NTRAK Alternate Wiring Recommended Practice, 2005

Purpose of the Recommended Practice

The original NTRAK standard specifying 18 gauge stranded "zip wire" for main track busses, 16 gauge for the "White" coded DC power bus and Cinch-Jones 302 Series two pin connectors remains the "standard wiring" for NTRAK modules. For individuals or clubs looking for wiring with less voltage loss, the following are "Recommended Practices" (RPs) which should be considered for new construction, refurbishing of existing modules and for modules used primarily with Digital Command Control (DCC). The goal of this RP is to provide a common approach to reducing wire and connector losses and to increase the number of power feeds to the tracks.

RP— Track Bus

Each NTRAK track (red, yellow, blue, green, etc.) shall have a continuous (unbroken) electrical bus running the length of the module. The bus shall be 12-gauge stranded copper zip wire (red/black zip wire, outdoor low-voltage lighting wire or speaker wire), or equivalent. This wire has a thin section between the two wires and can be "zipped" apart. One side of the covering has a rib molded along its length; connect the ribbed wire (or red wire in the case of red/black zip wire) to the front rail of the associated track and to the red or colored connector at the end of each bus.

The length of the bus wire is the length of the module plus 12" at each end.

RP- Connectors

Each bus will be connected to other modules using Anderson PP30 30 Amp Powerpole connectors at each end of the module, as follows:

Module End	Stacking	Configuration
Right	Vertical	Red over Black
Left	Vertical	Black over Red

Left end

Right end

Track Designation	NTRAK Colors Tape or Paint	Powerpole Shell Colors Front Rail/Rear Rail
DC Supply	White	White/Black
Front Main	Red	Red/Black
Rear Main	Yellow	Yellow/Black
Branch Line	Blue	Blue/Black
Branch Line 2	Blue/Yellow	Blue/Yellow
Mountain Div.	Green	Green/Black
Set-up Track	Green/Yellow	Greem/Yellow
Ft Passing Track	Orange	Orange/Black
Nn3 Front Trk	Red/Green	Red/Green
Nn3 Center Trk	Yellow/Green	Yellow/Green
Nn3 Rear Trk	Blue/Green	Blue/Green

RP— Color Coding

If red/black pairs of Powerpole connectors are used , they shall be color coded with tape or paint in accordance with NTRAK color standards, as shown in the 2nd column of the color chart above. Alternately, appropriate colored Powerpole housings may be used as shown in the 3rd column above.

RP — Track Feeders

Each track shall be connected to its corresponding electrical bus by pairs of feeder wires located every two feet beginning one foot from the module end. One or two foot long modules require only one feeder per track located at the center of the module. Solid core 18–22 gauge insulated wire shall be soldered to the outside or bottom of the rails and to the electrical bus. Feeder wires should be kept as short as possible.

Alternatively, the track feeder may be soldered to the rails as described in the paragraph above and connected to a terminal strip. The unbroken track bus shall connect to the terminal strip by wrapping the electrical bus around one screw or by a drop wire soldered to the bus which is then terminated on the terminal strip for distribution. This will permit correcting any wiring errors easily. Screw terminals shall be securely tightened and checked for tightness before each train show.

Note 1: Turnouts shall have feeders installed at both ends for all mainline tracks, with appropriate insulated joiners/gaps at the frog end.

Note 2: If unsoldered rail joints are used at any location on the mainline tracks, a feeder shall be present on both sides of the unsoldered joints.

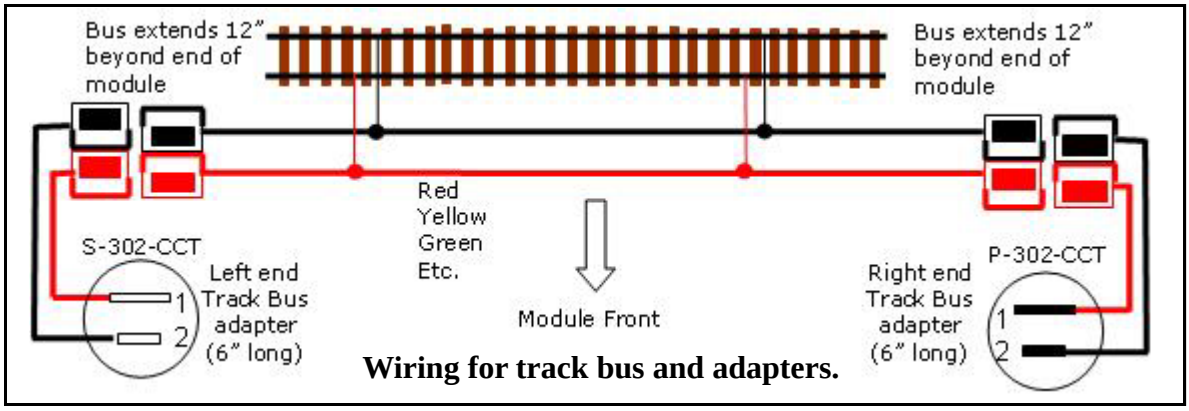
RP— Private Tracks

If the track(s) will only be powered from the connecting NTRAK track, then simply connect a pair of feeders from the connecting track bus to the private track. (If the turnouts are Electrofrog be sure to gap both (2) frog rails at the frog end of the turnout.)

If it is desired to provide alternate local power for private tracks (DCpower pack or separate DCC booster), use a DPDT switch. This is, in effect, two cab wiring with the connecting NTRAK track as the primary cab and the local DC power pack or DCC booster as the “local” cab.

RP— White Wire

The White Wire is NOT required for DCC operation; however, for compatibility with existing NTRAK modules the white wire must be included in the module wiring. While the NTRAK Electrical Standard



Wiring for track bus and adapters.

specifies 16-gauge stranded "zip cord" with Cinch-Jones connectors on each end this Recommended Practice recommends the same 12-gauge wire used for the Electrical Bus. For the White Wire, Powerpole connectors at both module ends shall be arranged horizontally, red on the left and black on the right, as shown below.

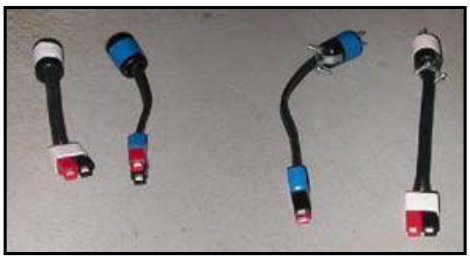
Use of the White Wire for private track powering or accessories is prohibited.

The use of the White Wire for 16VAC supply to DCC Boosters is not permitted, for safety reasons. Boosters shall be powered with a dedicated 120V to 16VAC power supply for each Booster.

RP - Adapter Cables

Since the use of Anderson Powerpole connectors is a Recommended Practice rather than the NTRAK Electrical Standard, adapters from Powerpole connectors to Cinch-Jones connectors shall be provided for modules (or module sets) wired with Powerpole connectors. See photo in next column.

16-gauge stranded wire should be used for the adapters with a maximum length of six (6) inches. At least one of the connections to the Cinch-Jones wire terminals should be insulated using either electrical tape or heat-shrink tubing to ensure no stray wires inside the shell can touch and cause a short.



Color-coding should be applied to the adapter cables — white tape, paint or use of a white Powerpole housing in place of the red housing.

Standard — 120VAC Wiring

This represents no change from the current standard. A UL/CSA approved heavy duty, multi-outlet, extension unit with a grounded (three wire) power cord, 14-gauge wire, 15-Amp capacity is required for each module. The outlets should be at the left end of the module and the plug at the right end. Use Stanley 1-1/4" Safety Cup Hooks #752976 or equivalent to retain and anchor the cord to the underside of the module. This unit shall be removable to meet safety codes.

120VAC wiring is subject to inspection by safety officials at public gatherings.

Where to get Powerpole Connectors

Powerpole connector pairs are available through the NTRAK Model Railroading Society's business office. An online Order Form and pricing is available at www.ntrak.org/order_form.htm. All sets include an instruction sheet.

Set "Red/Black:" has 10 Red/Black housing pairs and two extra contacts.

Set "NTRAK Colors" has housings with molded in colors for Red, Yellow, Blue and White. Black is used as the other pair color. Two extra contacts are included in the set.

Two pair sets are available for the Mountain Div track (Green/Black); Front passing track (Orange/Black); Alternate Branchline (Blue/Yellow). These sets include an extra contact.

Other custom color sets will be made up on request at the two pair price.

Note: NTRAK pricing includes shipping cost and there is no minimum order amount. Other sources often have extra shipping costs or an order minimum.

Some other sources are the following "on line" electronic supply firms:

Cablexperts at www.cablexperts.com
Connex Electronics at www.connex-electronics.com
Hometek at www.cheapham.com
Powerwerx at www.powerwerx.com
Quicksilver Radio Products at;
www.qsradio.com

Powerpoles are also carried by major industrial electronics distributors, including Newark InOne (www.newark.com) and Allied Electronics (www.alliedelec.com).

Since the 30A Powerpoles are also used in the R/C model aircraft hobby they may be available at R/C oriented hobby shops. They may be known as SB connectors or Sermos connectors in these shops.

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