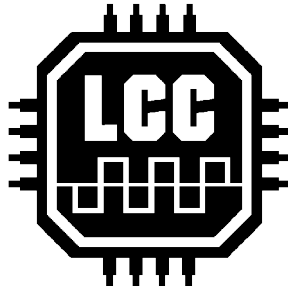


NMRA LCC

January 2020



Layout Command Control

What is LCC?

LCC stands for “Layout Command Control”. It is a protocol for controlling all the functions on your layout – things like detection, signals, building lighting, as well as the traditional layout control functions.

Will LCC work with my DCC layout?

Yes, DCC and **LCC** compliment one another. **LCC** does not make DCC obsolete. The **LCC** bus takes accessory traffic off of the DCC bus. Only locomotive control needs to remain on the rails.

Will LCC work on my DC layout?

Yes, and also with any other train control method.

Is LCC bi-directional?

Yes, **LCC**, unlike DCC decoders, can both send and receive data over the same **LCC** bus. This allows detectors, turnout feedback, local fascia controls, etc., to each talk to one another. Additional features such as status reporting, intelligent configuration, initialization, and upgrades of the products are now possible.

DCC (Digital Command Control), the existing NMRA standard for train control, is essentially a one way bus that allows only a single master command station to control mobile and stationary decoders over the rails.

Is the LCC High Speed?

The currently available **LCC** products operate an order of magnitude faster than DCC by using the automotive CAN bus. There is plenty of room for extra traffic. **LCC** may also be operated over other, even faster networks, such as Ethernet or WiFi.

Do I need a new LCC Master unit?

No! **LCC** is a peer-peer network. This means that any two (or more) **LCC** devices may communicate directly with one another without going through a central command station, such as DCC or many legacy control systems require. A computer does make things easier to configure, but it is not a requirement for operation.

The NMRA and LCC?

Just like the NMRA set the standards for DCC over 20 years ago, they have now set the standards for **LCC**. A group of independent volunteers, both modelers and experts in electronics, have together developed the concepts, protocols, interface standards, and documents, for **LCC**. This OpenLCB group established the standards which the NMRA has approved as **LCC**.

The NMRA has no vested interest in any particular manufacturer or products. They simply set the standards that all manufactures may use license free.

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 to prevent conflicts. New nodes may be added to any existing system with no data collisions... ever! The protocol is also expandable for adding functions that we have not even thought of yet.

Is LCC inter-operable?

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

Is anyone making LCC products?

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

TCS (Train Control Systems)

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

RR-CirKits (See reverse)

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

Deepwoods Software (MRS)

<https://www.deepsoft.com/home/products/modelrailroadssystem/>

These products are available today from RR-CirKits, Inc.

More info and photos at: 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 an 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.

New RR-CirKits LCC products are under development.