



LNRP3

For Digitrax LocoNet systems

LocoNet Repeater Module

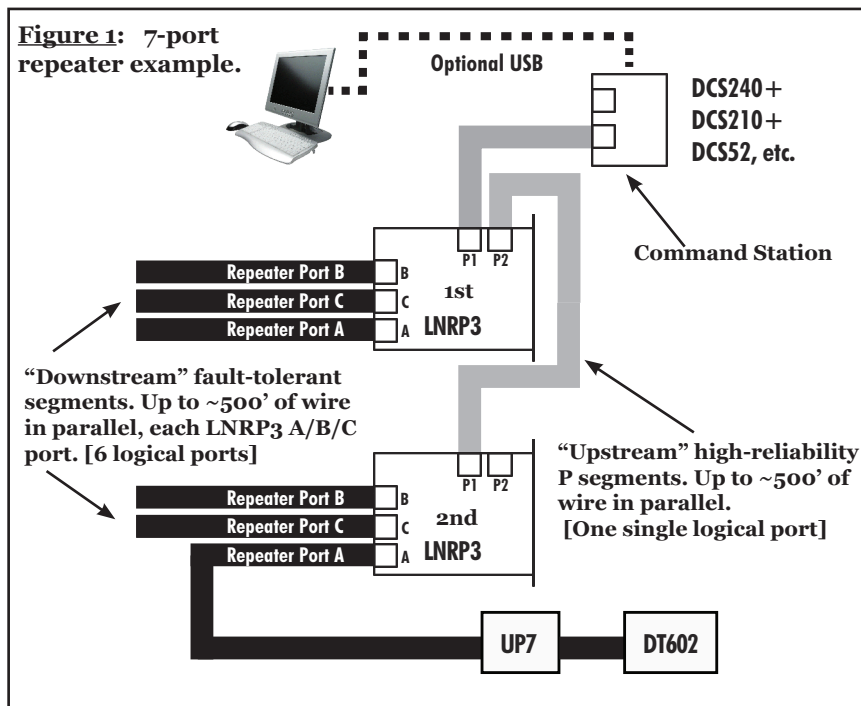
Isolates and Protects LocoNet Segments

Includes PS14 Power Supply

Features:

- Primary P-port bi-directional LocoNet repeater to A/B/C expansion ports.
- Electrically isolates ports A/B/C/P from common faults from other ports.
- Fault-tolerant A/B/C ports automatically disconnect and reconnect faulted port segments, so all unfaulted ports still see LocoNet messages.
- Expands LocoNet installations, for greater area and distance coverage.
- Increased Railsync current, automatic shutdown and overcurrent protection.
- Color LCD with soft key menus and selection knob.
- Fast Clock monitor display selectable by Option Switches (OPSW).
- Useful Diagnostic and status tool if LocoNet or system issues occur.
- Includes PS14 Power Supply.
- Digitrax DoC: Tested as CE, and FCC Part 15, Class B RFI conformant.

Figure 1: 7-port repeater example.



Parts List:

- 1 LNRP3 Repeater
- 1 Instruction Sheet
- 1 PS14 Power Supply

LNRP3 Installation:

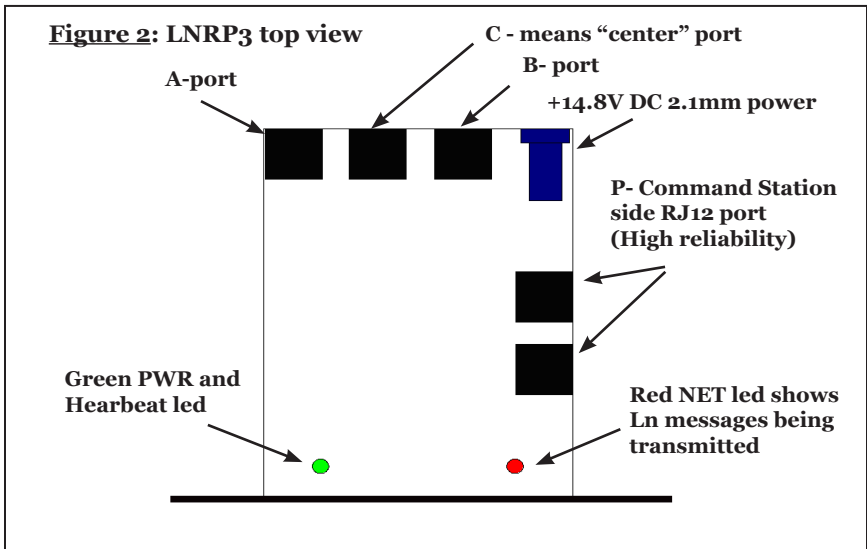
Figure 1 shows the general arrangement for connecting one or more LNRP3 units to configure a LocoNet (Ln) based system for operation. The LNRP3 units drive the Ln data and Railsync (RS) signals on the A/B/C-port LocoNet wire segments. Each LNRP3 *must* have a powered PS14 DC plug (~ +14.8V/300mA) plugged into the rear DC power port.

The ‘shaded’ wire segments on the P-port **side** RJ12 connectors are the higher-reliability LocoNet part of the System connected to and powered by the Command Station. Faults on any P-port segments can be detected, but the LNRP3 cannot isolate P-port segment problems.

The ‘dark’ wire segments shown are separate A/B/C-port LocoNets that the LNRP3(s) fault detects and can isolate. Port faults here automatically trip a fault disconnect, and reconnect on fault clearance. This isolates faulted ports from interfering with operations on other unfaulted ports.

The LNRP3 LCD display provides continuous status of A/B/C and P-port segments with 4 high-visibility square black symbol glyphs on the lower line of the display. Figure 3 shows the status symbols and combinations that report Ln voltage problems and Railsync overload issues, etc. Four black glyphs with white port names A/C/B/P in order means ports OK.

Each A/B/C-ports are electrically *identical* and can drive a typical total UTP wire length of about 500’ (about 150m), so a much larger area of a layout can be wired into separate segments that can logically work together. Side P1 and P2 ports are identical and paralled as one electrical P-port.



Notes:

- (1) Figure1 shows a 1-level “flat” system example, with one parallel P-port and six A/B/C repeated ports. Each segment can typically support about 500’ of total wire length combinations. Depending on the layout and wire, you may be able cascade up to 2 levels of LNR3’s by expanding extra “downstream” LNR3 P-ports out of other “upstream” A/B/C ports. None of the P-port segments are fault tolerant, but all A/B/C port segments with *no direct P connections* are fault tolerant.
- (2) To update/IPL new firmware, best practice is to connect the IPL source device downloading the new .dmf file, and target, to the upstream P-port. If the LNR3 powers up and detects a firmware problem (alternate PWR/NET leds blinking) it will wait for a new IPL *only on the P port*.
- (3) Port Electrical display of Ln risetime is an approximate measure of how far that port wiring can transmit Ln messages. This risetime to a pre-determined voltage, *with NO other devices on the segment* is converted to a typical UTP wire equivalent. This is *relative* and only an estimate due to e.g. different cable types.
- (4) The LNR3 employs active short protection at ~100mA on the 6 separate A/B/C port +/- (or P/N) Railsync lines, as well as backup self-resetting thermal-fuse overload protection. Use safe wiring practices to minimize possible heat generation when shorts occur on these railsync lines.
- (5) If the LCD screen manufacturing protection film is still in place, there will be a small green plastic tab poking out of the LCD window. Pull on this tab gently towards the front to remove this protective film, so you can uncover a clean display front surface.
- (6) A fraction of a microsecond after a new Ln message start, the LNR3 locks that port as the *source* port and the other 3 ports become repeater *destination* ports for that message duration. With 3 destination ports, the LNR3 does not do collision detection, and all other LocoNet devices must perform normal collision detection and recovery.
- (7) The PortA/B/C Ln data and Railsync voltages are set by the power supply input port voltage; maximum +18 volts DC input/+10 volts minimum.

Warranty & Repair

Digitrax gives a one year *Warranty* against manufacturing defects for this product. Visit www.digitrax.com for instructions for; tech support, current product information and returning items for repair.

Please return warranty items directly to Digitrax - Do NOT return items to place of purchase.



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