

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.

The Advanced Touchscreen is a premium controller designed to operate a large quantity of HVLS fans. Featuring the ability to independently operate or group up to 20 fans with optional BACnet® integration (refer to page 3), this controller is an ideal choice for any facility where versatility is a must.



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

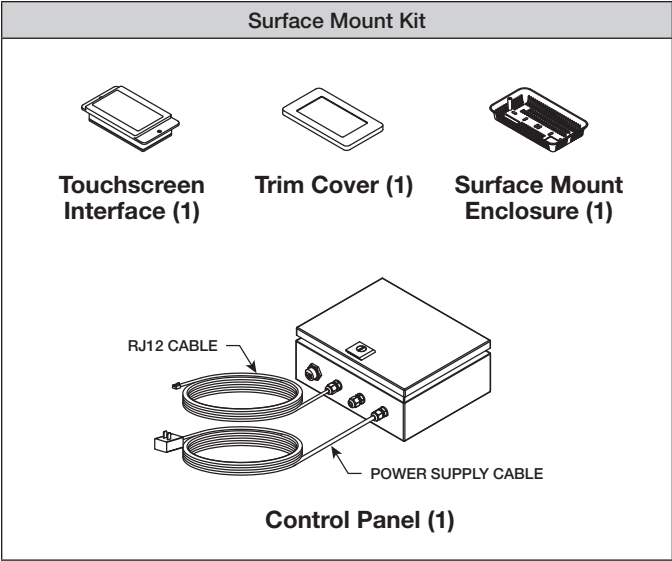
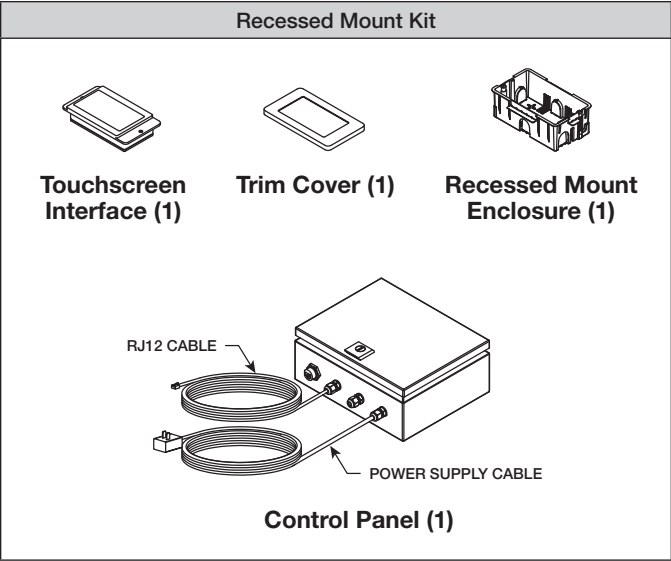
Controls are protected against damage during shipment. If the control cannot be installed and operated immediately, precautions need to be taken to prevent deterioration of the control during storage. The user assumes responsibility of the control and accessories while in storage. The manufacturer will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

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

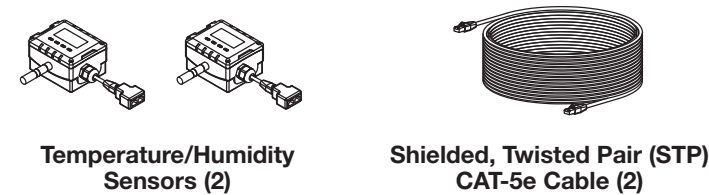
Control Components

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.



Optional Control Components



Installation

Control Panel

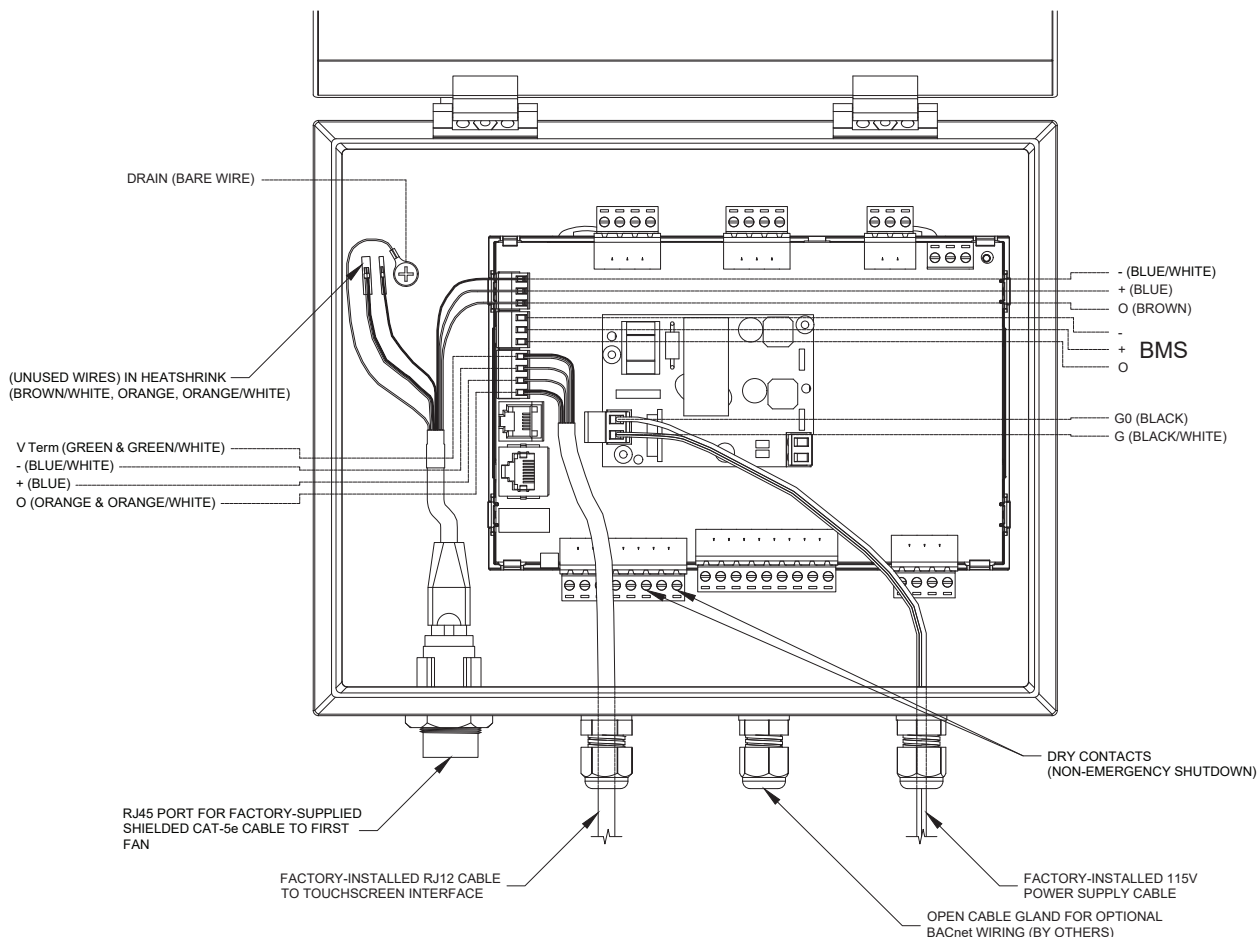
Hardware/Tools Needed (Not Included):

- # 2 Phillips Head Screwdriver
- 1/8 in. Phillips Head Screwdriver
- 2.0 mm Flathead Screwdriver

1. Identify the intended mounting location for the touchscreen interface.
2. Identify an appropriate mounting location for the control panel within 50 feet of the touchscreen interface's intended mounting location. Control panel can be mounted in a location where it is not visible in the space, but the panel must be accessible for troubleshooting and maintenance. Examples of acceptable mounting locations include: the surface of a wall or ceiling, above a drop ceiling, or in a mechanical room or maintenance closet.
3. Verify that there is a 115V outlet within 6 feet of the control panel mounting location. If an outlet is not available, identify a new mounting location for the control panel or install an outlet making sure to follow all local and national electrical codes.
4. Open the front of the control panel enclosure using a flathead screwdriver.

5. Mount the control panel enclosure to the structure using the four mounting holes located in the corners on the inside of the enclosure (mounting hardware provided by others to accommodate various mounting surfaces).
6. If BACnet MSTP communication to a building management system (BMS) is required, route an RS-485 communication cable (provided by others) from the BMS to the control panel through the unused cable gland on the exterior of the control panel enclosure. Connect the RS-485 communication cable to the BACnet terminal block on the control panel circuit board, as shown in Figure 1.

IMPORTANT: Touchscreen controls with BACnet MS/TP communication must be installed with shielded, twisted pair RS-485 communication cable. The minimum cable requirements are 3 insulated conductors and 1 uninsulated shield drain. Distributed capacitance between conductors shall be less than 30 pF per foot (100 pF per meter). Distributed capacitance between conductors and shield shall be less than 60 pF per foot (200 pF per meter). Foil or braided shields are acceptable. The maximum recommended length of an MS/TP segment is 4000 feet (1200 meters) with AWG 18 (0.82 mm² conductor area) cable. The use of greater distances and/or different wire gauges shall comply with the electrical specifications of EIA-485.



7. Close the front of the control panel enclosure using a flathead screwdriver.
8. Plug the factory-wired power supply cable into a 115V outlet.
9. Plug one end of the shielded, twisted pair CAT-5e communication cable that was provided with the HVLS fan(s) into the open RJ45 port on the exterior of the control panel enclosure.

IMPORTANT: VCFI fans must be installed with the supplied CAT-5e communication cable, shielded CAT-5e (by others), or RS-485 cable that complies with the following specifications. Cable must be twisted pair, shielded 24 ga. CAT-5e/RS-485 cable with a drain 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. and individual RS-485 cable lengths must not exceed 1,000 ft. to prevent network communication issues.

10. Route the factory-installed, 50 ft. RJ-12 cable from the control panel to the intended mounting location for the touchscreen interface.

Touchscreen with Surface Mount Kit

The following instructions apply to touchscreen control installations provided with the surface mount kit.

1. Using the plastic surface mounting enclosure as a template, mark and cut an opening in the surface of the wall for the RJ-12 communication cable from the control panel.
2. Mount the surface mount enclosure to the wall (mounting hardware provided by others to accommodate various mounting surfaces).
3. Route the RJ-12 cable through the wall opening and plug into the open port on the rear side of the touchscreen interface.
4. Mount the touchscreen interface to the surface mounting enclosure using the included hardware.
5. Snap the decorative trim cover into the front of the touchscreen interface.

Touchscreen with Recessed Mount Kit

The following instructions apply to touchscreen control installations provided with the recessed mount kit.

1. Mark and cut a 5.8 x 3.25 inch opening in the surface of the wall for installation of the recessed mounting junction box.



2. Remove the appropriate pre-scored knockout from the recessed mounting junction box for the RJ-12 communication cable from the control panel.
3. Route the RJ-12 cable through the knockout opening and secure appropriately.
4. Set the recessed mounting junction box in the wall opening and secure to the wall using the attached mounting screws. Tighten the mounting screws until hand-tight, alternating to ensure pressure is distributed evenly.
5. Plug the RJ-12 cable into the open port on the rear side of the touchscreen interface.
6. Mount the touchscreen interface to the recessed mounting junction box using the included hardware.
7. Snap the decorative trim cover into the front of the touchscreen interface.

Fan Networking/Drive Access

IMPORTANT: VCFI fans must be installed with the supplied communication cable or an appropriate cable type (by others) that complies with the following specifications.

Cable Type	Cable Construction	Min. Quantity of Conductors	Min. Wire Gauge	Characteristic Impedance	Distributed Capacitance (Conductor to Conductor)	Distributed Capacitance (Conductor to Shield)	Max. Cable Length Between Devices	Max. Communication Trunk Length
Shielded CAT-5e	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.	8	24 AWG	90-110 ohms	Ref ISO/IEC 11801		200 ft.	4,000 ft.
Shielded RS-485	Plenum-rated, shielded, twisted pair (STP) cable with separate shield drain. Foil or braided shields are acceptable.	3	24 AWG	100-130 ohms	Less than 30 pF per foot (100 pF per meter)	Less than 60 pF per foot (200 pF per meter)	1,000 ft.	4,000 ft.

Types of Fan Communication Wiring

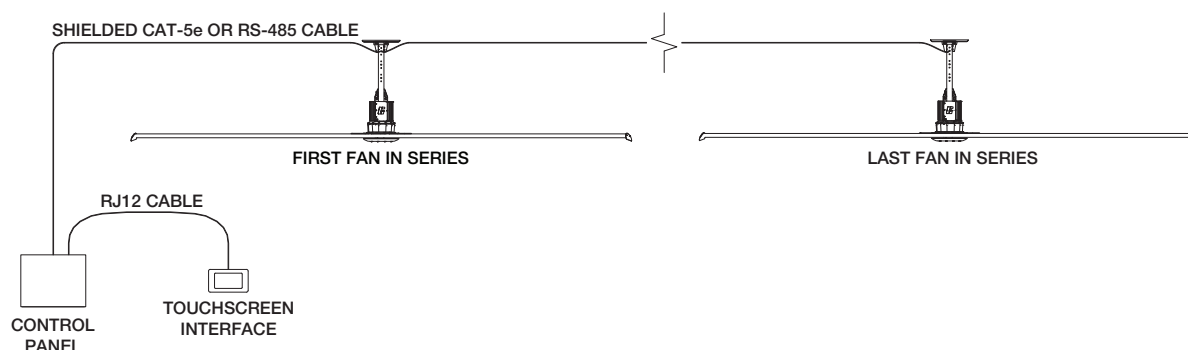
- Modbus RTU Control with CAT-5e
- Modbus RTU Control with RS-485
- BACnet Control

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. Fans using a Modbus control network will be connected using a “daisy-chain” or “point-to-point network topology” where the control is connected to the start/ end point of a row of fans with each fan being linked one after another.

IMPORTANT: If touchscreen control was provided with the optional temperature/humidity sensor package, do not remove the 24V (brown-white) wire from the communication wiring terminal strip on the last fan in the daisy-chain (furthest fan away from the control source).

Fan Networking/Drive Access

For network wiring connection, reference the appropriate fan Installation, Operation, and Maintenance (IOM) manual.



Accessories and Options

Temperature/Humidity Sensor (Optional)

Hardware/Tools Needed (Not Included):

- # 2 Phillips Head Screwdriver

IMPORTANT: If touchscreen control was provided with the optional temperature/humidity sensor package, do not remove the 24V (brown-white) wire from the communication wiring terminal strip on the last fan in the daisy-chain (furthest fan away from the control source).

The following instructions apply to touchscreen control installations that were provided with the optional temperature/humidity sensor package.

NOTE: Temperature/Humidity Sensor can only be installed when an Advance Touchscreen Control is used to run the fan network.



1. Plug one end of a shielded, twisted pair CAT-5e cable that was provided with the temperature/humidity sensor package into the 3-way RJ45 splitter located at the top of the downtube on the last fan in the daisy-chain. For daisy-chain communication wiring between fans, refer to instructions in the fan Installation, Operation, and Maintenance (IOM) Manual.

IMPORTANT: Touchscreen controls, temperature/humidity sensors, 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 the other end of the shielded, twisted pair CAT-5e cable into the shielded 3-way RJ45 splitter located on the temperature/humidity sensor labelled “CEILING”.
3. Open the front of the enclosure on the temperature/humidity sensor labelled “CEILING” by turning the slotted screws in the enclosure one quarter turn.
4. Mount the temperature/humidity sensor labelled “CEILING” in the desired mounting location using the three mounting holes on the inside of the enclosure (mounting hardware provided by others to accommodate various mounting surfaces).
5. Close the front of the enclosure on the temperature/humidity sensor labelled “CEILING”.
6. Plug one end of a second shielded, twisted pair CAT-5e cable that was provided with the temperature/humidity sensor package into the shielded 3-way RJ45 splitter on the temperature/humidity sensor labelled “CEILING”.
7. Plug the other end of the shielded, twisted pair CAT-5e cable into the shielded 3-way RJ45 splitter located on the temperature/humidity sensor labelled “ROOM”.
8. Repeat steps 3-5 to mount the temperature/humidity sensor labelled “ROOM” at occupant height.

NOTE: Temperature/humidity sensor utilizes Modbus addresses 30 and 31.

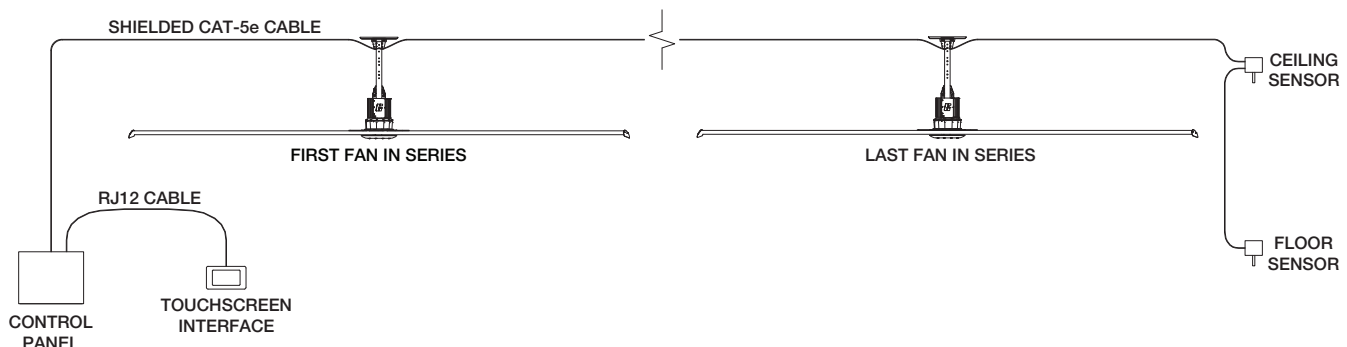
Non-Emergency Fan Shutdown Feature

Dry Contacts – NO/NC

Located on the Advanced Touchscreen Control Board.

- When the digital input contact is closed, the fans are permitted to operate. When the digital input contact is open, the fans will stop operating.
- The fans must also be programmed individually into Group 5 for this function to operate correctly.

IMPORTANT: Do not use this feature for emergency shutdown. The fans may continue operating for more than one minute before coming to a complete stop.



Operation

Initial Setup

1. Touch anywhere on the screen to move to the  page. Follow the on-screen prompts for initial control setup.
2. Initialize auto detect by tapping ; this will take 30 seconds to complete.
3. Verify that the correct number of fans has been detected. If the correct number of fans is not detected, run the auto detect a second time or confirm the communication cables are correctly installed at the control, control board, and fans.

OPTIONAL: If the auto detect function does not locate your fans, and the Modbus addresses are assigned to them, manually select the appropriate addresses. To manually select the fan Modbus addresses on the network, tap MANUAL ENABLE.

4. Once the correct number of fans is confirmed on the screen, tap the green  to continue.
5. Enter the mark name, blade count, and fan size for each installed fan by tapping on the boxes.

IMPORTANT: Incorrect fan model and size information will result in significant performance changes.

IMPORTANT: Modbus address must be unique per fan.

6. (Optional) Record serial number(s) and Modbus address information.
 - a. Tap  to complete fan setup.
 - b. Tap  to access the global settings page.

NOTE: Pages will initialize the first time they are entered. It may take up to 5 seconds for a page to load initially, or the first time after a power cycle.

Security

Upon initial startup, the control will be in guest mode. The touchscreen is setup with two levels of security which include guest and full. The level of access for each is as follows:

- guest – full read access and the ability to turn the fan(s) on/off
- full – full access to all settings and menus

NOTE: The  image in the bottom left corner of all home screens indicates the control is in guest mode and locked out.

FULL LOGIN

1. To login with full access, tap  to access the global settings and then tap  to enter the security page.
2. Tap  (login) and enter Username *full* and Password *0000*.
3. To change your current password to a new password, tap .

IMPORTANT: Once the password is changed, it is highly recommended to maintain this password in a safe place. If the password is lost, it cannot be recovered.

OPTIONAL: To return to guest mode, tap  (logout). The guest account can only turn fans on or off. They cannot adjust speed or make any other changes.

Clock Setup (Optional)

1. From the fan home screen, tap  to access global settings.
2. Tap on .
3. To set the date and time, tap the box at the bottom of the screen below SET DATE/TIME.
4. Tap the green  to save and complete setup.
5. Tap back to return to global settings.

Group Setup (Optional)

1. Set all desired fans to a group inside of the individual FAN SETTINGS screen.
2. In the fan settings, select a group number in the dropdown menu to select your group of fans to be controlled by.

GROUP	
NONE	
1	
2	
3	
4	
5	

NOTE: For applications using the temperature/humidity control, Group1 is required.

3. Once all fans have been assigned to the appropriate group, navigate back to the fan home screen by tapping the back button.
4. From the fan home screen, tap  to access global settings.
5. Tap  to enter group setup.
6. Using the dropdown menu, assign fans to desired group(s).

NOTE: Fans assigned to a group will only respond to group commands, not individual fan commands. Fans that belong to a group will display a blue power icon on the fan home screen.

Scheduling (Optional)

1. Set all desired fans to a schedule inside of the individual FAN SETTINGS page.
2. Select a schedule number in the dropdown menu for your scheduled fans to be controlled by.

SCHEDULE	
NONE	
1	
2	
3	
4	

3. Once all fans have been assigned to the appropriate schedule, navigate back to the fan home screen by tapping the back button.
4. From the fan home screen, tap  to access global settings.
5. Tap  to enter scheduling.
6. Select one of the available Schedule ID values from the dropdown menu.

7. Tap weekday or weekend to set a schedule.
8. Schedule as desired. Each schedule is divided into four time periods, with two time periods available for weekdays and an additional two for weekends.

Fan LED Light Control (Optional)

1. Navigate to the fan home screen and select your individual fan.
2. Tap  to enter the individual fan settings.
3. Use the dropdown menu to select Light as LED (for on) or No (for off).
4. For additional information on lights, contact technical support.

Assign Fan(s) for BACnet Communication with Building Management System (Optional)

1. Navigate to the BMS menu by tapping the  on the global settings page.
2. Adjust BACnet settings as required for the BMS network.

FACTORY SETTINGS

- Type: *BACnetMSTP*
 - Address: *1*
 - Device Instance: *0000000*
 - Baud: *19200*
 - Max Master: *127*
 - Max Info Frames: *20*
3. Navigate to the fan home screen by tapping the back button.
 4. Tap the fan that should be controlled with BACnet.
 5. Tap  to enter fan settings.
 6. Use the schedule dropdown menu to select BMS.

NOTE: BMS control of HVLS fan(s) can be temporarily suspended by tapping the chain icon on the fan or group page. A countdown timer will display the remaining amount of time before the fan reverts to BMS control.

Assign Light(s) to Fan(s) or Group(s) (Optional)

1. Navigate to the fan or group home screen.
2. Tap the fan or group that should be added to a schedule.
3. Tap  to enter fan or group settings.
4. Use the drop down menu to select Light as LED or OFF.
5. For additional information on lights, contact your local sales representative for technical support.

Temperature/Humidity Control (Optional) Assign Group 1

1. Navigate to the auto detect page by tapping  on the global settings page.
2. The temperature/humidity control is defaulted to None. If the temperature/humidity control was supplied with the controls. Tap "None" in the box below SENSORS, then select "Temp/RH" from the dropdown menu.
3. Tap the green  to return to the fan home page. All fans being controlled by the temperature/humidity control must be programed in the individual fan settings.
4. At the fan home page select your first fan and set all desired fan(s) to a Group 1.
5. Once you have all the fans in Group 1, navigate back to the fan home screen by tapping the back button and tap  to access global settings.
6. Tap  to enter group setup.
7. Use the dropdown menu to assign fan(s) that should be automatically controlled to Group 1.
8. Once complete, tap the back button to save and navigate to the group home page by tapping on the fan home page.
9. Tap Group 1.
10. Tap  to enter automatic control mode.
11. Tap the operating mode for the appropriate season ( summer or  winter), or tap  to return to manual operation.
12. Tap  to view current temperature and humidity sensor measurements.

NOTE: To adjust automatic temperature/humidity operation settings, navigate to the group settings screen by tapping . Then tap  to open the automatic operation settings page.

SUMMER MODE

1. Tap the Start Temp value to enter the desired starting temperature for fan operation. When the temperature or heat index measured at the floor sensor meets or exceeds the entered value, the fan(s) will begin to operate and automatically adjust fan speed to provide appropriate cooling for building occupants. The factory default value is 77°F.
2. Tap the Max Speed Temp value to enter the desired temperature for fan(s) to operate at max speed. If the temperature or heat index measured at the floor sensor meets or exceeds the entered value, the fan(s) will operate at their maximum speed. The factory default value is 86°F.
3. Tap the Max Speed value to enter the maximum desired operating speed for the fan(s) during summer operation. The factory default value is 7.

WINTER MODE ❄️

1. Tap the Start Delta value to enter the desired temperature differential between the floor and ceiling sensors that should trigger fan operation. When the difference between the temperatures measured by the floor and ceiling sensors meets or exceeds the entered value, the fan(s) will begin to operate and automatically adjust fan speed to evenly distribute warm air in the building (destratification). The factory default value is 10°F.
2. Tap the Max Speed value to enter the maximum desired operating speed for the fan(s) during winter operation. Max Speed for winter operation is typically 3-4 values lower than Max Speed for summer operation. The factory default value is 5.

Alarms 🔔

At any time, if the control displays a number over the bell in the top right corner of the screen. This will tell you that at some point there was an alarm or fault that occurred. Click on the 🔔 to navigate to this page.

TO CLEAR A FAULT

1. While on the alarms page, set your Filter to Hide Not Triggered.
2. In this order select the Check/Uncheck All button.
3. Select Ack to Acknowledge.
4. Select Reset to reset your alarms page.

NOTE: If any alarms do not clear from the screen, repeat Steps 1 to 4 and verify that the issue has been addressed. If the alarms remain active, they indicate a current fault condition that will require additional troubleshooting by a qualified or certified installer.

For additional information on faults, contact your local sales representative for technical support.

Advanced Admin Features

SOFT RESET

A soft reset is typically used when the advance touchscreen control function seems out of the ordinary operation.

Note: By clicking on the Soft Reset button, you may lose all fan set-up information, and you would need to re-enter this.

Important: A Soft Reset does not stop the fans by removing power. Fans may continue operating during or immediately after the reset. If personnel safety is a concern, disconnect power before servicing equipment.

By selecting the Soft Reset

- This restarts the touchscreen interface and control processor
- Clears temporary faults, communication glitches, or UI freezes
- Reinitializes Modbus communication with connected fans
- Returns the control to its home/startup screen

If your fans were running and are no longer running after the Soft Reset. Go to your fans individually or group settings page. Toggle your fans off and then back on and they should start rotating.

FAN CLIP BOARD 📋

In your individual fan control menu in the top left corner of the screen, you will see a clip board. Going into the clip board will allow you to see the fan status (current) and fan Fault History. In the Fault History, the most recent fault is at the top.

WATCHDOG

Within the Individual Fan Settings, you will find the Watchdog Timer. This adjustable setting determines how the fan responds if communication with the controller is lost.

When the Watchdog Timer is configured lower than default, the fan can continue operating at its last commanded speed even if the controller is disconnected. However, if power to the fan is interrupted, the fan will shut down and will not restart until communication with a controller has been re-established. The manufacturer default is set to 30 (seconds).

MAGNIFYING GLASS 🔍

In the individual fan settings, you will find a Magnifying glass. Selecting this will provide you with the fan's current operating status.

- Comm Errors
- Operating HRS
- Drive Firmware
- Motor RMS
- Drive MCU Temp (°F)
- Transistor (°F)
- DC Bus Voltage
- Motor RPM

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.	Contact your local representative or the manufacturer.
101	Heatsink Thermistor Error	Value out of expected range.	
102	Hall Error	Value out of expected range.	
103	Inverter Error	Critical hardware error.	

Modbus Registers List – Model VCFI (Models Shipped After 4/1/2026)

The VCFI fan's VFD is configured for Modbus RTU communication as standard. The Modbus register list is for applications where a building management system (BMS) or field-supplied control are to be used for fan operation. A baud rate of 19200 bps, 8 bits, no Parity and a device polling delay of 260 ms are recommended for network functionality.

	Register	Name	R/W	Retentive	Signed	Format	Range	Default	Description	Detail
Control	1	Run Command	R/W			x	0,1,2	0	0=Stop=clear Fault(s); 1=Forward; 2=Reverse; 99=Reset; 44 = Diagnostic; 55 = Commission; Reset after 44 or 55; Analog Override: Forward = 10 + Register[37]; Reverse = 20 + Register[37] (When J20 Pin7 is Active)	
	2	Speed Reference	R/W			xxx	0..100	0	10 RPM Minimum (0-100% Max Blade Speed)	
	3	Operational Status	R			x	0...16	0	See Fault-Warning Codes	
	4	Light Control	R/W			xxx	0..100	0	0-10V Output for Optional Light Control (%)	Resets to 0 after power cycle
	5	External Temperature	R		S	xxxxx	-400..1100		External Temp (°C) (0.1 units)	Based off an external 10K at 25C NTC thermistor
Fault	6	Latest Fault Code	R	R		xxx		0	Integer code representing fault history	At each fault occurrence, values are shifted to next register and the current fault is displayed in Last Fault Code. Values are retained after power cycle.
	7	Second Last Fault	R	R		xxx		0		
	8	Third Last Fault	R	R		xxx		0		
	9	Fourth Last Fault	R	R		xxx		0		
	10	Fifth Last Fault	R	R		xxx		0		
Diagnostics	11	Firmware Version (Motor Control)	R	R		xxxxx	1..500			Incremental Version Count
	12	Operating Hours	R	R		xxxxx	0-65535		Operating hours (driving motor)	MAX 65535
	13	Motor RPM	R		S	xxx.x	-2100...2100		Motor RPM (0.1 rpm)	RPM = 65535 (max 16 bit value) - Register 13
	14	Voltage, DC Bus	R			xxx	0...1000		Bus Voltage (Volts) (1 units)	
	15	Flyback (24V) Temp	R		S	xxx.x	-400...1250		24V Power Supply Temp (°C) (0.1 units)	
	16	Current, Motor RMS	R			x.x	0...100		RMS Motor current (Amps) (0.1 units)	
	17	Temperature, Capacitor	R		S	xxx.x	-400...1250		Bus Capacitor Temp (°C) (0.1 units)	
	18	Temperature, Transistor	R		S	xxx.x	-400...1250		Transistor Temp (°C) (0.1 units)	IGBT
	19	Temperature, Ambient	R		S	xxx.x	-400...1250		Ambient Temp (°C) (0.1 units)	
	20	Current, DC Link	R		S	xxx.x	0 ...150		RMS DC Link current (Amps) (0.1 units)	
	21	Communication Errors	R			xxx	0-65535		Number of errors since last power cycle	Communication Errors between Inverter and Communications board
	22	Supply Voltage L1-L2	R			xxxx	0...1000		RMS Modulated Supply Voltage (Volts) (1 Units)	
	23	Supply Voltage L2-L3	R			xxxx	0...1000			
	24	Supply Voltage L1-L3	R			xxxx	0...1000			
	25	Optional Temperature Measurement	R		S	xxx.x	-400...1250		Temperature (°C) (0.1 units)	Optional - External Drive temperature Input
	26	KEEP ALIVE (WatchDog)	R/W	R		xxxxx	0-65534	30	Seconds; 0: Disables	Any message resets; if a Timeout occurs, Fan will stop (if running)
	27	Firmware Version (Communication Control)	R	R		xxx	1...500		Control Board Firmware Version	Incremental Version Count

Modbus Registers List – Model VCFI (continued)

Register	Name	R/W	Retentive	Signed	Format	Range	Default	Description	Detail
Configuration	28	Motor Type	R/W		x	4,5	5	90, 210	4=90; 5=210 Model Type and Blade Length Sets Motor Type
	29	MODBUS Device ID	R/W	R		1..247	2	New Device ID is set after power cycle	Recommended Address Range 1-32
		Model Type	R/W	R	x	3,6	3	3=DS3, 6=DS6	Fan Blade Count
		Blade Length	R/W	R	x	1..8	1	8 ft. to 24 ft. (Blade Diameter)	1=8, 2=10, 3=12, 4=14, 5=16, 6=18, 7=20, 8=24
		Light Type	R/W	x	x	0,1	1	1 LED	
		Network Voltage Bias	R/W	R	x	0,1	1	Network Voltage Bias Enable (Pull Up / Pull Down)	0 - Disable; 1 - Enable
		Input Function Mode	R		x	1..9	x	Selected Rotary Switch Mode	Returns User Selected Rotary Switch Position
		RPM Bypass	R/W	R	xxx	10..210		Resonating Speed	See [Register 36]. Example: Fan Running at 50 Rpm Resonates, but 52 Rpm Does Not,
		RPM Tune	RW	R	xxx	10..210		New Non Resonating Speed	See [Register35]. Set [Register35]=50; [Register36]=52; 50Rpm will be replaced with 52Rpm
	37	Analog Override (Virtual Switch Position)	R/W	R	x	2..6	2	Rotary Switch Input Control Positions 2-6	Override Modbus Mode with Set Analog Input Mode when Analog Override Active (J20 Pin7)
	38	I/O Extra Direction	R/W	R	x	0,1	1	J3 Pin3, Digital Input/Output	0 - Input, 1 - Programmable Output-See Register39
	39	I/O Extra Function	R/W	R	x	0,1	0	J3 Pin3, Input/Output Function	0 - Drive Fault (Active Low); 1 - Programmable Output-See Register38
	40	Control Frequency (PWM)	R/W	R	xxxxx	5000-20000	16000	PWM Control Frequency 5-20KHz	Hz
	41	Preset Speed 1	R/W			0-100	25	Rotary Switch Preset Mode Speed 1	J20 Pin4 (Open), J20 Pin5 (Open)
	42	Preset Speed 2	R/W			0-100	40	Rotary Switch Preset Mode Speed 2	J20 Pin4 (Closed), J20 Pin5 (Open)
Troubleshooting	43	Preset Speed 3	R/W			0-100	75	Rotary Switch Preset Mode Speed 3	J20 Pin4 (Open), J20 Pin5 (Closed)
	44	Preset Speed 4	R/W			0-100	100	Rotary Switch Preset Mode Speed 4	J20 Pin4 (Closed), J20 Pin5 (Closed)
	45	Network Termination Resistor	R/W	R	x	0,1	0	Add 120 Ohm Termination Resistor	0 - Disable; 1- Enable
	51	Baud Rate	R/W		x	2...7	4	Baud Rate Setting	2 4,800 bps
									3 9,600 bps
									4 19,200 bps
									5 38,400 bps
									6 57,600 bps
									7 11,5200 bps
	61	Analog In 0-10V	R		xxxx			0.001V	
	62	Analog In 4-20ma	R		xxxx			0.001V	
	75	Diagnostics 1	R		Binary		0	16 Bits Inverter Health Status	If troubleshooting is needed, provide this information to Manufacturer. 0 = Good
	76	Diagnostics 2	R		Binary		0	16 Bits Inverter Health Status	
	77	Diagnostics 3	R		Binary			16 Bits COMs Board Health Status	

NOTE: Registers 46-50; 52-60; 63-75 are reserved for internal Diagnostics and Testing.

Modbus Registers – Model VCFC

The VCFC fan's VFD is configured for Modbus RTU communication as standard. The Modbus register list is for applications where a building management system or field-supplied control are to be used for fan operation.

	Register	Name	R/W	Retentive	Signed	Format	Range	Default	Description	Detail
Control	1	Run Command	R/W			x	0,1,2		0=Stop=clear Fault(s); 1=Reverse; 2=Forward; 99=Reset	
	2	Speed Reference	R/W			xxx	1...100		Percentage of full speed/torque	
	3	Operational Status	R			x	0...6		1=Comm CRC errors, 2=Drive Faulted, 3=Motor temp warning, 4=IGBT temp warning, 5=Drive Inhibited (Fire Input), 6=Wind Shut Down active	
	4	Light Control	R/W			xxx	0..100	0	J5 0-10V Output for Optional Light Control (%)	Resets to 0 after power cycle
	5	External Temperature	R			xxxxx	-400..1100		External Temp (°C) (0.1 unit)	Based off an external 10K @ 25C NTC thermistor
Fault	6	Last Fault Code	R	R		xxx			Integer code representing fault history	At each fault occurrence, values are shifted to next register and the current fault is displayed in Last Fault Code. Values are retained after power cycle.
	7	Second Last Fault	R	R		xxx				
	8	Third Last Fault	R	R		xxx				
	9	Fourth Last Fault	R	R		xxx				
	10	Fifth Last Fault	R	R		xxx				
Diagnostics	11	Firmware Version	R	R		xxxxx	1-500		Incremental Version Count	
	12	Operating Hours	R	R		xxxxx	0-65535		Operating hours (driving motor)	MAX 65535
	13	Motor RPM	R		S	xxx	-300...300		Motor RPM (0.1 rpm)	
	14	Voltage, DC Bus	R			xxx	0...1000		Bus Voltage (Volts) (1 units)	
	15	Voltage, Output RMS	R			xxx	0...1000		RMS Modulated Output Voltage (Volts) (1 units)	
	16	Current, Motor RMS	R			xx.x	0...150		RMS Motor current (Amps) (0.1 units)	
	17	Temperature, Motor	R		S	xxx.x	-300...1100		Motor Temp (°C) (0.1 units)	
	18	Temperature, Transistor	R		S	xxx.x	-400...1250		Transistor Temp (°C) (0.1 units)	Transistor to Heatsink
	19	Temperature, MCU	R		S	xxx.x	-300...1350		MCU Temp (°C) (0.1 units)	
	20	Thermal Speed Derate	R			xxx	0...100		Speed/Torque derate based on overtemp (%)	Thermal regulation (Motor and/or Drive)
	21	Communication Errors	R			xxx	0-65535		Number of errors since last power cycle	0-65535
	22	-- Spare --	R					0		
	23	-- Spare --	R					0		
	24	-- Spare --	R					0		
	25	-- Spare --	R					0		
Configuration	26	KEEP ALIVE (WatchDog)	R/W	R		xxxxx	0-65535	30	Seconds	Any message resets; if a timeout occurs, fan will stop (if running)
	27	MODBUS Serial Speed	R/W			x	0...9	5	Baud Rate Setting (SW2: Pin 7 ON)	0 1200 bps
										1 2400 bps
										2 4800 bps
										3 9600 bps
										4 19200 bps
										5 38400 bps
										6 57600 bps
										7 115200 bps
	28	Motor Type	R/W				0..2	0	13,70,170	0=13; 1 = 70; 2=170
	29	MODBUS Device ID	R/W	R			1-247	2	New Device ID is set after power cycle	SW2 PIN 8 must be set (on) for this to take effect
	30	-- Spare --	R/W					0		

NOTE: Registers 1000-1150 are reserved for internal Diagnostics and Testing.

BACnet MSTP Communication Points (Optional)

The following communication points list applies to installations that will be integrated with a building management system (BMS) via BACnet MSTP communication. BACnet points must be programmed into BMS (by others) for proper communication.

IMPORTANT: BACnet priority arrays are not supported by the Advanced Touchscreen control.

KEY

X = Modbus address of fan

HVLS Fan Points

Type	Instance	Variable Name	Read/Write	DataType	Description
AnalogInput	0	MS_ToBACnet.BN_NumberOfFans	Read Only	Real	Total number of fans found by controller.
AnalogValue	1	BMSPass1	Read/Write	Real	1st digit of writable BMS password. Default value is 1.
AnalogValue	2	BMSPass2	Read/Write	Real	2nd digit of writable BMS password. Default value is 2.
AnalogValue	3	BMSPass3	Read/Write	Real	3rd digit of writable BMS password. Default value is 3.
AnalogValue	4	BMSPass4	Read/Write	Real	4th digit of writable BMS password. Default value is 4.
BinaryValue	5	BMSSecurityEnable	Read/Write	Bool	Enables password protection of touchscreen interface through BMS. 0 = DISABLE; 1 = ENABLE
BinaryInput	X	Fan [X] .Enabled	Read Only	Bool	Fan at Modbus address [X] found in system
BinaryValue	X01	BMSFanOffOn [X]	Read/Write	Bool	BMS Off/On command for fan at Modbus address [X]
BinaryValue	X02	Fan [X] .Override	Read/Write	Bool	Fan at Modbus address [X] override command
BinaryInput	X03	FanCommand.OverrideStatus [X]	Read Only	Bool	Local override for fan at Modbus address [X] enabled
AnalogValue	X04	BN_LightSet [X]	Read/Write	Real	Percentage light for fan at Modbus address [X]
MultiStateInput	X05	MS_ToBACnet.BN_RunCommand [X]	Read Only	UInt	OFF; COOLING; HEATING - Status of fan at Modbus address [X]
AnalogValue	X06	BN_SpeedSet [X]	Read/Write	Real	Fan at Modbus address [X] speed command when BMS security is disabled on instance 5. Min = 0; Max = 10
MultiStateInput	X07	MS_ToBACnet.BN_OpStatus [X]	Read Only	UInt	OK; CRC ERROR; DRIVE FAULT; MOTOR TEMP WARNING; IGBT TEMP WARNING; FIRE INPUT; WIND SHUT DOWN - Hardware status of fan at Modbus address [X]
AnalogInput	X08	MS_ToBACnet.BN_GroupNumber [X]	Read Only	Real	Fan at Modbus address [X] group number
AnalogInput	X09	MS_ToBACnet.BN_ScheduleNumber [X]	Read Only	Real	Fan at Modbus address [X] schedule number
MultiStateInput	X10	MS_ToBACnet.BN_Fault [X]	Read Only	UInt	NO FAULT; MODBUS TIMEOUT; IMPACT DETECTION; MOTOR OVER TEMP; DRIVE OVER TEMP; BUS OVER VOLT; BUS UNDER VOLT; PHASE OVER CURRENT; MCU HIGH TEMP; OVERSPEED - Drive status of fan at Modbus address [X]
BinaryValue	X11	Fan [X] .ForwardReverse	Read/Write	Bool	Forward/Reverse command for fan at Modbus address [X]
AnalogInput	X12	MS_ToBACnet.BN_MotorRPM [X]	Read Only	Real	Fan at Modbus address [X] speed reference
BinaryInput	X13	AI_FanOffline_ X .Trigger	Read Only	Bool	Communication status for fan at Modbus address [X] . 0 = ONLINE; 1 = OFFLINE
AnalogValue	X14	BN_WatchDog [X]	Read/Write	Real	Watchdog for fan at Modbus address [X] . If communication is lost, fan will stop running after programmed number of seconds. 0 = DISABLE; Default = 30; Max = 65535
AnalogValue	X15	BMS_SpeedSet [X]	Read/Write	Real	Fan at Modbus address [X] torque command when BMS security is enabled on instance 5. Refer to Modbus register 2 torque tables for appropriate values. Min = 0; Max = 100

Optional Temp/Humidity Sensor Points

Type	Instance	Variable Name	Read/Write	Data Type	Description
BinaryValue	0	SummerWinterMode	Read/Write	Bool	Summer or winter mode for temp/humidity operation
AnalogInput	1	RoomTemp.Val	Read Only	Real	Temperature in C
AnalogInput	2	RoomRH.Val	Read Only	Real	Percentage RH
AnalogInput	3	CeilingTemp.Val	Read Only	Real	Temperature in C
AnalogInput	4	CeilingRH.Val	Read Only	Real	Percentage RH

EXAMPLE: Below is an example of BACnet addressing for the fan at address 29.

Type	Instance	Variable Name	Read/Write	Data Type	Description
MultiStateInput	2905	MS_ToBACnet.BN_RunCommand[29]	Read Only	UInt	OFF; COOLING; HEATING - Status of fan at Modbus address [29]

Typical BMS Integration Sequence

- Read currentValue of AI0. This is the number of fans found in the system. Does this match the intended number of fans on this controller? If not, troubleshoot network issues.
 - If there are **5** fans, and AI0 = **4**, one fan is turned off or not communicating.
 - If there are **5** fans, and AI0 = **5**, all fans have been seen on the network.
- Look at BI1, BI2, BI3, etc. These are the Modbus addresses of the fans found by the controller.
 - If BI**3** = TRUE, then use **"3"** for "X" when setting up the point list.
 - If BI**10** = TRUE, then use **"10"** for "X" when setting up the point list.
- Use the values from BI1-BI20 to identify the fans on the network. Next, set up a points list for each connected fan. See below for examples.

EXAMPLE: Below are examples of typical point lists for fans at various addresses. Not all options are displayed in these examples, other points may be integrated as well.

Typical point list for fan address **3**:

BI**3**01 BMSFanOffOn[**3**]

AV**3**06 BN_SpeedSet[**3**]

BV**3**11 Fan[**3**].ForwardReverse

AI**3**12 MS_ToBACnet.BN_MotorRPM[**3**]

MSI**3**10 MS_ToBACnet.BN_Fault[**3**]

Typical point list for fan address **10**:

BI**10**01 BMSFanOffOn[**10**]

AV**10**06 BN_SpeedSet[**10**]

BV**10**11 Fan[**10**].ForwardReverse

AI**10**12 MS_ToBACnet.BN_MotorRPM[**10**]

MSI**10**10 MS_ToBACnet.BN_Fault[**10**]

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

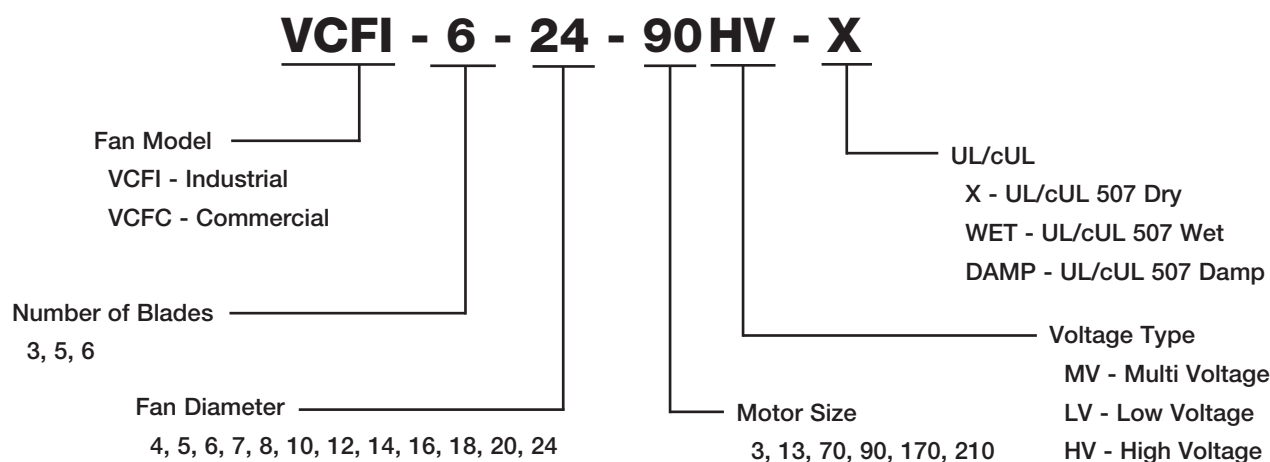
Legacy Models:

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.



Maintenance Log

Date _____ Time _____ AM/PM
Notes: _____

Date _____ Time _____ AM/PM
Notes: _____

Date _____ Time _____ AM/PM
Notes: _____

Date _____ Time _____ AM/PM
Notes: _____

Date _____ Time _____ AM/PM
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Notes: _____

Date _____ Time _____ AM/PM
Notes: _____

Date _____ Time _____ AM/PM
Notes: _____

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. This publication can be obtained from AMCA International, Inc. at www.amca.org.



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