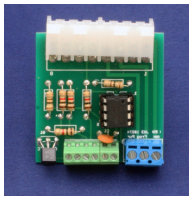
WHAT IS MRCS?

MRCS is your home for Open Source electronics for Model Railroad Operations. We offer Open Source hardware and software to help you operate your Railroad as prototypically as you like.

Our cpNode system is an updated, completely open, layout control system based on the popular and proven CMRI system (introduced by Dr. Bruce Chubb in 1985). cpNode complies with CMRInet, NMRA User Group Specification S-9.10

We offer signaling and telephone systems for dispatching, Order Board Systems , RFID systems for train tracking and car forwarding and many useful accessories!

We also welcome designs from community contributors



RSMC —

Remote Stall Motor Controller

The Remote Stall Motor Controller is designed to mount on a Circuitron(r) Tortoise slow motion switch machine and provides bi-polar control with a single logic level line, such as provided by a cpNode, IOX16/32, SMINI, DOUT, or SPST toggle switch.. The RSMC can also be used to control the MP1 switch motor.

Consulting, Design and Implementation

DIY (Do it Yourself) boards and system development are a great tool for those with an electronics hobby within the hobby, but what about those modelers who want a control system or phone system but don't want to take the time to learn a new sub-hobby?

Many of the products offered on our web site were developed in response to requirements of our clients for signaling, train order board and telephone systems. MRCS principals Seth Neumann and Chuck Catania bring deep expertise in developing and implementing solutions on model railroads of all sizes and eras.

- Electrical (DCC Power) Design
- Signal System Design
- Custom product design
- System Integration
- Signal System Set up and Programming
- Installation

MODEL RAILROAD CONTROL SYSTEMS

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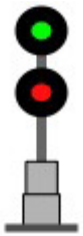

OPEN SOURCE ELECTRONICS FOR MODEL RAILROAD OPERATIONS

cpNode Layout Control System

cpNodes are Arduino-based nodes for the Computer Model Railroad Interface (CMRI) system. They communicate with each other and with classic CMRI nodes via CMRInet. cpNodes allow economic entry at as few as 16 lines and expand to as many as 144 lines per node. A range of detectors and adapters are available for driving various types of devices.

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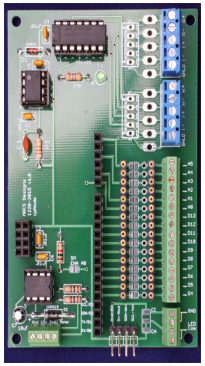
cpNode Products

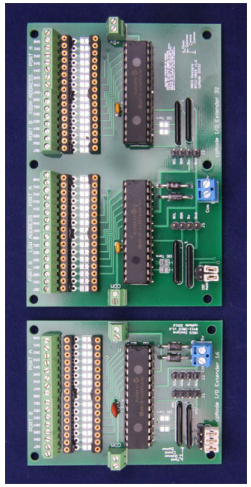


cpNodeVersion 2.0

cpNodes provide input and output ports which connect to LEDs for signals, push buttons, turnout motors, block detectors, and other devices for controlling model railroads.

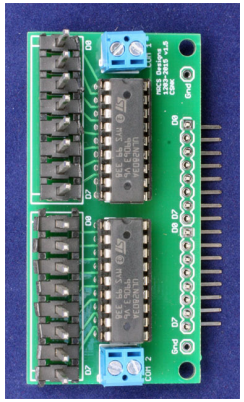
You must provide a Bread Board Leonardo (BB-Leo) processor, available from Modern Device, Screw terminal blocks or headers to connect external devices. cpNode includes:

- Socket to receive a BB-Leo (Arduino)
- CMRInet RS-422/485 Network Interface. CMRInet is now NMRA Layout Control Specification S9-10
- 16 I/O lines with solder pads for LED limiting resistors with screw terminal blocks or headers to connect external devices
- I2C interface for adding Input/ Output Expander (IOX) boards for more i/o
- Optional Stall motor controller
- Everything needed to control one end of a CTC siding, just add signals and detectors



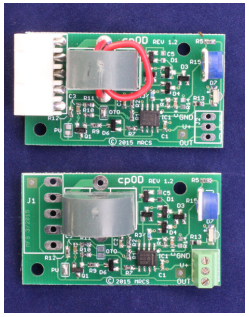
IOX16/32 Version 2.0

The IOX16/32 provides an 16 or 32 additional lines of i/o for the cpNode using the MCP23017 chip. IOX16 lines are configurable in as input or output in 8 bit (1 byte) increments. Up to 128 lines of i/o may be added to a cpNode in any combination of IOX16s and IOX32s for a total of 144 lines of i/o. Input and output voltages are limited to 5V. Each output may sink up to 25 mA subject to a device limit of 160mA, if all lines are used as output use 10mA as a design limit. Output pads are spaced at 0.100" to allow you maximum flexibility in configuring outputs.



Molex and High Current Adapters

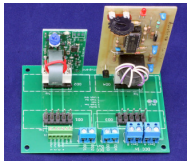
The cpNode and IOX16/32 are 5 volt devices. For loads that use greater than 5 volts or need to sink more than 25mA, we offer the CSNK high current adapter which converts 16 lines from a cpNode or IOX to sink up to .5A at 60VDC.. Output is on the traditional Molex connector. The "MOLEX" adapter simply converts the cpNodes 0.100 spaced holes to the classic CMRI MOLEX format.



cpOD Detectors

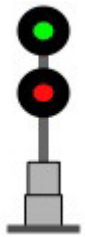
The cpOD is a low cost, DCC only, current sensing block occupancy detector for model railroads. It is intended to be inserted inline with one block feeder wire and provide a signal indicating a track block has current flowing in it. The Occupied signal is logic low and can be tied to a computer input port or a current limited LED. cpOD comes in two configurations:

- cpOD with 3 position screw terminal block
- cpOD-M with 5 pin Molex connector for use with an ODMB or ODX4 motherboard



ODX-4 Occupancy Detector Motherboards

The ODX-4 supports up to 4 MOLEX style Occupancy detectors



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