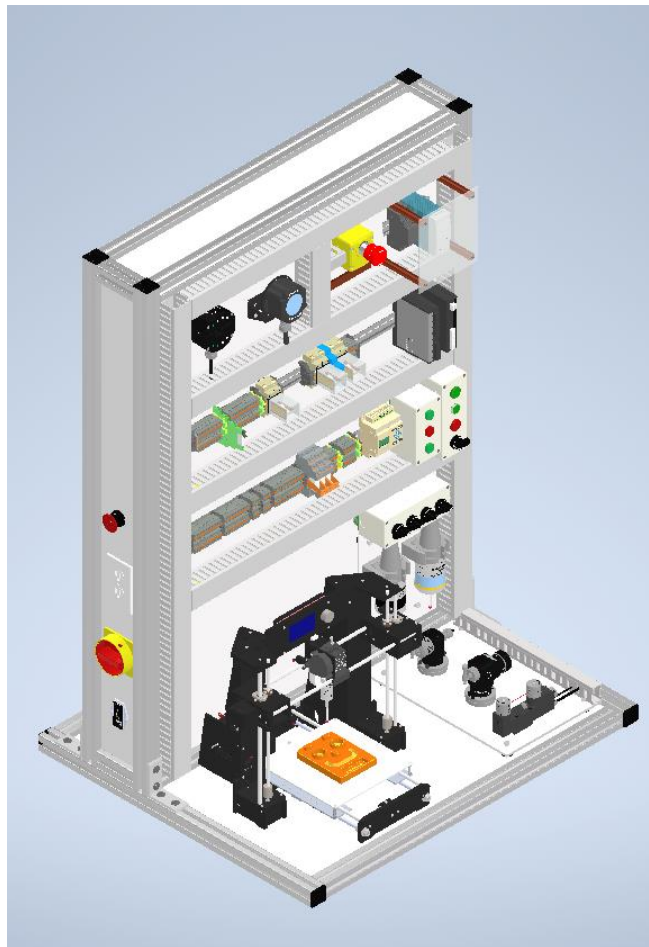




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# TRAINING RIG

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MACHINE TOOL TEAM  
RENISHAW | 2196 DUNWIN DR.

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## Scope

The Renishaw Training Rig stands as an invaluable resource, catering to Renishaw personnel and customers alike. This comprehensive platform encompasses an array of Renishaw's prominent products – from receivers and probes to lasers – all meticulously selected to provide an immersive learning experience. Beyond showcasing functional components, the rig extensively covers mechanical, electrical, and software intricacies that drive Renishaw's metrology success.

The Training Rig primarily serves to offer new employees and customers a hands-on encounter with troubleshooting and installation scenarios, a facet crucial for skill development. Managers and experienced technicians can simulate the most common scenarios that they face on the job and teach them to beginners, getting them prepared for when the time comes. Through this practical approach, competence with Renishaw products is enhanced, subsequently fostering success and unity within the metrology realm. In essence, the Renishaw Training Rig stands as a conduit for knowledge transfer, equipping individuals with the proficiencies needed to excel in the field.

Within this document you can find M-codes that we simulated on the rig, along with precise wiring diagrams that are graphic and easy to follow. Additionally, there is a bill of materials as well as costs (CAD) that was utilized to create this apparatus. All of us at Renishaw Canada hope this Training Rig assists in these aspects and provides everyone with a benefit in one way or another.

## Preface & Instructions

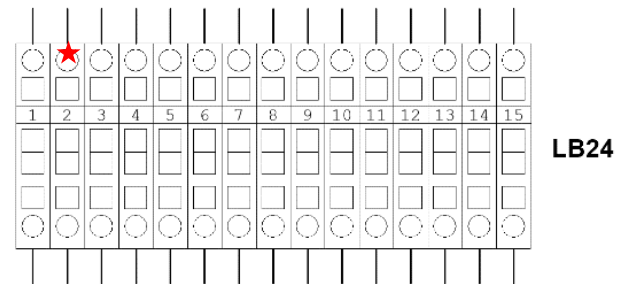
The following wiring diagrams are for the Renishaw Training Rig.

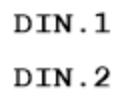
Each component will either have a graphic with connectors, or a wire that indicates its connection with text at the end of it that follows the nomenclature also labelled on the physical rig.

<b>Label Name</b>	<b>Meaning</b>
LB24	Live Blocks 24V
NB24	Neutral Blocks 24V
LB12	Live Blocks 12V
NB12	Neutral Blocks 12V
IOTB	I/O (Input/Output) Terminal Blocks
LEDTB	LED Terminal Blocks
RMITB	Radio Machine Interface Terminal Blocks
OMITB	Optical Machine Terminal Blocks
NC4TB	Non-Contact 4 Terminal Blocks
TSRTB	Tool Setter Terminal Blocks
R#	Relay #
M#	M-Code/Button/Switch #
PLC	Programmable Logic Controller

The specific pin # on the terminal block or component can be referenced by the following format and then mapped to its location on the physical rig:

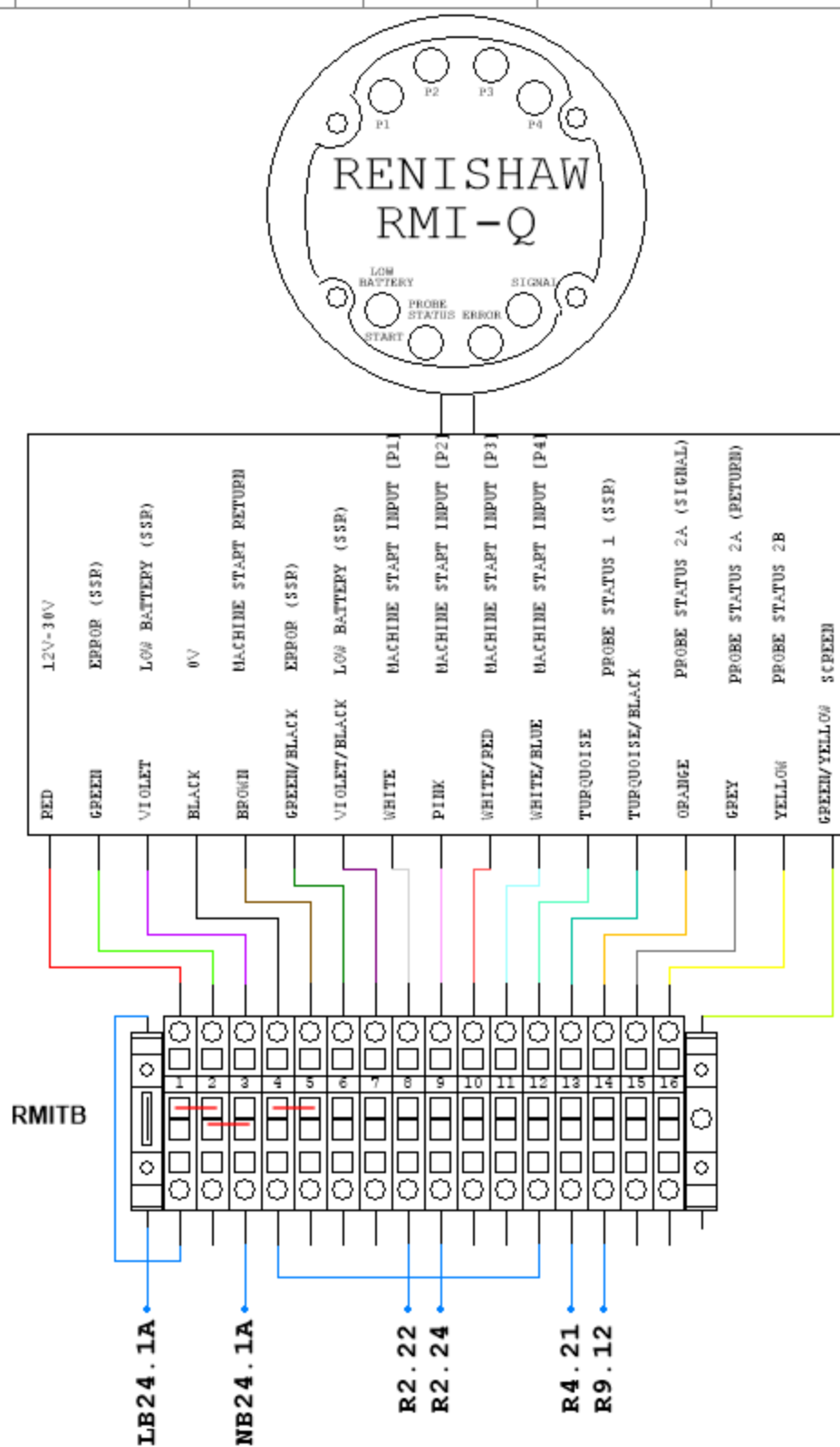
**LB24** . **2** **(A)**  
 Label Name Pin # Top/Bottom  
 Only Use if Terminal Block  
 A= TOP B= BOTTOM





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Title: Power Supply Wiring	Designed by: Nicholas Guerra	Size: A
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Title: RMI-Q

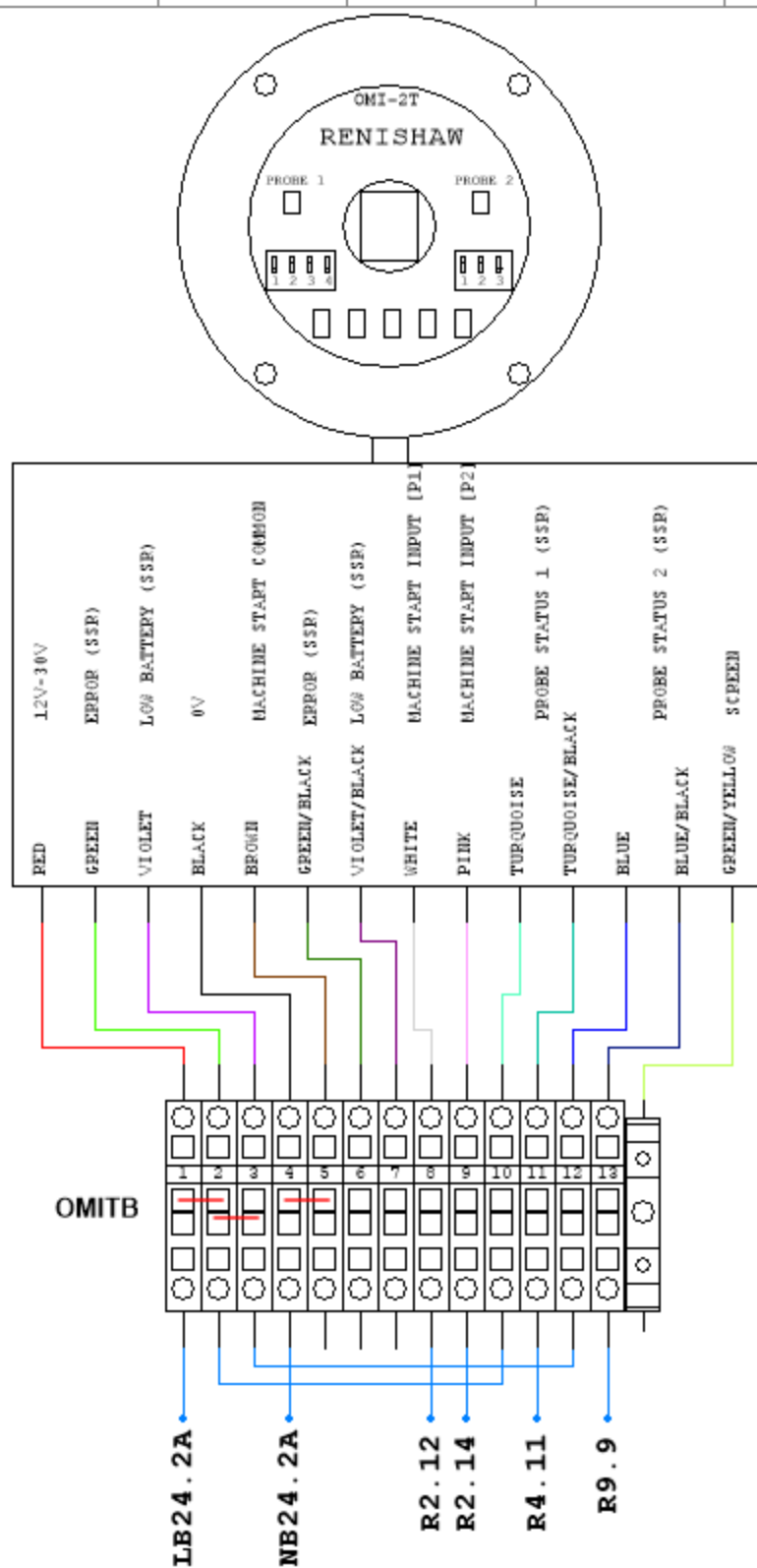
Designed by: Nicholas Guerra

Size: A

Date: 2023-08-24

Sheet 2 of 9

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Title: OMI-2T

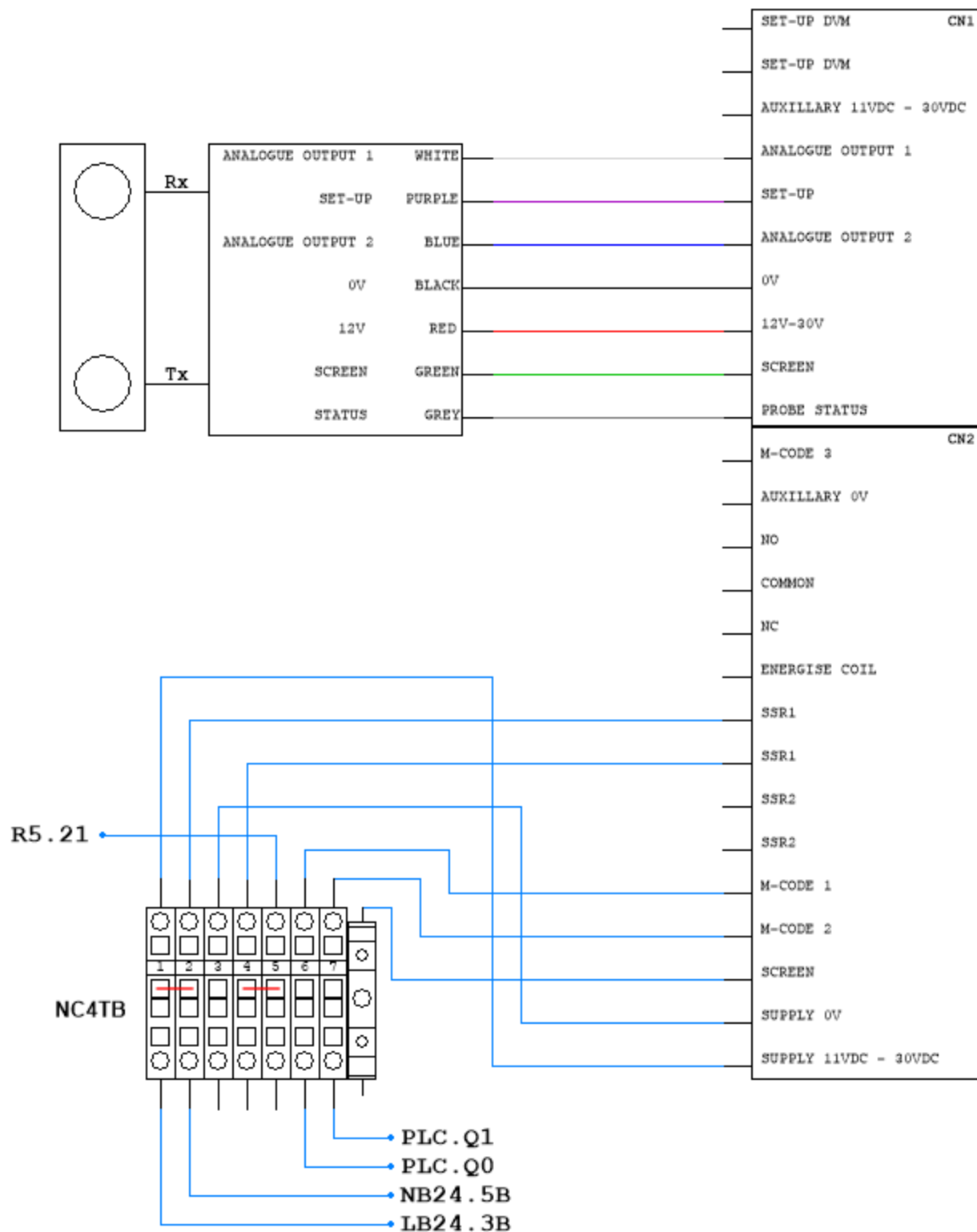
Designed by: Nicholas Guerra

Size: A

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Title: NC4+

Designed by: Nicholas Guerra

Size: A

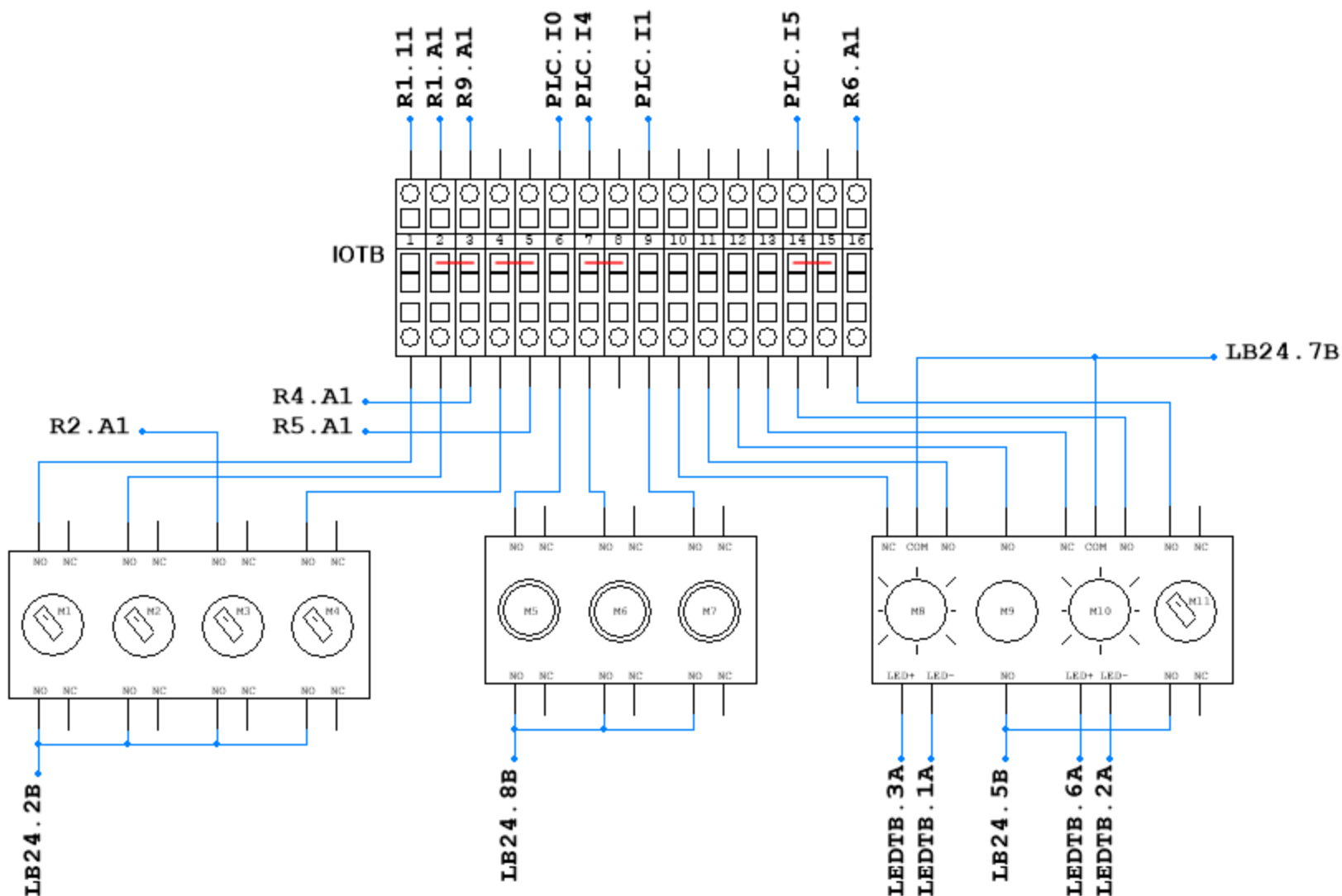
Date: 2023-08-24

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Revision: 1



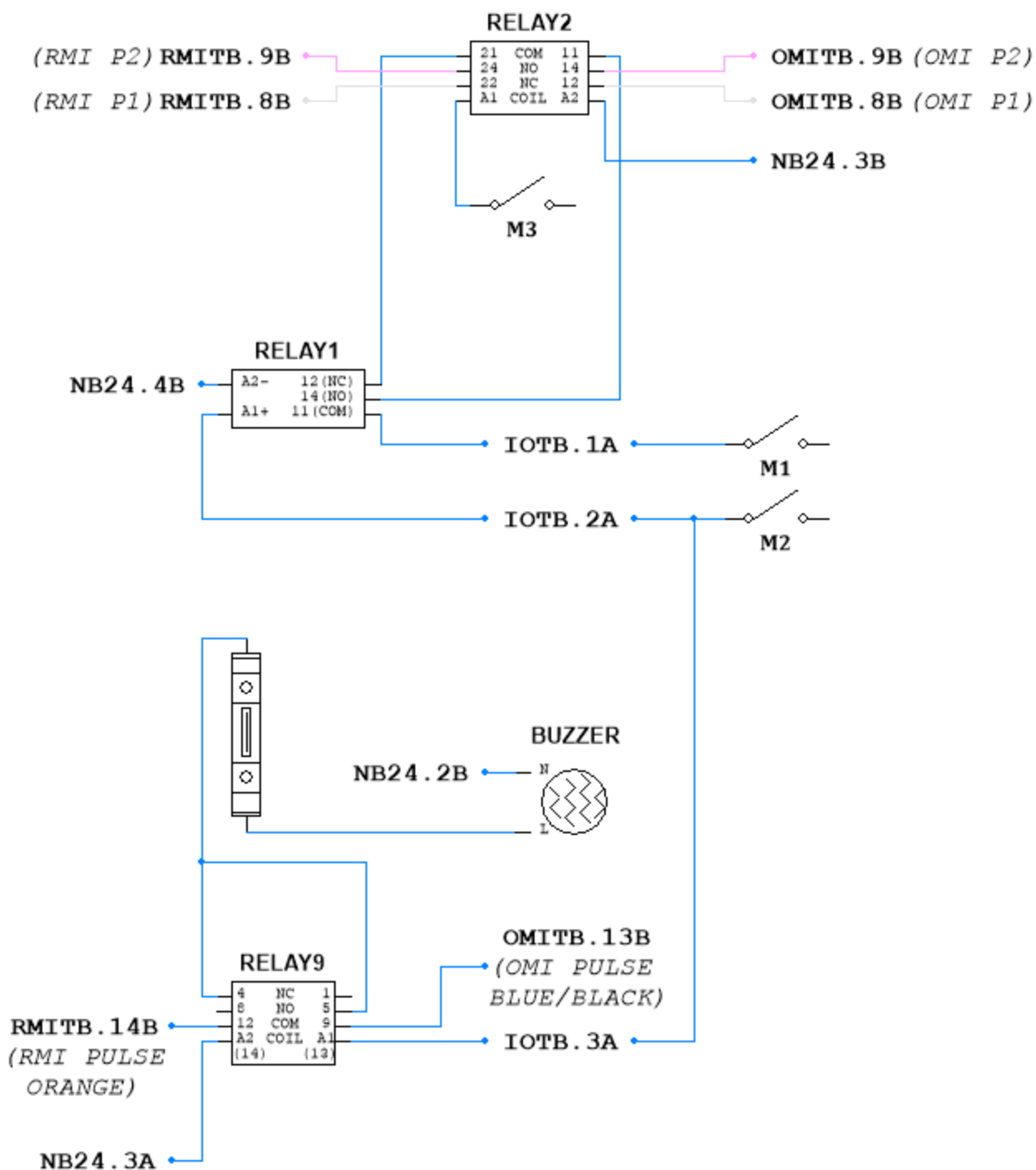




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Title: I/O AND M CODES	Designed by: Nicholas Guerra	Size: A
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Title: PROBE CONTROL

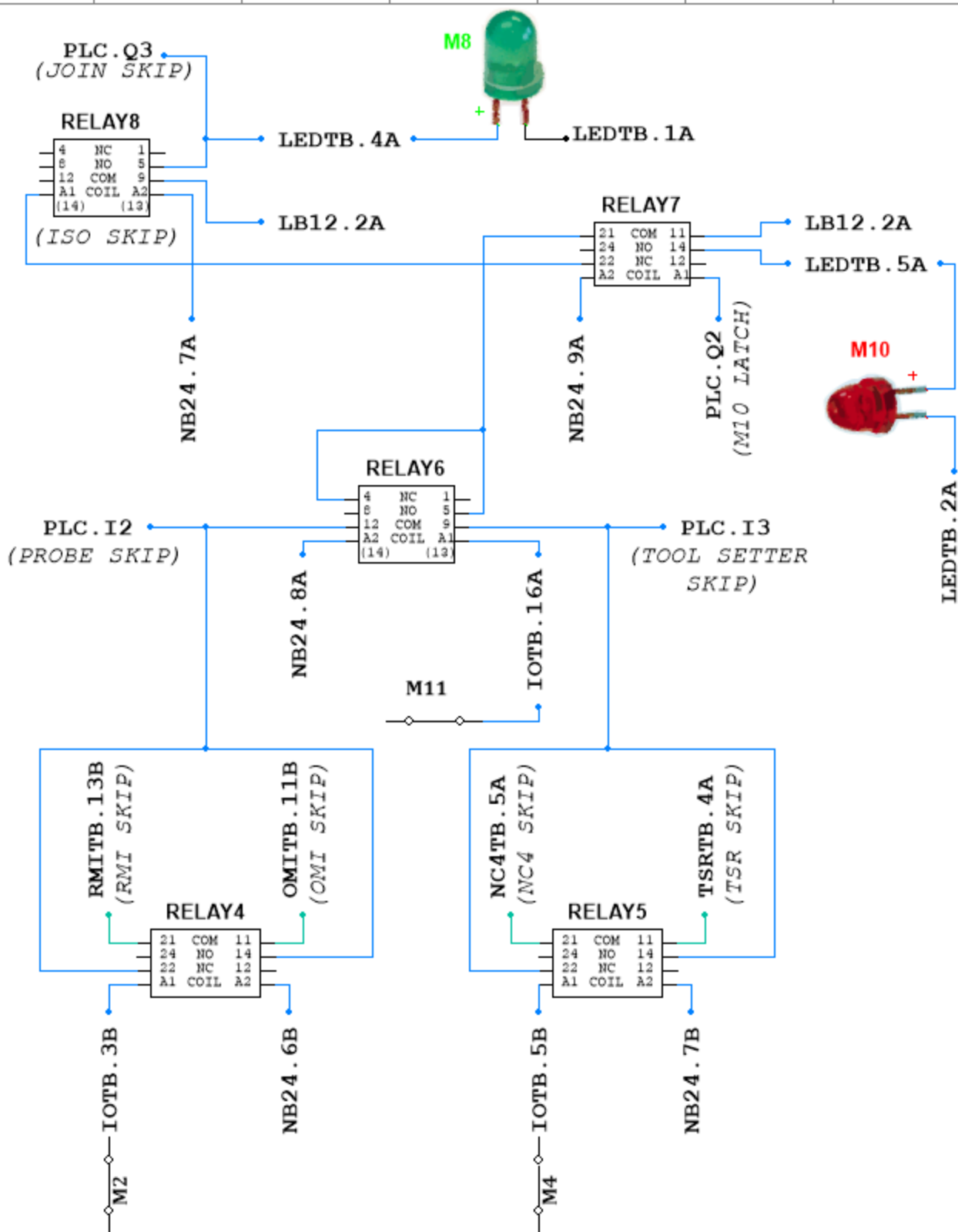
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Title: ISO AND JOIN SKIP

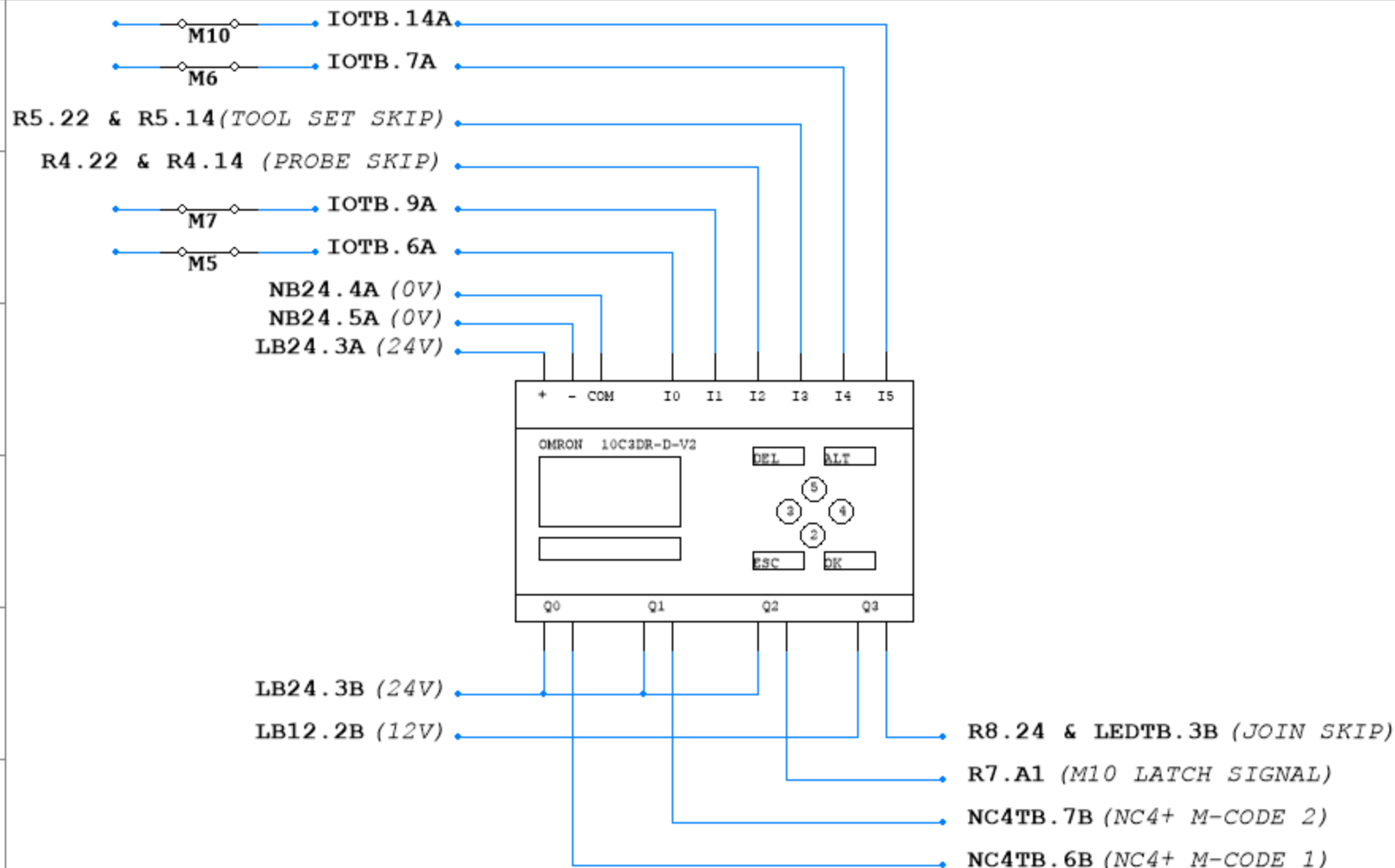
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Title: OMRON ZEN PLC

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Size: A

Date: 2023-08-24

Sheet 9 of 9

Revision: 1

# M-Codes

## Receiver M-Codes

- **M-code 1 (Probe Start)**
  - OFF = PROBE OFF
  - ON = PROBE ON
- **M-CODE 2 , Probe Type Selection Latch Switch (will control 24v to each unit)**
  - ON = OPTICAL
  - OFF = RADIO
- **M-code 3 – (Probe Selection on RMI-Q or OMI-2T, P1 or P2)**
  - OFF = P1 (Modulated 1, for optical)
  - ON = P2 (Modulated 2, for optical)

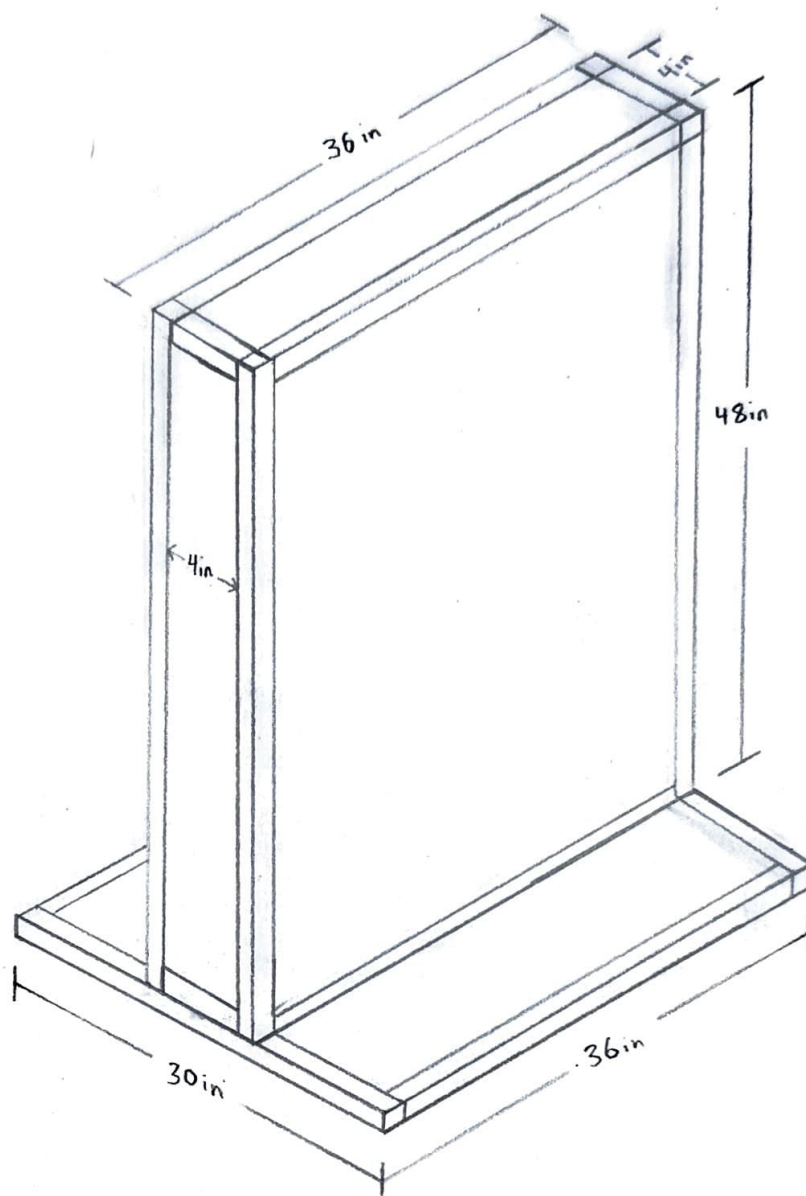
## Laser & Tool Setter

- **M-code 5 (PIN 11)**
  - SCENARIO 1, SEPARATE M-CODES (NO-BRIDGE)
    - OFF = NCTS LATCH OFF
    - ON = NCTS LATCH ON
- **M-code 6**
  - SCENARIO 2, BRIDGE MODE
    - OFF = TSM1
    - ON = TSM2
  - SCENARIO 3, RESET
    - Hold for 2 Seconds = RESET
- **M-code 7 (PIN 12)**
  - OFF = NCTS BROKEN TOOL
  - ON = NCTS BROKEN TOOL, TSM2 IF M2/M3 ON

## Skip control

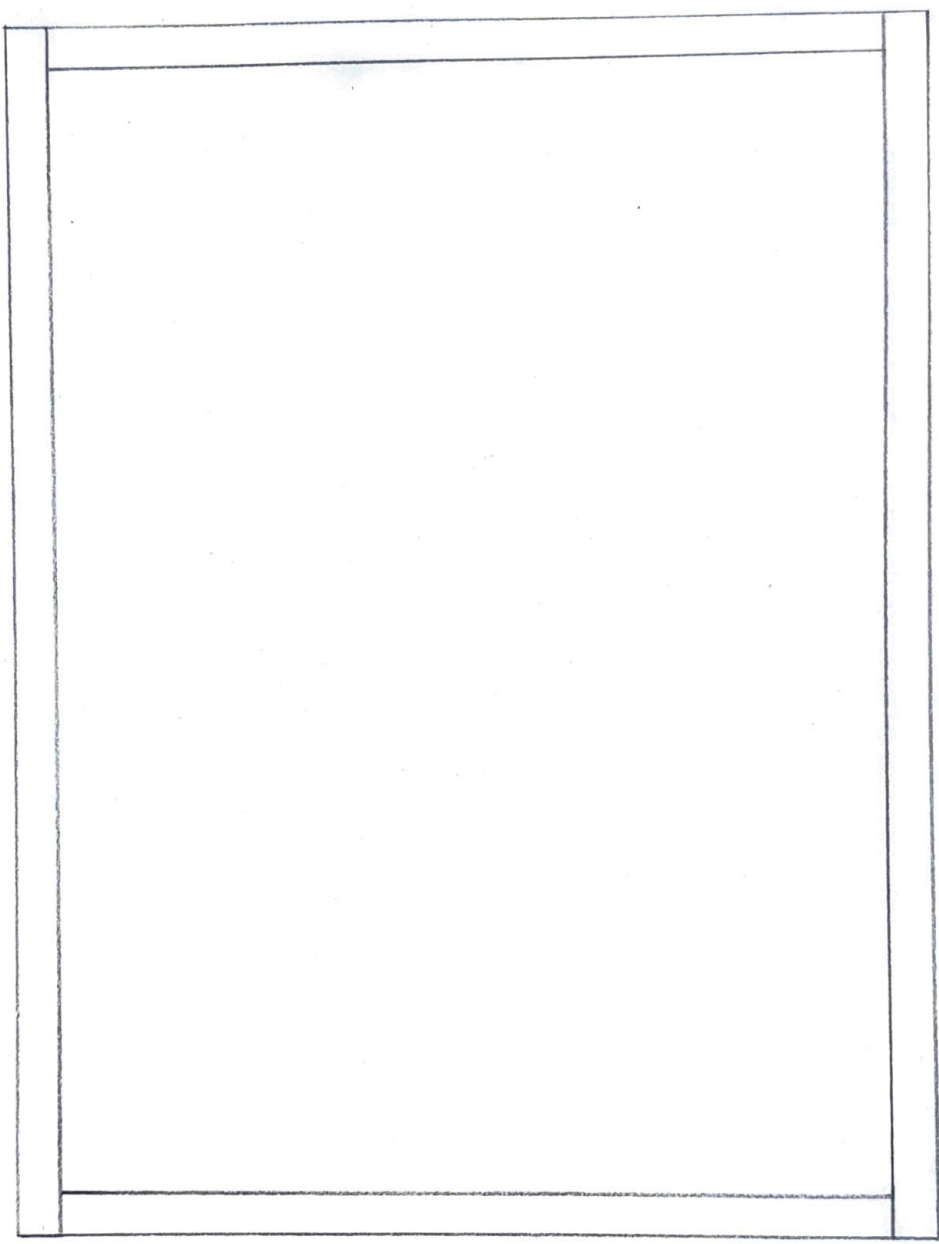
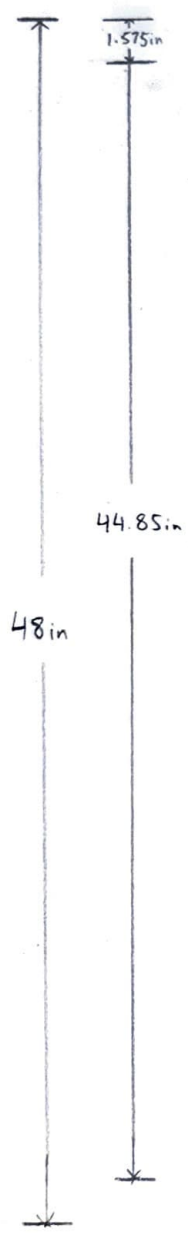
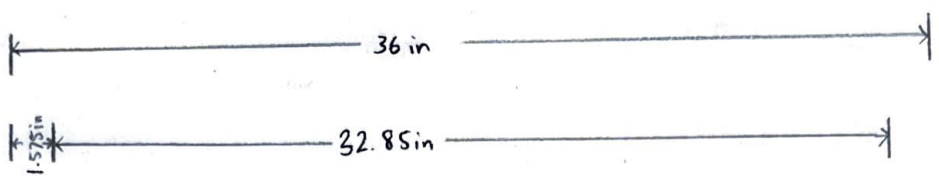
- **M-code 10 ( SKIP JOIN RELAY, overrides M-code 5)**

- **OFF = ISOLATED SKIP SWITCHING, M-CODE 5**
  - **ON = JOINED SKIP SWITCHING**
- 
- **M-code 11 (SKIP SWITCHING AS NEEDED)**
    - **OFF = SKIP, CHANNEL 1 (PROBE)**
    - **ON = SKIP, CHANNEL 2 (LASER)**

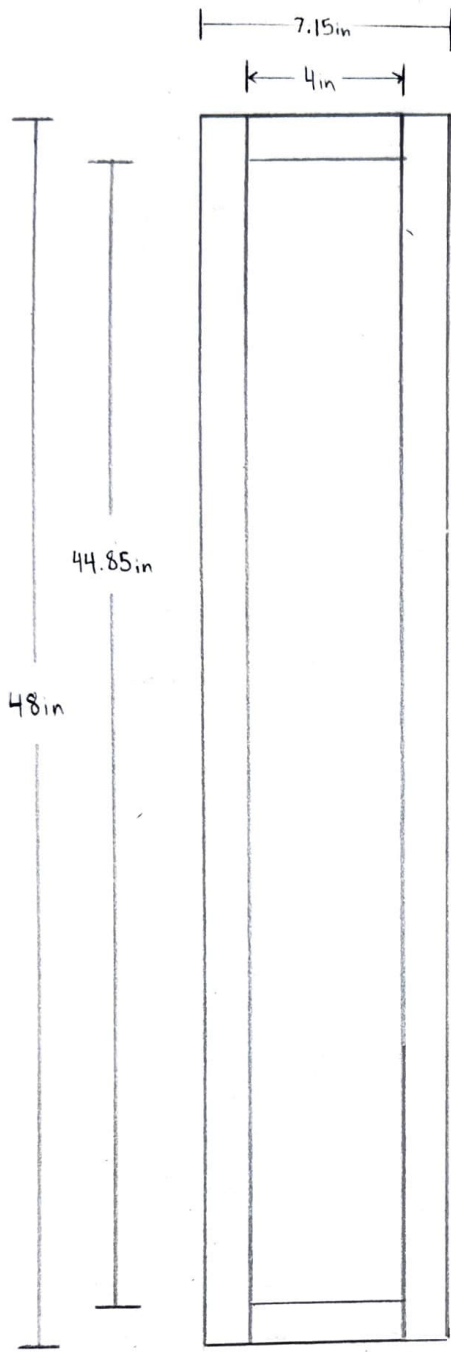




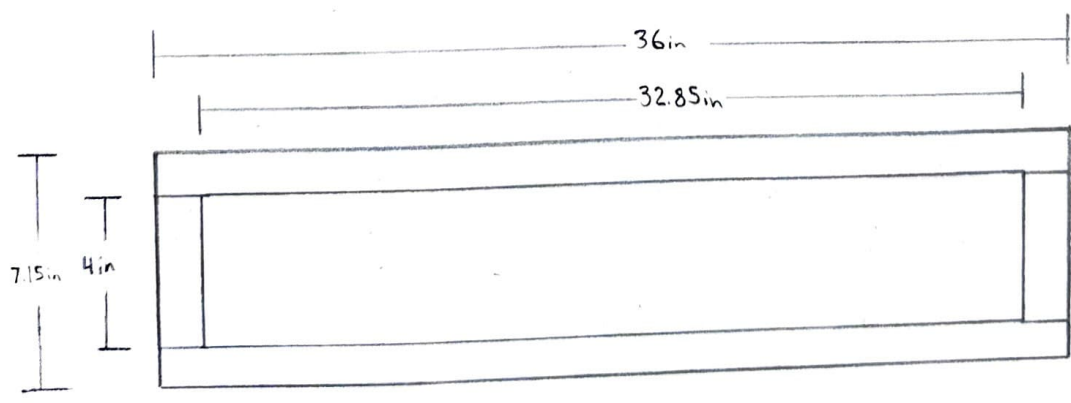
MAIN FRONT & BACK



SIDE



TOP & BOTTOM



BASE

