan installation and operations manual for more detailed instructions.

6. Secure the CAT-5e control cable to the building structure to ensure it does not interfere with the fan performance. To ensure proper communication, the control cable separate from the power wiring.
7. At the junction box on the floor of the building, plug in the CAT-5e cable to the RJ45 connection port on the back of the controller.
8. Secure the touchscreen control to the junction box using the provided installation screws.
9. Snap the cover plate onto the front of the control with the “top side” up.

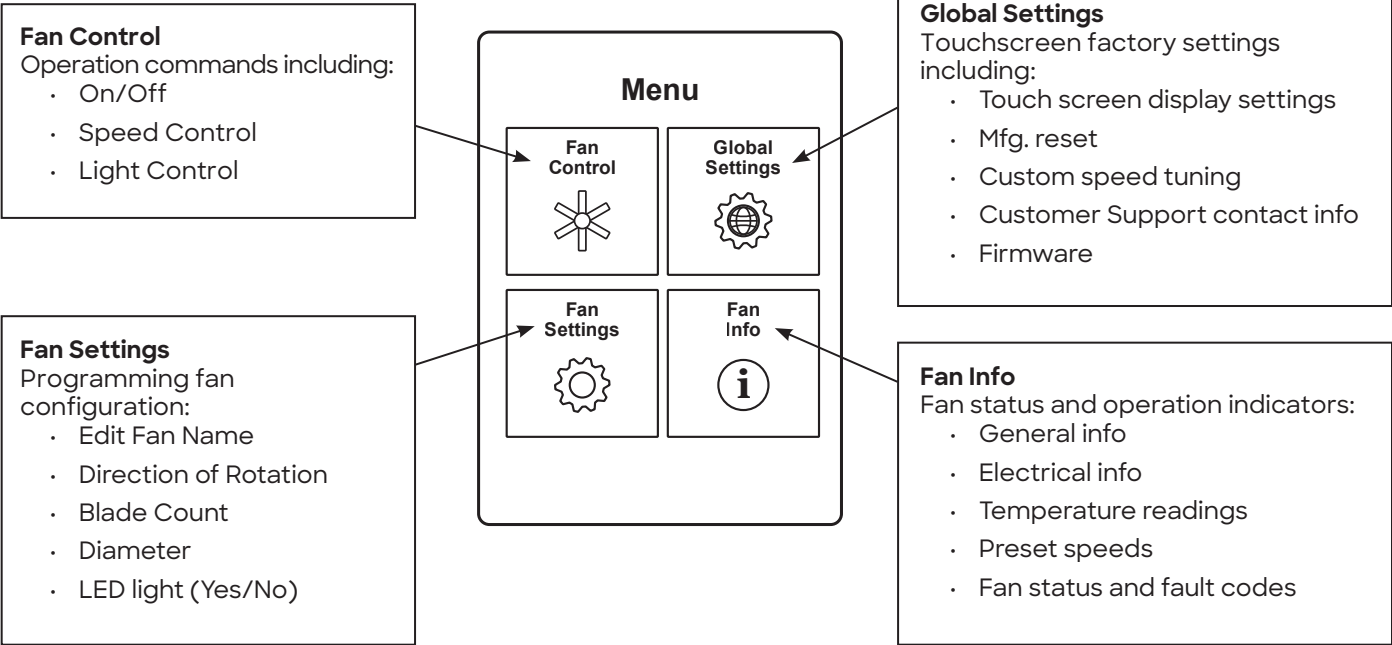
IMPORTANT: Controls and HVLS fans must be installed using the supplied shielded CAT-5e communication cable or an equivalent Plenum-rated, shielded, twisted pair (STP) cable with separate shield drain. Foil or braided shields are acceptable. Cable must use shielded RJ45 connectors with a soldered drain. Wiring configuration must follow EIA/TIA T568B wiring pinout. The maximum allowable cable length should not exceed 200 ft.

NOTE: The fan provides power to the control. At least one fan in the network must be energized to power up the control between devices.



Start-Up and Operation

Main Menu User Interface



Initial Setup

Before applying power to the control, confirm each modbus address on the fans are unique.

1. Apply power to the fan. The touch screen will illuminate with the controller software version number displayed. A progress bar will display on the bottom of the screen as the controller scans the network for fans to connect to.
 - a. If this is the first time powering up the touch screen controller, the interface will display the number of fans that were found and direct the user to the Fan Settings page. If the fan configurations require adjustment after this initial set up, the configuration page can be reached by selecting the Fan Settings icon on the main menu.

2. Select each fan to make sure the fan is programmed in the correct configuration. The following information on each fan should be set: Fan Name, Rotation, Blade Count, Fan Diameter and “Yes/No” indicating whether an LED Light accessory is installed on the fan.

<

Settings

Fan Name

FAN 1

Rotation

FWD

Blade Count

5

Fan Dia.

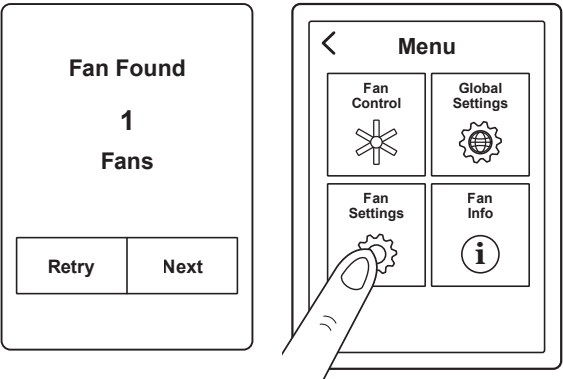
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LED Light

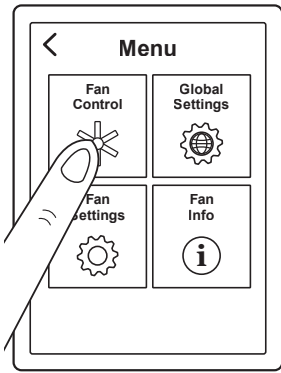
NO

3. Once all the fans have been named and configured appropriately, select “Done” or the back arrow to return to the main menu page.

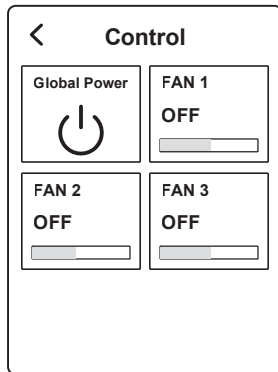
NOTE: If all of the fans on the network were not found, reference the troubleshooting section for additional information.



Fan Operation

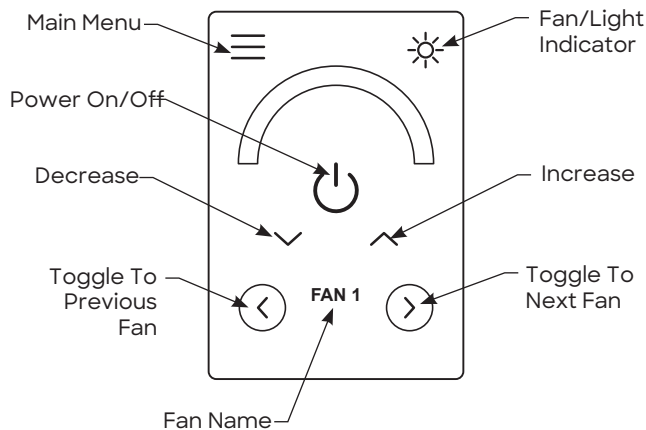


1. To start the fan, select the Fan Control icon on the main menu page.
2. Select the icon of the fan intended to operate.



3. The icon in the upper right corner is used to toggle between fan control and light accessory control. When the fan icon is present, fan speed can be controlled using the “increase” or “decrease” arrows and the power button can be used to turn the fan on/off. When the light icon is present, the light can be controlled using the same arrows.

NOTE: If the light was not programmed in the Fan Settings page, the light icon will not appear.



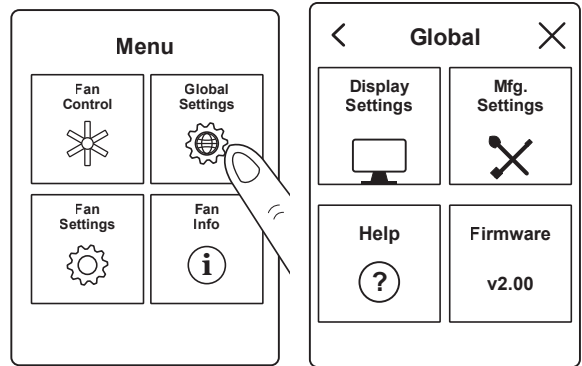
4. Selecting the Fan Name will take the user directly to the Fan Information page. Reference the General tab within the Fan Information page as covered in the next section.

NOTE: If the fan does not rotate when the power button is green or the fan rotates for less than a minute before shutting itself off, confirm the fan is set to the correct model and size within the Fan Settings page.

NOTE: If the Fan Name is illuminated RED, check the Status and Fault button on the General tab. For more information, reference the Operation Status and Fault Code tables.

Additional Security and Touchscreen Settings

1. Select the Global Settings icon on the main menu window to adjust the factory setting.



2. The following features can be accessed from the Global window:

Display Settings

- Brightness adjustment
- Lock screen time out adjustment

Mfg. Settings

- Passcode reset
- Factory reset

Help

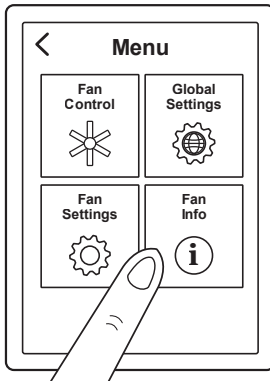
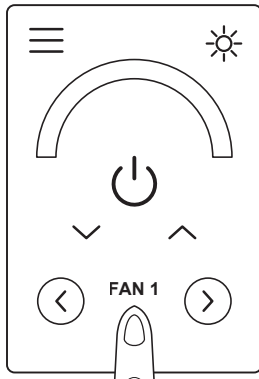
- Provides contact information if additional assistance is required.

Firmware

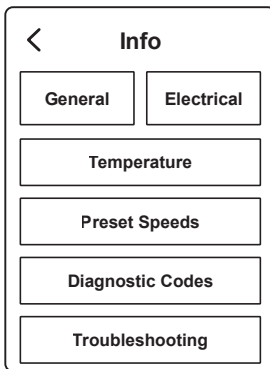
- Displays the firmware version loaded on the Standard Touchscreen Control.

Fan Info and Operation Status

1. Select the Fan Info icon on the main menu page or select the Fan Name on the Fan Control page.



2. The following information can be found in each tab:



The table to the right shows the available information per fan model

Tab	Diagnostic Parameter	Value	VCFI (Models Shipped After 4/1/26)	VCFI (Legacy Models)	VCFC
General	Comm Errors	count	x		
	Bus Voltage	volts	x	x	x
	Modbus Address	2 to 21	x	x	x
	Current Speed	%	x		
	Watchdog Timer	time	x		
	Fan RPM	speed	x		
	Status		x		
Electrical	DC Bus Voltage	volts	x	x	x
	Motor Current	amps	x	x	x
	VDC Precharge	volts	x		
	V-Gate	volts	x		
	5v Motor	volts	x		
	3.3v Motor	volts	x		
	1.65v Motor	volts	x		
	LED Output	volts	x		
	RS485 +	volts	x		
	5v Comms	volts	x		
	3.3v Comms	volts	x		
	10v Comms	volts	x		
	24v Comms	volts	x		
	RS485 -	volts	x		
Temperature	Flyback	temperature	x		
	Capacitor	temperature	x		
	Transistor	temperature	x	x	x
	Ambient	temperature	x	x	x
	Motor	temperature	x	x	x
Preset Speeds	Preset 1	speed, rpm	x		
	Preset 2	speed, rpm	x		
	Preset 3	speed, rpm	x		
	Preset 4	speed, rpm	x		
Diagnostic Codes	Diagnostic 1	code	x		
	Diagnostic 2	code	x		
	Diagnostic 3	code	x		
Troubleshooting	Fault History 1	code	x	x	x
	Fault History 2	code	x	x	x
	Fault History 3	code	x	x	x
	Motor Firmware	version #	x	x	x
	Drive Firmware	version #	x		
	L1-L2	volts	x		
	L2-L3	volts	x		
	L3-L1	volts	x		
	Input Function		x		

Fan Status

If your fan is connected to the controller but the fan is not operating properly, check the status of the fan by navigating to Fan Info > General > Status from the main menu page or by selecting the Fan Name at the bottom of the fan control screen. If the Fan Name is illuminated RED, this indicates a Status or Fault has been triggered and the fan requires attention. See page 8 for status messages and descriptions.

Fan Fault

When the controller identifies a fault with a fan or network connection, a fault code is triggered and the fan rotation stops. The fault can be identified by navigating to Fan Info > General > Fault from the main menu page. See pages 9-10 for fault messages and descriptions.

Troubleshooting

PROBLEM	CORRECTIVE ACTION
Controller screen does not illuminate or is flashing white while the fan is on.	1. Check supply power to the fan. Ensure the appropriate line voltage is applied across all phases.
	2. Measure the 24v terminal on the drive using a multimeter.
	3. The fan is powered up, the 24v terminal is outputting the appropriate voltage but the controller is not receiving 24volts from the fan. Check the CAT-5e cable between the controller and the fan using a Network Cable Tester, and ensure the RJ45 connector is fully seated.
Unable to find all of the fans during initial setup.	1. Confirm the CAT-5e connections are securely connected, and the wires are terminated properly on the communication terminals. Reference the appropriate fan manual for factory wired terminations and Modbus rotary dial positions.
	2. Check connectivity on the long CAT-5e cables between each fan and the controller using a Network Cable Tester.
	3. A single fan with incorrect communication settings may disrupt the network and prevent other fans from connecting to the controller. Disconnect CAT-5e cable between fan 1 and fan 2 and attempt to connect to the first fan in the network. Once the first fan is found by the controller, reconnect the CAT-5e connection between fans 1 and 2, and disconnect the next connection between fan 2 and fan 3. Continue adding fans one by one until the incorrectly configured fan is found.
	4. Disconnect the RJ-45 3-way splitter and connect the controller directly to the CAT-5e pigtail at the top of the fan. Check to see if the controller can find the fan but do not attempt to send a run command.
Fan(s) are found, but unable to control the fan(s).	1. Utilize the Fan Info tab to pull status information on the fan. If all the fan parameters on the "General" page are registering the information correctly, check the "Status" and "Fault Info" buttons for an error message. Reference the Drive Status and Drive Fault Info tables for more information.
	2. If the controller flashes white momentarily before shutting off again, it could mean that the fan is being supplied with inadequate power. Check the power supply at the fan with a multi-meter to make sure the appropriate voltage is being supplied to the fan.
	3. Check connectivity on the long CAT-5e cables between each fan and the controller using a Network Cable Tester. A single dropped lead can cause intermittent communication errors. Use precision if re-terminating CAT-5e cable is necessary.
The "FAN" name is RED and there is a fault code showing.	1. Reference the Fault Code table for more information.
	2. Clear the old status code and check to see if the fan is running properly, cycle power on the fan using the Power icon in the Fan Control tab. Wait until the fan has completely stopped spinning before hitting the power button a second time to run the fan. The fan name will have changed from a RED color back to a BLACK color indicating the previous status has been cleared.
	3. Refer to troubleshooting instructions in the fan Installation, Operation, and Maintenance (IOM) Manual for additional troubleshooting steps.

Reference

Operational Status Codes

Code	Observed Status	Description	How to Address the Issue
0	No Warning / Fault	Normal operation with no warnings or faults.	No action required.
1	Watchdog Timeout / Comm CRC Errors	Drive disabled due to lack of communication from controller within the designated time span.	Check that supply voltage is correct and that the watchdog is set to the appropriate duration. Watchdog Timer = 0 sec. is off, 30 sec. is factory default setting.
2	Drive Faulted (See Fault History)	Drive disabled due to fault condition.	Using a Standard or Advanced Touchscreen Control, check the fault code history for more information.
3	Motor Temperature Warning	Warning that the motor temperature is above threshold; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
4	Drive Temperature Warning	Drive temperature is above threshold; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
5	Disabled by Fire Relay	Drive disabled by fire relay inputs (FIRE+ and FIRE-); fan cannot resume rotation.	Reset the fire relay and power cycle the fan at the control.
6	Disabled by Wind Shutdown	Drive disabled by wind shutdown inputs (WIND+ and WIND-); fan cannot resume rotation.	Close overhead doors; reduce or eliminate stray wind/airflow across fan (reference fan clearance and spacing requirements); power cycle fan after wind/airflow has subsided.
7	Ambient Temperature Warning	Ambient temperature > 75°C; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
8	Flyback Transformer Temperature Warning	Flyback temperature > 75°C; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
9	DC Link Capacitor Temperature Warning	DC Link Capacitor temperature > 80°C; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
10	Heat Sink Temperature Warning	Heat Sink Temperature > 75°C; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
11	Comm Link Warning	Internal drive communications error.	Power cycle the fan at the disconnect, then power cycle the fan at the control.
12	Invalid Input Mode (Rotary Dial 1)	Rotary dial 1 is set to an unused or invalid position (i.e. between two positions).	Check all rotary dials to make sure they match the appropriate fan and control mode configuration.
15	Disabled by Diagnostic/Commissioning Mode	Drive disabled due to fault condition (similar to Operation Status Code 2 above) that was identified after running Diagnostic or Commissioning Mode.	Using a Standard or Advanced Touchscreen Control, check the fault code history for more information.
16	Configuration Parameter Error	Error reading or saving parameters within drive's internal software.	Power cycle at the control. If status message reoccurs, contact the manufacturer for a firmware package update.
17	CPU Temperature Warning	Communication CPU Temperature ≥ 100°C; fan may reduce speed to prevent fault condition.	Reduce fan speed/load; allow temperature to cool; power cycle fan after temperatures have normalized.
18	Motor Mismatch	Drive disabled due to mismatch between programmed motor HP size and expected motor HP size based on programmed fan blade count/diameter.	Go to the Fan Settings window of the control and confirm the correct blade count and fan diameter are assigned to the fan.

Fault Codes

Code	Observed Fault	Description	How to Address the Fault
0	No Fault Detected	Normal operation with no warnings or faults.	No action required.
1	Communication Fault / Modbus Timeout	Drive disabled due to inability to communicate with control.	Check all communication wiring connections and watchdog timer settings.
2	Impact Detection	Unexpected change in speed and/or torque indicates impact.	Disconnect the supply power to the fan and visually inspect the hub and blades for scuffs, cracks or bent components. If the fan appears undamaged and rotor can be spun by hand with no audible noise, power cycle the fan at the control and slowly ramp up the fan speed.
3	Motor High Temp	Motor temperature is above the threshold; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
4	Drive High Temp	Drive temperature is above the threshold; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
5	DC Bus Over Voltage	DC Bus voltage is above operating range, often linked to high incoming supply voltage.	Check the supply voltage with a multi-meter. Confirm the specified drive voltage matches the building supplied power.
6	DC Bus Under Voltage	DC Bus voltage is below operating range, often linked to low incoming supply voltage.	Check the supply voltage with a multi-meter. Confirm the specified drive voltage matches the building supplied power.
7	Phase Over Current (Software Limit)	Drive disabled due to current on one or more output phases exceeding limits within internal drive software.	Check supply power wiring connections for signs of damage or loose connections. Check for missing phase on supply power wiring. Ensure rotor can be spun by hand.
8	Microcontroller High Temperature	MCU Temperature is too high; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
9	Overspeed Fault	Fan rotation is over the limit for the given fan model/size; fan shut down to prevent damage/failure.	Go to the Fan Settings window of the control and confirm the correct blade count and fan diameter are assigned to the fan.
10	Ambient Air High Temperature	Ambient Temperature > 110°C; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
11	DC Link Capacitor High Temperature	DC Link Capacitor temperature > 110°C; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
12	Flyback High Temperature	Flyback temperature > 110°C; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
13	Heatsink High Temperature	Heatsink temperature > 110°C; fan shut down to prevent damage/failure.	Allow temperature to cool; power cycle fan after temperatures have normalized; contact the manufacturer if fault code reoccurs at reduced temperatures.
14	Rotor Stalled	Fan unable to rotate.	Inspect the fan for any obstacles that may have shifted into the blade span.
15	Phase Over Current (Hardware Limit)	Drive disabled due to extreme current on one or more output phases that indicates a short circuit.	Check supply power wiring for signs of damage or loose connections that may be causing a short; power cycle fan and attempt to operate; contact the manufacturer if fault code reoccurs without evidence of external short.
16	Gate Drive Undervoltage	Drive disabled due to low voltage on Gate Drive Power Supply (< 11V). Typically caused by incorrect or unstable supply voltage or loose supply power wiring connections.	Check the supply voltage with a multi-meter and confirm that voltage is stable and within specified voltage range of drive; check supply power wiring for loose connections; power cycle fan and attempt to operate; contact the manufacturer if fault code reoccurs.
17	Brown Out	Drive disabled due to supply voltage < 100V. Typically caused by brown out conditions affecting a building's power supply.	Check the supply voltage with a multi-meter. If the supply voltage is above 100V, power cycle the fan at the control and attempt to run the fan. If this fault reoccurs, contact a certified electrician.
18	No Load Detected	Motor phase leads open or not connected; motor not plugged in or the pins on the connectors do not have good contact.	Check that the pins on the connectors between the motor and drive are nested properly and have good connection.
19	Ground Fault	Motor shorted to earth ground.	Check for pinched or bare wires between motor and drive. Check shorts before putting fan back into service.

Fault Code (continued)

Code	Observed Fault	Description	How to Address the Fault
20	Input Phase Dropped	AC supply phase (L1, L2, L3) not detected or >5% deviation.	Inspect and correct the supply voltage.
21	Mechanical Overload	Fan is attempting to rotate but has exceeded mechanical power limit (locked rotor condition).	Inspect the fan for any obstacles that may have shifted into the blade span.
22	AC Input Undervoltage Lockout	Drive disabled due to low supply voltage.	Check the supply voltage with a multi-meter and confirm that voltage is stable and within specified voltage range of drive; check supply power wiring for loose connections; power cycle fan and attempt to operate; contact customer care if fault code reoccurs.
23	Torque Max	Drive disabled due to mismatch between measured torque output and expected torque output based on programmed fan blade count/diameter.	Go to the Fan Settings window of the control and confirm the correct blade count and fan diameter are assigned to the fan.
100	Motor Thermistor Error	Value out of expected range.	
101	Heatsink Thermistor Error	Value out of expected range.	
102	Hall Error	Value out of expected range.	
103	Inverter Error	Critical hardware error.	

Maximum Fan Speed

Reference maximum fan speed by blade count and fan size.

Models:

VCFI	-	3, 6	-	8, 10, 12, 14, 16, 18, 20, 24	-	90, 210	LV, HV
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Size	Three Blades		Six Blades	
	Motor [N·m]	Max Speed [rpm]	Motor [N·m]	Max Speed [rpm]
8	90	210	90	193
10	90	158	90	164
12	90	154	90	146
14	90	130	90	126
16	90	115	210	110
18	90	107	210	94
20	210	89	210	81
24	210	66	210	67

Models:

VCFC	-	5	-	4, 5, 6, 7, 8, 10, 12, 14	MV, LV
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Size	Five Blades	
	Motor [N·m]	Max Speed [rpm]
4.3	3	200
5	3	197
6	3	165
7	3	135
8	13	184
10	13	140
12	13	103
14	13	76

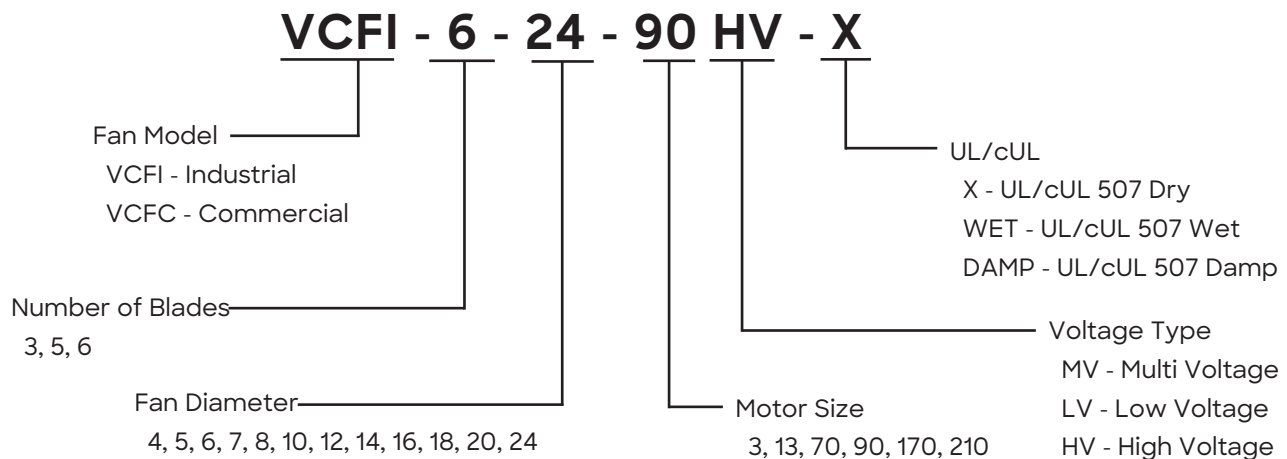
Legacy Models:

VCFI	-	3, 6	-	8, 10, 12, 14, 16, 18, 20, 24	-	70, 170	LV, HV
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Size	Three Blades		Six Blades	
	Motor [N·m]	Max Speed [rpm]	Motor [N·m]	Max Speed [rpm]
8	70	145	70	142
10	70	141	70	136
12	70	134	70	119
14	70	120	70	97
16	70	101	70	81
18	70	87	70	69
20	70	76	170	78
24	70	56	170	61

Fan Model Nomenclature

The model number system is designed to completely identify the fan.



Our Commitment

As a result of our commitment to continuous improvement, Venco reserves the right to change specifications without notice.

AMCA Publication 410-25, Safety Practices for Users and Installers of Industrial and Commercial Fans, provides additional safety information.

