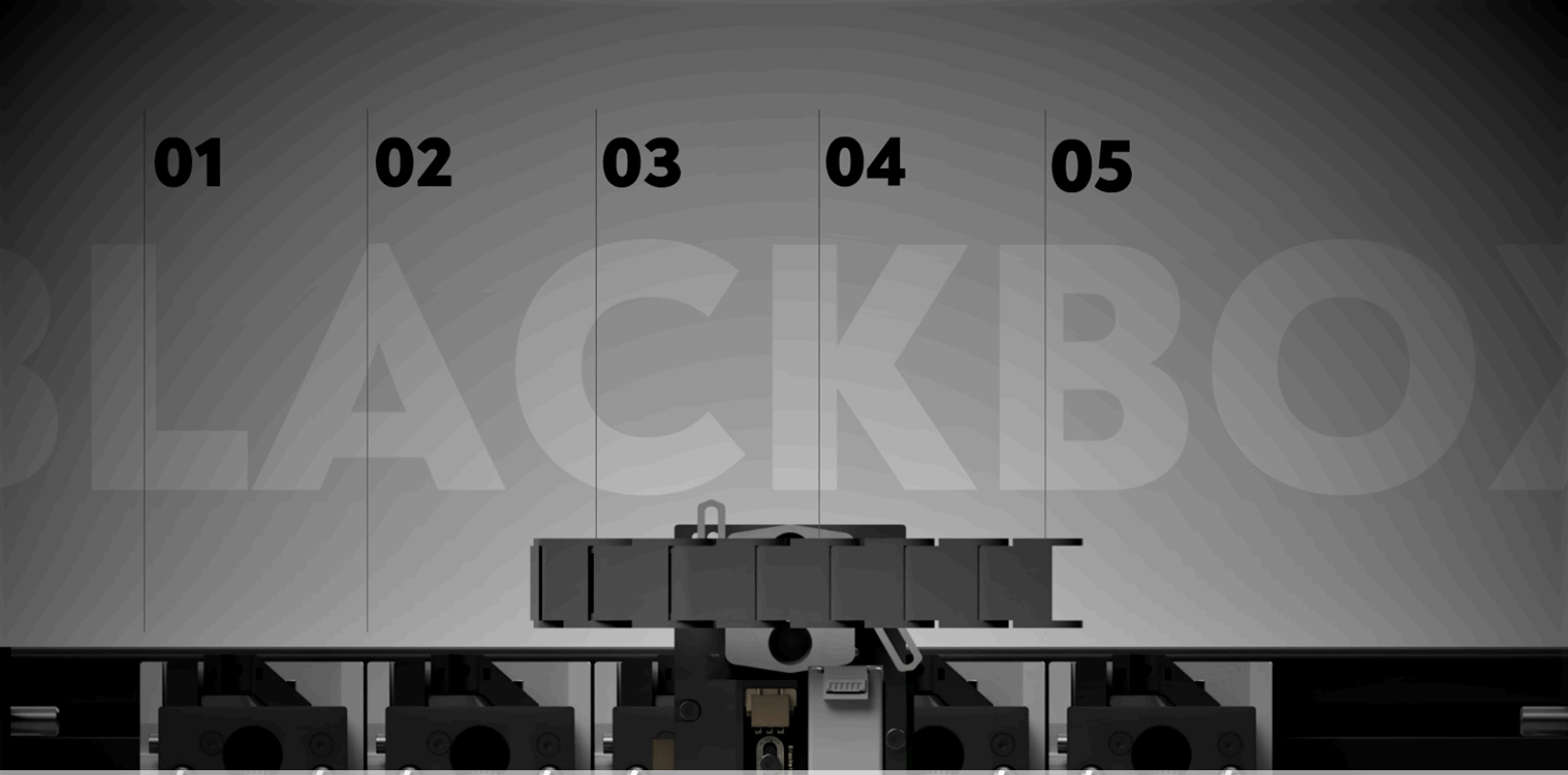


BLACKBOX CE

Wiring Guide

DOCUMENTATION VERSION 1

Blackbox CE:

Wiring

Change Log

Version	Notes
1	Initial Release

Tools/Supplies

QTY	Description
32	Meters - 24 AWG FEP or PTFE Wire - Red
38	Meters - 24 AWG FEP or PTFE Wire - Black
22	Meters - 24 AWG FEP or PTFE Wire - Green
10	Meters - 24 AWG FEP or PTFE Wire - Blue
14	Meters - 20 AWG FEP or PTFE Wire - Red
14	Meters - 20 AWG FEP or PTFE Wire - Black
4	Meters - 18 AWG FEP or PTFE Wire - Red
2	Meters - 18 AWG FEP or PTFE Wire - Brown
3	Meters - 18 AWG FEP or PTFE Wire - Black
2	Meters - 18 AWG FEP or PTFE Wire - Blue
2	Meters - 18 AWG FEP or PTFE Wire - Yellow/Green
30	10CM Zip Tie
10	15-20CM Zip Tie
10	Adhesive Tie Wrap Mount
7	4 Pin Molex Microfit 3.0 Connector
12	4 Pin Molex Microfit 3.0 Receptacle
23	2 Pin Molex Microfit 3.0 Connector
3	2 Pin Molex Microfit 3.0 Receptacle
55	Molex Microfit 3.0 Crimp Socket
95	Molex Microfit 3.0 Crimp Pin
1	Kit - Molex KK Connector Kit for Duet 3 6HC (and 3HC if equipped)
21	Insulated Fork Terminal - 4.3mm - 18-20 AWG (red)
10	Insulated Fork Terminal - 3.2mm - 18-20 AWG (red)
3	Insulated Spade Terminal - 6mm - 18-20 AWG (red)
4	Insulated Spade Terminal - 4mm - 18-20 AWG (red)
6	JST-XHP 2 Pin Connector
4	JST-XHP 3 Pin Connector
20	JST-XH 2.54 Crimp Socket
1-4	JST-PH 6 Pin Connector
6-20	JST-PH Crimp Socket
5	2 Position WAGO
1	USB-C Cable - 5A capable (No data needed)
	Crimping pliers (Iwiss 2820M or similar)
	Wire Stripping Pliers
	Insulated Terminal crimping pliers
	Soldering Iron + Solder
	Meter stick or tape measure
	(Optional) DVOM with back-probing tips

Step 1: AC Inlet / Power Supply

Notes:

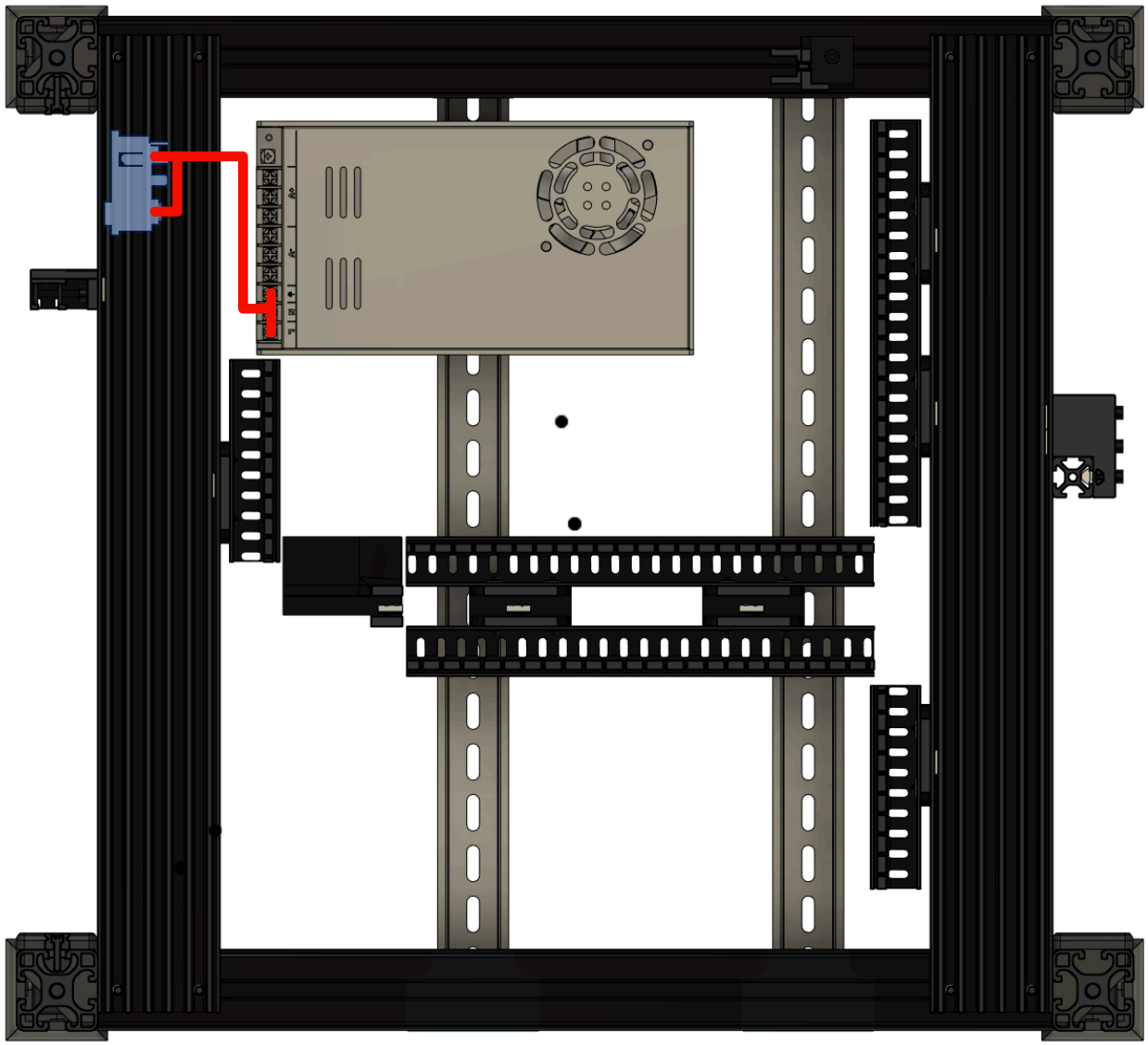
We're Starting HOT! The wires that connect the power supply to the AC Inlet are one of the mains 110/220V circuits that should be triple checked before proceeding. NEVER interact with or modify this wiring while connected to a wall outlet.

Use wires rated for 250V+ at 18AWG or larger.

The colors shown in this guide are of a European standard. In the USA the LINE wire should always be a color (usually black) and the NEUTRAL line should always be white. The earthing wire in the US is green.

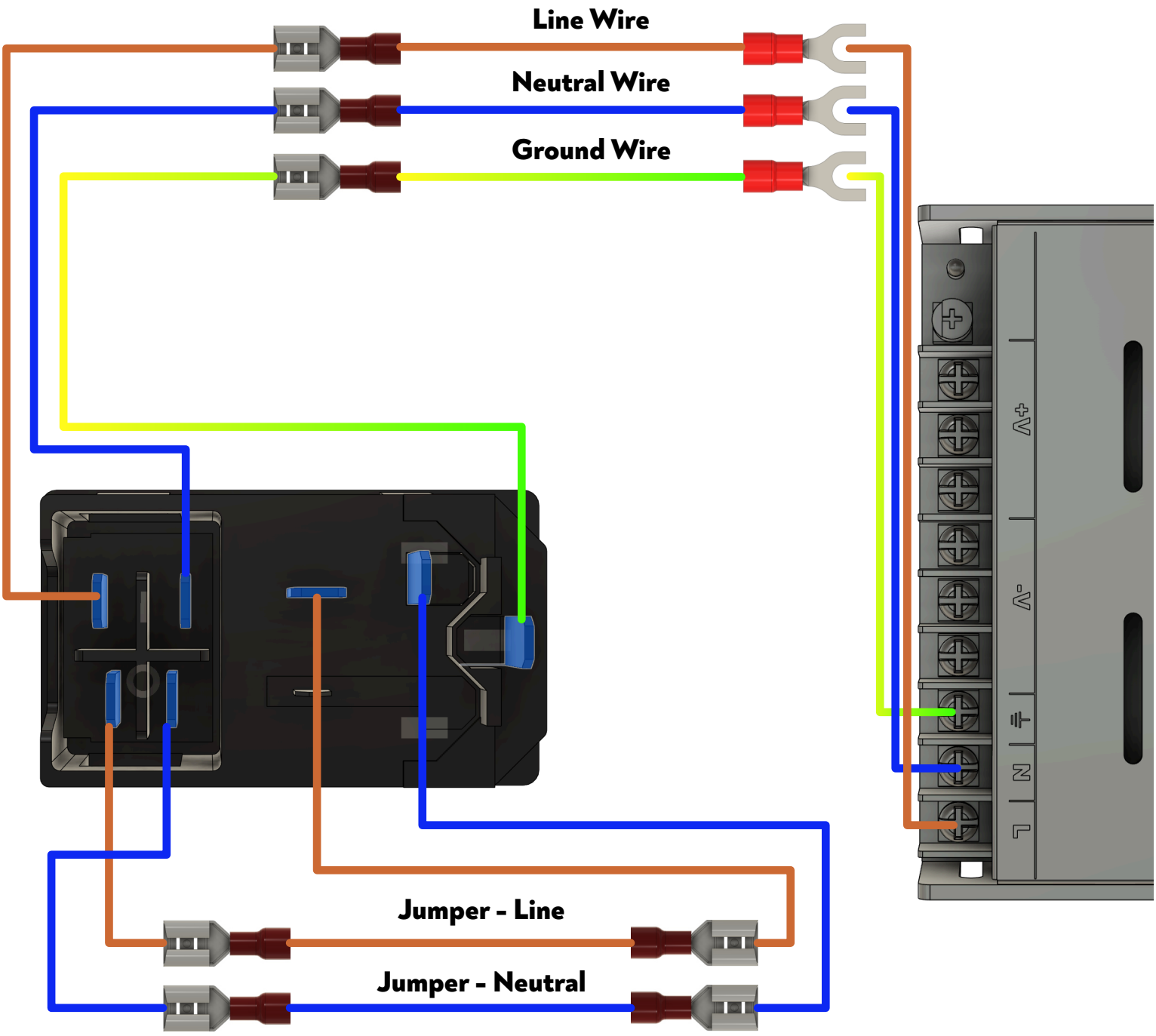
Don't Forget! : The power inlet does not ship with a fuse installed! Install this fuse now if you have not already!

Wire Routing



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Jumper - Line	Power Inlet	Female Spade	Power Switch	Female Spade	8	18	BRN	N	
Jumper - Neutral	Power Inlet	Female Spade	Power Switch	Female Spade	8	18	BLU	N	
Line Wire	Power Switch	Female Spade	24V Power Supply	Fork	20	18	BRN	N	
Neutral Wire	Power Switch	Female Spade	24V Power Supply	Fork	20	18	BLU	N	
Ground Wire	Power Inlet	Female Spade	24V Power Supply	Fork	20	18	GN/YEL	N	



Step 2: Solid State Relay

Notes:

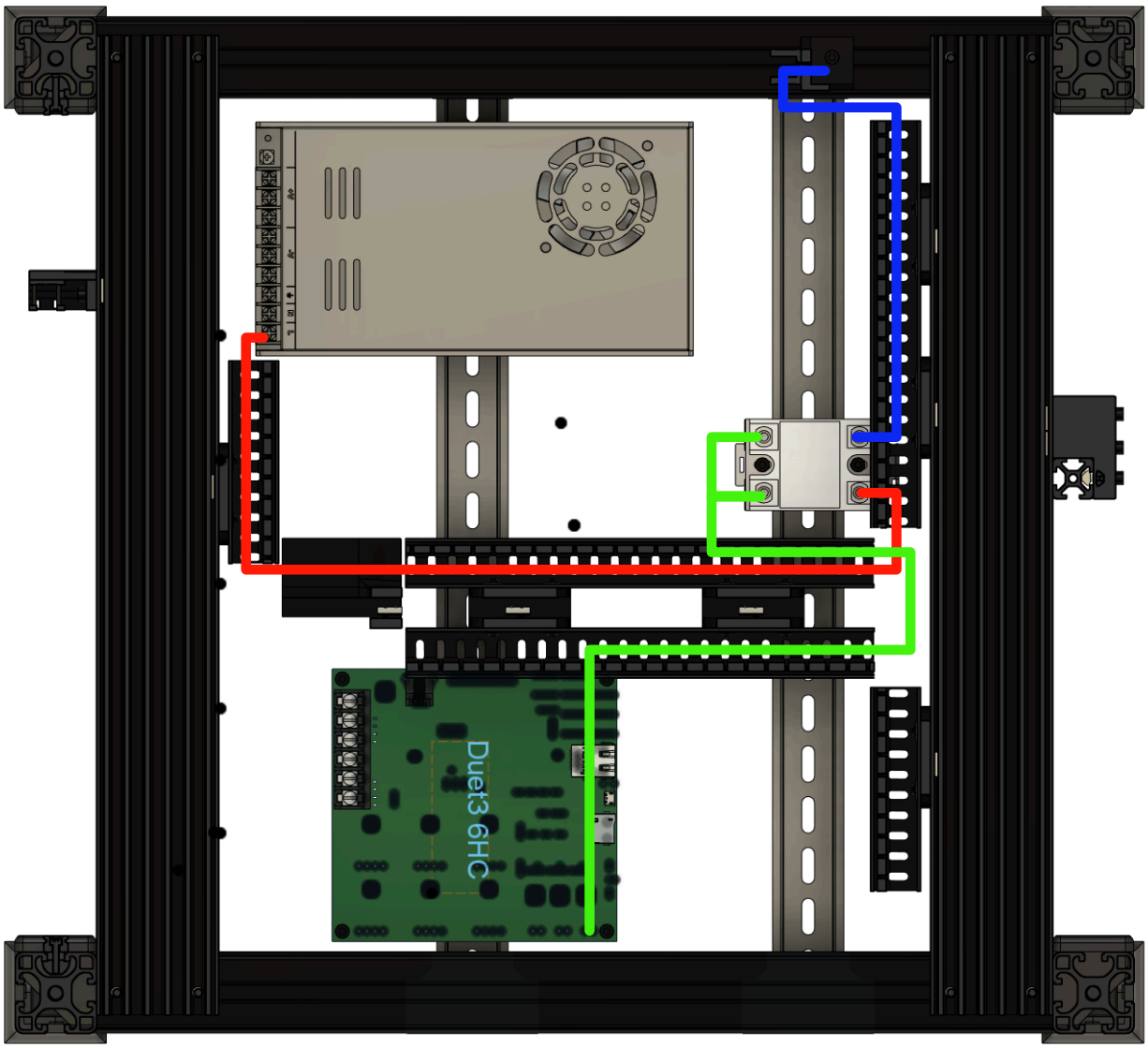
RED = LINE (IN)

GREEN = TRIGGERS (+ & -)

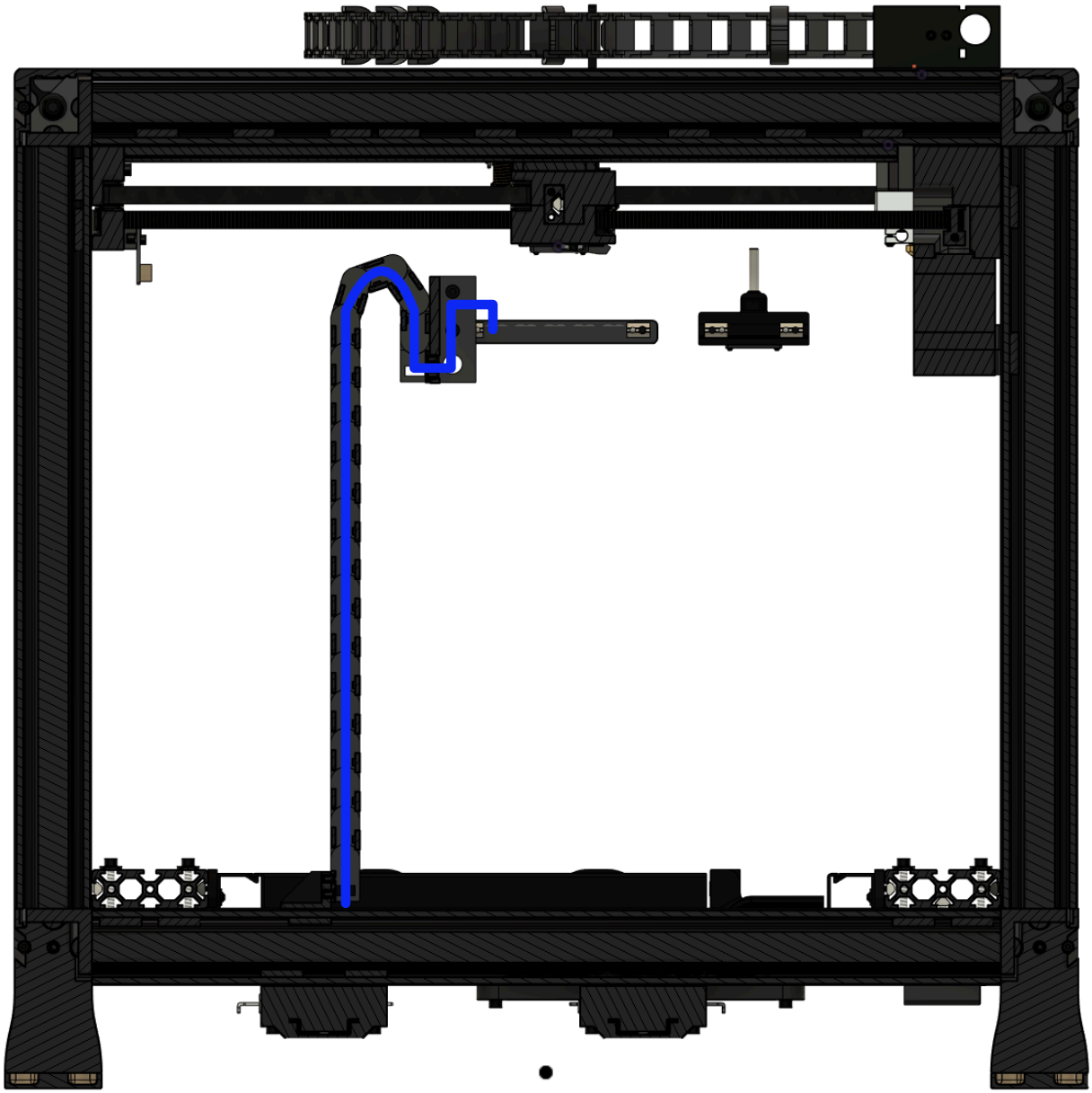
BLUE = LINE (LOAD)

See the assignments page below for context

Wire Routing (TOP)

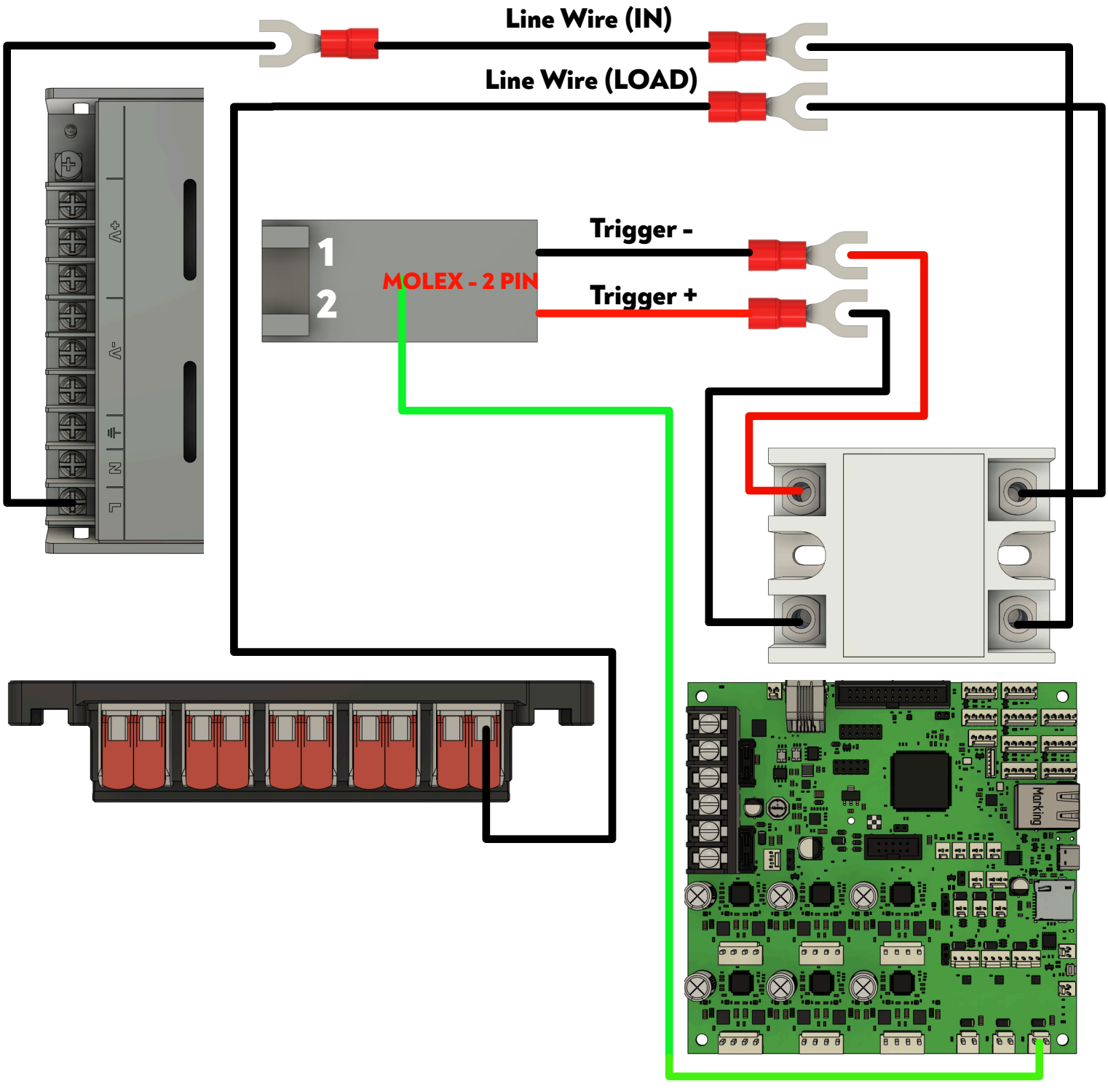


Wire Routing (REAR-SIDE)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Line Wire (IN)	24V Power Supply	Fork	SSR	Fork	57	18	BLK	N	
LINE Wire (LOAD)	SSR	Fork	Heated Bed WAGO	Bare Wire	86	18	BLK	Y	
Trigger +	Duet 3 6HC	Molex LG Pin 2 of 2	SSR IN +	Fork	42	24	RED	N	OUT_3
Trigger -	Duet 3 6HC	Molex LG Pin 1 of 2	SSR IN -	Fork	42	24	BLK	N	OUT_3



Step 3: Heated Bed Wagos

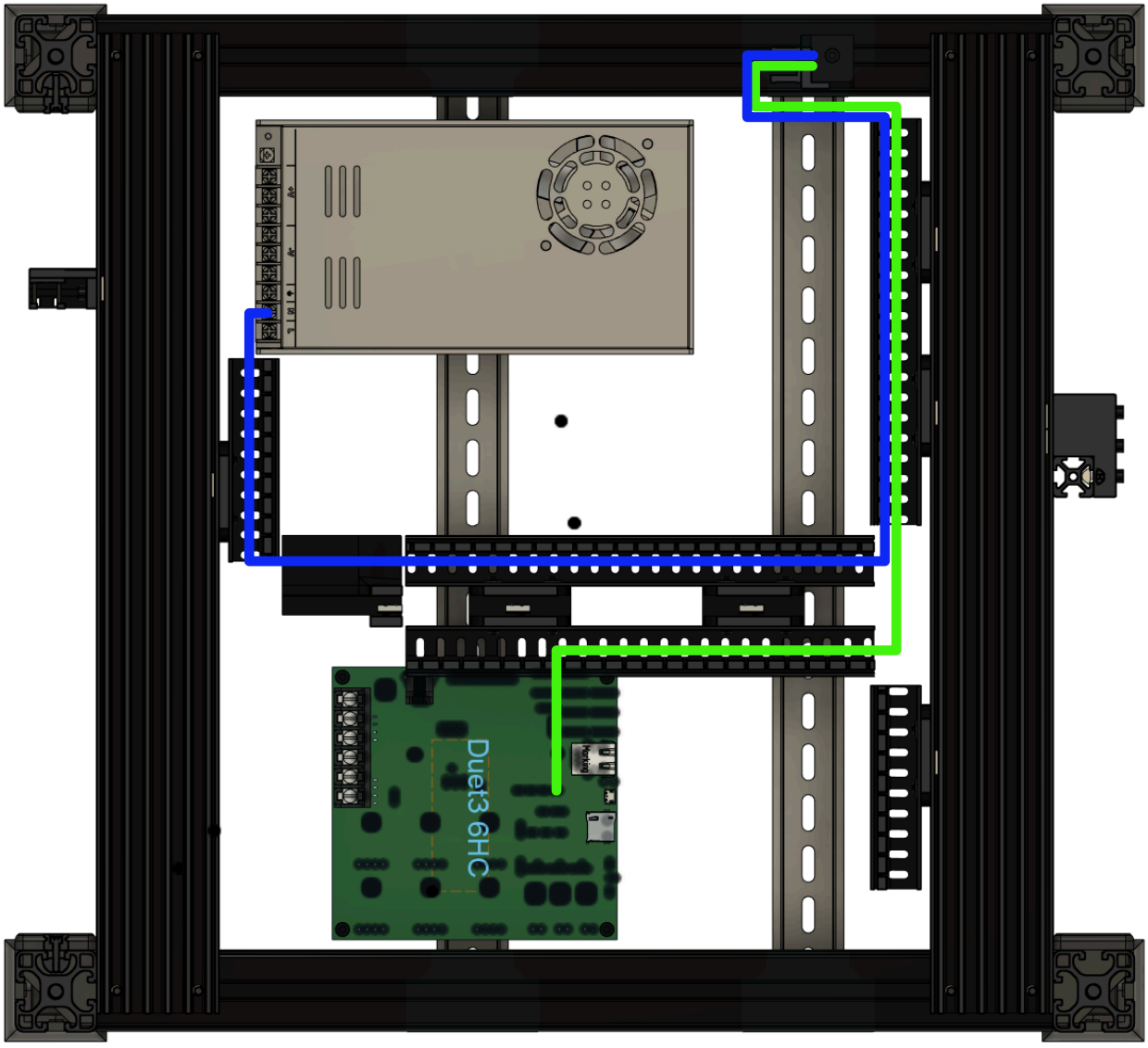
Notes:

GREEN = Bed Thermistor (+ & -)

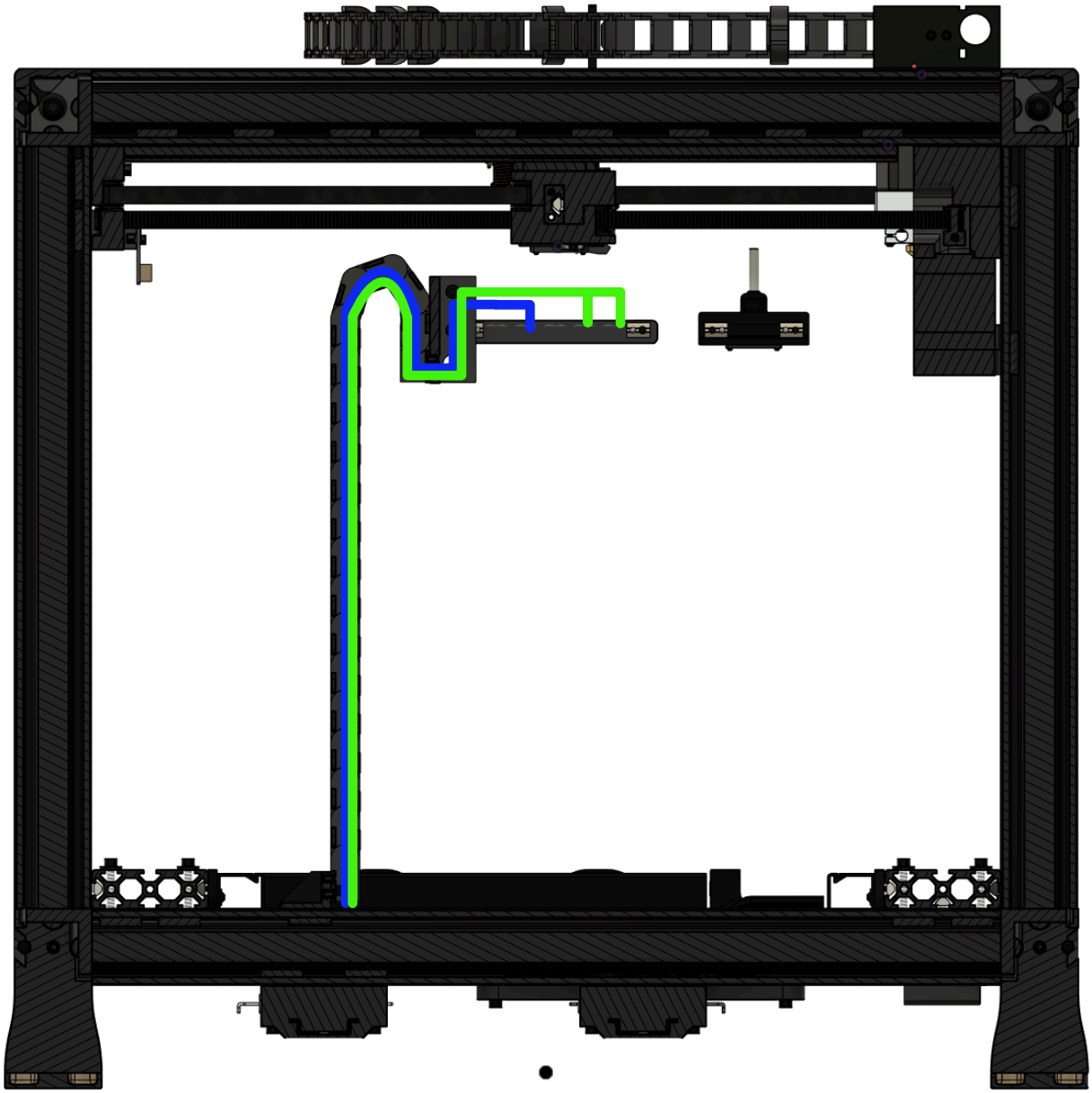
BLUE = Neutral 120V Wire

See the assignments page below for context

Wire Routing (TOP)

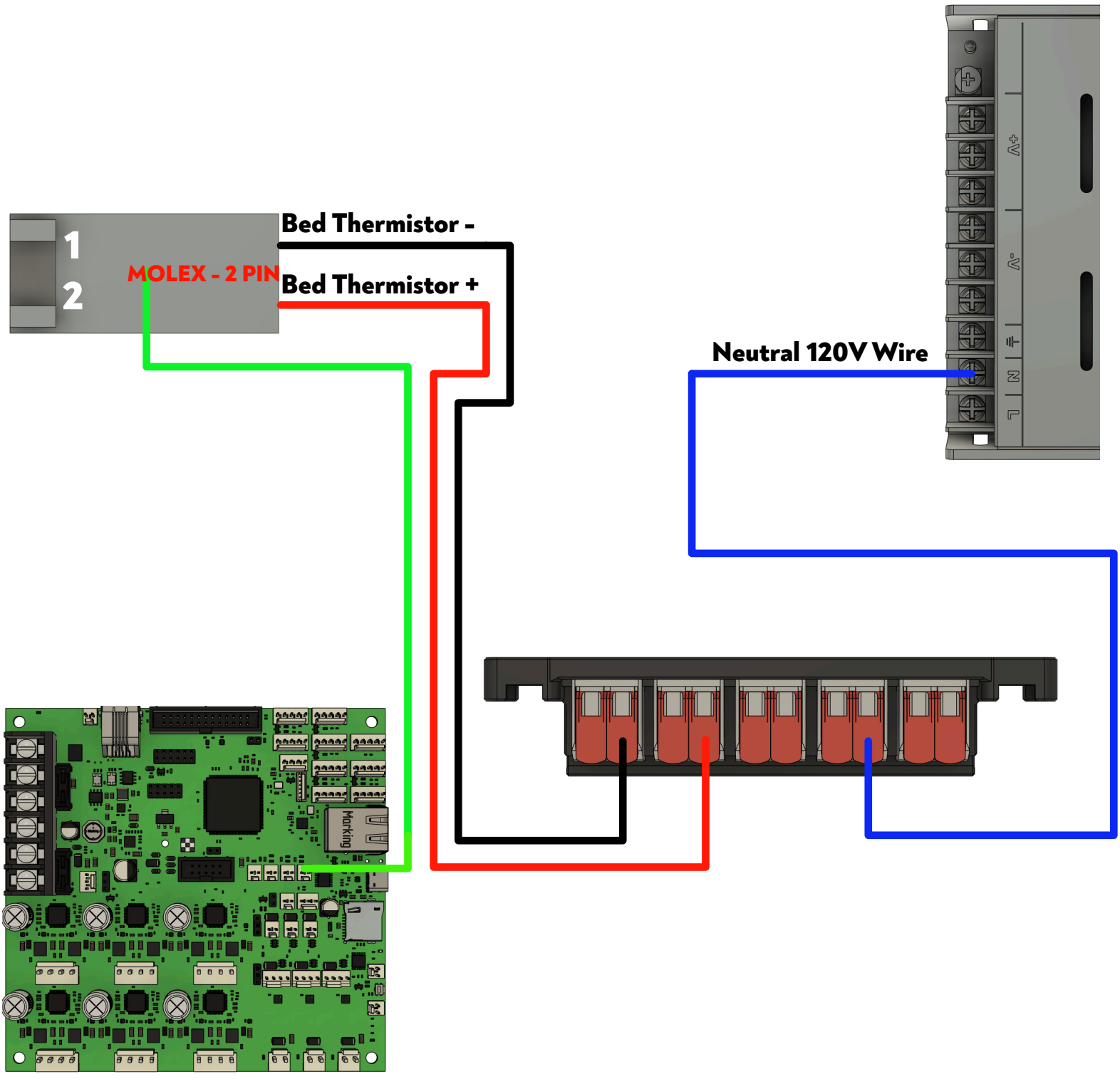


Wire Routing (REAR-SIDE)

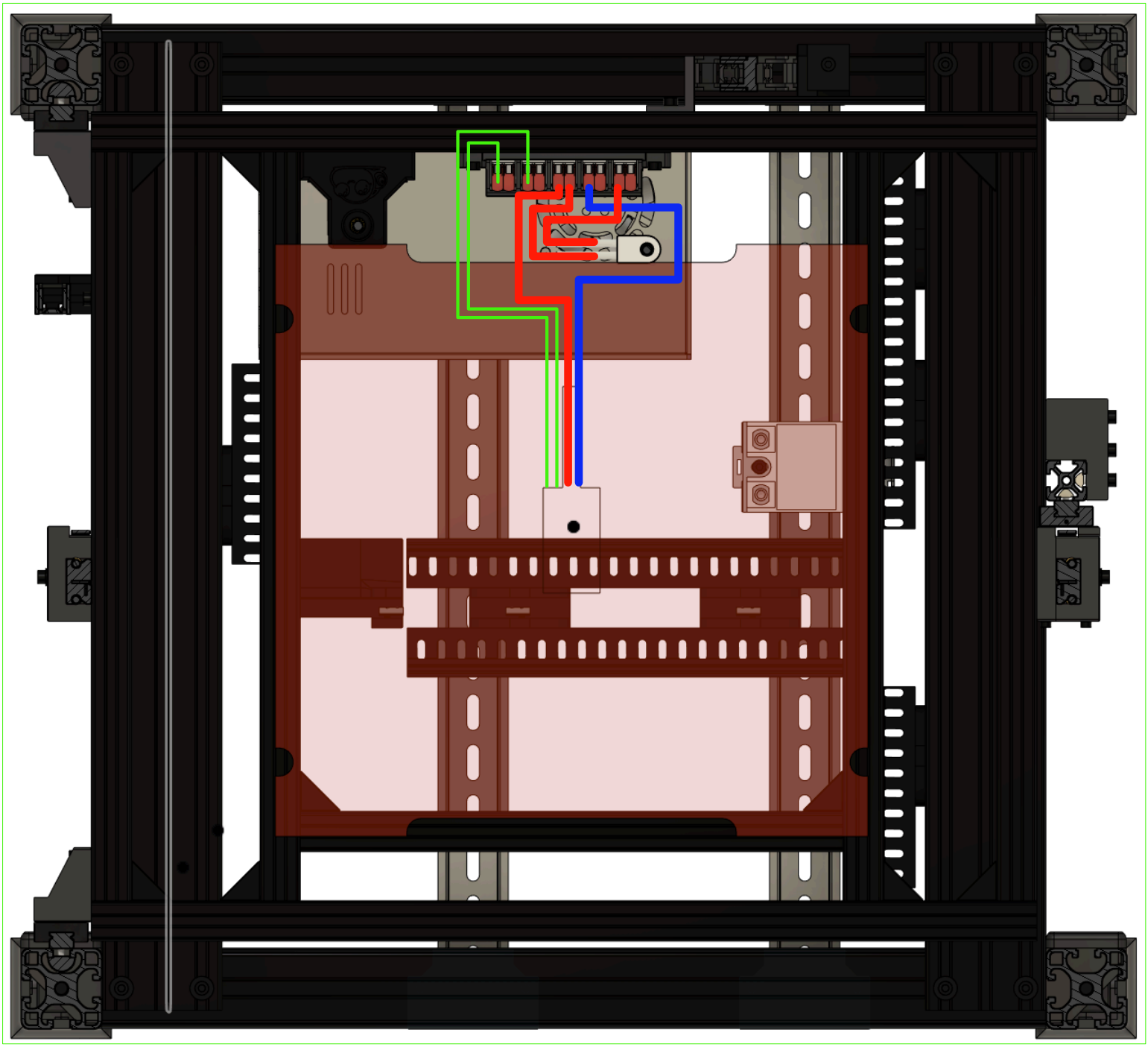


Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Neutral 120V Wire	24V Power Supply	Fork	Heated Bed WAGO	Bare Wire	133	18	WHT or BLU	Y	
Bed Thermistor +	Duet 3 6HC	Molex KK Pin 2 of 2	Heated Bed WAGO	Bare Wire	118	24	RED	Y	TEMP_3
Bed Thermistor -	Duet 3 6HC	Molex KK Pin 1 of 2	Heated Bed WAGO	Bare Wire	118	24	BLK	Y	TEMP_3



Step 3B: Heated Bed Connections



Notes:

GREEN = Bed Thermistor (+ & -) - These wires are usually red in color and are not polarity sensitive.

BLUE = Neutral 120V Wire - Can be connected to either white wire of the bed heater

RED = Line 120V Circuit - The current flow is as follows:

Line IN Wago to either leg of the thermal fuse

> Remaining leg of the thermal fuse to empty Wago

> Remaining terminal of empty Wago to the remaining white wire of the bed heater

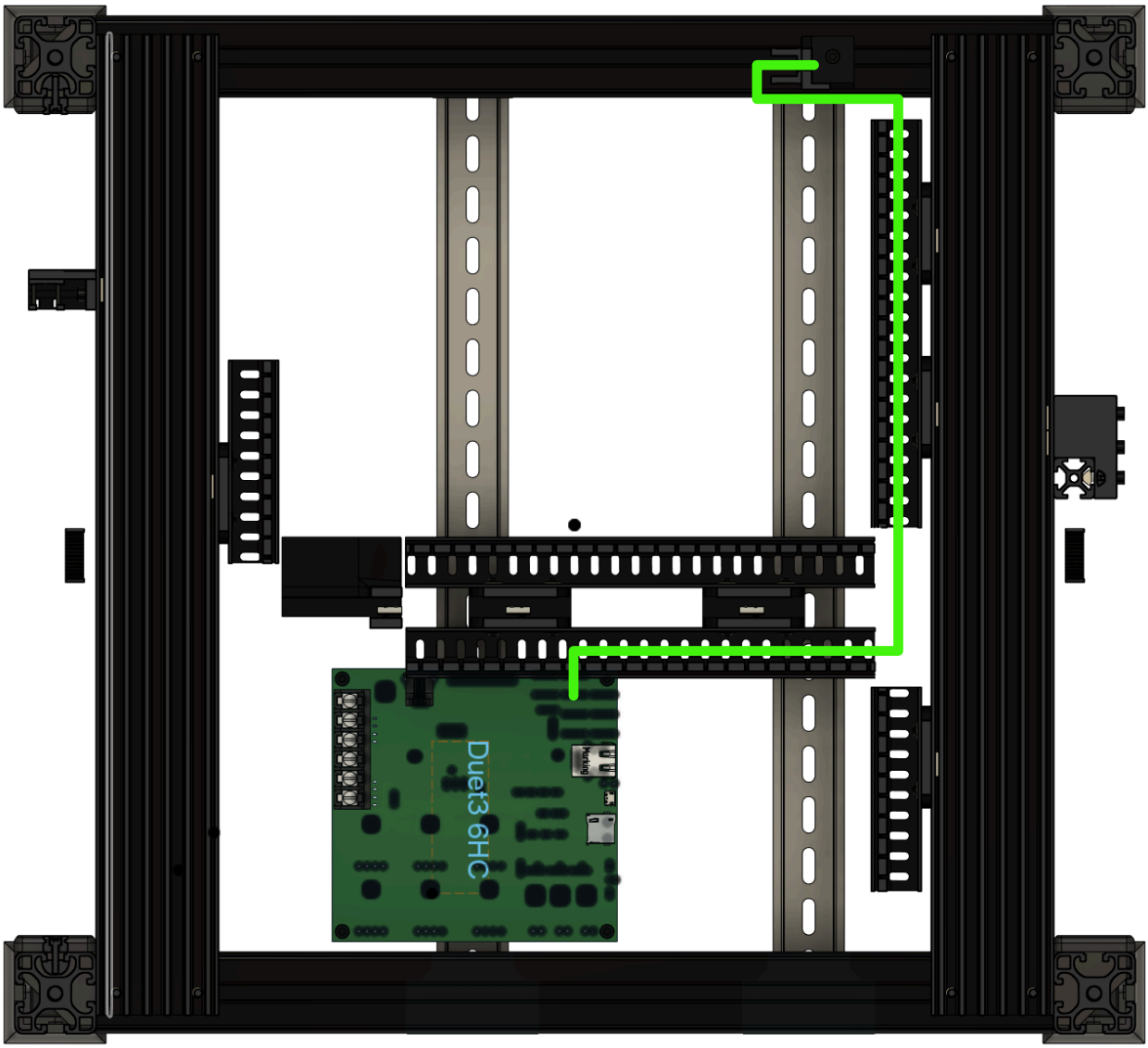
Step 4: Sexbolt Offset Switch

Notes:

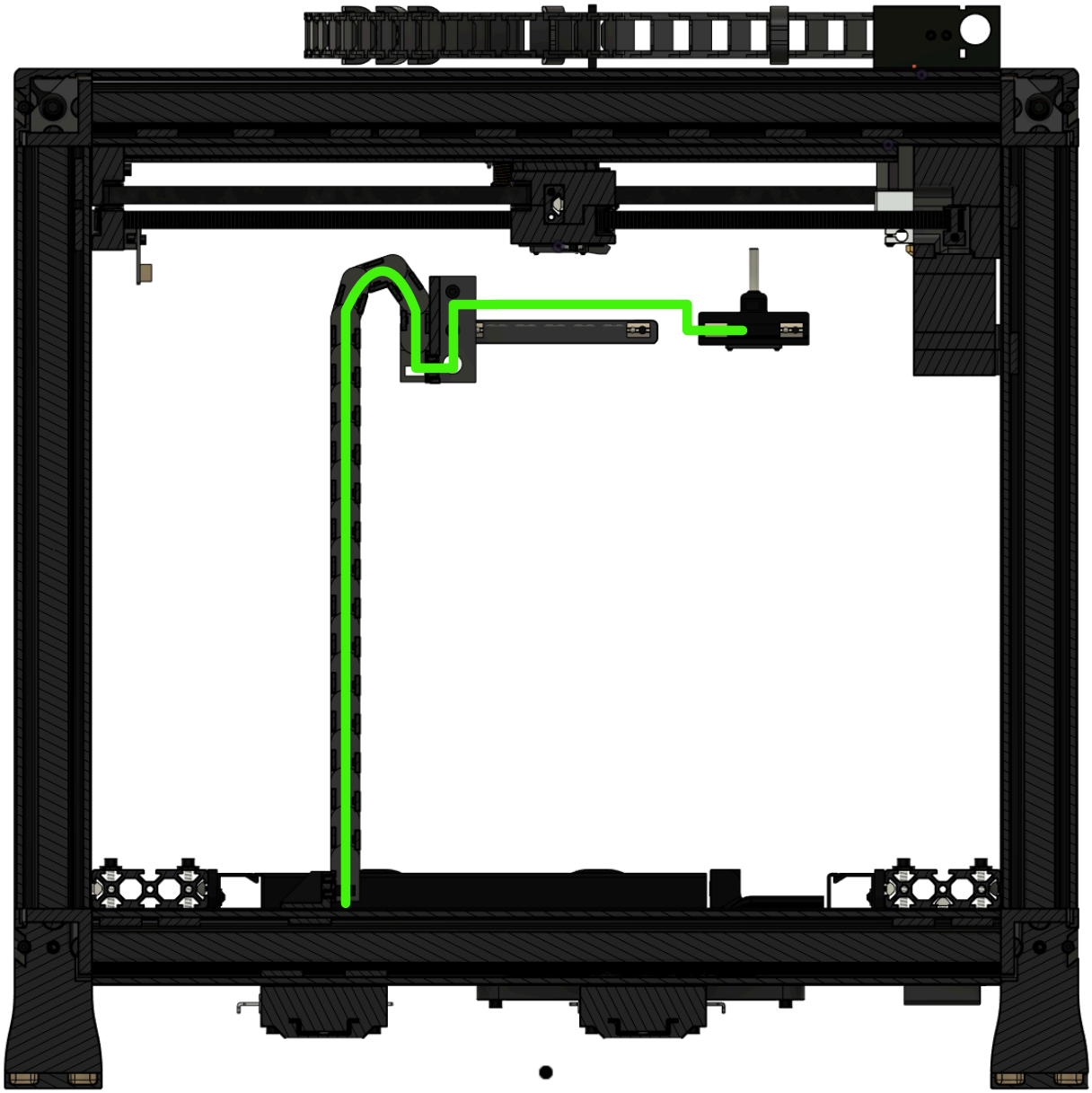
GREEN = Sexbolt Trigger Pair (GND & Low Switch)

See the assignments page below for context

Wire Routing (TOP)

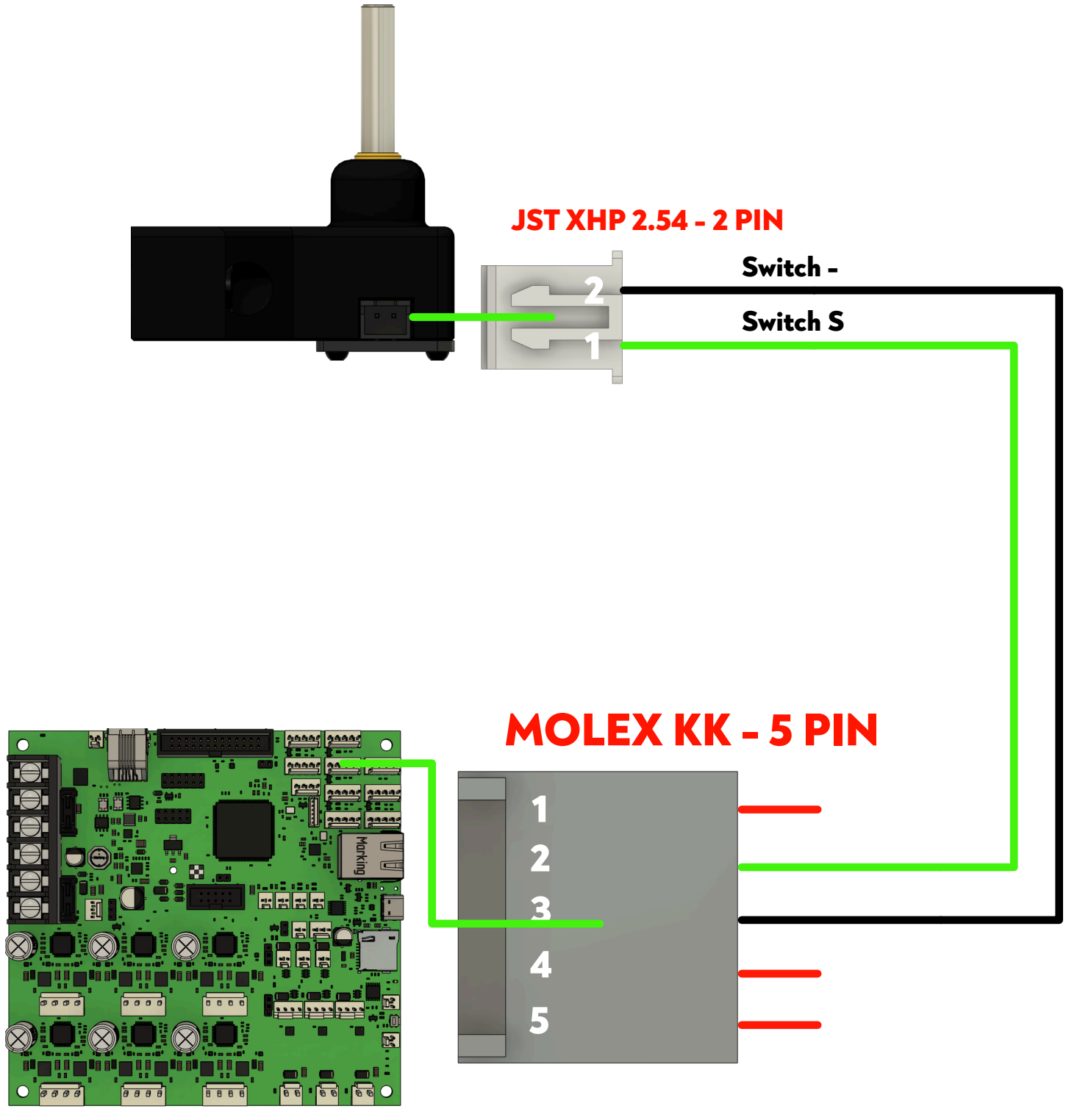


Wire Routing (REAR-SIDE)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Switch S	Sexbolt Switch	JST-XH Pin 1 of 2	Duet 3 6HC	Molex KK Pin 2 of 5	141	24	GREEN	Y	IO_5_IN
Switch -	Sexbolt Switch	JST-XH Pin 2 of 2	Duet 3 6HC	Molex KK Pin 3 of 5	141	24	BLK	Y	IO_5_IN



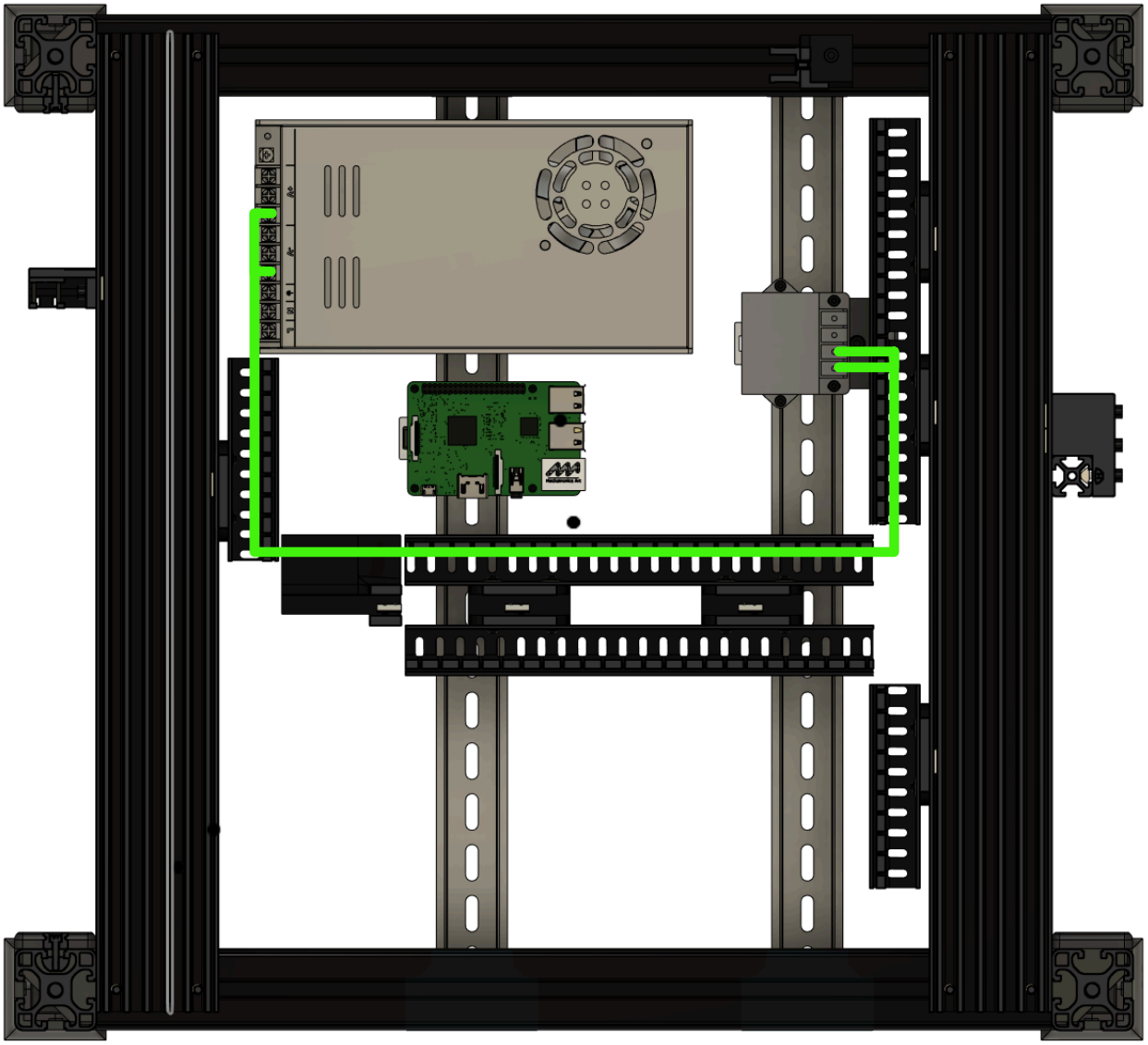
Step 5: 12V DC Converter

Notes:

GREEN = 24V Supply for 12V DC Converter

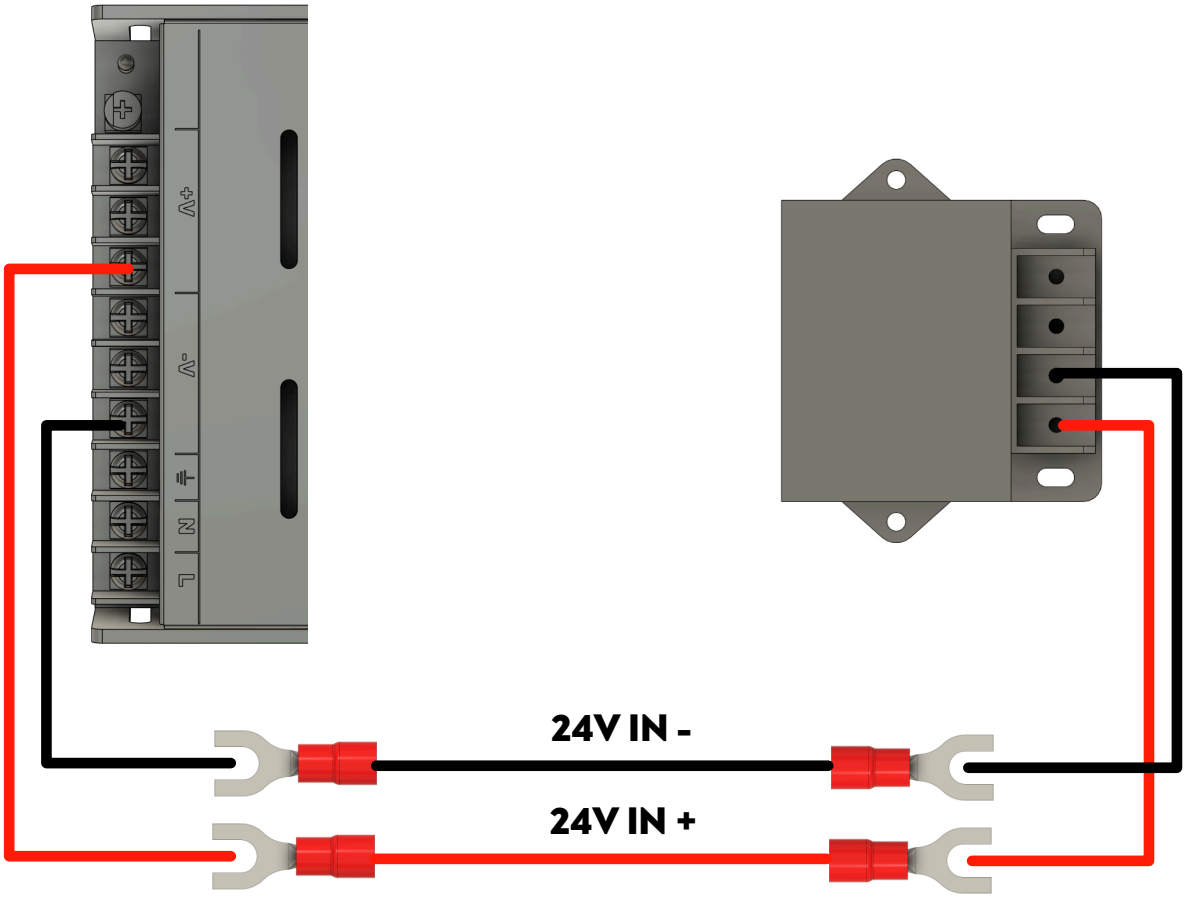
See the assignments page below for context

Wire Routing (TOP)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
24V IN +	24V Power Supply	Fork	12V Converter	Fork	67	18	RED	N	
24V IN -	24V Power Supply	Fork	12V Converter	Fork	67	18	BLK	N	



Step 6: 5V DC Converter

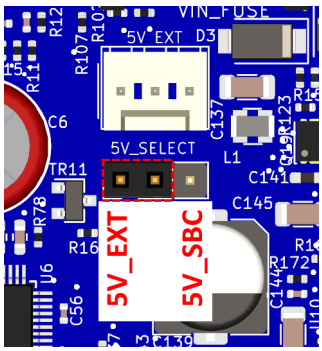
Notes:

GREEN = 24V Supply for 5V DC Converter

RED = 5V Supply for Duet 3 6HC

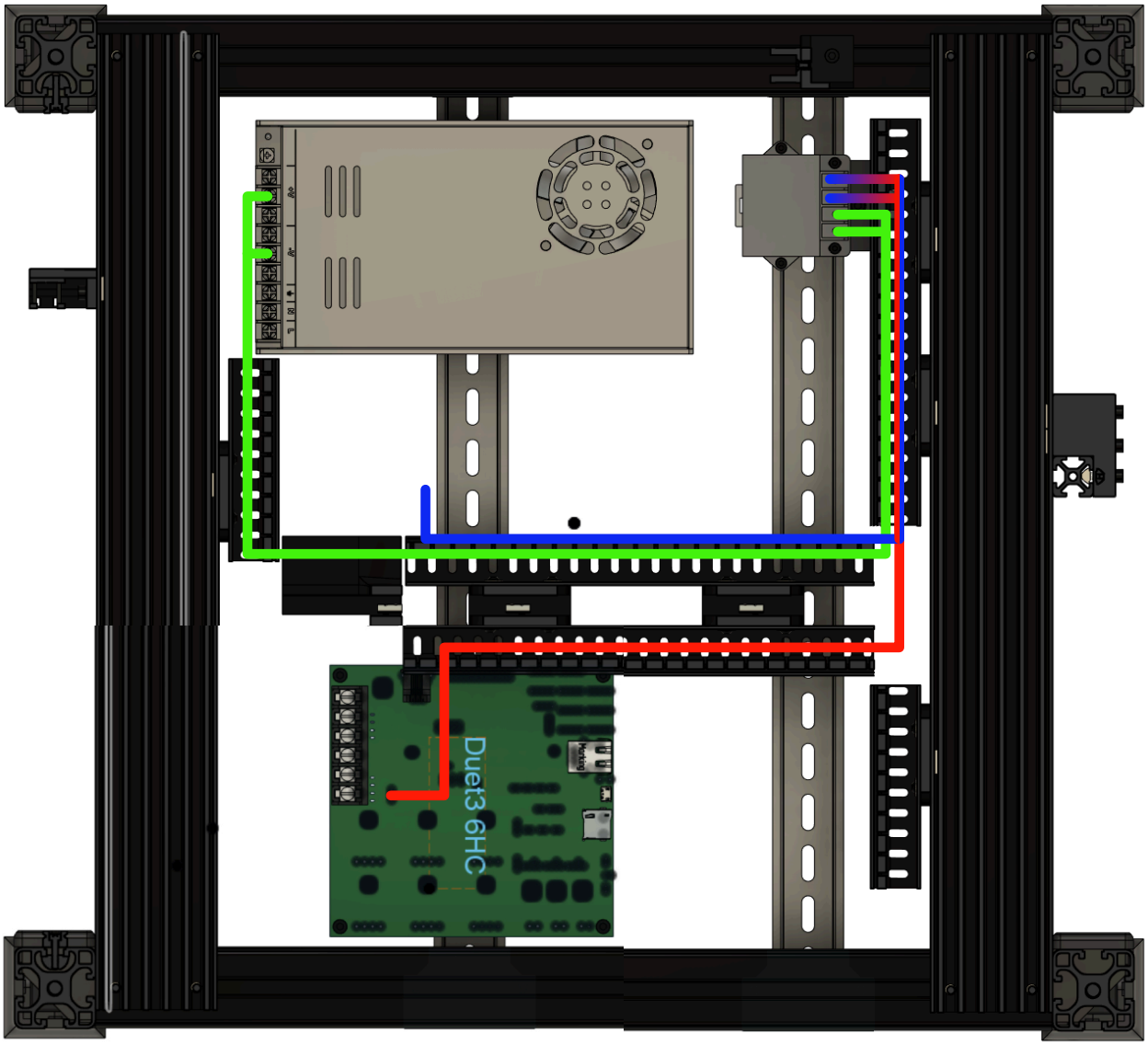
BLUE = 5V Supply for Raspberry Pi

See the assignments page below for context



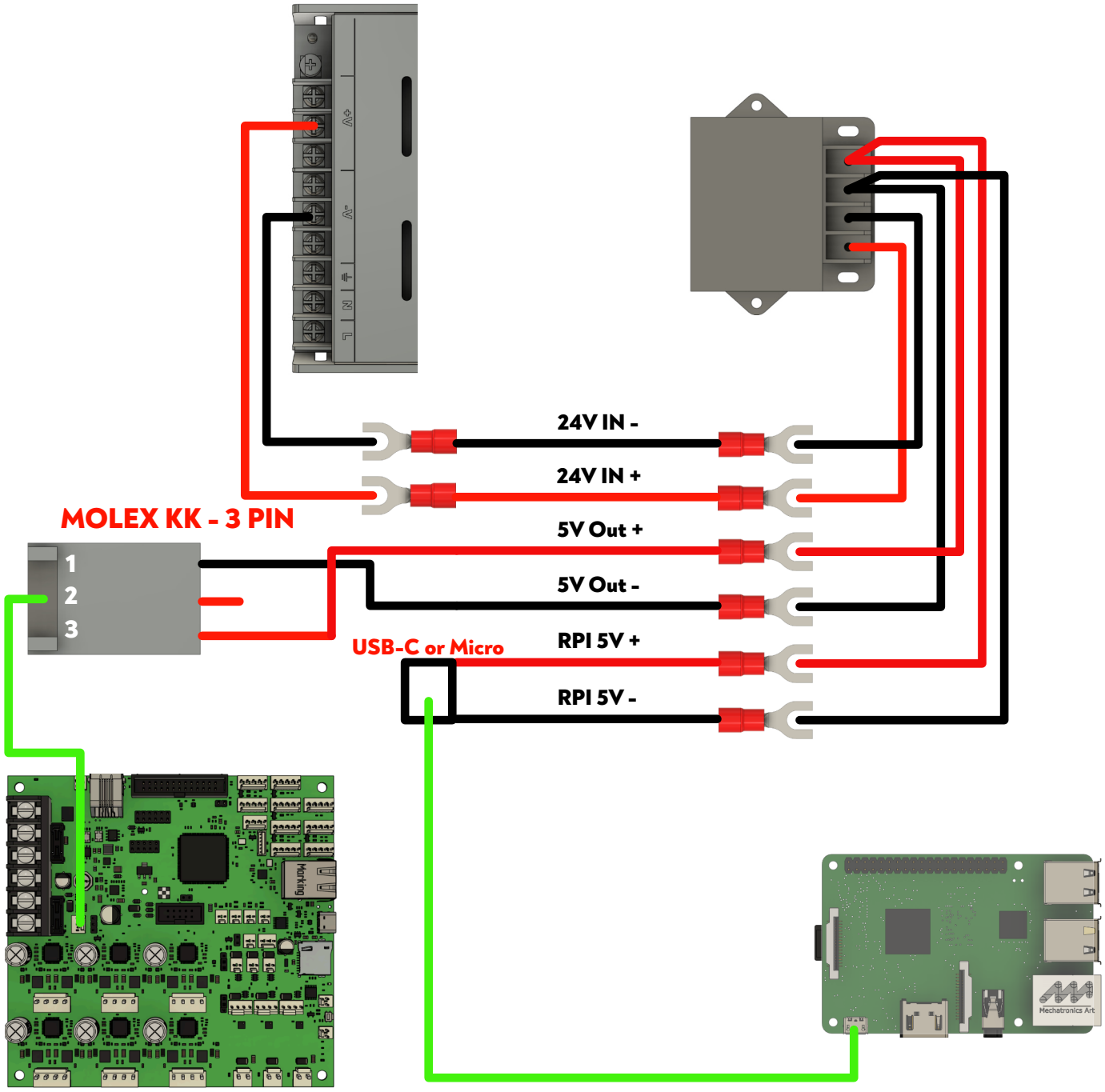
Don't Forget! : The Jumper for determining the 5V power supply source should be moved to 5V_EXT - See Image Above

Wire Routing (TOP)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
24V IN +	24V Power Supply	Fork	12V Converter	Fork	74	18	RED	N	
24V IN -	24V Power Supply	Fork	12V Converter	Fork	74	18	BLK	N	
5V Out +	5V Converter	Fork	Duet 3 6HC	Molex KK PIN 3 of 3	60	20	RED	N	5V_EXT
5V OUT -	5V Converter	Fork	Duet 3 6HC	Molex KK Pin 1 of 3	60	20	BLK	N	5V_EXT
RPI 5V+	5V DC Converter	Fork	RPI	USB-C	40	20	RED	N	
RPI 5V-	5V DC Converter	Fork	RPI	USB-C	40	20	BLK	N	



Step 7: Duet 3 Power Supplies

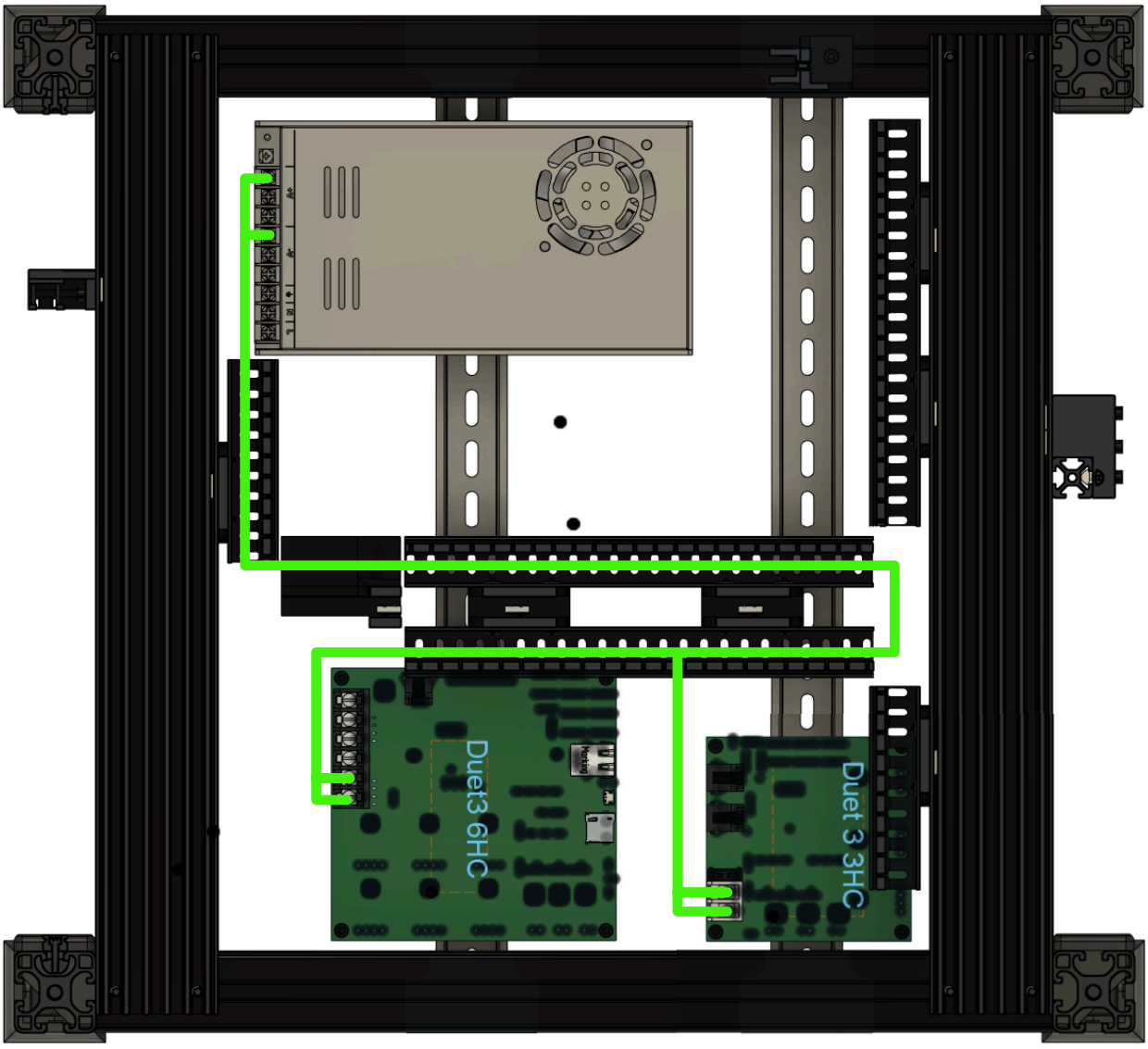
Notes:

The Duet 3 3HC Expansion board is only applicable to builds with 3+ equipped FDM Tools

GREEN = 24V Supply for Duet 3 6HC, Duet 3 3HC

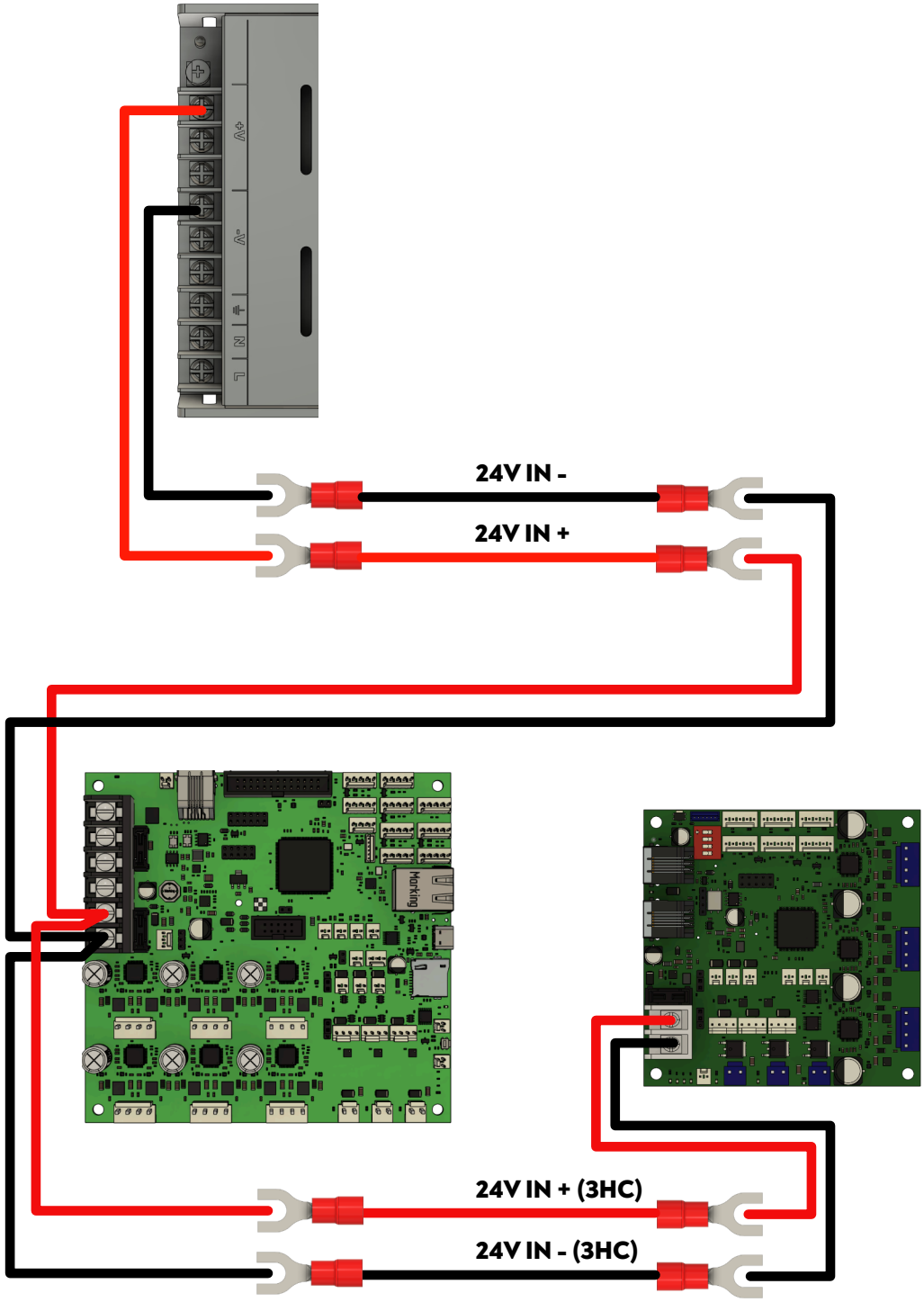
See the assignments page below for context

Wire Routing (TOP)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
24V IN +	24V Power Supply	Fork	Duet 3 6HC	Fork	91	18	RED	N	POWER_IN
24V IN -	24V Power Supply	Fork	Duet 3 6HC	Fork	91	18	BLACK	N	POWER_IN
24V IN +	Duet 3 6HC	Fork	Duet 3 3HC	Fork	39	18	RED	N	POWER_IN
24V IN -	Duet 3 6HC	Fork	Duet 3 3HC	Fork	39	18	BLACK	N	POWER_IN



Step 8: Water Pump

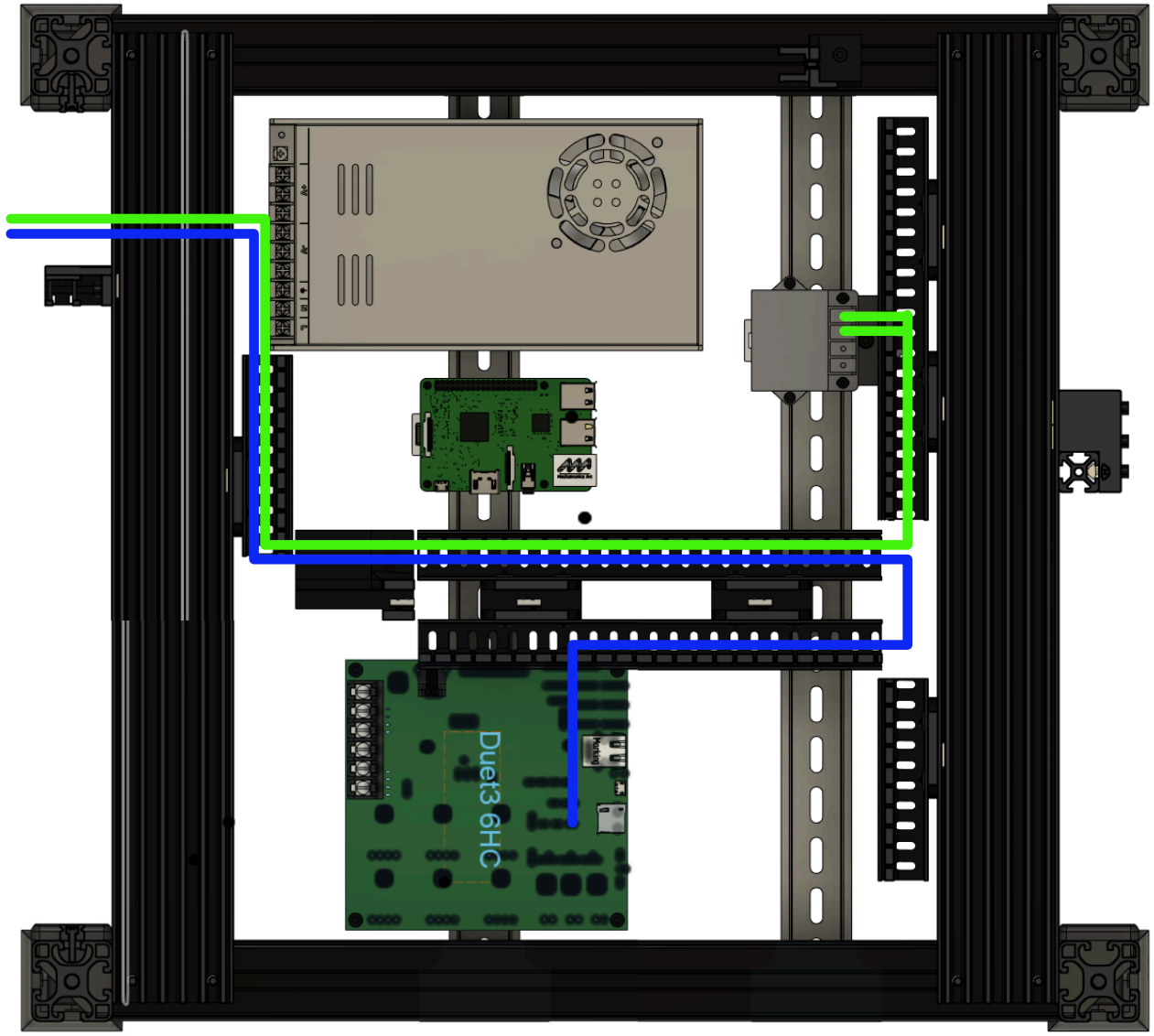
Notes:

GREEN = 12V Supply for Water Pump

BLUE = Radiator Fan Power Supply

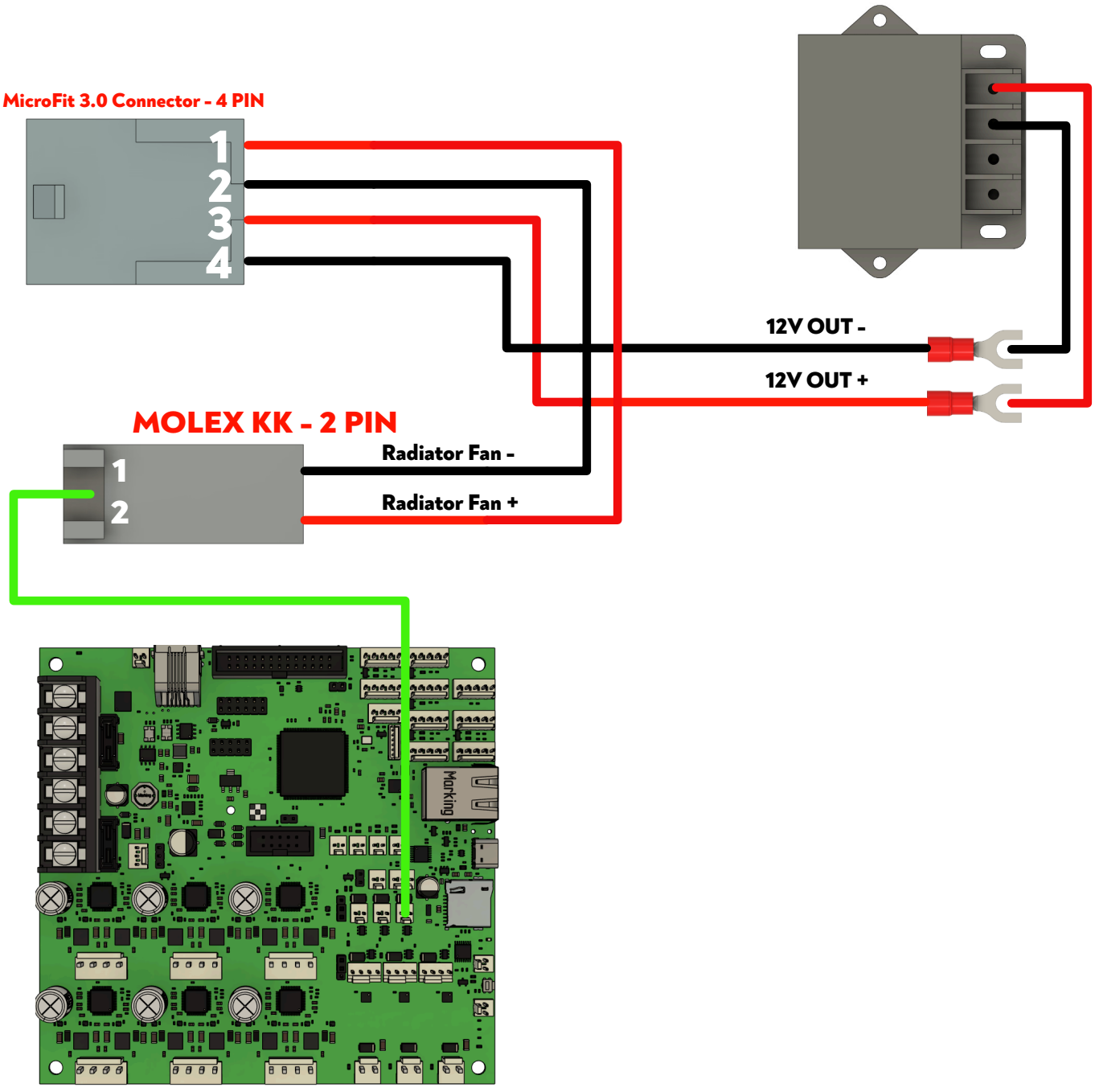
See the assignments page below for context

Wire Routing (TOP)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Radiator Fan +	Duet 3 6HC	Molex KK Pin 2 of 2	6020 Fan	Microfit Connector Pin 1 of 4	50	24	RED	N	OUT_9
Radiator Fan -	Duet 3 6HC	Molex KK Pin 1 of 2	6020 Fan	Microfit Connector Pin 2 of 4	50	24	BLK	N	OUT_9
12V OUT +	12V Converter	Fork	Water Pump +	Microfit Connector Pin 3 of 4	86	20	RED	N	
12V OUT -	12V Converter	Fork	Water Pump -	Microfit Connector Pin 4 of 4	86	20	BLK	N	



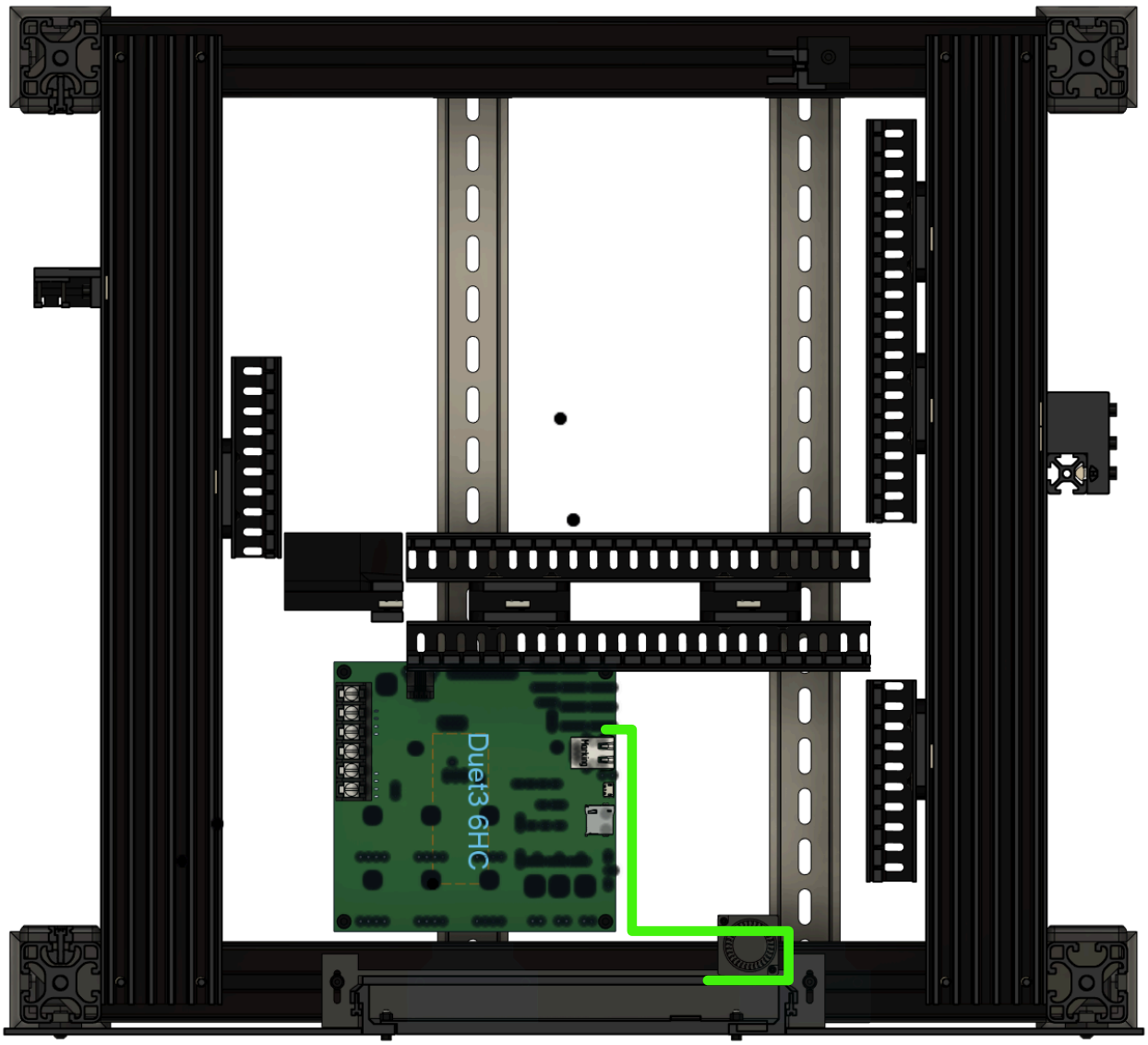
Step 9: PanelDue Display (OPTIONAL)

Notes:

GREEN = Display Data + Wire Supply

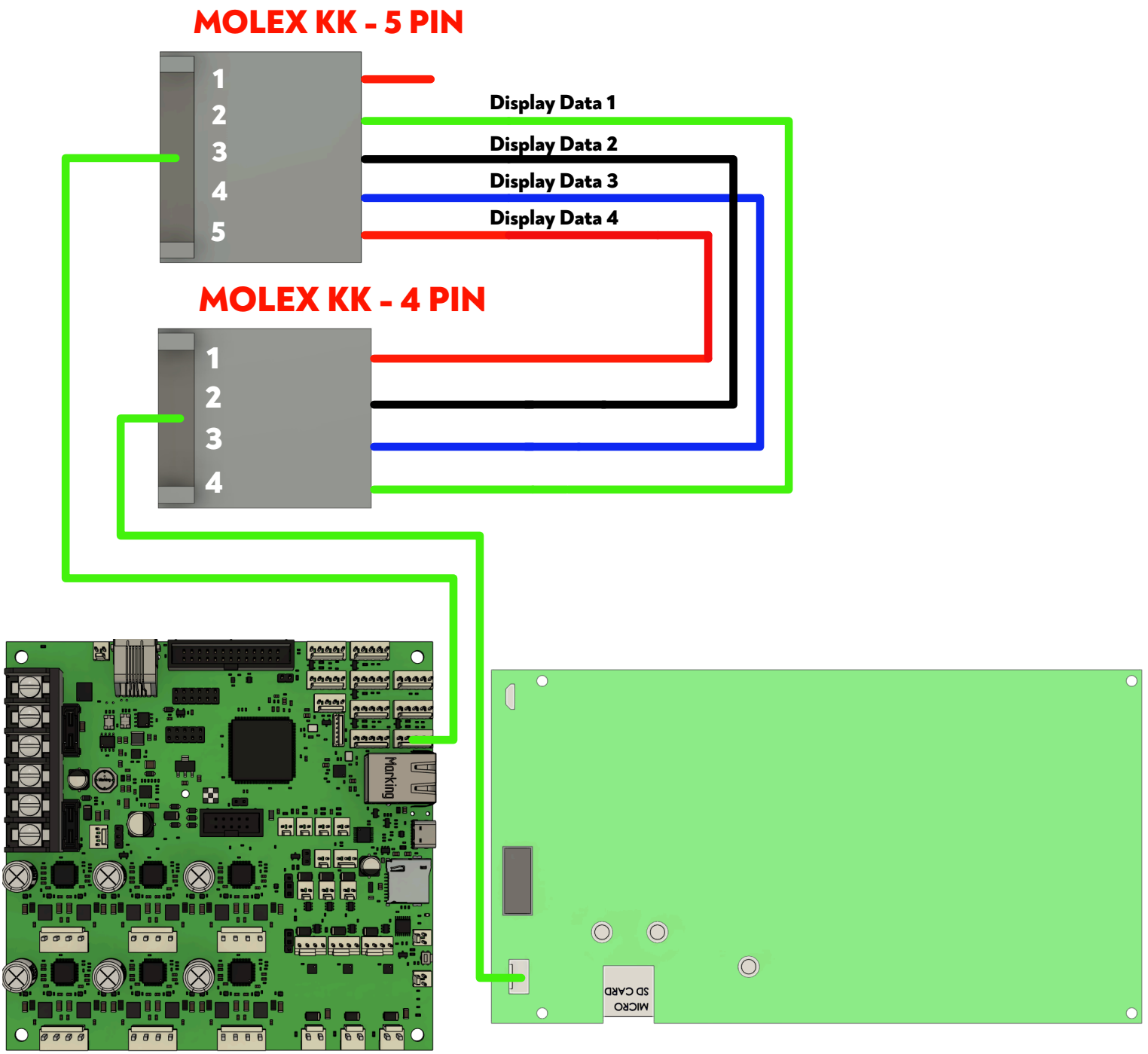
See the assignments page below for context

Wire Routing (TOP)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Display Data 1	Duet 3 6HC	Molex KK Pin 2 of 5	PanelDue	Molex KK Pin 4 of 4	62	24	GREEN	N	IO_0
Display Data 2	Duet 3 6HC	Molex KK Pin 3 of 5	PanelDue	Molex KK Pin 2 of 4	62	24	BLACK	N	IO_0
Display Data 3	Duet 3 6HC	Molex KK Pin 4 of 5	PanelDue	Molex KK Pin 3 of 4	62	24	BLUE	N	IO_0
Display Data 4	Duet 3 6HC	Molex KK Pin 5 of 5	PanelDue	Molex KK Pin 1 of 4	62	24	RED	N	IO_0_5V_EXT



Step 10: Tool Docks

Notes:

Each dock requires only heater and thermistor circuits!

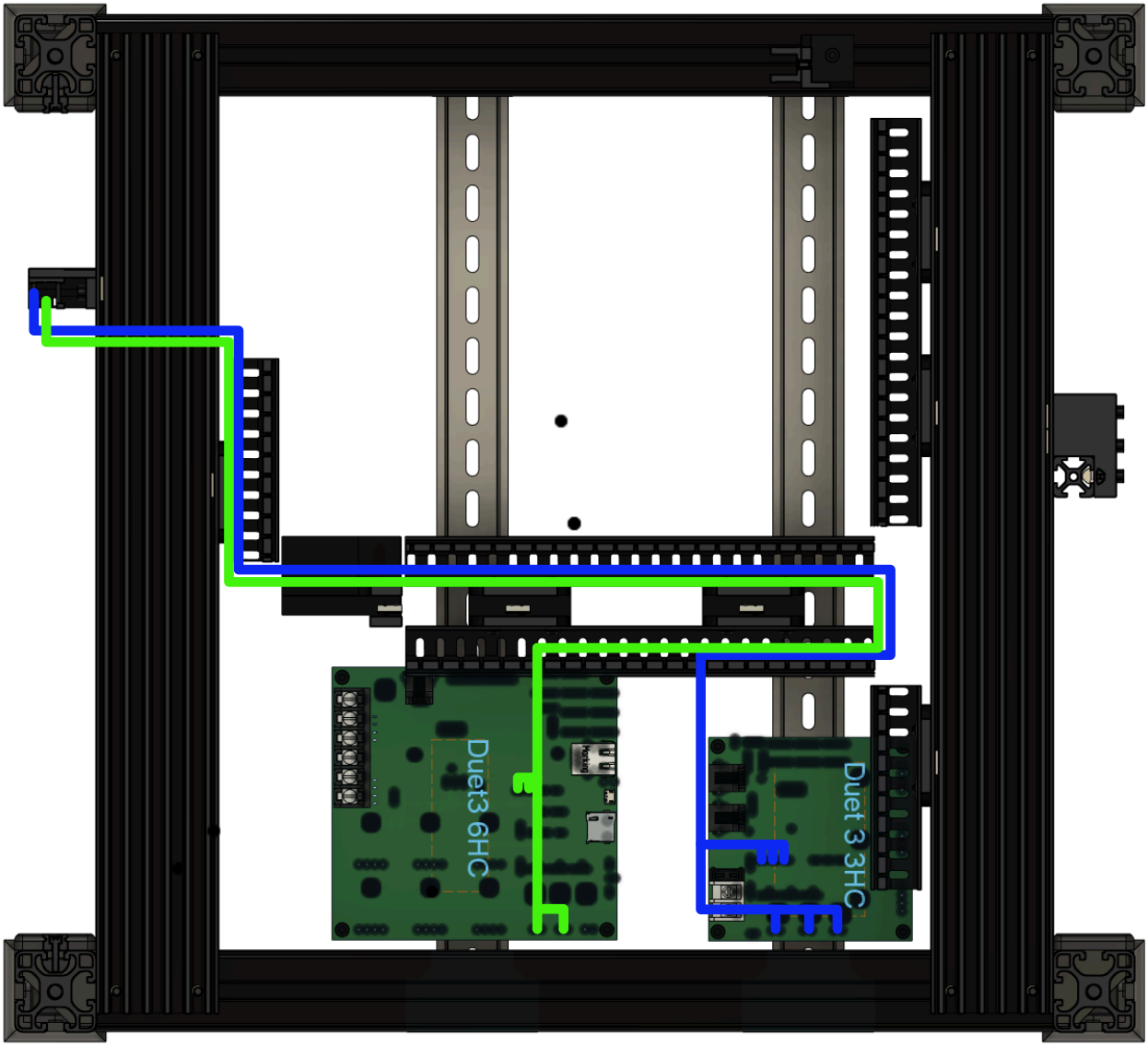
GREEN = Tool Dock Connections for FDM tool 1 & 2

BLUE = Tool Dock Connections for FDM tool 3, 4 and 5 (Duet 3 3HC required)

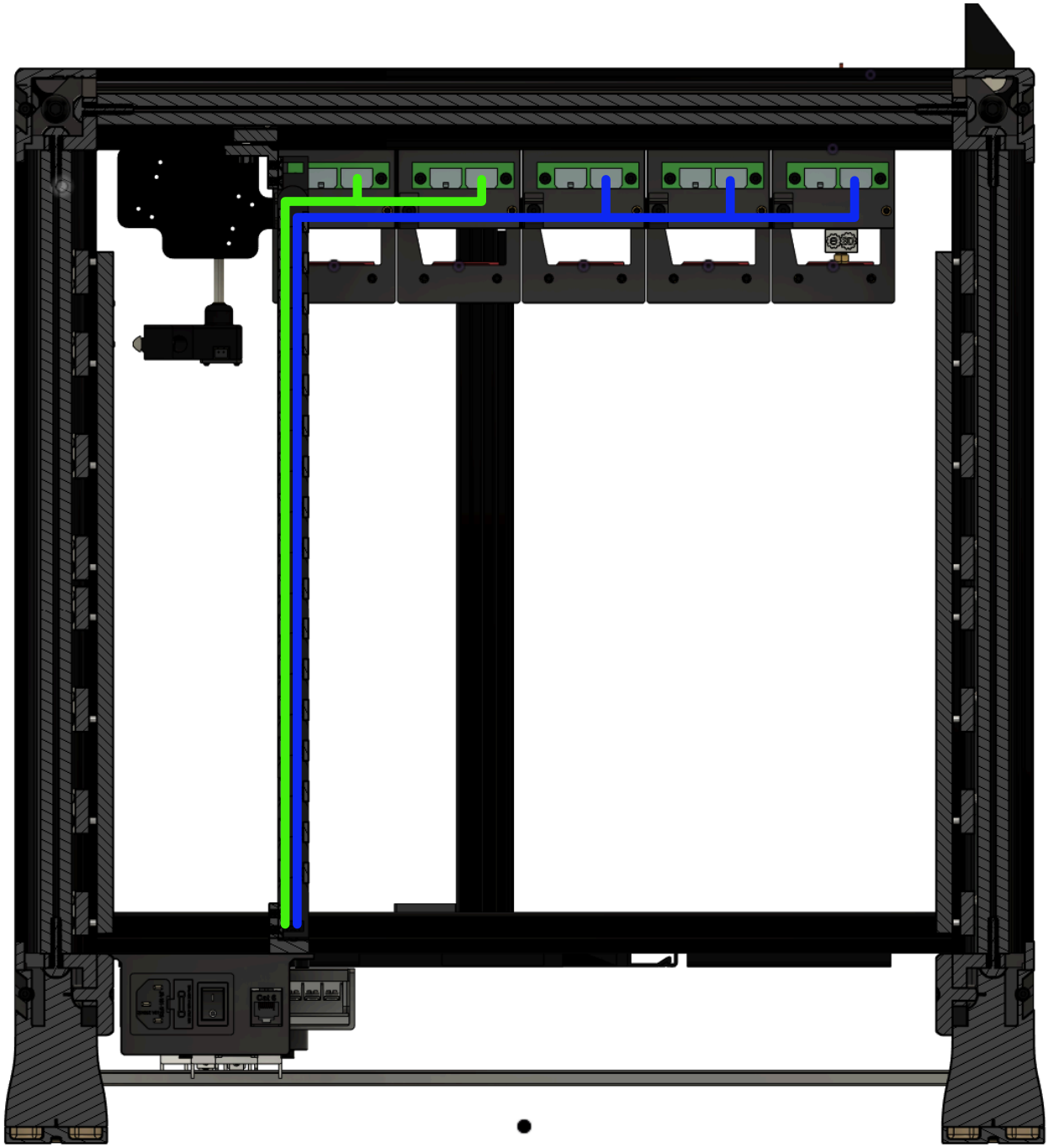
See the assignments page below for context

Don't Forget! : "Tool 0" is closest to the REAR of the machine!

Wire Routing (TOP)



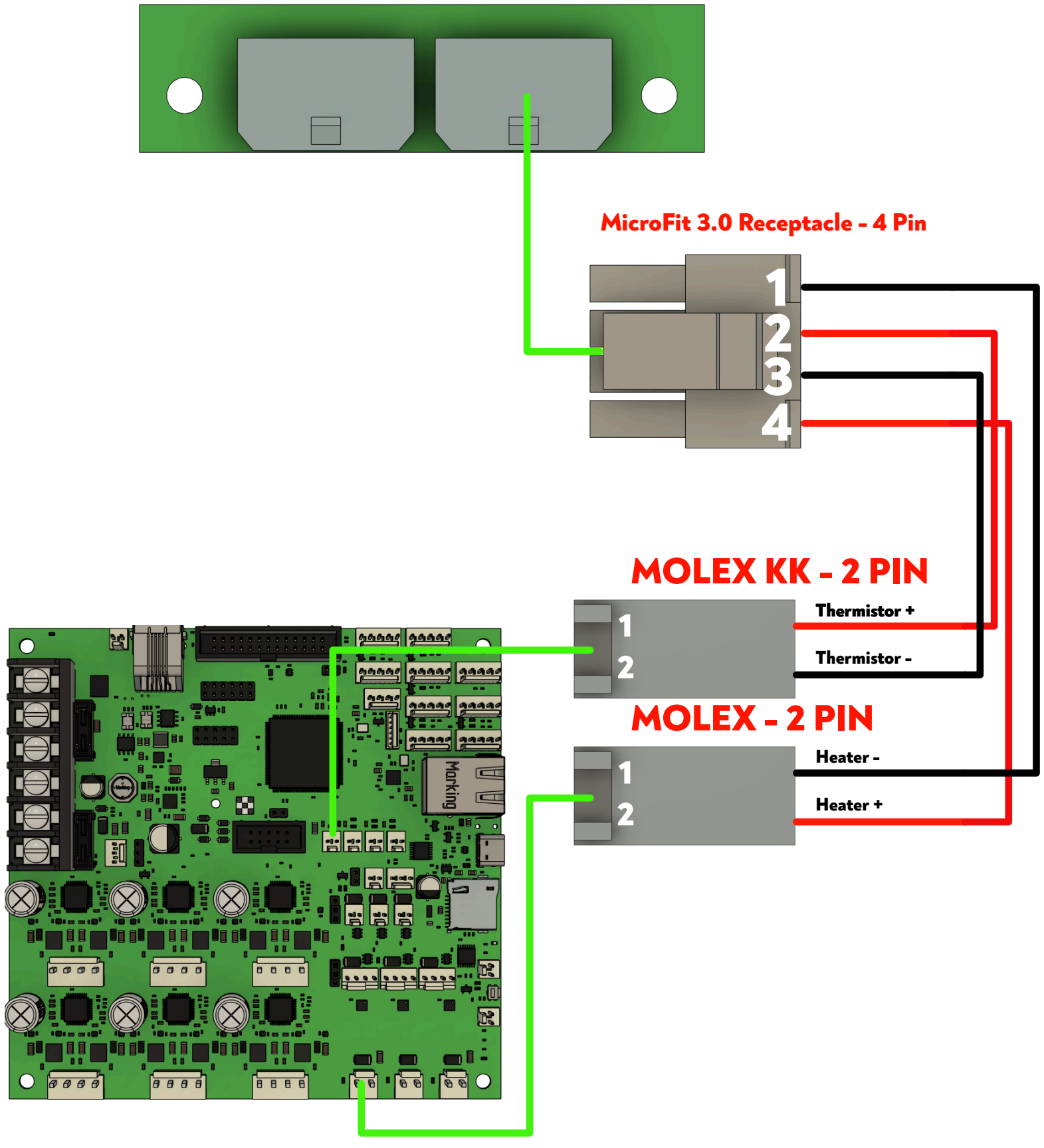
Wire Routing (LEFT SIDE)



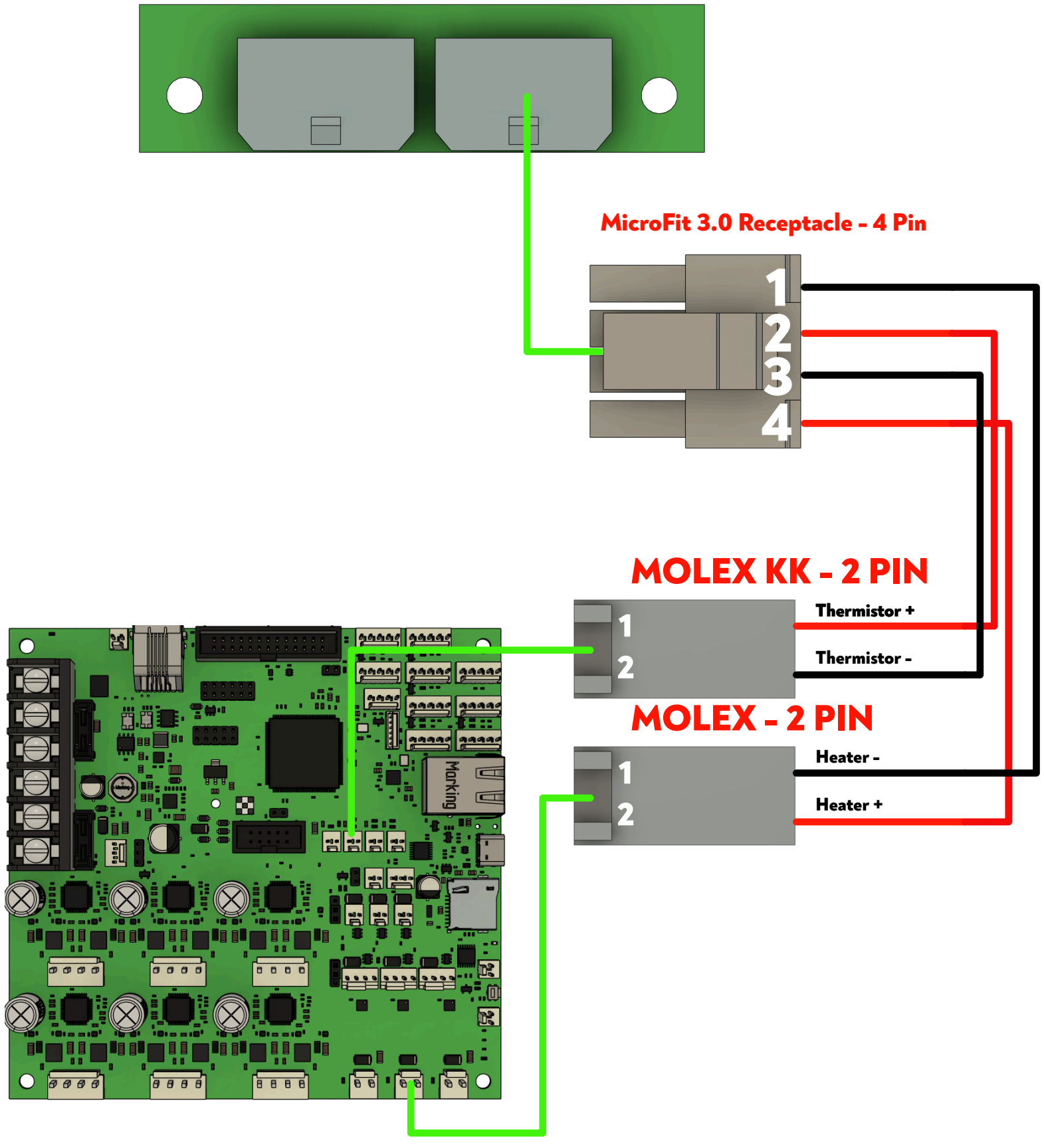
Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Tool 0 Heater +	Duet 3 6HC	Molex LG Pin 2 of 2	Tool Dock 0	Microfit Receptacle Pin 4 of 4	136	20	RED	N	OUT_1
Tool 0 Heater -	Duet 3 6HC	Molex LG Pin 1 of 2	Tool Dock 0	Microfit Receptacle Pin 1 of 4	136	20	BLACK	N	OUT_1
Tool 0 Thermistor +	Duet 3 6HC	Molex KK Pin 1 of 2	Tool Dock 0	Microfit Receptacle Pin 2 of 4	136	24	RED	N	TEMP_0
Tool 0 Thermistor -	Duet 3 6HC	Molex KK Pin 2 of 2	Tool Dock 0	Microfit Receptacle Pin 3 of 4	136	24	BLACK	N	TEMP_0
Tool 1 Heater +	Duet 3 6HC	Molex LG Pin 2 of 2	Tool Dock 1	Microfit Receptacle Pin 4 of 4	141	20	RED	N	OUT_2
Tool 1 Heater -	Duet 3 6HC	Molex LG Pin 1 of 2	Tool Dock 1	Microfit Receptacle Pin 1 of 4	141	20	BLACK	N	OUT_2
Tool 1 Thermistor +	Duet 3 6HC	Molex KK Pin 1 of 2	Tool Dock 1	Microfit Receptacle Pin 2 of 4	141	24	RED	N	TEMP_1
Tool 1 Thermistor -	Duet 3 6HC	Molex KK Pin 2 of 2	Tool Dock 1	Microfit Receptacle Pin 3 of 4	141	24	BLACK	N	TEMP_1
Tool 2 Heater +	Duet 3 3HC	Molex LG Pin 2 of 2	Tool Dock 2	Microfit Receptacle Pin 4 of 4	131	20	RED	N	OUT_0
Tool 2 Heater -	Duet 3 3HC	Molex LG Pin 1 of 2	Tool Dock 2	Microfit Receptacle Pin 1 of 4	131	20	BLACK	N	OUT_0
Tool 2 Thermistor +	Duet 3 3HC	Molex KK Pin 1 of 2	Tool Dock 2	Microfit Receptacle Pin 2 of 4	131	24	RED	N	TEMP_0
Tool 2 Thermistor -	Duet 3 3HC	Molex KK Pin 2 of 2	Tool Dock 2	Microfit Receptacle Pin 3 of 4	131	24	BLACK	N	TEMP_0
Tool 3 Heater +	Duet 3 3HC	Molex LG Pin 2 of 2	Tool Dock 3	Microfit Receptacle Pin 4 of 4	136	20	RED	N	OUT_1
Tool 3 Heater -	Duet 3 3HC	Molex LG Pin 1 of 2	Tool Dock 3	Microfit Receptacle Pin 1 of 4	136	20	BLACK	N	OUT_1
Tool 3 Thermistor +	Duet 3 3HC	Molex KK Pin 1 of 2	Tool Dock 3	Microfit Receptacle Pin 2 of 4	136	24	RED	N	TEMP_1
Tool 3 Thermistor -	Duet 3 3HC	Molex KK Pin 2 of 2	Tool Dock 3	Microfit Receptacle Pin 3 of 4	136	24	BLACK	N	TEMP_1
Tool 4 Heater +	Duet 3 3HC	Molex LG Pin 2 of 2	Tool Dock 4	Microfit Receptacle Pin 4 of 4	141	20	RED	N	OUT_2
Tool 4 Heater -	Duet 3 3HC	Molex LG Pin 1 of 2	Tool Dock 4	Microfit Receptacle Pin 1 of 4	141	20	BLACK	N	OUT_2
Tool 4 Thermistor +	Duet 3 3HC	Molex KK Pin 1 of 2	Tool Dock 4	Microfit Receptacle Pin 2 of 4	141	24	RED	N	TEMP_2
Tool 4 Thermistor -	Duet 3 3HC	Molex KK Pin 2 of 2	Tool Dock 4	Microfit Receptacle Pin 3 of 4	141	24	BLACK	N	TEMP_2

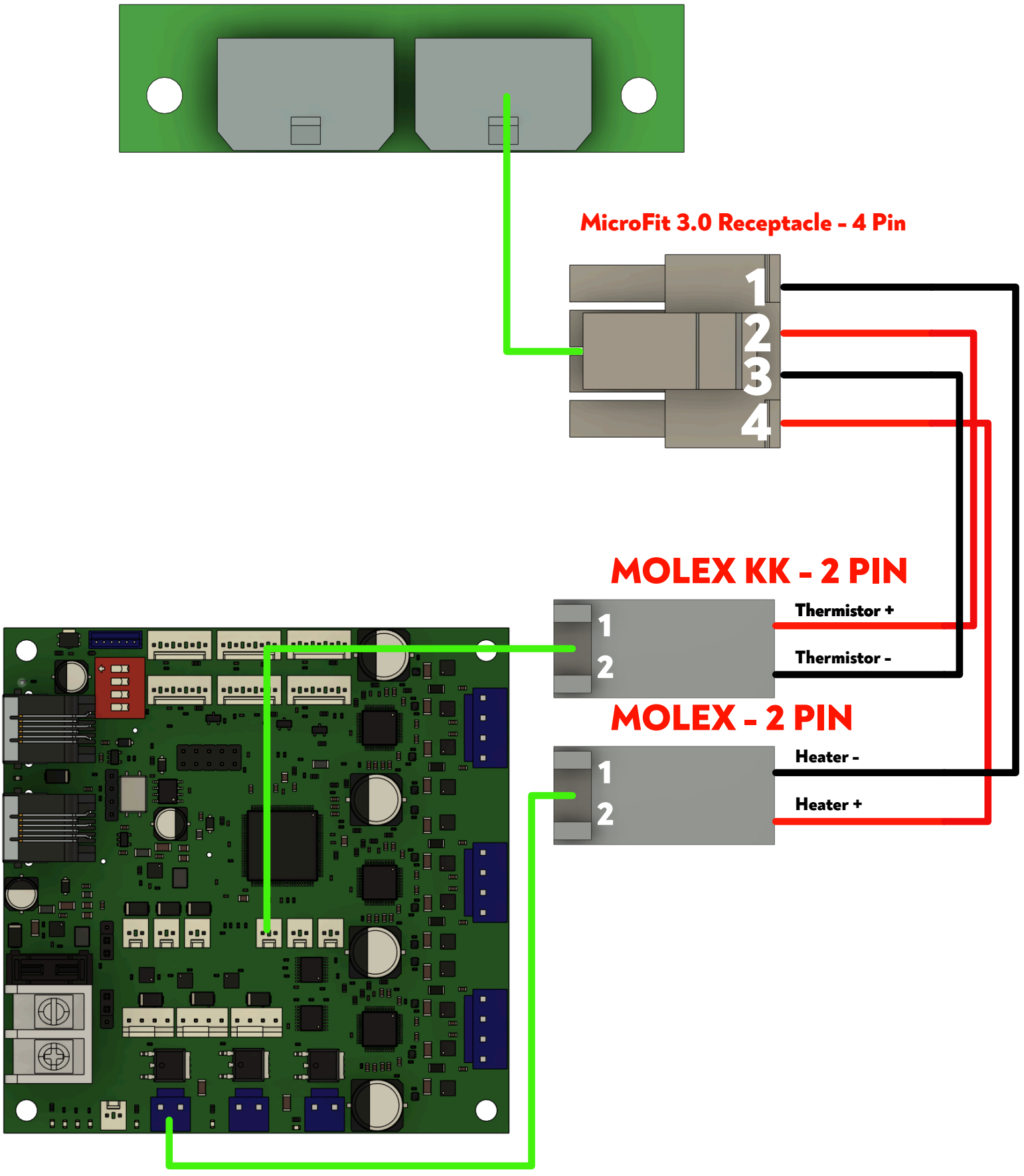
Tool 0


MicroFit 3.0 Receptacle - 4 Pin
1
2
3
4
MOLEX KK - 2 PIN
1
2
Thermistor +
Thermistor -
MOLEX - 2 PIN
1
2
Heater -
Heater +
Marking

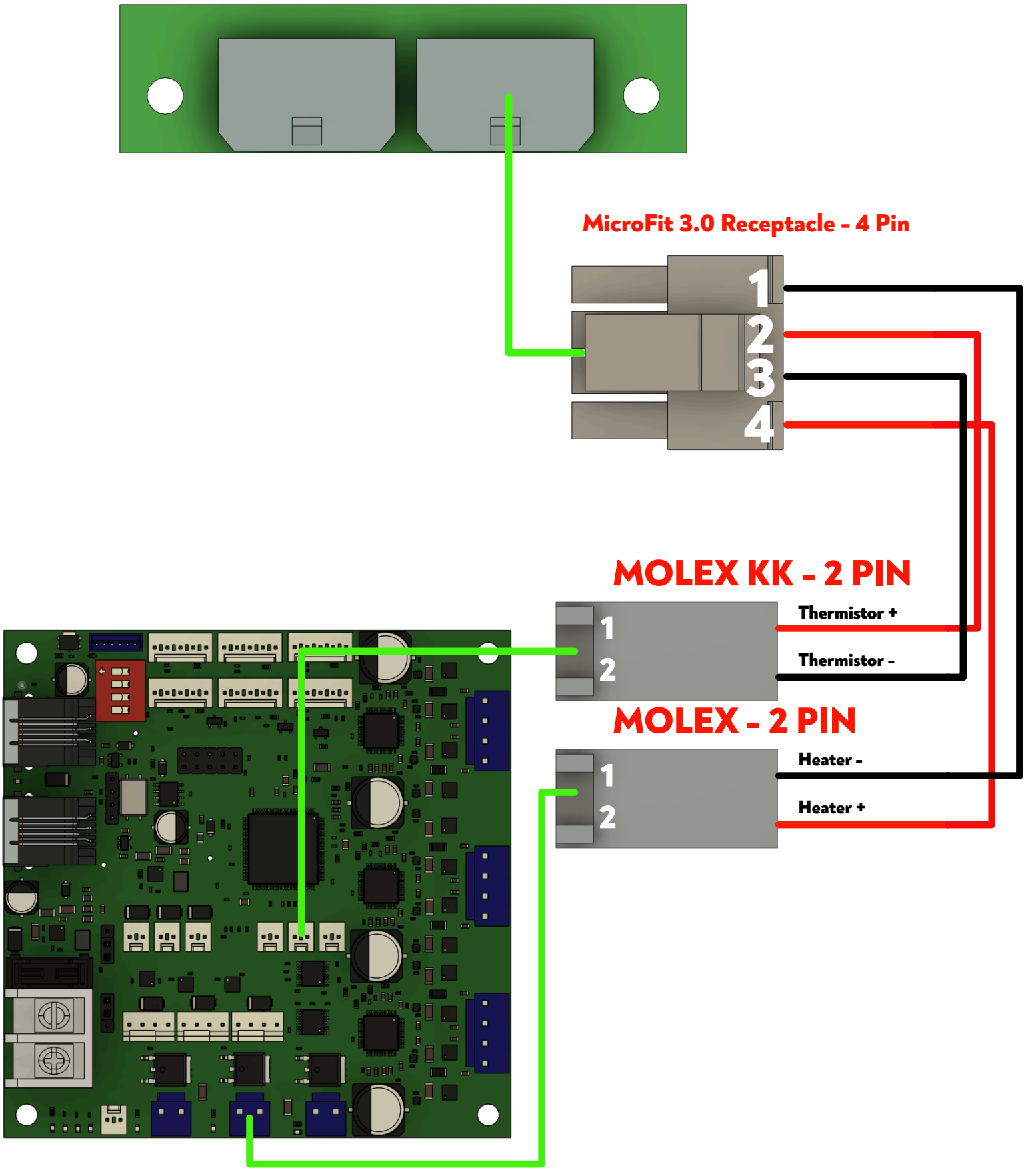
Tool 1


MicroFit 3.0 Receptacle - 4 Pin
1
2
3
4
MOLEX KK - 2 PIN
1
2
Thermistor +
Thermistor -
MOLEX - 2 PIN
1
2
Heater -
Heater +
Marking

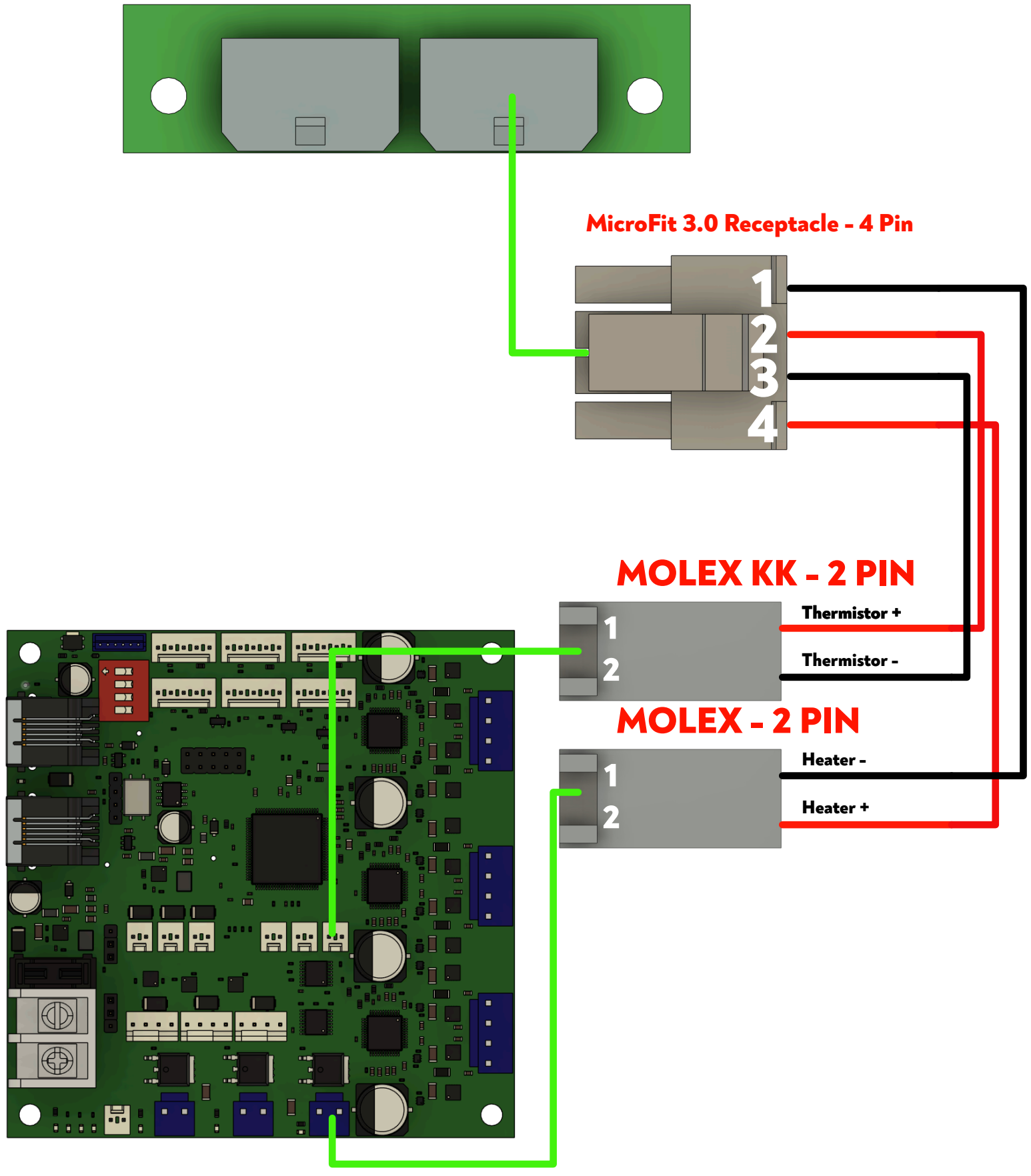
Tool 2


MicroFit 3.0 Receptacle - 4 Pin
1
2
3
4
MOLEX KK - 2 PIN
1
2
Thermistor +
Thermistor -
MOLEX - 2 PIN
1
2
Heater -
Heater +

Tool 3


MicroFit 3.0 Receptacle - 4 Pin
1
2
3
4
MOLEX KK - 2 PIN
1
2
Thermistor +
Thermistor -
MOLEX - 2 PIN
1
2
Heater -
Heater +

Tool 4


MicroFit 3.0 Receptacle - 4 Pin
1
2
3
4
MOLEX KK - 2 PIN
1
2
Thermistor +
Thermistor -
MOLEX - 2 PIN
1
2
Heater -
Heater +

Step 11: Enclosure Lighting

Notes:

GREEN = Power Supply for enclosure LED 1

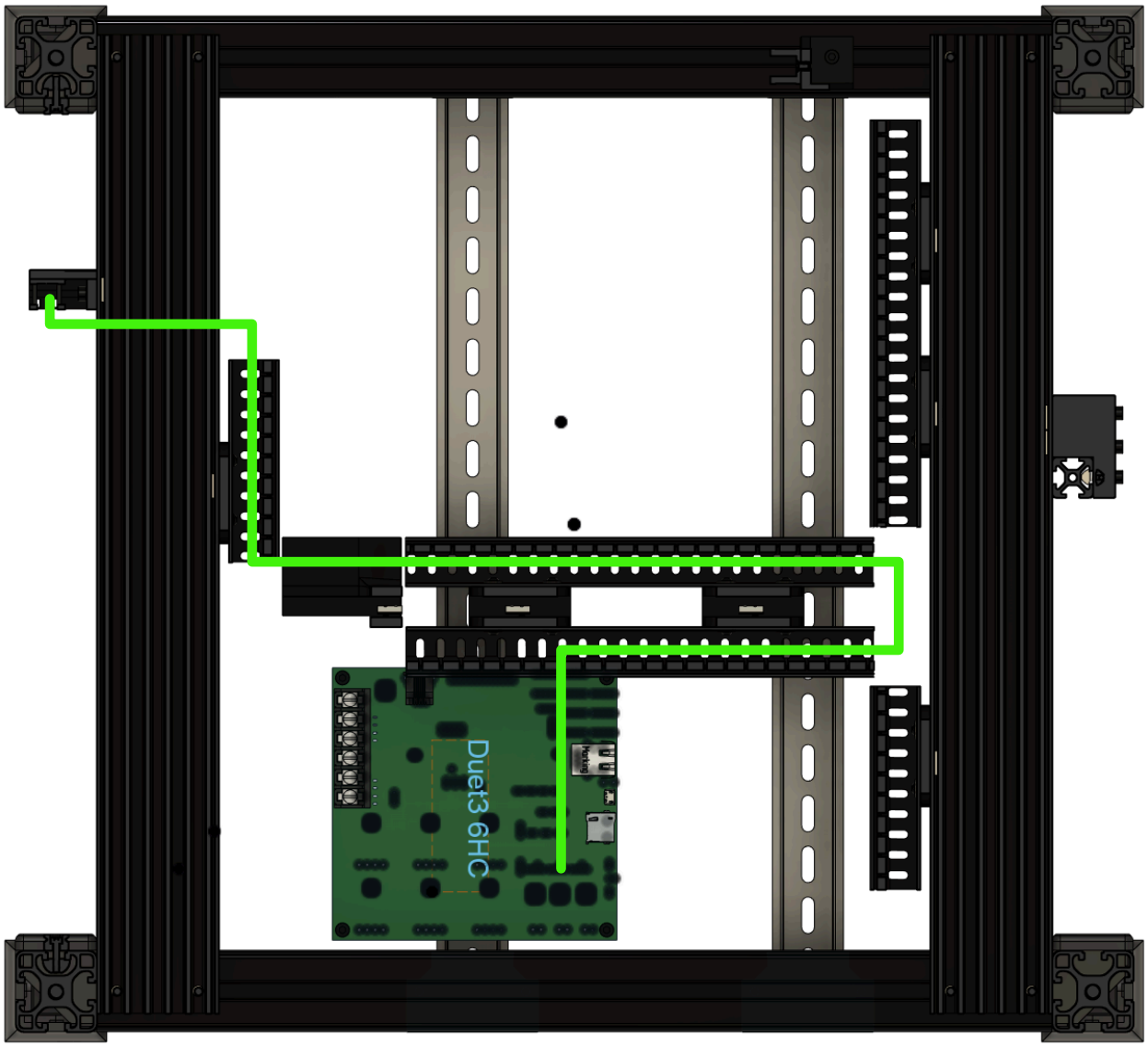
BLUE = Jumper for enclosure LED 2

RED = Jumper for enclosure LED 3

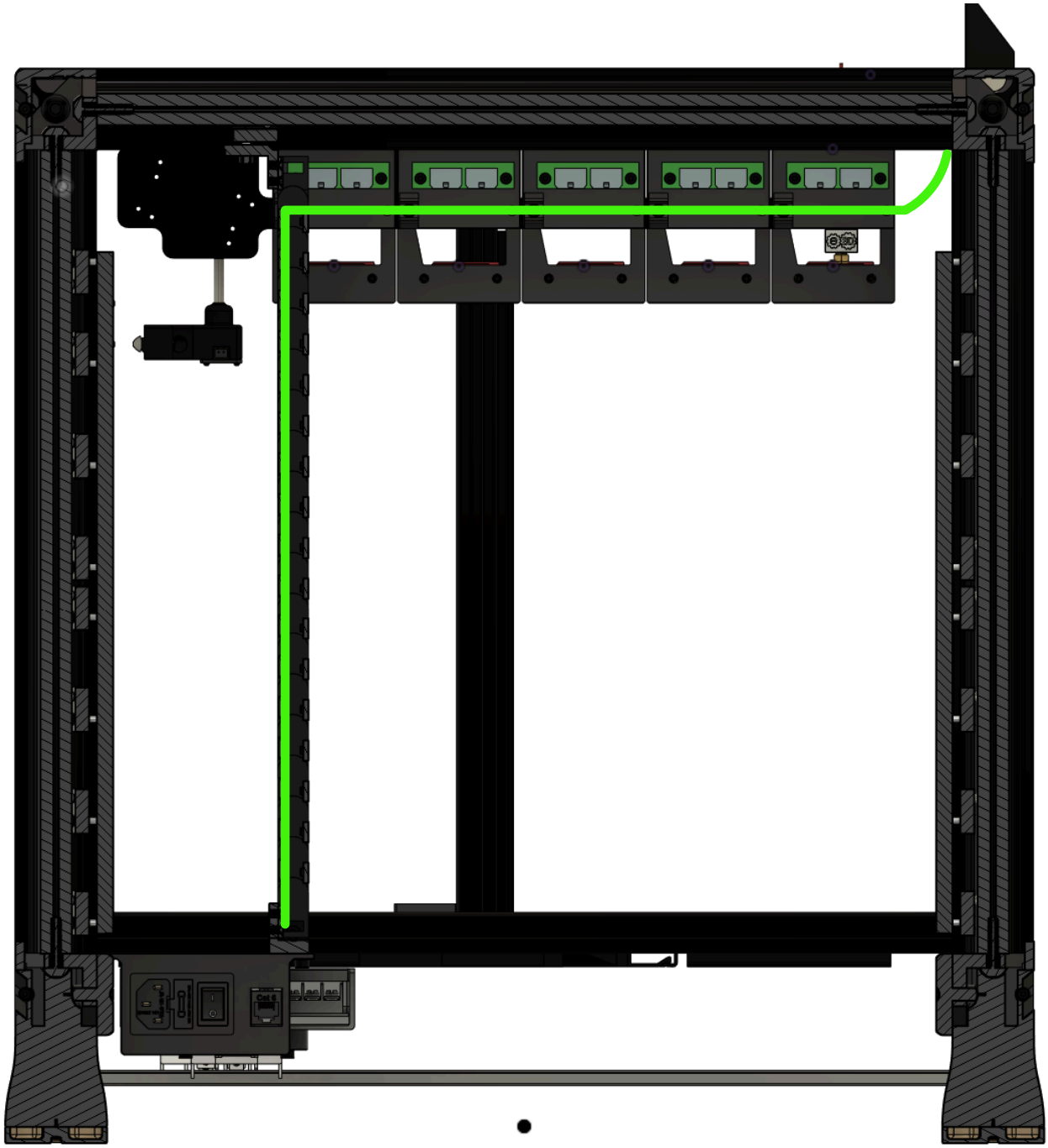
See the assignments page below for context

Don't Forget! : Each LED strip is directional! Be sure that inlets and outlets are oriented properly!

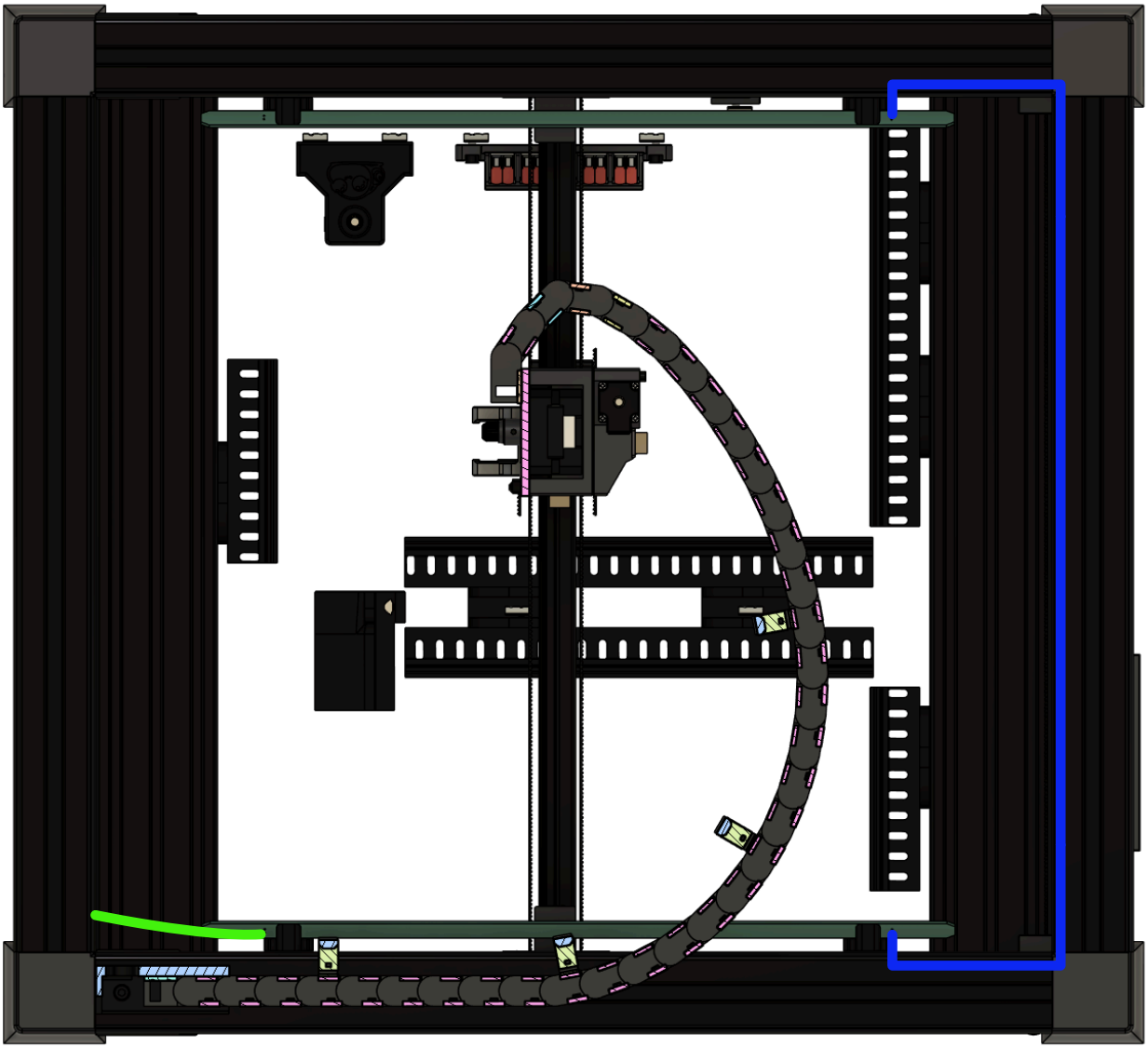
Wire Routing (TOP)



Wire Routing (LEFT SIDE)

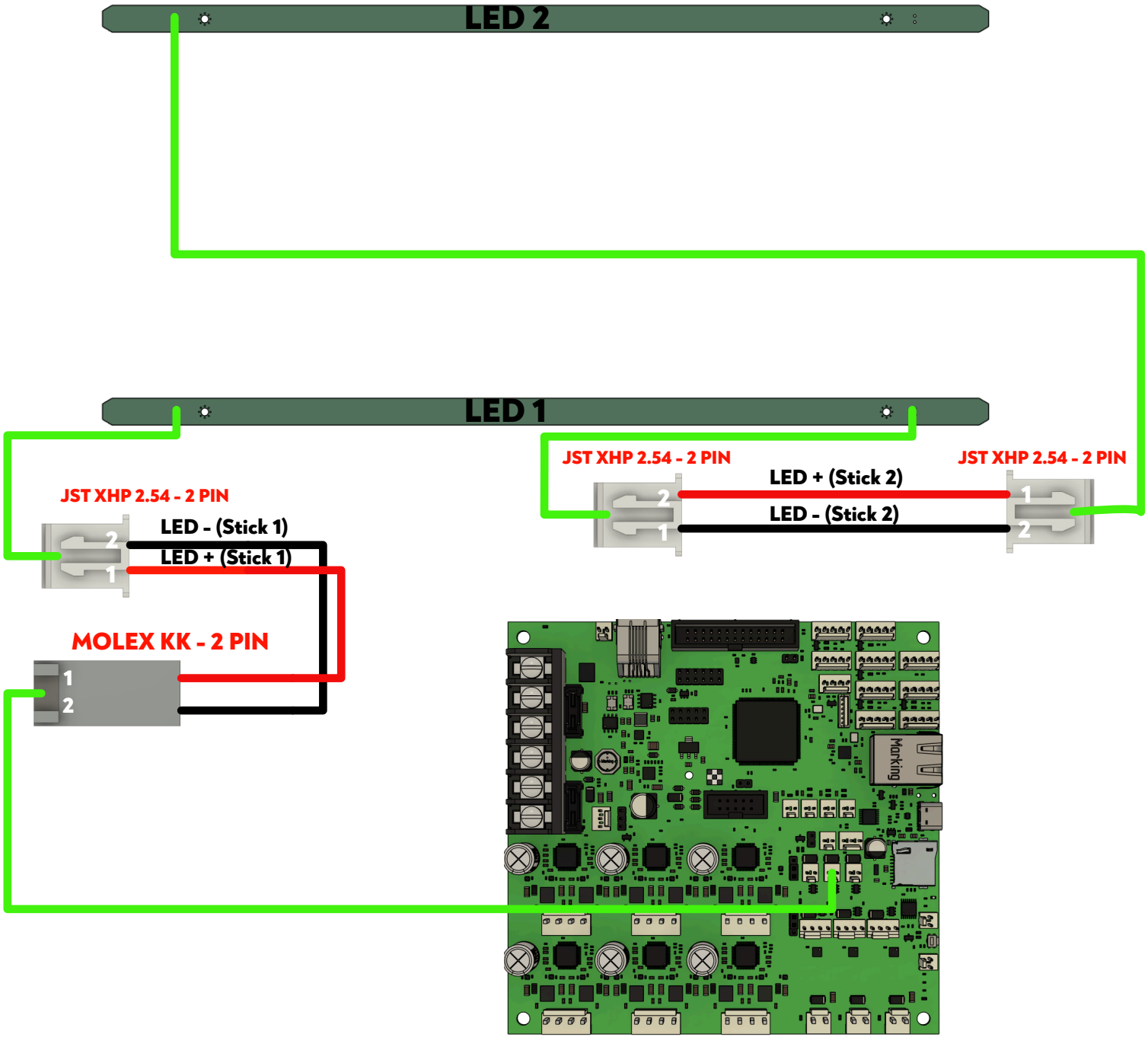


Wire Routing (GANTRY)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
LED + (Stick1)	Duet 3 6HC	Molex KK Pin 1 of 2	Light Stick 1	JST XH Pin 1 of 2	144	20	RED	N	OUT_8
LED - (Stick1)	Duet 3 6HC	Molex KK Pin 2 of 2	Light Stick 1	JST XH Pin 2 of 2	144	20	BLACK	N	OUT_8
LED + (Stick2)	Light Stick 1	JST XH Pin 2 of 2	Light Stick 2	JST XH Pin 1 of 2	61	20	RED	N	
LED - (Stick2)	Light Stick 1	JST XH Pin 1 of 2	Light Stick 2	JST XH Pin 2 of 2	61	20	BLACK	N	



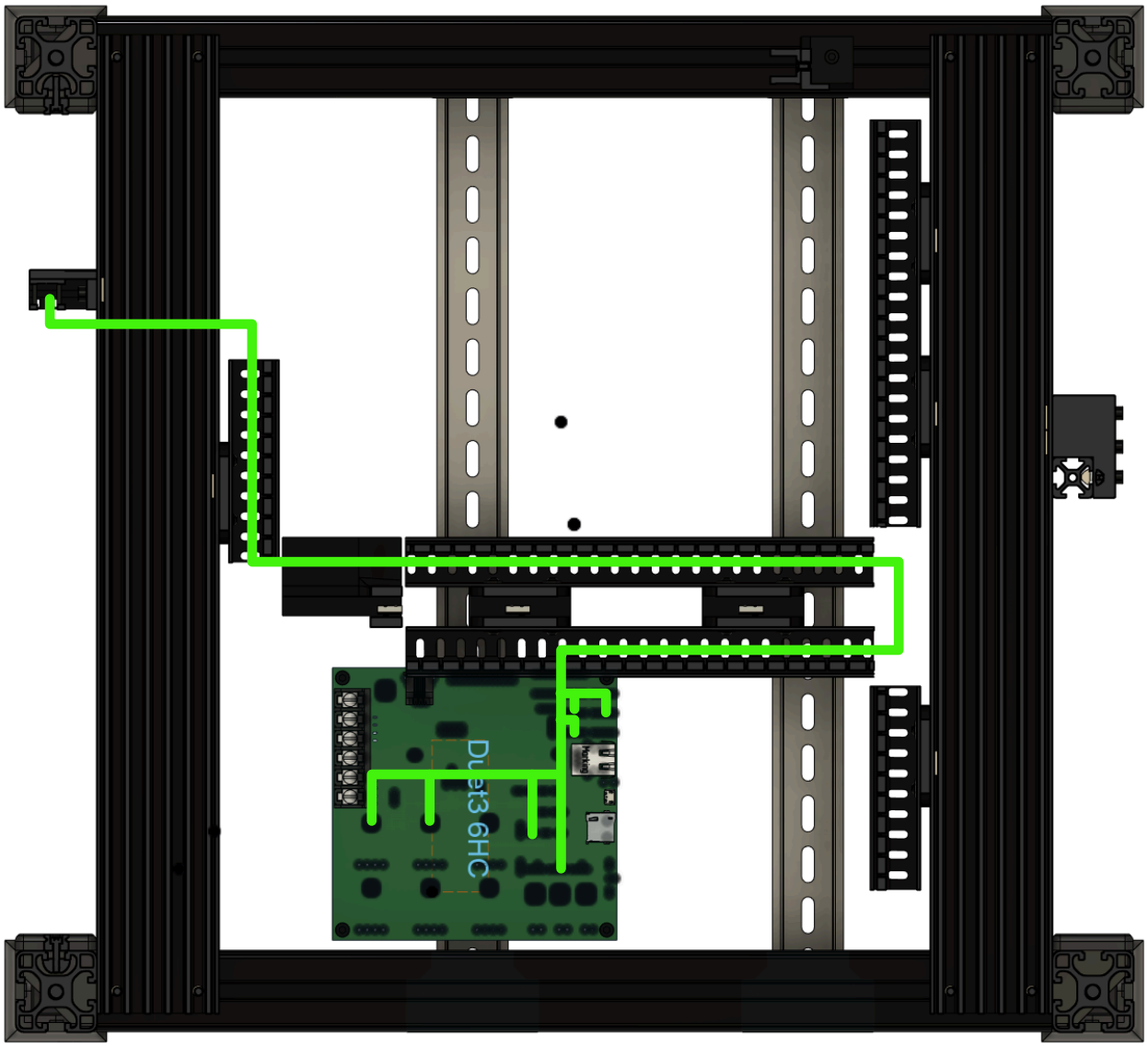
Step 12: Tool Head

Notes:

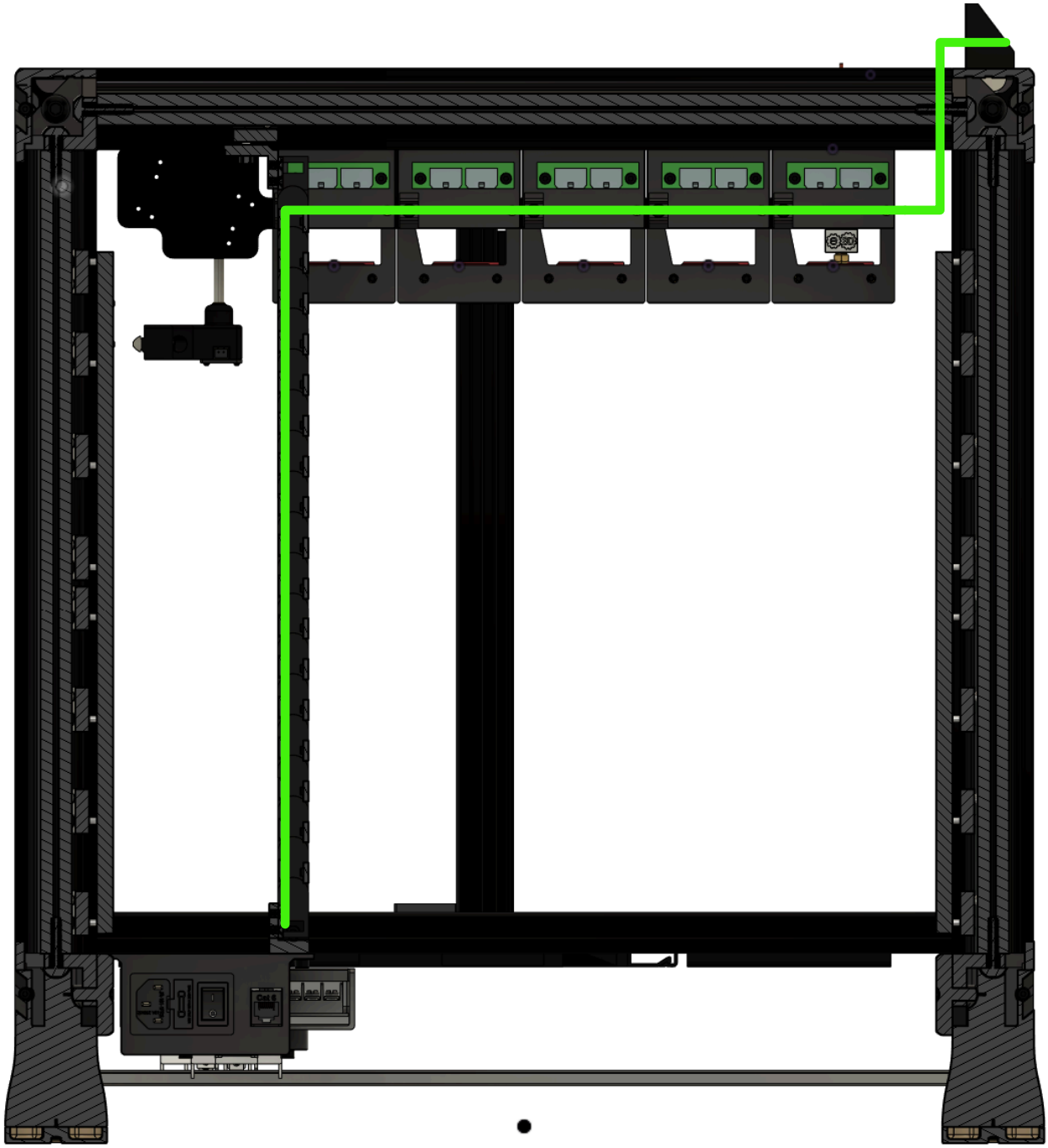
GREEN = Wire Path to all Tool Head Components

See the assignments page below for context

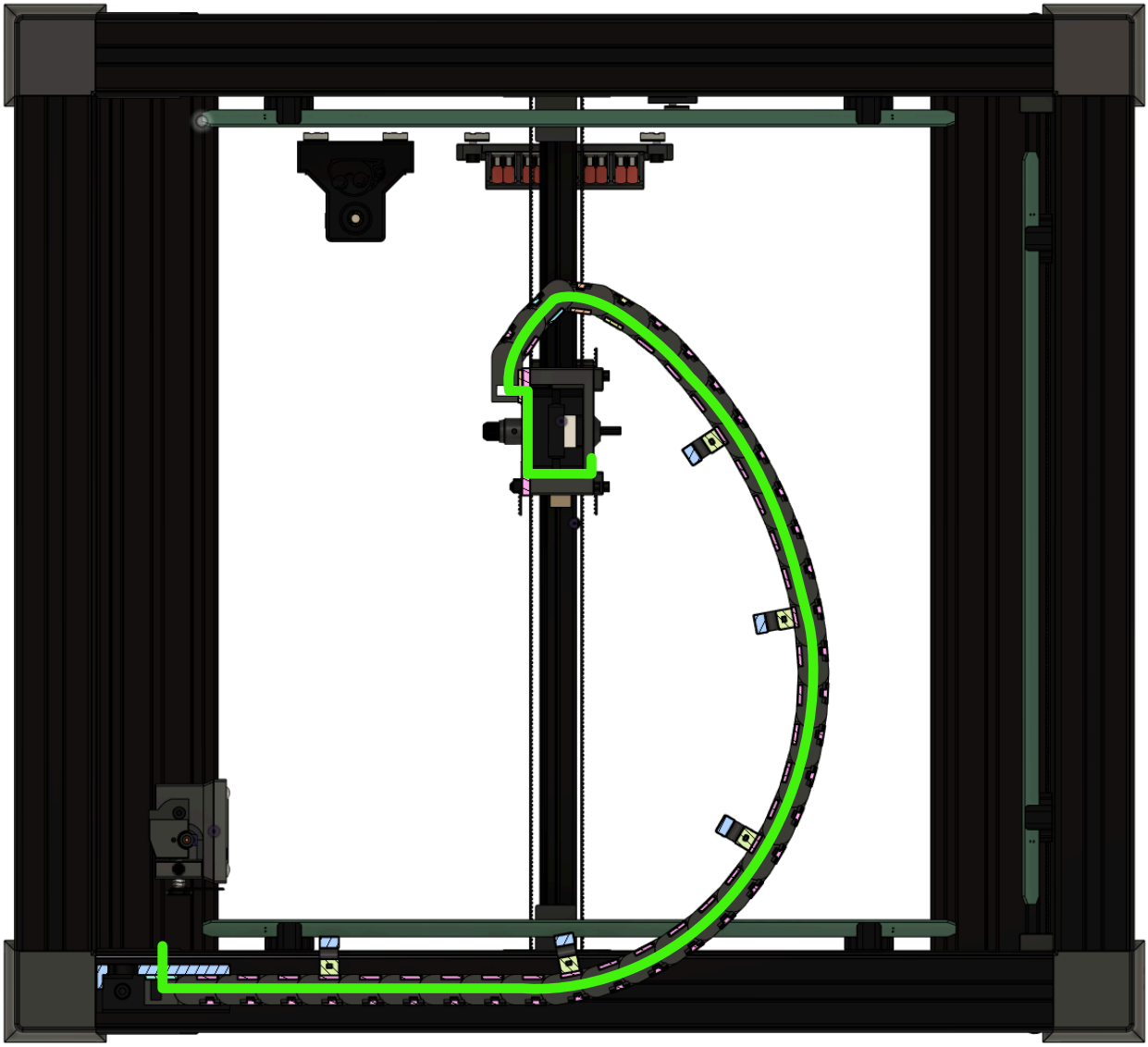
Wire Routing (TOP)



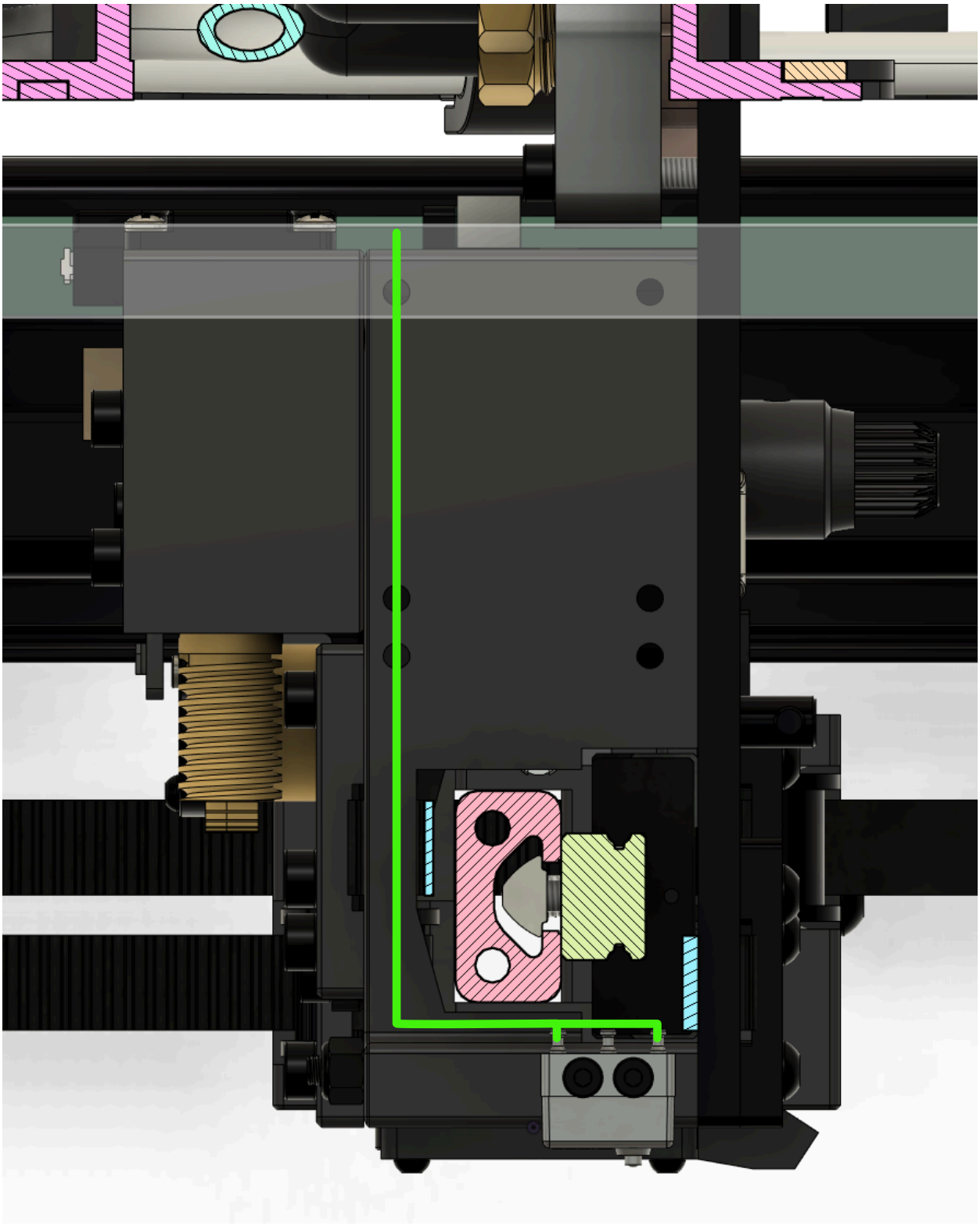
Wire Routing (LEFT SIDE)



Wire Routing (GANTRY)



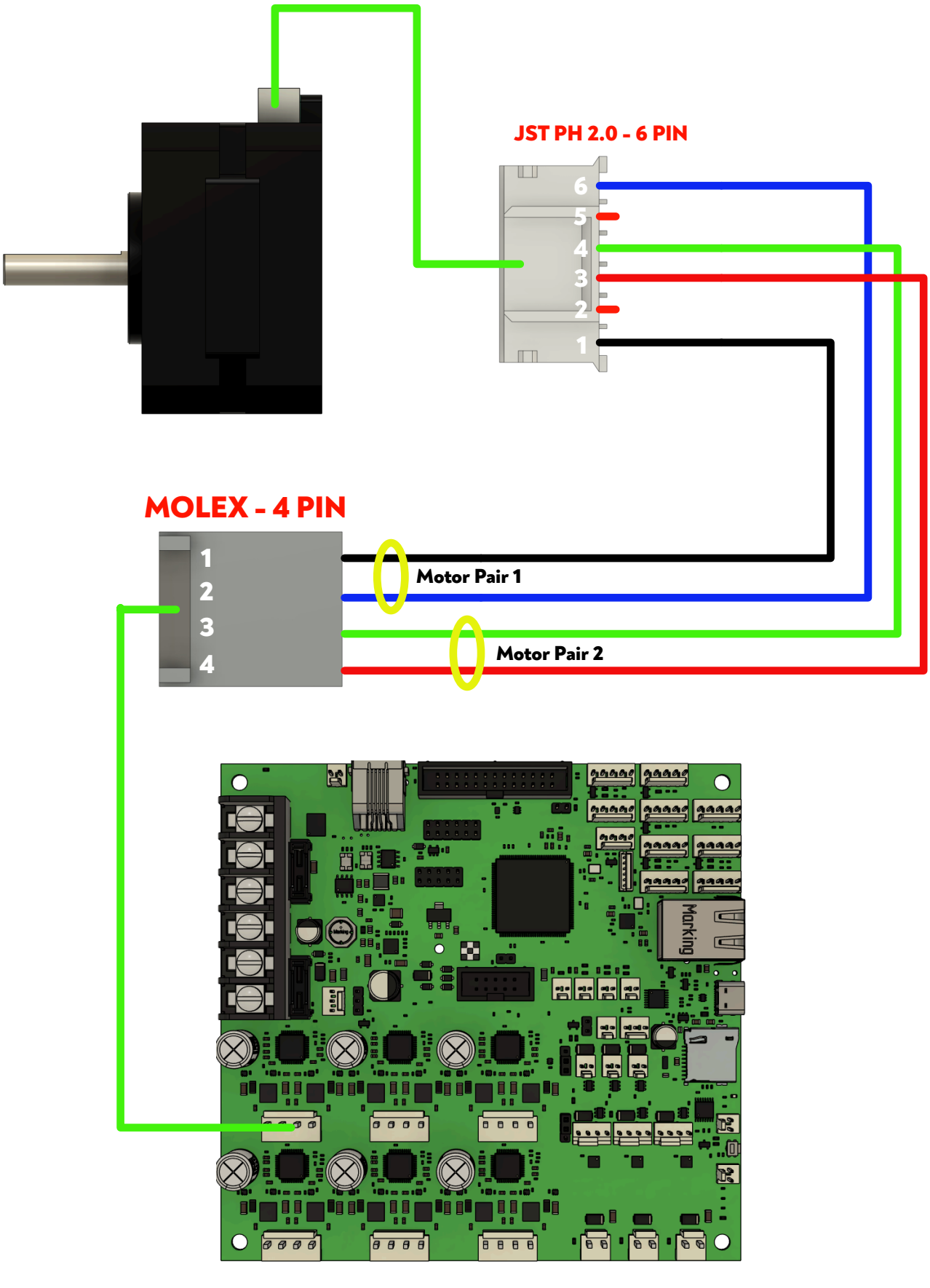
Wire Routing (Special View - Z Switch)



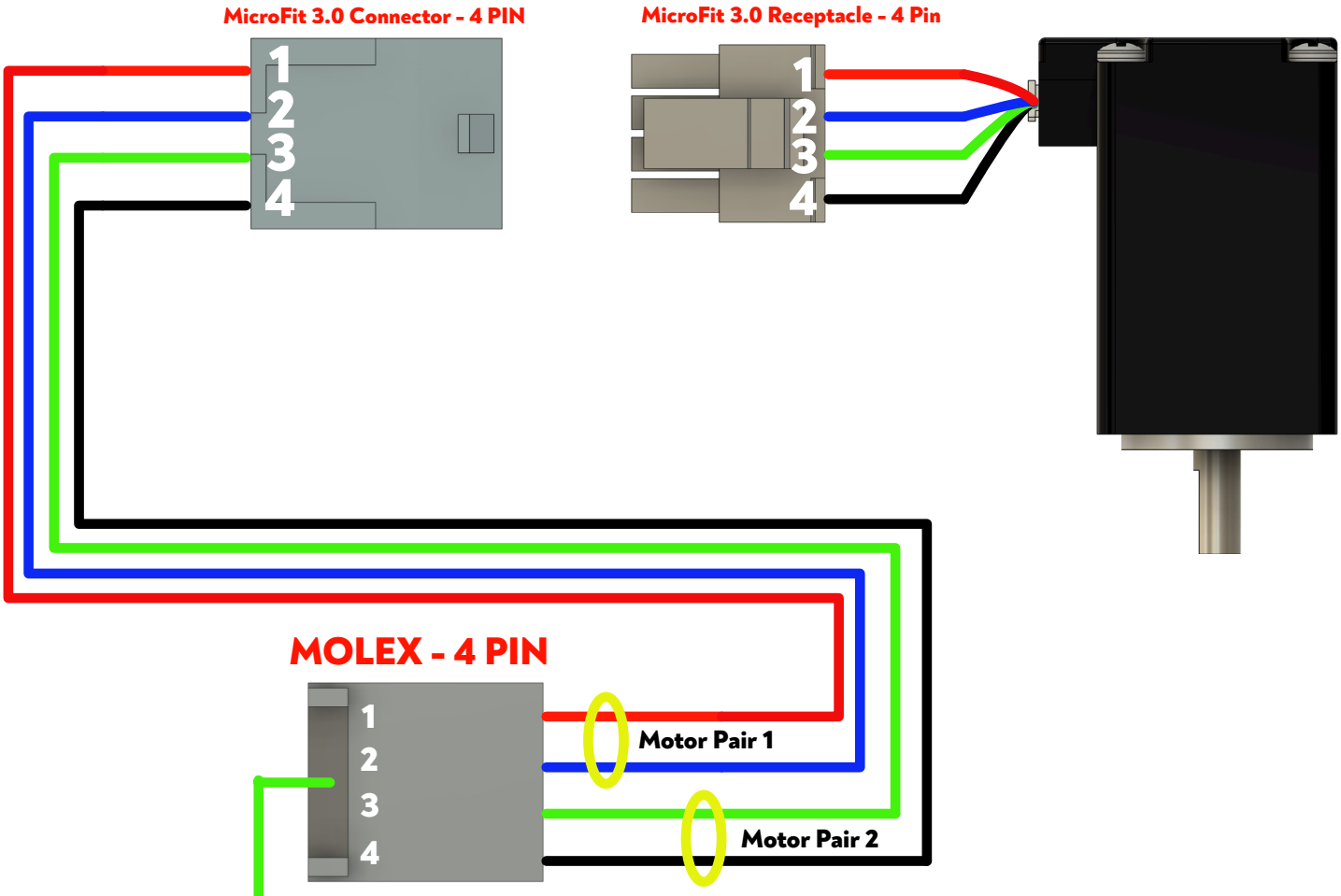
Pin Assignments, Colors & Specs

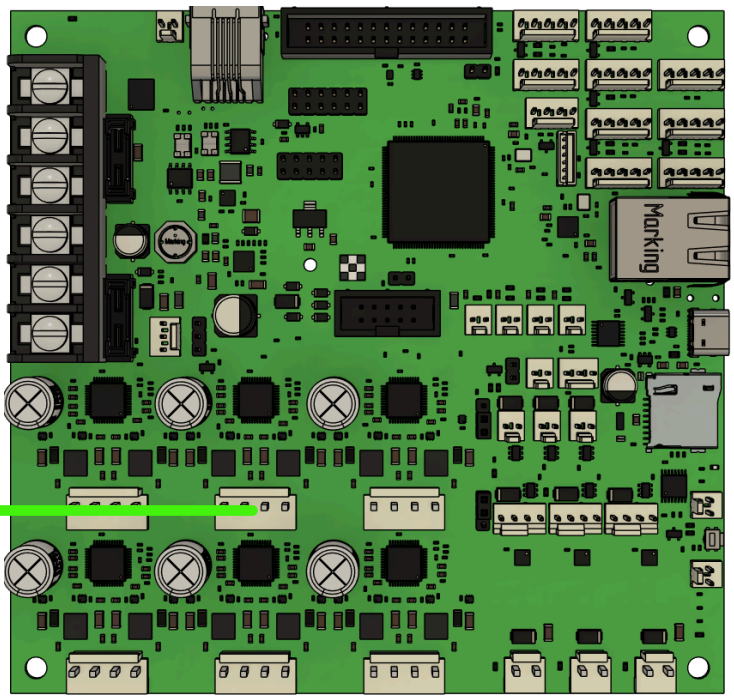
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
E Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	Extruder Motor	JST PH Pin 1 of 6	256	24	BLACK	Y	DRIVER_3
E Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	Extruder Motor	JST PH Pin 6 of 6	256	24	BLUE	Y	DRIVER_3
E Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	Extruder Motor	JST PH Pin 4 of 6	256	24	GREEN	Y	DRIVER_3
E Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	Extruder Motor	JST PH Pin 3 of 6	256	24	RED	Y	DRIVER_3
T Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	Tool Lock Motor	Microfit Connector Pin 1 of 4	256	24	RED	Y	DRIVER_4
T Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	Tool Lock Motor	Microfit Connector Pin 2 of 4	256	24	BLUE	Y	DRIVER_4
T Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	Tool Lock Motor	Microfit Connector Pin 3 of 4	256	24	GREEN	Y	DRIVER_4
T Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	Tool Lock Motor	Microfit Connector Pin 4 of 4	256	24	BLACK	Y	DRIVER_4
X Endstop +	Duet 3 6HC	Molex KK Pin 5 of 5	X Endstop	JST XH Pin 1 of 3	256	24	RED	Y	IO_1
X Endstop S	Duet 3 6HC	Molex KK Pin 4 of 5	X Endstop	JST XH Pin 2 of 3	256	24	GREEN	Y	IO_1
X Endstop -	Duet 3 6HC	Molex KK Pin 3 of 5	X Endstop	JST XH Pin 3 of 3	256	24	BLACK	Y	IO_1
Z Endstop S	Duet 3 6HC	Molex KK Pin 2 of 5	Z Endstop	Microfit Connector Pin 1 of 2	256	24	GREEN	Y	IO_3
Z Endstop -	Duet 3 6HC	Molex KK Pin 3 of 5	Z Endstop	Microfit Connector Pin 2 of 2	256	24	BLACK	Y	IO_3
TL Endstop +	Duet 3 6HC	Molex KK Pin 5 of 5	Tool Lock Endstop	JST XH Pin 1 of 3	256	24	RED	Y	IO_4
TL Endstop S	Duet 3 6HC	Molex KK Pin 4 of 5	Tool Lock Endstop	JST XH Pin 2 of 3	256	24	GREEN	Y	IO_4
TL Endstop -	Duet 3 6HC	Molex KK Pin 3 of 5	Tool Lock Endstop	JST XH Pin 3 of 3	256	24	BLACK	Y	IO_4
Part Fan +	Duet 3 6HC	Molex KK Pin 2 of 2	Part cooling Fan	Microfit Connector Pin 1 of 2	256	24	RED	Y	OUT_7
Part Fan -	Duet 3 6HC	Molex KK Pin 1 of 2	Part cooling Fan	Microfit Connector Pin 2 of 2	256	24	BLACK	Y	OUT_7

Extruder Motor

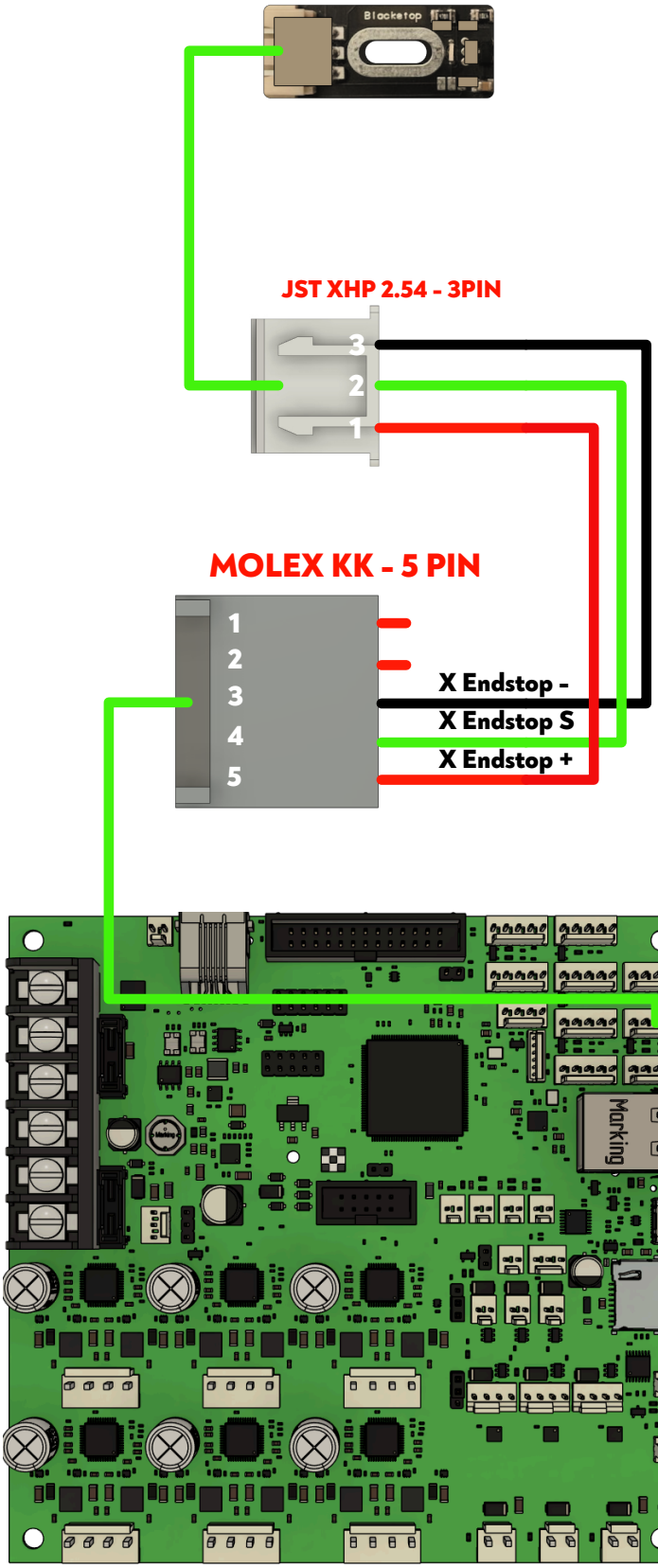


Tool Lock Motor

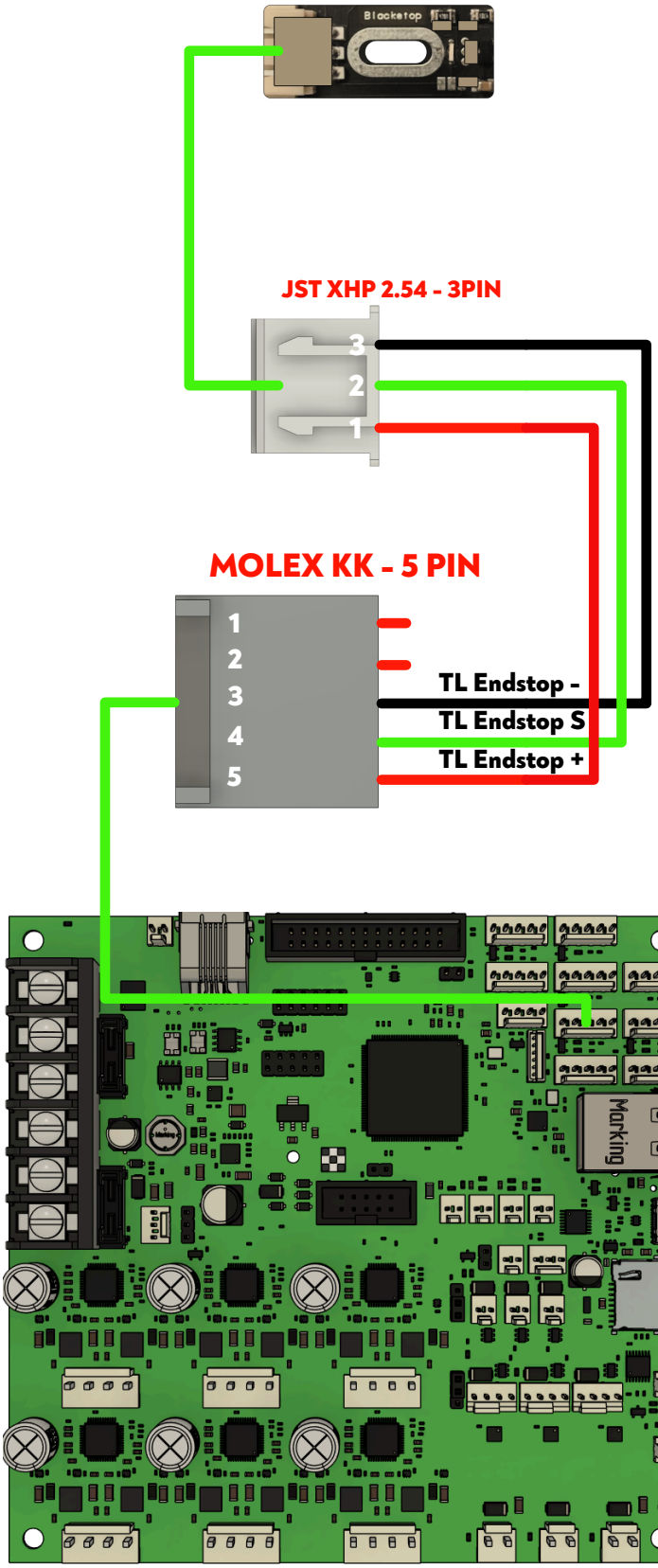




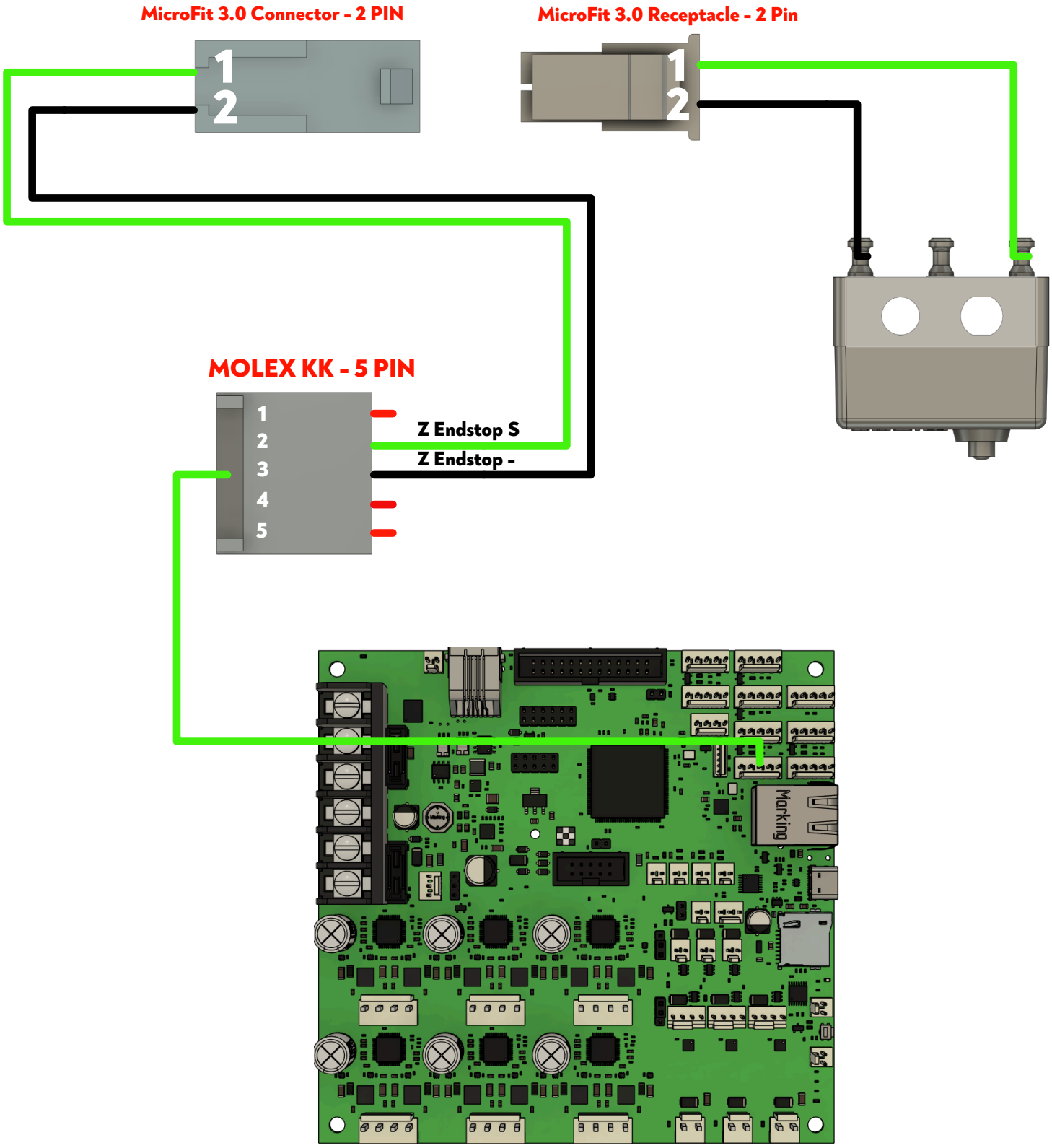
X End Stop


Blacktop
JST XHP 2.54 - 3PIN
3
2
1
MOLEX KK - 5 PIN
1
2
3
4
5
X Endstop -
X Endstop S
X Endstop +
Marking

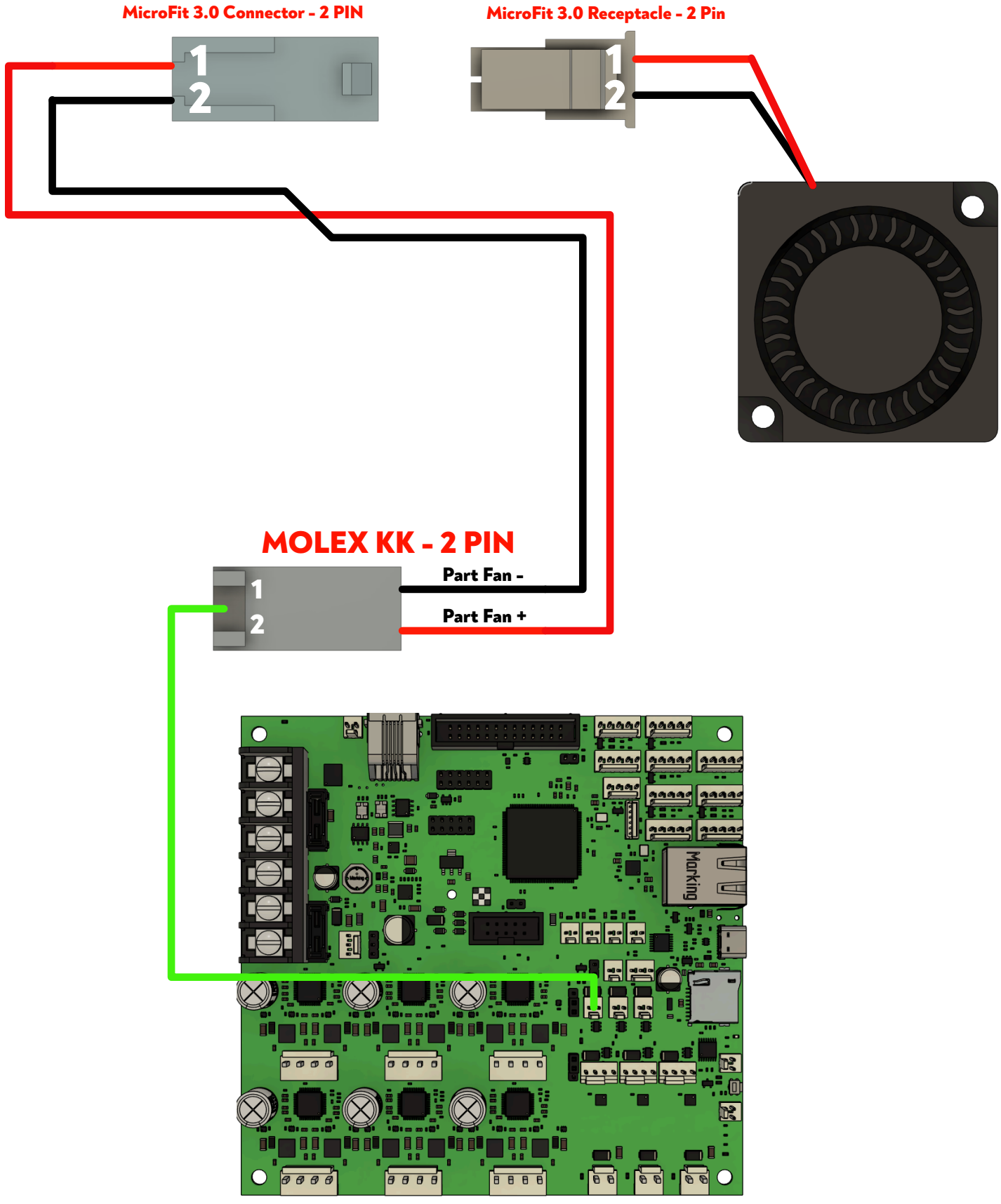
Tool Lock End Stop



Z End Stop / Z Probe



Part Cooling Fan



Step 13: Y End Stop

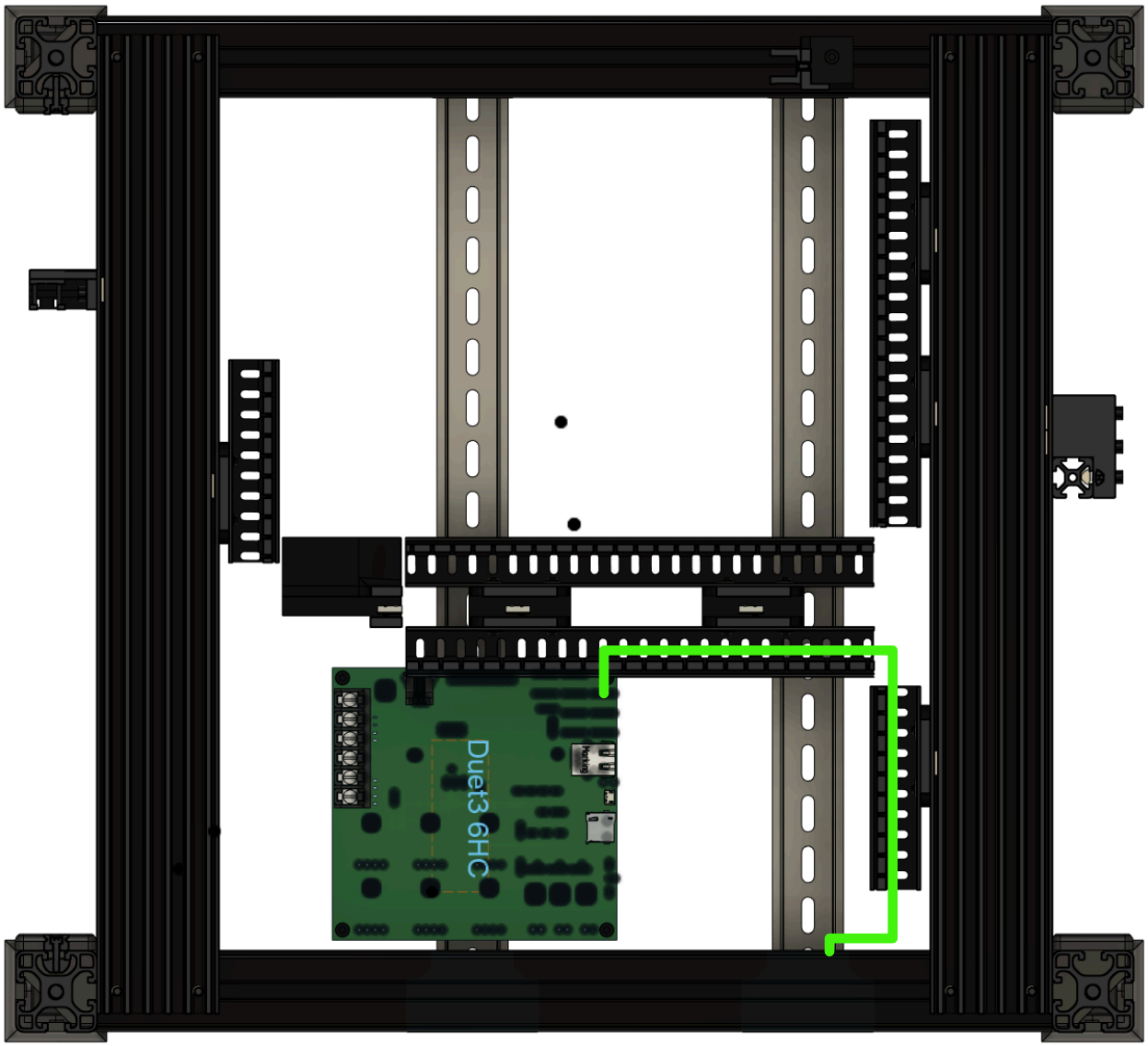
Notes:

Wrapping the portion of the wiring outside of the right floor panel will allow us to tuck the wiring into the extrusion slot for a clean look!

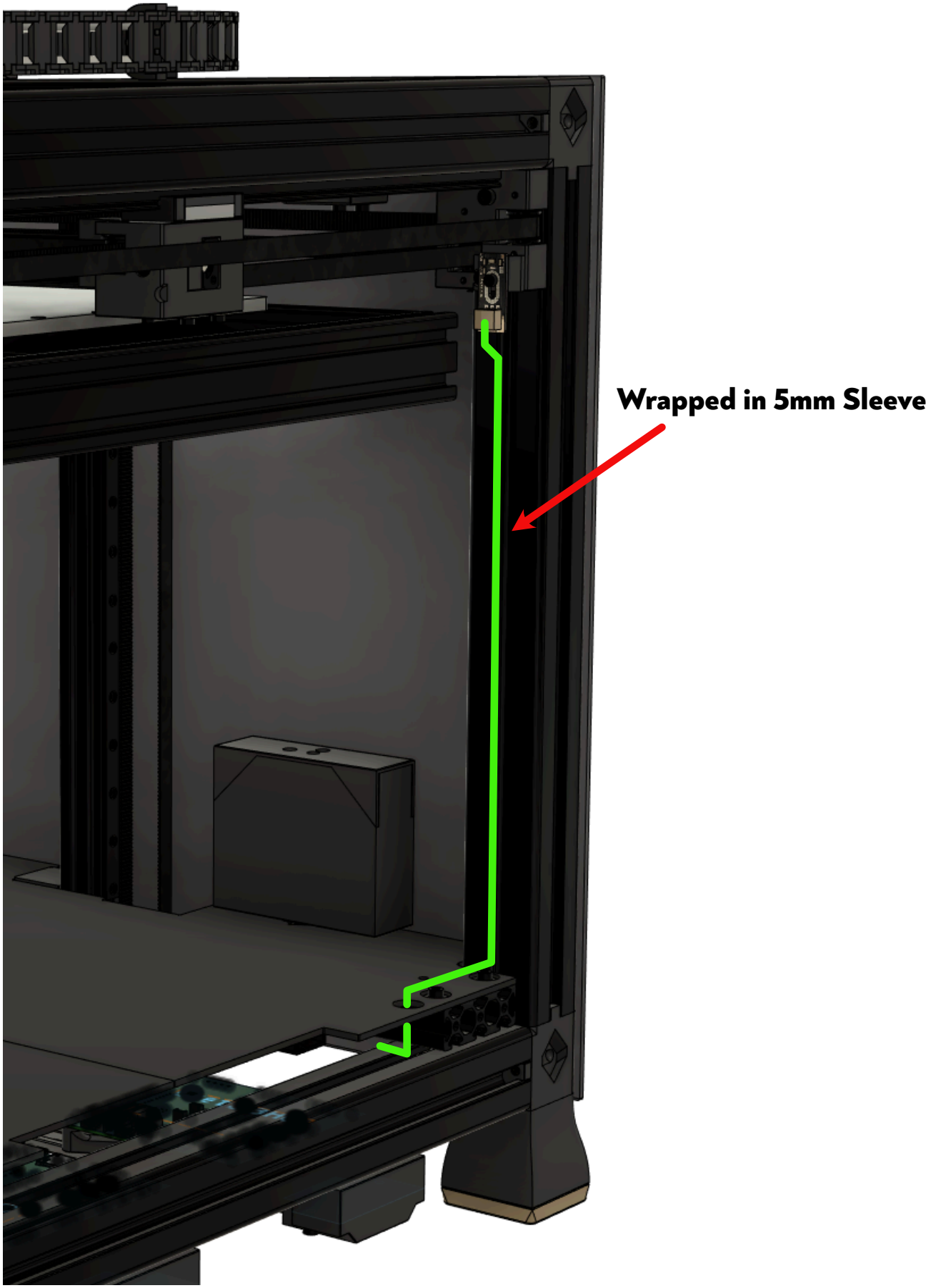
GREEN = Y End Stop Wires

See the assignments page below for context

Wire Routing (TOP)

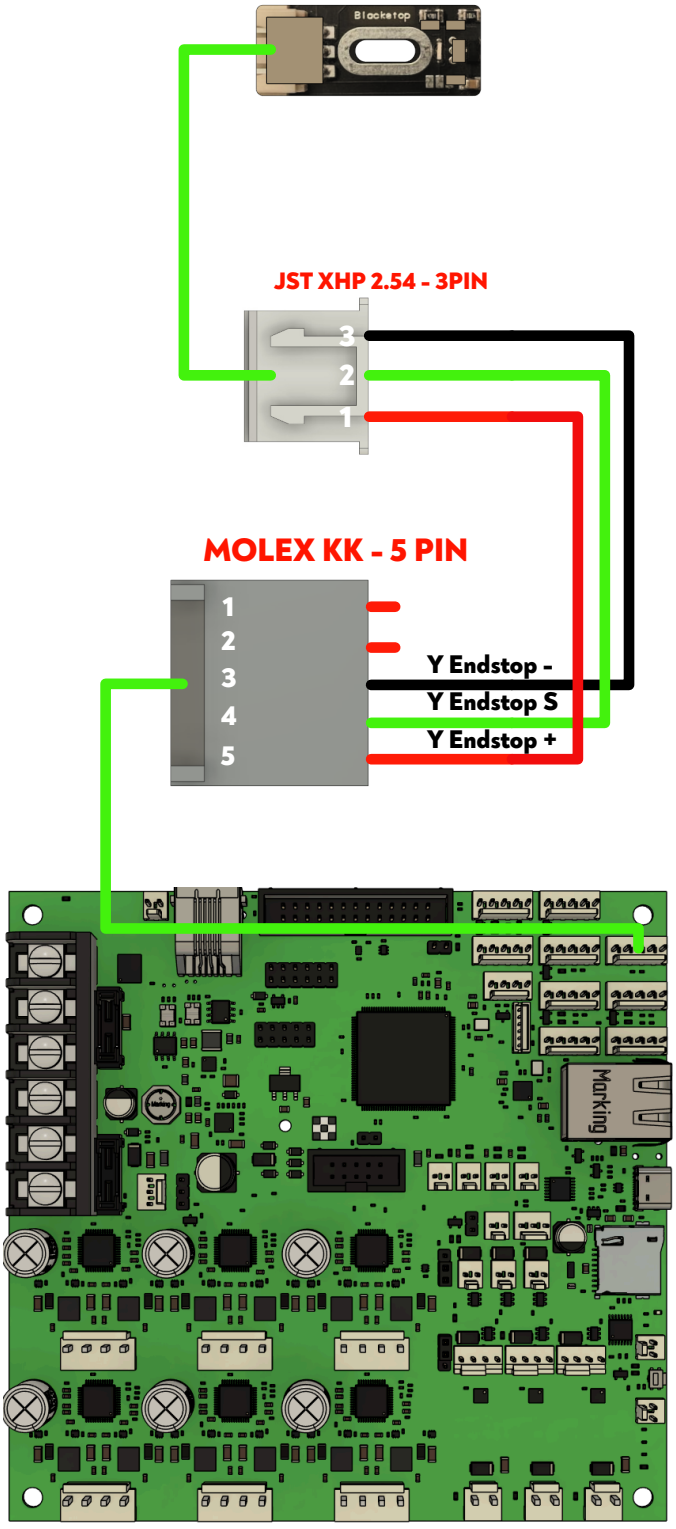


Wire Routing (Special View)



Pin Assignments, Colors & Specs

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Y Endstop +	Duet 3 6HC	Molex KK Pin 5 of 5	Y Endstop	JST XH Pin 1 of 3	83	24	RED	N	IO_2
Y Endstop S	Duet 3 6HC	Molex KK Pin 4 of 5	Y Endstop	JST XH Pin 2 of 3	83	24	GREEN	N	IO_2
Y Endstop -	Duet 3 6HC	Molex KK Pin 3 of 5	Y Endstop	JST XH Pin 3 of 3	83	24	BLACK	N	IO_2



Step 14: B Motor

Notes:

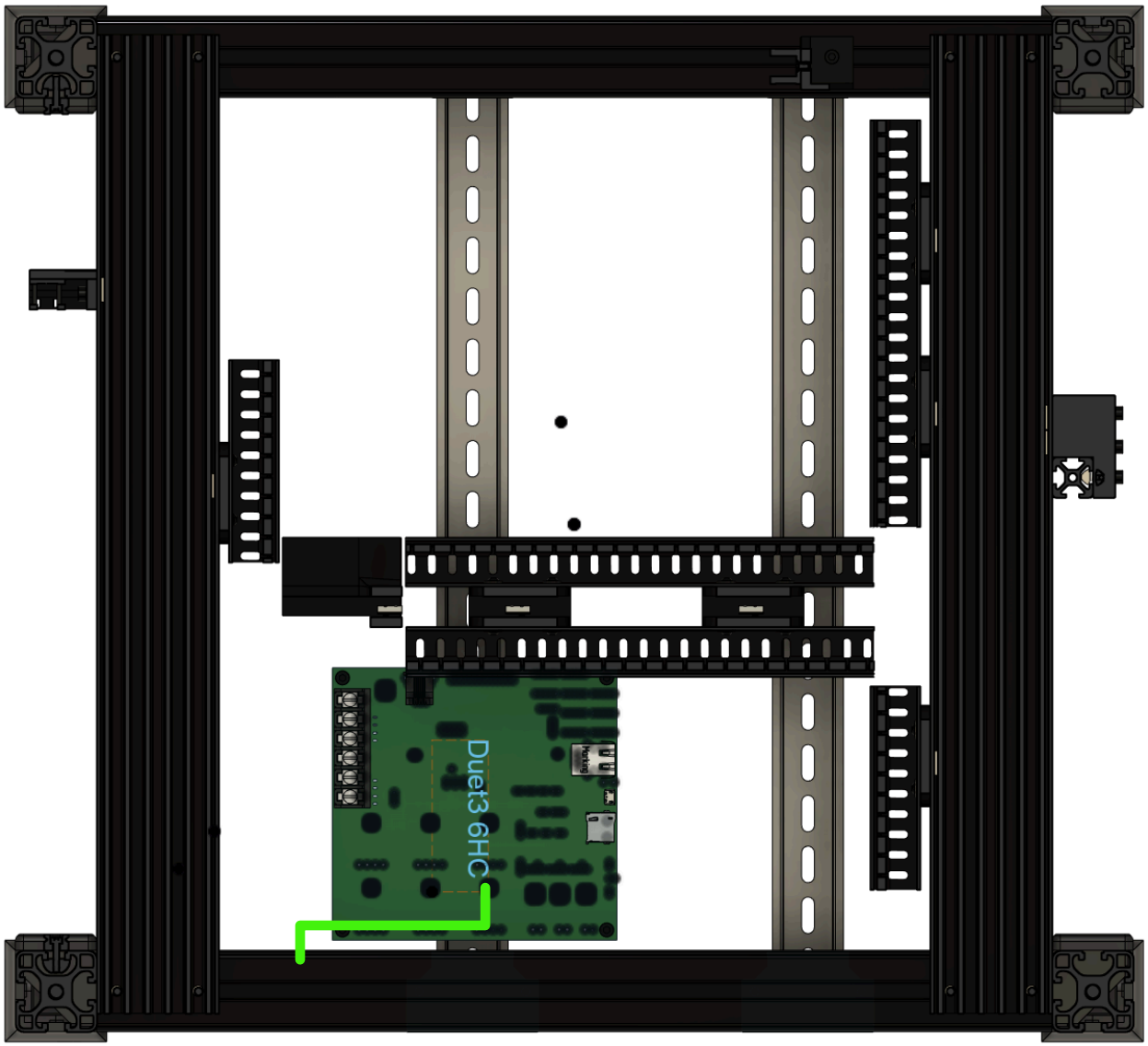
Wrapping the portion of the wiring outside of the left floor panel will allow us to tuck the wiring into the extrusion slot for a clean look!

Your connection method will vary based on your kit configuration!

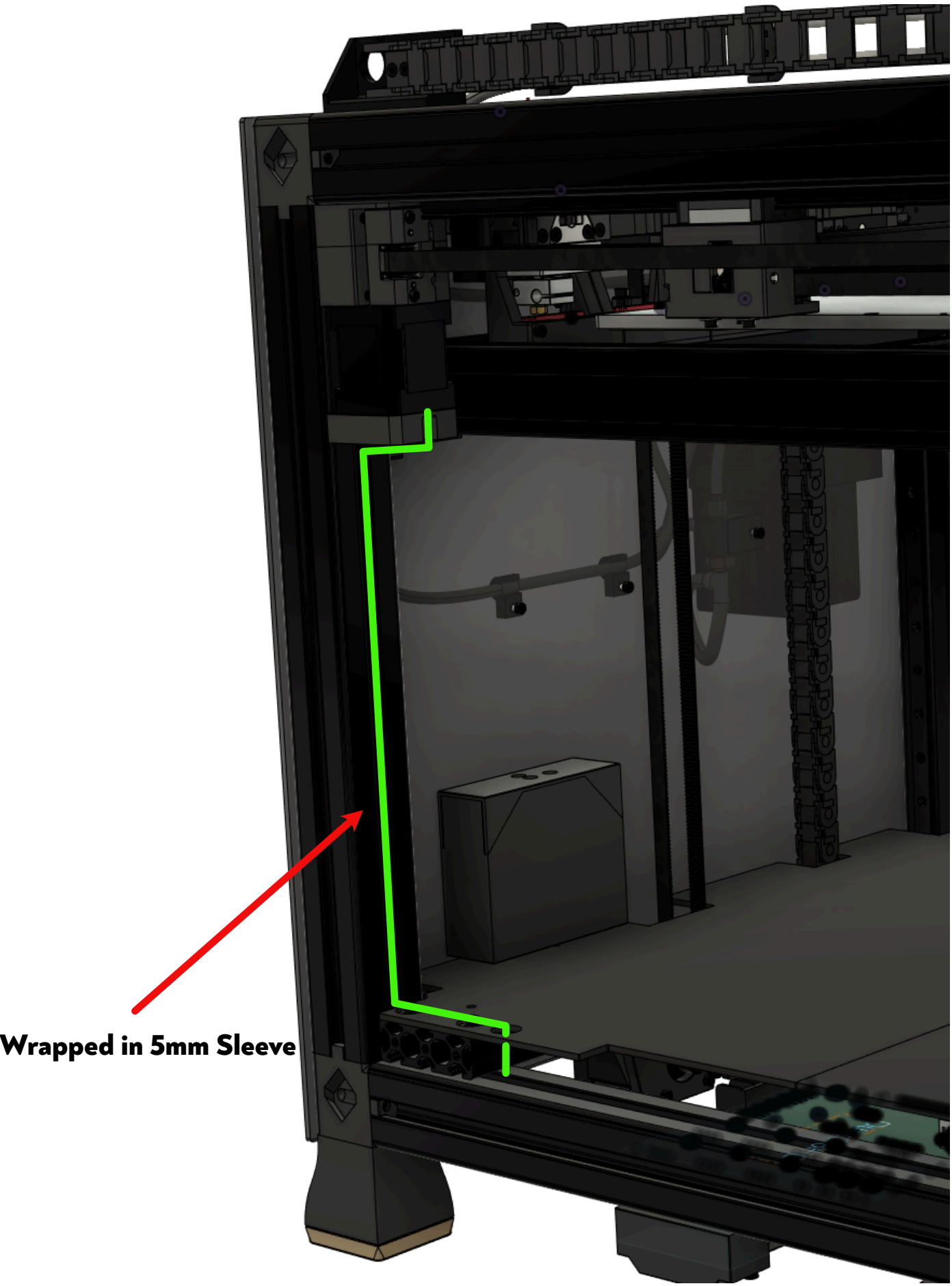
GREEN = B Motor Wires

See the assignments page below for context

Wire Routing (TOP)



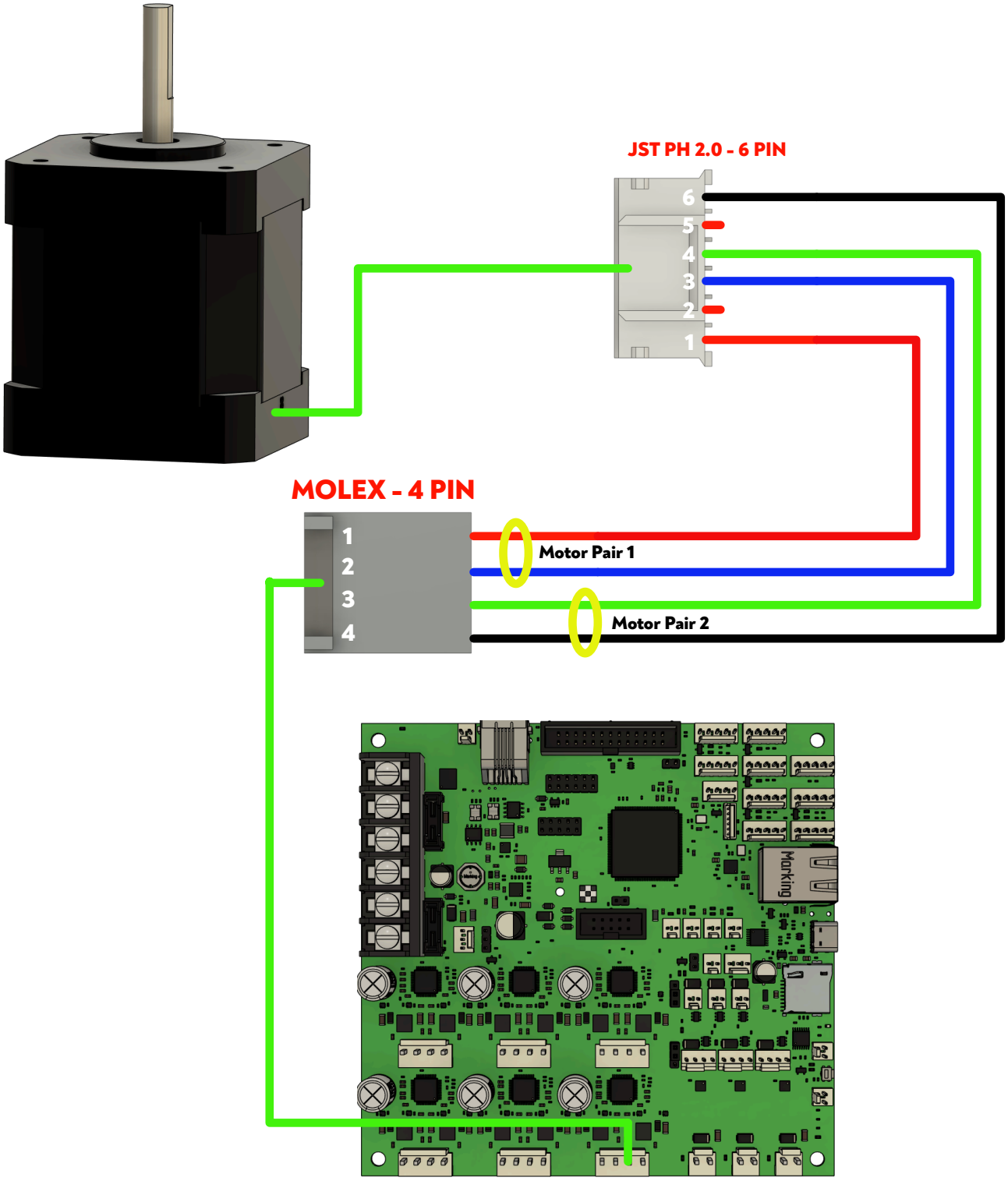
Wire Routing (Special View)



Pin Assignments, Colors & Specs

FOR STANDARD 1684MAC STEPPER MOTORS

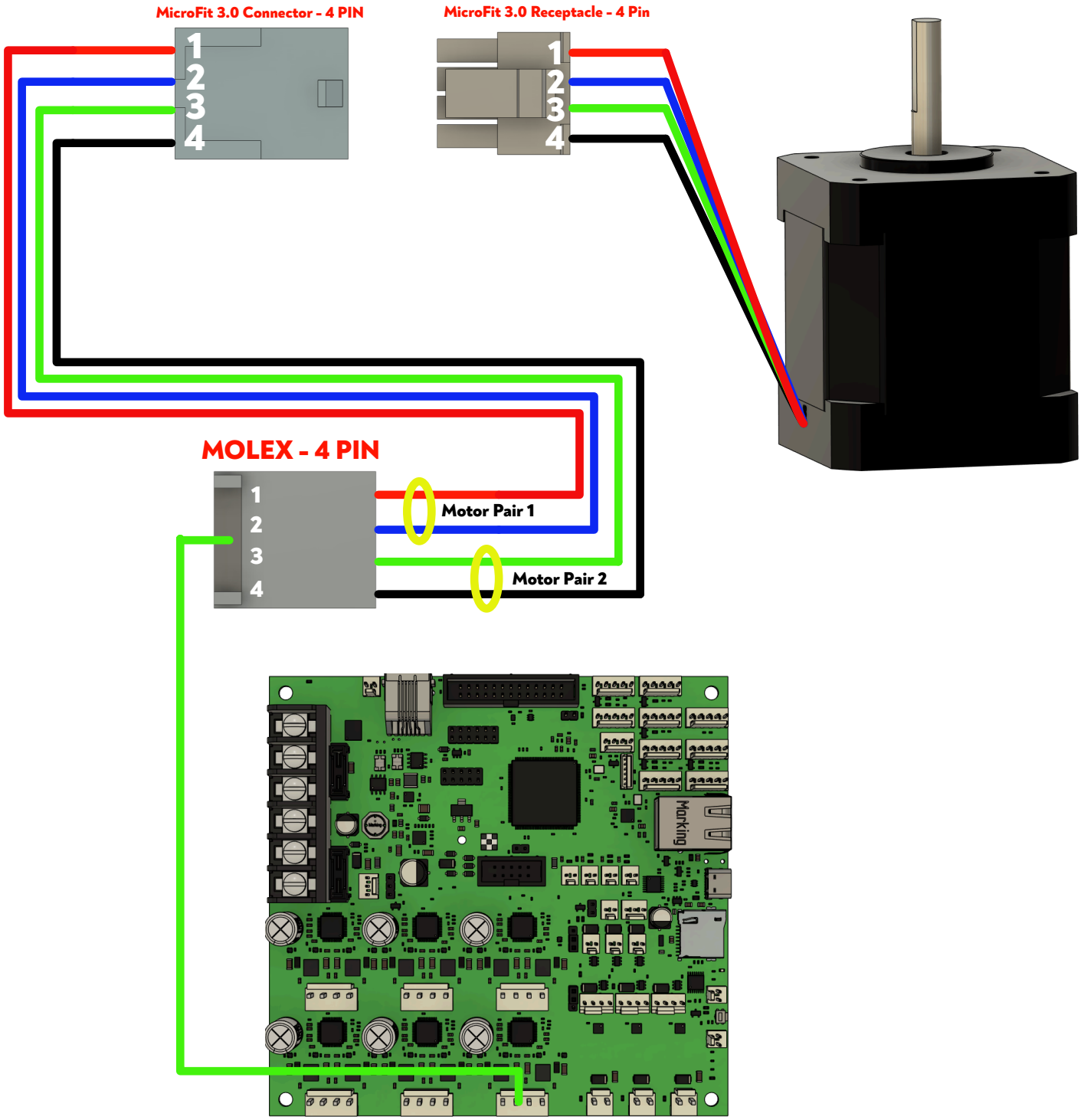
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
B Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	B Motor	JST PH Pin 1 of 6	61	24	RED	N	DRIVER_0
B Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	B Motor	JST PH Pin 3 of 6	61	24	BLUE	N	DRIVER_0
B Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	B Motor	JST PH Pin 4 of 6	61	24	GREEN	N	DRIVER_0
B Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	B Motor	JST PH Pin 6 of 6	61	24	BLACK	N	DRIVER_0



Pin Assignments, Colors & Specs

FOR HIGH TEMP 1684MAH STEPPER MOTORS

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
B Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	B Motor	Microfit Connector Pin 1 of 4	61	24	RED	N	DRIVER_0
B Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	B Motor	Microfit Connector Pin 2 of 4	61	24	BLUE	N	DRIVER_0
B Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	B Motor	Microfit Connector Pin 3 of 4	61	24	GREEN	N	DRIVER_0
B Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	B Motor	Microfit Connector Pin 4 of 4	61	24	BLACK	N	DRIVER_0



Step 15: A Motor

Notes:

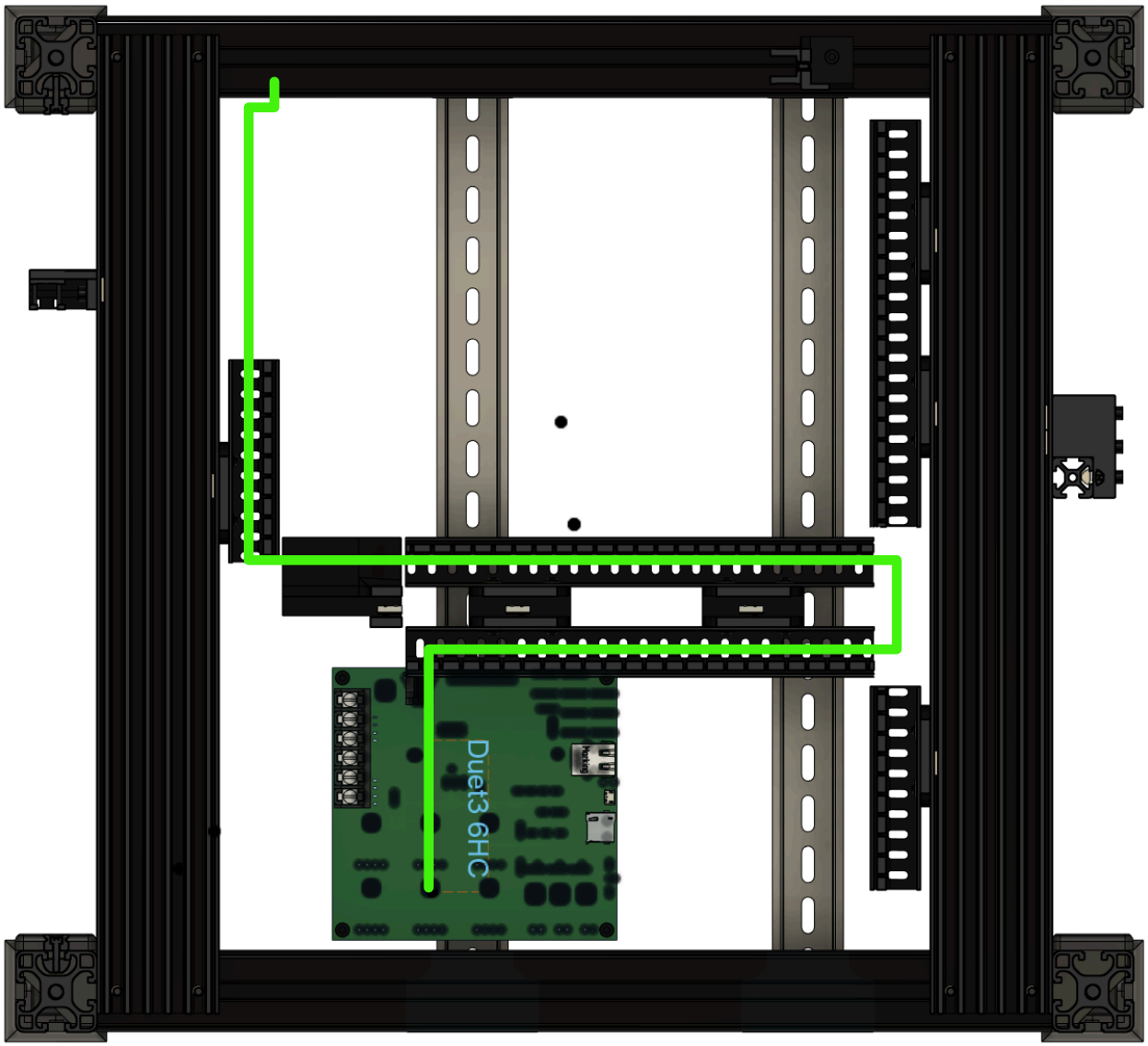
Wrapping the portion of the wiring outside of the left floor panel will allow us to tuck the wiring into the extrusion slot for a clean look!

Your connection method will vary based on your kit configuration!

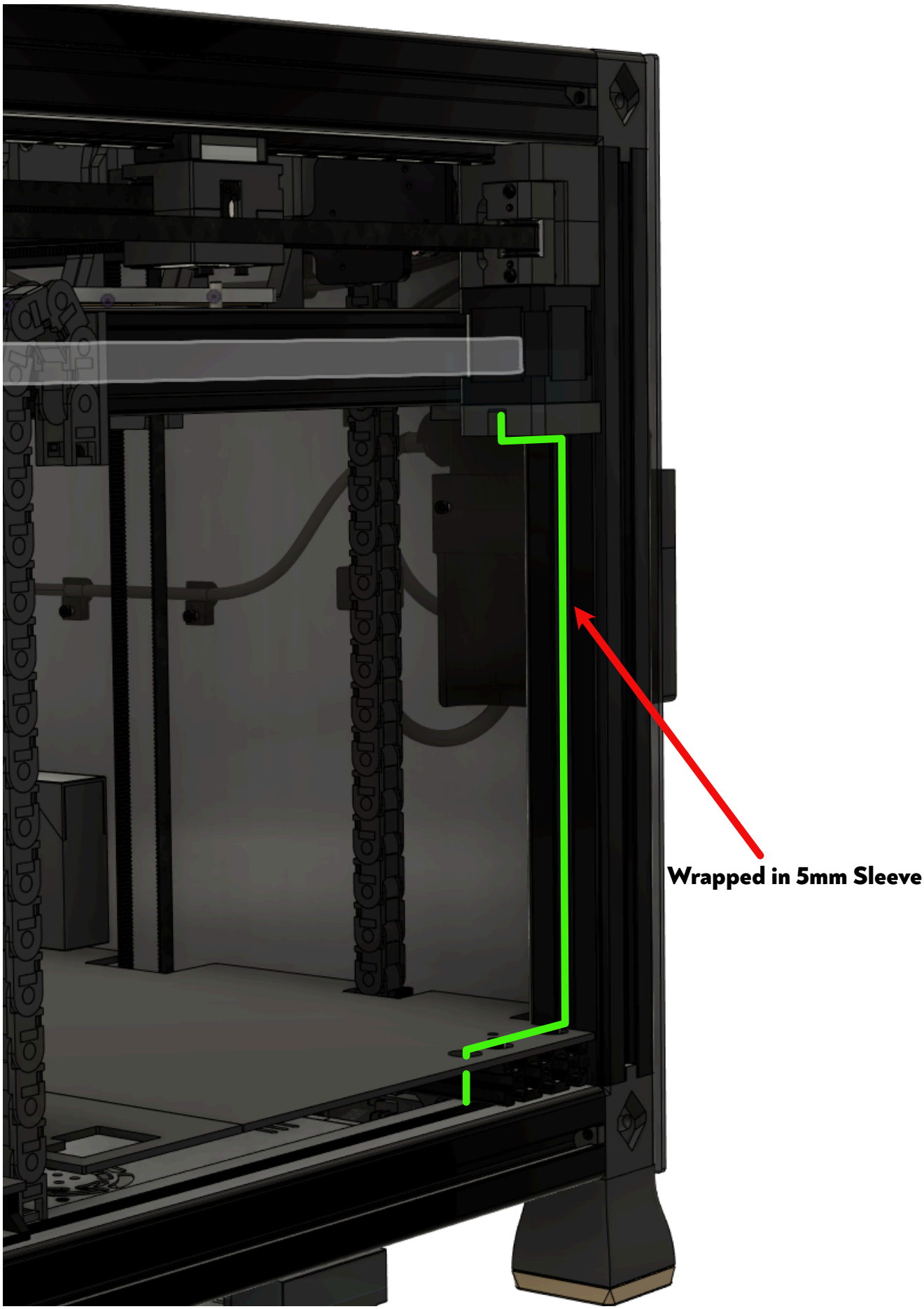
GREEN = A Motor Wires

See the assignments page below for context

Wire Routing (TOP)



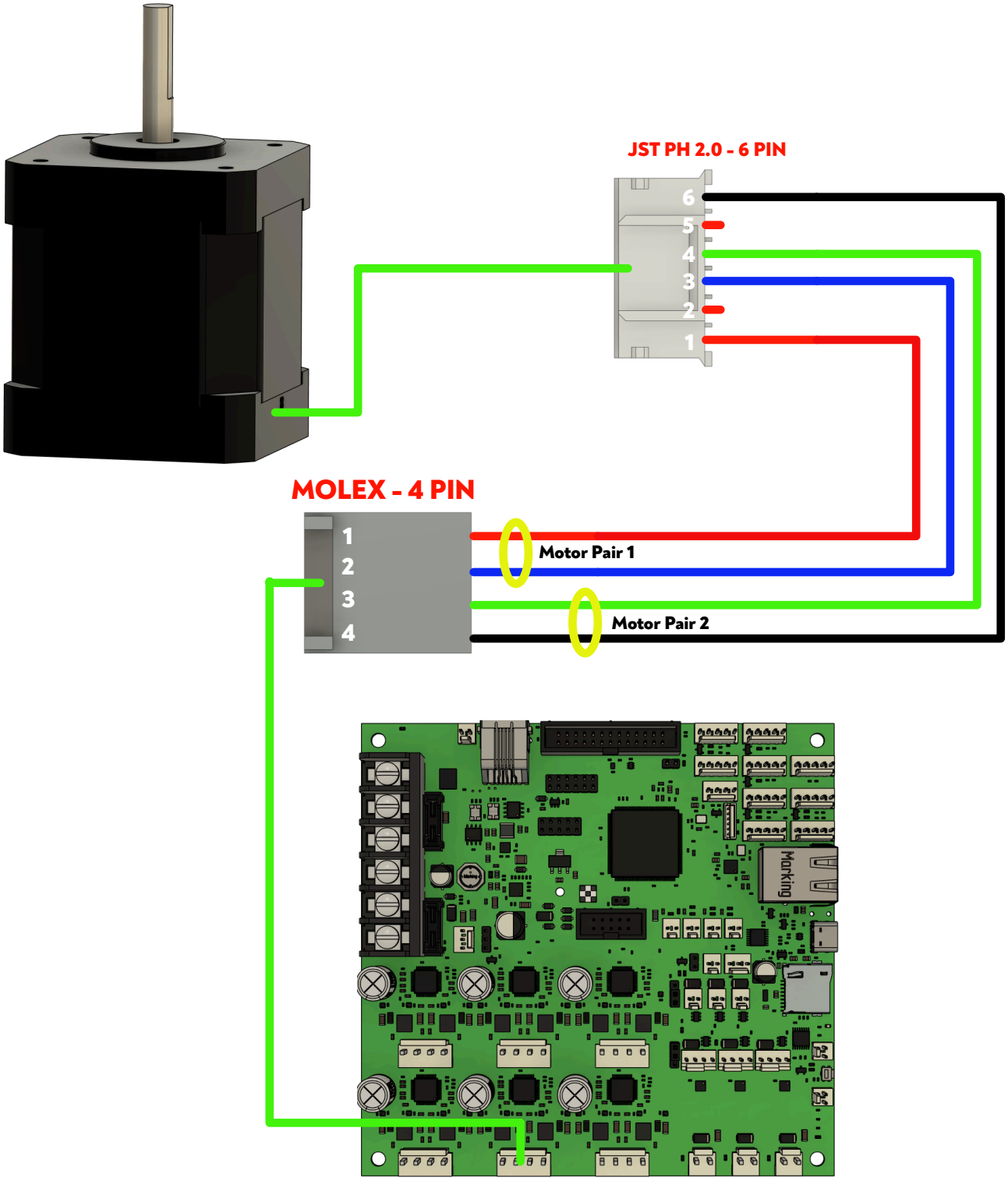
Wire Routing (Special View)



Pin Assignments, Colors & Specs

FOR STANDARD 1684MAC STEPPER MOTORS

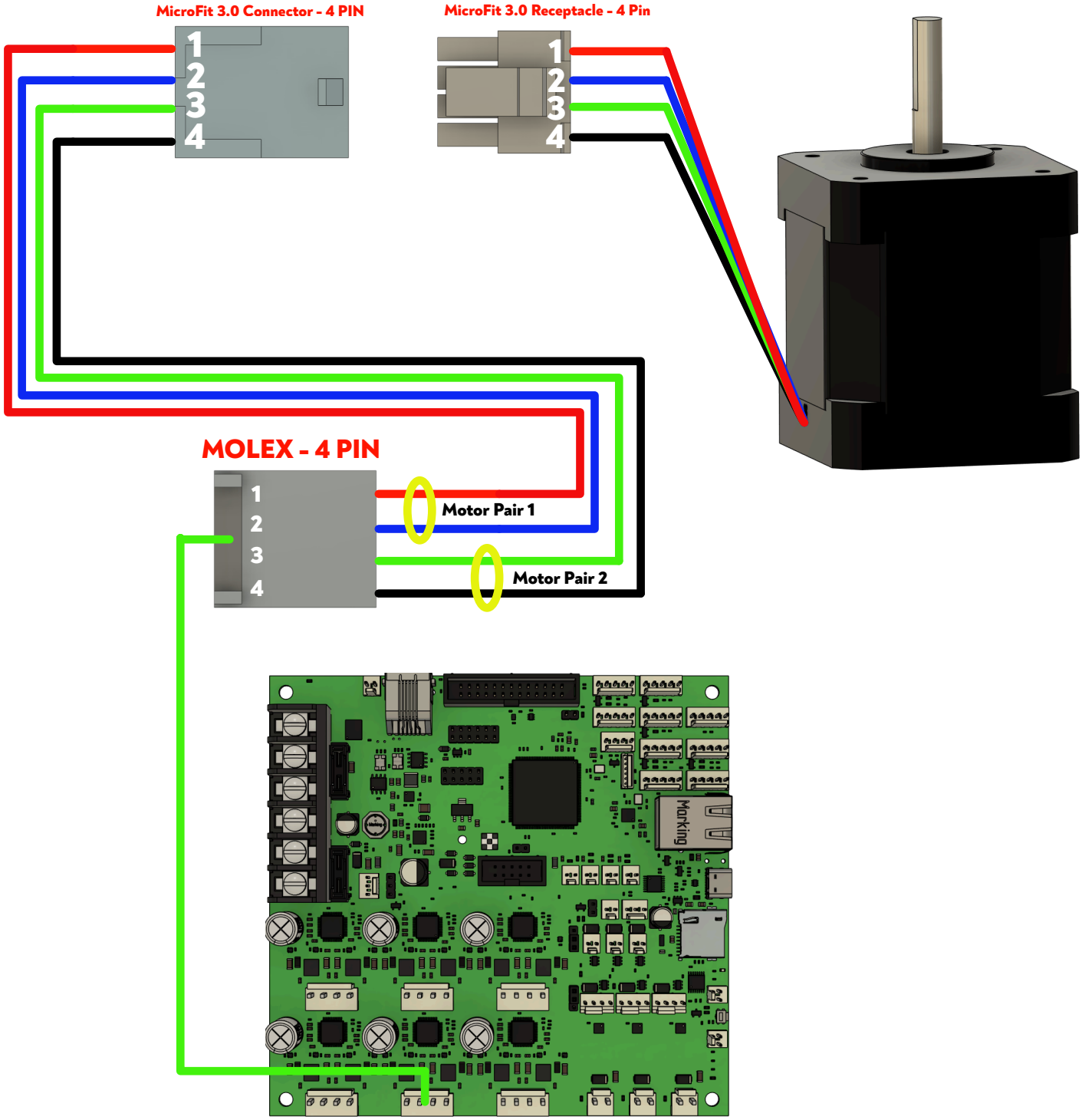
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
A Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	A Motor	JST PH Pin 1 of 6	173	24	RED	N	DRIVER_1
A Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	A Motor	JST PH Pin 3 of 6	173	24	BLUE	N	DRIVER_1
A Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	A Motor	JST PH Pin 4 of 6	173	24	GREEN	N	DRIVER_1
A Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	A Motor	JST PH Pin 6 of 6	173	24	BLACK	N	DRIVER_1



Pin Assignments, Colors & Specs

FOR HIGH TEMP 1684MAH STEPPER MOTORS

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
A Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	A Motor	Microfit Connector Pin 1 of 4	173	24	RED	N	DRIVER_1
A Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	A Motor	Microfit Connector Pin 2 of 4	173	24	BLUE	N	DRIVER_1
A Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	A Motor	Microfit Connector Pin 3 of 4	173	24	GREEN	N	DRIVER_1
A Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	A Motor	Microfit Connector Pin 4 of 4	173	24	BLACK	N	DRIVER_1



Step 16: Z Motor

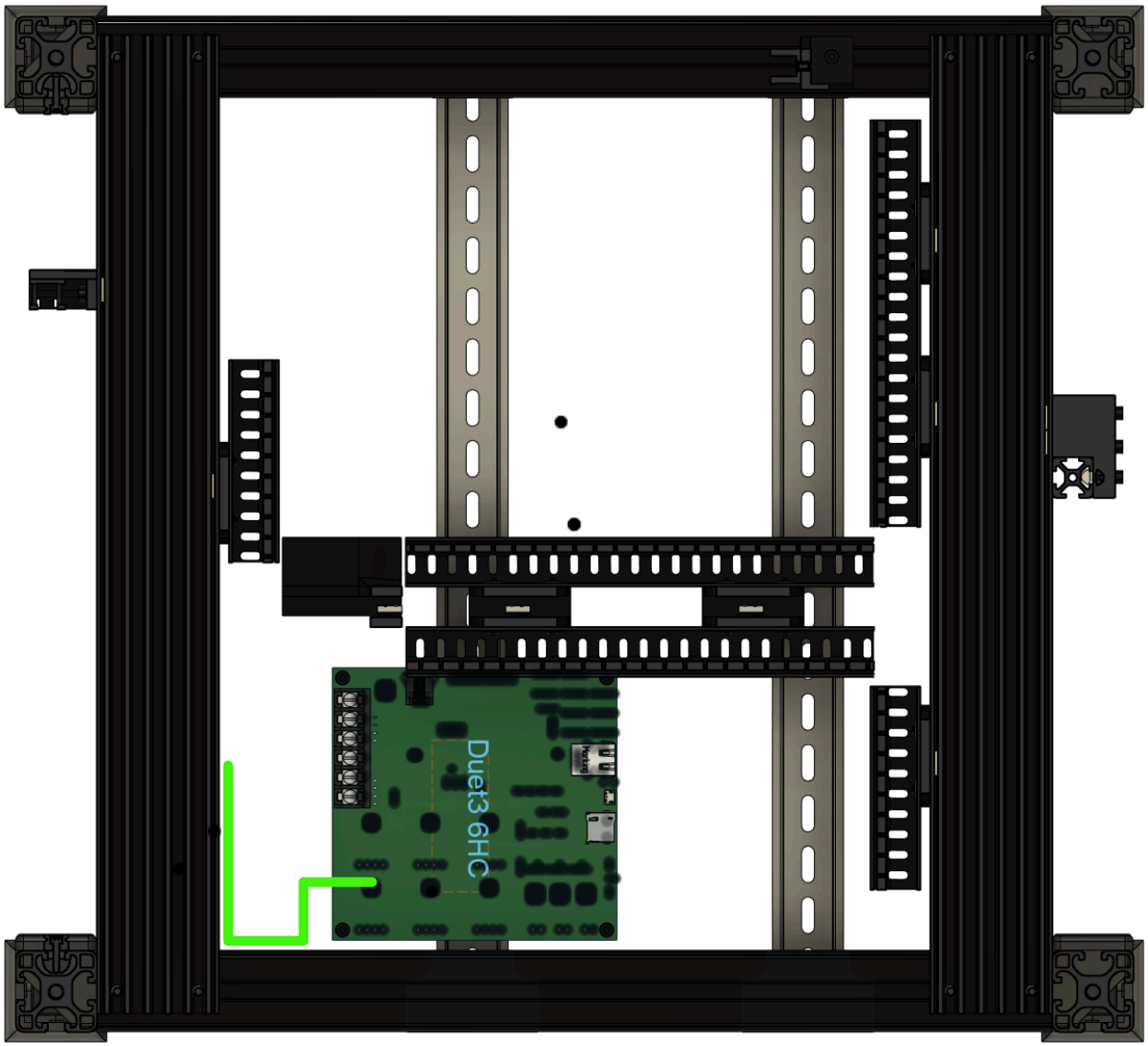
Notes:

Your connection method will vary based on your kit configuration!

GREEN = Z Motor Wires

See the assignments page below for context

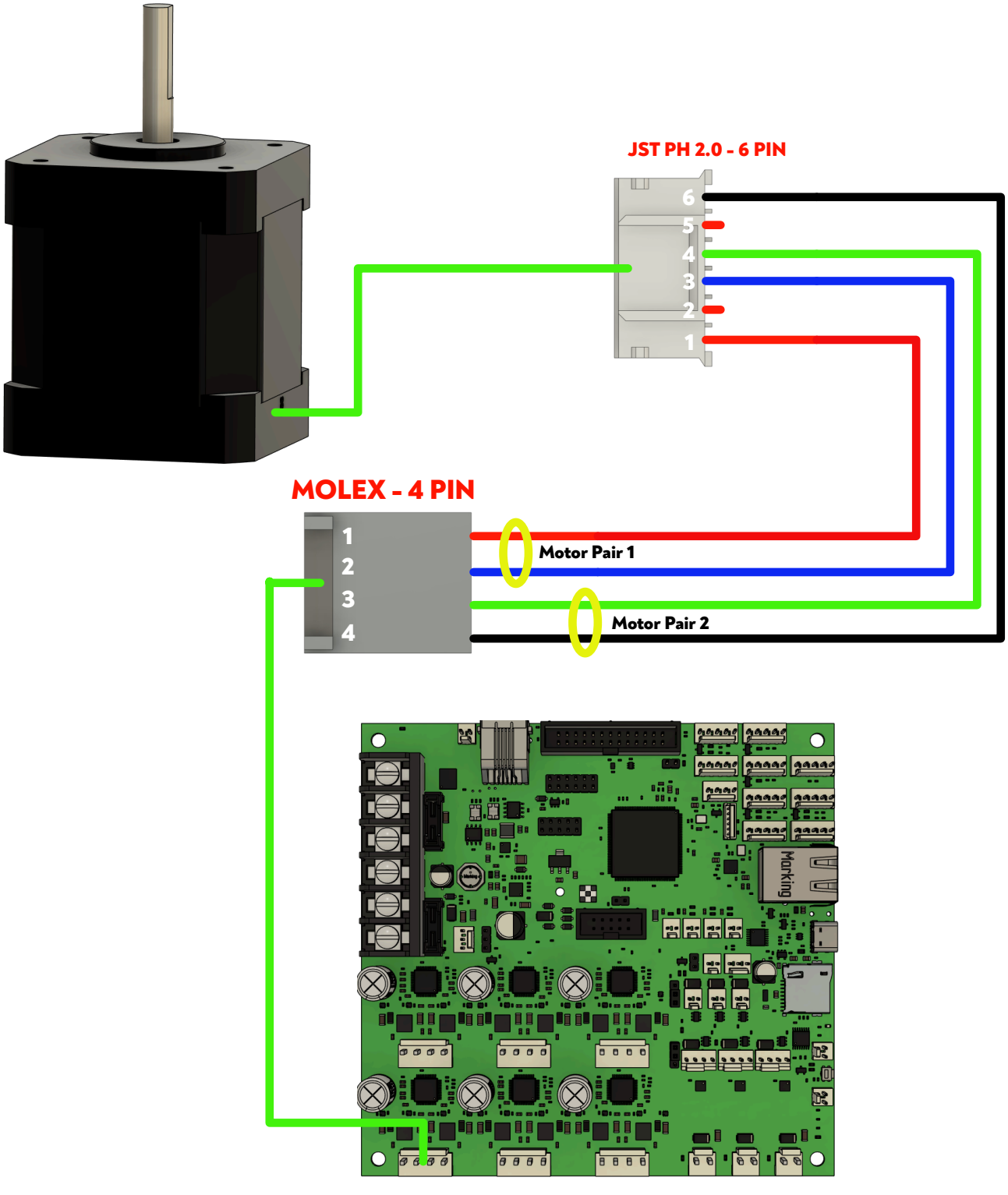
Wire Routing (TOP)



Pin Assignments, Colors & Specs

FOR STANDARD 1684MAC STEPPER MOTORS

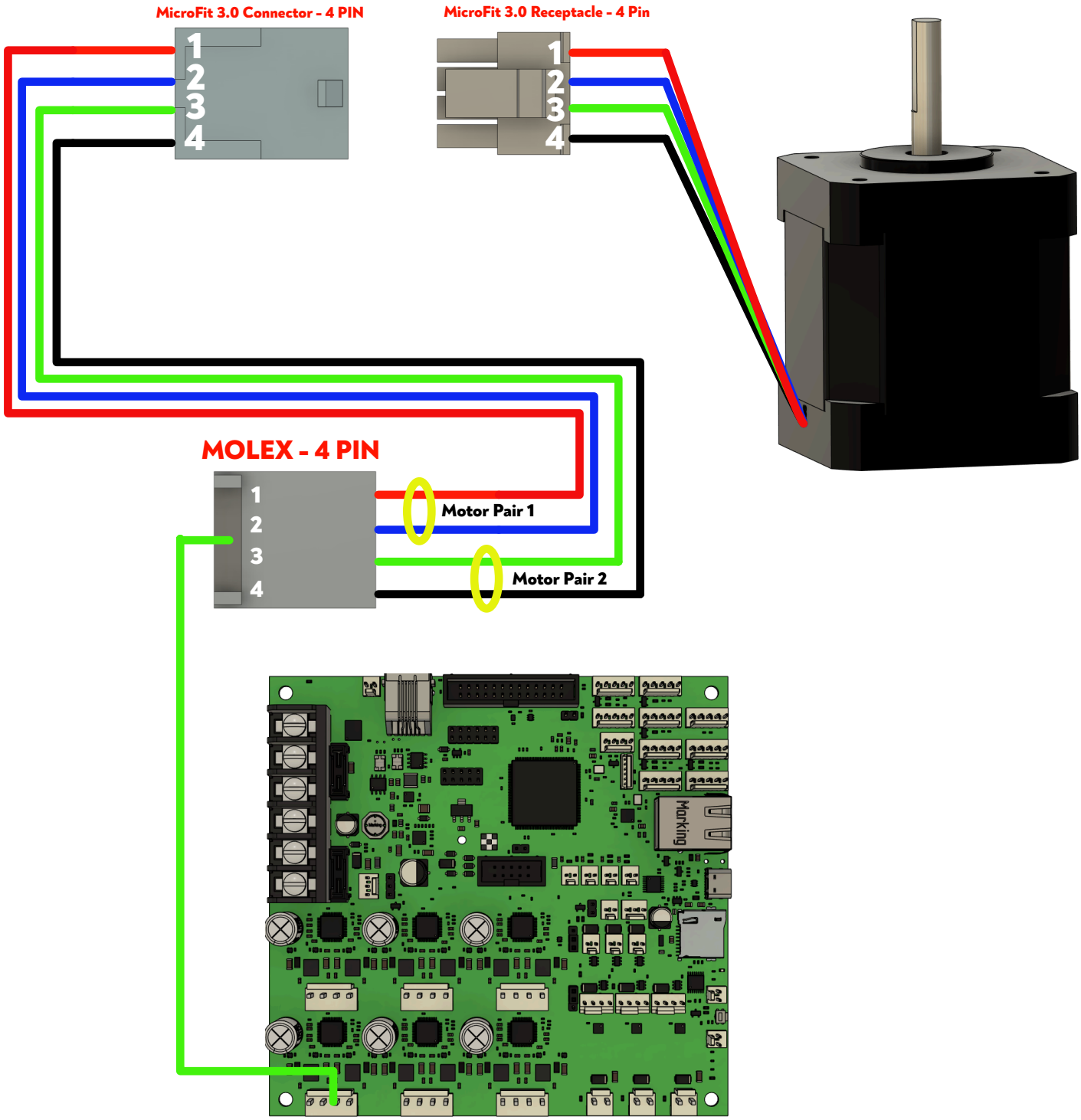
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Z Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	Z Motor	JST PH Pin 1 of 6	17	24	RED	N	DRIVER_2
Z Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	Z Motor	JST PH Pin 3 of 6	17	24	BLUE	N	DRIVER_2
Z Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	Z Motor	JST PH Pin 4 of 6	17	24	GREEN	N	DRIVER_2
Z Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	Z Motor	JST PH Pin 6 of 6	17	24	BLACK	N	DRIVER_2



Pin Assignments, Colors & Specs

FOR HIGH TEMP 1684MAH STEPPER MOTORS

Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Z Motor Pair 1	Duet 3 6HC	Molex LG Pin 1 of 4	Z Motor	Microfit Connector Pin 1 of 4	17	24	RED	N	DRIVER_2
Z Motor Pair 1	Duet 3 6HC	Molex LG Pin 2 of 4	Z Motor	Microfit Connector Pin 2 of 4	17	24	BLUE	N	DRIVER_2
Z Motor Pair 2	Duet 3 6HC	Molex LG Pin 3 of 4	Z Motor	Microfit Connector Pin 3 of 4	17	24	GREEN	N	DRIVER_2
Z Motor Pair 2	Duet 3 6HC	Molex LG Pin 4 of 4	Z Motor	Microfit Connector Pin 4 of 4	17	24	BLACK	N	DRIVER_2



Step 17: Tool Hoops (FDM)

Notes:

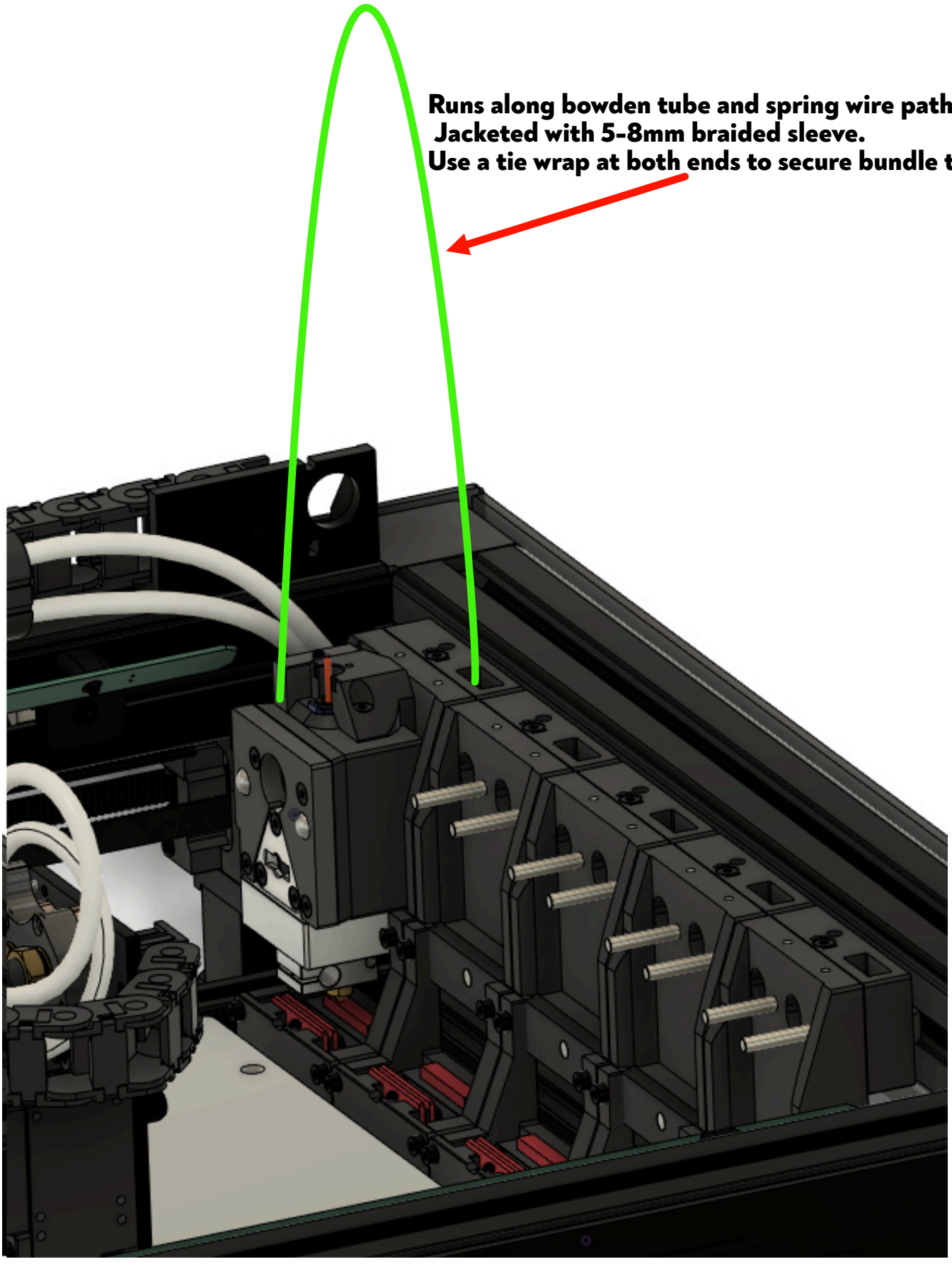
The number of needed tool hoop harnesses is dependent on the number of equipped FDM tools

GREEN = Tool Hoop Wires

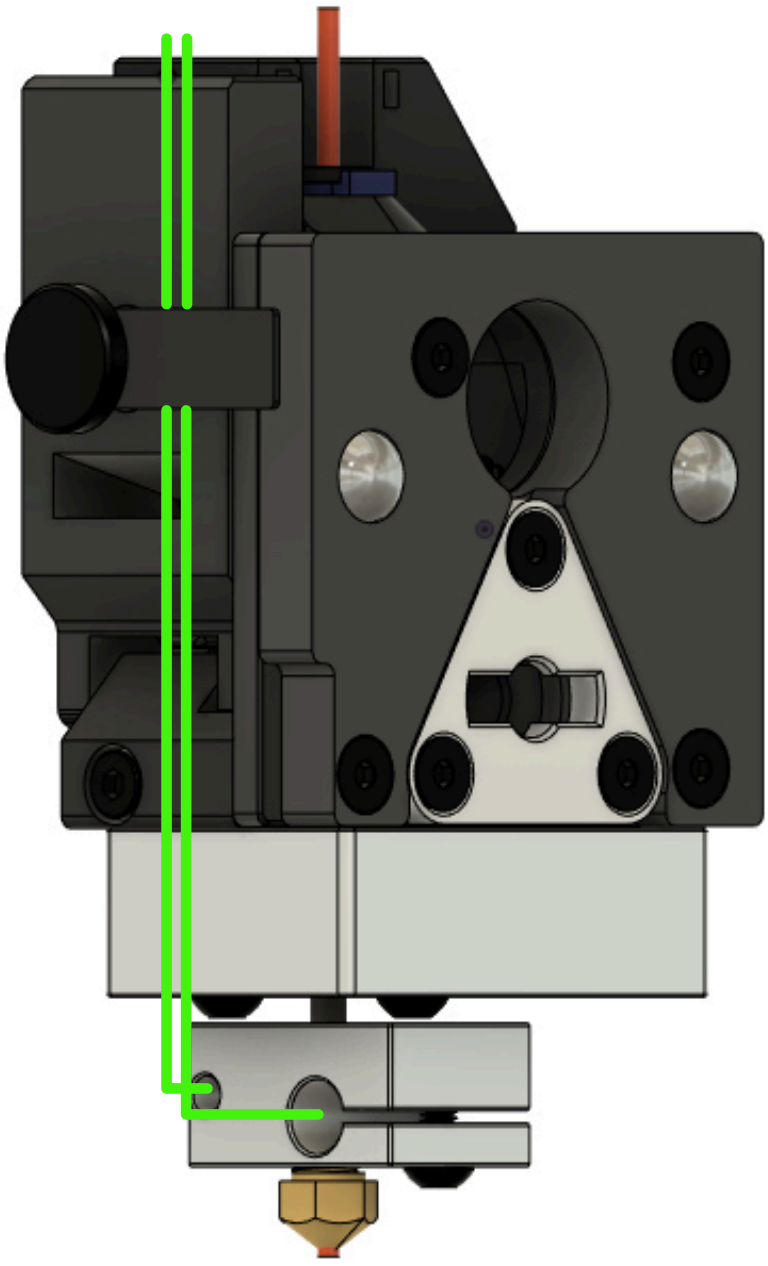
See the assignments page below for context

Wire Routing (LEFT)

Wire Routing (Special View)

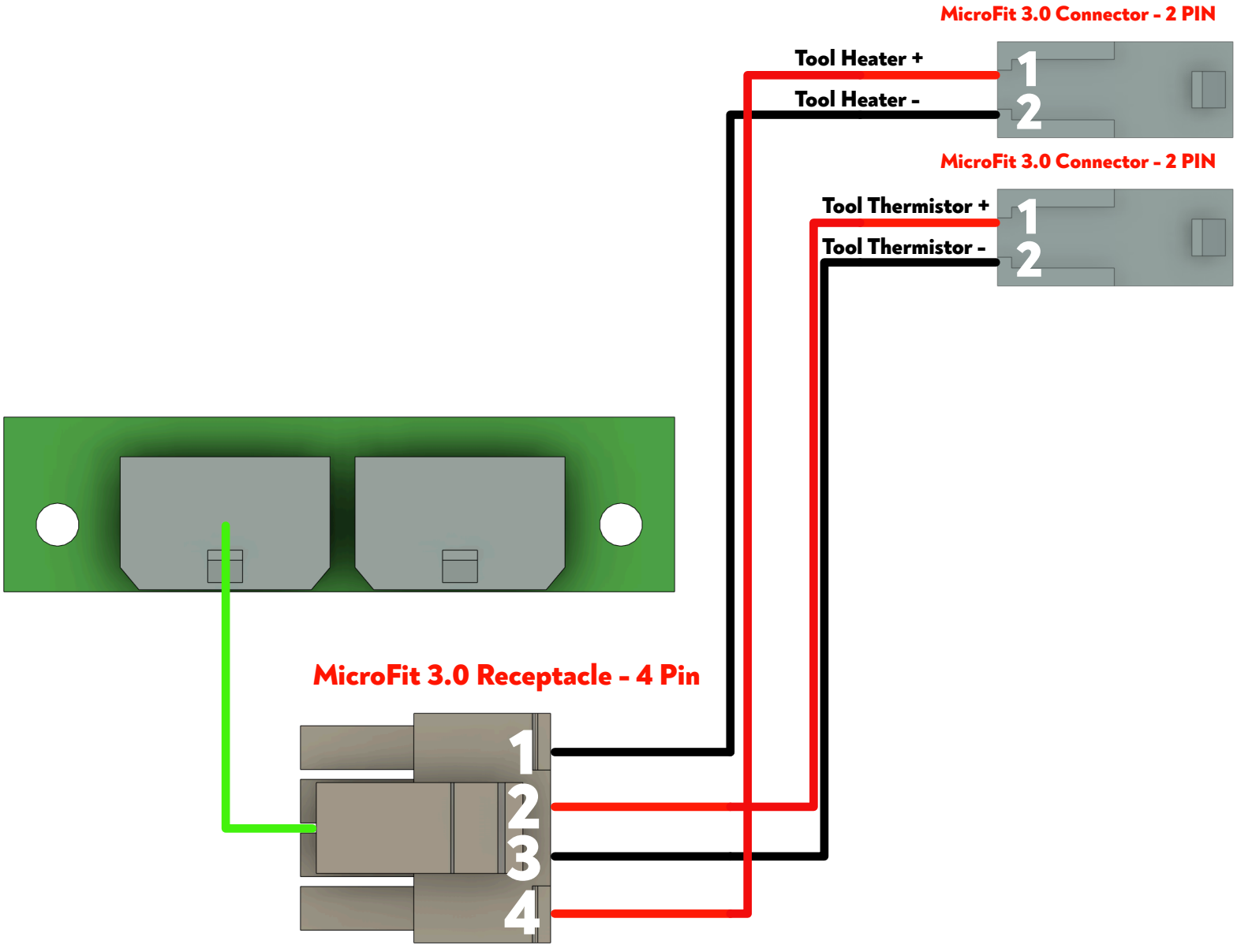


Wire Routing (Special View)



Pin Assignments, Colors & Specs

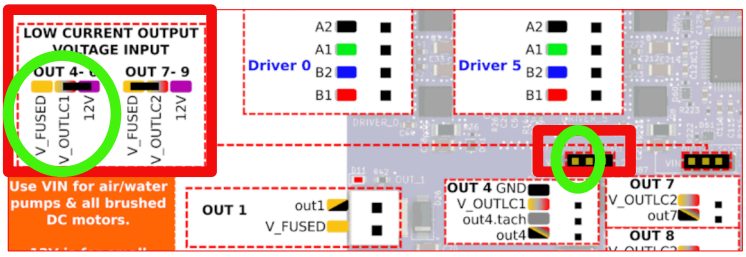
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
Tool N Heater +	Tool Dock N	Microfit Receptacle Pin 4 of 4	Tool Heater +	Microfit Receptacle Pin 1 of 2	70	20	RED	Y	
Tool N Heater -	Tool Dock N	Microfit Receptacle Pin 1 of 4	Tool Heater -	Microfit Receptacle Pin 2 of 2	70	20	BLACK	Y	
Tool N Thermistor +	Tool Dock N	Microfit Receptacle Pin 2 of 4	Tool Thermistor +	Microfit Receptacle Pin 1 of 2	72	24	RED	Y	
Tool N Thermistor -	Tool Dock N	Microfit Receptacle Pin 3 of 4	Tool Thermistor -	Microfit Receptacle Pin 2 of 2	72	24	BLACK	Y	



Step 18: AUX Cooling Fan

Notes:

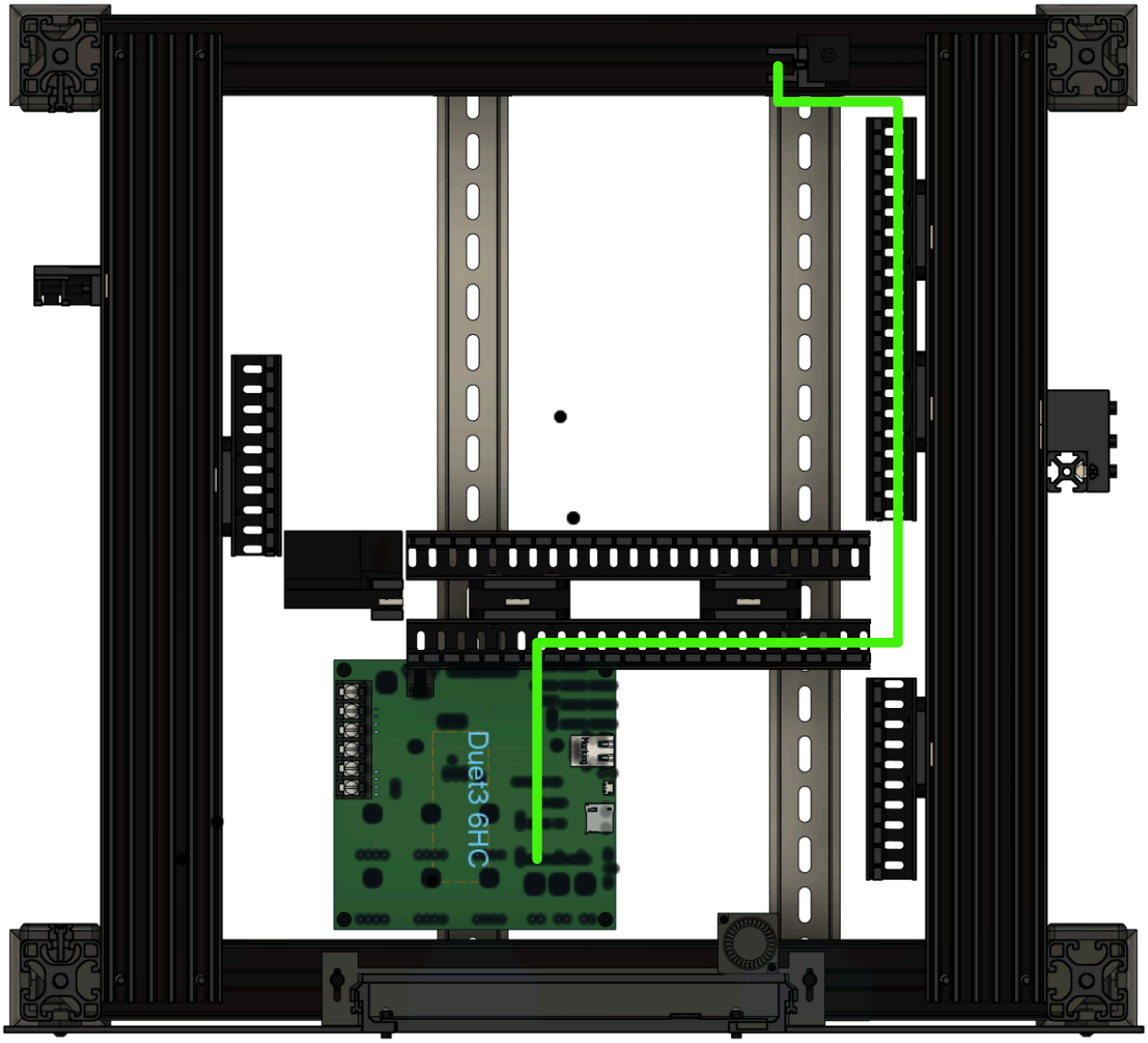
GREEN = AUX Fan Wires



See the assignments page below for context

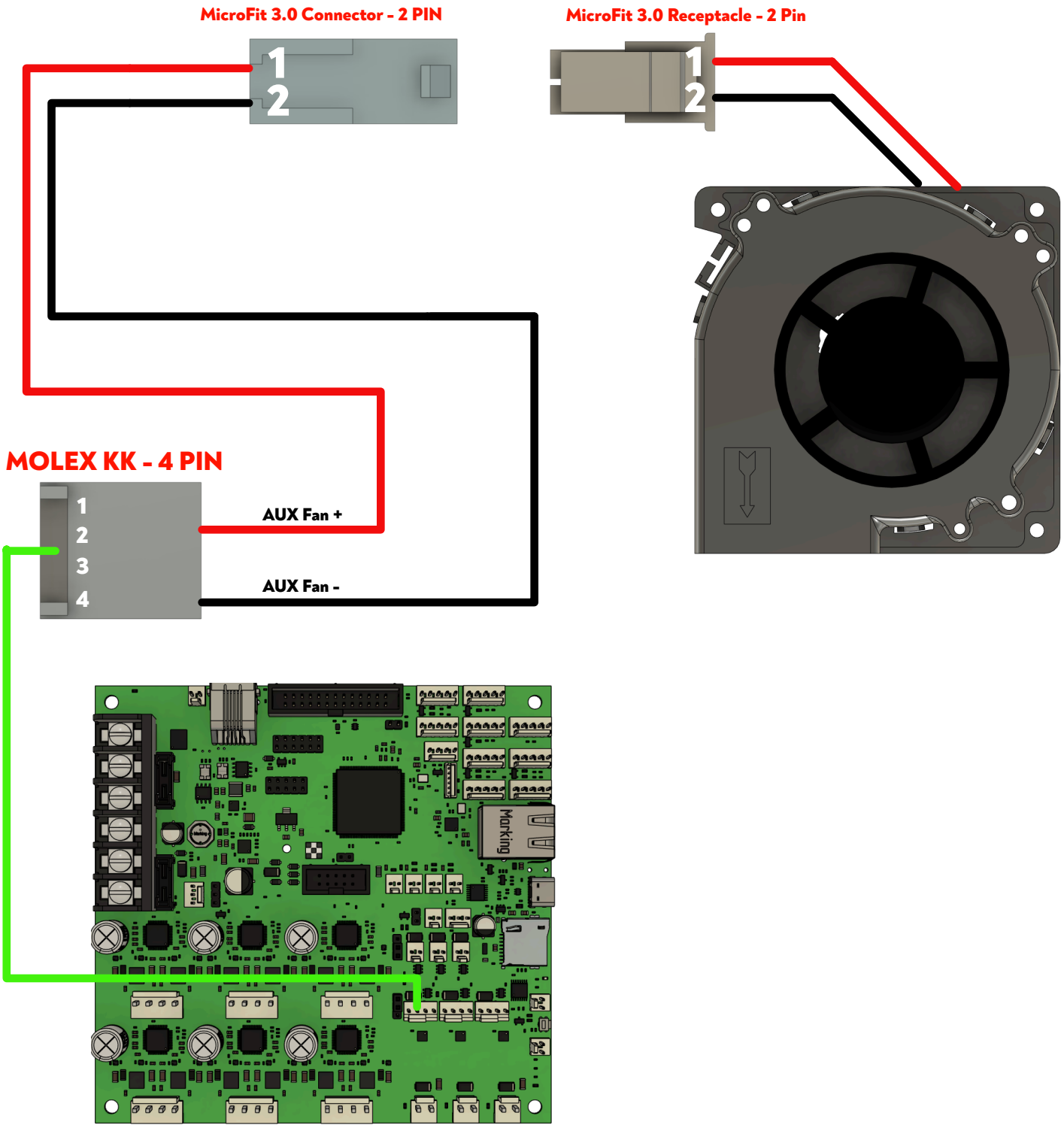
Don't Forget! : The Jumper for determining the voltage source for OUT_4-6 should be moved to V_FUSED - See Image Above

Wire Routing (TOP)

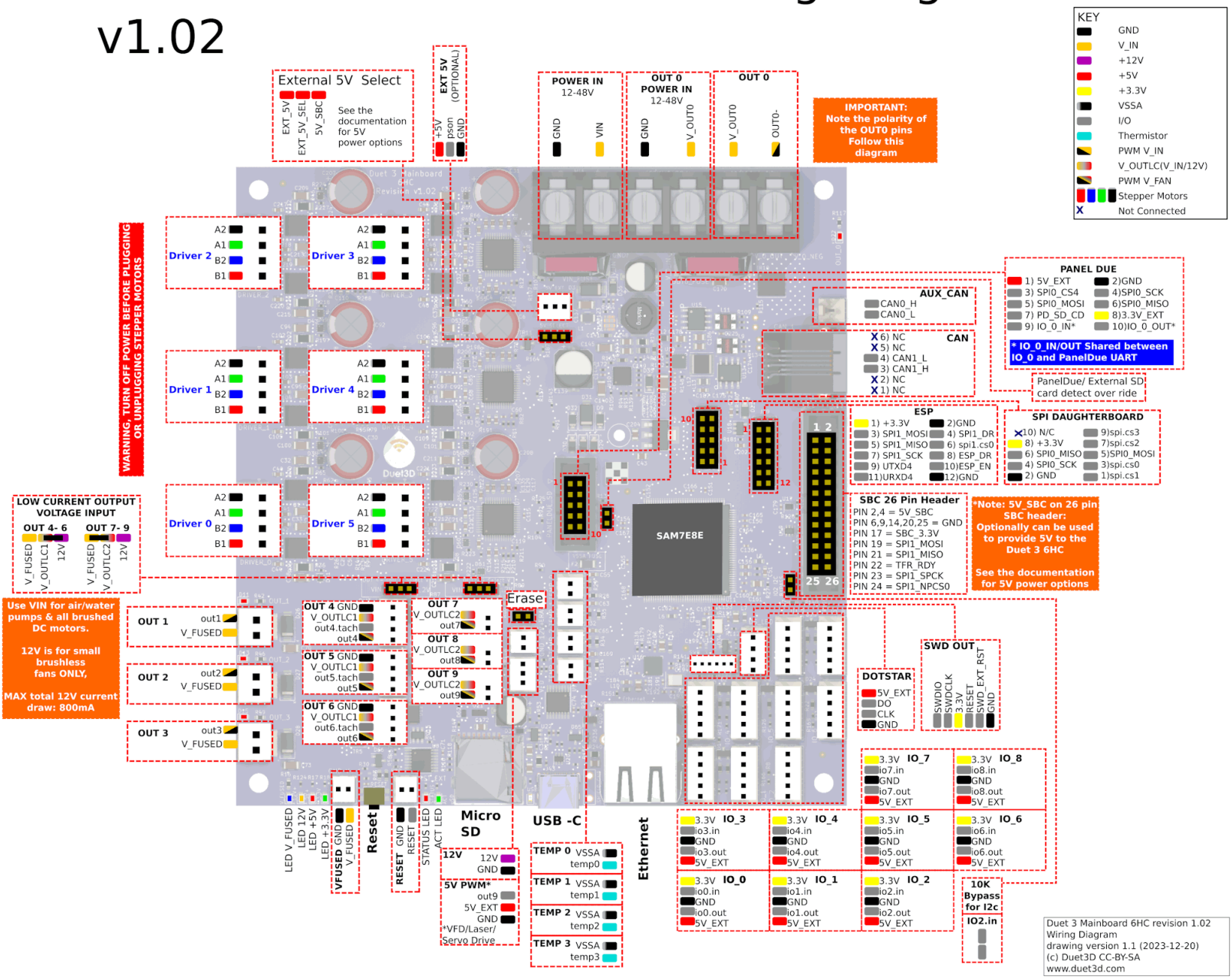


Pin Assignments, Colors & Specs

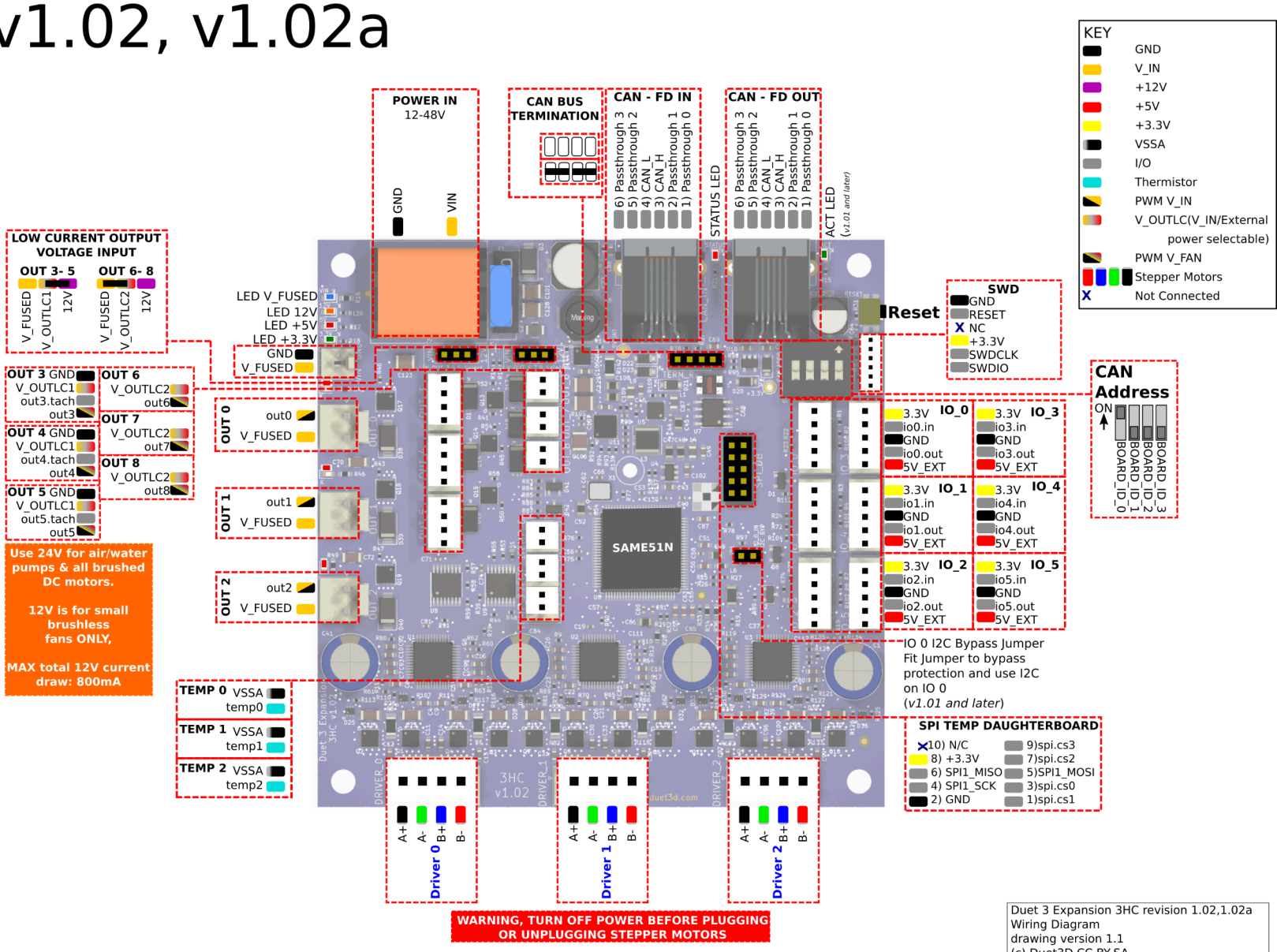
Wire Name	Component A	Connector A	Component B	Connector B	Length (CM)	Wire Gauge	Color	Motion?	Connector Name
AUX Fan +	Duet 3 6HC	Molex KK Pin 2 of 4	AUX fan	Microfit Connector Pin 1 of 2	85	24	RED	N	OUT_4
AUX Fan -	Duet 3 6HC	Molex KK Pin 4 of 4	AUX fan	Microfit Connector Pin 2 of 2	85	24	BLK	N	OUT_4



Duet 3 Mainboard 6HC - Wiring Diagram v1.02



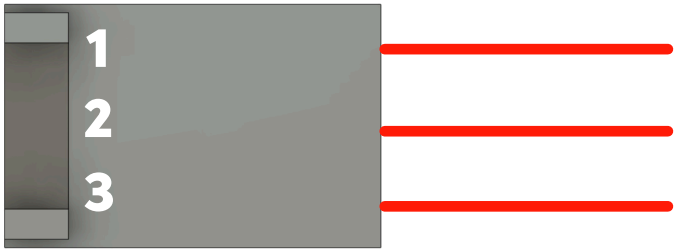
Duet 3 Expansion 3HC - Wiring Diagram v1.02, v1.02a



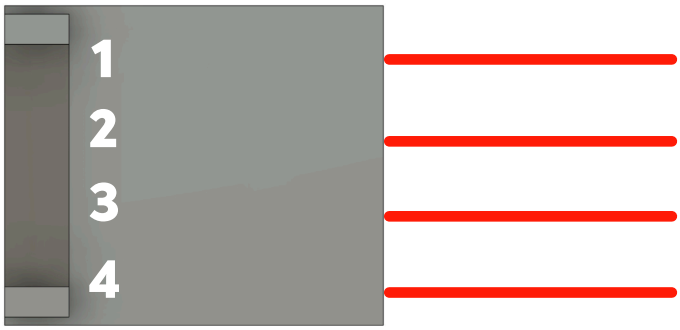
Pin Reference Guide - Molex Type KK

MOLEX KK - 2 PIN

MOLEX KK - 3 PIN



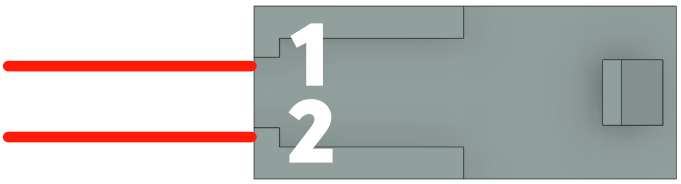
MOLEX KK - 4 PIN



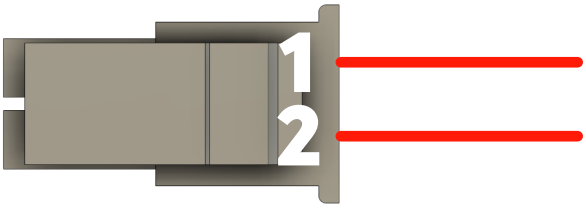
MOLEX KK - 5 PIN

Pin Reference Guide - Molex Microfit 3.0

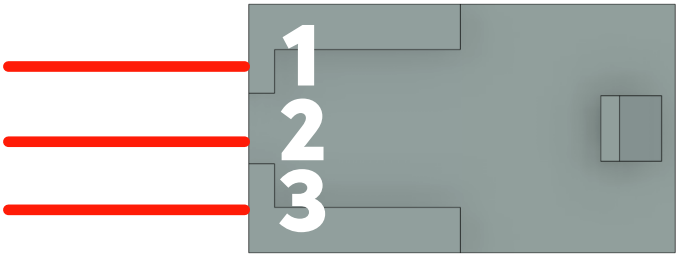
MicroFit 3.0 Connector - 2 PIN



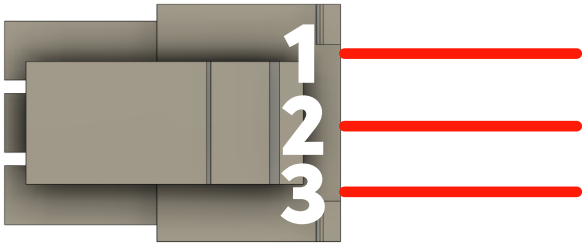
MicroFit 3.0 Receptacle - 2 Pin



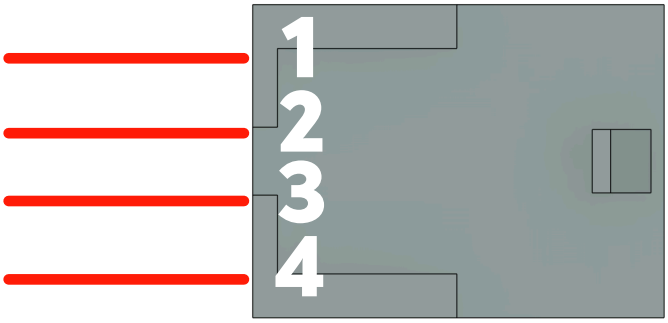
MicroFit 3.0 Connector - 3 PIN



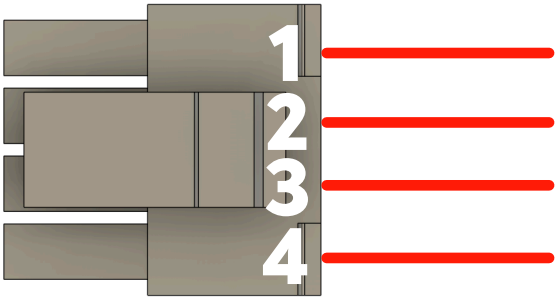
MicroFit 3.0 Receptacle - 3 Pin



MicroFit 3.0 Connector - 4 PIN

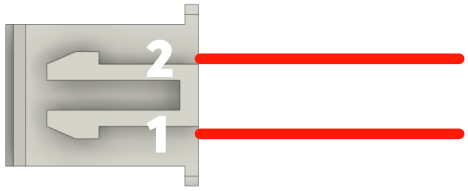


MicroFit 3.0 Receptacle - 4 Pin

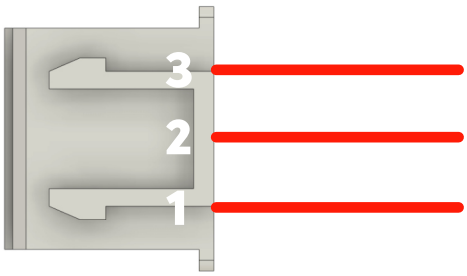


Pin Reference Guide - JST XHP 2.54 & PH 2.0

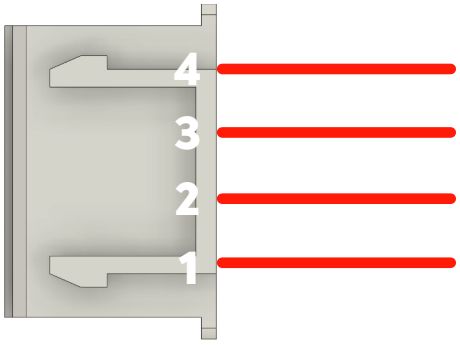
JST XHP 2.54 - 2 PIN



JST XHP 2.54 - 3PIN



JST XHP 2.54 - 4 PIN



JST PH 2.0 - 6 PIN