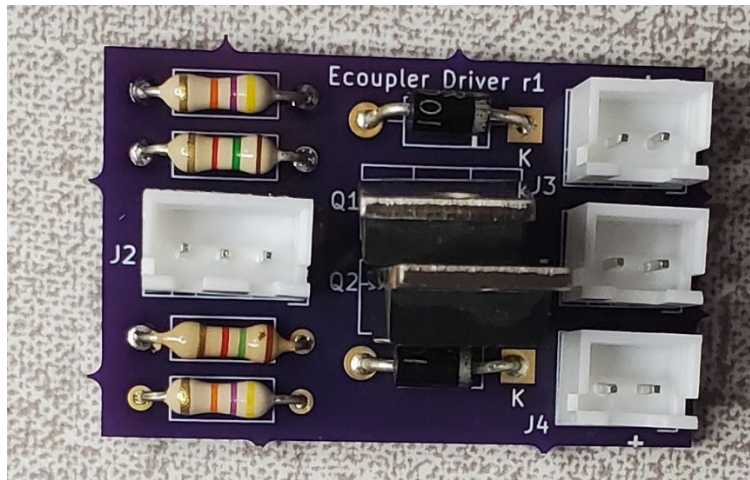


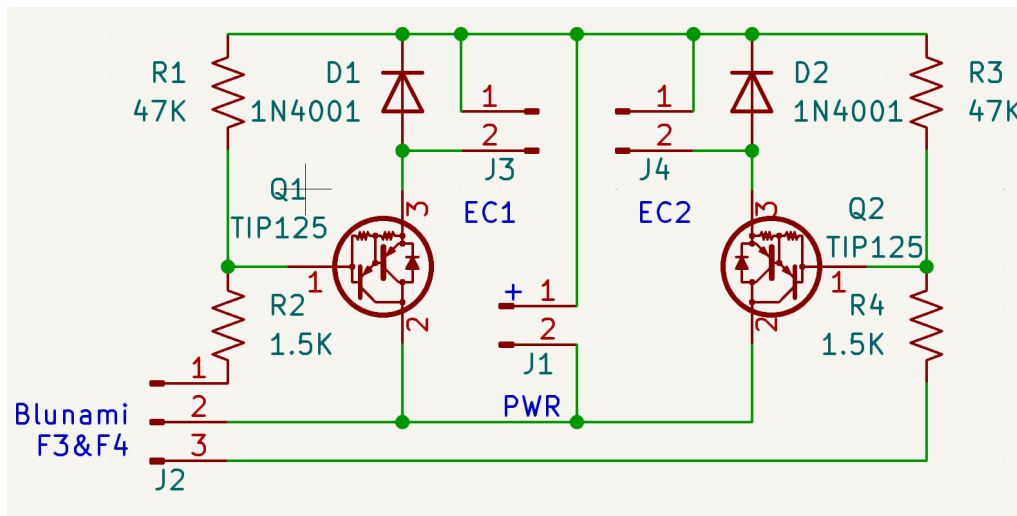
Interfacing Electrocouplers to the Blunami DCC Controller

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The Blunami¹ DCS controller card by Soundtraxx is a viable, lower cost and more flexible alternative to Lionel TMCC™ or MTH DCS™ for command control of S-gauge and many 3-rail O model railroad locomotives. It is particularly well suited for converting pre-TMCC, pre-DCS diesel models to command control. However, its “function” outputs cannot handle the current drawn by electrocouplers when they are energized. A simple current driver circuit is needed to handle the electrocoupler current while minimally loading the Blunami function outputs.



The circuit is quite simple: a PNP Darlington transistor current amplifier, powered from the DC supply full-wave bridge (FWB) rectifier and filter capacitor that powers the Blunami controller, often via a converter/regulator. Current capacity should be sufficient for any electrocoupler.



¹ Blunami and Soundtraxx are trademarks of ThrottleUp! Corp.

TIP125 power transistors were used simply because I had dozens of them in my electronic parts inventory. Other (and newer) PNP transistors are certainly usable, provided that their continuous collector current rating is at least 3A and their rated collector-emitter voltage exceeds 35V. A DC gain (h_{FE}) of 100 should be adequate. If a non-Darlington transistor is used, resistors R2 and R4 will need to be reduced by a factor of 10 or so, to minimize emitter-collector voltage when the electrocoupler is pulsed. Resistors are ¼W. The JST XH series connectors pictured are optional.

DC power, from the locomotive's FWB and filter capacitor, is attached at J1, with the outside pin positive. The Blunami controller's FX3&4 outputs are connected to pins 1 and 3 of J2, with pin 2 connected to its common terminal. The electrocouplers connect to J3 and J4 – and are not polarized.

The Blunami function outputs sink current to the common bus of that controller when pulsed or latched. This will cause current to flow from the emitter through the base of the transistor, turning it on and allowing full electrocoupler current to flow from emitter to collector.

@gunrunnerjohn has prepared a smaller, SMT component version of this driver circuit.

BluRail App Configuration

The FX3 and FX4 outputs can be readily renamed to “F Coupler” and “R Coupler” within the BluRail app. The green toggle next to the function's name configures it for pulsed or latching operation. It must be set to pulse (white) to avoid overheating the electrocoupler.

