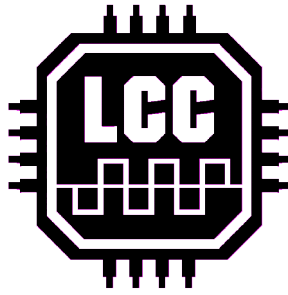


# NMRA LCC

## January 2018



# Layout Command Control

## What is LCC?

LCC stands for “Layout Command Control”. LCC is the NMRA branded version of OpenLCB. (Open Layout Control Bus ) It is a system for controlling all the functions on your layout – things like detection, signals, building and room lighting, or layout sounds, as well as the traditional control functions.

## Why is LCC so special?

Like people, each LCC product is unique. No more need for the user to assign and keep track of device addresses in order to prevent conflicts. Any new node may be added to any existing system with no collisions of data... ever! The protocol is also expandable for adding things that we have not thought of yet.

## Is LCC bi-directional?

Yes, unlike DCC, LCC decoders can both send and receive commands, and even reply to them. This allows detectors, turnout feedback, local fascia controls, etc., to all talk to one another. Additional features such as status reporting, and easy, intelligent configuration and upgrades of the products are now possible. The currently available LCC products operate a magnitude faster than DCC over the CAN bus so there is plenty of room for this extra traffic.

LCC can also operate over other networks, including Ethernet and WiFi.

DCC (Digital Command Control), the existing NMRA standard for train control, is essentially a one way bus that allows a single master command station to control save mobile and stationary decoders, but not to receive data back from them, nor to allow them to communicate with other devices.

## Do I need a new LCC Master unit?

No! LCC is a peer-peer network. This means that any two (or more) LCC devices can communicate directly with one another without requiring any central command station, like DCC or other legacy control systems do. A computer can make things easier to configure, but it is not a requirement for operation.

## The NMRA and LCC?

Just like the NMRA set the standard for DCC over 20 years ago, they have now set the standard for LCC. A group of independent volunteers who are both model railroaders and experts in electronics have together developed the concepts, protocols, interfaces, and documents for LCC. The group calls itself OpenLCB. The OpenLCB group developed the standards and the NMRA has approved them as LCC.

The NMRA has no vested interest in any one manufacturer or products. They just set and approved the standards that the manufactures can use.

## Will LCC work on my DCC layout?

Yes, DCC and LCC compliment each other. LCC does not make DCC obsolete. LCC can take some of the burden off of the DCC bus by routing all of the non-locomotive commands through a different pair of wires. Only the locomotive control data needs to remain on the DCC bus.

## Will LCC work on my DC layout?

Yes, and also with any other train control method.

## Is LCC inter-operable?

Yes, that is why standards are important. Any manufacturer’s LCC products will inter operate with LCC products from any others.

## Is anyone making LCC products?

Several manufacturers are already providing LCC products, or will be shortly.

TCS (Train Control Systems) is introducing an LCC compatible command station and wireless throttle at this show.

### Better Living Center (Booth 45)

<http://www.tcsdcc.com/>

RR-CirKits already has a number of LCC compatible items available. (See reverse)

### Stroh (Booth 116 C-D)

<http://www.rr-cirkits.com>

# These products are available now from RR-CirKits, Inc.

More info and photos at: [www.rr-cirkits.com](http://www.rr-cirkits.com)

## LCC-Buffer-USB

**NMRA CAN bus LCC® to USB interface.** 2,500 Volt Digital isolation between CAN bus LCC® and USB port. Type B USB connector for PC connection. Compatible with JMRI.

## LCC-PowerPoint

**LCC Power-Point ties together 2 LCC jacks, a Traffic Monitor, and a power supply.** Create a powered LCC bus for simple wiring by powering your LCC Nodes over the cable.

## LCC-Terminator Pair

**NMRA CAN bus LCC® Termination Pair.** May be used to provide the required termination at each end of the CAN bus LCC®

## LCC Starter Kit

**LCC Starter Kit** Includes a LCC Buffer-USB, a Power-Point, and 2 Terminators

## LCC Repeater

**LCC Repeater.** Bit level repeater connects two LCC ® CAN bus segments.

## Tower-LCC

**16 Line Input/Output node for NMRA CAN bus LCC®.** Logic level interface compatible with other standard RR-CirKits I/O modules.

## Signal-LCC-S

**16 Led drivers plus 8 line Input/Output node for NMRA CAN bus LCC®.** Logic level I/O port compatible with other standard RR-CirKits I/O modules. Miniature Screw Terminals for LED connections.

## Signal-LCC-P

**16 Led drivers plus 8 line Input/Output node for NMRA CAN bus LCC®.** Dual 10 pin headers for LED connections.

**More RR-CirKits LCC products are under development.**