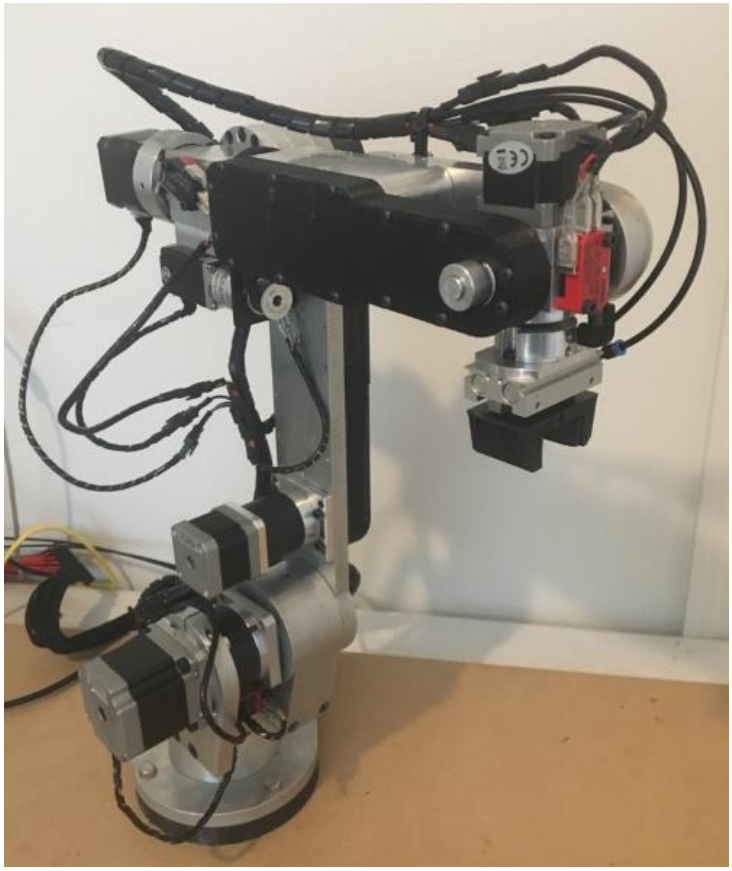


Model AR2 Electrical Enclosure

ELECTRICAL PANEL ASSEMBLY

BILL OF MATERIALS

All Stepper motors, drivers and power supplies are available at:
www.omc-stepperonline.com

by BUD Industries
BUD Industries NBF-32026 Plastic ABS NEMA Economy Box with Solid Door, 15-47/64" Length x 11-51/64" Width x 6-9/32" Height, Light Gray Finish
34 customer reviews | 11 answered questions
Price: $38.83 Prime
In Stock.
Want it Sunday, Feb. 26? Order within 40 mins and choose Two-Day Shipping at checkout. De
Ships from and sold by Amazon.com in easy-to-open packaging. Gift-wrap available.
Used & new (9) from $32.23 Prime

Specifications for this item

Part Number	NBF-32026	Length	15-47/64 inches
Number of Items	1	Material Type	Plastic

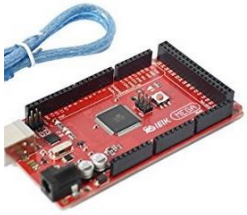
by BUD Industries
BUD Industries NBX-32926-PL ABS Plastic Internal Pa 14-1/4" Length x 10-27/64" Width x 9/64" Thick, for NBF Boxes
3 customer reviews
Price: $20.10 Prime
In Stock.
Want it Sunday, Feb. 26? Order within 39 mins and choose Two-Day Shipping at che
Ships from and sold by Amazon.com.
New (3) from $20.10 Prime

Specifications for this item

Part Number	NBX-32926-PL	Material Type	Plastic

BUD Industries
BUD Industries IPV-1116 IP32 Air Vent, 3.9" x 3.9"
See all 3 in this Product Family
6 customer reviews | 3 answered questions
Was: $11.81
Price: $6.28 prime
You Save: $5.53 (47%)
In Stock.
Want it Sunday, Aug. 6? Order within 7 hrs 17 mins and choose Two-Day

uxcell Switch Power Supply Driver for LED Strip Ligh 110/220V 5V 2A 10W
by uxcell
66 customer reviews | 12 answered questions
Price: $6.99 Prime
Get $50.00 off instantly: Pay $0.00 upon approval for the Amazon.com Rewards Visa C more
Only 9 left in stock.
Want it Sunday, Feb. 26? Order within 37 mins and choose Two-Day Shipping at
Details
Sold by uxcell and Fulfilled by Amazon. Gift-wrap available.
Size: DC 5V 2A 10W
DC 5V 2A 10W | DC 5V 3A 15W | DC 5V 5A 25W | DC 5V 8A 40W
DC 5V 10A 50W | DC 5V 12A 60W | DC 5V 20A 100W | DC 5V 30A 15



Ieik Mega 2560 R3 ATmega2560-16AU + ATME USB Cable for Robot Arduino UNO MEGA2560 Duemilanove 2013
by IEIK
89 customer reviews | 7 answered questions
Price: $11.89 Prime
In Stock.
Want it Sunday, Feb. 26? Order within 1 min and choose Two-Day Shippi
Details
Sold by Smileshopper and Fulfilled by Amazon. Gift-wrap available.
- Our development boards and modules are compatible with the Arduino
- 1 x IEIK Mega 2560 R3 Bule
- 1 x USB Cable

Arduino Mega Case Enclosure New Black Co with Switch
by SB Components
8 customer reviews
Price: $6.99 Free shipping for Prime members when buying this Add-
Your cost could be $1.99: Reload $100, get $5 free. Learn more
In Stock.
Want it Monday, Feb. 27? Add it to a qualifying order within 17 hrs 39 m
Two-Day Shipping at checkout. Details
Sold by SB Components and Fulfilled by Amazon. Gift-wrap available.
- This is a no-nonsense protective case designed specifically for the Ard
- The case is a two-piece injection-molded ABS enclosure that snaps to Arduino. Holds the Arduino firmly in place

JBtek 8 Channel DC 5V Relay Module for A Pi DSP AVR PIC ARM
by JBtek
147 customer reviews | 42 answered questions
Price: $8.98 Prime
In Stock.
Want it Monday, Feb. 27? Order within 17 hrs 37 mins and choose
checkout. Details
Sold by JBtek and Fulfilled by Amazon. Gift-wrap available.
- 5V 8-Channel Relay interface board, and each one needs 15-20mA
- Equiped with high-current relay, AC250V 10A ; DC30V 10A
- Standard interface that can be controlled directly by microcontrolle DSP, ARM, ARM, MSP430, TTL logic)
- Indication LED's for Relay output status

Phanteks 24 Pin M/B Premium Sleeved E 19.68" Length, Black/Red(PH-CB24P_BR
8 customer reviews | 4 answered questions
List Price: $16.99
Price: $14.99 Prime
You Save: $2.00 (12%)
Your cost could be $9.99. Qualified customers get $5 in Gift Card fun Amazon Gift Card Balance. Learn more
Only 20 left in stock (more on the way).
Want it Tuesday, Feb. 14? Order within 4 hrs 34 mins and choos
checkout. Details
Ships from and sold by Amazon.com. Gift-wrap available.
Color: Black/Red

BILL OF MATERIALS CONTINUED

Switchcraft EHUSBBABX USB-B to USB-A Feedthru Panel | Finish
by Switchcraft
$9.70 prime
Only 1 left in stock - order soon.
More Buying Choices
$9.70 (2 new offers)

UGREEN Ethernet Extension Cable Network Cat6 Patch Cable RJ45 Cords Shielded Male to Female Connector, 1.5ft/0.5m
182 customer reviews | 5 answered questions
Sale: $5.59 Prime
Your cost could be $0.59. Qualified customers get $5 in Gift Card funds on first $10 Amazon Gift Card Balance. Learn more
In Stock.
Want it Tuesday, Feb. 14? Order within 4 hrs 37 mins and choose Two-Day S checkout. Details
Sold by UGREEN GROUP LIMITED and Fulfilled by Amazon. Gift-wrap available.
Size: 1.5ft
1.5ft $5.59 Prime | 3ft $6.99 Prime | 6ft $7.55 Prime | 10ft $8.55 Prime

uxcell AC 600V 10A Red Mushroom Emergency Stop Pus Button Switch 22mm NO NC
33 customer reviews | 5 answered questions
Price: $6.94 Prime
In Stock.
Want it Tuesday, May 16? Order within 11 hrs 22 mins and choose Two-Day Shipping at checkout. Details
Sold by uxcell and Fulfilled by Amazon. Gift-wrap available.
- Item Name : Emergency Stop Push Switch;Type : Self Locking Rotary;Ith : 10A
- Ui : 600V;Voltage Category : AC 125V, 5A; AC 300V, 3A;Button Diameter : 4cm/1.5"
- Contact Type : 1 NO (Normally Open) + 1 NC (Normally Closed);Mount Hole Diameter : 2 / 0.87"(7/8");Fit Panel Thickness(Adjustable) : Max 0.6cm / 0.24"
- Size : 3.7 x 3 x 7cm/ 1.4" x 1.2" x 2.8"(L*W*H);Material : Plastic and Metal;Main Color : Re Fuchsia, Blue, Gray
- Net Weight : 45g;Package Content : 1 x Emergency Stop Switch

See more product details

Hilitchi 30 Piece Nylon Plastic Waterproof Adjustable 3.5 - 13mm Cable Glands Joints Cable Gland - PG7, PG9, PG11, PG13.5, PG16
2 customer reviews
Price: $10.41 Prime
Your cost could be $5.41. Qualified customers get $5 in Gift Card funds on first $100 reload of their Amazon Gift Card Balance. Learn more
In Stock.
Sold by Hilitchi and Fulfilled by Amazon. Gift-wrap available.
Color: Black-30pcs
$10.41 Prime | $14.36
- High Quality Cable Gland Kit, Applied to Cable Fixing, Waterproof Design
- Package Includes: 30pcs (6 each size)
- Model: PG7, PG9, PG11, PG13.5, PG16

ASI ASIUK5N Din Rail Mounted Terminal Block, Screw (Pack of 50)
4 customer reviews
List Price: $24.42
Price: $21.01 ($0.42 / DIN Rail Terminal) Prime
You Save: $3.41 (14%)
In Stock.
Want it tomorrow, Feb. 26? Order within 11 hrs 11 mins and choose One-Day Shippi
Details
Ships from and sold by Amazon.com. Gift-wrap available.
Used & new (4) from $15.76 Prime

Specifications for this item

Part	ASIUK5N	Current	Amp

by Amico
15 Pcs 35mm Width Slotted Design Aluminum DIN Rail 9.8"
10 customer reviews
Price: $11.35 & FREE Shipping
Note: Not eligible for Amazon Prime.
Only 1 left in stock.
Get it as soon as March 2 - 7 when you choose Expedited Shipping at checkout.
Ships from and sold by uxcell.
New (5) from $11.35 & FREE shipping.

Specifications for this item

Part Number	a12022900ux0297

ASI ASIEB106 Din Rail Terminal Block External Bridge (10)
4 customer reviews
Price: $22.11 ($2.21 / Din Rail Terminal) prime
In Stock.
Want it Monday, Sept. 11? Order within 2 hrs 15 mins and choose Two-Day Shipping a
Details
Ships from and sold by Amazon.com. Gift-wrap available.
New (1) from $22.11 prime

Specifications for this item

Part Number	ASIEB106

BILL OF MATERIALS CONTINUED

eBoot 130 Pieces Solderless Flexible Breadboard Jumper V
to Male for Arduino Prototype Shield
by eBoot

$6.99 ~~$10.99~~ prime
Get it by **Monday, Sep 11**

Smraza
Smraza 120pcs Multicolored Jumper Wire 40p
Female, 40pin Male to Male, 40pin Female to
Breadboard Jumper Wires Ribbon Cables Kit f
connections S02
10 customer reviews

Price: $7.99 Prime

In Stock.
Want it Thursday, March 9? Order within **2 hrs 26 mins** and choose Two
checkout. Details
Sold by SmrazaDirect and Fulfilled by Amazon. Gift-wrap available.

- Multicolored 3 pieces Breadboard Jumper Wires as a set, High-grade C

There are different options for main power supplies and drivers – you can use 24vdc Power supply with ST-6600 drivers

350W 24V 14.6A 115/230V Switching Power Supply Stepper Motor CNC Router Kits

SKU: S-350-24

This professional 350W 24V 14.6A Switching CNC Power Supply can be widely used in Industrial Automation and CNC Stepper/Servo System. 115V and 230V can be chosed by switch. Powerful functions(eg. PWM control) and professiona de..

$23.96 As low as : $21.06 STEPPERONLINE

Bipolar Stepper Motor Driver Max 4A Current 40VDC Input 1
Subdivision

SKU: ST-6600

This bipolar stepper motor driver is builded with THB6600 IC, the Max output current is 5.0A with 8 current options, and the microstep resolution can reach 16(3200 steps/rev). This low cost high subdivision stepper motor driver ..

$18.98 As low as : $15.53 STEPPERONLINE

Or you can use 36vdc power supply with DM542T digital drivers.
(this combination is recommended)

400W 36V 11A 115/230V Switching Power Supply Stepper Motor CNC Router Kits

SKU: S-400-36

This professional 400W 36V 11A Switching CNC Power Supply can be widely us in Industrial Automation and CNC Machines. 115V and 230V can be chosed by switch. Powerful functions(eg. PWM control) and professional designs (Built-i..

$25.16 As low as : $22.11 STEPPERONLINE

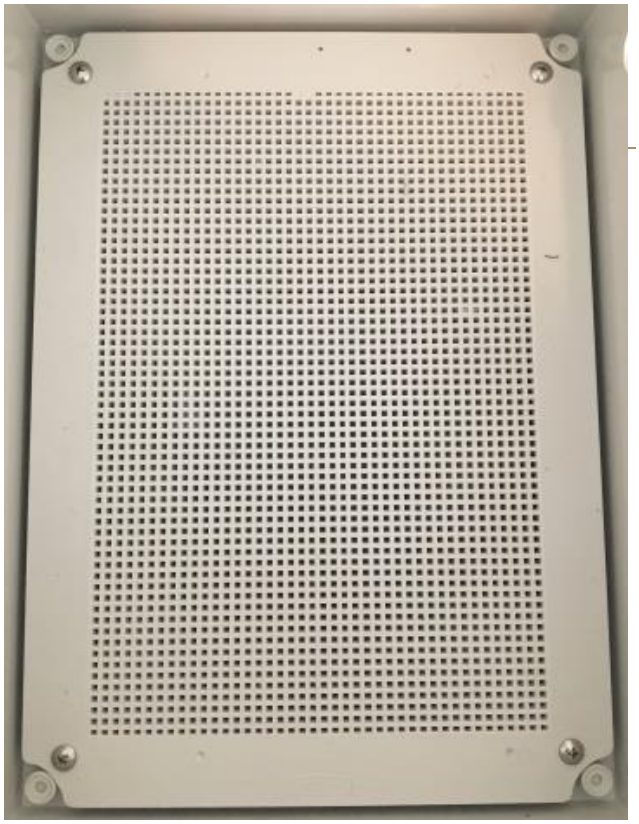
Digital Stepper Driver 1.0-4.2A 20-50VDC for Nema 17, 23, 24
Stepper Motor

SKU: DM542T

This driver is brand STEPPERONLINE and manufactured by Leadshine (The m famous stepper driver company in China). The DM542T is a fully digital stepp driver developed with advanced DSP control algorithm based on the lates..

~~$32.84~~ $25.49 As low as : $22.09 STEPPERONLINE

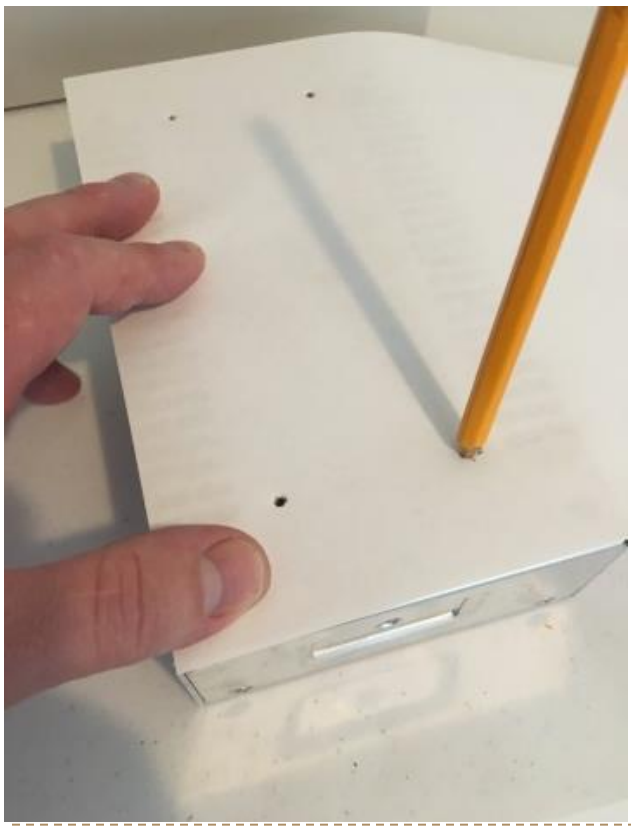
ASSEMBLY



Install backplane into bottom of enclosure using the supplied screws.

Cut 48mm x 30mm rectangular hole in right side of enclosure centered in panel with the top parallel to hasp as shown.

Install fused inlet socket, drill pilot holes and secure with (2) flat head screws.



Align sheet of paper on back of power supply and mark each of the 4 mounting holes.

Align sheet of paper even with backplane and then use marker to transfer the hole pattern.

Drill marked holes with 4mm drill bit then secure power supply with (4) 4mm x 10 button head screws to bottom of enclosure.

Cut length of DIN rail down to approx 6.5” long.

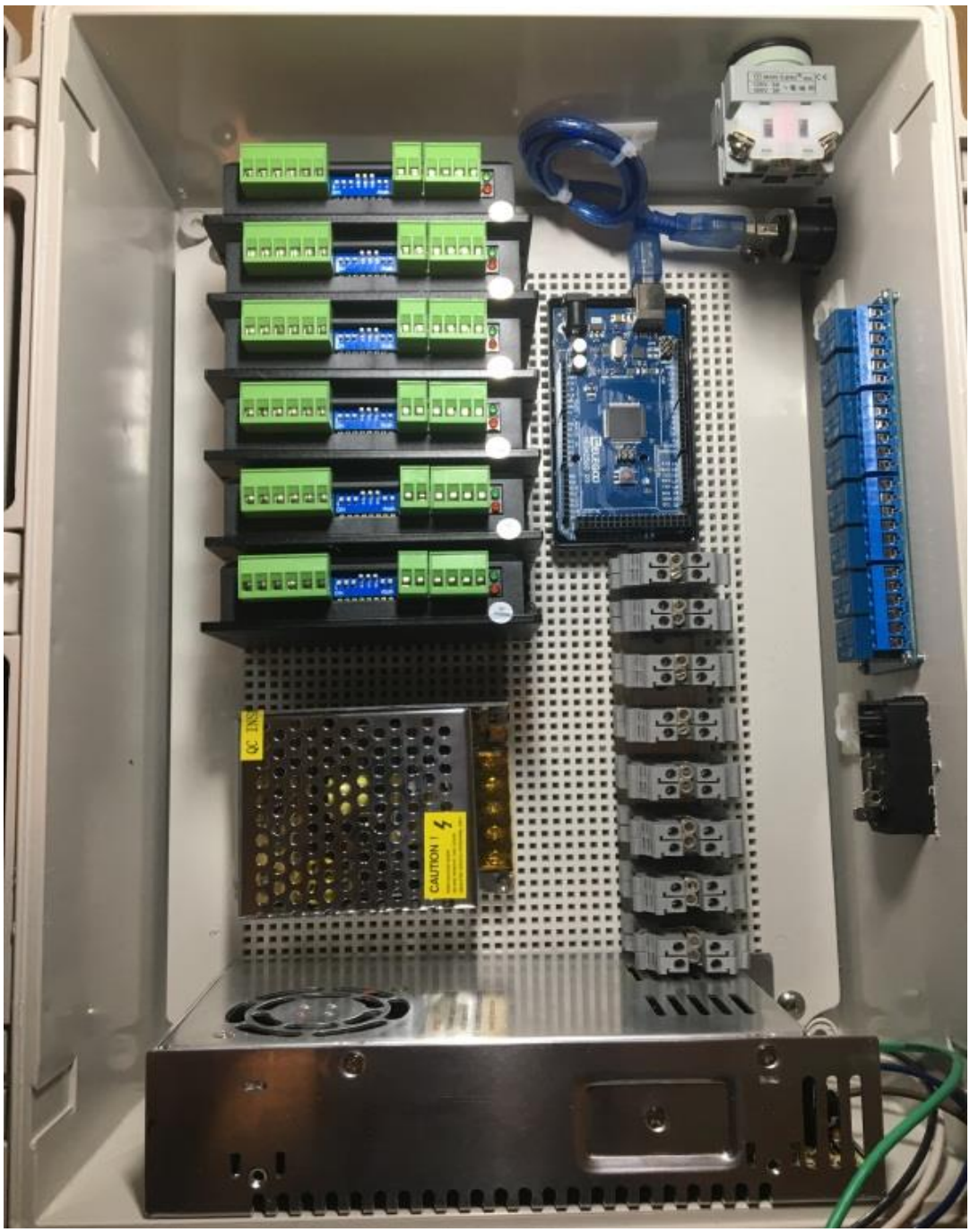
Use #6 and #4 sheet metal screws to secure

- (6) ST-6600 stepper drivers
- 5vdc power supply
- Arduino mega enclosure
- 8 channel relay board
- DIN rail

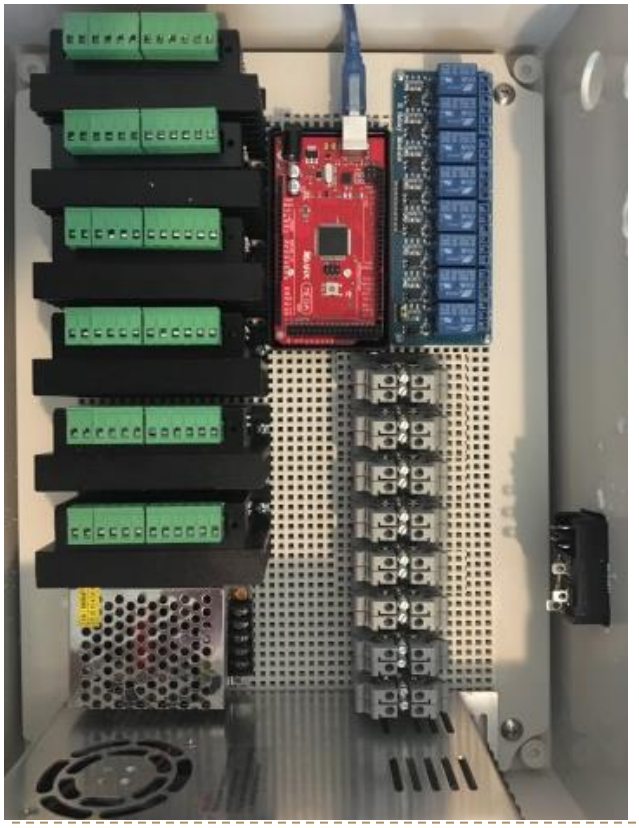
In the orientation shown.

ALTERATE LAYOUT

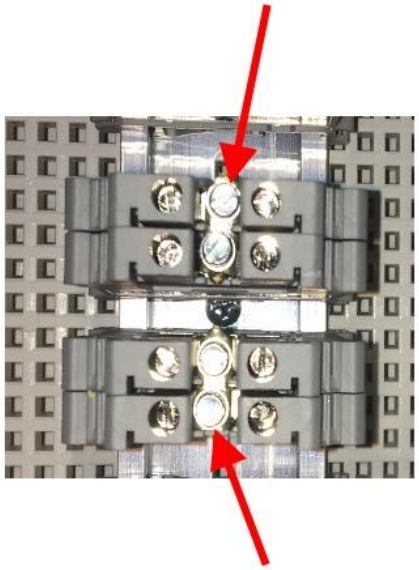
This alternate layout places the relay board on the right side providing easier access to the relay terminals. This layout uses DM542T digital stepper instead of the lower cost ST6600 drivers and a 35vdc power supply.



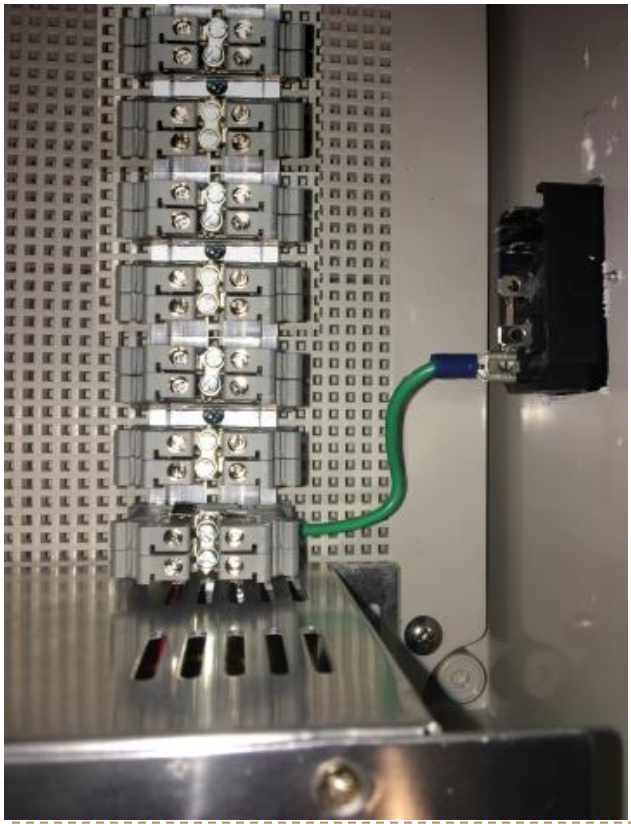
Install Arduino 2560 mega control board with supplied USB cord inserted and secure board to enclosure base using #2 screws.



Install (16) terminal blocks onto DIN rail. Install in 8 groups of 2 as shown.

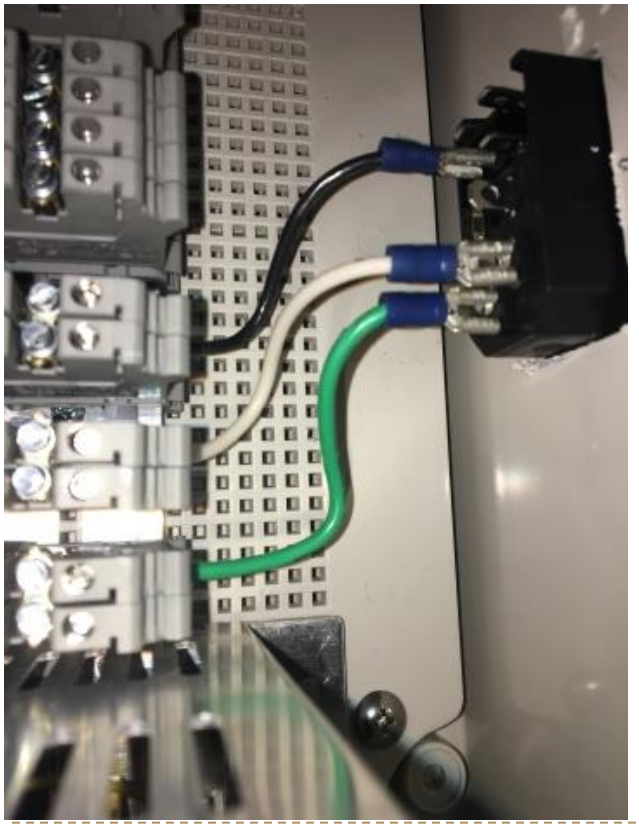


Install terminal jumpers across each set of 2 terminals so that each group of 2 becomes bridged together.

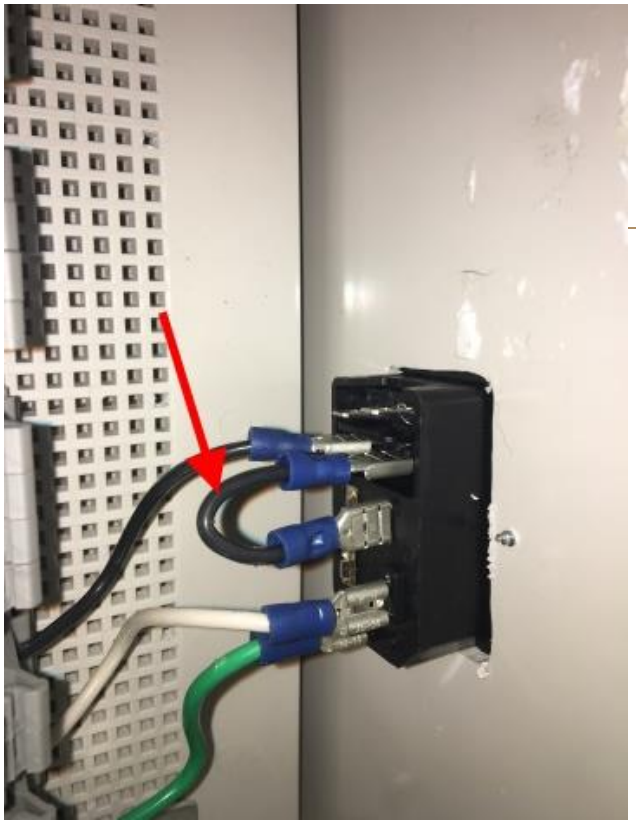


Install green16awg wire from bottom set of terminal blocks to terminal shown on fused inlet socket.

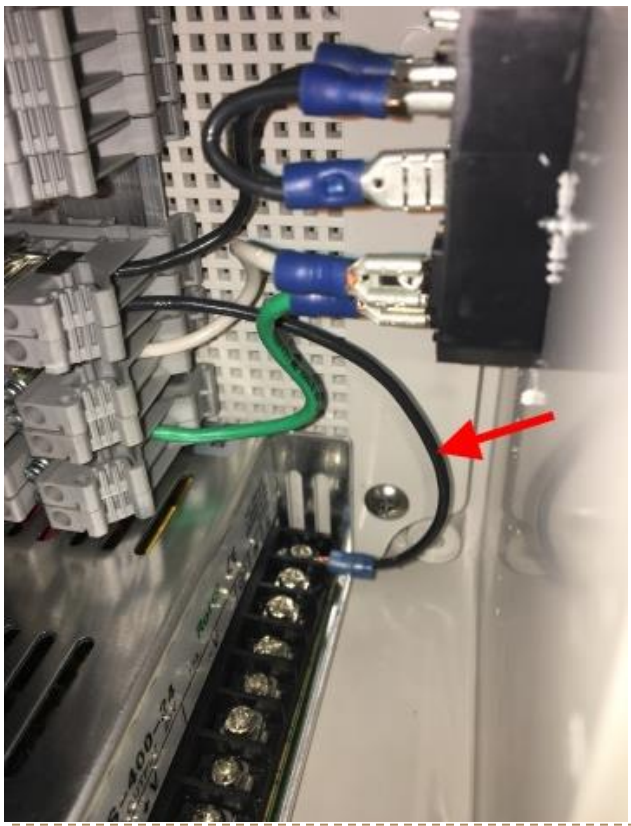
Install white16awg wire from 2nd set of terminal blocks to terminal shown on fused inlet socket.



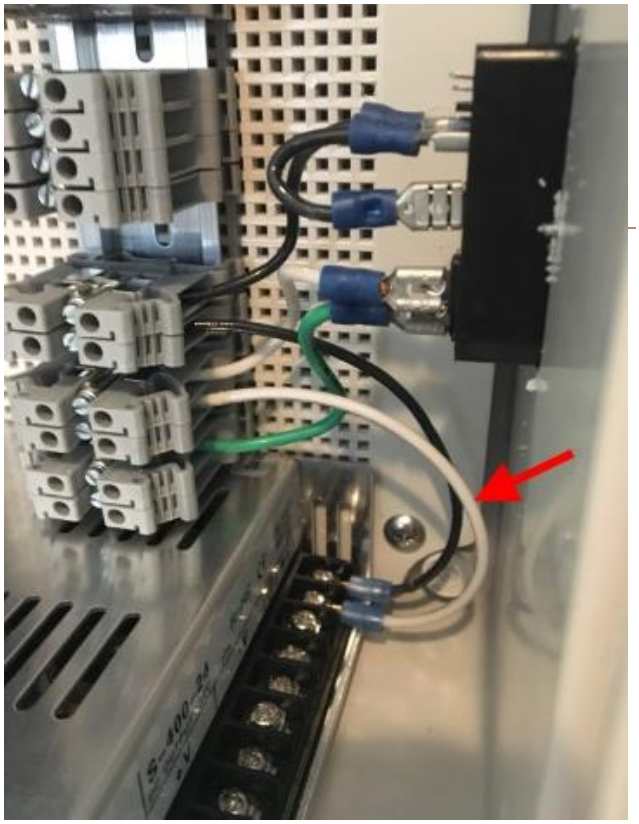
Install black16awg wire from 3rd set of terminal blocks to terminal shown on fused inlet socket.



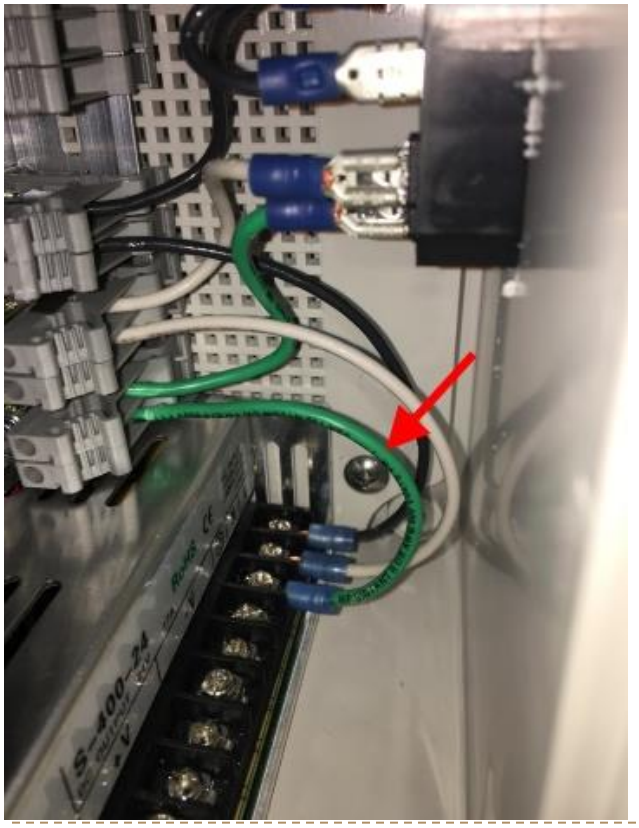
Install jumper as shown on inlet socket.



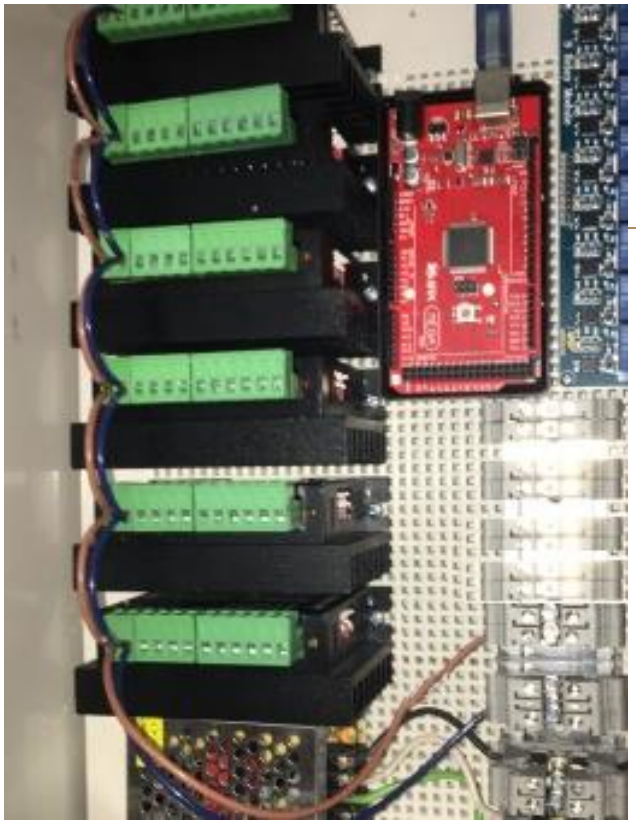
Install black 16awg wire from 3rd terminal block from bottom to the Line terminal on power supply.



Install white 16awg wire from 2nd terminal block from bottom to the Neutral terminal on power supply.

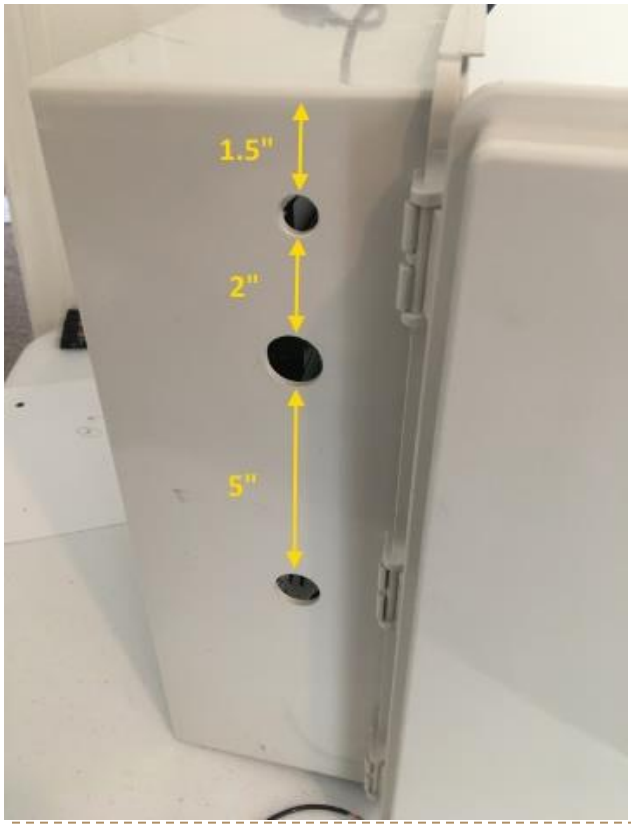


Install green16awg wire from terminal block from bottom to the Ground terminal on power supply.



Install blue 16 awg wire from the 4th from the bottom terminal block to the DC- terminal on bottom stepper driver and then install jumpers all the way up across all 6 drivers.

Install brown 16 awg wire from the 5th from the bottom terminal block to the DC+ terminal on bottom stepper driver and then install jumpers all the way up across all 6 drivers.

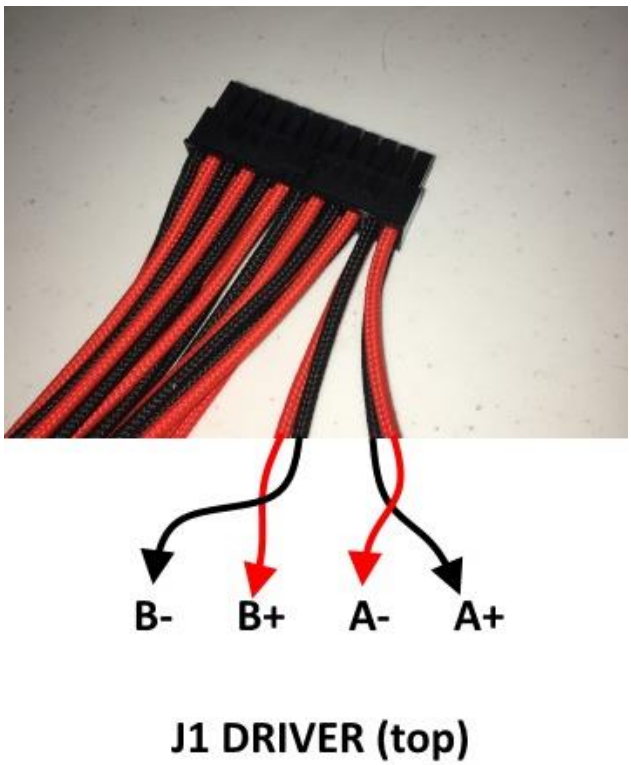


Use stepped drill bit to drill ½" diameter hole on left side of enclosure 1.5" from top. Drill 7/8" hole 2" down from ½" hole and then another 7/8" hole 5" down from the first 7/8" hole.

Install (1) ½” gland nut and (2) 7/8” gland nuts as shown.

Cut female end off of ATX 24 pin extension cable as shown and then strip back ¼” of sheathing from the end of each wire.

With ATX male end clip facing out toward you as shown insert the top 12 wires into the top gland nut and then insert the bottom 12 wires into the bottom gland nut.

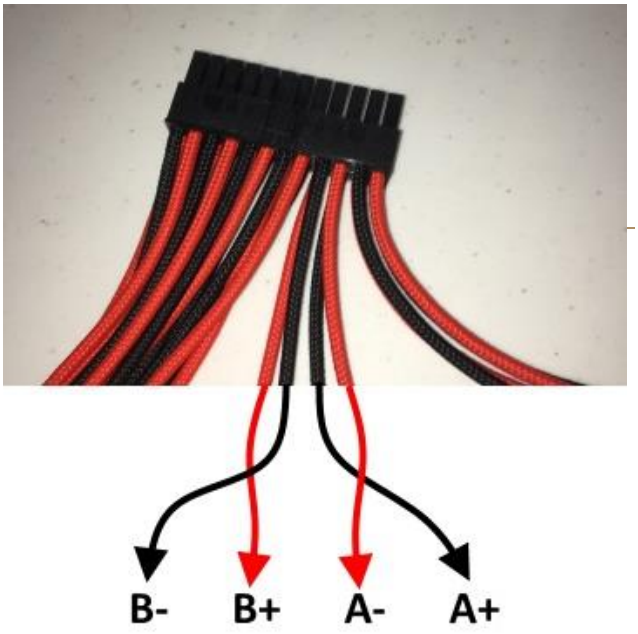


J1 DRIVER (top)

The next step is to land the ATX extension wires to the correct terminal on all 6 drivers. This and the following 5 slides will illustrate which wires go to the correct driver terminals. You will need to trace each wire inside the enclosure and connect as shown. The top driver in the enclosure is for J1 the second down is for J2 and down on. Also refer to the full wiring diagram at the end of this manual as well as the ATX pinout diagram.

Connect the J1 driver to the wires shown

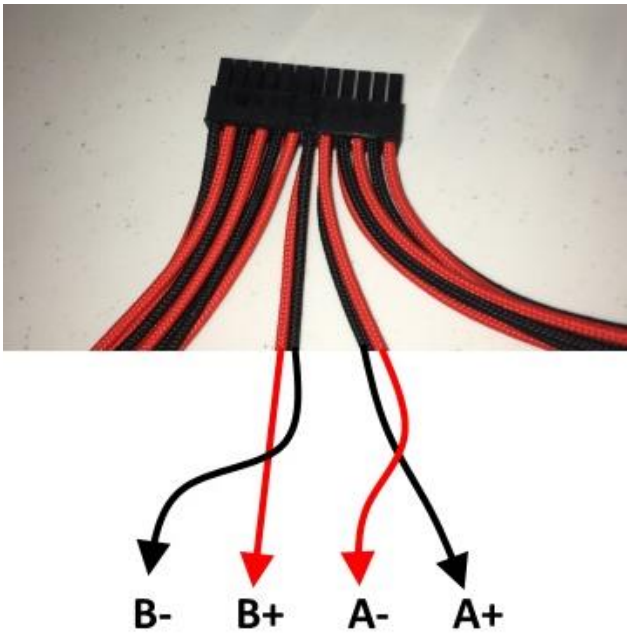
(note the male connector tab is on top in the picuture)



J2 DRIVER (2nd down)

Connect the J2 driver to the wires shown

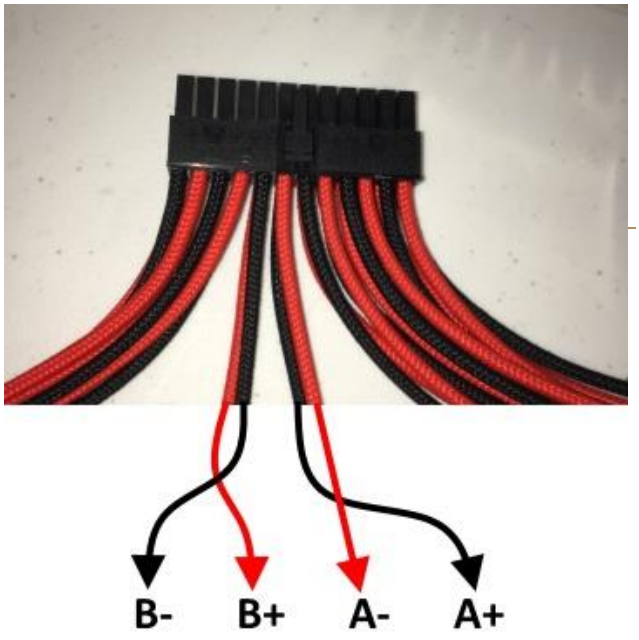
(note the male connector tab is on top in the picuture)



J3 DRIVER (3rd down)

Connect the J3 driver to the wires shown

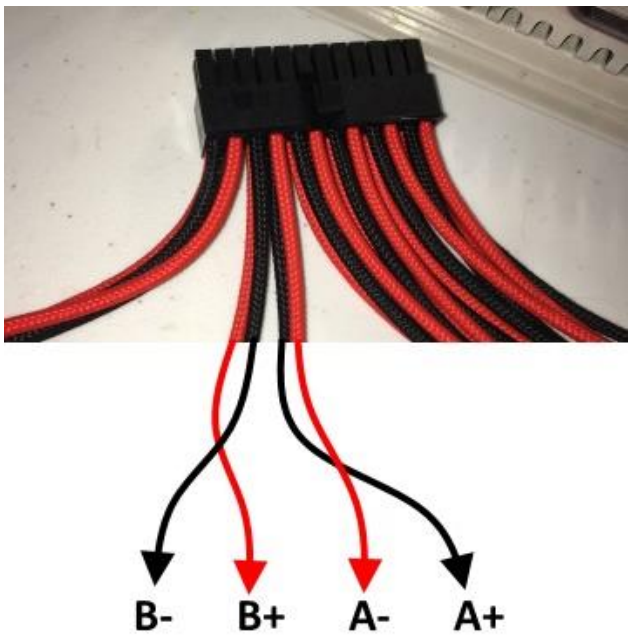
(note the male connector tab is on top in the picuture)



J4 DRIVER (4th down)

Connect the J4 driver to the wires shown

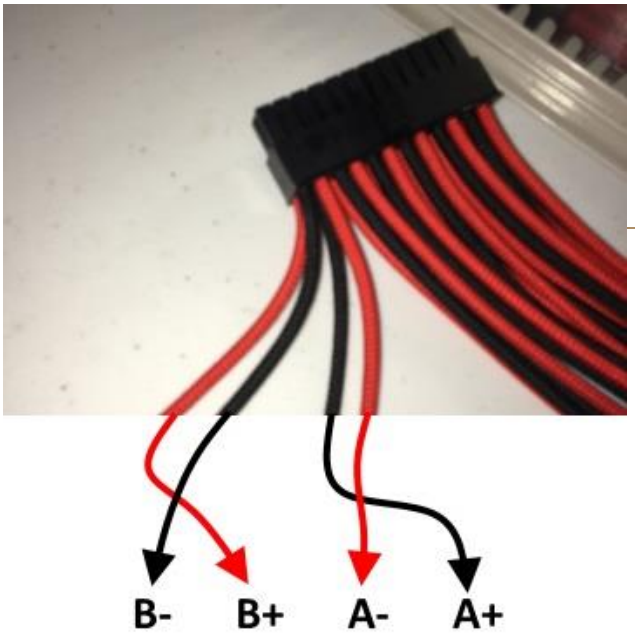
(note the male connector tab is on top in the picuture)



J5 DRIVER (5th down)

Connect the J5 driver to the wires shown

(note the male connector tab is on top in the picuture)



J6 DRIVER(6th down)

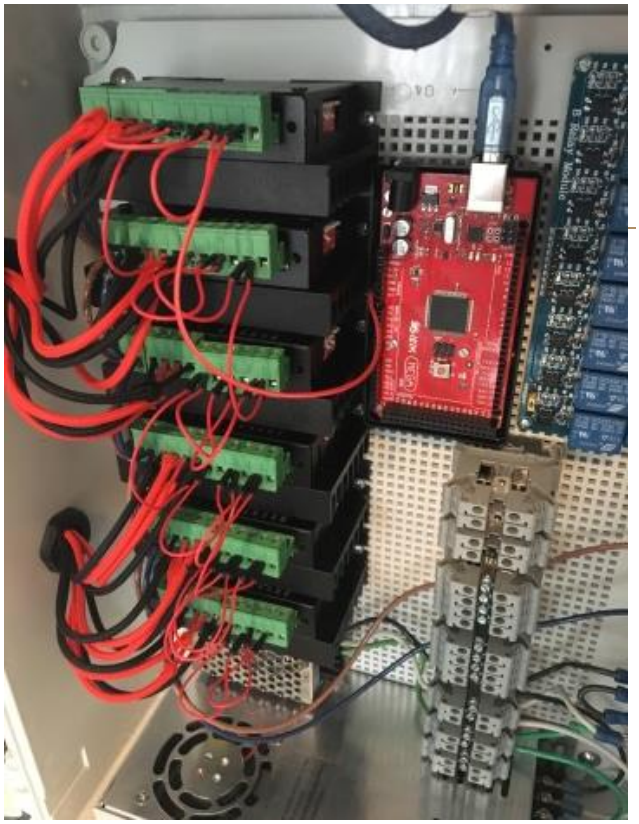
Connect the J6 driver to the wires shown

(note the male connector tab is on top in the picuture)

From inside the enclosure with all the ATX extension wires landed to the 6 drivers it should look like this.

Trace the circle from the vent onto front cover door, cut out circle and mount vent in front of stepper drivers as shown.

- For the next step you will need to jumper +5vdc across all +driver terminals. Use 17 short red jumpers and one long red jumper - twist ends together end to end so you have a chain of jumpers. Test continuity across all jumpers before installing.

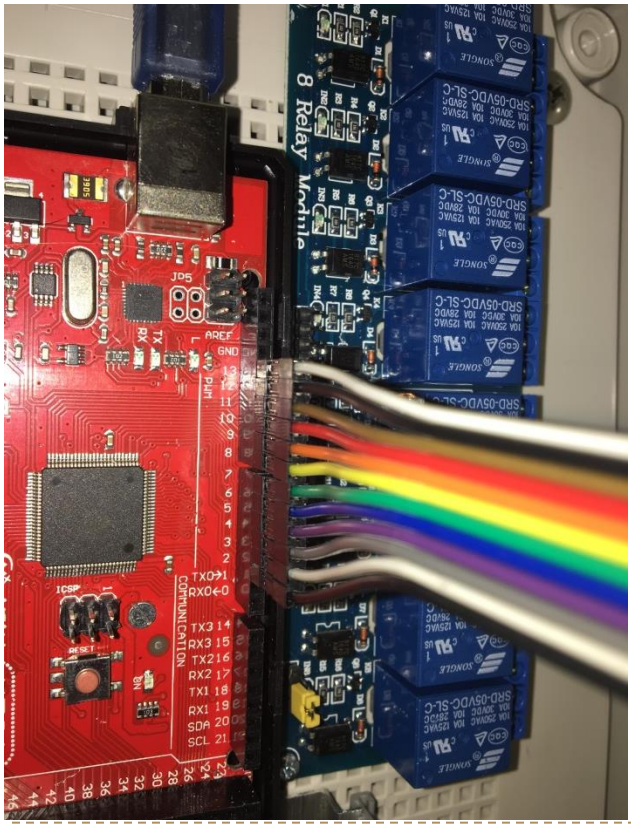


The next step is to run 5vdc from the arduino to all the (+5v) terminals across all of the stepper drivers. The drivers are NPN or negative switching which means the step and direction pulses will be made by the negative wire and the positive is high or on all the time on all the (+5v) terminals. Each driver has (3) positive terminals that require a constant +5v signal:

- PUL+(+5)
- DIR+(+5)
- ENA+(+5)

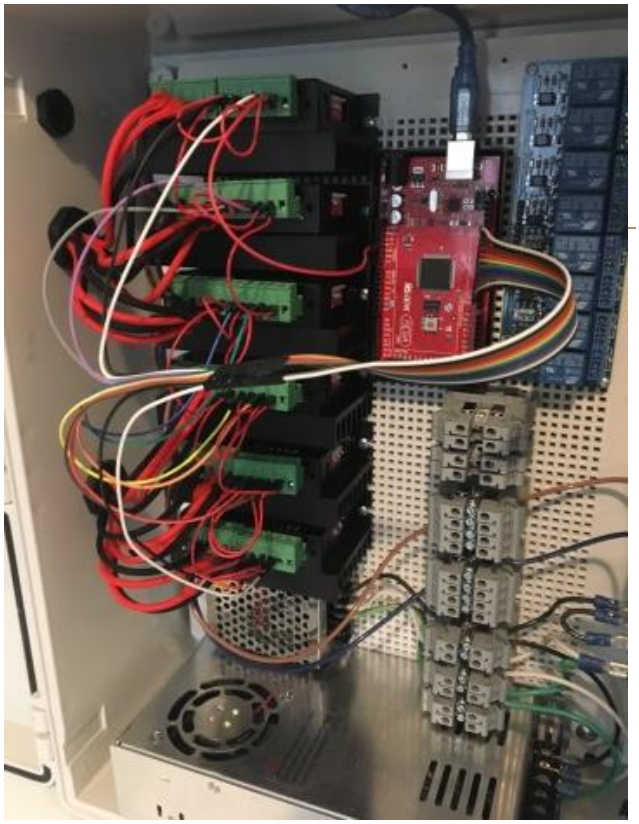
Run a long jumper from the arduino +5v to the J1 stepper drivers ENA+(+5v) terminal, then jumper that over to the DIR+(+5) and jumper that over to the PUL+(+5), then jumper to the next driver and across its (3) (+5) terminals and continue down and across all drivers – you will need a total of (17) short jumper wires.

(Also refer to the full wiring diagram at the end of this manual)



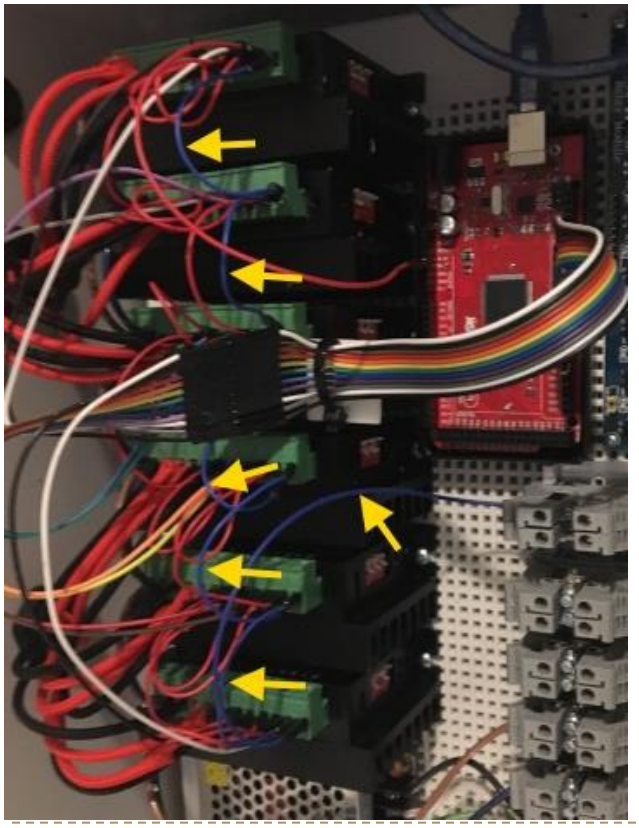
Connect a ribbon of (12) jumper wires to pins 2 through 13 on the arduino board as follows:

- Pin 2 to black to J1 PUL(-5)
- Pin 3 to white to J1 DIR(-5)
- Pin 4 to grey to J2 PUL(-5)
- Pin 5 to purple to J2 DIR(-5)
- Pin 6 to blue to J3 PUL(-5)
- Pin 7 to green to J3 DIR(-5)
- Pin 8 to yellow to J4 PUL(-5)
- Pin 9 to orange to J4 DIR(-5)
- Pin 10 to red to J5 PUL(-5)
- Pin 11 to brown to J5 DIR(-5)
- Pin 12 to black to J6 PUL(-5)
- Pin 13 to white to J6 DIR(-5)



Extend the jumper wires with matching color wires and connect to the stepper drivers negative pulse and direction terminals as outlined in the previous step.

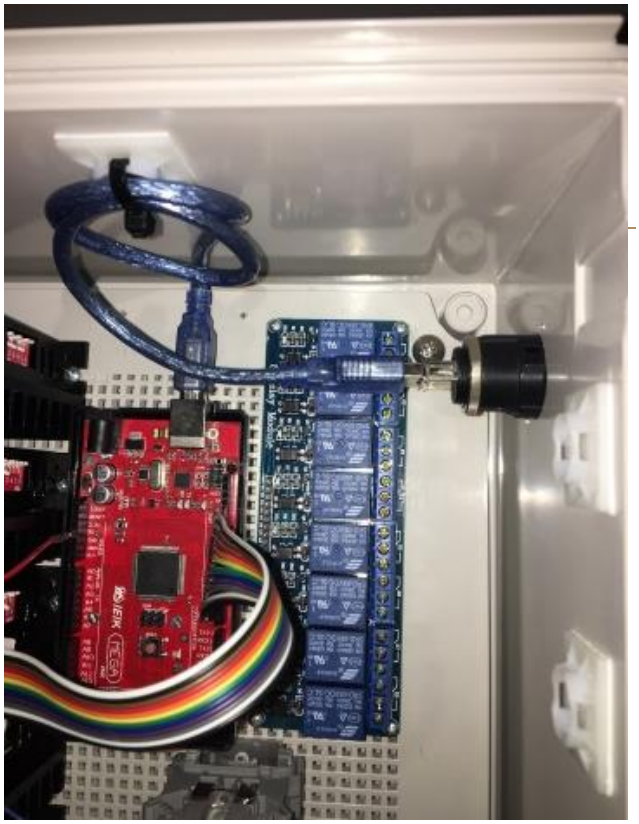
(Also refer to the full wiring diagram at the end of this manual)



Connect a long blue jumper from the top set of terminal blocks over to the ENA-(ENA) on the J6 driver and then use 5 short blue jumpers to jump across the ENA-(ENA) on all stepper drivers. The purpose of these wires is to disable all the stepper drivers. If you were to provide a negative input to any of the other 3 inputs on the top set of terminal blocks this would disable all drivers. This circuit will not be used any further in this manual but its purpose would be if you had a safety switch or gate protecting your robot you would wire your safety gate to these terminals to provide -5v when the gate is open and this will disable any motors while the gate or safety circuit is open.

Use stepped drill bit to drill a 7/8” hole in right side of enclosure centered in panel toward the top of enclosure as shown.

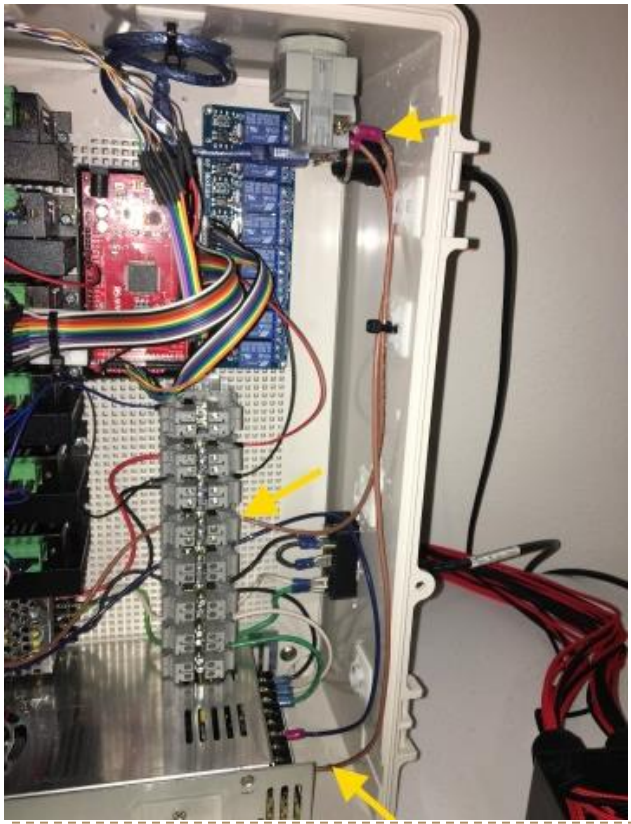
Install USB (B) to (A) panel jack as shown.



On inside of enclosure connect USB cable from arduino to USB panel jack. Secure cable with adhesive cable tie mount.

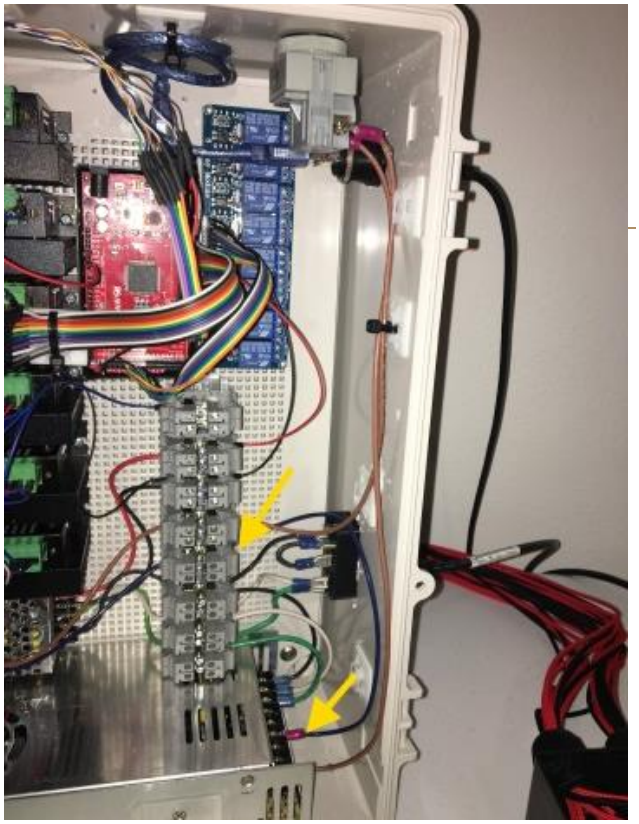
Use stepped drill bit to drill a 7/8” hole in top of enclosure where shown.

Install E-Stop button as shown.

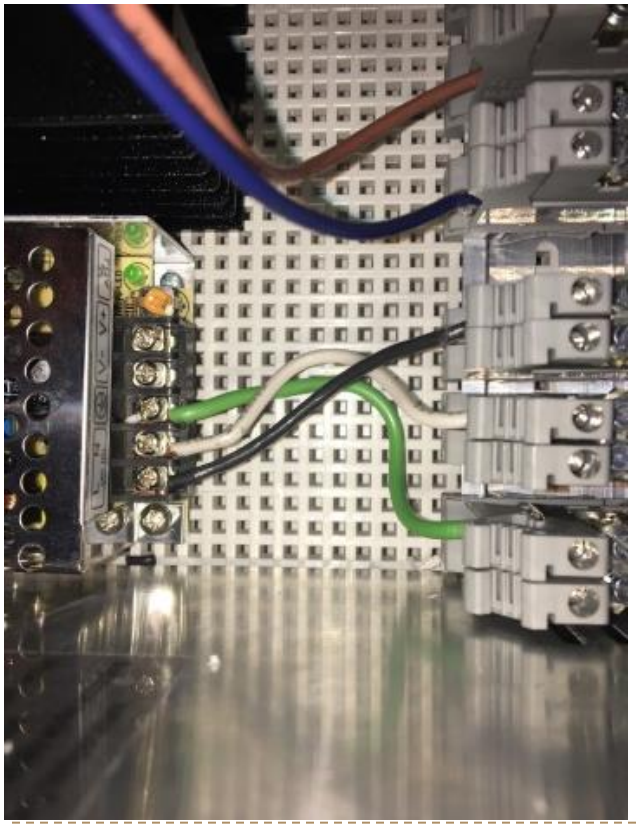


Connect brown 16awg wire from +V terminal on 24vdc power supply up to terminal on E-Stop switch – then from opposite terminal on E-Stop switch down to the 5th from the bottom terminal block group on DIN rail.

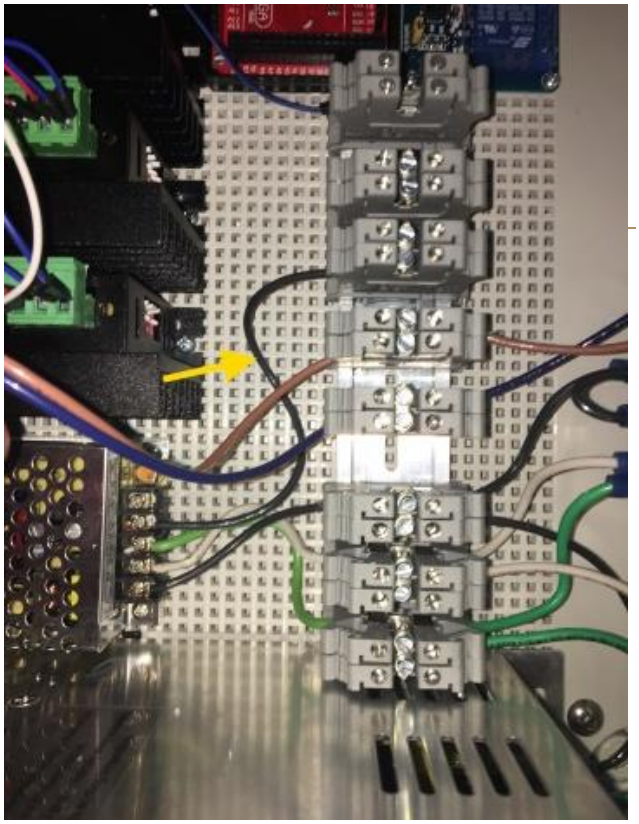
The E-Stop button will cut off the 24vdc power to the stepper drivers.



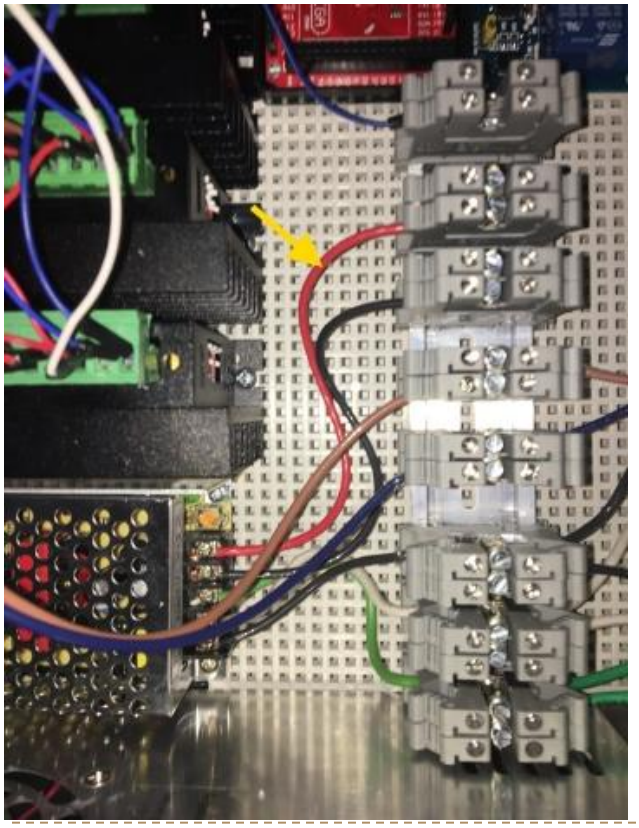
Connect blue 16awg wire from –V terminal on 24vdc power supply to 4th from the bottom terminal block group on DIN rail.



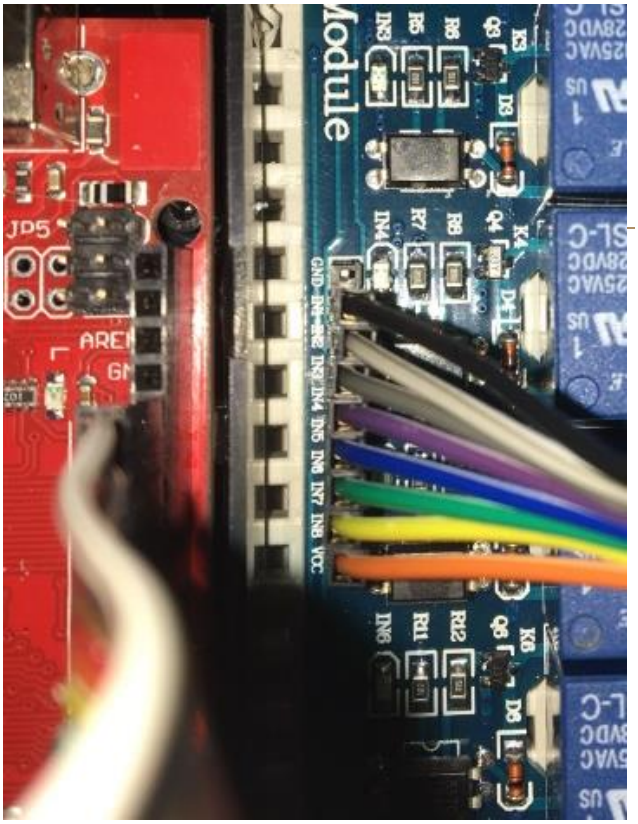
Connect black, white and green wires from the 3 bottom terminal blocks over to the corresponding terminals on the 5vdc power supply as shown.



Connect black 16awg wire from –V terminal on 5vdc power supply to the 6th from the bottom terminal block group.

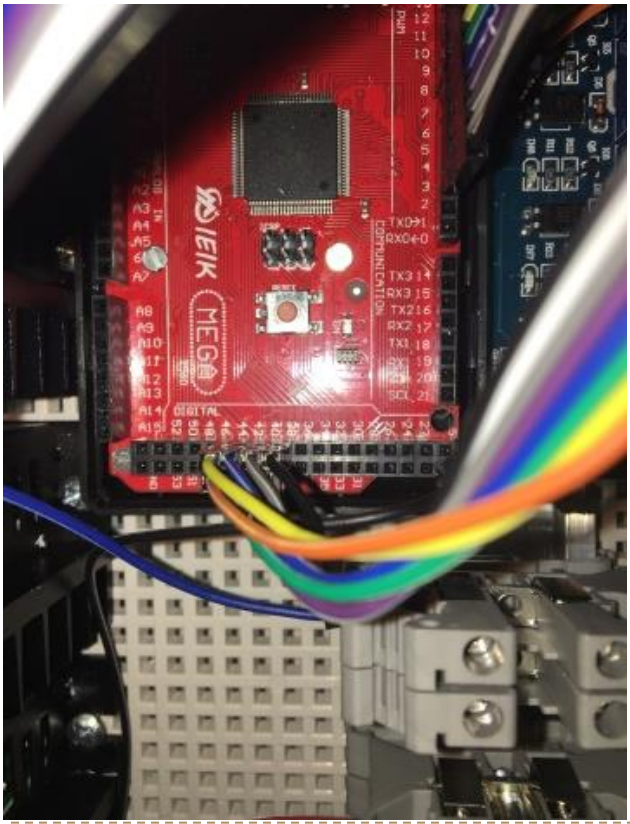


Connect red 16awg wire from +V terminal on 5vdc power supply to the 7th from the bottom terminal block group.



Connect a ribbon of (8) wires from the 8 channel relay board to the arduino as follows:

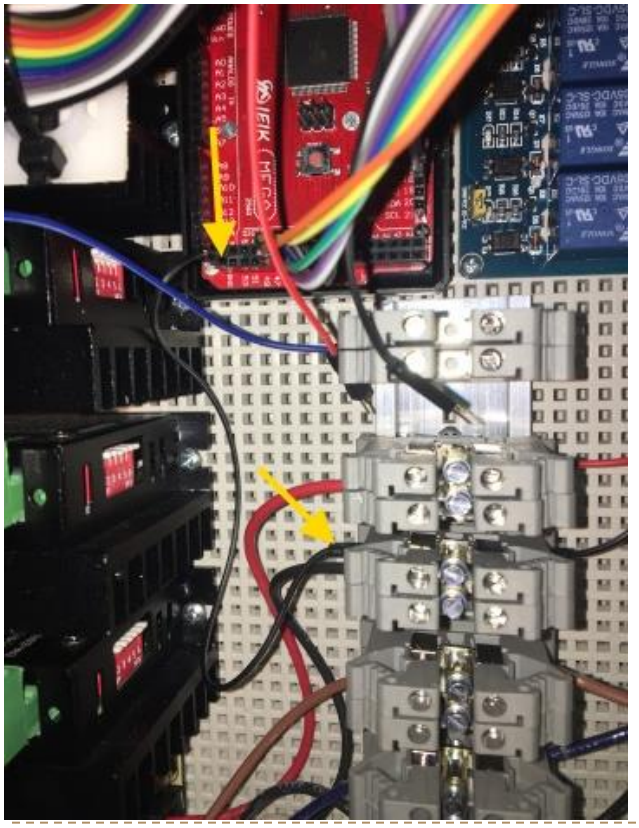
- IN1 to black to arduino pin 38
- IN2 to white to arduino pin 39
- IN3 to grey to arduino pin 40
- IN4 to purple to arduino pin 41
- IN5 to blue to arduino pin 42
- IN6 to green to arduino pin 43
- IN7 to yellow to arduino pin 44
- IN8 to orange to arduino pin 45



This photo shown the other end of the ribbon connected to pins 38 through 45 on the arduino.

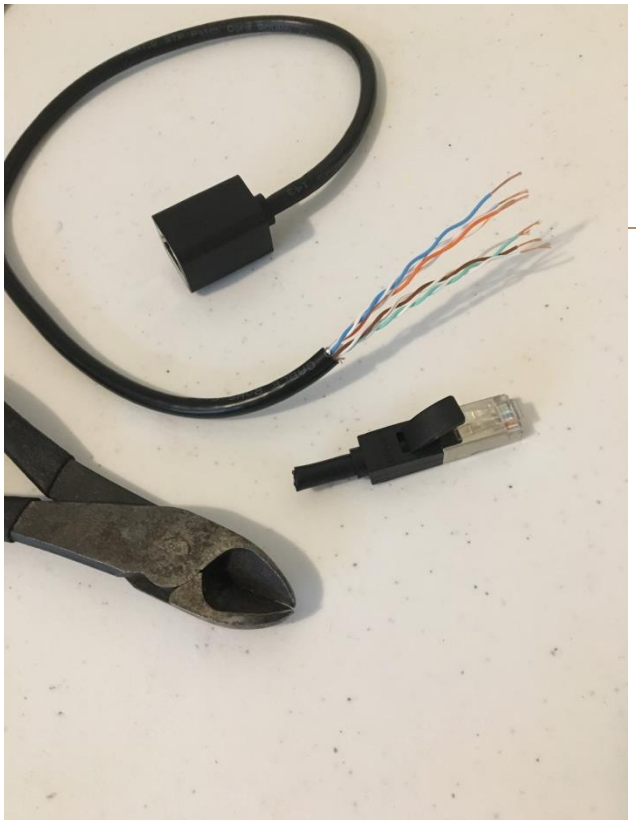
Connect a long red jumper from the VCC terminal on the relay board to the +5vdc terminal blocks on the DIN rail (7th from the bottom)

Connect a long black jumper from the GND terminal on the relay board to the -5vdc terminal blocks on the DIN rail (6th from the bottom)

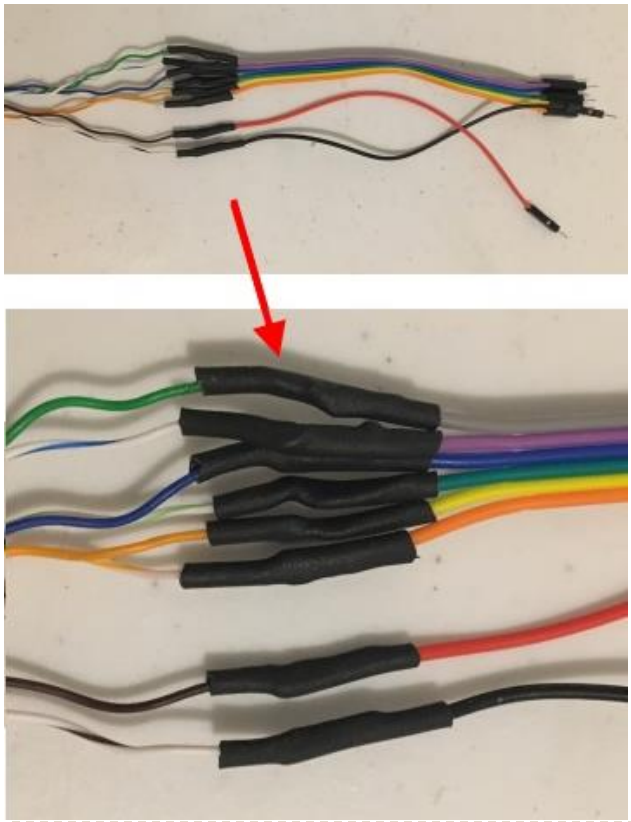


Connect a long black jumper from the far bottom left GND terminal on the arduino to the -5vdc terminal group on the DIN rail (6th from the bottom)

The arduino and the 5vdc power supply must share ground connection – the 5vdc supply powers the relays as the arduino tends to run short on power.



Cut off the male end of an RJ45 extension cable, remove 2” of outer sheathing then strip ¼” sheathing off each individual wire.



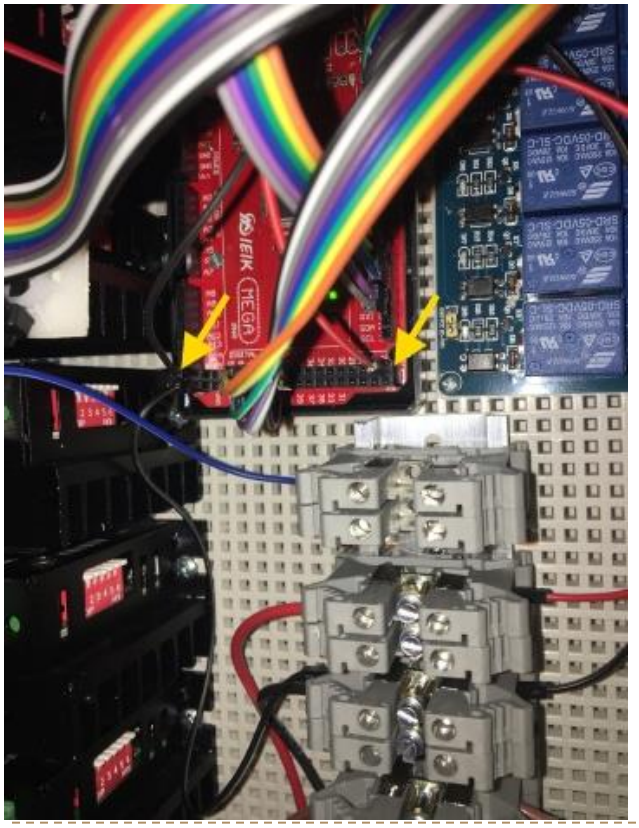
Solder and heat shrink tube a (6) ribbon set of jumpers as follows:

- RJ45 white/or stripe to orange to arduino pin 14
- RJ45 or/white stripe to yellow to arduino pin 15
- RJ45 white/gr stripe to green to arduino pin 16
- RJ45 blue/white stripe to blue to arduino pin 17
- RJ45 white/blue stripe to purple to arduino pin 18
- RJ45 green/white stripe to grey to arduino pin 19

Then connect:

- RJ45 brown/wh stripe to red jumper to arduino +5v
- RJ45 white/brown stripe to black jumper to arduino GND

Feed RJ45 cable assembly through ½" gland nut on left side of enclosure and plug (6) wire ribbon into arduino pins 14 through 19 as shown.



Connect red wire from RJ45 cable assembly to the +5v pin on far bottom right of board.

Connect black wire from RJ45 cable assembly to the other unoccupied GND pin on far bottom left of board.

DIP SWITCH SETTING USING ST-6600 DRIVERS AND ECONOMY SERIES GEARDRIVE MOTORS

THESE SETTINGS ARE USED FOR THE FOLLOWING ECONOMY SERIES MOTORS:

• J1 - 17HS19-1684S-PG5	1/4 STEPS	1.5 AMP
• J2 - 23HS30-2804S-PG47	1/4 STEPS	3 AMP
• J3 - 17HS19-1684S-PG19	1/8 STEPS	2 AMP
• J4 - 11HS20-06742-PG5	1/2 STEPS	1 AMP
• J5 - 17LS19-1684E-200G	1/4 STEPS	1.5 AMP
• J6 - 14HS13-0804S-PG19	1/4 STEPS	1 AMP

Set the dip switches for J1 stepper driver:

J1= ¼ step – 1.5amp
Switch 1 – down
Switch 2 – up
Switch 3 – up
Switch 4 – up
Switch 5 – down
Switch 6 – up

Set the dip switches for J2 stepper driver:

J2= ¼ step – 3amp
Switch 1 – down
Switch 2 – up
Switch 3 – up
Switch 4 – down
Switch 5 – up
Switch 6 – down

Set the dip switches for J3 stepper driver:

J3= 1/8 step 2amp
Switch 1 – down
Switch 2 – up
Switch 3 – down
Switch 4 – down
Switch 5 – down
Switch 6 – up

Set the dip switches for J4 stepper driver:

J4= ½ step – 1amp
Switch 1 – up
Switch 2 – down
Switch 3 – up
Switch 4 – down
Switch 5 – up
Switch 6 – up

Set the dip switches for J5 stepper driver:

J5= ¼ step – 1.5amp
Switch 1 – down
Switch 2 – up
Switch 3 – up
Switch 4 – up
Switch 5 – down
Switch 6 – up

Set the dip switches for J6 stepper driver:

J6= ¼ step – 1amp
Switch 1 – down
Switch 2 – up
Switch 3 – up
Switch 4 – down
Switch 5 – up
Switch 6 – up

DIP SWITCH SETTING USING DM542T DRIVERS AND 3 PRECISION / 3 ECONOMY SERIES GEARDRIVE MOTORS

THESE SETTINGS ARE USED FOR THE FOLLOWING SERIES MOTORS:
(J1,J2 &J3 are precision series J4,J5 & J6 are economy series)

• J1 - 17HS15-1684S-HG20	1/4 STEPS	1.46 AMP
• J2 - 23HS22-2804S-HG50	1/4 STEPS	2.37 AMP
• J3 - 17HS15-1684S-HG50	1/4 STEPS	1.46 AMP
• J4 - 11HS20-06742-PG5	1/4 STEPS	.5 AMP
• J5 - 17LS19-1684E-200G	1/4 STEPS	1.46 AMP
• J6 - 14HS13-0804S-PG19	1/4 STEPS	1 AMP

J1:
SW1 = OFF SW2 = ON SW3 = ON SW4 = ON
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

J2:
SW1 = OFF SW2 = OFF SW3 = ON SW4 = ON
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

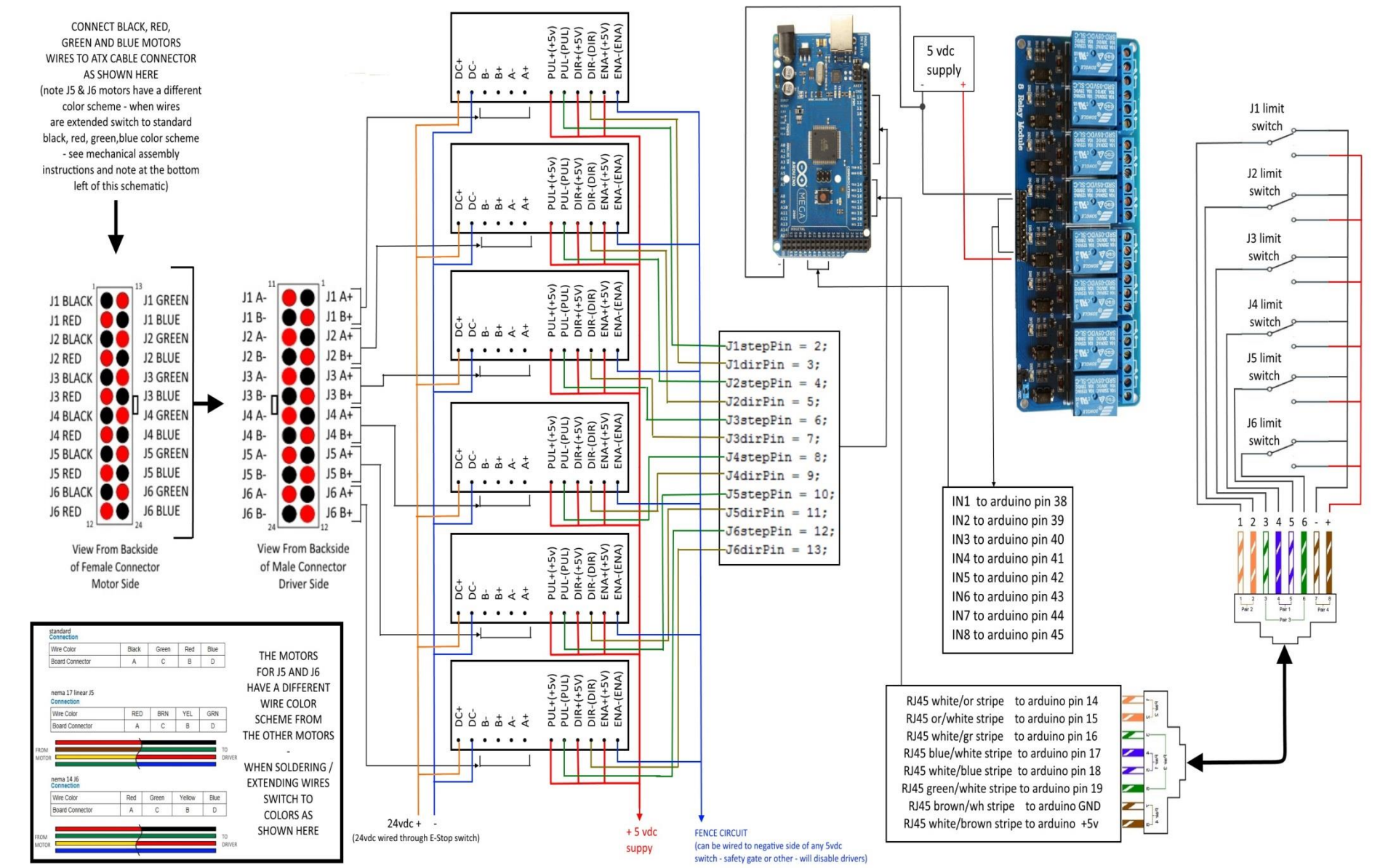
J3:
SW1 = OFF SW2 = ON SW3 = ON SW4 = ON
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

J4:
SW1 = ON SW2 = ON SW3 = ON SW4 = OFF
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

J5:
SW1 = OFF SW2 = ON SW3 = ON SW4 = ON
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

J6:
SW1 = ON SW2 = ON SW3 = ON SW4 = ON
SW5 = ON SW6 = OFF SW7 = ON SW8 = ON

AR2 - 6 AXIS STEPPER MOTOR ROBOT WIRING SCHEMATIC



Startup

- I would recommend making a wiring harness per the wiring harness manual from the project page. If you are direct wiring per the 3D printed robot assembly manual I recommend waiting to loom all the wires on the robot until after you have started up the robot so you can make sure all axis fully articulate and you have plenty of slack on the wires.
- Load the "sketch_Annin_Robot.ino" to the arduino and take note which COM port your arduino is connected to.
- Before opening the AR2 software and establishing a serial connection toggle each limit switch on the robot and make the the LED on the arduino lights up. Every switch should make the LED come on its imperative these all work otherwise you cannot calibrate the robot.
- Open the AR2 software and set the COM port (you should only have to do this the first time)
- Carefully test each axis – jog J1 through J6 a couple degrees *(be careful – robot is not calibrated yet and you can drive an axis too far and bend one of your switches)* in each direction to make sure you can jog in each direction. If you find an axis not moving or if the + and – jog buttons make the axis go in the same direction then you very likely have an issue with the step or direction wires to the stepper drivers or an issue with one of the many jumpers. I have found every problem I have encountered has been due to a jumper not making connection or coming loose. I cant stress enough the need to secure each wire and check with a meter. If you hit axis limits when testing before you have calibrated you can press the "Force Calibration to Mid Range" button and this will set your current calibration to mid point and allow you to jog – but be careful this button is only for testing to allow you to get around axis limits before you calibrate.
- Note different drivers can rotate the motors in different directions; in the arduino sketch near the top of the program you can change the motor direction values. If using DM542T driver(CW) set to 0 // if using ST6600 driver(CCW) set to 1 then load then reload the sketch.
- Press the auto calibrate button – the robot should move to each limit switch and calibrate each axis to its limit.
- J1 should go to its full negative limit @ -160°
- J2 should go to its full negative limit @ -130°
- J3 should go to its full positive limit @ +140°
- J4 should go to its full positive limit @ +164°
- J5 should go to its full negative limit @ -105°
- J6 should go to its full negative limit @ -120°