

# LCS Sample Diagram

This diagram shows a very elaborate LCS system. But you don't need to start big! The only required component is the LCS DB-9 Cable with Power Supply, just one per layout. Your system could start out as simple as a Legacy base, the LCS DB-9 cable and a single LCS module, such as a SensorTrack.

Lionel hand-held remotes (Cab-1L and CAB-2) communicate with the command base. All commands from the remotes are echoed to the LCS bus. CAB-2 remotes require Legacy Base and offer two-way communication to base as well as the LCS bus.

LEGACY Command Base holds your engine roster and status of all locomotives. It send commands via a one-way communication link to locos and TMCC switches and accessories.

The LCS DB-9 Cable with Power Supply is the bridge between LCS and your command base. It also supplies power to all LCS modules.

The LCS WiFi allows up to 15 WiFi devices, such as the Apple iPad®, to send commands over the LCS bus and through command base.

LCS App is Lionel's free iPad® application (requires LCS WiFi). Create custom control panels, view and edit your locomotive roster and received real-time updates when compatible locomotives cross over LCS SensorTracks. LCS App can run TMCC and LEGACY locomotives, command-controlled switches and accessories.

## Command Base to Loco

The Lionel Command Base communicates with locomotives via a 455kHz radio frequency (RF) command control signal (see orange line). This is a one-way communications link.

An LCS BPC2 switches up to 8 AC track power blocks (connections and transformer not shown)

PC or Laptop with 9-pin Serial

The LCS SER2 connects the LCS bus to older Lionel serial devices like the TPC or ASC (right). It also boosts the available serial data drive current, so you can connect all your existing 9-pin devices without problems.

You can connect multiple SER2 modules if desired to add to add an extra DB-9. This would let you connect a PC to run the Lionel Legacy System Utility program or 3rd party LCS compatible software. Third party developers' code can be fully LEGACY compatible, including the Quilling Whistle and other LEGACY-only features.

TMCC switches are controlled by messages from the command base. They can be thrown via Lionel remote, LCS App or 3rd party products.

Each LCS SensorTrack(tm) receives information from compatible LEGACY locomotives and transmits this info back over the LCS Bus to LEGACY base. This in turn updates info on CAB-2 remote, LCS App and 3rd Party software.

Up to four remotely operated switches from Lionel and other manufacturers can be controlled by one ASC2. Switches can be thrown via Lionel hand-held remotes, LCS App or 3rd party products.

Up to eight lights, uncoupling tracks or basic on/off accessories can be controlled by one LCS ASC2. Power for lights and accessories is provided by a separate transformer.

## LCS PDI BUS

The Layout Control System bus (blue line) is a bidirectional system. A single LCS PDI Cable links LCS modules, carrying commands and status info in both directions. The LCS PDI cable also carries operating power for each module.

## LEGEND

Command Base

LCS Bus

Standard WiFi

Old 9-pin Serial

Remote/Base Radio

Hook-up wire

