

# Commercial HVLS Fan User's Manual



This manual applies to fans manufactured beginning January 2024 with serial number C61701152.

E506041

## **⚠ WARNING**

*Do not install, operate, or service this product unless you have read and understand the Safety Practices, Warnings, and Installation and Operating Instructions contained in this manual. Failure to do so could result in death or serious injury.*

## **User's Manual Installation, Operations Maintenance and Parts**

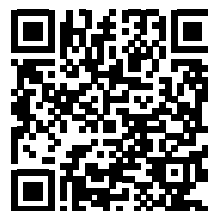
Part No. 6023693D

## LIMITED PRODUCT WARRANTY

Warranty information for the Commercial HVLS Fan can be found by scanning the QR codes or clicking the links below.



Click [here](#) to view the 4Front U.S. and Canada Warranty.



Click [here](#) to view the International Warranty.

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## INTRODUCTION

Welcome and thank you for choosing this Commercial fan from 4Front Engineered Solutions.

This User's Manual contains information you need to safely install, operate, and maintain the fan. It also contains a complete parts list and information about ordering replacement parts. Please read and keep this User's Manual before using your new fan.

For more information, please visit our website at [www.epicfan.com](http://www.epicfan.com)

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## HOW TO USE THIS MANUAL

This section explains the visual clues and conventions that will help you quickly locate the information you need. Other conventions and icons identify interactive elements that will provide additional information when using the online version of this manual.

### BASIC ELEMENTS

- Names of menus, buttons, icons, and fields are highlighted in bold text.
- Text highlighted in blue indicates a link you can click to navigate to another topic.

### INTERACTIVE ONLINE ELEMENTS

These elements are available in the online version of the document.

- The blue TOC icon at the top of every page takes you back to the Table of Contents.

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## SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, CAUTION, or NOTICE in the User's Manual. The use of Safety Signal Words is explained below.



*This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.*

#### **▲ DANGER**

*Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.*



*Indicates an electrical hazard with a medium level of risk that could result in death or serious injury.*

**⚠ CAUTION**

*Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.*

**⚠ WARNING**

*Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

**NOTICE**

*Notice is used to address practices not related to personal injury.*

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## SAFETY PRACTICES

**⚠ WARNING**

*READ THESE SAFETY PRACTICES BEFORE INSTALLING, OPERATING, OR SERVICING THE FAN. Failure to follow these safety practices could result in death or serious injury.*

*READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE FAN. If you do not understand the instructions, ask your supervisor for instruction.*

*To reduce the risk of personal injury, do not bend the blade brackets when installing the brackets or cleaning the fan. Do not insert foreign objects in between rotating fan blades.*

**⚠ DANGER**

*To reduce the risk of fire, HVLS fan motor assemblies must be installed with the blade assemblies that are marked on their cartons to indicate the suitability with this model. Other blade assemblies cannot be substituted.*

*Be certain to follow the instructions in this manual.*

**⚠ WARNING**

*Installation of the equipment must comply with local and national electrical codes and must be in accordance with ANSI/NFPA 7-1999.*

*Do not use this commercial fan until you have received proper training. Improper use could result in property damage, bodily injury, and/or death. Read and follow the complete [Operating Instructions — HMI on page 41](#) before use. If you do not understand the instructions, ask your supervisor to explain them to you or call your local distributor.*

*DO NOT USE THE FAN IF IT APPEARS DAMAGED OR DOES NOT OPERATE PROPERLY. Inform your supervisor immediately.*

*Do not operate the fan until all personnel, building structure, and equipment are clear of all moving parts and exclusion zones. Install guards as required.*

*To reduce the risk of electrical shock, do not expose to water or rain.*

*Support directly from the building structure. Do not install the fan unit onto a structure of insufficient strength. Consult a professional engineer or registered architect. Improper installation of the fan could result in death or serious injury.*

**⚠ WARNING**

*Before service, inspection, or cleaning, make certain the power is disconnected and properly locked out.*

*If the fan does not operate properly using the procedures in this manual, BE CERTAIN TO REMOVE POWER FROM THE UNIT AND LOCK-OUT THE DISCONNECT ON THE POWER CIRCUIT. Call your local distributor for service.*

*Keep your body clear of moving parts at all times.*

*All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.*

*If it is necessary to make troubleshooting checks inside the VFD box with the power on, USE EXTREME CAUTION. Do not place fingers or uninsulated tools inside the enclosure. Touching wires or other parts inside the enclosure could result in death or serious injury.*

**⚠ WARNING**

*Variable Frequency Drive (VFD) fan controllers contain high voltage capacitors. Before working on the fan controller, ensure isolation of the main voltage supply and verify voltage has bled off prior to beginning work. Failure to do so may result in death or serious injury.*

*If you have problems or questions, contact your local distributor for assistance.*

**⚠ WARNING**

*To reduce the risk of injury to persons, install the fan so that the blades are at least 3.05m (10') above the floor.*

**⚠ CAUTION**

*Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards.*

**⚠ CAUTION**

*When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.*

**⚠ CAUTION**

*Exercise caution and common sense when powering the fan. Do not connect the fan to a damaged or hazardous power source. Do not attempt to resolve electrical malfunctions or failures on your own.*

**⚠ CAUTION**

*When service or replacement of a component in the fan requires the removal or disconnection of a safety device, the safety device is to be reinstalled or remounted as previously installed.*

**⚠ WARNING**

*Risk of fire, electric shock, or injury to persons during cleaning and user-maintenance. Disconnect the fan from the power supply before servicing.*

**⚠ WARNING**

*Stay alert. Watch what you are doing. Use common sense when installing fans. Do not install fans when tired, or under the influence of drugs, alcohol, or medications. A moment of inattention while installing fans may result in serious personal injury.*

**⚠ CAUTION**

*The installation of this fan requires the use of some power tools. Follow the safety procedures found in the owner's manual for each of these tools and do not use them for purposes other than intended by the manufacturer.*

## OWNER'S RESPONSIBILITIES

The owner's responsibilities include the following:

The owner should recognize the inherent danger of the interface between the commercial fan and shop worker. The owner should, therefore, train and instruct operators in the safe use of the commercial fan.

Nameplates, cautions, instructions, and posted warnings shall not be obscured from the view of operating or maintenance personnel for whom such warnings are intended. Warnings which are worn or non-legible should be replaced.

Manufacturer's recommended periodic maintenance and inspection procedures in effect at the date of shipment shall be followed and written records of the performance of these procedures should be kept.

Commercial fans that are structurally damaged or have experienced impacts from external sources shall be removed from service, inspected by the manufacturer's authorized representative and repaired as needed before being placed back into service.

The owner shall see that all nameplates and maintenance manuals are provided to users.

Modifications or alterations of commercial fans shall be made only with written permission of the original manufacturer.

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## NATIONAL FIRE PROTECTION ASSOCIATION STANDARD

In accordance with NFPA 13 Standard from the National Fire Prevention Association as referenced in sections 12.1.4 and 11.1.7: High Volume Low Speed (HVLS) Fans: The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:

- The maximum fan diameter shall be 24 feet (7.3m).
- The fan shall be approximately centered between four adjacent sprinklers.
- The vertical clearance from the fan to the sprinkler deflector shall be a minimum of 3 feet (0.9m).
- All fans shall be interlocked to shut down immediately upon receiving a water flow signal from the alarm system in accordance with the requirements of NFPA 72-National Fire Alarm and Signaling Code.

## FAN KIT

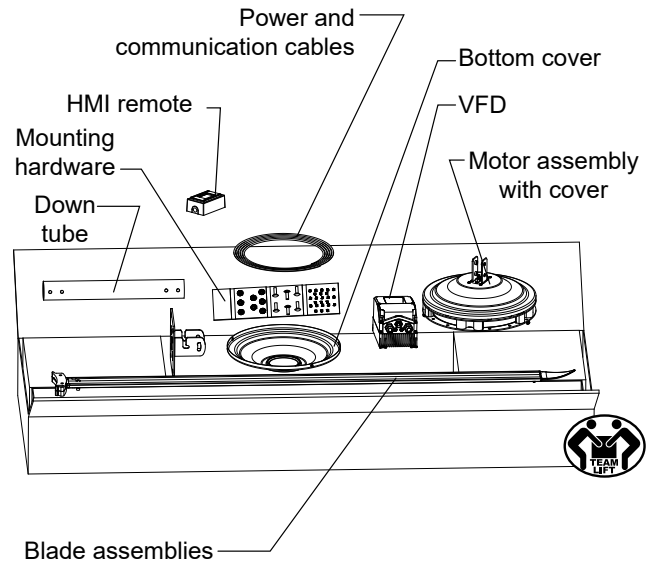
### FAN BOX

- Blade Box - 5 blades each
- Motor assembly with covers
- HMI remote control (optional)
- Variable Frequency Drive (VFD)
- Mounting hardware
- Motor Power Cable
- Down Tube
- Communication cable (single fan control only)

### REQUIRED TOOLS

- Wrenches: 9/16
- Sockets: 1/2, 9/16
- Spirit level, short
- Torque wrench: 15-60 ft-lbs (for use with sockets)
- Tape measure
- T-15 Torx (included)
- T-40 Torx (included)
- Gloves

Figure 1



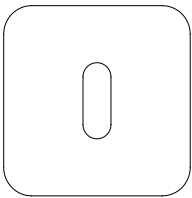
## PRIOR TO FAN INSTALLATION

1. Ensure the blade length matches the fan model size by consulting the fan model designation located on the fan box.
  2. Ensure all mounting hardware is present.  
See [Hardware on page 13](#).
- 

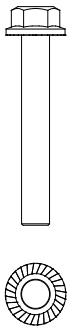
## FOR OPTIONAL NETWORK (IFAN OR MULTI-FAN) FANS ONLY

Ensure the Fan Network Address number matches the network layout drawing where applicable. Consult the Part Number label on the side of the VFD.

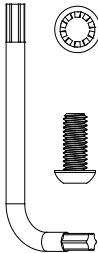
HARDWARE



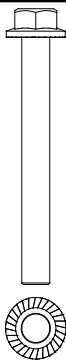
**Fan mount**  
6017852 (x4)  
Clamp plate



**Fan mount bolt**  
6017873 (x4)  
3/8-16UNC x 2-1/2" hex bolt  
grade 5  
serrated head  
  
6015118 (x4)  
3/8-16UNC hex nut  
grade 5  
serrated head



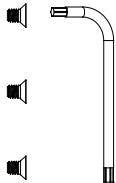
**Motor mount hardware**  
6017838 (x4)  
5/16" lock washer  
  
6017835(x4)  
5/16-18UNC x 3/4" Torx screw  
grade 5  
  
6017872 (x1)  
T40 Torx wrench



**Down tube mount bolt**  
6017748 (x2)  
3/8-16UNC x 3-1/4" hex bolt  
grade 5  
serrated head  
  
6015118 (x2)  
3/8-16UNC hex nut  
grade 5  
serrated head



**Blade mounting bolt**  
6017837 (x10)  
5/16-18UNC x 1-3/4" hex bolt  
grade 5  
serrated head



**Bottom cover hardware**  
6017870 (x3)  
8-32UNC x 1/4" Torx screw  
  
6017871 (x1)  
T15 Torx wrench

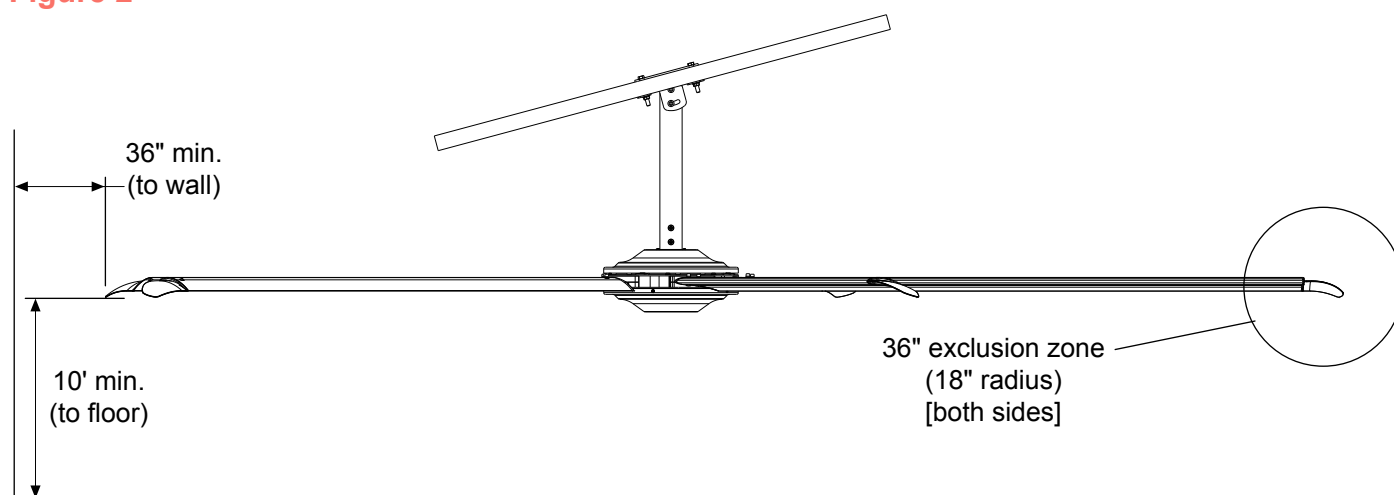
## INSTALLATION CONSIDERATIONS

### ⚠ WARNING

*Do not mount the fan directly under or within the exclusion zone or in line with the HVAC supply discharge vent. Do not mount directly under the air register.*

*Do not have air ducts in line with or above the fan blowing toward the fan. HVAC registers blowing toward the fan must be at least 1 diameter away from the end of the blade.*

**Figure 2**



### NOTICE

*The angle mount has 45° of motion. The extension lengths shown are minimum recommendations only, based solely off roof pitch and fan diameter. Other considerations such as placement of lights, sprinkler systems, HVAC systems, etc. must be evaluated when determining extension requirements. In addition, the fan blades must be a minimum of 10 ft. above the floor. All fans must still maintain 3' between blades and typical obstructions.*

## ROOF SLOPE

COMMERCIAL FAN					
Roof Slope	0	2/12	3/12	4/12	Hanging Weight Weight (lbs)
Roof Angle/Degrease	0	9.5°	14.0°	18.4°	
Fan Diameter	Extension requirement from mounting point (FT)				
6 FT/1.8 M	0 FT/0 M	1 FT/.31M	1 FT/.31M	1 FT/.31M	50
8 FT/2.4 M	0 FT/0 M	1 FT/.31M	1 FT/.31M	2 FT/.61M	54
10 FT/ 3.0M	0 FT/01M	1 FT/.31M	2 FT/.61M	2 FT/.61M	58
12 FT/3.7M	0 FT/0 M	1 FT/.31M	2 FT/.61 M	2 FT/.61M	63
14 FT/4.3 M	0 FT/0 M	2 FT/.61 M	2 FT/.61M	3 FT/.91M	68

\*Non-standard obstructions may require additional length to the extensions. Please consult the factory for additional clarification on non-standard obstructions.

## PLACEMENT AND SPACING

Consult your local distributor to help you plan the most efficient installation of your fans.

Ensure fan placement is such that the fan's blades are a minimum of 10 ft. from any manned working surface such as a floor or mezzanine.

Ensure the fan blade does not extend into the exclusion zone. Extensions are available if required. See **Figure 2**.

Avoid mounting blades directly under lights or skylights to avoid a visual strobing affect.

### NOTICE

*If the fan is part of a networked system, ensure fan placement is in accordance with the building layout.*

### NOTICE

*Be certain to comply with all local and national codes during installation.*

### ⚠ WARNING

*For fans subjected to high cross winds from open bay doors or air conditioning diffuser ducts, the fan must be at least one fan diameter (as measured from the end of the winglet) from open bays or A/C ducts mounted at or above the blade plane.*

*In addition, all outdoor mounted fans must be at least one fan diameter from any obstructions and must be protected from the elements. Consult your local distributor for outdoor patio applications.*

### ⚠ DANGER

*Do not mount fans to flat ceilings.*

### NOTICE

*Fans with long extensions may oscillate at high speeds. Any extensions 3 feet or longer require the installation of guy wires.*

## SUGGESTED FAN MOUNTING TYPES

### NOTICE

If the building support beam is not level, ensure proper fan clearance using the mounting information shown in [Installation Considerations on page 14](#) or add mounting extensions as required to ensure clearance. See [Figure 2](#).

### I-BEAM MOUNTING

1. Position the fan centered square to the bottom flange of the I-Beam.
2. Secure the clamp plates (6017852) using the provided 3/8-16 UNC hex serrated flange nuts and 3/8-16 UNC x 2 1/2" long bolts. See [Figure 4](#).

### NOTICE

Ensure the clamp plates overlap the I-Beam flange by at least 30%..

3. Torque to 20-28 ft-lbs.

### SOLID BEAM MOUNTING

1. Locate the beam bracket (6018175). See [Figure 6](#).
2. Ensure the bottom flange of the bracket is below the bottom of the beam.
3. Square the bottom flange to the beam.
4. Shim as required. The vertical flange of the beam bracket must be square with respect to the floor.

Figure 3

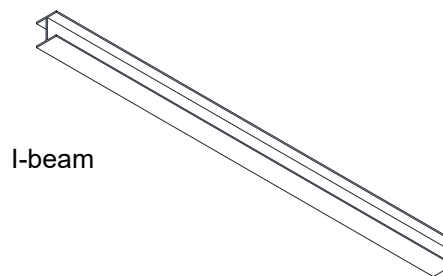


Figure 4

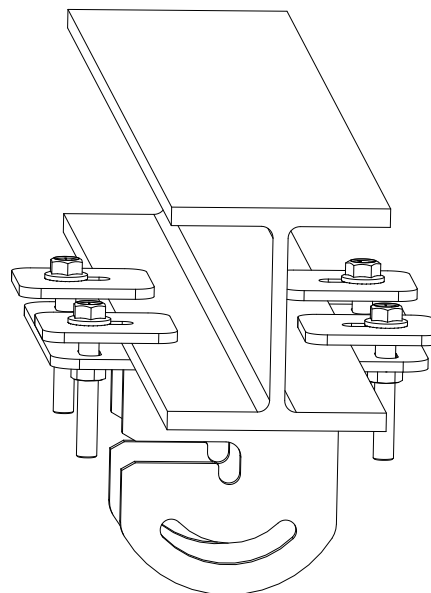
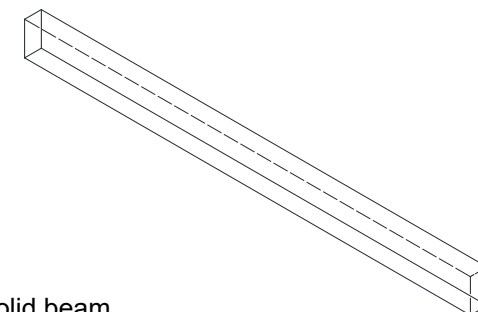


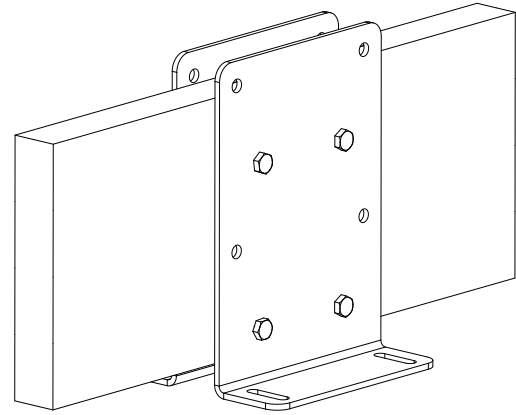
Figure 5



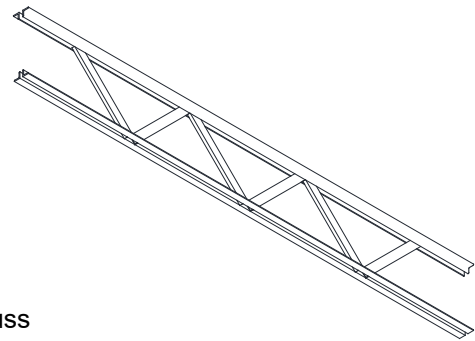
- Using the holes in the beam bracket as a template, mark and drill at least four (4) 9/16" diameter holes through the beam. Space the holes as widely as practical. See **Figure 6**.
- Align the beam brackets to the holes and fasten them into place using the 3/8" diameter grade 5 bolts (not provided).
- Torque to 20-28ft-lbs.

Locking hardware (nuts and washers) are required.

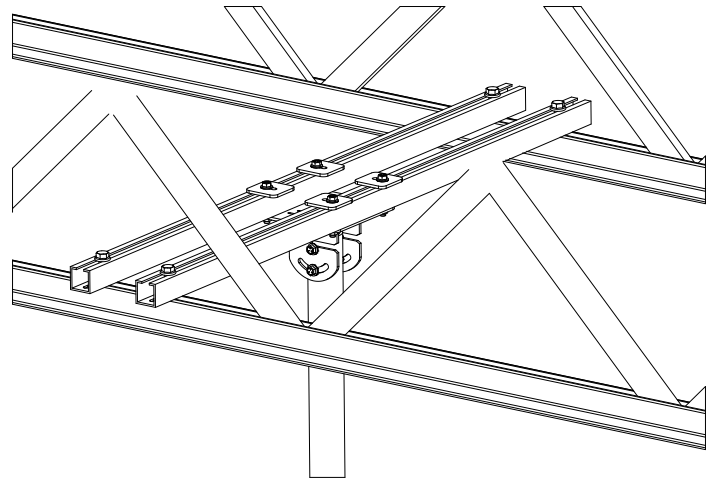
**Figure 6**



**Figure 7**



**Figure 8**



## TRUSS MOUNT INSTALLATION WITHOUT 4FRONT KIT

The recommended additional structural material for truss mounting is 1-5/8" x 1-5/8" 12 gauge strut channel beams and hardware. Other structural material may be used, but consult the factory prior to substituting other beams and hardware.

- Size the strut channel beams to ensure at least 3" of overlap at each end on the adjoining truss members.  
Do not span more than 6 feet.
- Place the mount bracket at the desired location, preferably the center, on the strut channel beams.
- Fasten the mount bracket using the provided 3/8" diameter grade 5 hardware (6017873 and 6015118).

### NOTICE

*Use 6017852 clamp plates as required.*

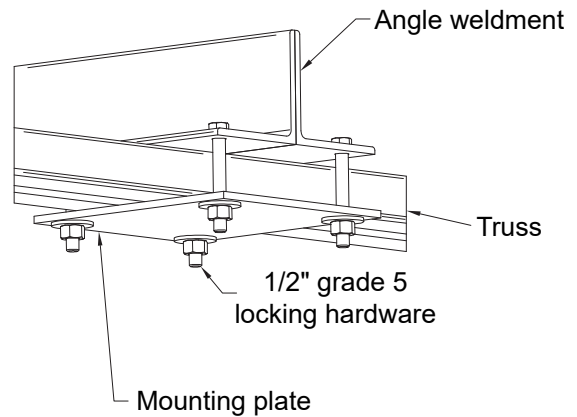
- Torque to 20-28 ft-lbs.
- Locate the beam/mount assembly on the building truss system. Top mounting is preferred. See **Figure 8**.

6. Fasten the strut channel beams to the building truss system using 3/8" diameter, grade 5 hardware. (Not provided.)

**DO NOT** use spring-loaded strut channel beam hardware.

Locking hardware (nuts and washers) are required.

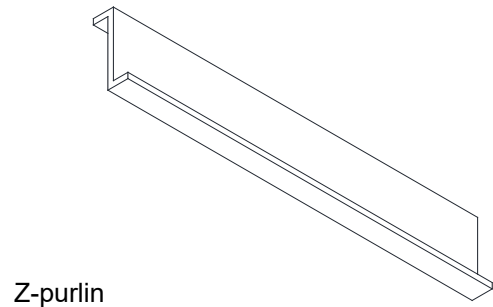
**Figure 9**



### TRUSS MOUNT WITH 4FRONT KIT

1. Install the angle weldment and mounting plates using the supplied 1/2" grade 5 locking hardware. See **Figure 9**.
2. Torque to 44-48 ft-lbs.
3. Locate the fan mount assembly on the bottom of the angle weldment. Align the mount assembly so that it is centered and square to the angle weldment.

**Figure 10**



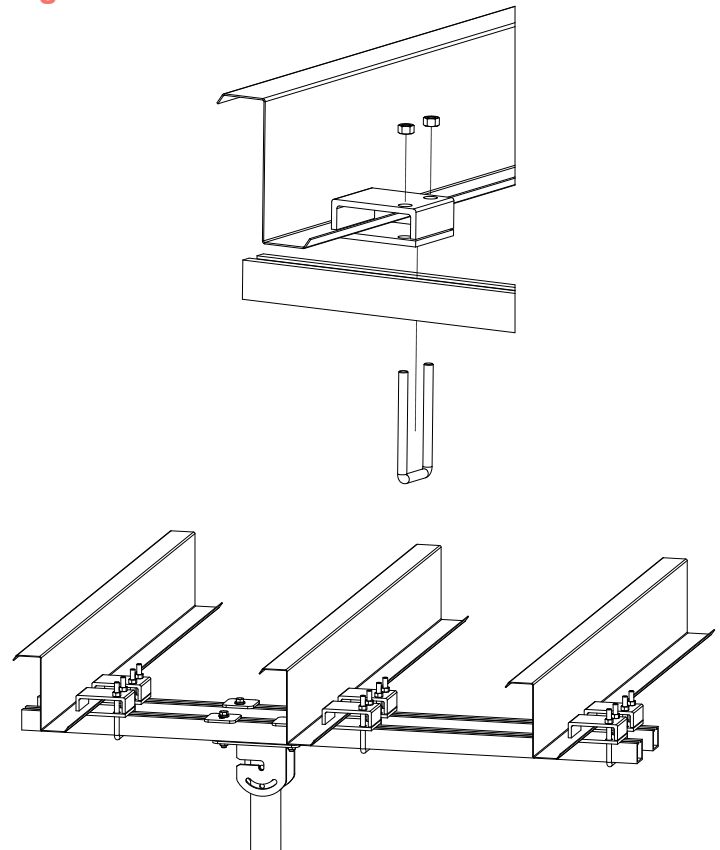
### Z-PURLIN MOUNT INSTALLATION (OPTIONAL KIT 6017954)

When you mount a fan using the Z-Purlin (see **Figure 10**) optional kit, you must use the Unistrut® purlin clamp Part P2784.

The strut must span a minimum of three purlins.

Consult a structural engineer prior to installing the fan.

**Figure 11**



1. Attach two clamps on each purlin and loosely secure the strut channel to the clamps with the u-bolts. See **Figure 11**.
2. Mount the bracket at the desired location. The preferred location is near the center purlin.
3. Fasten the bracket using the provided 3/8" diameter grade 5 hardware (6017873 and 6015118).
4. Use clamp plates (6017852) as required.
5. Torque to 20-28ft-lbs. See **Figure 11**.

### *Suggested Fan Mounting Types*

6. Check the strut channels to ensure they are parallel with each other and perpendicular to the purlins.
7. Tighten the u-bolts.
8. Torque to 20-28 ft-lbs.

Diagram illustrating the components of a ceiling fan assembly, including:

- Controller box (VFD)
- Fan mount
- Down tube
- Guy wires (if required see )
- Motor power cable
- Motor assembly
- Bottom cover
- Blade assembly
- HMI remote

# INSTALLATION

## DOWN TUBE ASSEMBLY

1. Route the motor power cable through the down tube.
2. With the tube located next to the motor assembly, install the cable connection to the top of the motor assembly. See **Figure 13**.

Use the support materials contained in the shipping package to support the motor assembly and prevent damage.

### NOTICE

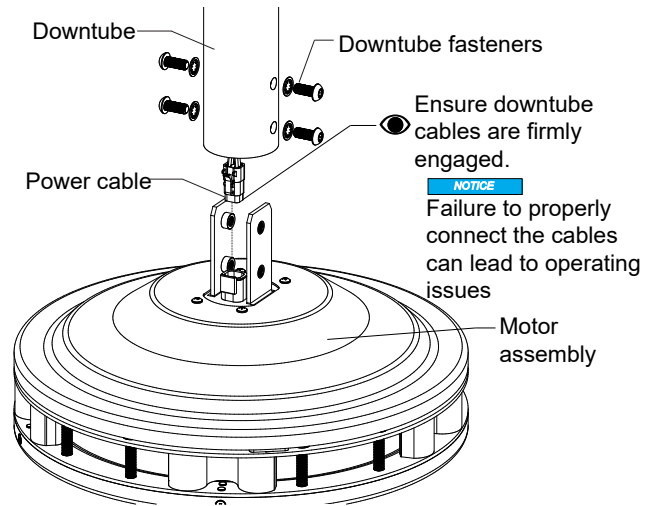
*Ensure proper connection of the motor power cable. Failure to properly connect the cables can lead to operating issues.*

3. Slide the down tube over the motor assembly mount bracket ensuring the cable is not pinched or in a bind.
4. Align the down tube so the holes in the down tube align with the holes in the motor assembly mount bracket.
5. Attach the down tube to the motor assembly mount bracket using the 5/16" diameter Torx screws (6017835) and washers (6017838) supplied.
6. Tighten the Torx screws using the Torx wrench (6017872) provided.

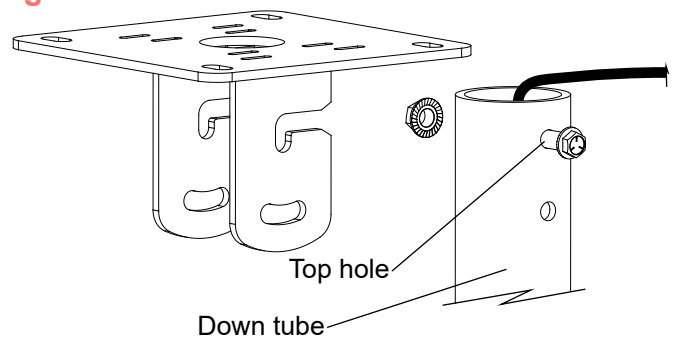
## HANG THE MOTOR

1. In the top hole of the down tube, install the 3/8" diameter bolt (6017748) and nut (6015118) loosely. See **Figure 14**.
2. Check to make sure the screw does not pinch or bind the motor power cable.

**Figure 13**

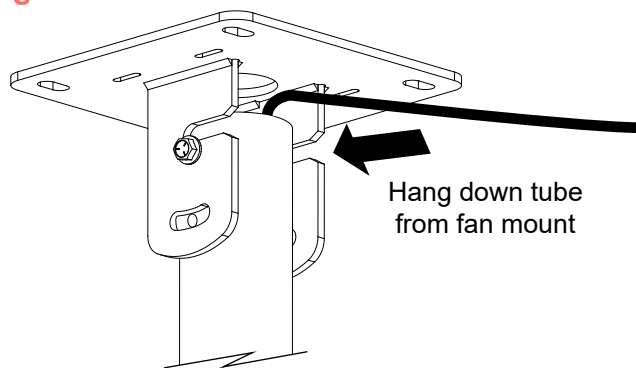


**Figure 14**

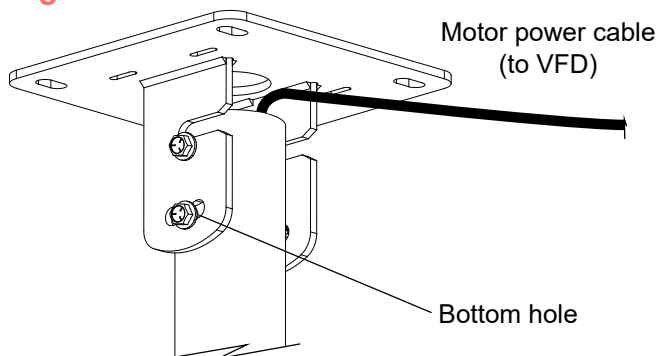


3. Using the bolt you just installed, hang the motor and the down tube assembly on the fan mount. See **Figure 15**.
4. Check to make sure the motor power cable is free of binding or pinching. See **Figure 16**.
5. Loosely install the 3/8" diameter bolt and nut (6017748) in the bottom hole at the top of the down tube.
6. Check to make sure the bolt does not pinch or bind the motor power cable. See **Figure 17**.
7. Use a spirit level to make sure the down tube is plumb.
8. Tighten the 3/8" diameter x 3-1/4" bolts to 20-28 ft-lbs.

**Figure 15**



**Figure 16**



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### OPTIONAL GUY WIRE KIT (6016307)

Guy wires are required on all fan installations where the down tube is greater than three feet in length.

Guy wires are designed to constrain lateral movement of the fan while it is in operation. This movement may be due to impacts on the fan or winds impinging on the blades causing the fan to sway.

**NOTICE**

*Failure to attach guy wires may result in loss of warranty.*

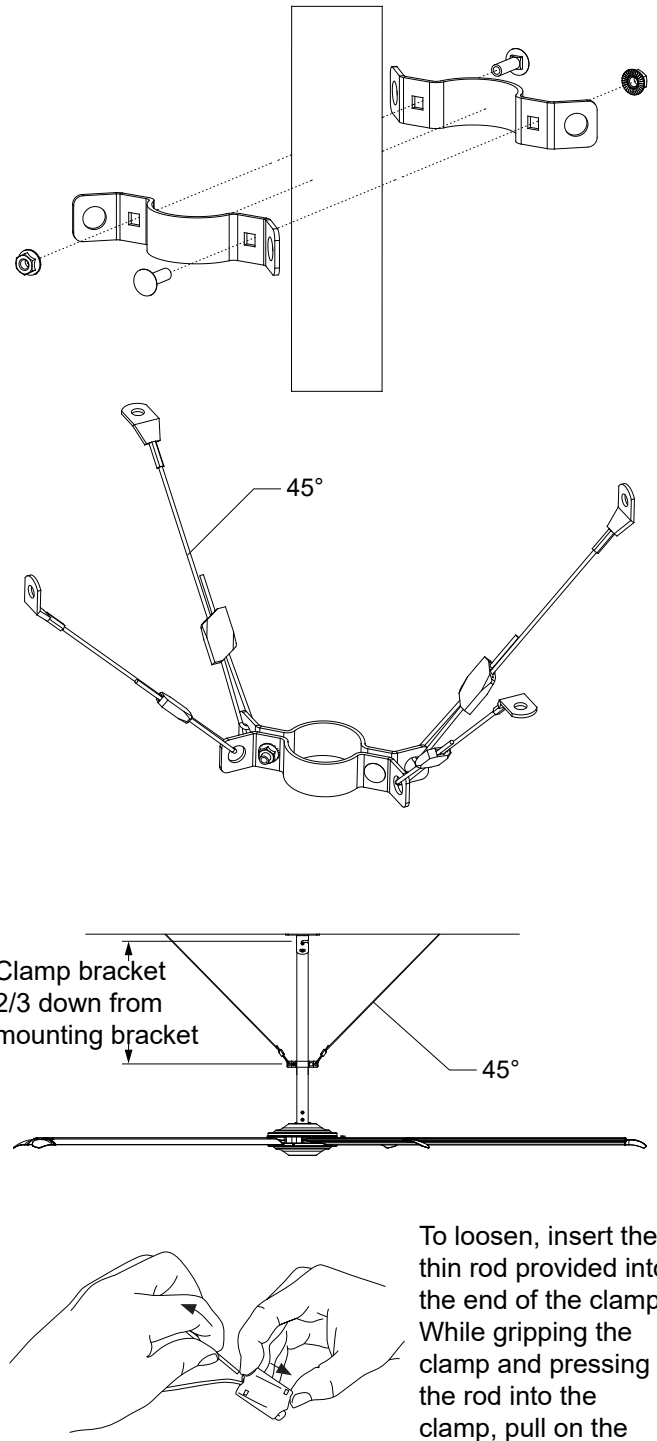
**⚠ WARNING**

Ensure the proper guy wire length is accompanying the extension used. Ensure the angle formed by the guy wire with the roof structure is 45 degrees or less. See **Figure 17**.

Avoid any sharp edges or corners to reduce fatiguing and fraying of the guy wires. Failure to attach guy wires may result in severe injury or death.

1. Remove the parts from the package and inventory the contents.
  - Four cables
  - Four Gripple cable clamps
  - Two 5/16-18 x 1" serrated flanged hex hardware
  - Two guy wire clamp brackets
  - One Gripple release tool
2. Locate the down tube clamp with the 5/16" diameter x 1" bolts supplied.
3. Torque the clamp to 12-17 ft-lbs.
4. Attach each cable to the building structure by either:
  - Looping the cable through the cable eyelet and around a beam/truss or other secure building structure. This is the preferred method.
- OR
- Using 3/8" diameter grade 5 fasteners and lock washes (not provided) to secure the guy wires to the structure
5. Tighten fasteners to 20-28 ft-lbs.
6. On each cable assembly, slide one Gripple cable approximately 12 inches on the cable. See **Figure 17**.

**Figure 17**



To loosen, insert the thin rod provided into the end of the clamp. While gripping the clamp and pressing the rod into the clamp, pull on the

## Installation

7. Loop one cable assembly through each lug on the down tube clamp bracket back through the Gripple cable clamp.  
  
Leave the clamp loose.
8. Use a spirit level on the down tube, tighten the cable assemblies by pulling the cable through the Gripple cable clamp as required to achieve a taut cable set while maintaining the down tube plumb.
9. Secure the loose cable ends or trim them.

---

## VARIABLE FREQUENCY DRIVE (VFD) INSTALLATION

### **⚠ DANGER**

*Before doing any electrical work, make certain the power is disconnected and properly tagged out and locked out.*

*All electrical work must be done by a qualified technician and meet all applicable codes.*

**USE EXTREME CAUTION.**

*Touching wires could result in electrical shock, death or serious injury.*

*On a 120V fan, never allow more than 130 volts incoming power to be connected to the controller box.*

*Damage to the fan and serious injury or death may result.*

### **NOTICE**

*Do NOT place the Variable Frequency Drive (VFD) inside another enclosure.*

The VFD should be located outside of the blade arc where possible and oriented so that the connections are accessible.

1. Fasten the VFD to the building structure so the box is secure against movement. The fasteners are not included.
2. Route the motor power cable from the fan mounting location to the VFD.

Check to ensure the cable is routed clear of the fan blades and supported throughout their run.

**NOTICE**

*The maximum length of the cable between the VFD box and motor is 150 linear feet.*

*When extending power cable, you must use Shielded SO cord.*

*Do not run the motor cables in the same conduit as the input voltage.*

*Do not run the motor cables in the same conduit as other motor cables.*

3. Connect the motor power cable from the fan to the VFD. See **Figure 18** and **Electrical Schematics on page 29**.
4. Connect the remote signal cable to the VFD and route it to the touch screen remote location. See **Figure 19**.

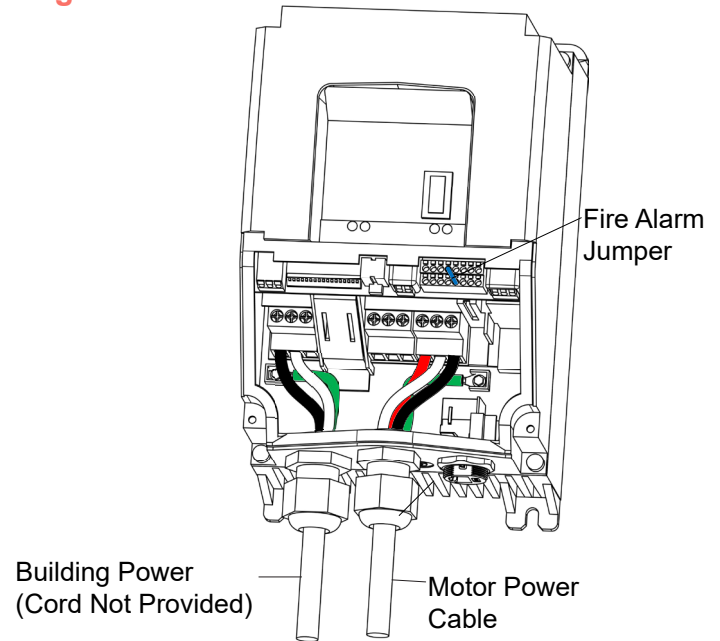
**NOTICE**

*Ensure proper connection of the motor power cable. Do not alter factory-supplied cables. Failure to properly connect the cable can lead to operating issues.*

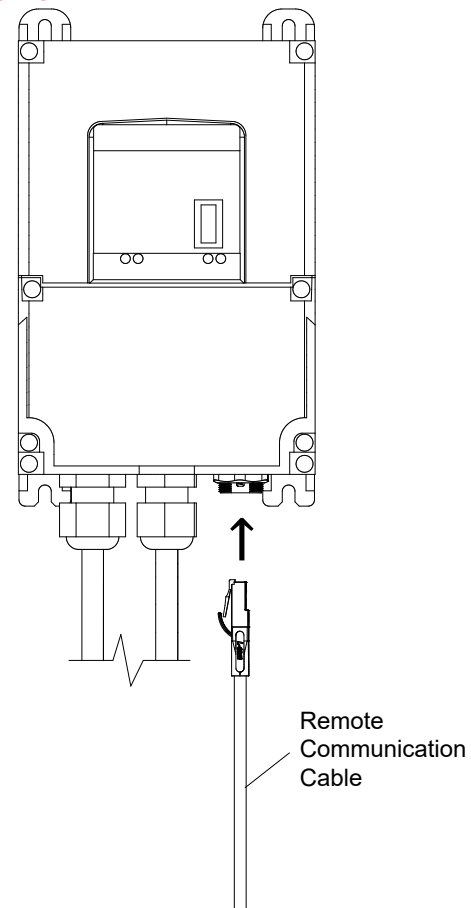
**NOTICE**

*If you are not using the fire alarm option, make sure the fire alarm jumper is in place to ensure proper operation. See **Fire Control System Fan Shutdown (Optional) on page 35**.*

**Figure 18**



**Figure 19**



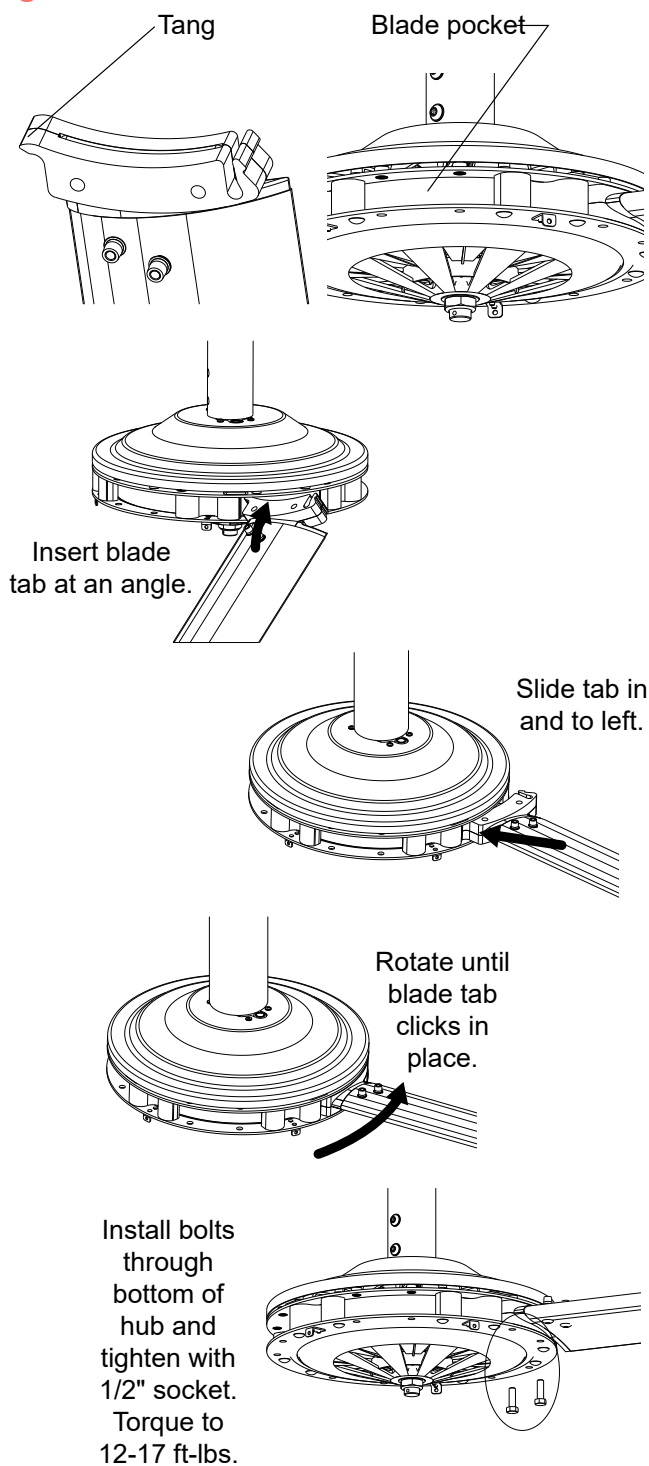
## INSTALL BLADES

1. Position the mounting end of the blade assembly in an open blade pocket on the assembly rim as shown in **Figure 20**.
2. Angle the blade approximately 45° downward and rotated approximately 15° forward. See **Figure 20**.

This angle will position the forward tang of the blade mount between the two steel mount rings on the motor assembly.

3. Rotate the blade backward and upward to allow the mount end of the blade to slide into the blade pocket on the assembly rim.
4. Position the forward tang of the mount in the forward end of the blade pocket.
5. Rotate in the same plane as the hub to seat the blade mount into the blade pocket.
6. Insert two 5/16" x 1-3/4" (6017837) long fasteners from below through the hub mount ring and blade mount.
7. Tighten the fasteners enough to hold the blade in place but do not fully tighten at this time.
8. Repeat steps 1 through 7 for each of the remaining blades.
9. Fully torque the blade mount fasteners to 12-17 ft-lbs.

Figure 20



## INSTALL THE BOTTOM COVER

1. Align the mounting holes on the bottom cover with the mounting holes on the motor assembly.
2. Install the three supplied #8 diameter Torx fasteners (6017870).
3. Firmly tighten the fasteners using the Torx tool (6017871) provided. See **Figure 21**.

## INSTALL HMI REMOTE CONTROL

### NOTICE

*Do not over-torque the mounting screws. If you over-torque the mounting screws, it may cause damage to the screen.*

*It is the installer's responsibility to torque properly.*

1. Mount the touch screen remote to the factory-supplied junction box inside the building as close to the fan assembly as practical.

Direct line of sight is preferred.

The height should be 4.5 feet (53 inches) to the center from the floor. See **Figure 22**.

### NOTICE

*The remote control signal cable (6023484) has terminated ferrules at one end. PROTECT these ferrules during cable routing*

2. Route the remote signal cable (6023484) from the VFD box through the hole in the factory-supplied junction box.
3. Wire the four leads of the remote control signal cable (6023484) to the orange connector of the touch screen remote control.

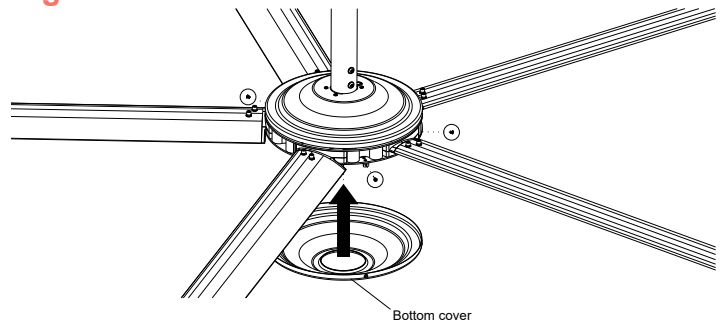
For any excess cable, coil it neatly and secure it near the VFD box.

4. Mount the touch screen to the junction box using the provided fasteners.

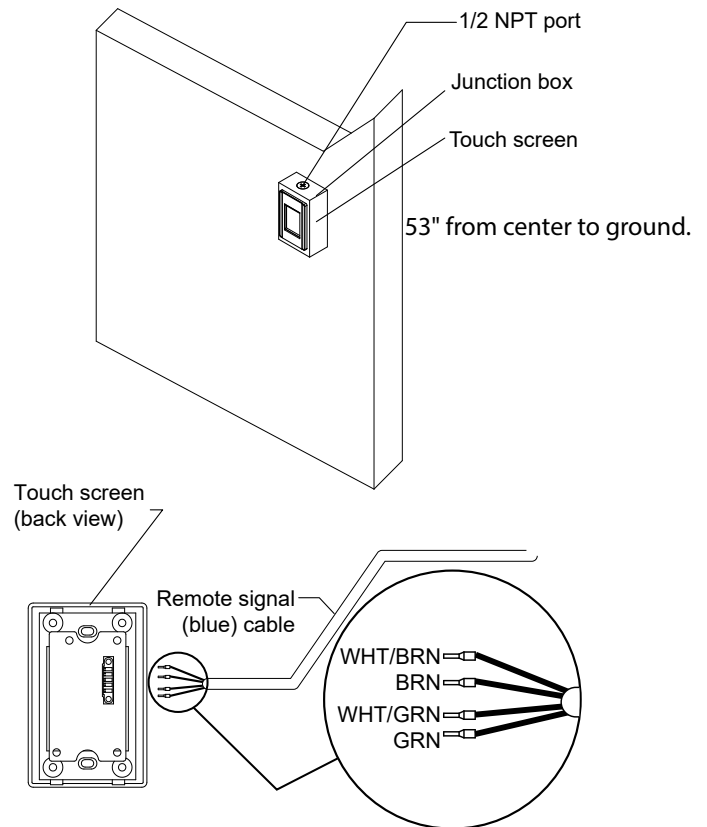
### NOTICE

*For cable runs exceeding 1000 feet, consult the factory.*

**Figure 21**



**Figure 22**



## **VERIFY OPERATION — HMI**

1. Ensure touchscreen lights up and then follow [HMI Setup on page 38](#).
- 

## **TEMPERATURE CONTROL INSTALLATION — OPTIONAL**

1. Mount the temperature control unit to the factory supplied junction box. The junction box is inside the building 60" above the floor.

# ELECTRICAL SCHEMATICS

## ⚠ DANGER

*Before doing any electrical work, make certain the power is disconnected and properly tagged out and locked out.*

*All electrical work must be done by a qualified technician and meet all applicable codes.*

**USE EXTREME CAUTION.**

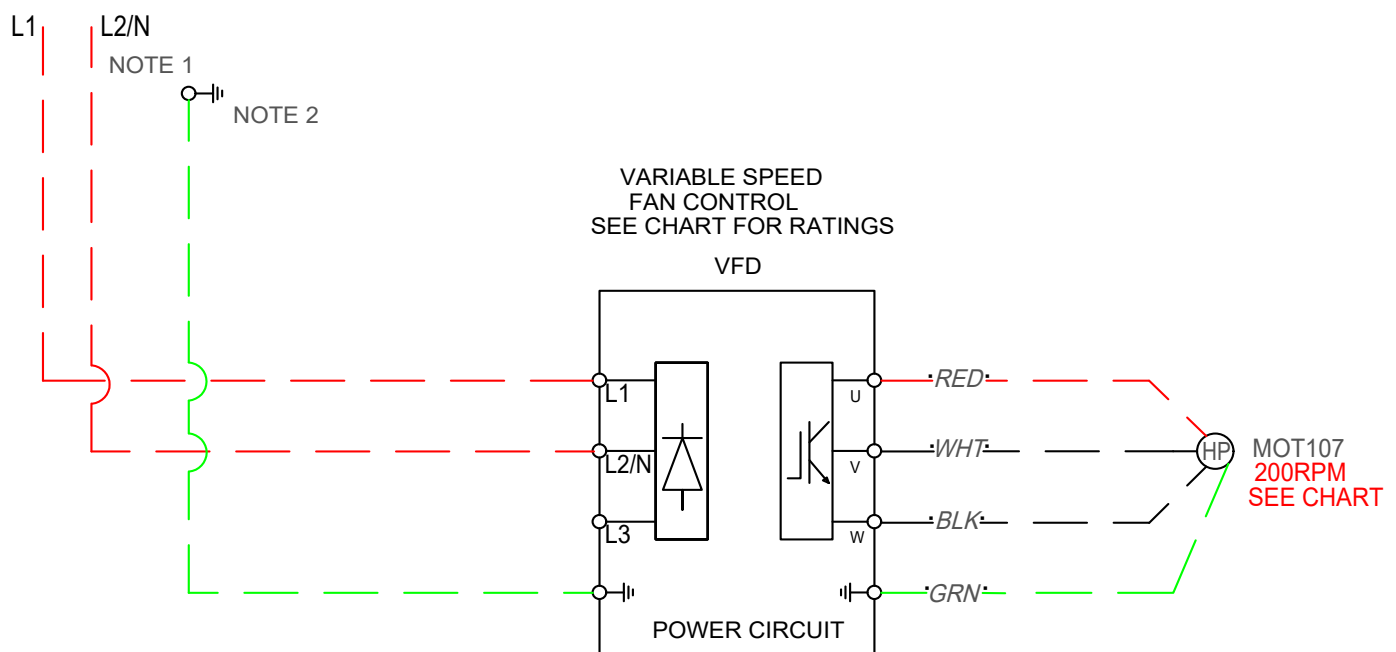
*Touching wires could result in electrical shock, death or serious injury.*

*On a 120V fan, never allow more than 130 volts incoming power to be connected to the controller box.*

*Damage to the fan and serious injury or death may result.*

## 1 PHASE WIRING

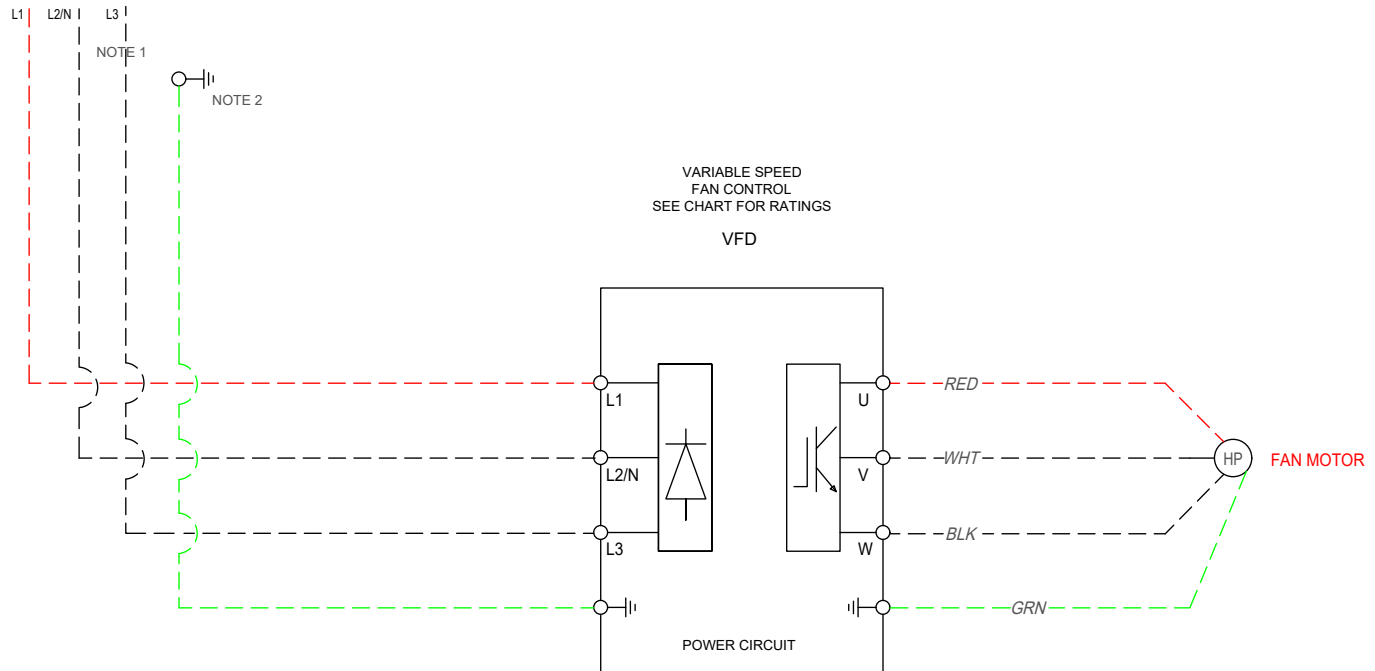
**Figure 23**



## 3 PHASE WIRING

Figure 24

DISCONNECT BY OTHERS  
SUPPLY BCPD = SEE CHART  
PANEL FLA = SEE CHART  
SCCR 5KA

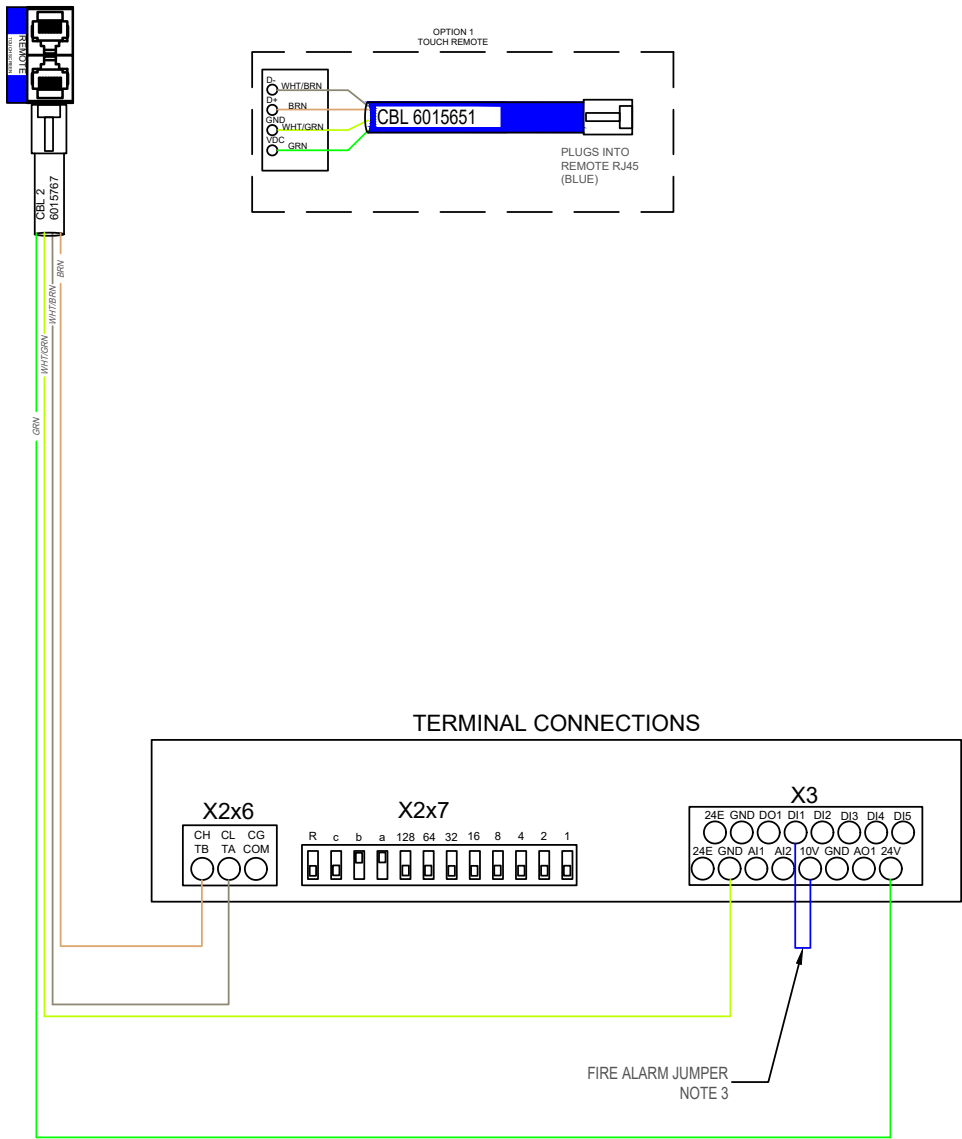


## SIZING CHART

	6023470	6023490
VOLTAGE	120V/1PH/50 60HZ	230V/1PH 3PH/50 60HZ
FLA	7.4A	4.2A 1PH/2.5A 3PH
BCPD	10A	5A
MOTOR	0.75HP, 3.3FLA @ 127V/60HZ	0.75HP, 3.3FLA @ 127V/60HZ
VFD	120V/1PH 1HP/0.75KW/16.8A	230V/1PH 1HP/0.75KW/4.2A
O/L	3.3A	3.3A

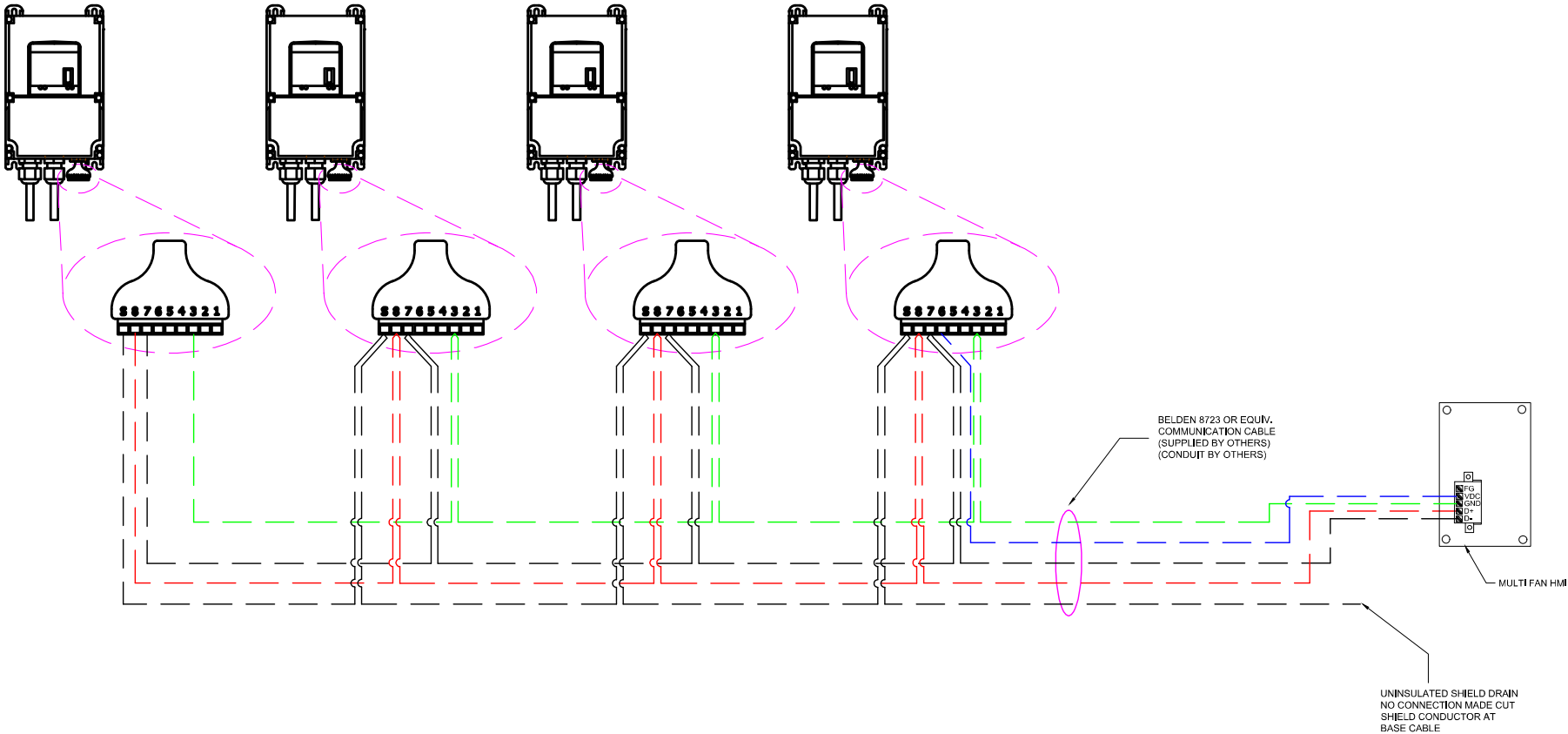
VARIABLE FREQUENCY DRIVE

Figure 25



Multi-Fan Wiring

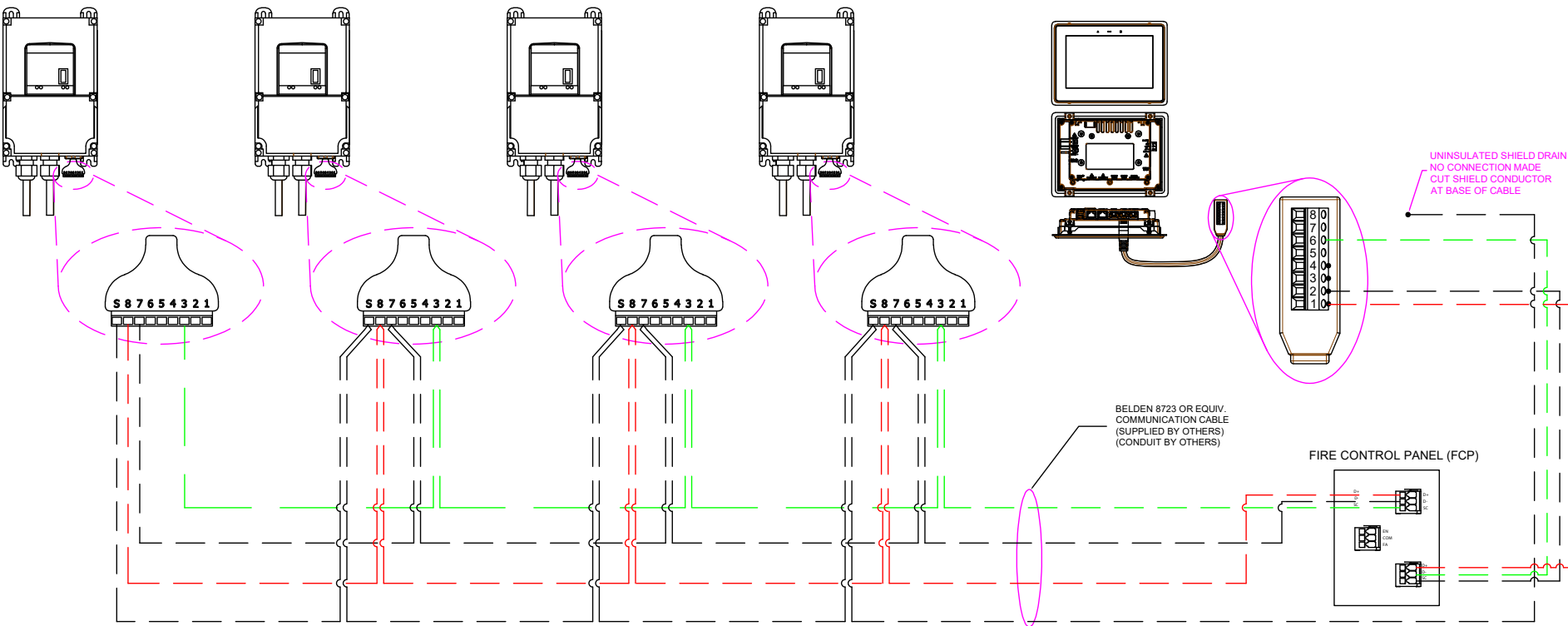
Figure 26



IFAN WIRING

Figure 27

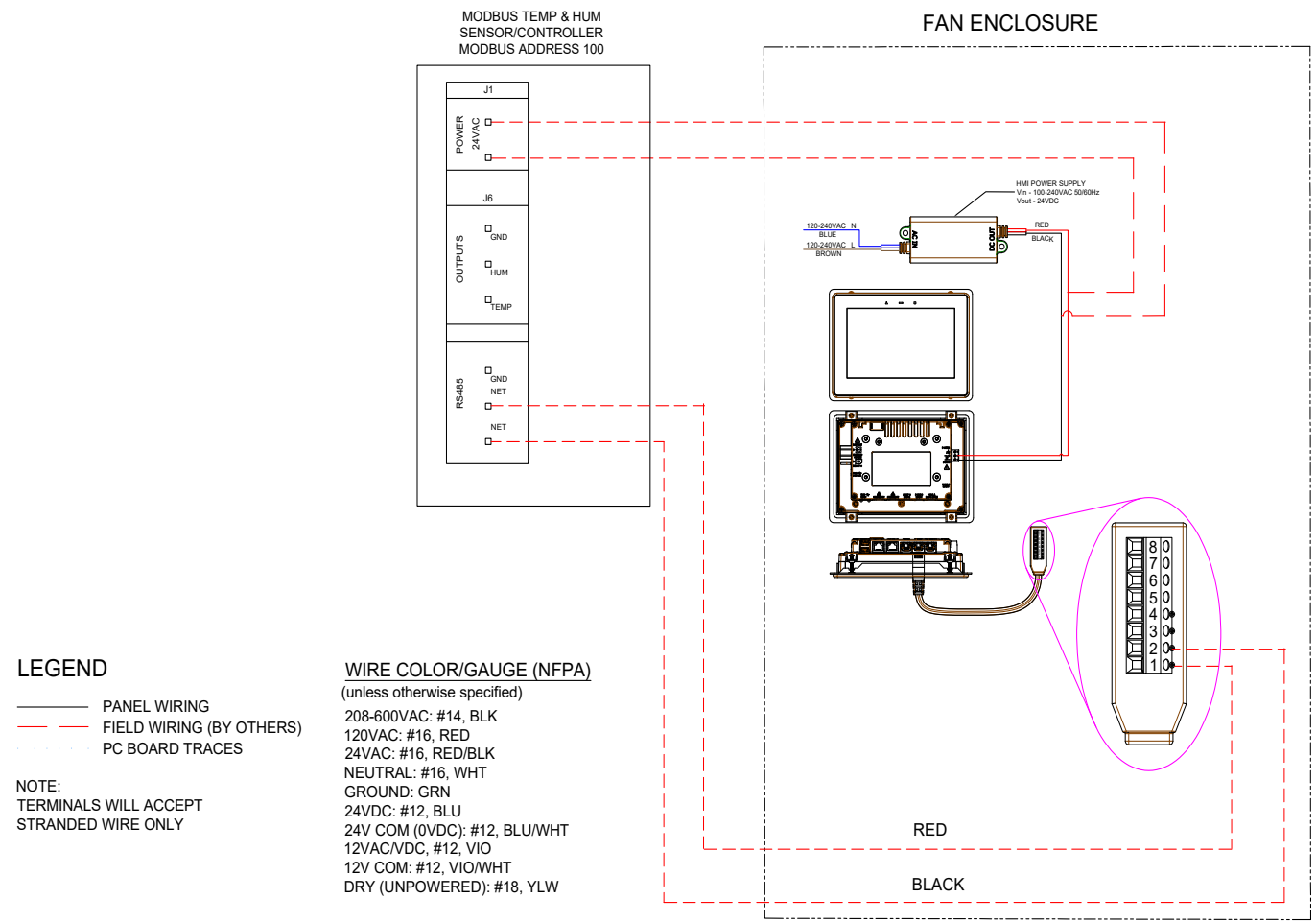
Commercial Fan Field Wiring



OPTIONAL TEMPERATURE FAN WIRING

Figure 28

Commercial Fan Optional Hardware Field Wiring



## FIRE CONTROL SYSTEM FAN SHUTDOWN (OPTIONAL)

This fan includes a fire alarm option. This option allows the fan to be shut down by the fire control system in case of an emergency.

### NOTICE

*Ensure the fire alarm jumper is in place or the building fire control system is connected and the jumper removed.*

### NOTICE

*The normally closed (NC) contacts must be dry contacts. They are open in the event of an active alarm.*

## ENABLE THE FIRE CONTROL SHUTDOWN OPTION

The fire control system fan shutdown option is not enabled when shipped. To enable the shutdown option:

1. Remove the jumper between DI1 and 10V.
2. Replace the jumper with a set of dry, normally closed contacts.

### NOTICE

See [Fire Control System Fan Shutdown Panel — Standard Installation \(6015291\) \(Optional\) on page 36](#) for fire shutoff panel options.

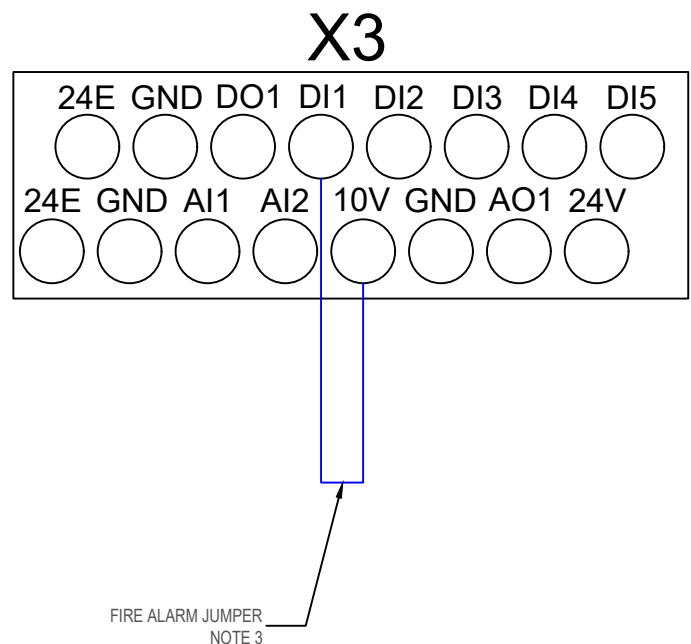
## TEST THE FIRE CONTROL SHUTDOWN OPERATION

To test the fire control system fan shutdown:

1. Remove the wire from the NC contact at the building fire control panel.

The fan should coast to a stop.

Figure 29

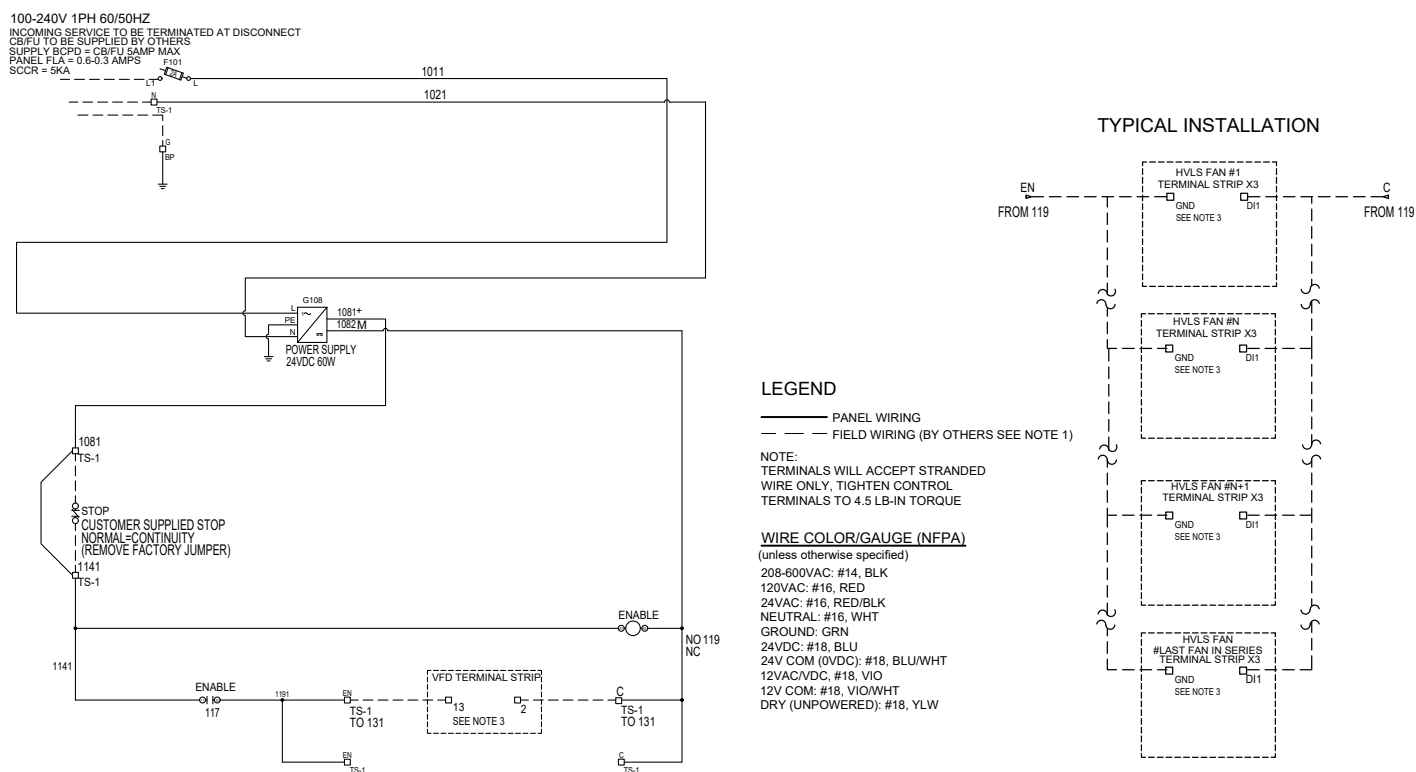


## NOTICE

*If you leave the jumper installed, the fan will not shut down due to the fire control system contacts.*

## FIRE CONTROL SYSTEM FAN SHUTDOWN PANEL — STANDARD INSTALLATION (6015291) (OPTIONAL)

### Figure 30

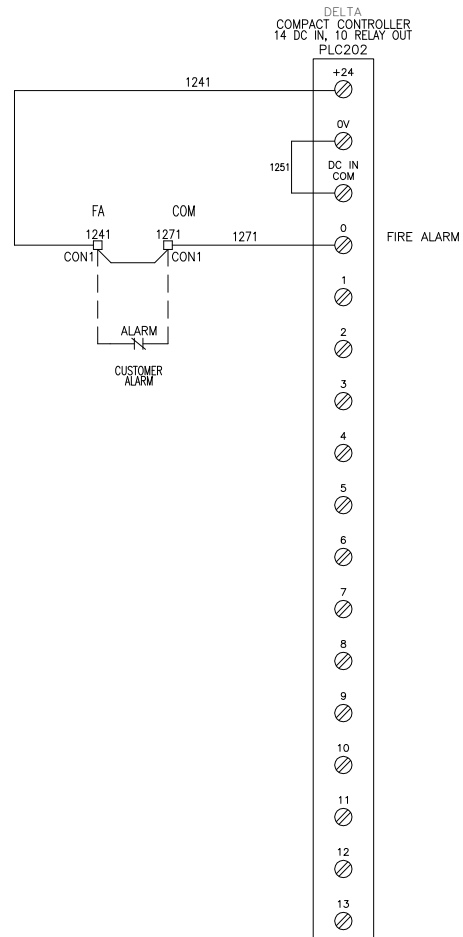
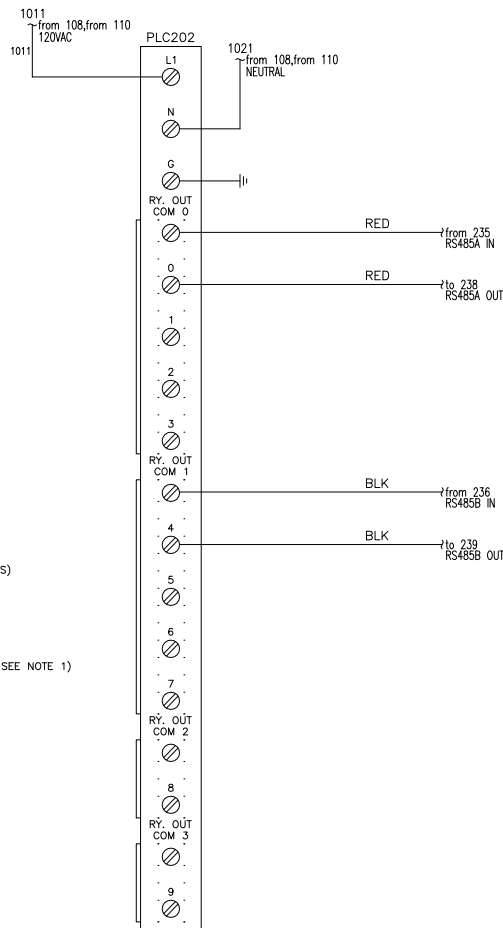
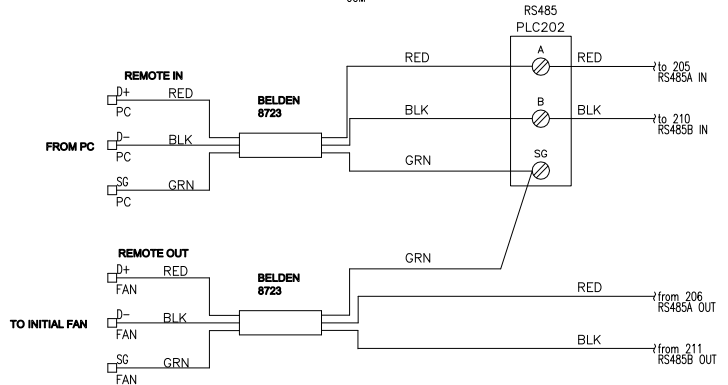
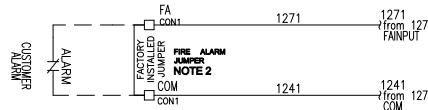
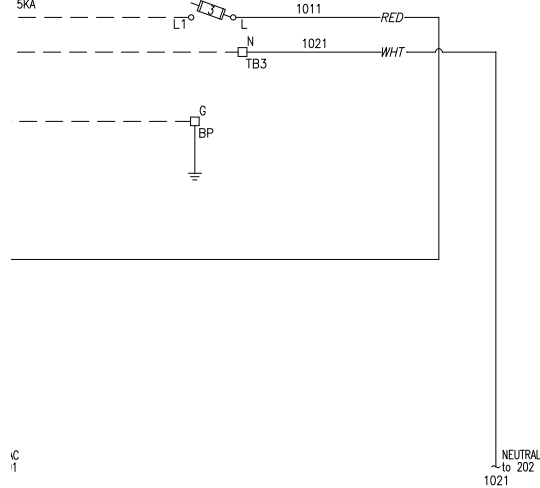


# FIRE CONTROL SYSTEM FAN SHUTDOWN PANEL — NETWORK INSTALLATION (6020547) (OPTIONAL)

**Figure 31**

V/1PH/60HZ

3 SERVICE TO BE TERMINATED AT DISCONNECT  
TO BE SUPPLIED BY OTHERS  
1 BOPD = CB/FU 15AMP MAX  
LA = 1.2 AMPS  
5KA



## LEGEND

— PANEL WIRING  
- - - FIELD WIRING (BY OTHERS)

## LEGEND

— PANEL WIRING  
- - - FIELD WIRING (BY OTHERS SEE NOTE 1)

NOTE:  
TERMINALS WILL ACCEPT STRANDED  
WIRE ONLY

WIRE COLOR/GAUGE (NFWA)  
(unless otherwise specified)

208-600VAC: #14, BLK  
120VAC: #16, RED  
24VAC: #16, RED/BLK  
NEUTRAL: #16, WHT  
GROUND: GRN  
24VDC: #18, BLU  
24V COM (OVDC): #18, BLU/WHT  
12VAC/VDC: #18, VIO  
12V COM: #18, VIO/WHT  
DRY (UNPOWERED): #18, YLW

## HMI SETUP

The Human Machine Interface (HMI) program controls up to a total of six fans. The program also allows the use of the Temperature Control accessory.

The temperature control accessory can only be used with a single fan configuration.

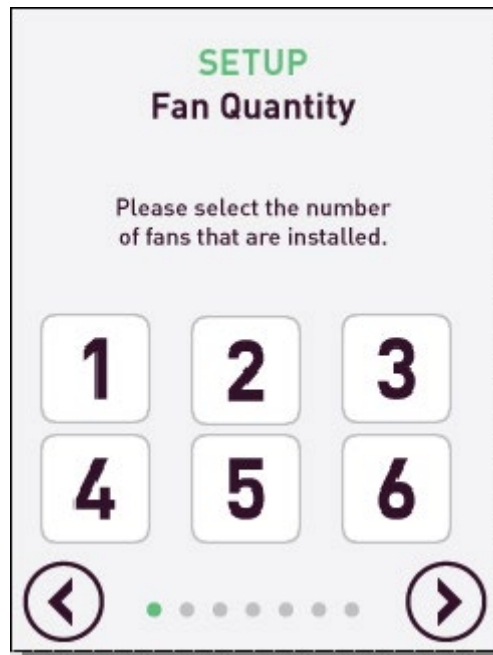
Once you complete the installation, the initial touchscreen control prompts you to configure your fan system. Follow the prompts on the HMI screen to complete these tasks.

### DEFINE THE NUMBER OF FANS

1. Press the number of fans (1-6) the HMI will control. See **Figure 32**.

The number you selected changes to green.

**Figure 32**



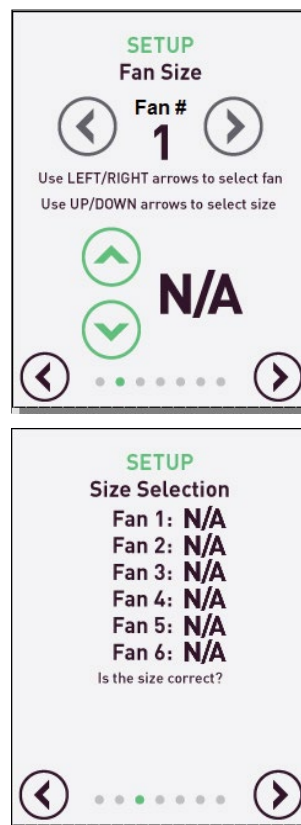
### SET THE DIAMETER OF THE FANS

#### NOTICE

*The fan size is on the side of the fan shipping container.*

1. Press the left or right arrow to select the fan for which you want to set the diameter.
2. Press the up or down arrow to select the diameter for the selected fan. See **Figure 33**.
3. Repeat steps 1 and 2 until you have set the diameter for all fans, and then advance to the next screen.
4. Verify that the sizes displayed are correct. If so, press the right arrow.

**Figure 33**



## ENABLE THE TEMPERATURE CONTROL OPTION (OPTIONAL)

### NOTICE

*The Temperature Control option requires the use of an optional temperature sensor (Std: 6013861 or 4X: 6016700). The 4X option should only be used if the temp sensor part number 6016700 is being used.*

If you chose a single fan for the Fan Quantity on the first screen, the Enable Temperature Control screen displays.

1. Press **Yes** to enable the temperature control; otherwise press **No**. See **Figure 34**.

The option you selected changes to green.

2. Press the right arrow to continue.

If you enabled Temperature Control, the Temperature setup screen displays.

## SET UP TEMPERATURE CONTROLS

1. Press C for Centigrade or F for Fahrenheit.
2. Press Yes if you are using a NEMA 4X temperature sensor; otherwise press No. See **Figure 35**.

## CORRECT ERRORS DURING HMI CONFIGURATION

If you make an error when configuring the HMI program, you can go back to the Setup screen to correct it. To access the Setup screen:

1. Press the menu icon in the bottom left-hand corner of the screen.
2. Press the setup icon.
3. Enter the passcode (default 1111).

The setup screen displays.

Figure 34

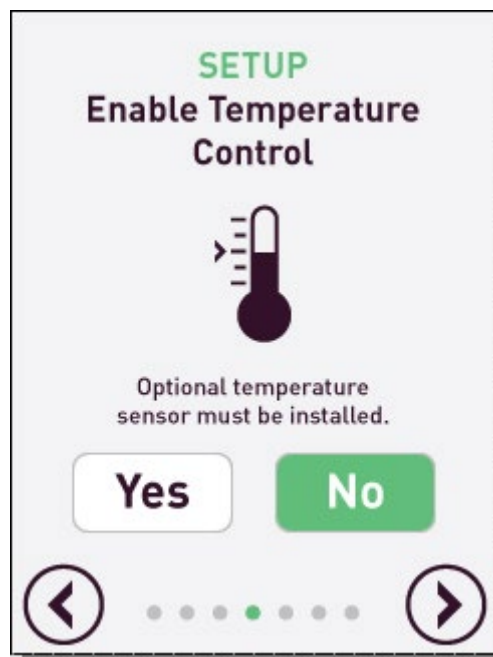
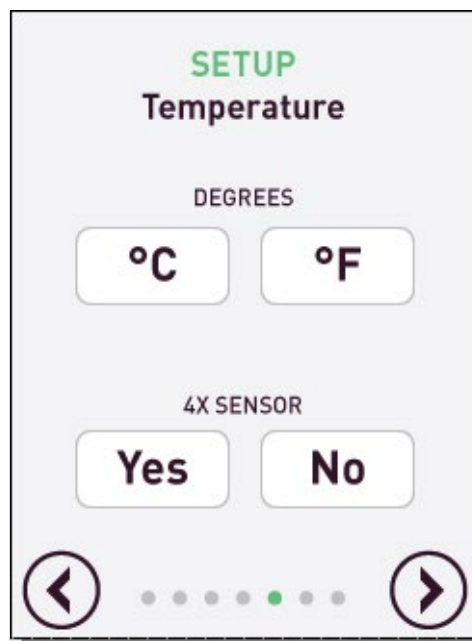


Figure 35



## POST CONFIGURATION TASKS

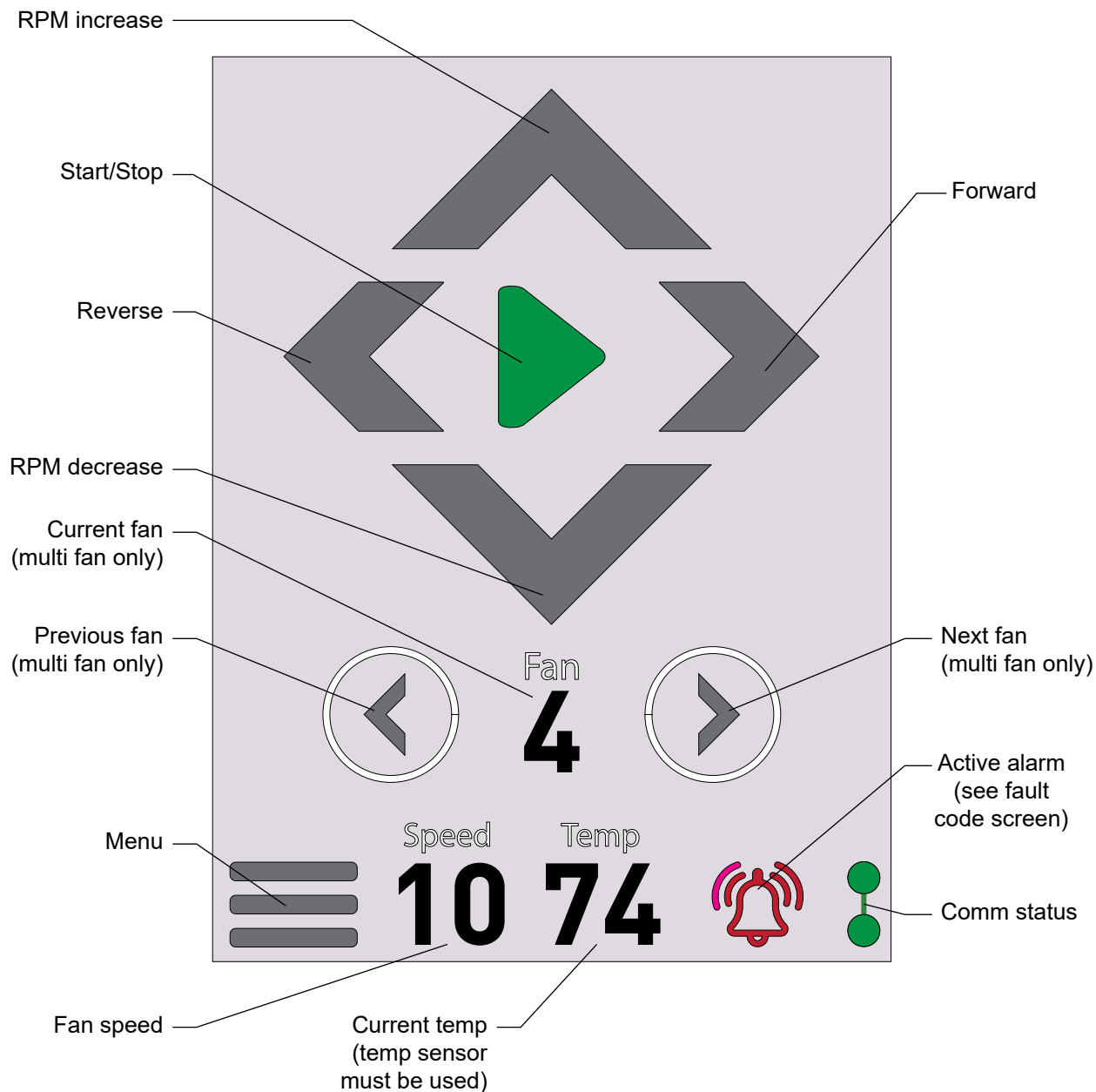
After you configure the HMI program for your location, you should:

1. Operate the fan using the [Operating Instructions — HMI on page 41](#).
2. Check the fan for proper rotation direction, stability, and noise level.
3. Train authorized personnel how to use the fan using the [Operating Instructions — HMI on page 41](#).

# OPERATING INSTRUCTIONS — HMI

## FAN CONTROL SCREEN

Figure 36



**⚠ WARNING**

Before operating the commercial fan, read and follow the [Safety Practices on page 7](#) and the [Operating Instructions — HMI on page 41](#). Use by untrained personnel could result in death or serious injury.

Figure 37

**VERIFY PRIOR TO OPERATION**

- The voltage and phase are correct.
- The clearance from obstructions matches the requirements.
- All safety cables are present and properly installed, if applicable.
- All fasteners are properly torqued.
- No personnel are in the movement area.

**LOGIN SCREEN**

If the passcode has been enabled, you must login before operating the fan.

The default password is 1111.

**NORMAL FAN OPERATION**

1. Verify the communication status symbol in the bottom right-hand corner is green.  
If it is not, communication is not working properly.
2. Press the **Start** button, and then select the beginning fan rotation direction. See [Figure 37](#).
3. Set the desired speed by pressing either **RPM increase** or **RPM decrease** until your desired speed displays.

Maximum speed is 10.

Minimum speed is 1.



## CHANGE THE FAN ROTATION DIRECTION

It is not necessary to stop the fan before changing its rotation.

- Select **Forward** or **Reverse**.

## DIAGNOSTIC SCREEN

The Diagnostic screen shows the following information. See **Figure 38**.

### SERVICE PROVIDER INFORMATION

Contact the provider shown on the Corporate Address page for all fan service issues.

### FAN INFORMATION

Fan information is on the Diagnostic screen.

- VFD serial number
- Motor speed RPM
- Motor current (x10)
- Fan alarm, if an alarm is present
- Fire alarm, if an alarm is present

### BUTTON INFORMATION

The Fault Code button displays the Active Alarm screen.

The Temp button displays the Temperature Settings screen.

The Passcode button displays the Passcode screen.

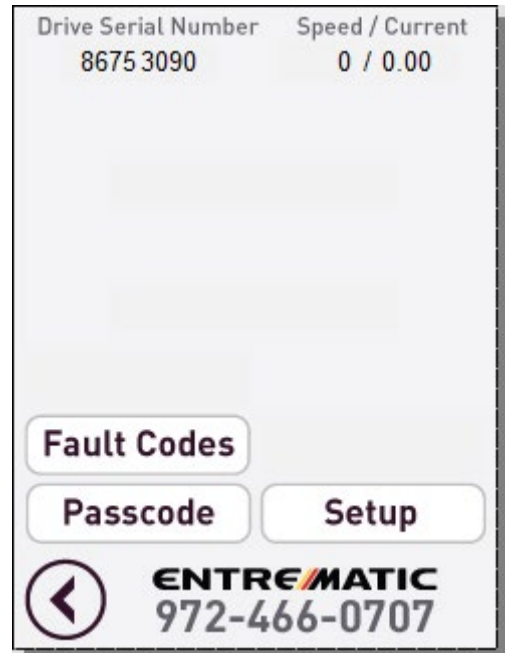
The Setup button displays the Setup screen.

### FAULT CODES

If a Fan Alarm is displayed, press the Fault Code button to display the Active Fault Code screen.

If the fan is currently under a Fault Code, the Active Fault Code number that caused the fault displays in the top right-hand corner of the screen.

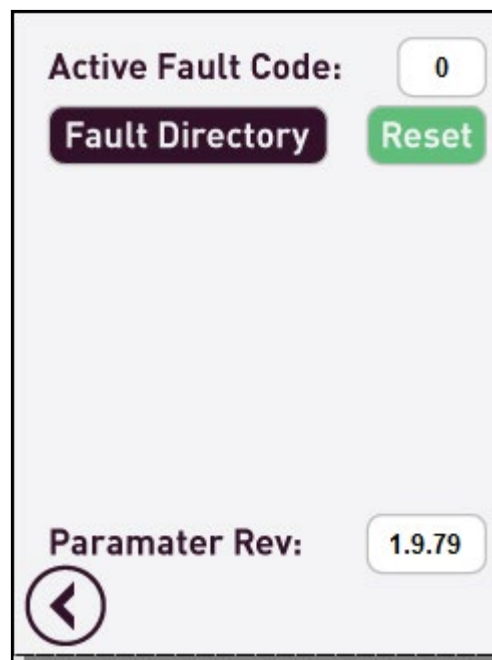
Figure 38



To resolve the Fault Code:

1. Press the **Fault Code Directory** button to display a description of the Fault Code. See **Figure 39**.
2. Match the number with the error code in the directory.
3. Resolve the issue causing the fault.
4. Press the **Reset** button to allow the fan to operate.

Figure 39



## FAULT CODE DEFINITIONS

FAULT CODE	DEFINITION
8784	Continuous Overcurrent
8992	Short Circuit/Earth Leakage
9024	Short Circuit
9040	I <sup>2</sup> *t Overload
9090	I*t Error Fault
12576	Mains Phase Fault
12816	DC Bus Overvoltage Fault
12832	DC Bus Undervoltage Trouble
16912	Overtemperature Fault
17024	Heatsink Temperature Sensor Fault
17168	Motor Temperature Failure
25233	Maximum Allowed Trouble Codes Fault
29056	Motor Overcurrent Fault
30337	Memory Module not Present Fault
33185	Modbus Network Time-Out Fault
33553	Torque Limit Reached
65286	Motor Overspeed Fault
65289	Motor Phase Missing
65290	Motor Phase Failure Phase U
65291	Motor Phase Failure Phase V
65292	Motor Phase Failure Phase W
65337	Motor Overload
65366	Maximum Motor Frequency Reached

## PASSCODE PROTECTION

You can add passcode protection to the remote to prevent unauthorized use.

1. Press the **Menu** button on the main screen.
2. Press the **Passcode** button on the diagnostic screen.
3. Type your passcode. See **Figure 40**.

### NOTICE

*The default passcode is 1111. If you have customized your passcode, enter your customized passcode.*

## ENABLE YOUR PASSCODE

By default the passcode is disabled.

- Press the unlocked padlock icon to enable the passcode entry requirement.

## DISABLE YOUR PASSCODE

- Press the locked padlock icon to disable the passcode entry requirement.

## UPDATE YOUR PASSCODE

1. Enter your new passcode using the numeric keypad.
2. Press the Update Passcode button. See **Figure 41**.

When the passcode is enabled, the system automatically logs you out after two minutes.

Figure 40

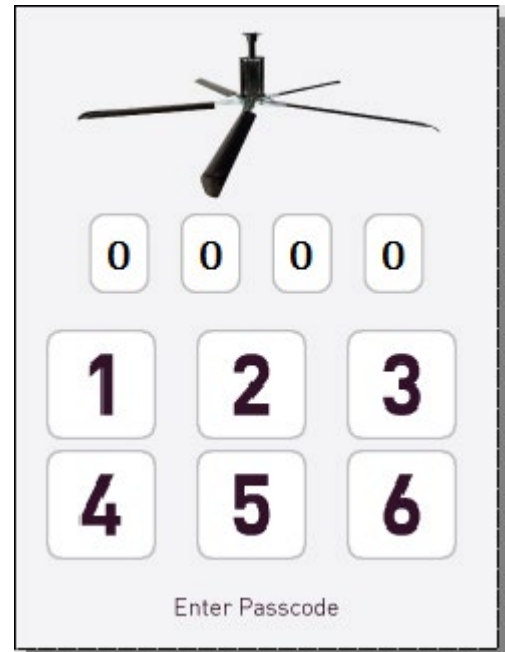
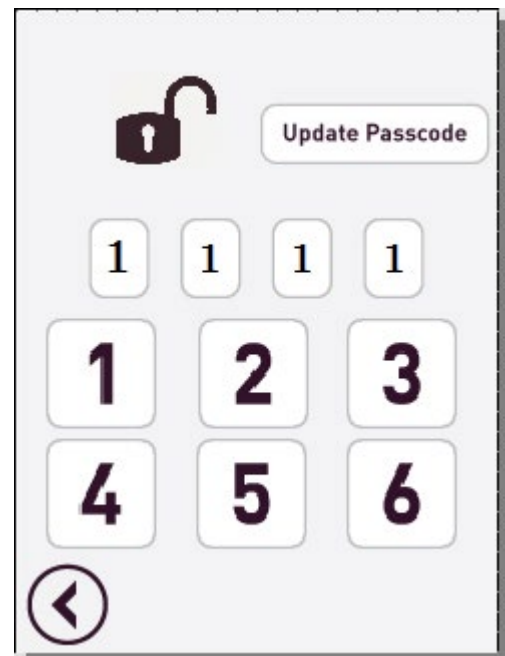


Figure 41



## MULTI-FAN CONTROL — OPTIONAL

- Press the previous or next buttons to select the fan you would like to control. See **Figure 42**.

The All option lets you control all of the fans at the same time.

## TEMPERATURE CONTROL — OPTIONAL

To enable the temperature control:

1. Cycle through the start/stop/temp control until you reach Temp. See **Figure 43**.
2. To access the temperature settings screen from the main menu, press the menu button, and then press the Temp button.
3. Type the temperature to start the fan automatically. See **Figure 44**.

At this temperature, the fan automatically starts at speed 2.

4. Type a value to increment the temperature for the next speed setting.

This value is added to the start temperature you entered in the previous step and sets the temperatures at which the fan switches to speeds 4, 6, 8, and 10.

### EXAMPLE:

If you enter 70° for the start temperature and enter 3 for the increment value, the fan starts at speed 2 when the temperature is 70°.

When the temperature reaches 73°, the fan switches to speed 4.

When the temperature reaches 76°, the fan switches to speed 6.

The fan decreases in speed as the temperature decreases until the temperature falls below the start point. When the temperature falls below the start point minus the increment value, the fan automatically shuts off.

Figure 42

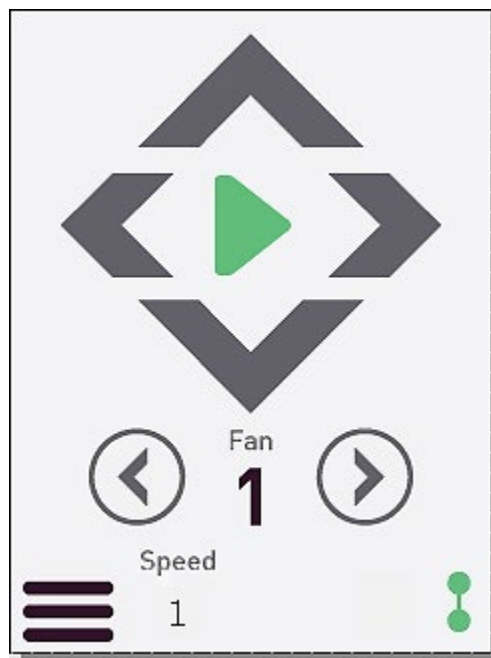
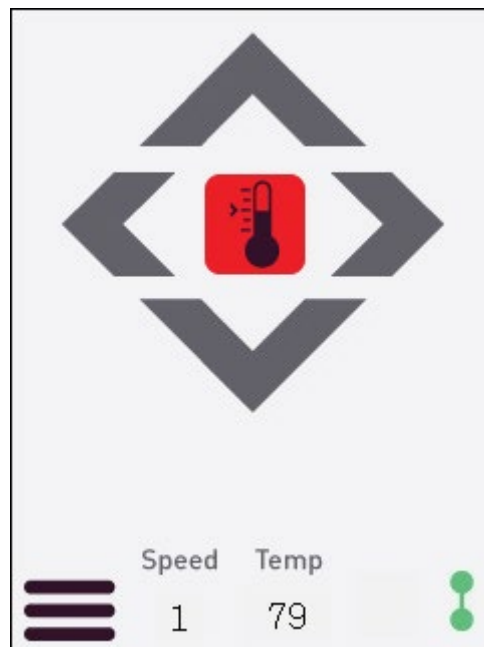


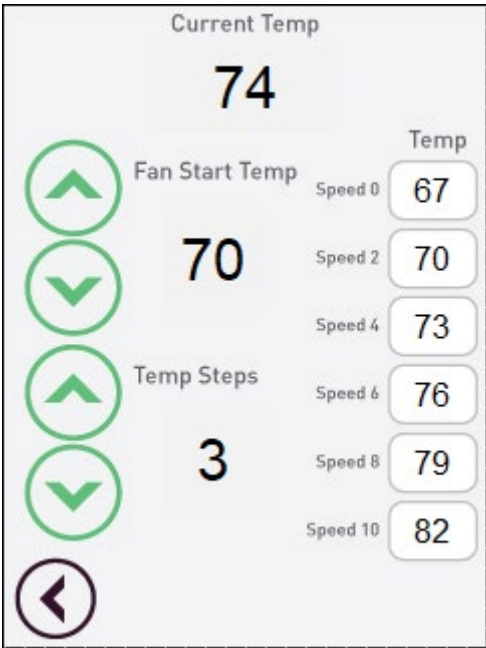
Figure 43



DISABLE THE TEMPERATURE CONTROL

To disable the temperature control, cycle to Stop or Run from the main screen.

Figure 44



## PLANNED MAINTENANCE

### **⚠ DANGER**

*Before service, inspection or cleaning make sure the power is disconnected and properly locked out and tagged out.*

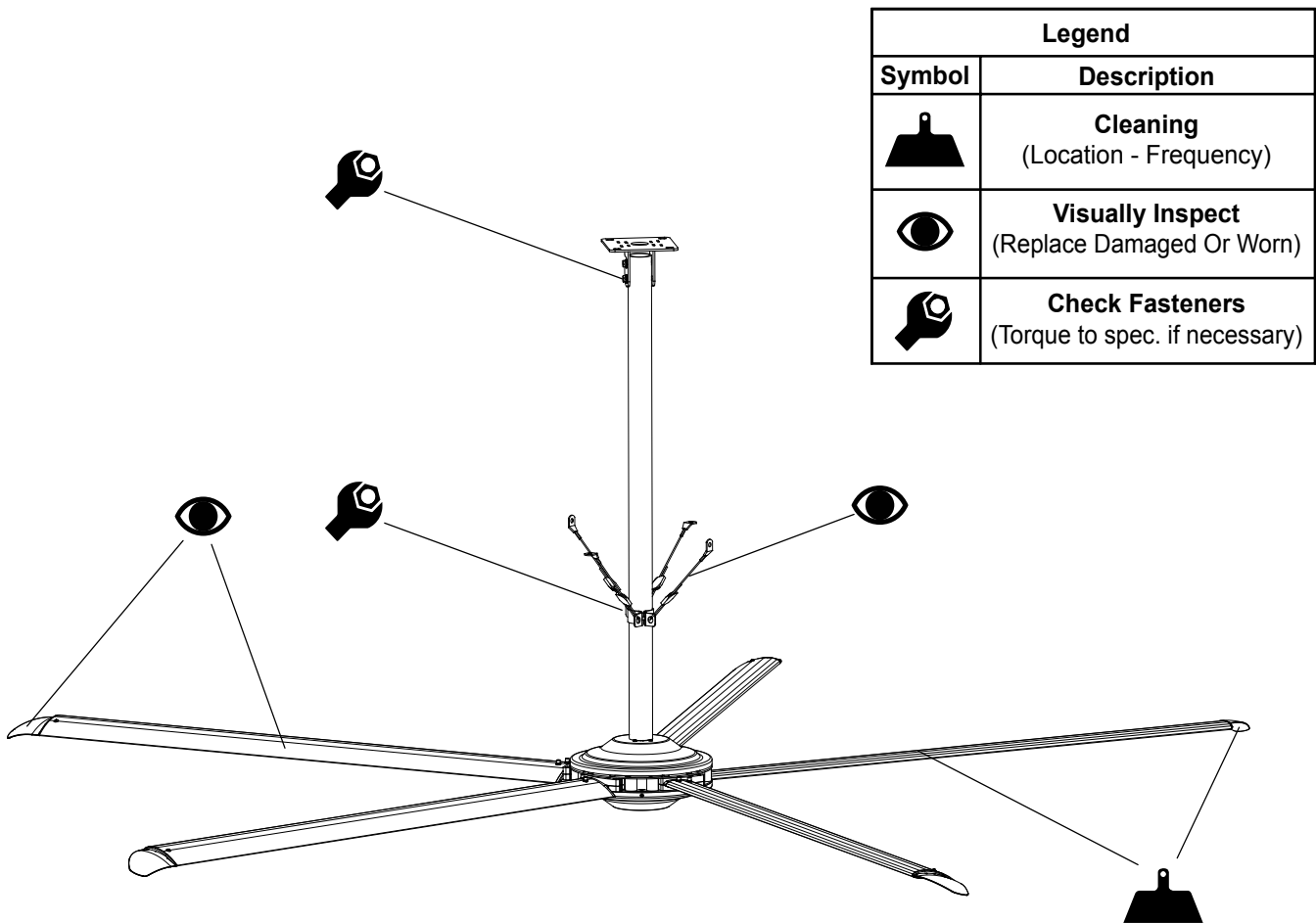
### **⚠ WARNING**

*Before servicing the fan, read [Safety Practices on page 7](#) and [Operating Instructions — HMI on page 41](#). Failure to do so could result in death or serious injury.*

## ANNUALLY

1. Inspect the blade mounting hardware and tighten as required
  - a. Torque to 20-28 ft-lbs.
2. Inspect guy wires for chafing or wear, if applicable.
  - a. Ensure wires are taut
  - b. Re-tighten cables as required.
  - c. Ensure all cable mounting hardware is secure.
  - d. Maintain plumb attitude of the down tube.
  - e. Torque to 12-17 ft-lbs.
3. Inspect fan blades and winglets.
4. Clean fan blades as required.
  - a. Use a soft dry cloth.
  - b. If necessary, use a mild detergent to clean surfaces. Do not use harsh cleaners.

Figure 45



# TROUBLESHOOTING GUIDE

## ⚠ WARNING

Before servicing the fan, read [Safety Practices on page 7](#) and [Operating Instructions — HMI on page 41](#). Failure to do so could result in death or serious injury.

## ⚠ DANGER

Before doing any electrical work, make certain the power is disconnected and properly locked out or tagged out.

Failure to do so may result in death or serious injury.

All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

Do not route control wiring for any other device through this control box.

Ensure the voltage and phase of the incoming power agrees with the label on the top of the VFD box and fan.

Be certain the power is off when wiring to the control box.

Failure to do so may result in electrical shock, death, or serious injury.

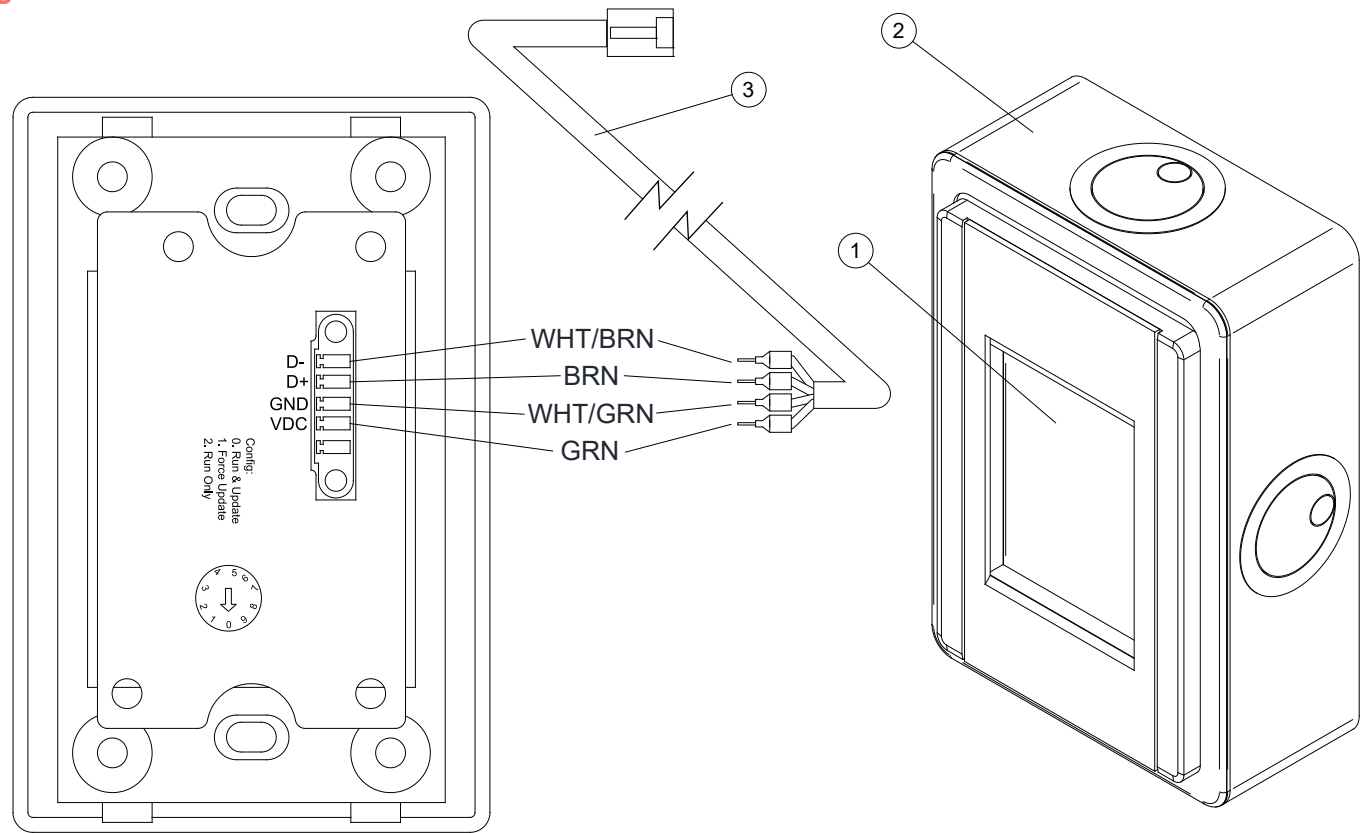
Use the Troubleshooting Guide if the fan fails to perform properly. Find the condition that closely matches your situation and make the recommended adjustments

PROBLEM	POSSIBLE CAUSE	SOLUTION
Fan runs but makes noise or vibrates.	Bad motor bearing	Check to see if the fan rotates freely by hand without binding.
	Missing or damaged winglet	Check winglets.
	Loose or damaged blade	Ensure blades are firmly attached and mounting fasteners are tight.
Fan does not operate	No power to the control panel	Check for primary power at the terminals.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Fan does not operate. Control Panel has power	Obstructions preventing movement	Check the fan unit to ensure there are no obstructions preventing movement.
	Remote not properly connected	Check connections between the remote and the VFD.
	VFD faulted	Check for the VFD fault.  Check the Fault Action Code and reset the driver by powering the VFD off, and then on again.
	Motor power cable disconnected	Check cable connection
	Fire circuit is open	A RED fire alarm indicator shows the fire alarm is active or the circuit is open.  Review the building fire alarm system, and then reset it if necessary.
Fan operating, but shows excessive wobble	Guy wires not tensioned properly	Re-tension guy wires in accordance with <a href="#">Optional Guy Wire Kit (6016307)</a> on page 22.
	Winglet missing	Replace winglet.
Fan generating a ticking noise, tick increases with speed	Blade bolts are not properly tightened	Loosen the blade nuts.  Support the blade level horizontally before you torque the bolts to 12-17 ft-lbs.

PARTS LIST — HMI REMOTE

Figure 46



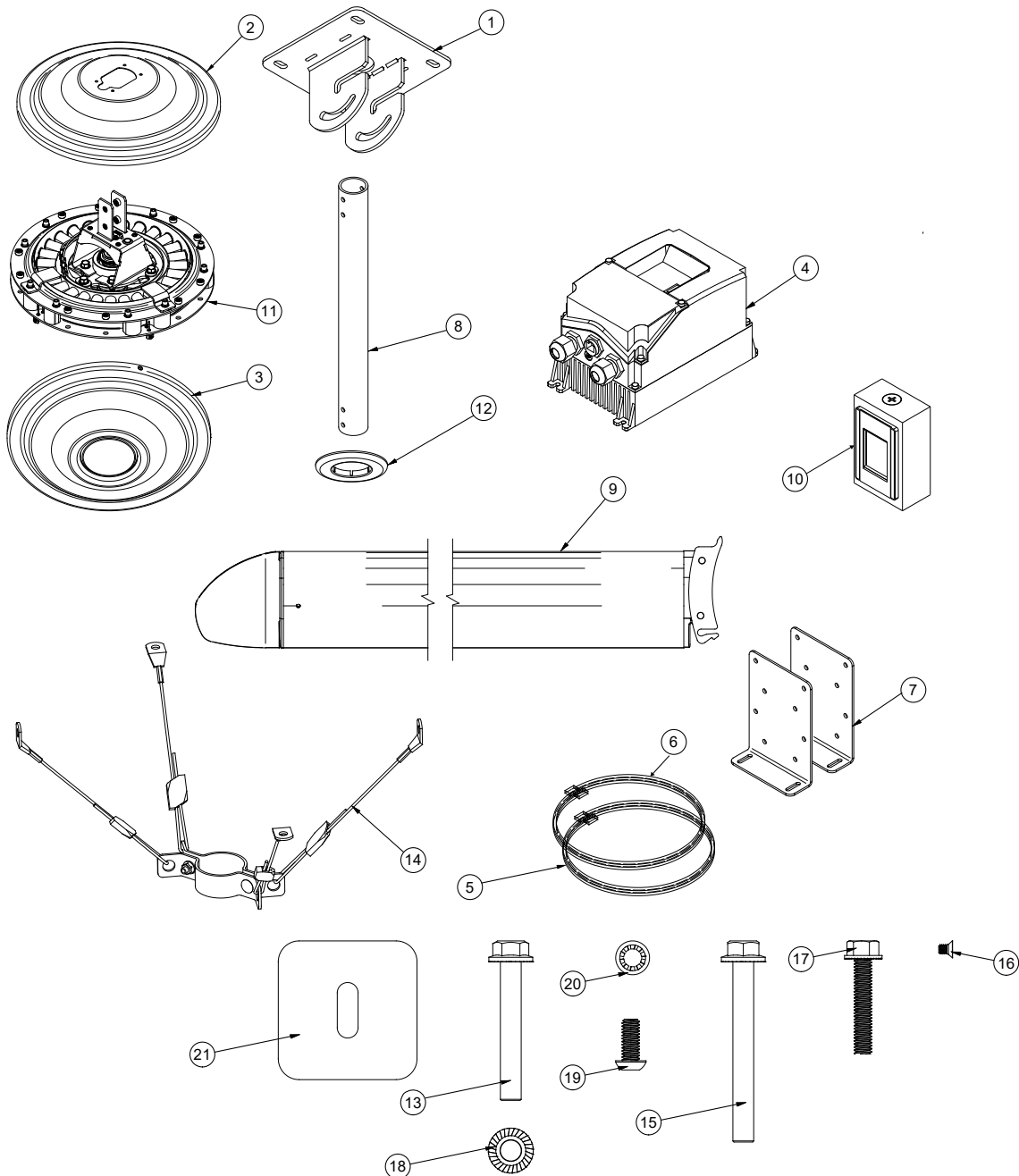
ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	Touchscreen Controller - Epic	6023472
	1	Touchscreen Controller - Kelley	6023473
	1	Touchscreen Controller - Serco	6023474
2	1	J-Box, Plastic, Ivory	6015648
3	1	Cable CAT5, 100" w/Ferrule (Blue)	6023484

## PARTS LIST — FAN

### ⚠ WARNING

To ensure proper function, durability, and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used. Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in any way alter the product from its normal working condition at the time of purchase from 4Front Engineered Solutions may result in product malfunction, breakdown, premature wear, death or serious injury.

Figure 47

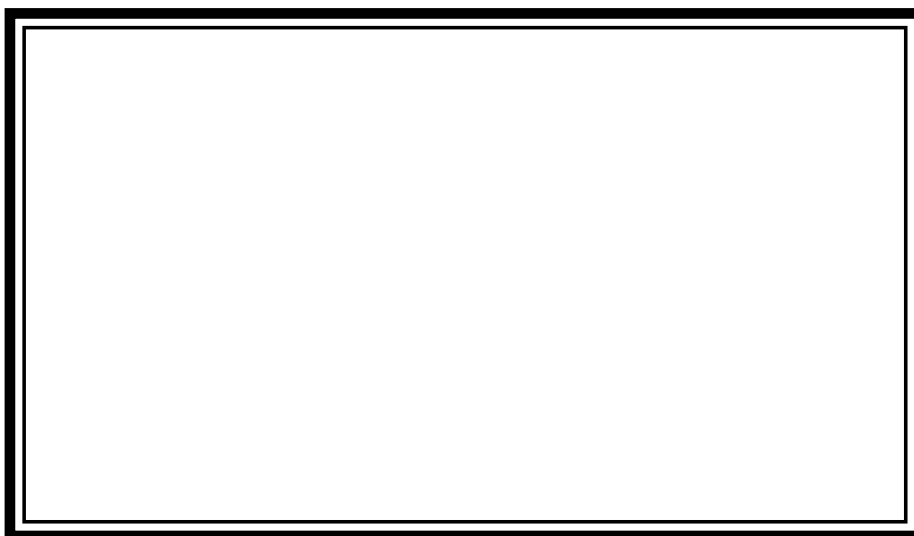


ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	Mount	6018002
2*	1	Upper Cover - Silver	6016286
3*	1	Lower Cover - Silver	6016285
4	1	VFD - 120V/1PH	6023470
		VFD - 240V/1PH or 3PH	6023491
5	1	Power Cable	6023464
6	1	Control Cable	6023484
7	1	Beam Mount — Optional	6018175
8*	1	Down Tube - Silver	6016367
9*	1	Blade Assembly — 6 ft. - Silver	6017580
	1	Blade Assembly — 8 ft. - Silver	6017581
	1	Blade Assembly — 10 ft. - Silver	6017582
	1	Blade Assembly — 12 ft. - Silver	6017583
	1	Blade Assembly — 14 ft. - Silver	6017584
10	1	Controller Assembly	Consult Factory
11	1	Motor Assembly	6016280
12	1	Ceiling Cover Plate	6017848
13	4	3/8-16UNC x 2 1/2", FLNG SERTD Hex Bolt. GRD-5	6017873
14	1	Extension Guy Wire Kit, 3-5'	6016307
	1	Extension Guy Wire Kit, 5-10'	6017765
	1	Extension Guy Wire Kit, 10-15'	6017766
15	2	3/8-16 UNC x 3 1/4", FLNG SERTD Hex Bolt, GRD-5	6017748
16	3	8-32 UNC x 1/4", Lg FLT HD Screw - Torx ZP	6017870
17	10	5/16 UNC x 1 3/4, FLGD SRTD Hex Bolt, GRD-5, ZP	6017837
18	6	3/8-16UNC Hex Serrated Flange Nut	6015118
19	4	5/16UNC x 3/4 LG Torx SOC HD Screw, GRD-2, ZP	6017853
20	4	5/16 INT Tooth Lock Washer	6017838
21	4	Clamp Plate	6017852

\* Consult factory for colors other than silver.

NOTES

Please direct questions about your fan to your local distributor. Your local distributor is:



## **Corporate Office**

1612 Hutton Drive, Suite 140

Carrollton, TX 75006

Tel: (972) 466-0707

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**APS Resource**

262.518.1000

Scan this code or [click](#) here to locate an APS Resource distributor. For replacement parts, please call the number above.