



North Raleigh Model Railroad Club

Application Note

Electronics for Accessories Powered by the 15VAC Accessory Bus

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Questions, comments, corrections and suggestions should be addressed to the NRMRC Standards Committee at wallisjm@att.net

The NTRAK and T-TRAK Standards and Recommended Practices define an Accessory Bus that is used to provide power for module mounted lights and electrical devices. The power supply is 15VAC from a power supply such as the Digitrax PS515, NCE P515 or equivalent. Specifications for the Accessory Bus are provided in the relevant sections defining wiring for NTRAK and T-TRAK modules.

Some of the accessories mounted on modules will probably not accept 15VAC as their input power. An accessory may require DC power or AC or DC power at a lower voltage than 15V. Some possible solutions are:

- If the device requires DC but can accept a voltage as high as 15V then a simple diode bridge rectifier will convert the AC to DC. Choose based on the amperage requirement, e.g. 0.5A, 1.0A, 1.5A, etc. Available from Digi-Key, Mouser, etc.
- If the device requires DC at a lower voltage then use a voltage regulator. Voltage regulators are available with outputs ranging from 1.5VDC to 12VDC. Note that incandescent light bulbs will operate on either AC or DC, as long as the correct voltage is supplied.

Be sure to put an appropriately sized fuse in series with the Accessory Bus Feeder to protect the device electronics and bus in the event of a short circuit.

Two good sources of voltage regulators and DC control devices are Bakatronics LLC in Wallingford CT at <http://www.bakatronics.com>, and Quality Kits in Kingston ON Canada at <http://store.qkits.com>. Most circuits are available as either a kit or built-up, and prices are reasonable. Useful devices are the following:

- Model AAR3 Automatic Reversing Circuit for DC Locomotives, trolleys, etc. Circuit board requires 10–16V AC or DC fixed input, plus 0–12VDC for speed control (supplied assembled) and Model BKD-2000 Current Detector, used for intermediate stops.
- Model FK804 DC Motor Speed Control: Input: 12VDC. Output: 0–12VDC, 1.5A (Pulse Width Modulation). The assembled version is model FA804.
- FK807 DC Voltage Regulator. Input: 12VDC. Output: 0–12VDC, 500 mA. This is pure DC. The assembled version is model FA807.
- FK808 DC Voltage Regulator. Input 0–30V AC or DC, 1A. Output: 0–30V DC, 1A. With 15VAC accessory bus power the output is 0–15VDC. The assembled version is Model FA808.
- Model FK815 Adjustable Voltage Regulator Kit. Input 15VAC, 1A. Output: 1.5, 3, 5, 6, 9, 12VDC, 1A. The assembled version is model FA815. This device can be considered a universal voltage regulator since it can be set to several output voltages.
- Tam Valley Depot (<http://www.tamvalleydepot.com>) offers a Train Shuttle Controller which is a self-contained 2-digit DCC system powered by an included 12VDC supply, but operates in the 8 – 15 VDC range. It includes the ability to automatically reverse a decoder-equipped locomotive/trolley and provide a mid-stop option. Speed, and delay times at the end and mid-point are individually adjustable. Momentum using the decoder CVs is available.

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