OpenLCB

Easy to use: Whether you want to do simple setup by just pushing buttons on boards, or use a full-featured configuration tool, OpenLCB makes setup easy.

Protects your investment: From your first two boards through huge modular layouts, OpenLCB equipment has lots of room to grow with your railroad.

Simple to expand: OpenLCB equipment can be added without worrying about ID conflicts, keeping track of complicated address assignments, or ever being forced to go back and reconfigure equipment – all while working with existing model-railroad controls.

The OpenLCB project is developing a new layout control bus for model railroad use.

Come and join us at:

www.openlcb.com

A new way of controlling model railroads
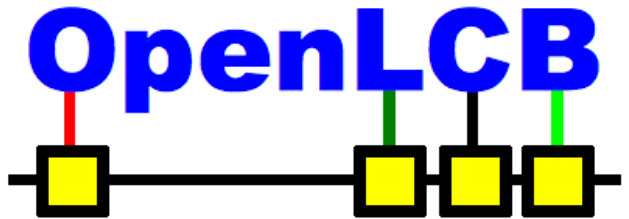
OpenLCB

✔ Easy but sophisticated, a network for model railroad control.

✔ From
   small,
     … to big,
       … to huge,
   OpenLCB™ will
     help you do …
   what <u>you</u>
     want to do most:
   run your railroad.

OpenLCB: A First Look
In 2010, model railroaders ask a lot from the electronics on their layouts. They want to automate accessories, simplify operation of their staging yards, have fine control over layout lighting, and build realistic dispatcher panels. Home and club layouts are getting more detailed and complicated, and existing electronics for control systems are having a hard time keeping up. OpenLCB is intended to be the next step forward, providing better layout controls for the next twenty years.

What is OpenLCB?
OpenLCB is a messaging system that products can use to help you control your model railroad in a simple manner, with less wiring. Like the DCC standard, manufacturers and hobbyists can use the OpenLCB documents and reference designs to create products to do all sorts of things, while still ensuring that products from different companies will work together.

Simplicity:
However, the biggest advantage to OpenLCB is not apparent unless you compare it to other buses. They require the user to choose 'node IDs' and to ensure that no node has the same ID. Similarly, you have to keep track of the numbers used to represent events. This is quite easy on small layouts, reasonable on larger layouts, but becomes very time-consuming on very large layouts, or layouts that are put together from multiple people's modules, such as occurs at large meets of Fremo, Free-mo, Ntrak, oNeTrak, etc. OpenLCB keeps track of node numbers, command and channel numbers, and all that other book-keeping so that users never have to worry unless they want to. This makes putting together large modular layouts more efficient. You never have to reconfigure a module because its addresses are already in use. Together with other advanced features, OpenLCB lets these groups focus on enjoying their massive layouts.

Summary:
OpenLCB is a Step Forward for Layout Control
OpenLCB is a messaging system that connects accessories together in a coherent whole in a simple manner that lets model railroaders run their railroads. More information is available at http://openlcb.org. Come join us!

OpenLCB
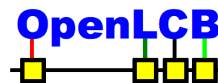
Getting Started:
Simple layouts might start with only a few nodes (boards), for example a set of push-buttons that are used to control a set of turnouts (points). When a button is pushed, the button-node does send a message on the bus to indicate that the button was pushed. Other nodes are then taught to respond to that message by causing something to happen, such as turning on a light, changing a signal, or moving a turnout. This process is called the 'Producer/Consumer Model'. The messages are called 'events'; the node that sends an event is called a 'producer', because it produces the event; and the node that acts upon it is called the 'consumer', because it consumes the event.

The Future:
Great care has been taken to design OpenLCB so that it has lots of room to grow. It's intended to work for the very largest modular layouts, and also to grow with the next 25 years of model railroading. The twenty-year history of DCC provides lots of examples of how creative model railroaders can think of new uses for electronics. OpenLCB has lots of capability built in to keep up with that for the next twenty years and more. For example, even though CAN segments can only handle limited number of nodes and limited length, OpenLCB provides the tools needed to create automatic bridges to connect multiple CAN segments together without complicated configuration or electrical issues. When even that is out-grown, OpenLCB allows for the creation of "filtering" bridges that only move messages to segments where they are needed, and also makes it possible to extend the OpenLCB layout control with Ethernet or WiFi connections.

Flexible Controls:
The Producer/Consumer, or P/C, Model is very powerful. It allows one or more producers to cause one or more consumers to cause actions. However, its real power comes from the fact that neither the producers, nor the consumers, need to know about any of the others. Events can represent such abstract concepts as "Set the lighting to dawn", or "Set the layout to mainline running", which can effect multiple different devices on the layout in different ways.

The Technology:
Simple OpenLCB nodes are connected using the commercial-standard "Control Area Network bus" or CAN bus. CAN is an extremely robust technology, used in applications from factory floors to automobile controls. Using a widely-available standard like this makes is easy and cost-effective for manufacturers to build products that work together. A single CAN bus cable can accommodate from 50-75 nodes spread out over 300-400 feet. Should your layout grow beyond that, or you take your modules to a large modular meet, you can control the layout with two bus-segments, and join them with a bus-repeater. Using two segments makes each shorter, have less nodes, and need less power. The bus-repeater node simply joins the two halves together by moving the messages back and forth. The important point is that you do not have to change anything else. All your configuration is intact and you can just continue as you were.

Easily grow as far as you want:
While OpenLCB is makes it simple to control small layouts, it really shines as your layout grows. You can add new devices to the layout without having to change the configuration of any of the others. You don't have to think about addresses or board numbers or command codes, because those are handled by the producer/consumer connections. You can put together a couple devices on your workbench, and later move them to the layout without worrying about conflicts between addresses or having to keep track of which channel numbers you've used already.
    Although finished implementations aren't available yet, OpenLCB has also been designed to connect existing connection methods like LocoNet, XpressNet, C/MRI, DCC, etc. For example, an OpenLCB installation could use a "bridge" to connect to an existing DCC system so that accessory decoder operations (turnout commands) on the DCC system can cause the OpenLCB nodes to act.