

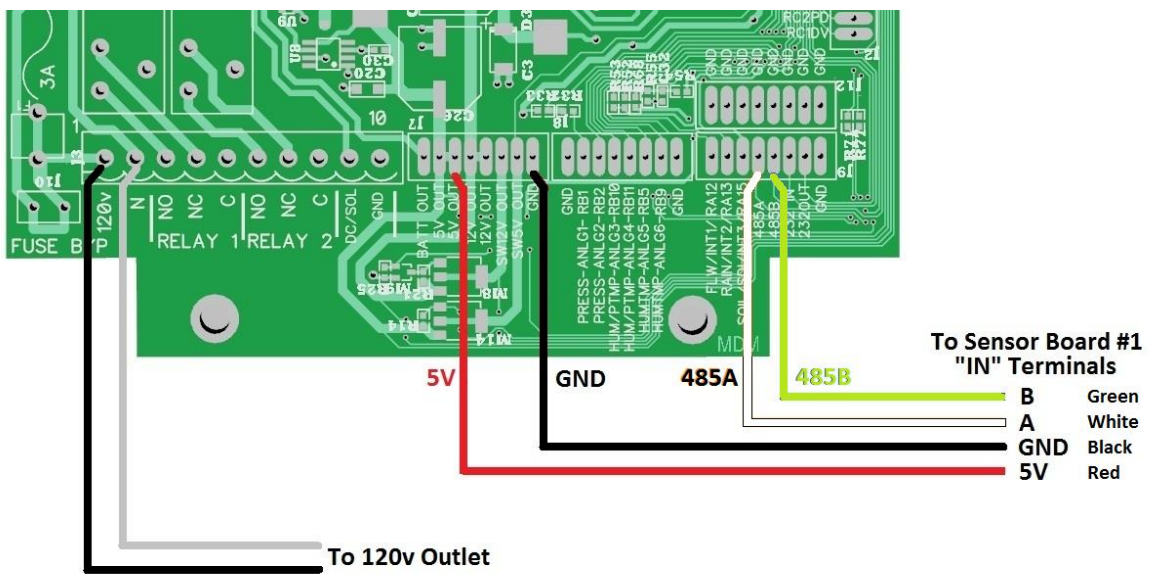
# Crop Link / Grain Trac Bin Monitor Installation Guide

## Using Bin4 v2 63 sensor type boards:

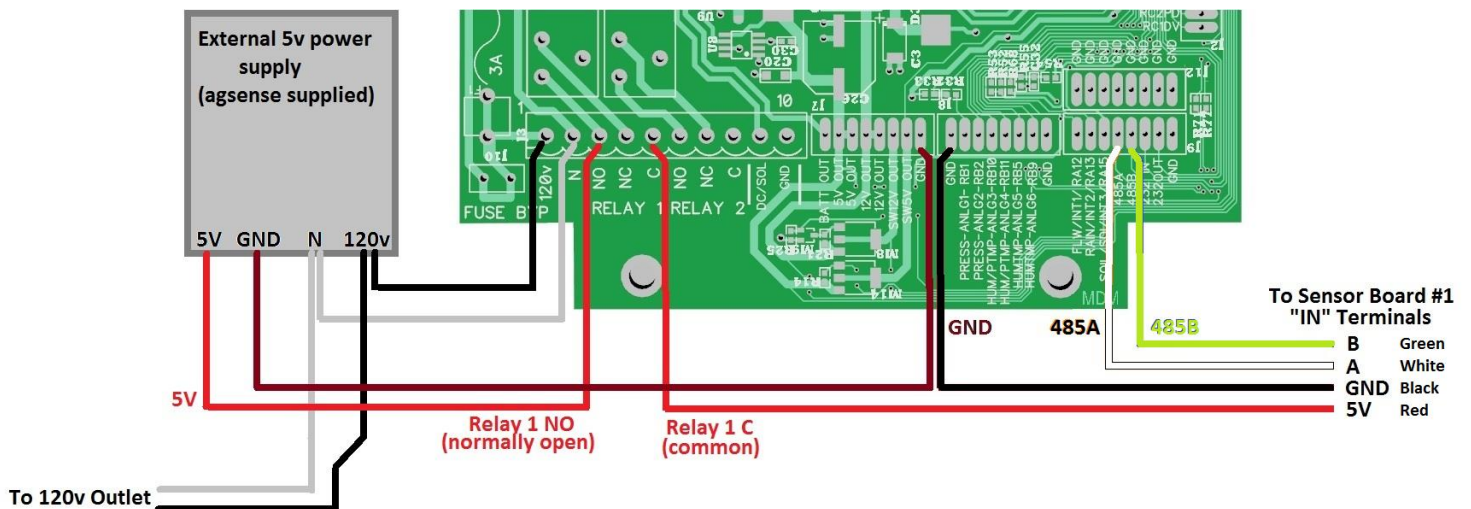
**Power Cord** – the pre-installed power cord is 3 prong, and is to go to a 120v w/ground outlet only.

**Cell Antenna:** In most installations, the communications unit is mounted in its own plastic enclosure with a black metal bracket attached which has the cell antenna pre-mounted. On units that the communications board is mounted inside a large metal enclosure with multiple sensor boards: make sure magnetic antenna is placed on top of the metal box or on steel bin/building with as few obstructions as possible. Be sure antenna cable does not get kinked, cut, damaged during installation.

### Data Cable connection to the communication board:



### Communications Board Connections - Systems with up to 4 Sensor Boards



### Communications Board Connections - Systems with 5+ Sensor Boards

## **Data Cable between boxes:**

In a multiple board system with two or more boxes containing sensor boards, locate an empty terminal strip on the Sensor Board in each box labeled “IN” and “OUT” (in box 1, one of the sensor boards will have its “out” section empty, and in box 2 one of the “in” sections will be empty etc..) - above each “IN” and “OUT” there are four terminals: “B” “A” “5V” “GND”

Starting at Box 1 - the main unit (the one that contains the communications board and antenna) - connect:

Box 1 Out “B” to Box 2 In “B”  
Box 1 Out “A” to Box 2 In “A”  
Box 1 Out “5v” to Box2 In “5v”  
Box 1 Out “GND” to Box 2 In “GND”

Continue to connect all boxes together in this pattern: Box 2 “OUT” to Box 3 “IN”, Box 3 “OUT to Box 4 “IN”, etc...

Be sure to use appropriate sized cable between boxes - no smaller than 20 gauge between boxes that have very few sensor boards are very close together, up to 12 or 10 gauge between all boxes that have more sensor boards and/or longer distances between boxes. On longer runs, be sure to use shielded cable and/or conduit to limit electrical noise coming from other equipment.

## **Connecting Cables to the Sensor Boards:**

Be sure to write down on paper how many cables are in each bin, and how many sensors are on each cable (note: some cables have more wires than actual sensors – \*\*example - some cables have 12 sensor wires, but only 10 sensors – the two extra wires would not be used or attached to the sensor board – you may need to check the manufacturers tag on each cable, or ohm test all of the sensor wires to determine how many are actually connected to sensors) Opens or no continuity between the common wire and the sensor wire = no sensor attached.

Also be sure to write down on paper how many cables are installed into each sensor board, what bins those cables go to, and how many sensors each cable has starting from board 1 sensor 1. We will need all this information when you call AgSense to have us configure the system to show up on the internet correctly. (A worksheet is provided in the following pages)

Each sensor board can hold a maximum of 63 sensors. It can also hold up to 8 separate cables, but all of those cables sensors added together cannot exceed the limit of 63 sensors per board.

**NOTE: if a sensor board does not have enough positions left to fit the entire cable onto that board, you must move the entire cable to the next board.**

Starting with Bin 1, Cable 1, Sensor 1 (sensor 1 of each cable being the bottom of the bin – see temp cable color codes in the examples) , start installing the sensor wires into the sensor boards starting at board 1 sensor 1, see examples below.

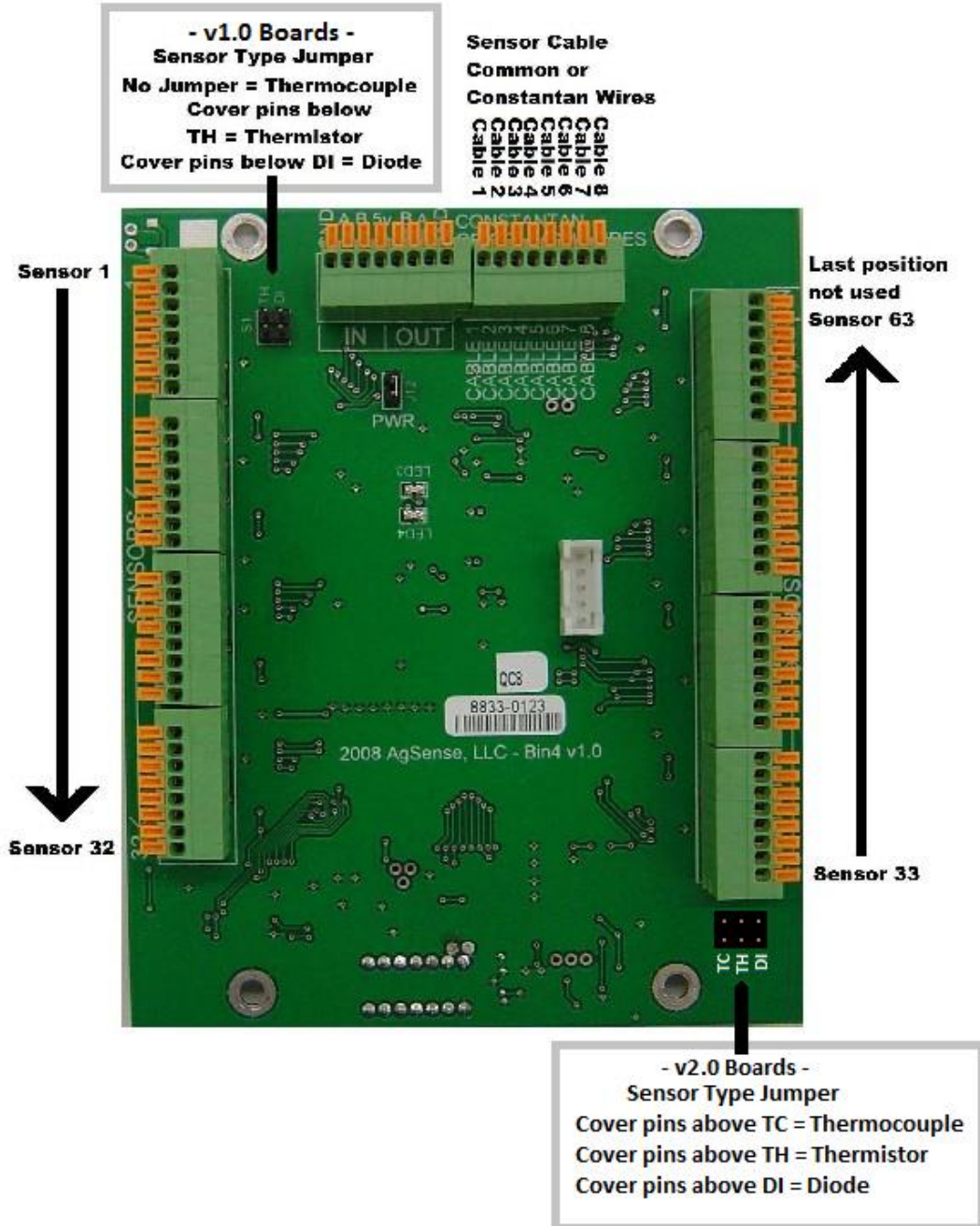
**Example 1: 3 cables, 6 sensors each**

Cable 1, Sensors 1-6 go into board positions 1-6  
 Cable 1 common wire goes into position marked “Cable 1” at the top of the board.

Cable 2, Sensors 1-6 go into board positions 7-12  
 Cable 2 common wire goes into position marked “Cable 2” at the top of the board.

Cable 3, Sensors 1-6 go into board positions 13-18  
 Cable 3 common wire goes into position marked “Cable 3” at the top of the board.

**NOTE: If a cable has more than 1 common/constantan wire, (like some thermocouple cables) all of the common/constantan wires for each individual cable go into the same “Cable” terminal at the top of the board.**



Example of some temp cable wire colors. (Check your cable supplier – your colors/sensor positions may vary) **Note: this board is set up to read the cable from bottom to top. (Sensor 1 is the bottom of the bin)**

Newer Boone and TSG Thermocouple cables: (not all cables will have this many sensors, and some cables may have unused wires that are not connected to sensors – see manufacturers tag or ohm test each cable before installing)

### **Orange Common Wire**

| <b>Color</b> | <b>Terminal Strip Position Number</b> |
|--------------|---------------------------------------|
| Clear        | 18                                    |
| Yellow       | 17                                    |
| Red          | 16                                    |
| Green        | 15                                    |
| Blue         | 14                                    |
| Black        | 13                                    |

### **Brown Common Wire**

| <b>Color</b> | <b>Terminal Strip Position Number</b> |
|--------------|---------------------------------------|
| Clear        | 12                                    |
| Yellow       | 11                                    |
| Red          | 10                                    |
| Green        | 9                                     |
| Blue         | 8                                     |
| Black        | 7                                     |

### **White Common Wire**

| <b>Color</b> | <b>Terminal Strip Position Number</b> |
|--------------|---------------------------------------|
| Clear        | 6                                     |
| Yellow       | 5                                     |
| Red          | 4                                     |
| Green        | 3                                     |
| Blue         | 2                                     |
| Black        | 1                                     |

**Bottom of the Bin**

Opi Cables with Diode or Thermistor Sensors:  
(2 wire or 4 wire digital cables cannot be used with the Grain Trac unit)

### **OPI 8 Sensor Cables**

#### **White Common Wire**

| <b>Color</b> | <b>Cable 1 - Terminal Strip Position Number</b> |
|--------------|---|
| Grey         | 8   |
| Purple       | 7   |
| Blue         | 6   |
| Green        | 5   |
| Yellow       | 4   |
| Orange       | 3   |
| Red          | 2   |
| Brown        | 1   |



## **Using the Crop Link/Grain Trac to control Grain Bin Fans:**

Note: This cannot be used on larger systems with 5+ sensor boards and separate 5v power supply due to relay 1 already being used to control the 5v power going to all the sensor boards.

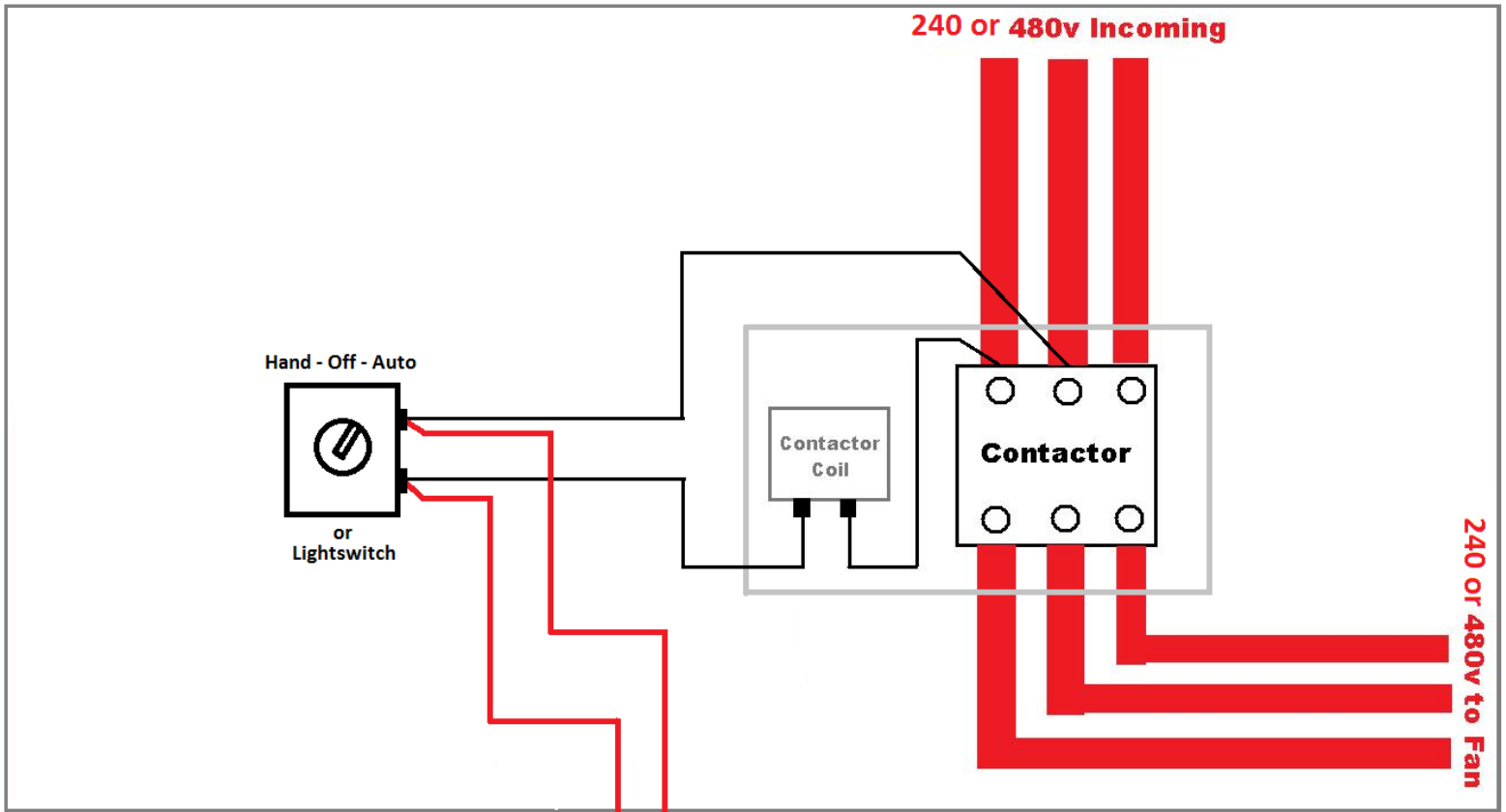
The schematic drawings below show a general overview (simplified) of 2 different styles of fan control wiring – please look them over carefully and consult an experienced electrician if you have any questions or problems with this wiring.

Drawing 1A shows fan controls using the Hand-Off-Auto switch or simple lightswitch style of wiring.

Drawing 1B shows fan controls using the Start and Stop Button style of wiring.

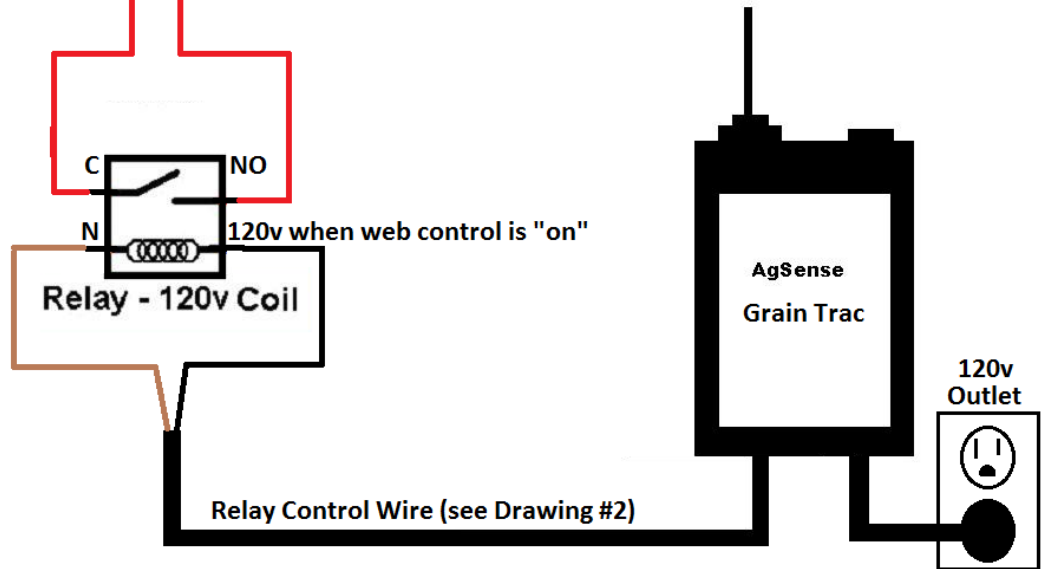
Drawing 2 shows the additional wiring needed at the Grain Trac unit.

TYPICAL EXISTING CONTROLS ( Hand-Off-Auto or Lightswitch style Controls )

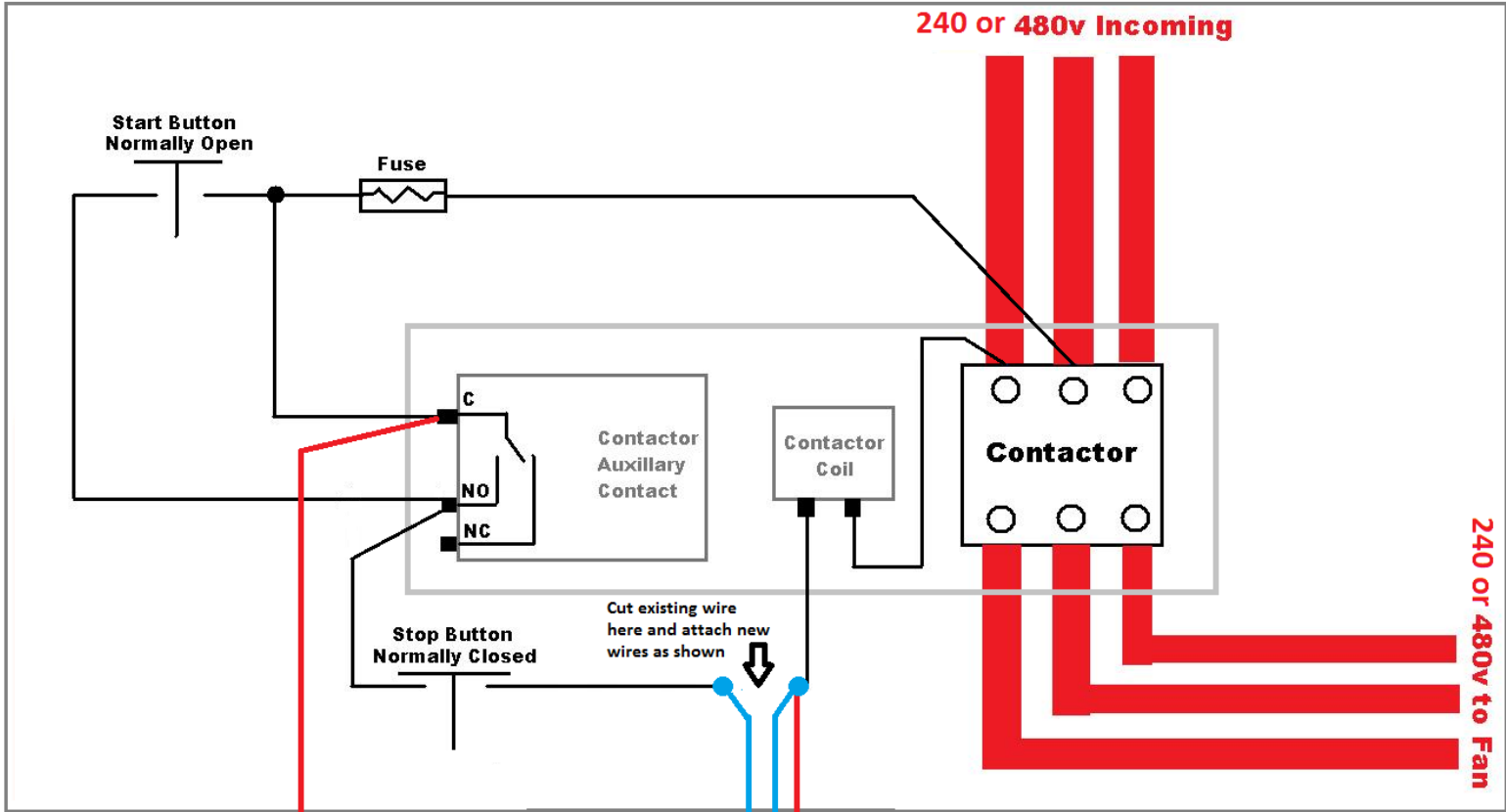


Need to add:

SPST normally open relay with 120v AC Coil (must choose a relay with contacts rated to handle the amperage needed to control the fan's contactor)



TYPICAL EXISTING CONTROLS (separate start and stop pushbuttons)



**Need to add:**  
 Toggle switch  
 SPST normally open relay  
 with 120v AC Coil  
 (must choose a relay  
 with contacts rated to  
 handle the amperage  
 needed to control the  
 fan's contactor)

