California Central Coast

On30 Module Specification 2.10

This document provides the essential details needed to construct a module with a physical interface and electrical interconnects which will be compatible with California Central Coast On30 modules.

Physical Requirements

The width of a module's interface is 24 inches with a height of 6 inches. The other key physical parameter is table height which is 48” above the floor as measured to the top of the interface.

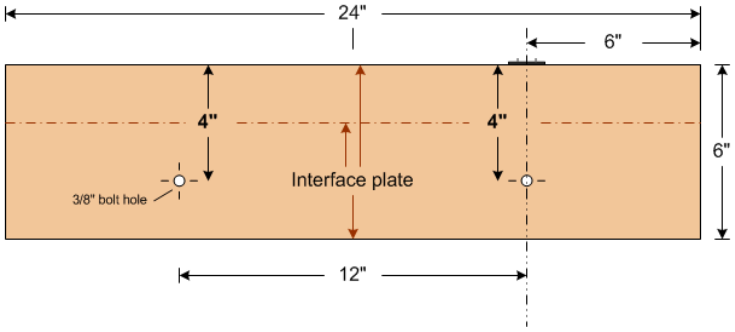

Figure 1

Interface plate – At a minimum, the lower 4 inches of the interface forms the interface plate; the point where modules are mechanically connected. The plate can be up to the full 6 inch height of the interface. If less than 6 inches and the upper portion is foam board (or similar fragile material), then a protective end fascia is recommended.

Interface plate material – high grade ½ inch plywood or ¾ inch hardwood.

Plate width – 24 inches (excluding any side fascia material such as 1/8th inch luan plywood).

Mounting holes – Interface plate must have 3/8 inch holes placed as shown in figure 1. These holes are used with 2 inch by ¼ inch standard bolts to physically connect modules.

Module height – 48 inches above the floor to the top of the interface.

Leg adjustment – Each leg will have adjustable feet with at least 1 inch of variability. Module height should be adjustable from 47 ¾ inches to 48 ¾ inches to allow for floor irregularities.

Backdrops – The modules are intended to be viewed from both sides. Backdrops are not allowed.

Track and Operating Requirements

The On30 reference track products used for the modules measures approximately 3/16ths of an inch from the underside of the ties to the top of the rail (Peco On30 and MicroEngineering On30 code 100). Using specific products is not a requirement but adhering to the overall tie/rail height and code 100 rail between modules is needed to ensure smooth operation.

The track at the interface must be:

- Straight, level and perpendicular to the interface in the 4 inches closest to the interface.
- Rails must end 1 inch before the interface (joiner rails are used to span between modules).
- Rail ends must be free of scenery / ballast so that an insulating rail joiner may slide on easily.
- Faux ties must be in place between the rail ends and the interface to support joiner rails.
- Track centerline must be 6 inches in from one end of the interface (excluding fascia material, see Figure 1)
- The point side of a switch may be within 4 inches of an interface provided that its straight route conforms to the above.

The track between interfaces:

- A module must have at least one route (main route) between its interfaces.
- The minimum radius on the main route is 22 inches.
- The main route may pass no closer than 3 inches to a module edge.
- Clearances on the main route must follow the minimums defined by the NMRA for On30.
- The main route must use either code 83 or 100 rail, but must have code 100 rail at the interfaces.
- Track which is not part of the main route may be code 70, 83 and/or 100.
- Within a module, the main route may branch into two or more routes, form a wye, or form a return loop provided that it adheres to all other requirements for a main route.
- Grades are allowed as follows:
    - There must be at least 8 inches of track between changes in grade (level-to-grade and grade-to-grade).
    - Grades on the main route must return to the standard rail height at the interfaces (48 3/16 inches). As an exception, if a set of modules have a main route with a grade spanning them, the main route must return to standard rail height at the interfaces on the ends of the module set.
    - On the main route, the initial starting grade from level track must be 2% or less.
    - After the initial starting grade, grade changes are limited to 1% increments or less (e.g. 2% to 3%).
    - The maximum main route grade is 4%. It is recommended that the grade on the main route be kept at or below 2.5% to allow the maximum diversity of motive power.
    - All grades must have proper vertical transition curves.
    - Rail joiners should be kept at least 4 inches away from the vertical transition curves.
    - Grades on secondary routes staying within a module or passing between modules can be as steep as the module builder desires.

Electrical and DCC

There are three electrical aspects to DCC wiring – the track power bus, the command bus and the control bus (this is DCC system specific).

The track power bus:

- The track power bus will utilize insulated, stranded copper wire (16 gauge minimum, up to 12 gauge).
- The power bus wire will be anchored to the underside of the module at each end.
- At each interface, the power bus will extend 12" beyond the interface and will be fitted with an appropriate track bus connector.
- The power bus wire will terminate with 30 Amp Anderson PowerPoles (one red, one black).

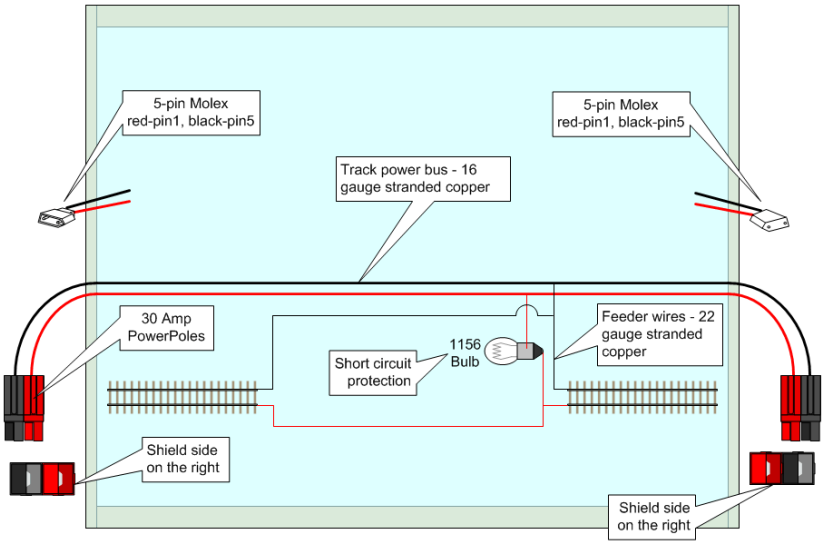

Figure 2

Power connections to the track:

- All feeder wires from the track power bus to the rails must be insulated, 22 gauge copper wire (stranded preferred).
- The track bus will be accessed once to feed all of the rail feed wires on a module.
- Short circuit protection must be inserted between the power bus and the rail feed wires. A tail light bulb (type 1156) wired in series on ***one*** of the rail feeds will accomplish this.
- Each module will be electrically isolated from its neighbors at the rails by using insulating rail joiners on one side of each set of joiner rails.

DCC Command bus:

The command bus will utilize 8-wire cables which will provide support for both 6-wire DCC command bus schemes (e.g. NCE), and 8-wire command bus schemes (e.g. MRC).

- Command bus ports will be RJ45. They may be 2-to-1 (2F/F) connectors with the single port protruding through the side fascia, commercial RJ45 sockets, etc.
- Modules with one or more switches must have at least one command bus port on the side nearest the track or module controls (whichever is most appropriate). Modules that have only a straight-through route (no switches) are not required to have a command bus port.

- Any module over 7 feet in length, and modules containing passing sidings, should have at least two command bus ports on the side closest to the controls for the passing sidings.
- The command bus will consist of network Cat5 cables with RJ45 plugs on each end.

Wyes and Reverse loops:

- Any module with a reverse loop must have an isolated section of the loop wired through a reverse loop circuit.
- Any module with a wye must have one branch of the wye isolated with the isolated branch wired through a reverser circuit (or equivalent).
- The length of the isolated track section on a loop module must be at least 60" long.
- The isolated track section on a wye module must be at least 15" long (long enough to turn a locomotive). If the wye is intended to have a full train in the isolated section, then that isolated section must be at least 60" long. If a module will attach to the isolated section, then the module should ***not*** draw power from the reverser circuit.