



Fan Controller User Guide



BIN-SENSE® Fan Controller User Guide

1.0 BIN-SENSE® Fan Controller at a Glance	3
1.1 Fan Controller	3
1.2 Master Unit Overview	3
1.3 Remote Unit Overview	4
1.4 BIN-SENSE® Fan Controller Kit Accessories	4
2.0 Installation Guide	5
2.1 Preparations Before Installation	5
2.2 Fan Controller Wire Diagrams	6
2.3 Connecting to Master or Remote Units	29
2.4 Optional Powering of Master or Remote Units from BIN-SENSE® Fan Controller	30
2.5 Installing BIN-SENSE® Fan Controller in SMART Setups	31
3.0 Using Your BIN-SENSE® Fan Controller	32
3.1 Logging In	32
3.2 Mobile Browser	34
4.0 Product Warranty Statement	35
5.0 Contact Us	38

Congratulations on purchasing your BIN-SENSE® Fan Controller. IntraGrain Technologies Inc.'s mission is to provide quality, cost-effective, innovative solutions for monitoring grain to all sizes of farms.

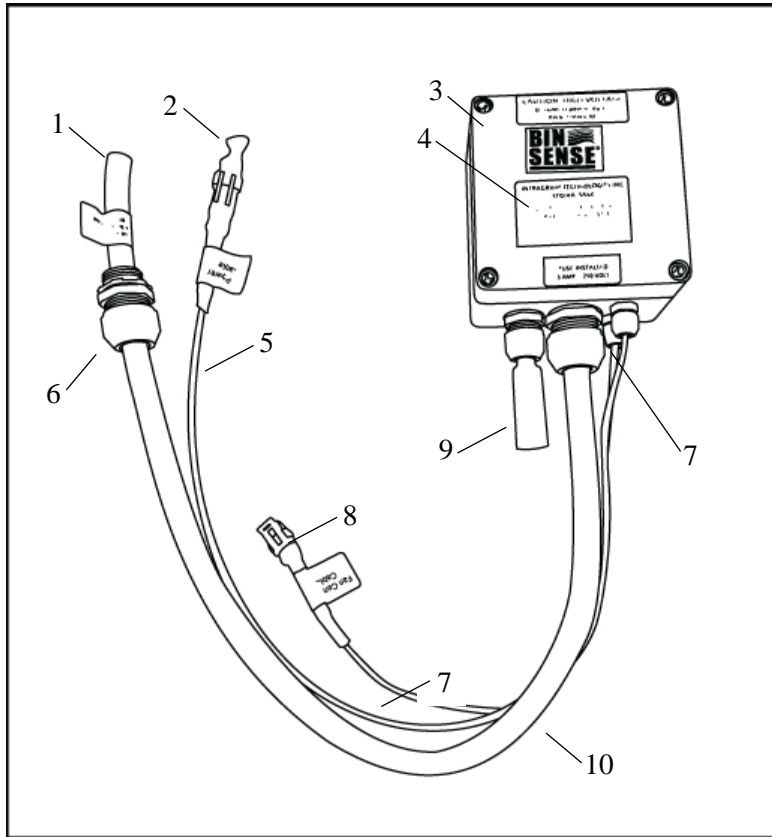
BIN-SENSE® Fan Controller was created with the customer in mind and has been designed for easy use. The BIN-SENSE® Fan Controller connects to aerations fans and provides the ability for the user to turn on and off fans from our website and Smart mobile device to maximize efficiency.



WARNING: To avoid injury, read all of the installation instructions carefully before installing or using your BIN-SENSE® system.

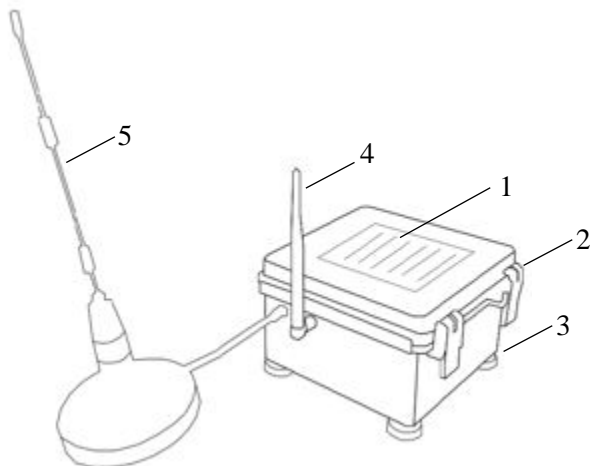
1.0 BIN-SENSE® Fan Controller at a Glance

1.1 Fan Controller Overview

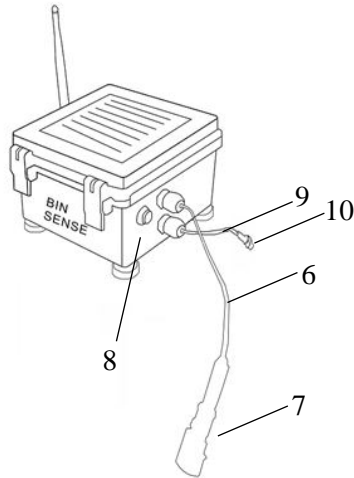


1. SOOW cable (to be stripped back)
2. Fan power cable cap
3. Front of enclosure
4. Serial number
5. Fan power cable
6. Cable grip for SOOW cable
7. Fan control cable
8. Fan control cable connector
9. Sensor housing
10. SOOW cable

1.2 Master Unit Overview

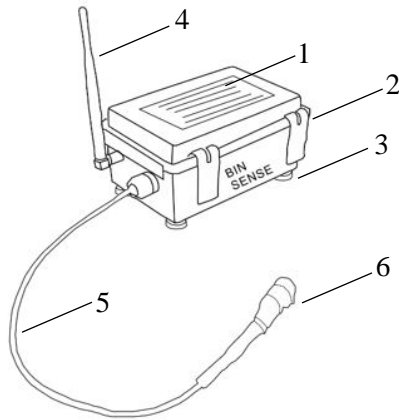


1. Solar panel
2. Lid latch
3. Magnetic mounting feet
4. Antenna #1
5. Antenna #2 (magnetic mount)



- 6. Sensor link cable
- 7. Sensor link cable connector
- 8. Scan button
- 9. Auxiliary battery link cable (optional)
- 10. Auxiliary battery link cable connector (optional)

1.3 Remote Unit Overview



- 1. Solar panel
- 2. Lid latch
- 3. Magnetic mounting feet
- 4. Antenna
- 5. Sensor link cable
- 6. Sensor link cable connector

1.4 BIN-SENSE® Fan Controller Kit Accessories

Accessory	Use	Quantity
Screw 10 x ½" Self tapping tek screws	Mounting Fan Controller to aeration fan	4
Rubber seal	For spacers for mounting feet where needed	8
Kit (enclosure feet)	Mount Fan Controller to aeration fan	1
Cable grip gray	For SOOW wire where entering the aeration fan	1
Cable grip lock nut	For the cable grip	1
Connector terminals 16-14AWG	For SOOW conductors in the aeration fan	5
Connector #10 fork 16-14AWG	For SOOW green/ground wire	1
2 position lever nut	For Master or Remote unit when tying in to power unit from Fan Controller	1

2.0 Installation Guide



WARNING: Installation needs to be done by a qualified electrician. All local code requirements must be complied with. Turn off all electrical connections to fans before installing. Follow wiring diagrams carefully, correct wiring is polarity sensitive.

2.1 Preparations Before Installation

1. **Before you begin installation:** Ensure that the accessories listed in Section 1.4 are included with your system and that you have the tools required (listed below).

Tools Required:

- Drill (preferably cordless)
- #2 Robertson drill bit
- Philips screwdriver
- Side cutter
- Wire strippers
- Knife
- Knockout punch set
- Connector crimper
- Tool belt for carrying tools
- Safety harness and lanyard for tying off



WARNING: BIN-SENSE® Fan Controller should be installed on the fan housing so that the cable will reach the control box. Be careful as to mount where screws will not interfere with the fan.

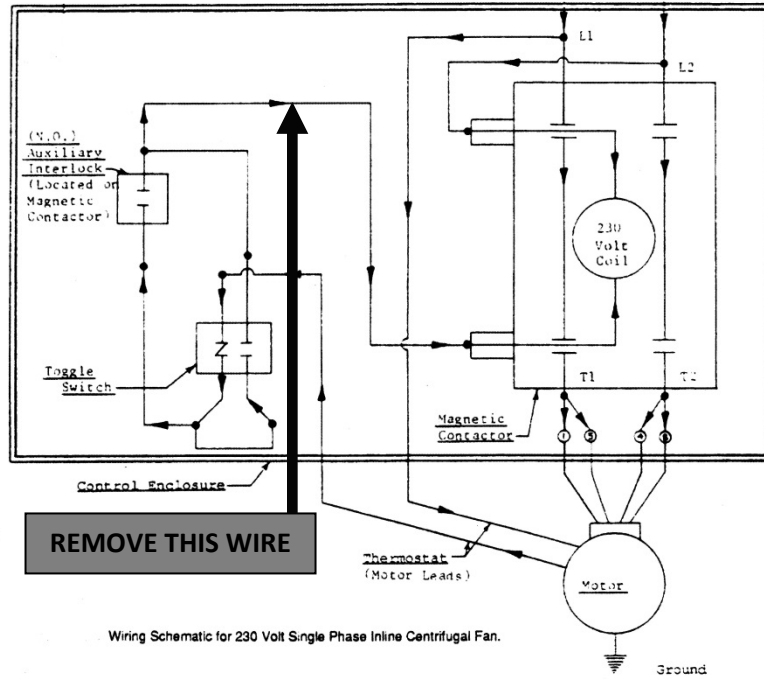
2. Install open end of SOOW cable into aeration fan box and then follow appropriate drawings corresponding to the correct make and voltage of fan (see *Figure 1*).



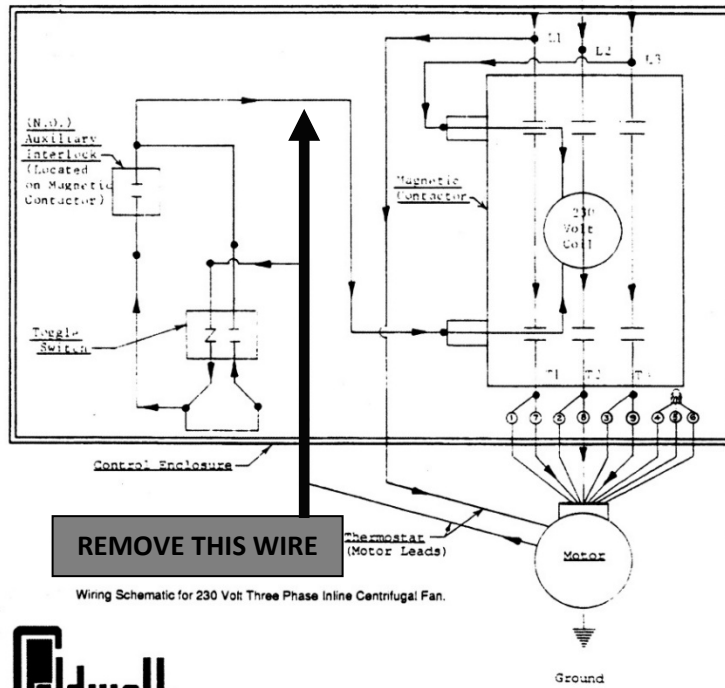
Figure 1: SOOW cable into aeration fan box

2.2 Fan Controller Wire Drawings

CALDWELL 230V 1 Phase Electrical Schematics



CALDWELL 230V 3 Phase Electrical Schematics



3 Phase 460 Volt Caldwell Schematic

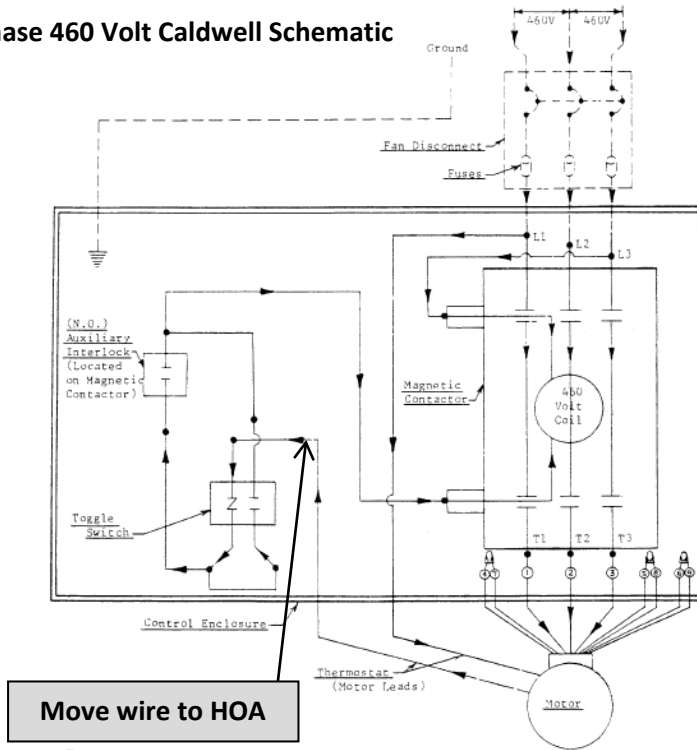


Figure 19. Wiring Schematic for 460 Volt Three Phase Inline Centrifugal Fan.

3 Phase 575 Volt Caldwell Schematic

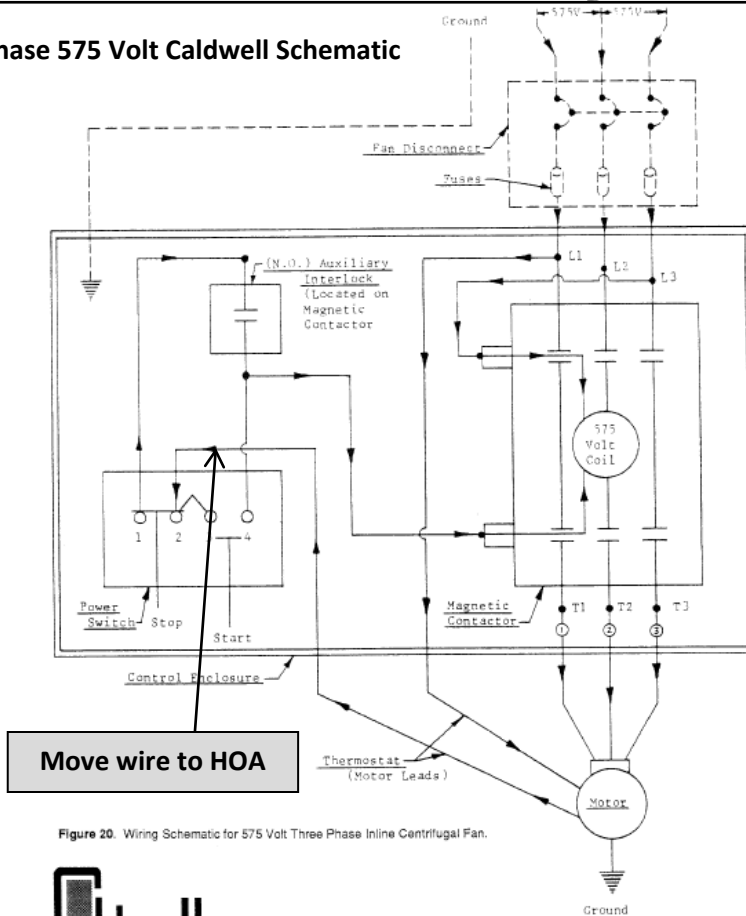
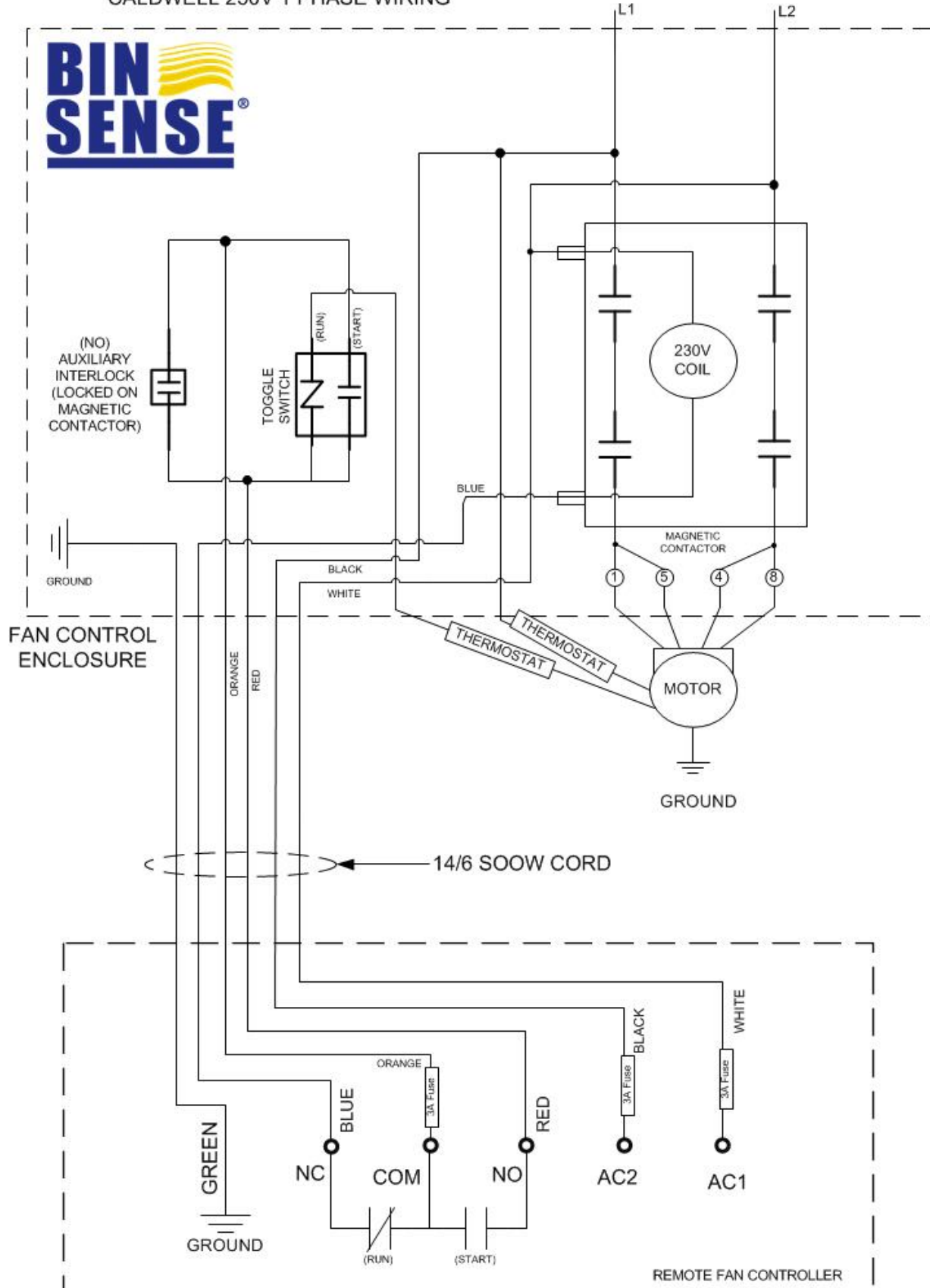


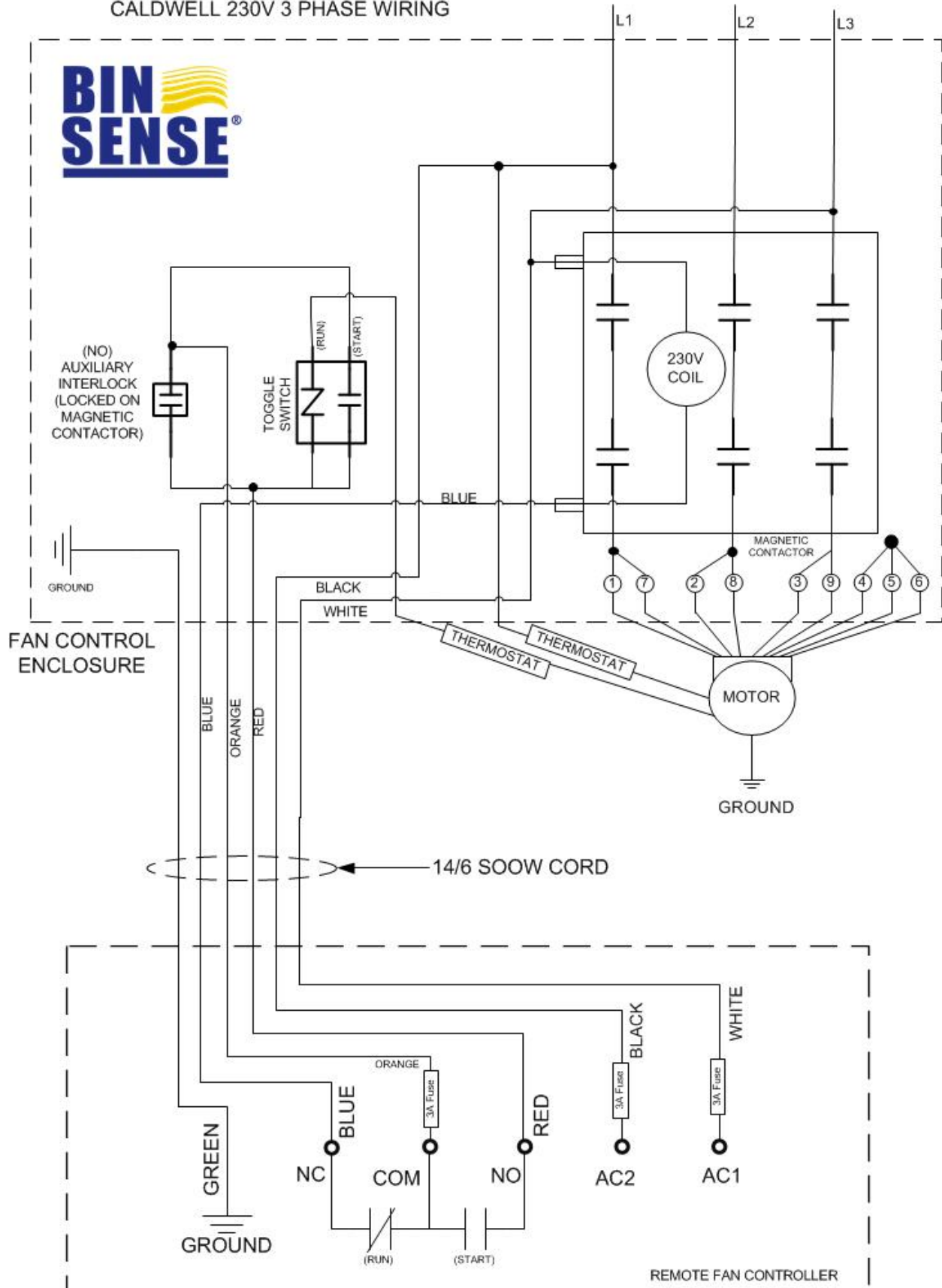
Figure 20. Wiring Schematic for 575 Volt Three Phase Inline Centrifugal Fan.



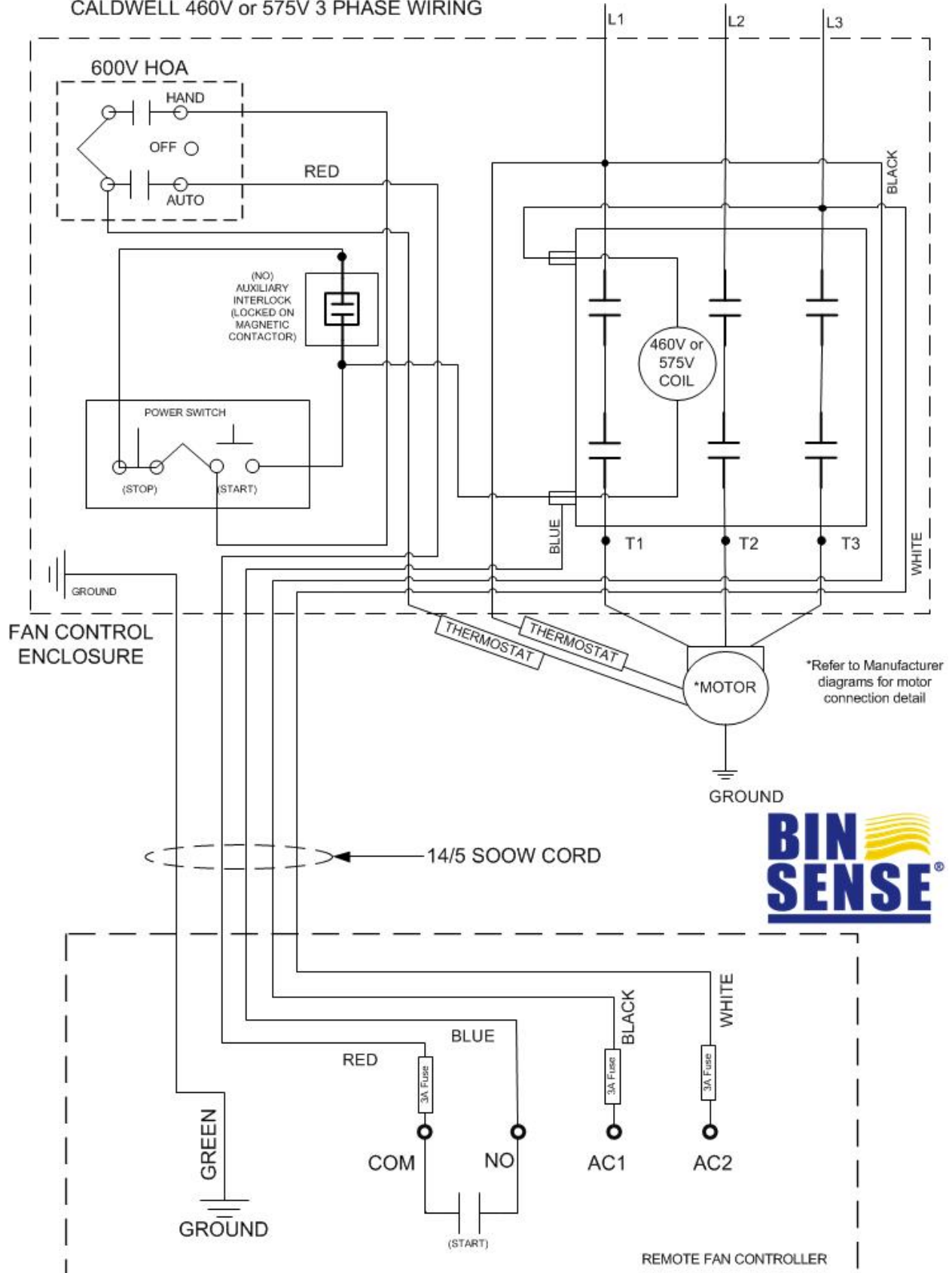
CALDWELL 230V 1 PHASE WIRING



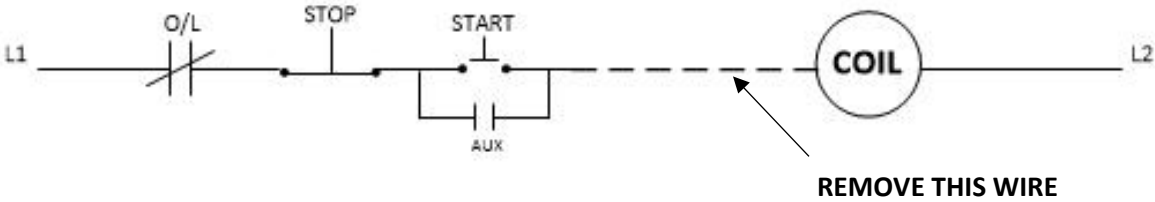
CALDWELL 230V 3 PHASE WIRING



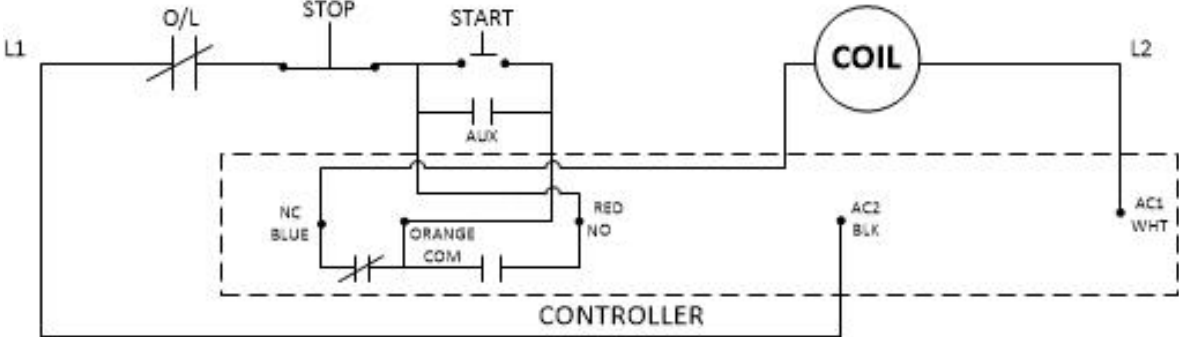
CALDWELL 460V or 575V 3 PHASE WIRING



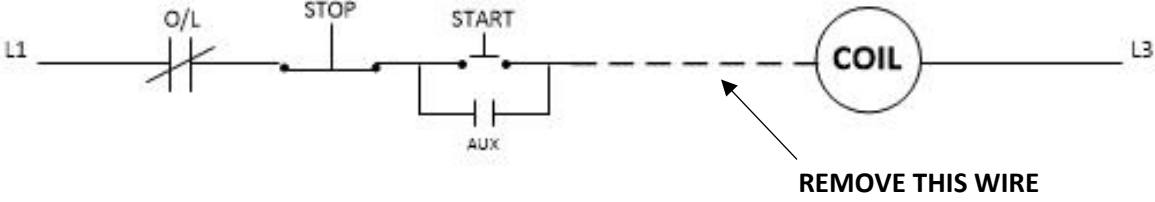
CALDWELL Single Phase 230 V Control Wiring One-Line



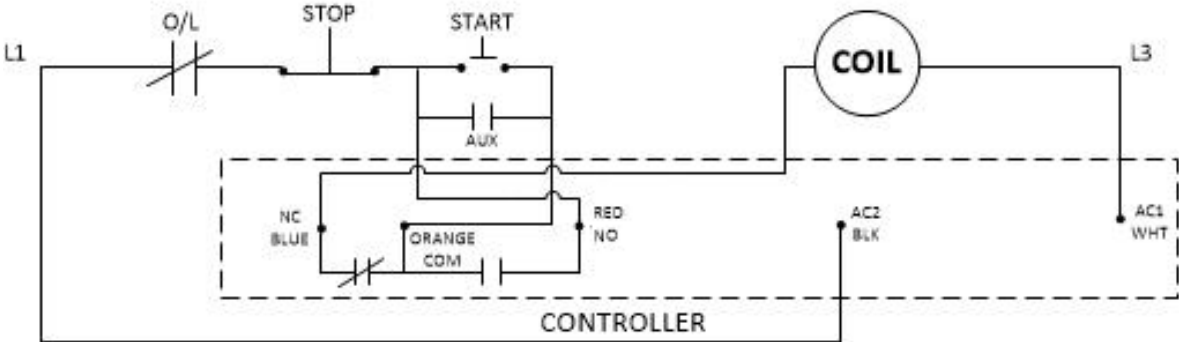
With Controller



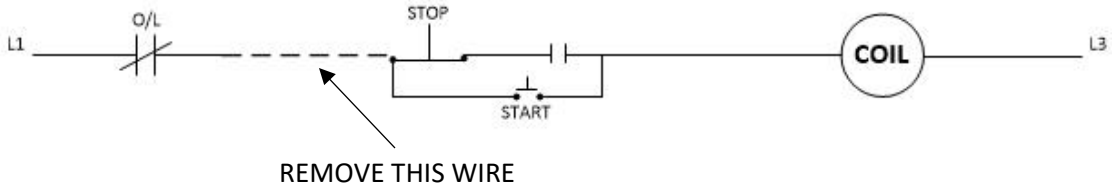
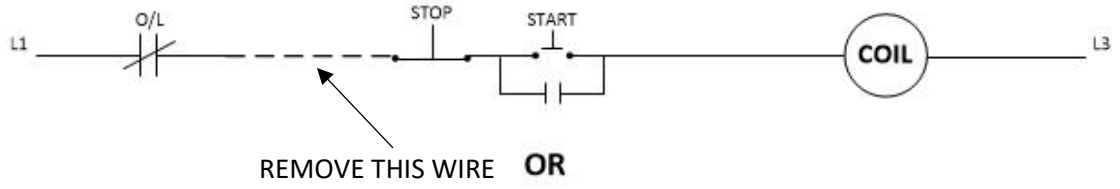
CALDWELL 3 Phase 230 V Control Wiring One-Line



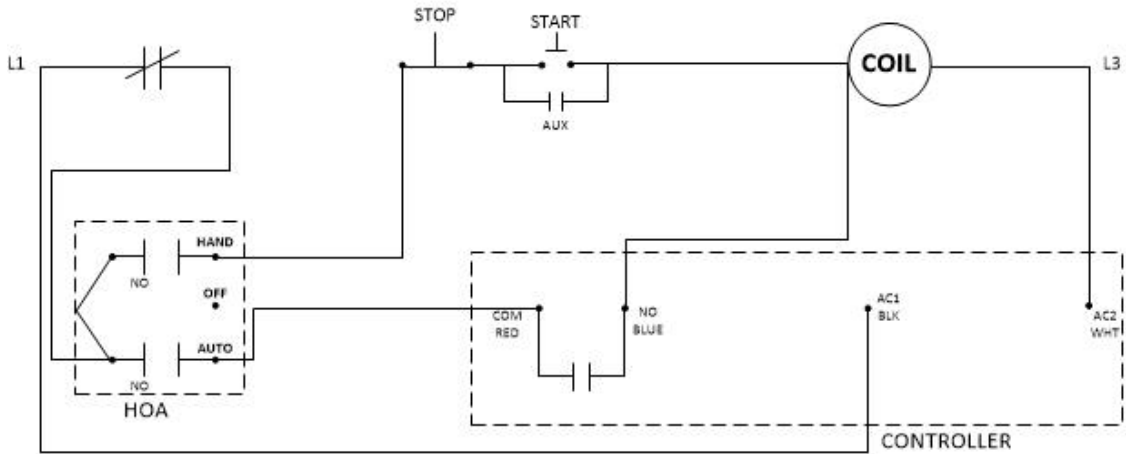
With Controller



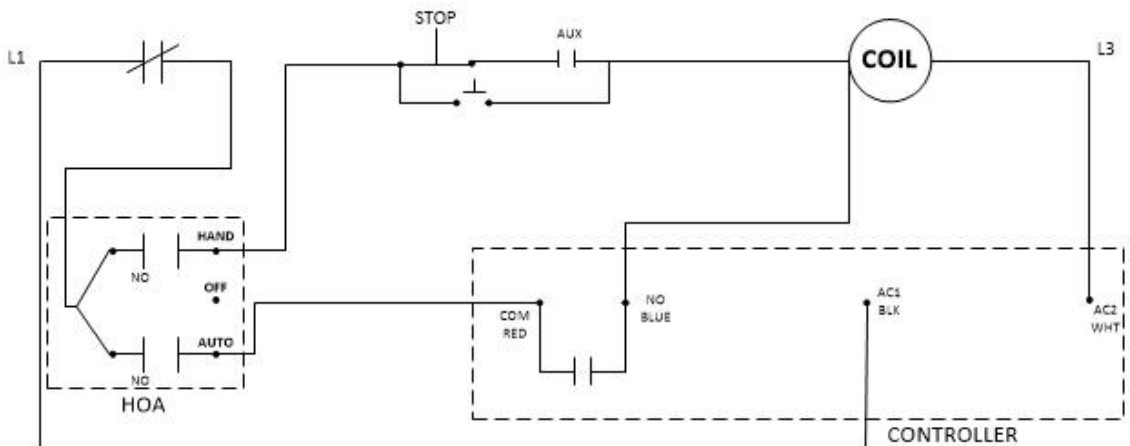
CALDWELL 3 Phase 460 V/575 V Control Wiring One-Line



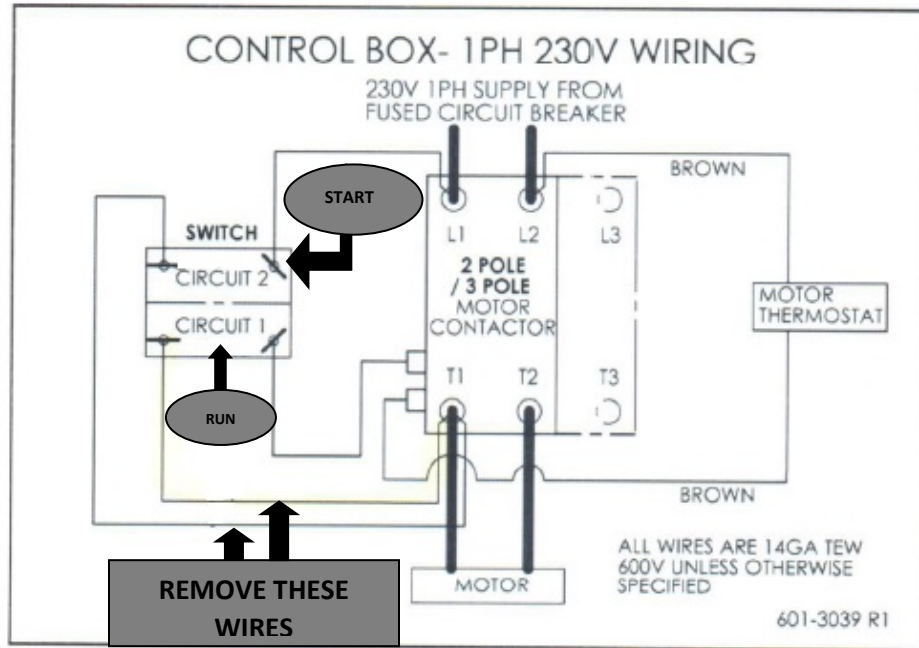
With Controller



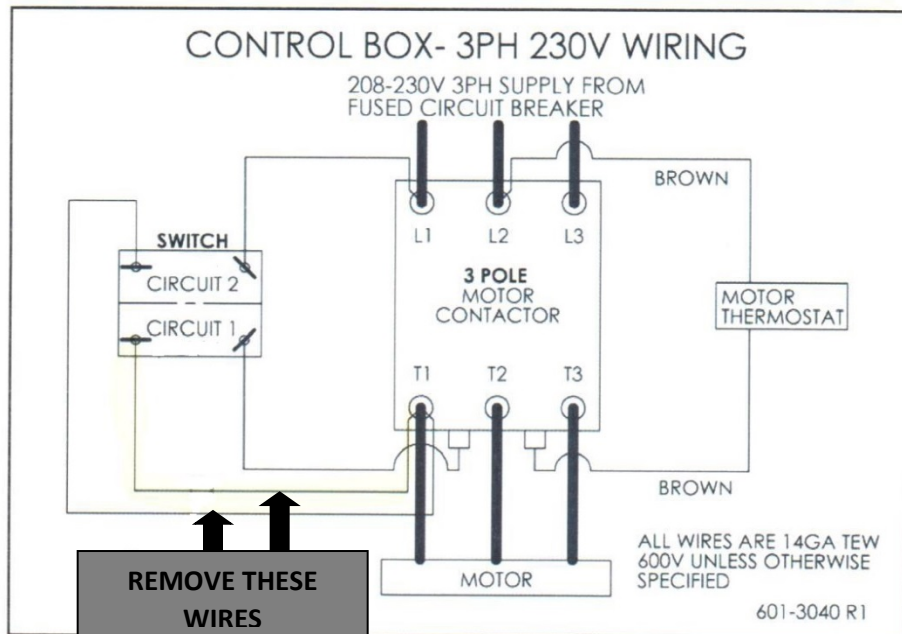
OR

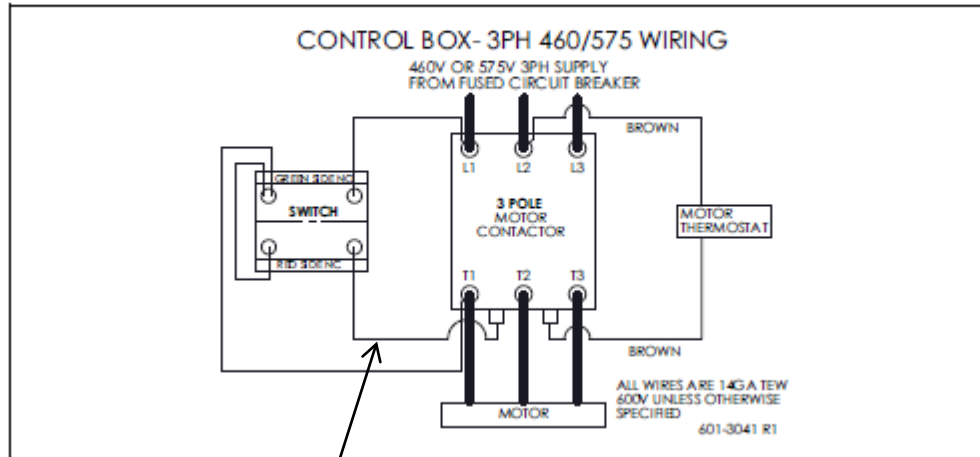


EDWARDS 230V 1 Phase Electrical Schematics



EDWARDS 230V 3 Phase Electrical Schematics

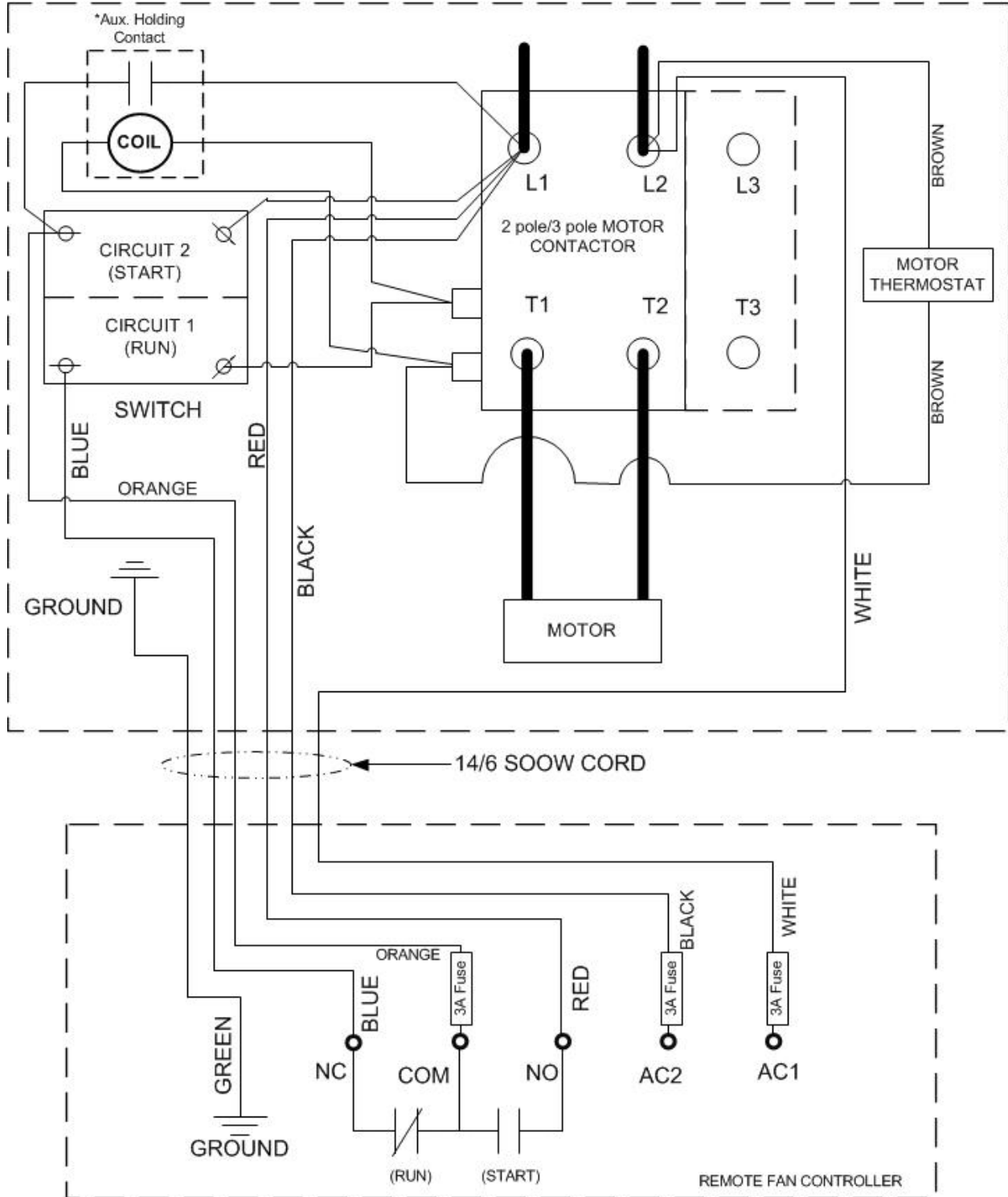




Move wire to HOA



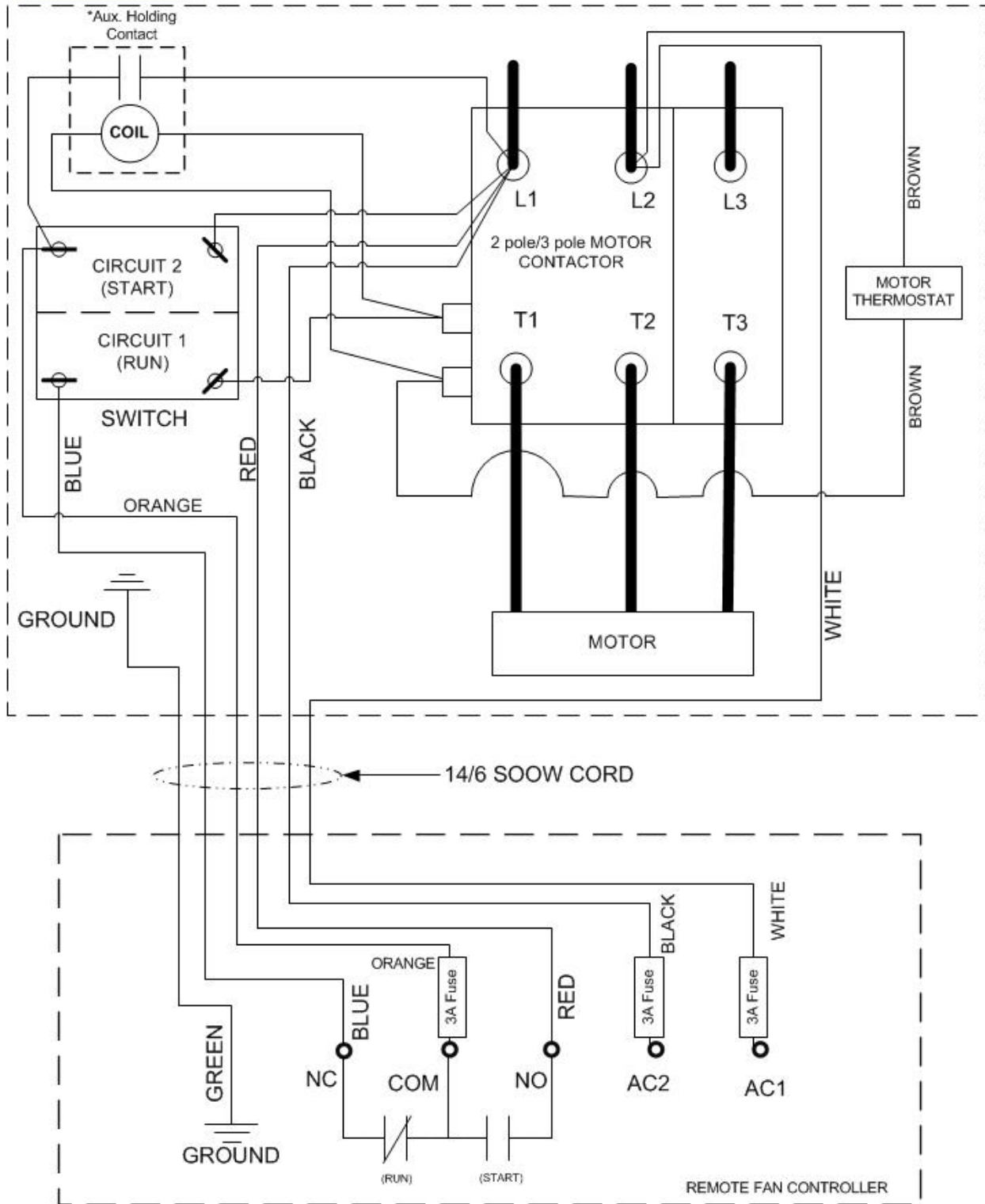
CONTROL BOX – 1PH 230V WIRING (EDWARDS)
230V 1PH SUPPLY FROM FUSED CIRCUIT BREAKER



*Aux. Holding Contact sold separately

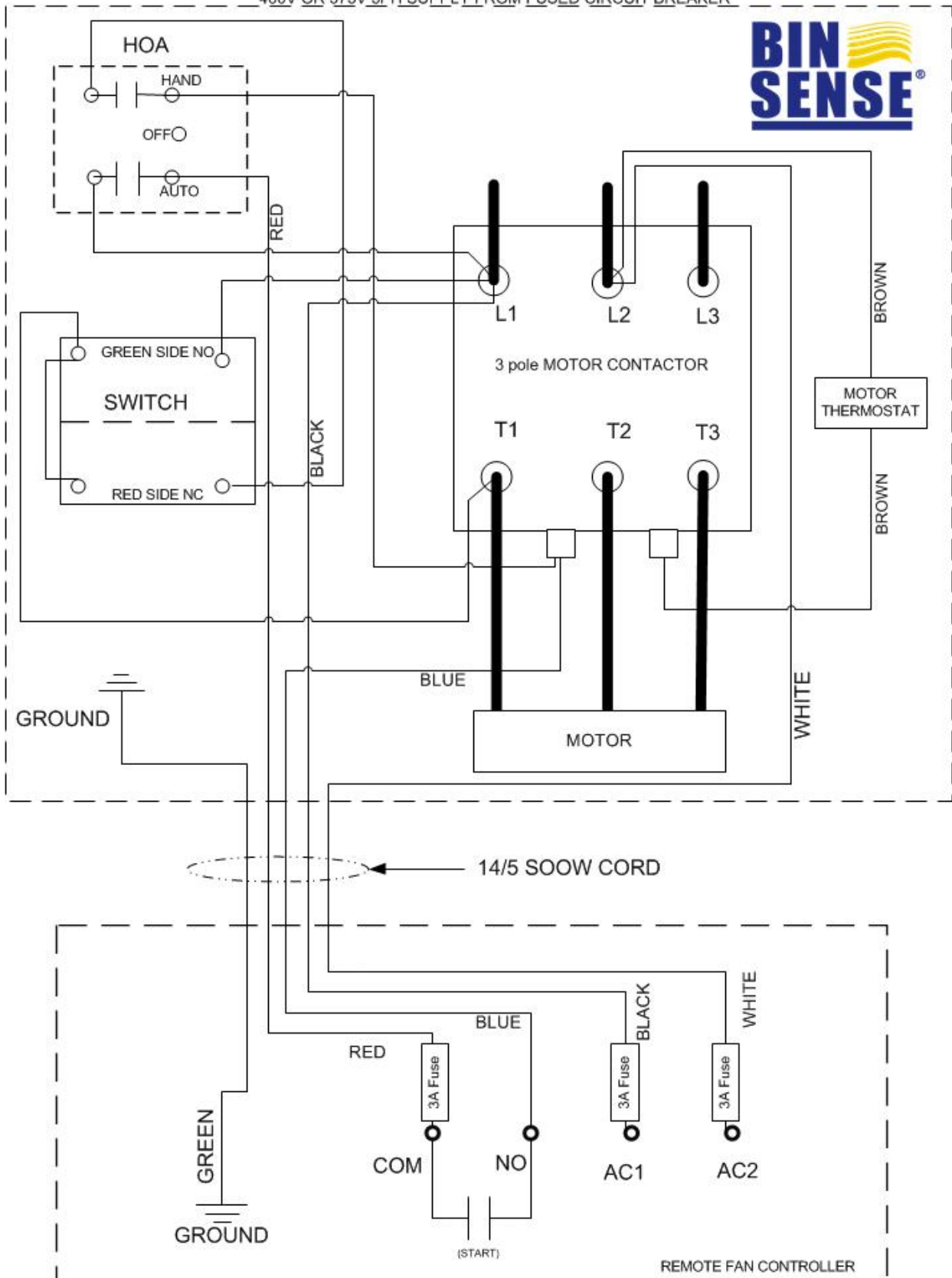


CONTROL BOX – 3PH 230V WIRING (EDWARDS)
 208-230V 3PH SUPPLY FROM FUSED CIRCUIT BREAKER



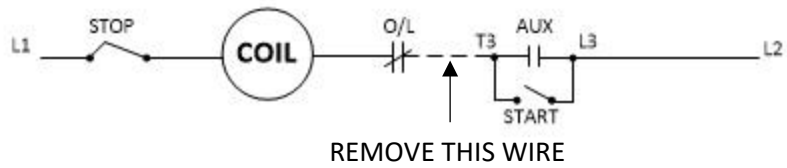
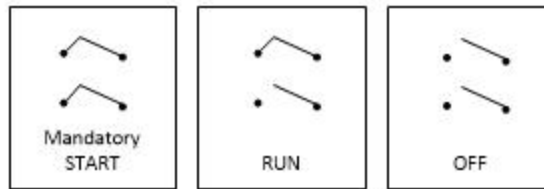
*Aux. Holding Contact sold separately

CONTROL BOX – 3PH 460/575V WIRING (EDWARDS)
 460V OR 575V 3PH SUPPLY FROM FUSED CIRCUIT BREAKER

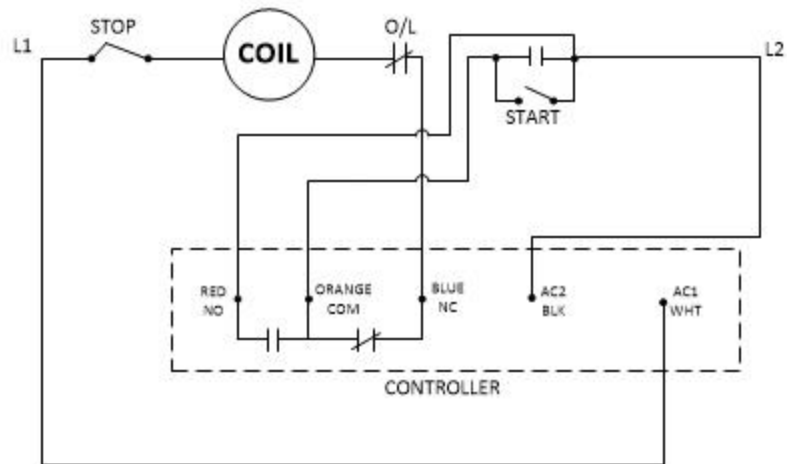


Old EDWARDS Single Phase 230 V Control Wiring One-Line

Switch Detail Double Pole Single Throw

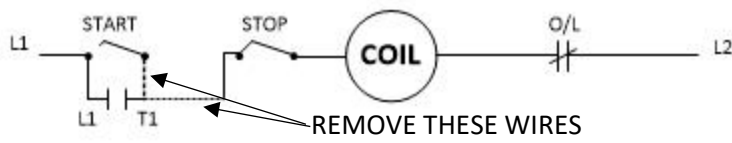
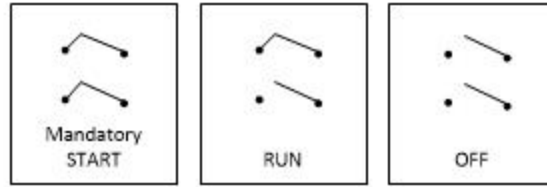


With Controller

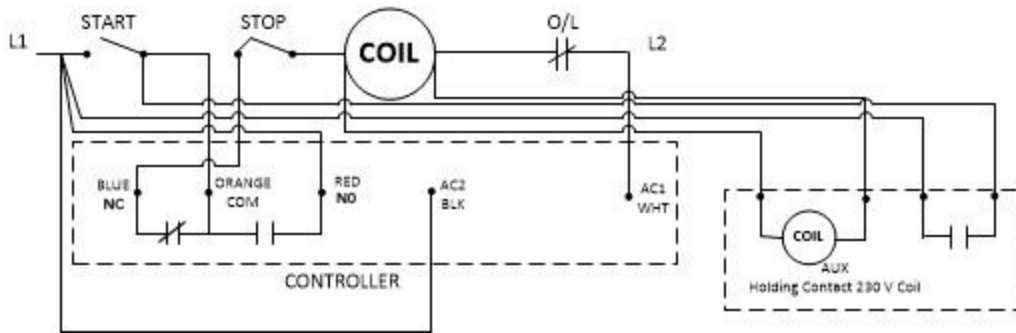


New EDWARDS Single Phase and 3 Phase 230 V Control Wiring One-Line

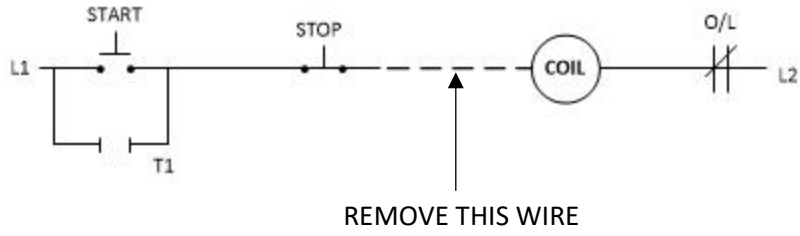
Switch Detail Double Dole Single Throw



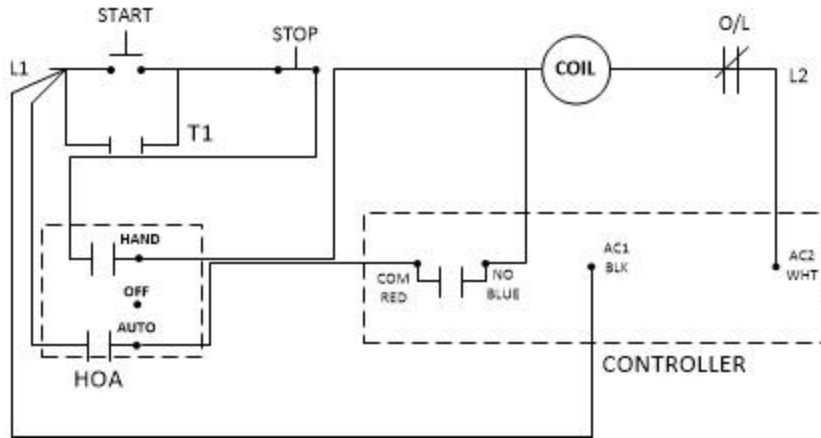
With Controller



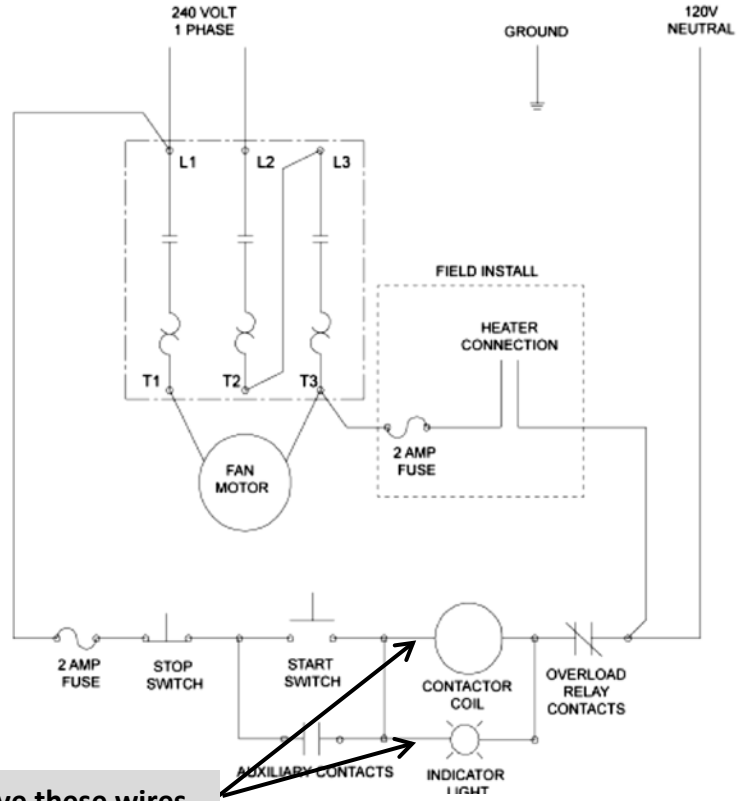
EDWARDS 3 Phase 460 V/575 V Control Wiring One-Line



With Controller

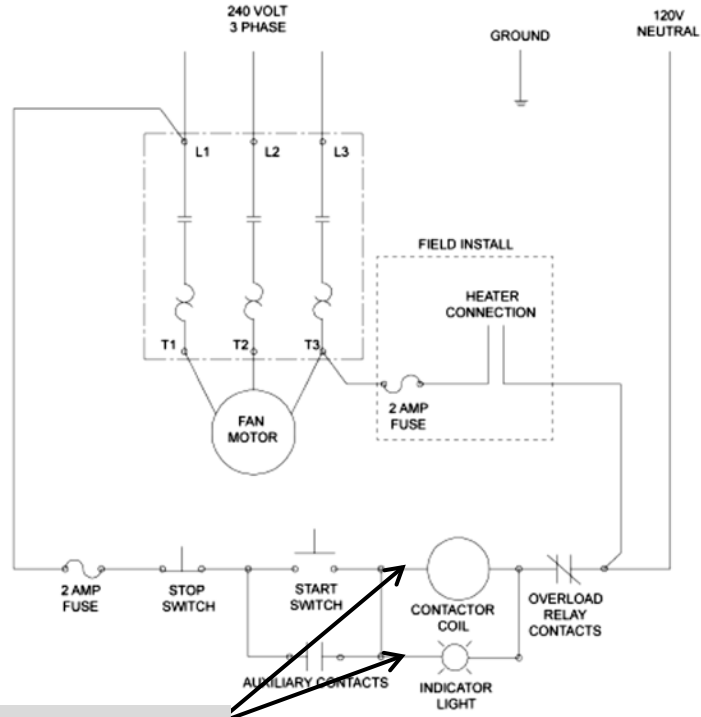


GSI 1 Phase 230 Volt Schematic



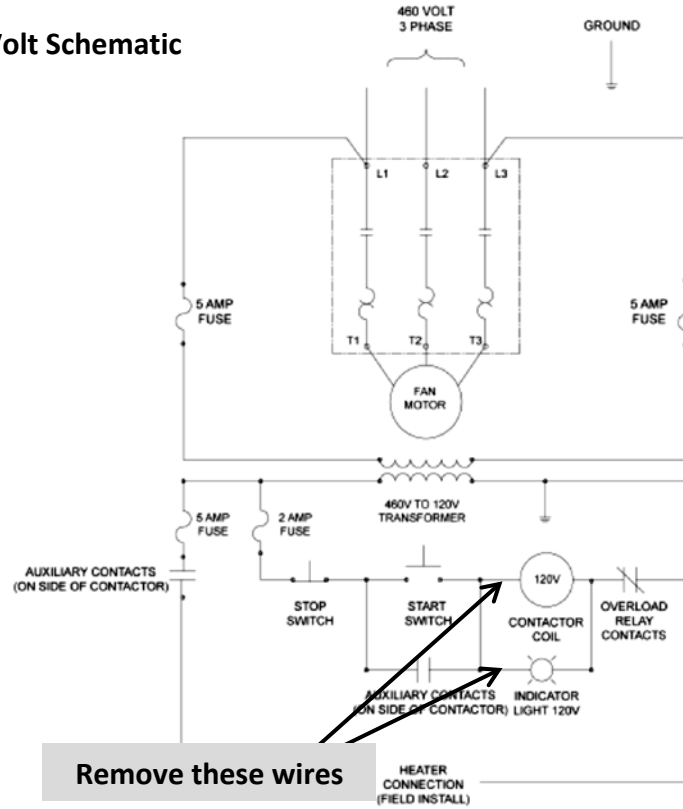
Remove these wires

GSI 3 Phase 230 Volt Schematic

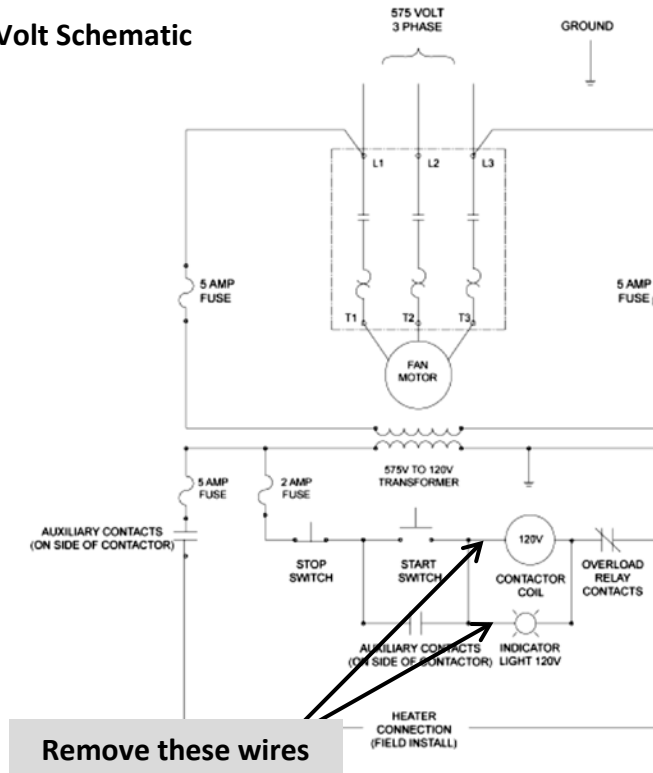


Remove these wires

GSI 3 Phase 460 Volt Schematic

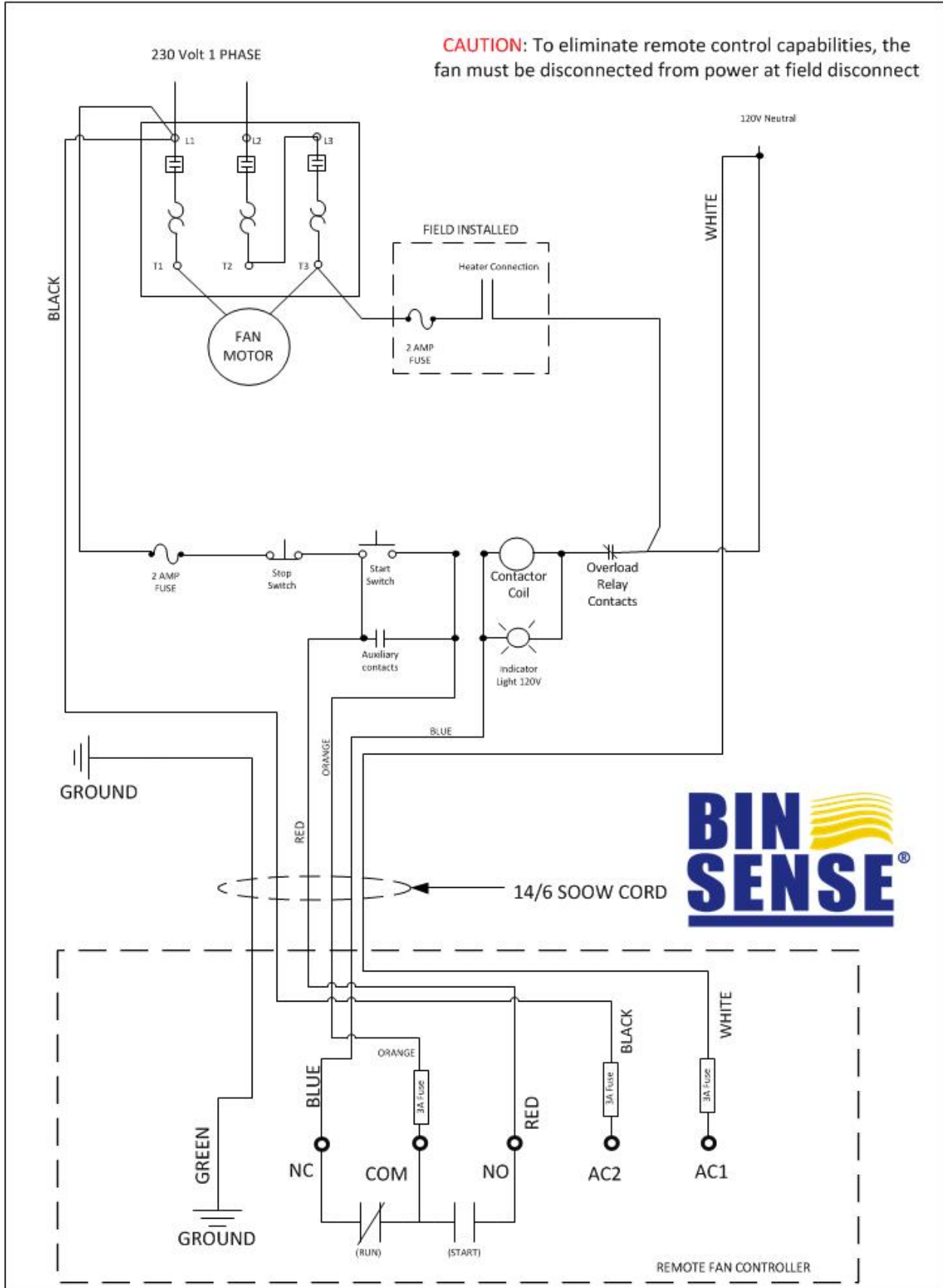


GSI 3 Phase 575 Volt Schematic

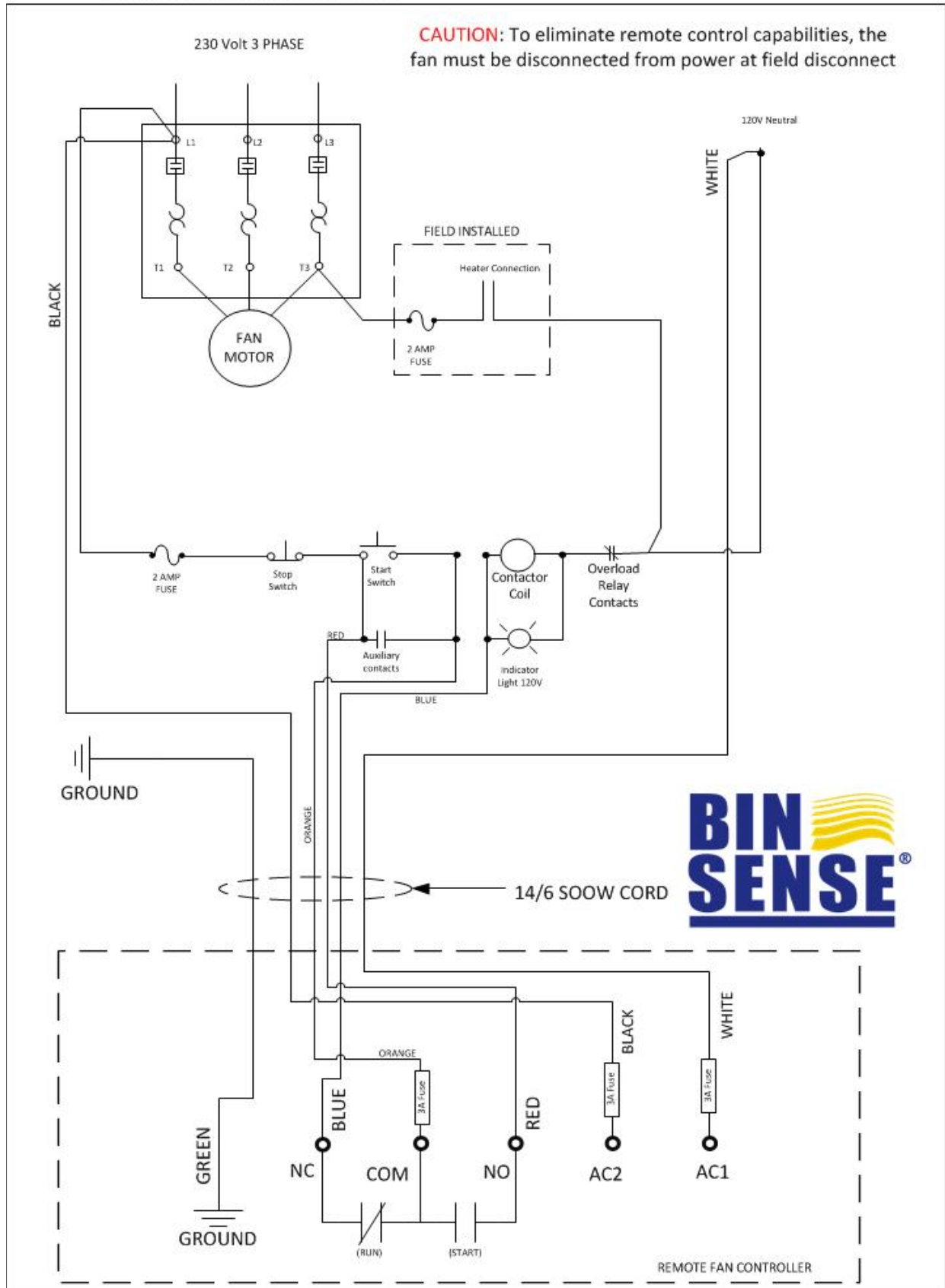


1 PHASE 230 V GSI Fan connection

CAUTION: To eliminate remote control capabilities, the fan must be disconnected from power at field disconnect

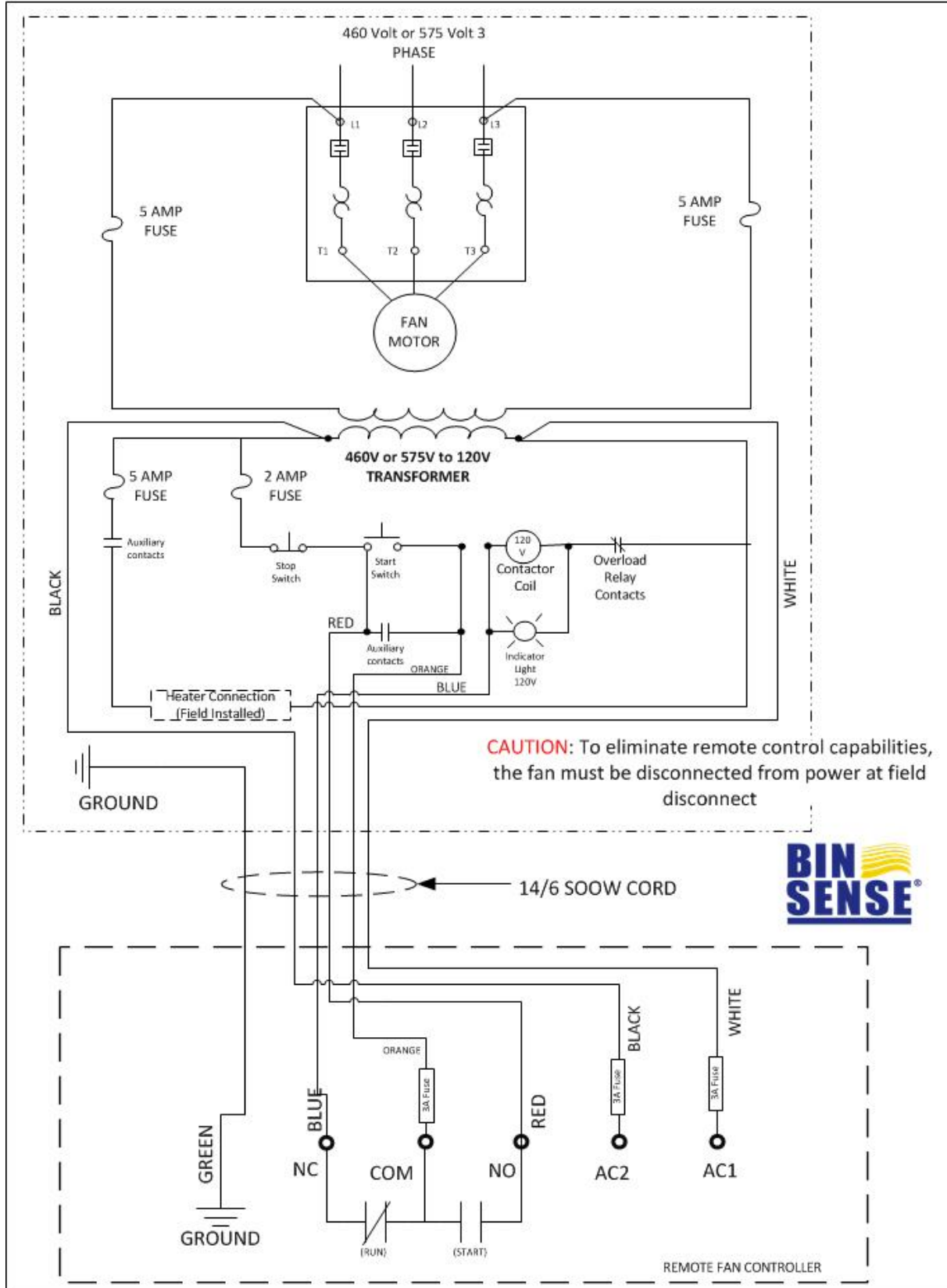


3 PHASE 230 V GSI Fan connection

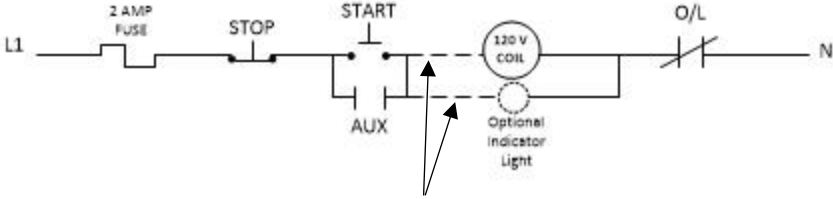


3 PHASE 460 V or 575 V GSI Fan connection

CAUTION: These fans use the 230 Volt fan controller due to transformed down control voltage

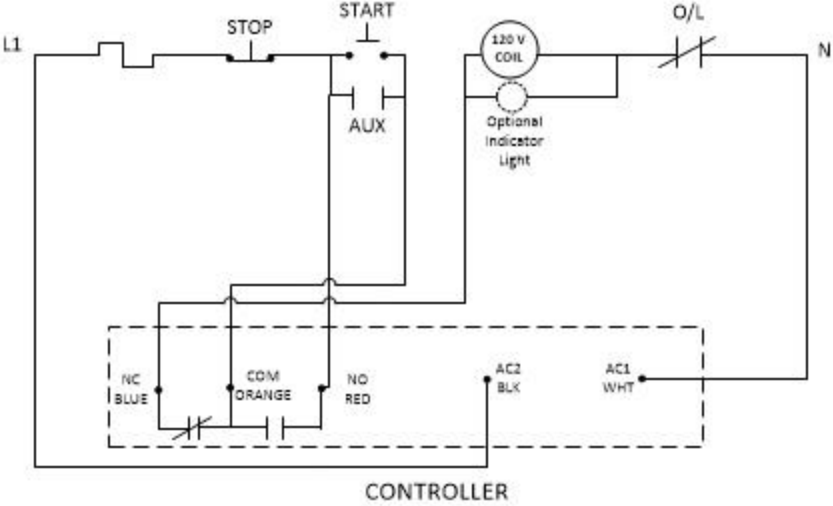


GSI Single and 3 Phase 230 V & 3 Phase 460 V/575 V Control Wiring One-Line

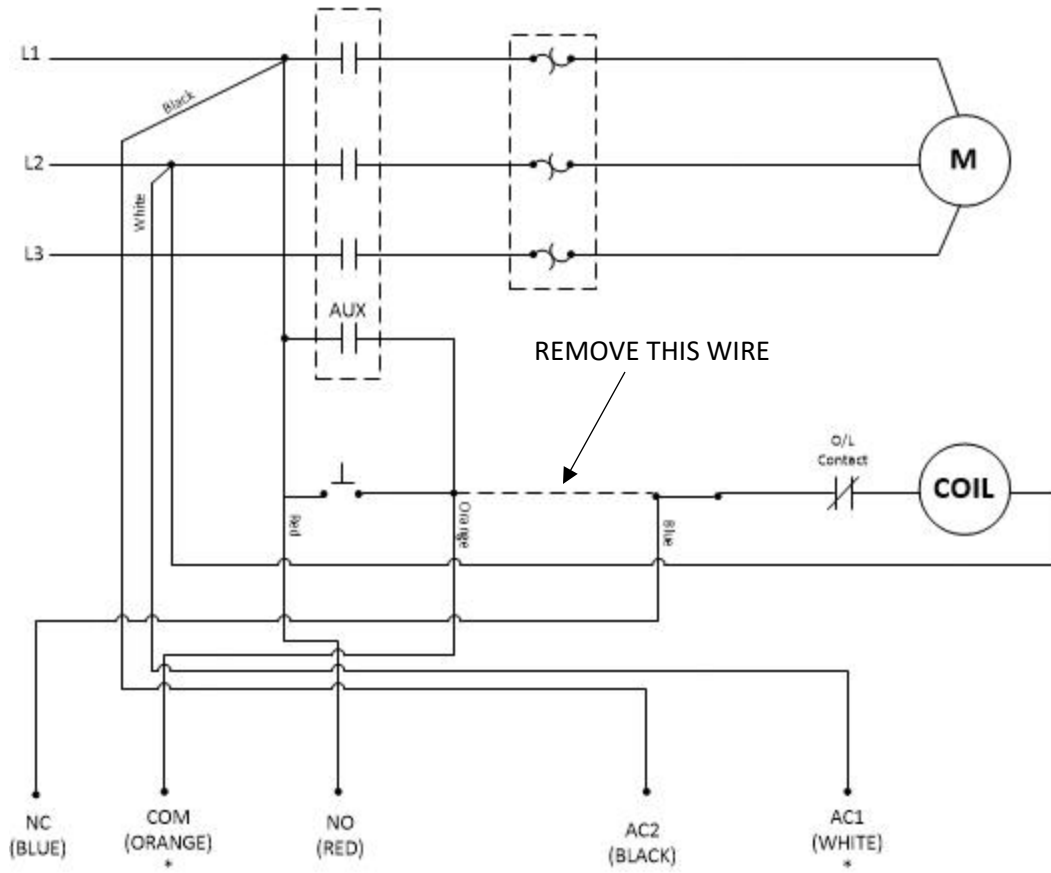


REMOVE THESE WIRES

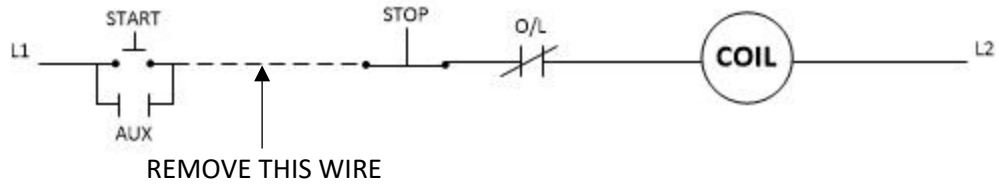
With Controller



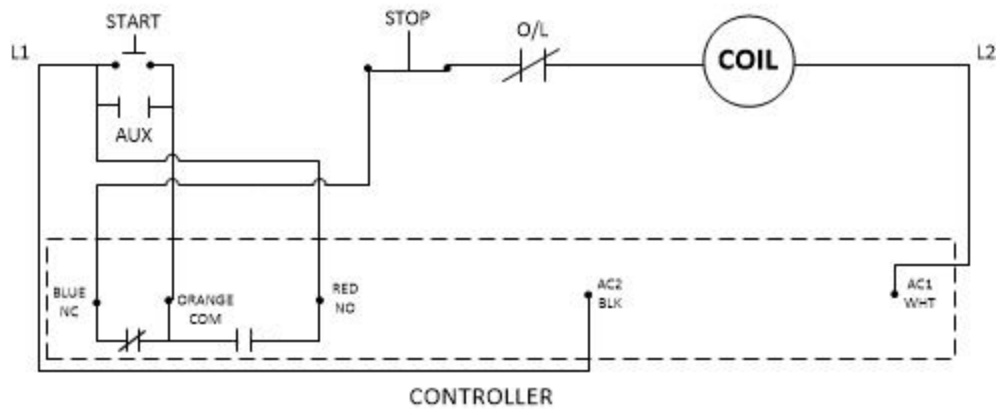
SUKUP 3 Phase 208 V O/L Fan Connection



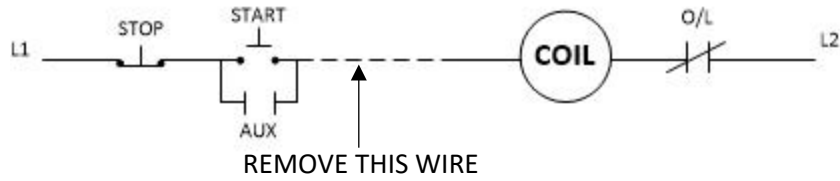
SUKUP 3 Phase 208 V Control Wiring One-Line



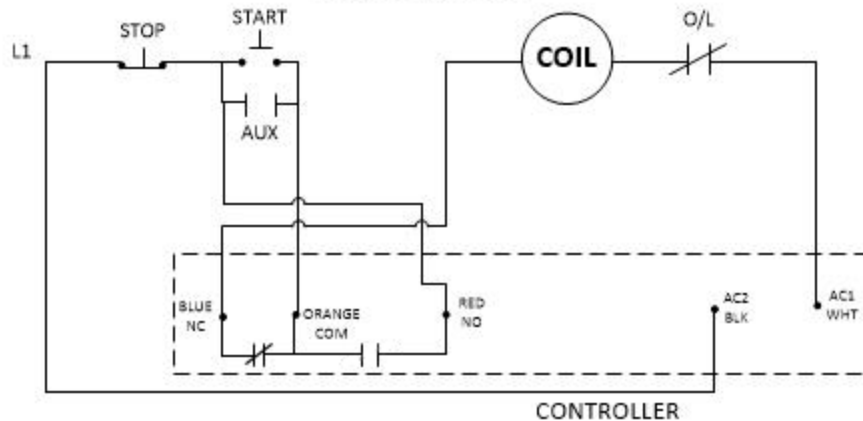
With Controller



SUPERIOR Single Phase 230 V Control Wiring One-Line



With Controller



2.3 Connecting to Master or Remote Units

The Fan Controller cable on the BIN-SENSE® Fan Controller needs to be connected to the sensor link cable on the Master or Remote unit that is on that bin. A splitter 1 x 2 cable can be used on the Master or Remote in order to be able to plug in the temperature or moisture sensing cable(s) as well as the Fan Controller cable. When running the link cable from the BIN-SENSE® Fan Controller to the attached Master or Remote, the shortest distance should always be used when feasible to do so.

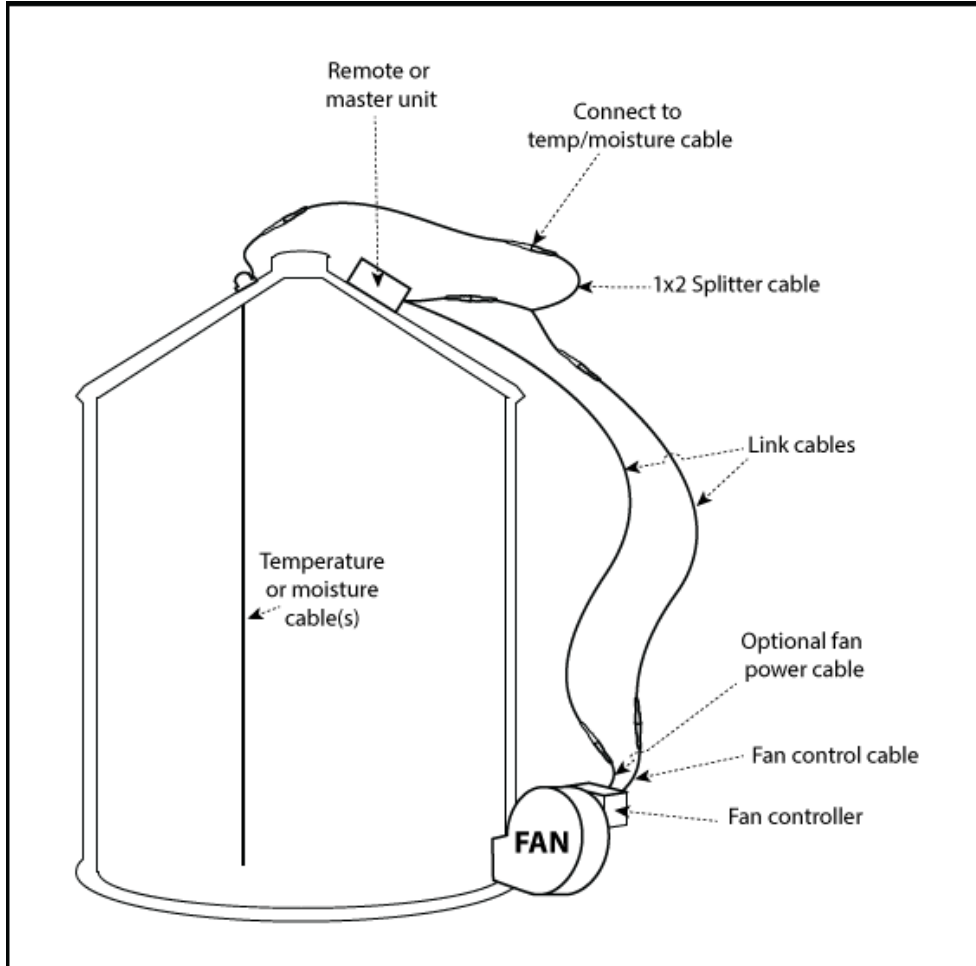


Figure 2: Diagram of cable set up



CAUTION: When climbing up a bin, be sure to use approved safety procedures and materials such as ladders and a safety harness. When working above 1.2 metres wear a safety harness or personal protective equipment. An approved tool belt must be worn to keep both hands free when climbing up and down a ladder.

2.4 Optional Powering of Master or Remote Units from BIN-SENSE® Fan Controller

The BIN-SENSE® Fan Controller comes standard with a Fan Power Cable that can be used to power the Master or Remote Unit that it is connected to. In order to utilize this feature a second Link Cable will need to be run from the Master or Remote unit to the BIN-SENSE® Fan Controller. Be aware of the mate end required for the proper connection to the BIN-SENSE® Fan Controller. It is the opposite of the required end for the Fan Control Cable. At the Master or Remote unit, the stripped back wire can be brought into the Master or Remote unit through the same cable grip as the Sensor Link Cable. **NOTE: Another cable grip may need to be added.** Once inside the enclosure, the wire will take the place of the solar panel(s). For the Remote unit, the black and red wires going to the solar panel from J11 are to be cut at a halfway point, stripped and connected to both colors of the Link Cable wires going to the BIN-SENSE® Fan Controller. For the Master unit, the Auxiliary Power Cable can be used by connecting it on the inside to J9. Alternatively, a wire can be run to the inside of the enclosure. Cut the black and red wires going from J9 to the battery at a halfway point, strip and connect to both colours of the Link Cable wires going to the BIN-SENSE® Fan Controller Power cable. **NOTE: The solar panel must be disconnected by removing the connector from J11, in order not to damage the Fan Controller.** Batteries are now no longer required in the Master and Remote unit. They may be removed or can remain installed if chosen.



CAUTION: When using the BIN-SENSE® Fan Controller to power the Master or Remote Unit, the aeration fan must always remain connected to power otherwise the unit or system could stop operating.

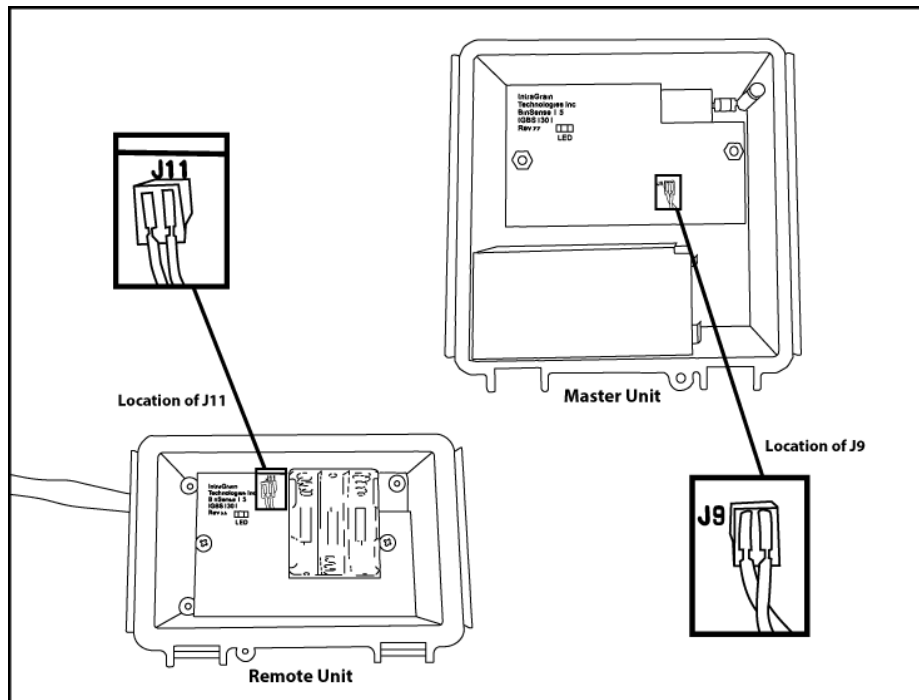


Figure 3: Optional power by connecting J11 to wire in Remote units and J9 in Master units

2.5 Installing BIN-SENSE® Fan Controllers in SMART Setups

When connecting multiple BIN-SENSE® Fan Controllers to a single Master or Remote unit the following needs to be done:

1. Dip Switches inside Master or Remote unit need to be set to give unique IDs and to set offset start up times. (See *Figure 4*) The BIN-SENSE® Fan Controllers require unique IDs in order to determine which bin they are installed on and to be able to accommodate start up offset times. The IDs should always start at 1 and increase consecutively.
2. Do not connect more than 3 BIN-SENSE® Fan Controllers to any one Master or Remote unit in order to stay within the unit's limitations.

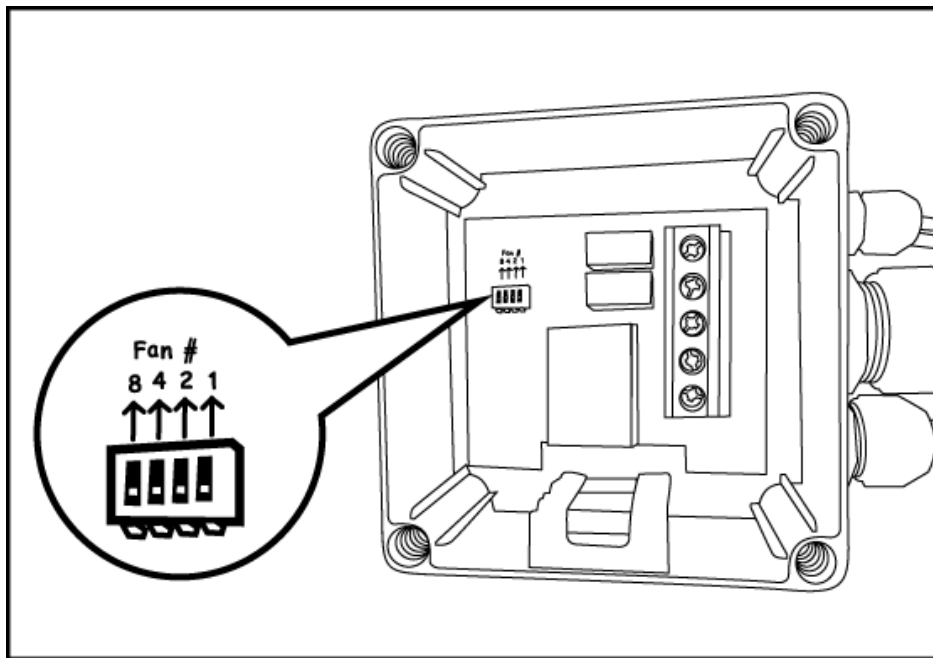


Figure 4: Dip switch to set unique ID

When installing multiple BIN-SENSE® Fan Controllers on a SMART setup, the Fan Controller Cable can be connected through the BIN-SENSE® Fan Controllers by using a 1X2 Splitter Cable.



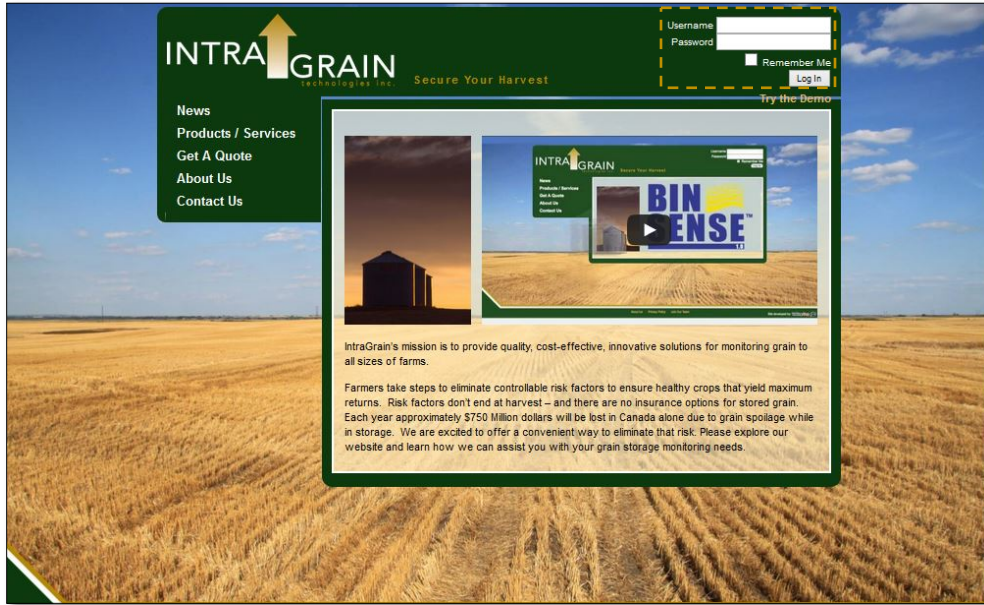
CAUTION: Extreme care and caution must be used when climbing up a bin. Be sure to use approved safety procedures and materials such as ladders and a safety harness. When working above 1.2 metres, wear a safety harness or personal protective equipment. An approved tool belt must be worn to keep both hands free when climbing up and down a ladder.

Good work, you have now installed your BIN-SENSE® Fan Controller.

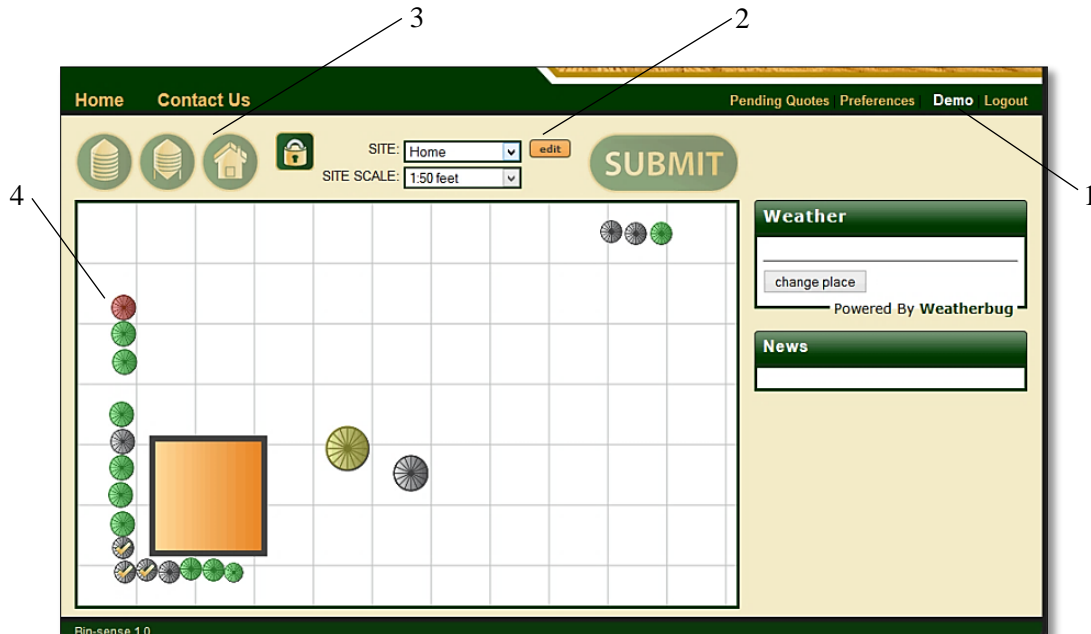
3.0 Using Your BIN-SENSE® Fan Controller

3.1 Logging In

1. Using your preferred web browser, go to www.intragrain.com
2. Input *username* and *password* in the top right corner of website. Click “Log in”.

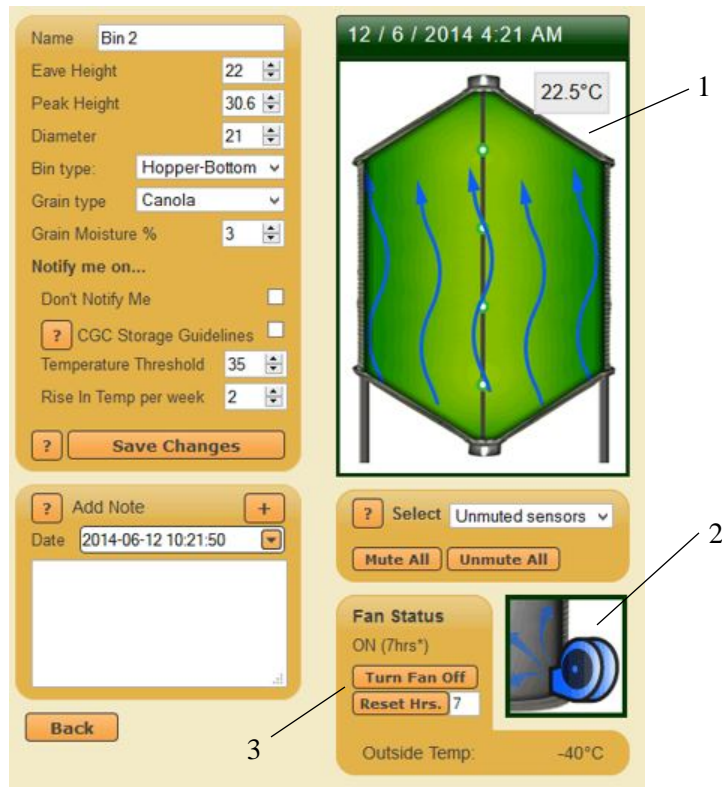


3. A successful log in page includes the following:



1. Username and display
 2. Site and scale
 3. Request additional monitoring hardware
 4. You farm layout
-  Safe temperature
 -  Potentially harmful temperature
 -  Harmful temperature detected
 -  Not currently monitored

4. Click on each bin with BIN-SENSE® Fan Controller installed to display details such as:



1. Bin details (blue wavy arrows indicate fan is running)
2. Fan status (location where you have your fan settings)
 - ON: Turns on fan and set for how many hours you need fan to run
 - OFF: turns fan off
 - RESET: When fan is ON, set how long you want to run the fan, when fan is OFF, set in how many hours you want the fan to turn on
 - “Starting Up”: Start fan command is queued and waiting for system to report
 - “Shutting Down”: Stop fan command is queued and waiting for system to report
 - “Cannot Run”: Error with starting fan, or command is not sent through
3. Fan indicator
 - BLUE: Cooling
 - GREEN: Starting up
 - GREY: Off
 - RED: Cannot run

3.2 Mobile Browser



Fan Icon Colour
GREEN: Starting up
BLUE: Fan on
GREY: Fan off
RED: Fan cannot run

Start fan from your mobile device

Set how many hours to run fan

4.0 Product Warranty Statement

- 4.1 **Definitions.** For the purposes of this Instruction Manual, the following terms shall have the following meanings ascribed to them:
- a. **Equipment:** means any hardware, device or equipment provided by IntraGrain in association with the BIN-SENSE® System.
 - b. **IntraGrain Data:** means any proprietary information, documents, records, materials or data provided to or accessible to the User through the use of the IntraGrain Service.
 - c. **IntraGrain Service:** means the BIN-SENSE® equipment and service and the IntraGrain website and user interfaces, including all features and functionalities and all content and software associated therewith.
 - d. **User:** means the purchaser or any user of the IntraGrain Service.
- 4.2 **Limited Warranty.** IntraGrain warrants, for a period of twelve months from the date of purchase, the Equipment shall be free of defects in materials and workmanship under normal use. During the warranty period, IntraGrain shall, at its option, repair or replace any defective components or products upon return of the product at the User's expense to IntraGrain, at no charge for labour or materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The User must promptly notify IntraGrain in writing that there is defect in material or workmanship, such written notice to be received prior to the expiration of the warranty period. There is no warranty on any software products provided to the User on a license basis in association with the BIN-SENSE® System. The User is solely responsible for the proper selection, installation, operation and maintenance of any Equipment purchased from IntraGrain.
- 4.3 **Limitations of Warranty.** This warranty only applies to the functioning of the Equipment, and specifically only to defects in parts and workmanship relating to normal use. It does not cover: (a) damage incurred in shipping or handling; (b) damage caused by disaster such as fire, flood, wind, earthquake or lightning; (c) damage due to causes beyond the control of IntraGrain such as excessive voltage, mechanical shock or water damage; (d) damage caused by unauthorized attachment, alterations, modifications or foreign objects by the User or any third party; (e) defects caused by failure to properly install or to provide a suitable installation environment for the Equipment; (f) damage caused by use or misuse of the Equipment for purposes other than those for which it was designed; (g) damage from improper maintenance; or (h) damage arising out of any other abuse, mishandling or improper application of the Equipment.
- 4.4 **GENERAL WARRANTY DISCLAIMER.** OTHER THAN AS EXPRESSLY SET FORTH IN THIS AGREEMENT, INTRAGRAIN MAKES NO REPRESENTATIONS, WARRANTIES OR COVENANTS TO ANY PERSON OR ENTITY WITH RESPECT TO THE EQUIPMENT OR THE INTRAGRAIN

SERVICE. EXCEPT AS SET FORTH ABOVE, THE INTRAGRAIN SERVICE IS PROVIDED ON AN "AS-IS" AND "AS AVAILABLE" BASIS. INTRAGRAIN DOES NOT GIVE ANY WARRANTIES, GUARANTEES, REPRESENTATIONS OR CONDITIONS, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FUNCTIONALITY OF THE EQUIPMENT OR THE INTRAGRAIN SERVICE, FITNESS FOR A PARTICULAR PURPOSE (INCLUDING THE PREVENTION OF HEATED, SPOILED OR OTHERWISE UNMARKETABLE GRAIN), ACCURACY OF DATA, COMPLIANCE WITH ANY DESCRIPTION, OR NON-INFRINGEMENT OF THIRD PARTY RIGHTS) WITH RESPECT TO ANY EQUIPMENT AND THE INTRAGRAIN SERVICE AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW.

4.5 NO WARRANTY OF SERVICE AVAILABILITY. INTRAGRAIN DOES NOT GUARANTEE THE ACCURACY OR TIMELINESS OF INFORMATION AND/OR DATA (INCLUDING, WITHOUT LIMITATION, INTRAGRAIN DATA) AVAILABLE OR ACCESSIBLE THROUGH USE OF THE EQUIPMENT AND THE INTRAGRAIN SERVICE NOR THAT THE INTRAGRAIN SERVICE MAY BE PROVIDED WITHOUT INTERRUPTION OR ERROR FREE. INTRAGRAIN DOES NOT WARRANT THAT IT WILL BE ABLE TO CORRECT ALL REPORTED DEFECTS IN THE INTRAGRAIN SERVICE. INTRAGRAIN DOES NOT GUARANTEE THAT THE INTRAGRAIN SERVICE AND ACCESS TO YOUR ACCOUNT WILL ALWAYS FUNCTION WITHOUT DISRUPTIONS OR DELAY. SINCE THE INTRAGRAIN SERVICE MAY OR WILL BE FACILITATED AND/OR TRANSMITTED THROUGH PUBLIC INTERNET LINES, COMMUNICATIONS NETWORKS AND PUBLIC AND/OR PRIVATE SWITCHED TELEPHONY NETWORK(S) (AS THE CASE MAY BE), YOU UNDERSTAND THAT THERE MAY BE SERVICE DISRUPTIONS OR OUTAGES.

4.6 LIABILITY EXCLUSION. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, INTRAGRAIN SHALL NOT BE LIABLE FOR ANY DIRECT (EXCEPT AS PROVIDED IN SECTION 1.7 BELOW) INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES WHATSOEVER OR FOR ANY LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF REVENUE, LOSS OF REPUTATION OR GOODWILL, LOSS OF CONFIDENTIAL OR OTHER INFORMATION, BUSINESS INTERRUPTION OR FOR ANY INJURY OR LOSS OF LIFE ARISING OUT OF OR IN ANY WAY RELATED TO THE USE OF OR INABILITY TO USE, THE EQUIPMENT OR THE INTRAGRAIN SERVICE. THIS EXCLUSION INCLUDES ANY LIABILITY THAT MAY ARISE

OUT OF THIRD PARTY CLAIMS. CUSTOMER SHALL NOT APPLY FOR, SEEK OR OTHERWISE REQUEST FROM ANY COURT, RELIEF, REMEDY, COMPENSATION OR REDRESS IN THE FORM OF EXEMPLARY OR PUNITIVE DAMAGES.

4.7 **MAXIMUM LIABILITY.** THE AGGREGATE LIABILITY OF INTRAGRAIN FOR ALL CLAIMS OF ANY KIND WHETHER BASED IN CONTRACT, INDEMNITY, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, FOR ALL LOSSES OR DAMAGES ARISING OUT OF, OR RESULTING IN CONNECTION WITH THE USE OF THE EQUIPMENT, THE PERFORMANCE OR LACK THEREOF, OR FROM ANY PRODUCTS OR SERVICES OFFERED BY INTRAGRAIN IN CONNECTION WITH THE EQUIPMENT, WILL IN NO CASE EXCEED THE AMOUNT, IF ANY, PAID BY THE CUSTOMER TO PURCHASE THE EQUIPMENT AND TO ACCESS THE INTRAGRAIN SERVICE IN THE YEAR IN WHICH THE CLAIM AROSE. INTRAGRAIN IS NOT AND SHALL NOT BE LIABLE FOR ANY LOSS OF BUSINESS, USE OR DATA, INTERRUPTION OF BUSINESS, LOST PROFITS OR GOODWILL, OR OTHER KIND OF INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH LOSS, AND NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OR OF ANY LIMITED REMEDY. THIS EXCLUSION INCLUDES ANY LIABILITY THAT MAY ARISE OUT OF THIRD PARTY CLAIMS AGAINST THE CUSTOMER OR INTRAGRAIN.

5.0 Contact Us

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