Custom Metal Box

MEMSDuino

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NIST

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Abstract

This is a custom metal box which contains the relay board that connects 90 volts to selected pins on a Dsub connector in the lid. The base of the box is attached to a wood board by 4 screws, and the 90 volt boost board is attached to the inside by means of a bracket screwed to the box. This box fully encloses the 90 volts at room temperature for safety.

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X2

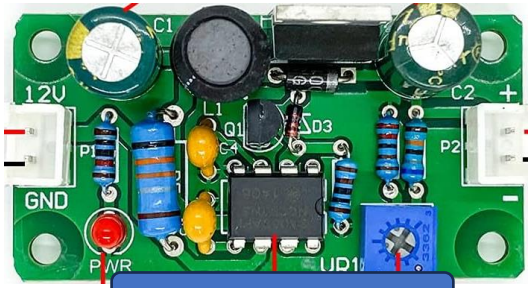
7/32” 4-40 standoff

Bud AN-1304-A Diecast Aluminum Box

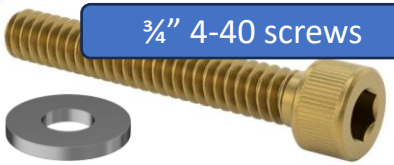
HV-DCDC-bracket

X6

¼” 4-40 screws



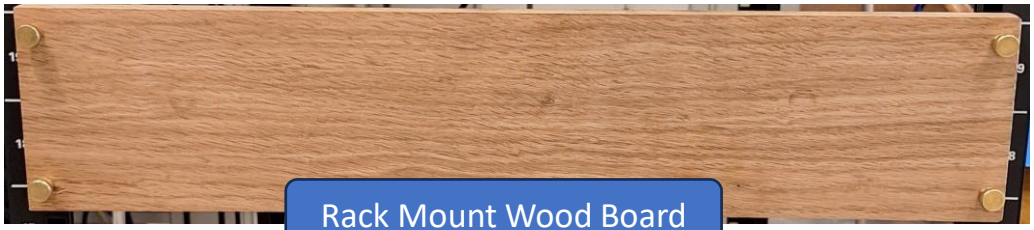
12V to 90 V Boost



¾” 4-40 screws

X4

#40 washers



Rack Mount Wood Board

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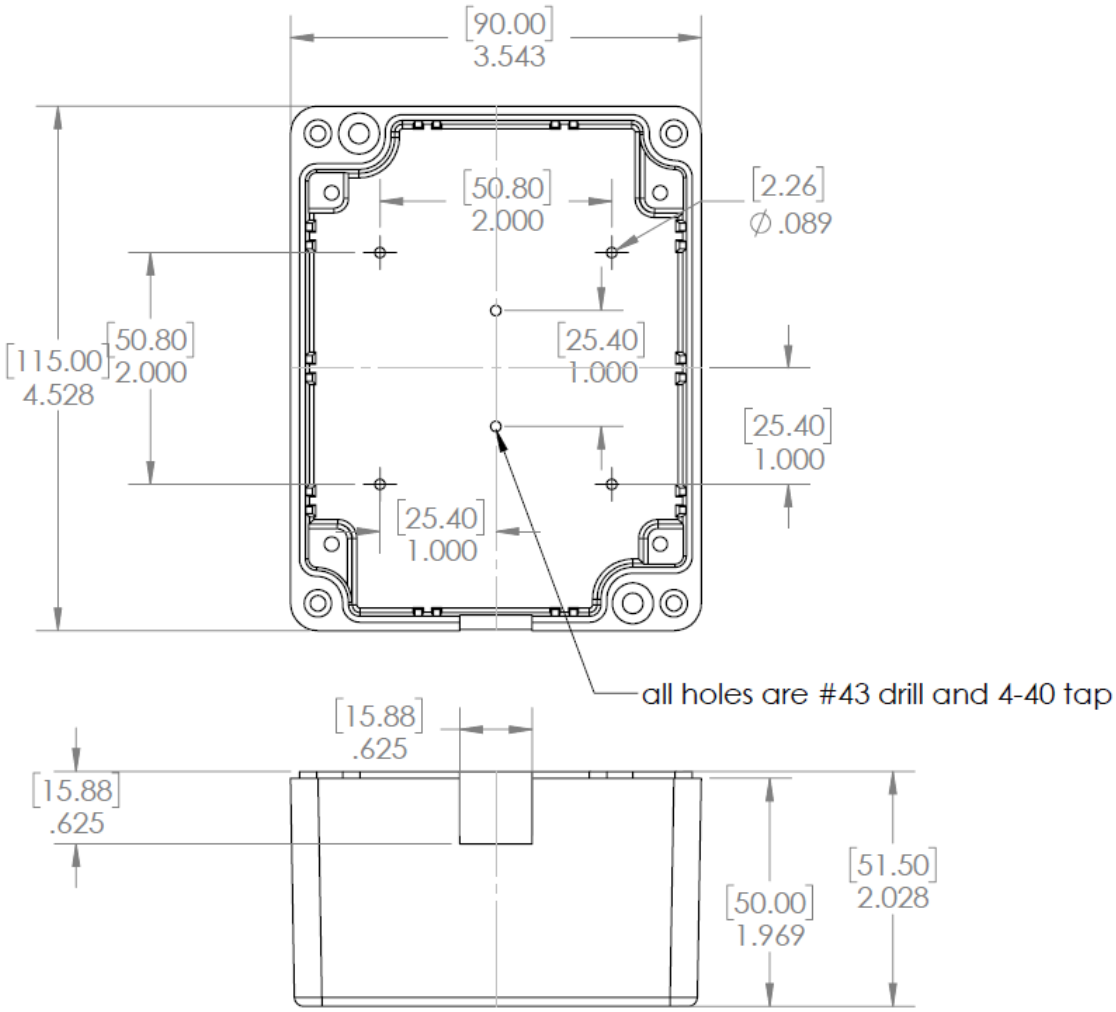
Modify or buy already-modified AN-1304-A box as follows:



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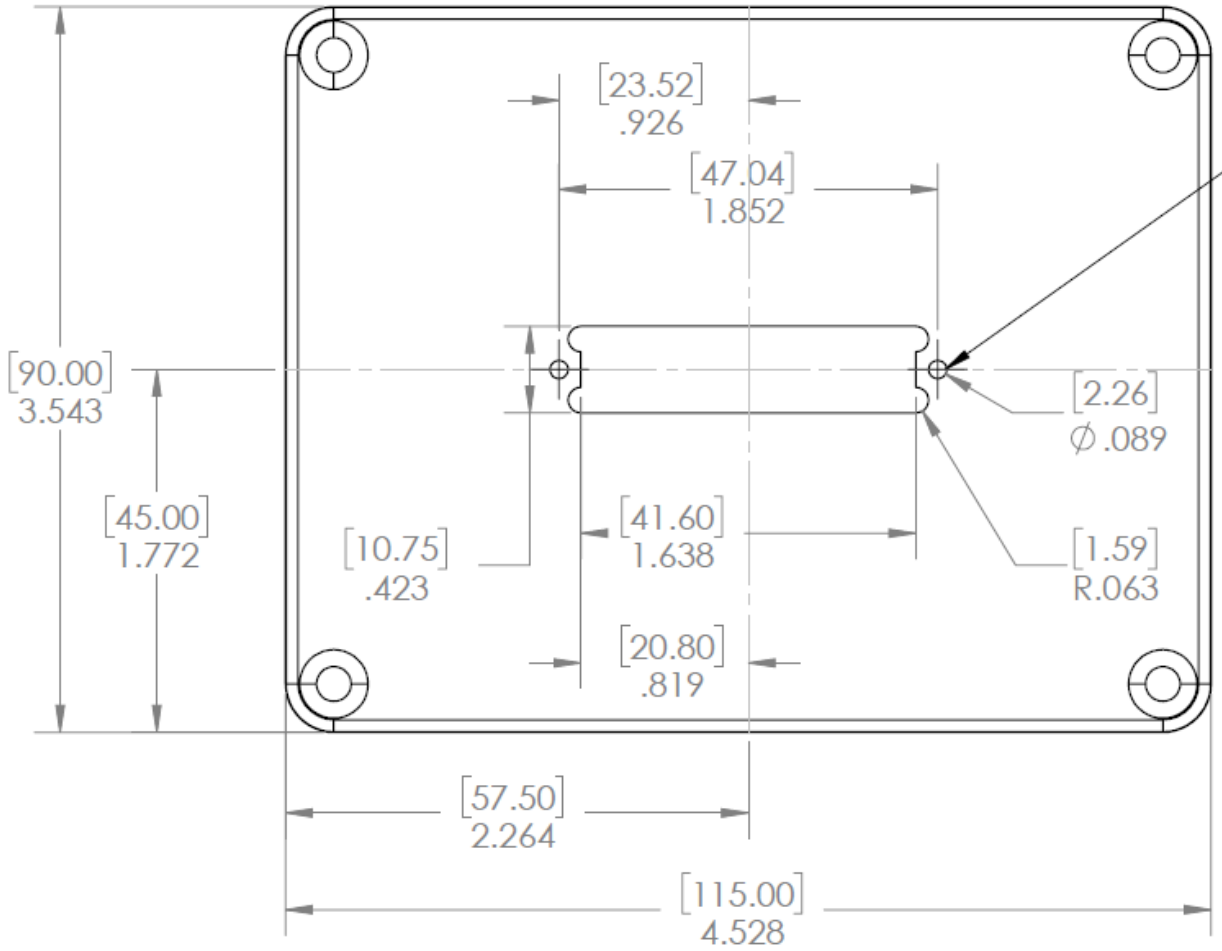
Modify or buy already-modified AN-1304-A lid as follows:



1/8 inch mill coordinates

½(0.423 – 0.125) = 0.149”

½(1.638 – 0.125) = 0.757”

3/8 inch mill coordinates

½(0.423 – 0.375) = 0.240”

½(1.638 – 0.375) = 0.6315”

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Screw DB25 Connector to lid using 7/32” 4-40 standoffs:

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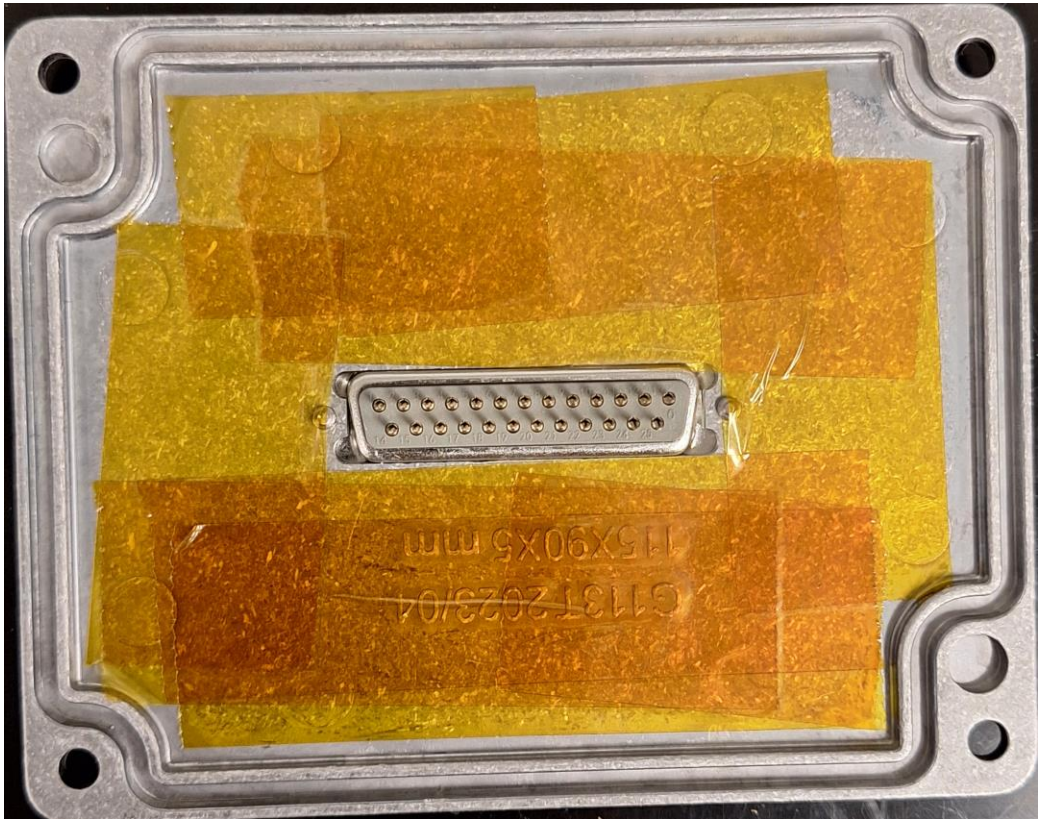
Add polyimide tape to lid to prevent possible shorts



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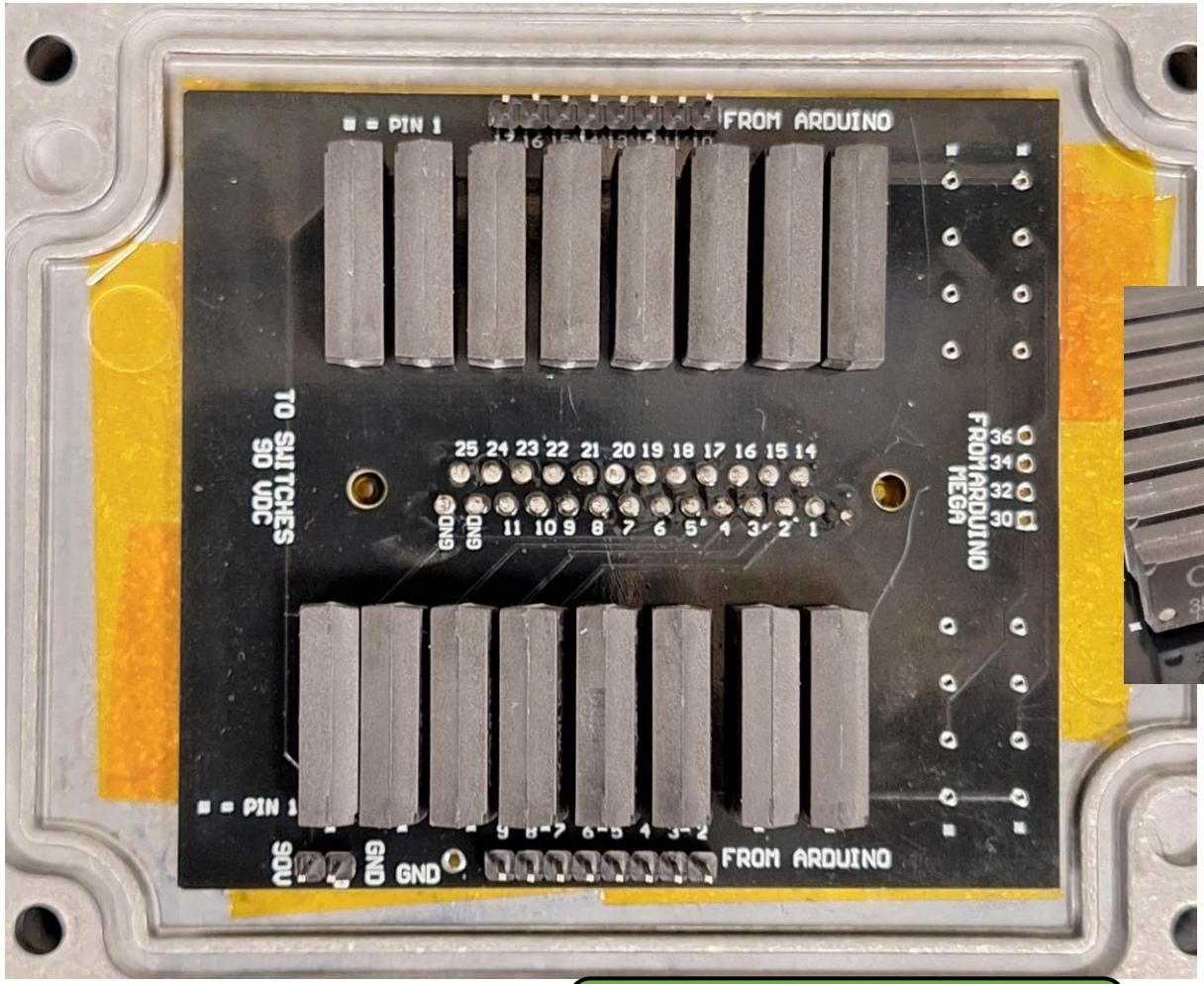
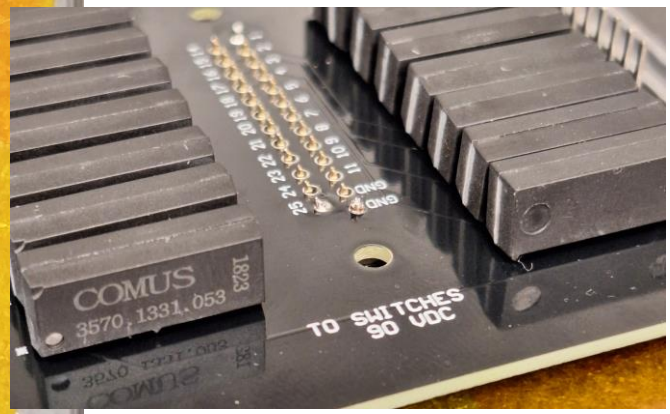
Solder already-assembled DB25 relay circuit board to DB25 connector, adding some space deliberately along the pins





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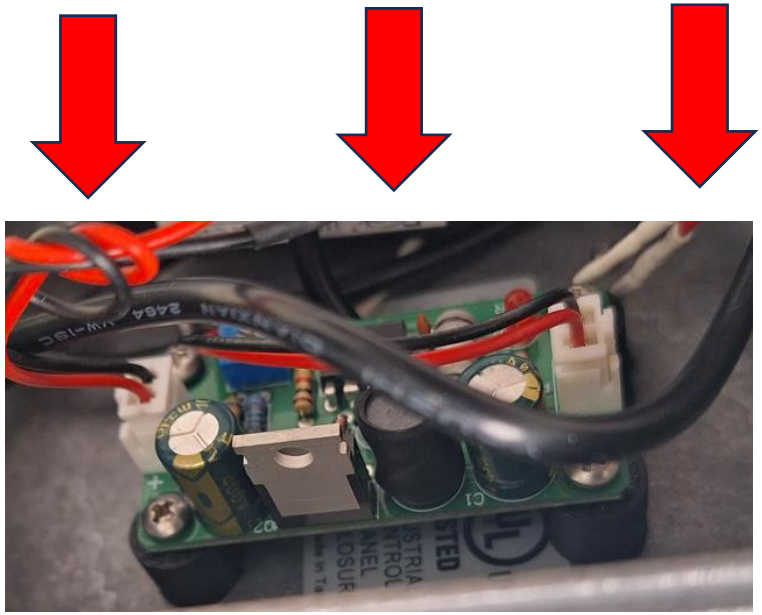
Use 4-40 screws to assemble the DCDC HV mounting bracket to the box, and the high voltage boost board to the bracket

X6



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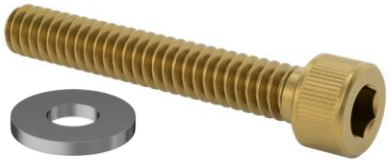
Use ¾” 4-40 screws to attach the main box to the wood board, with washers for each screw:



X4

Be sure to orient box so that hole for cables points towards Arduino.

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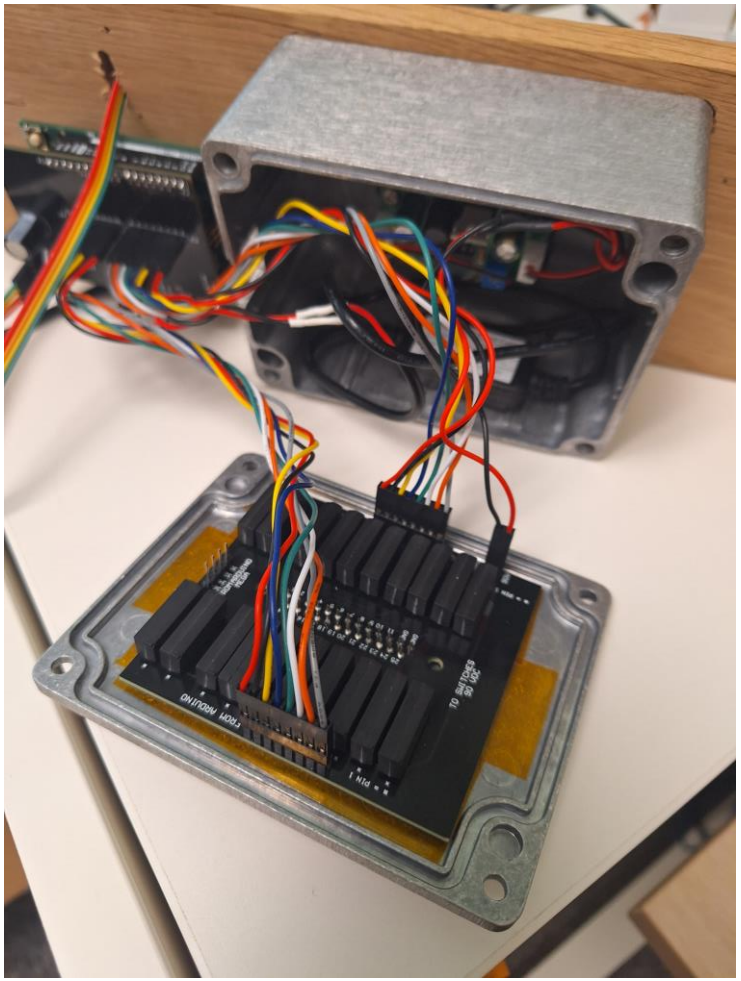
Assemble cables, matching red wire to lowest pin number on both ends, being careful to keep track of which 8 pin cable is which.



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Conclusions:

The captive circuit board is not ideal, and a better design might make this slightly mor modular. It would also be useful if someone were to get these made in some volume and sold fully machined.

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