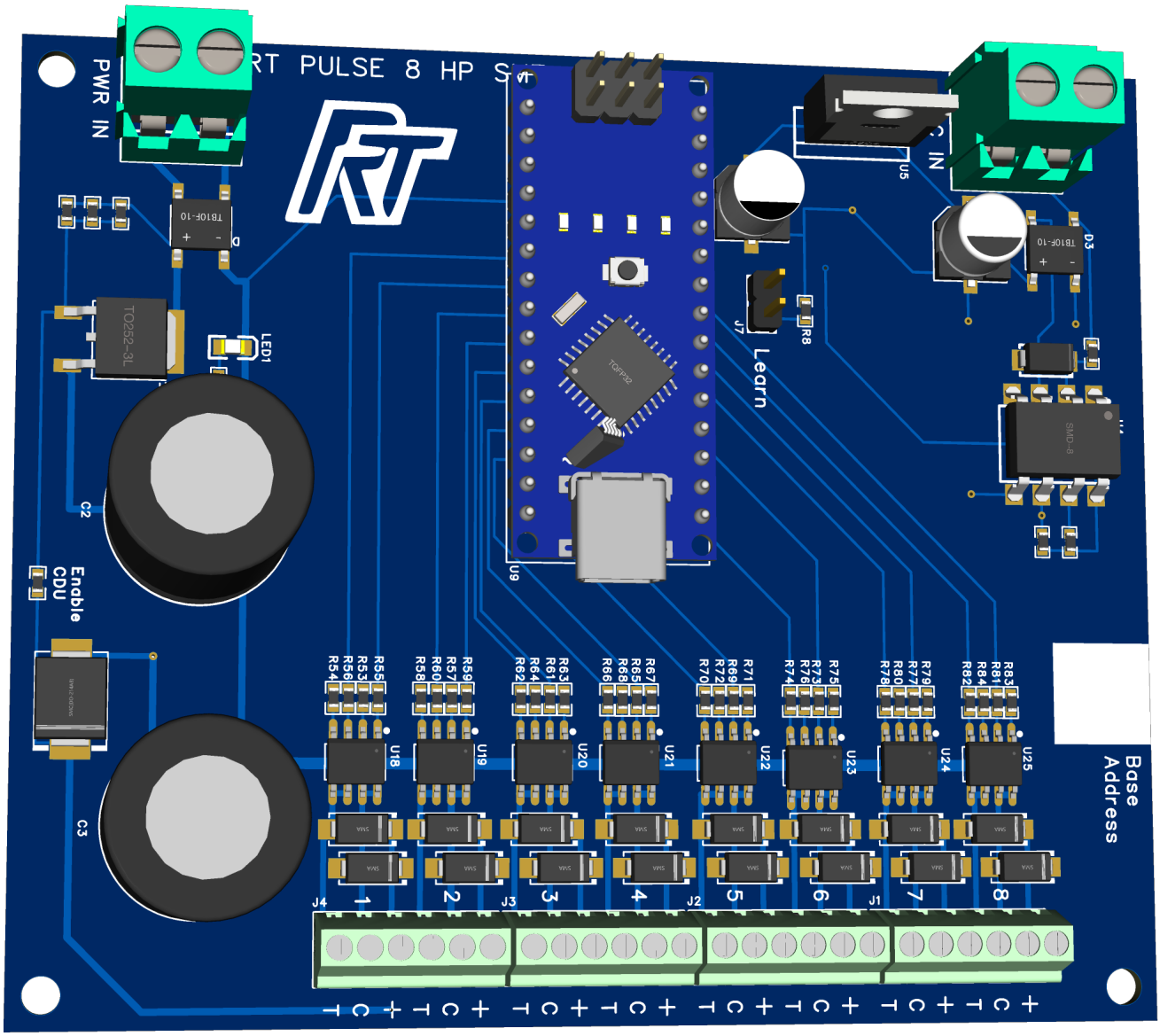
CONSTRUCTION MANUAL

Model Railroad DCC accessory decoder high power.



CONSTRUCTION MANUAL

This board is a DCC accessory decoder. What can be controlled with it is dependent on the firmware used.

This document describes the construction of the board.

The board can control dual solenoid turnouts such as the Marklin M track 5117, 5202, 5120, 5214, 5207 or 5128 with the firmware available here:

https://github.com/Rosscoetrain/DCC-Turnout-Decoder-Direct

The maximum current for any one solenoid is 5A, this is limited by the output mosfets.

Please read all this document before construction of the PCB.

Bill of Materials

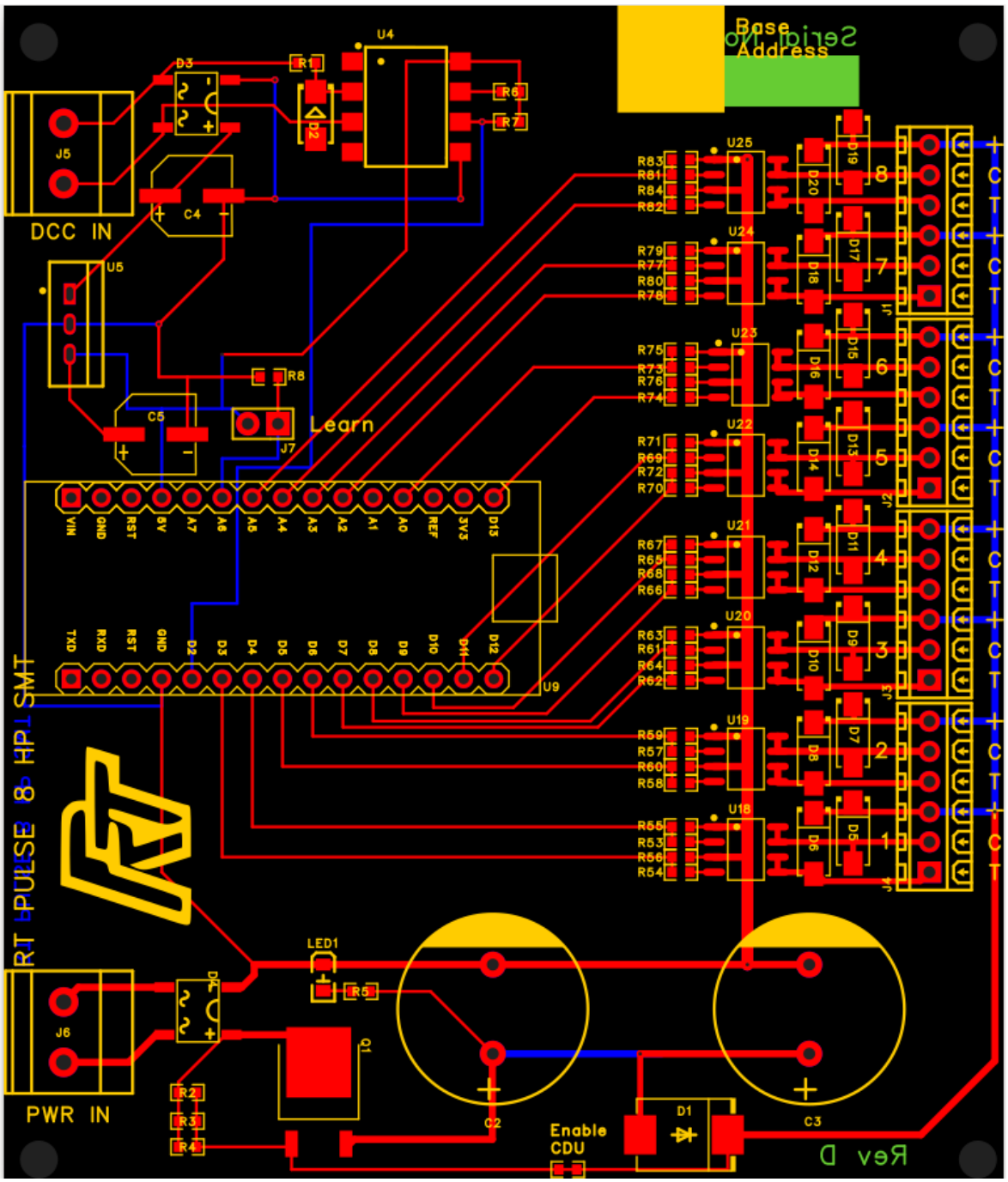
PCB	RT PULSE 8 HP SMT
C2,C3	3000uF electrolytic capacitor*
J1,J2,J3,J4	6 way 2.54mm screw terminal
J5,J6	2 way 5.08mm screw terminal
J7	2 way 2.54mm male header
U5	7805 *
U9	Arduino Nano
	15 pin female headers x 2 for Arduino Nano *

* see Other Information section

Construction of the board.

As with most PCB construction start with soldering in the lowest profile items first.

I suggest marking them of the list on the next page as you go.



Recommended soldering order:

		Done
J1	6 way 2.54mm screw terminal	
J2	6 way 2.54mm screw terminal	
J3	6 way 2.54mm screw terminal	
J4	6 way 2.54mm screw terminal	
J7	2 way 2.54mm male header	
U9	2 x 15 pin female headers for Arduino Nano	
PWR IN	2 way 5.08mm (0.2”) screw terminal or pluggable terminal	
DCC IN	2 way 5.08mm (0.2”) screw terminal or pluggable terminal	
U5	7805. NOTE orientation. (see Other Information section).	
C2	3000uF 35V electrolytic capacitor (see Other Information section).	
C3	3000uF 35V electrolytic capacitor (see Other Information section).	

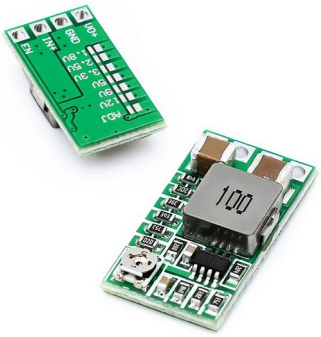
Other information.

The Arduino Nano should be mounted into 15 pin female headers. If your Nano does not have male headers already installed then you will need to solder them on the underside of that as well.

Optional components.

C2 and C3 can be replaced with any electrolytic capacitor that will fit. There are holes for 7.5mm pitch on the PCB. eg a 10000uF 25V electrolytic capacitor will fit the 7.5mm pitch holes. It's up to you to determine if the electrolytic capacitor will fit. The capacitor supplied in the kit will fit and is a 10000uF 25V if a single capacitor or 2 x 3300uF 25V.

U5 the 7805 regulator can be replace with a buck converter board like this and I recommend them as there is virtually no heat generated. If you purchased the kit from us then you will be provided with one of these and a three pin header to solder it in place.



They are available on ebay and aliexpress just search for:

Power Supply DC Buck Step Down Voltage Converter Regulator Mini Module 3A 5V

Note that they are the version that has the holes at the end so that they can be simply soldered in place instead of a 7805 (TO220) voltage regulator.

Addendum

References.

PCB at Rosscoe Train store:

https://rosscoe.com/shop/index.php?main_page=product_info&cPath=1&products_id=7

5V 3A buck converter on ebay:

https://www.ebay.com.au/itm/325224780087

Dual solenoid accessory decoder firmware:

https://github.com/Rosscoetrain/DCC-Turnout-Decoder-Direct