PB5

5 Amp Booster

Reference Manual

NCE Corporation

82 East Main Street

Webster, NY 14580

PRODUCT MANUAL FOR PB5
5 AMP BOOSTER

PREFACE

This manual provides information pertaining to the installation and operation of the PB5 BOOSTER only.

COMPONENTS

The PB5 comes supplied as follows:

1 - Black box labeled Five Amp Power Booster in the upper center and PB5 in the lower, right corner.
1 - 1 foot cable with modular telephone plugs on both ends. Each plug has four gold-plated contacts. This is the control bus cable. For the technically inclined, this is a 4-wire cable with RJ-H connectors.
1 - Track Connector Plug
1 - DC Power Supply with additional 25%, 30 sec. Surge capability.
1 - PB5 Manual.

NCE Warranty Center
82 East Main Street
Webster, New York 14580
Phone: 585-265-0230 Fax: 585-265-0234

FCC Statement

This NCE product complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Keep in mind that by FCC rules, **all** electronic equipment must accept any interference, including interference that may cause undesired operation. If this equipment does cause harmful interference to radio, or television reception, which is found by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

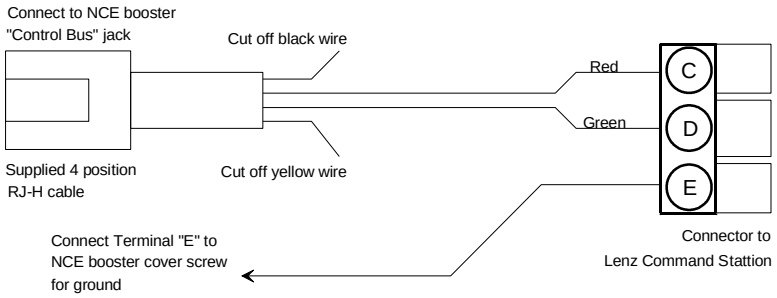
- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the device
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

About NCE

NCE has been manufacturing DCC Products on an OEM basis since 1993. Originally we offered only "chip sets" that contained software enabling other DCC manufacturers to build DCC systems. As time went on some of those manufacturers asked us to first supply partial assemblies then complete assemblies in addition to the chip sets. This has helped NCE to grow into a full time electronic design and manufacturing firm devoted entirely to the development and sale of products for the control of model railroads. We build an amazing array of products for both our own customers and other DCC manufacturers. We keep labor costs low by utilizing modern automated robotic assembly for most products.
Our product designer is Jim Scorse. Jim models the Erie Railroad in O-Scale and has a long history in model railroading. He has numerous patents in the area of digital imaging, video and computer network data communications over noisy channels. Jim is active in the Layout Design SIG as well as 30 years with the "Tuesday Night Gang", (round robin model railroad club) and is probably one of the only active model railroaders among all the DCC manufacturers.

WIRING TO A DIGITRAX SYSTEM

This wiring diagram is provided for the operators that wish to add an NCE power booster to their existing DIGITRAX system. This cable splicing is required to the first DB100/DB150 only. Always leave the “Ground to Sync”



Connection from Lenz command station to NCE booster

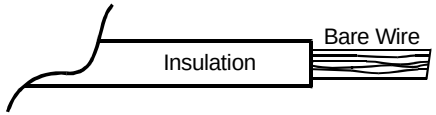
Jumper installed.

CONNECTIONS, CONTROLS and INDICATORS

Starting at the left side of the front panel, each terminal, socket, switch and indicator is explained below:

TRACK TERMINALS:

The screw terminals of the black connector are designed to accept wires up to #14 AWG (2mm). Insulation should be stripped back 1/4 inch (6mm). Only stranded wire should be used. Do *not* tin the wires to prevent fraying. If solid wire is



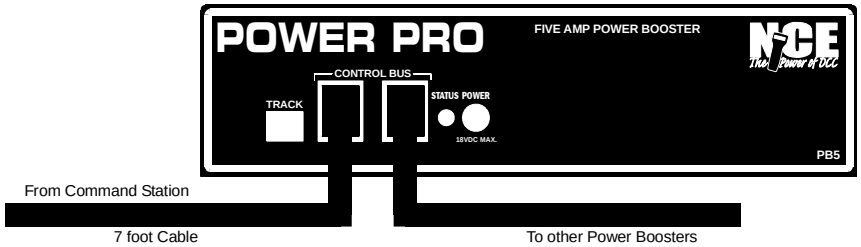
used for track power, make a splice joint to stranded wire at some convenient place. Only stranded wire should enter the terminal for reliable contact.
Wires from these terminals go to the track. If more than one booster is connected to the layout, be sure the left track terminal on all boosters is consistently wired to the same rail. This will ensure you have the same “phase” as you cross power district boundaries. Always use wire of sufficient gauge (#18 minimum) to connect to the layout. Power “drops” of #24 or #22 wire to a larger wire bus under the track are fine as long as the length of each drop to the main

bus is less than 2 feet. Use of a smaller bus will prevent the booster from detecting a short circuit and may be a fire hazard.

The voltage to the track is dependent on the power source input voltage as discussed below. The DCC track voltage can be changed from 13.8 to 12 Volts by setting the switch on the power supply for N, HO and some S Scales. We offer a 9 Volt power source for Z Scale. Please call us at 585-265-0230 for a replacement. We do not recommend using a 5 Amp booster with O-Scale as most O-Scale locomotives have stall currents in the area of 8 Amps (Weaver, Red Caboose, P&D). For O-Scale usage we recommend our PB110 ten Amp power booster.

CONTROL BUS SOCKETS

The control bus sockets on the front of the PB5 are paired to allow wiring the control signal coming from the command



station to “daisy chain” through the booster.

Use the supplied 1 foot RJ-H cable to connect the PB5 to your command station’s CONTROL BUS socket. The remaining (unused) socket on the PB5 can be used to connect to other Boosters in daisy chain fashion. Use only the 4-wire RJ-H cable for this purpose. Longer cables may be used if more distance is needed between power stations. The last power station at the end of the daisy chain will have one empty socket. The PB5 will place a nominal 6mA load on the command station control bus.

STATUS LIGHT

This light will illuminate light steadily under normal operations. Flashing indicates an abnormal or fault condition. Here is a description of the various conditions indicated by the status light.

Steady on - Track power is on and operations are normal.

Rapid flash - No DCC signal from command station (control bus cable is unplugged, programming track in use, etc.)

Slow flash - Short circuit in the layout wiring, the layout track or in a locomotive.

POWER SOCKET:

Input power from the outside power supply goes into the PB5 via the round socket. Use ONLY the NCE supplied P514 power supply.

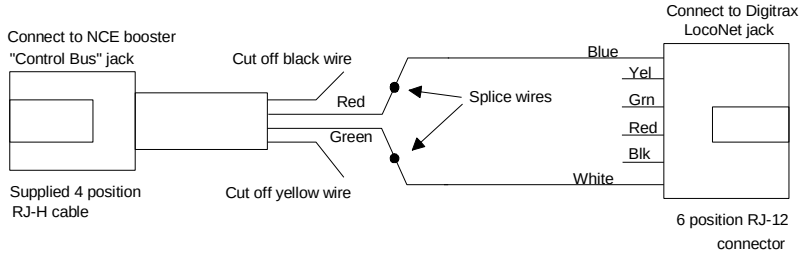
TRACK VOLTAGE ADJUSTMENT

The track voltage can be changed between 12 Volts and 13.8 Volts by setting the switch on the P514 power supply.

CONNECTING THE PB5 TO OTHER SYSTEMS

WIRING TO A LENZ COMMAND STATION

This wiring diagram is provided for the operators that wish to add an NCE power booster to their existing LENZ system. Lenz does not provide a ground point.



NOTE: Connect one of the NCE booster cover screws to the ground connection of other boosters in the system

Connection from Digitrax command station to NCE boosters