NEWSLETTER

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Digital Consultants
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Current Central Station 3 Version – 1.4.1(0)
Current Central Station 2 Version – 4.2.8(4)
Current Mobile Station 2 Version – 3.55

We attended the "Golden Spike" 150th Anniversary of the Transcontinental Railroad in Ogden and Promontory Summit, Utah. I can't say enough about these events. It was wonderful to be a part of this historic anniversary and to see the newly restored Big Boy No. 4014. I have seen a total of three Big Boys now in museums. I am impressed by the size and weight of these locomotives and I think everyone should take the time to view one. What I was most taken back by was the heat the Big Boy radiated. Now, I know they can't just turn off the locomotive because it is steam locomotive, but I didn't even think about the heat due to the fire inside burning constantly. In a museum piece, they are static displays and they are cold, so long gone is the experience of a working machine. Hats off to Union Pacific and their foresight to preserve a working prototype of this railroad legend!

We were present for the Golden Spike re-enactment and the re-creation by U.P. for using the FEF 844 and Big Boy 4014. We had two LGB booths and were displaying the new Central Pacific Jupiter and Union Pacific No. 119 replicas from LGB, available under item number L29000. These are amazing reproductions of the highest quality and will be a great addition to any LGB collection.

May 10, 2019, Promontory Summit, Utah

Automatic Routing for Mobile Station 2 Users, Part 2

In the last issue, I detailed how to set up routing if the layout is controlled by an MS2. Now, I will show how to expand this into four stop blocks to run three trains easily, then install a 72442 Brake Module. After that, I will explain how to connect Start up signals and a 72720 Control Box. It is important to note that the 72710 Control Box with Feedback Function, will not work in this application.

Adding a Control Box

I feel the Keyboard interface might be a little clumsy in an emergency situation. So, I wanted to use a 72720 Control Box to manually change the M84.

This posed a problem because any input to the M84 will change one “stop” section to “red” and another to “green”. This may not be desirable. The problem was solved with the use of a diode on every “input” of the M84. Once the diode is installed, the electrical current to a specific input on the M84 does not travel to a different input that shares a common wire. I used a 1N4001 diode on each input then wired the 72720 Control Box to the input on the M84 side of the diode (Fig. 1).

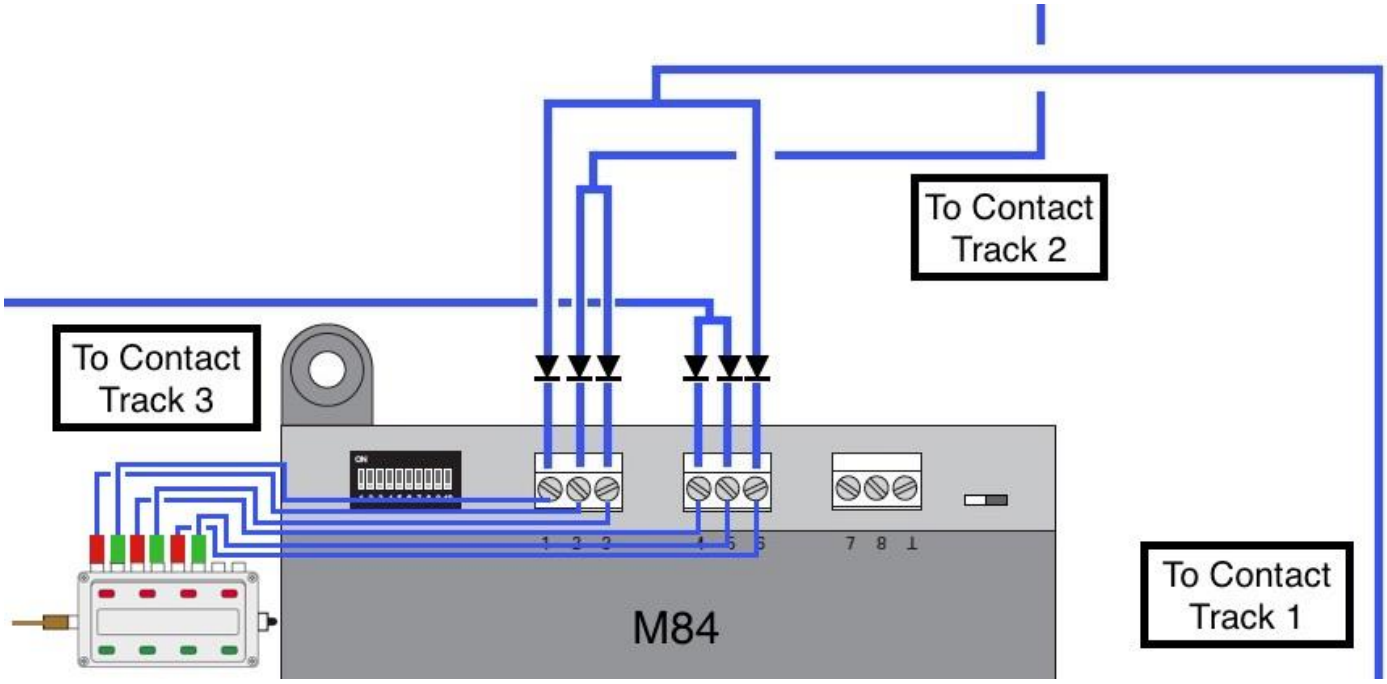

Fig. 1 – Connection of 72720 Control Box and diode placement

Once the control box was wired up, I was able to control each stop / signal independently without causing another stop / signal to change.

Addition of a Brake Module

A brake module can be added to the stop sections easily but it does require a little more wiring. The advantage of using a brake module is the locomotive lights and drive sounds will stay on while it is in the brake sections, not to mention it will slow to a stop.

The brake module gets wired like the example in the 72442 manual, with the three track sections and track feed. I have modified the illustration from the manual to reflect the application of this article (Fig. 2).

I should note that at this point it is not necessary to connect the “stop” section from the brake module to the track. The M84 is doing the same thing at this point. You can choose to use the “stop” from the brake module if you like by taking the wire from the M84 that is connected to the track stop section and plugging it into the “stop” of the brake module (noted in Fig. 2).

Manual activation of the brake module will need to be through the 72720 Control Box and automatic activation will be from the circuit track.

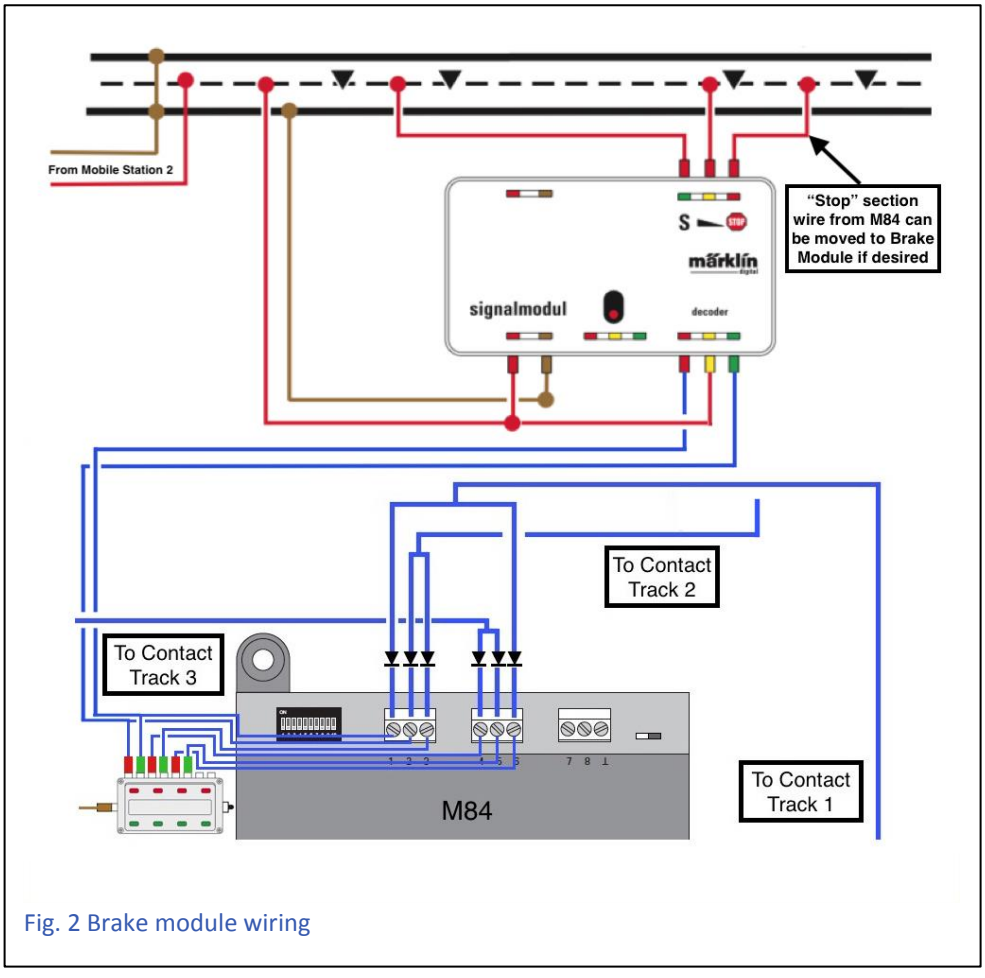

Fig. 2 Brake module wiring

You might notice the green output of the 72720 Control Box goes to the red of brake module and vice versa for the red output. Without going into a long-winded explanation, or starting a debate of the logic of the Märklin control boxes, let me just say this is how I needed to wire it, for it to operate correctly. For example, when a locomotive hits the contact, or the manual override is pressed, the brake module is activated / de-activated.

The wiring to the brake module will be at the marked “Decoder” and needs to be connected to the 72720 Control Box and the “input terminals” of the M84 (AFTER THE DIODE).

Adding Start up Signals

Once I have all of the wire connections made, I can add some Start up signals. Since all of the wiring to the stop sections is complete, there is no need to wire the Start up signal to the “stop” section. There would be no benefit to doing so, as the Start up signal will stop a train exactly like the M84 or Brake Module is currently doing. So, all I have to do is plug the Start up signal into the M84 and mount it.

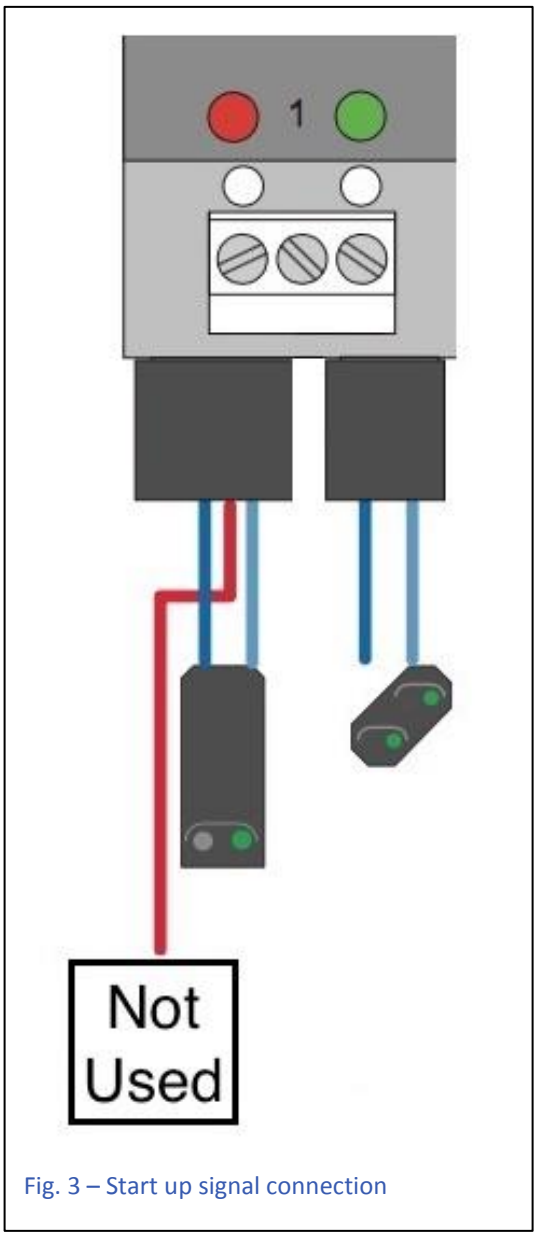

Fig. 3 – Start up signal connection

At this time, I can add a Start up distance signal in the same manner, just plug it into the M84. Both signals plug in as directed in figure 3. Make sure the wires point down when the signal is connected to the M84 (Fig 4).

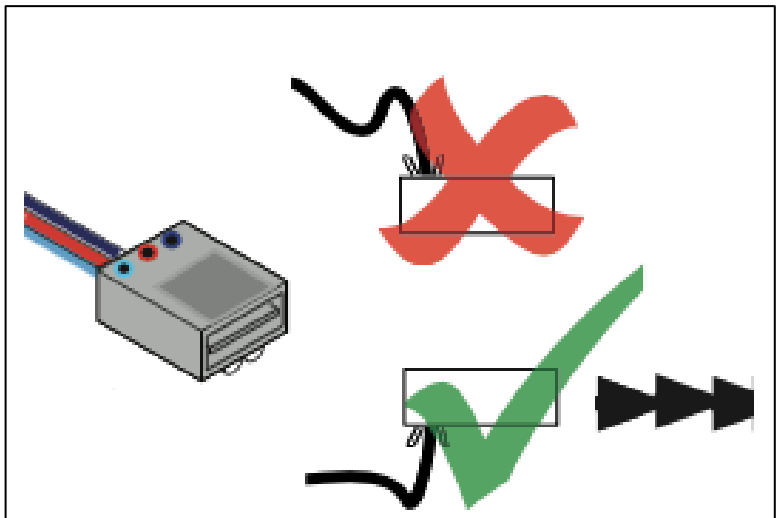

Fig. 4 – Start up signal plug orientation

The stop sections and the signals can be manually controlled with the “Keyboard” on the MS2 or with the 72720 Control Box. Since the signals are connected directly to the M84, the aspect will change when the M84 changes.

Expanding Into Four Contacts

I mentioned that this routing was easily expanded into more stop sections. It's just a matter of setting up a new "stop" section, then changing one wire "input" and adding two other "inputs" from the new contact track.

Notice in figure 5 the "input" wire that was on #6 moved to #8, and the new "input" wires from the new "Contact Track 4" occupy "input" #6 and #7 now. This will utilize all of the "inputs" and all of the "channels" on the M84. Any additional expansion will require a second M84.

Not shown is the diagram for the diodes and the 72720 Control Box. Needless to say, it is similar to figure 1. For the new "input" wires, a diode needs to be installed on "input" #6 and #7 and then the wires from the 72720 Control Box can be installed into #6 and #7.

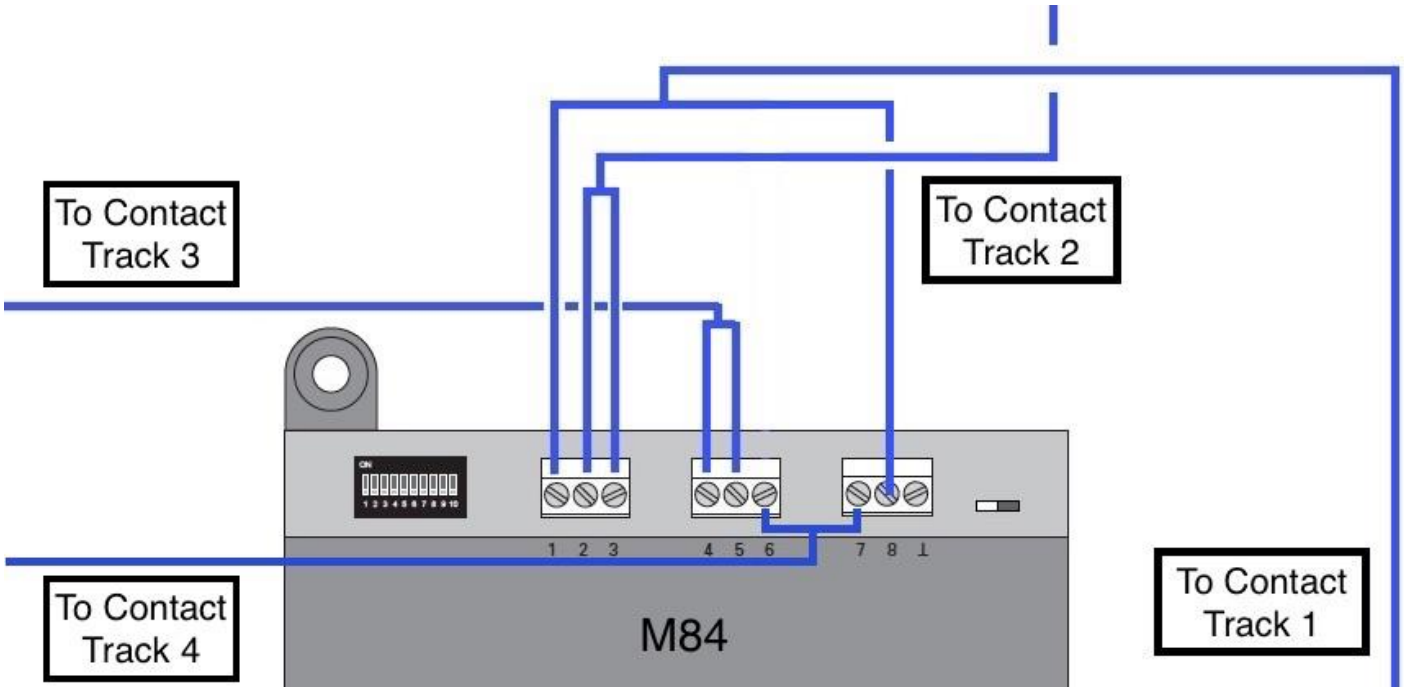

Fig. 5 – New input from contact track #4

Just for fun, I combined the graphics so you can see the overall wiring that is required to do this project (Fig 6). If the steps are taken one at a time, it is not very complicated.

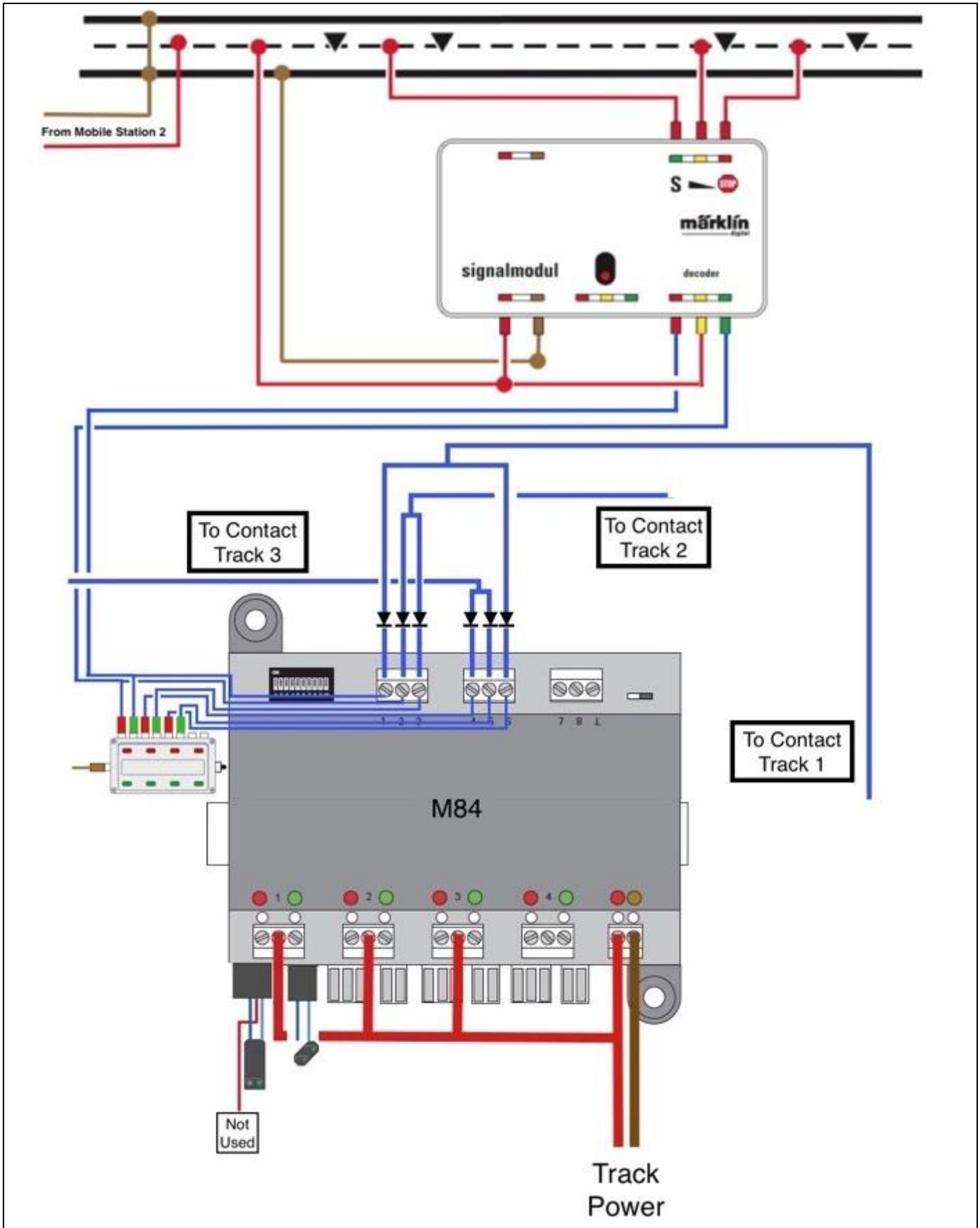

Fig. 6 Overall wiring

I have expanded the list of components from part 1 of this article, by adding the items mentioned in this article.

Components needed:

24994 - Straight Circuit Track or 24194 / 24294 R-1 / R-2 Curved Circuit Track
60842 – M84 Multi Decoder
7101 - Blue Wire
7105 - Red Wire
74030 - Insulators
74995 - Feed Wire Spade Connectors

Optional / If needed:

71415 - Red Plugs
72090 – Distribution Strip

New components needed:

71412 - Yellow Plugs
71413 - Green Plugs
71415 - Red Plugs
72442 - Brake Module
72720 - Control Box
74380 - Start-Up Distance Signals – optional
74391 - Start-Up Signals
1N4001 - Diodes

Enjoy your hobbies!

Rick Sinclair

S88 Device Selection

In my last article, I discussed how to configure the different S88 Feedback Modules into your Central Station. In this article, I will discuss the different types of S88s and some of the differences in how they are applied with either a 2-rail or 3-rail layout. It would seem a more logical approach to have discussed the different S88s prior to connection setup, but the previous article was meant to address the many questions we receive from readers who already own S88 devices.

There are 3 models of S88s offered in the Märklin/LGB/Trix lineup. They are: L88 (Link S88), S88 AC and S88 DC. Product numbers are (respectively): 60883, 60881, and 60882. The L88 and S88 AC are similar in operation but they connect to the Central Station with different connectors. The S88 DC operates differently than the other two, and I'll explain this more later.

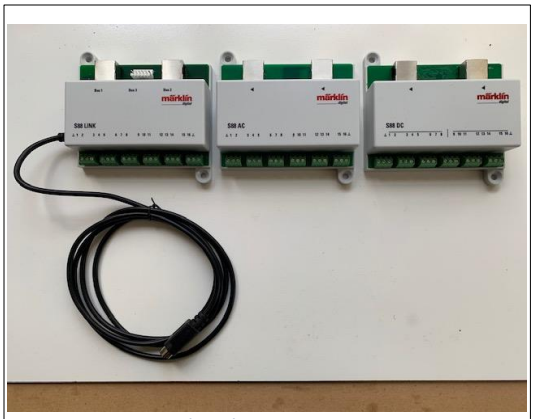

Fig. 1 – S88 Link (L88),S88 AC, and S88 DC

The two main connection types for the S88s are either the 7-pin plug w/ horizontal alignment tab and the other is an RJ-45 type jack that is used with Ethernet cables. This is illustrated in Figs. 2 and 3. There is a third connector, which is part of the L88 only, and this is for users who have older S88 type devices 6088 and 60880, which cannot be connected directly to either the CS3 or CS3plus.


Fig. 2 - 7-Pin connection

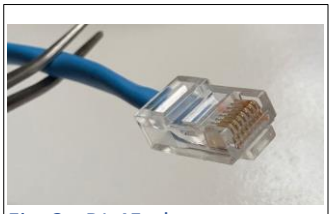
Fig. 3 - RJ-45 plug

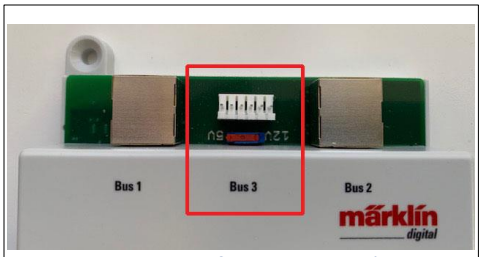

Fig. 4 - Connection for older S88s (6088, 60880). Shown with 5 V selector for use with older S88s

In terms of equipment requirements, the S88 Link will need its own switched mode power pack, 66367. As mentioned before, L88 will allow for backwards compatibility so established layouts with older S88s can still be utilized with the CS3 and CS3plus controllers. The L88 is also required for connecting with older CS2 controllers if you are planning to use any of the newer S88s.

In Fig. 5, I show the connection points for the CS3plus. You can use either the 7-pin port for the L88, or the RJ-45 port located under the CS3. The underside port is ideal for users who only have newer model S88s.

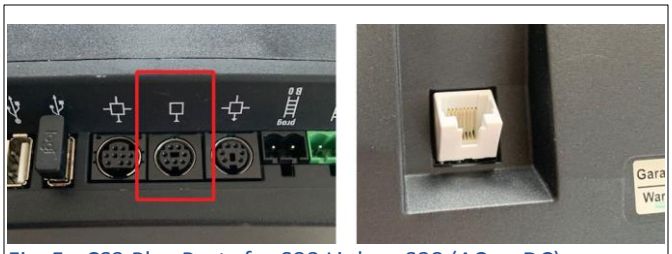
Fig. 5 - CS3 Plus Ports for S88 Link or S88 (AC or DC)

Fig 6. shows the dual 7-pin ports for the CS3. It doesn't have an RJ-45 port. The 7-pin port is also used as the connection point for track Booster 60175, so if this port is in use, you will need to also have a Terminal Box, 60145, which will expand the number of 7-pin connections (Fig. 7).

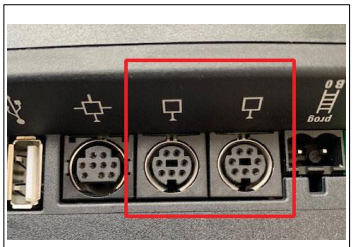
Fig. 6 - CS3 dual ports

All three units are similar in that they can detect changes in voltage when sensors are wired to the positive (+) track output. This means that they can be used with photo sensors, magnetic reed switches and circuit tracks (in the case of Märklin's circuit track).

S88 - AC or DC?

The difference between the L88 and S88 AC versus the S88 DC unit is in how they manage track occupancy. In 3-rail the L88 and AC units will monitor an isolated outer rail and compare it to the other outer rail for detection. Bear in mind that both outer rails in a 3-rail track operate on the same polarity. Only one of them would have "0" signal and the other the "–" signal. When the common wheels of a 3-rail train or rolling stock makes contact, it sends the "–" signal to the "0" rail, activating the sensor. Figure 8 illustrates how an isolated rail can still supply power to a train.


Fig. 7 - 60145 Terminal for 7-pin expansion ports

To create track occupation sensors in a 2-rail system, we have to use an S88 DC. In Figure 9, we can't have a zero (0) rail to compare with, because that would mean we would have one rail "+" and **no** "–" rail (it's like disconnecting the – terminal from a battery). The S88 connections won't be connected to the "+" rail (which is compared to the "-" reference rail), because it would short out the controller. The S88 connections for 2-rail track occupancy would have to be connected to the same "-" rail as the reference inverted "T" rail. Since these rails are the same voltage and polarity, I believe that these sensors are activated by a change in current. This is important, because it means that 2-rail track occupancy can only be activated by a current drawing device, i.e. a locomotive or rolling stock that has track generated power draw like lights.

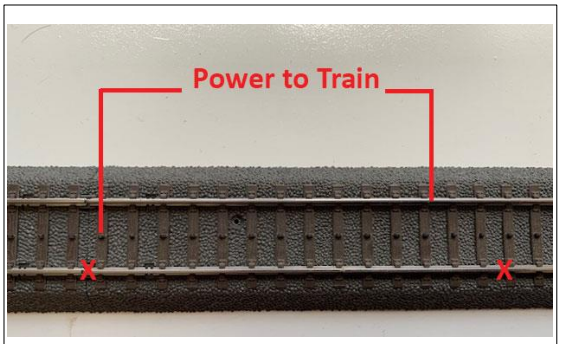

Fig. 8 - Isolated rail indicated, where opposite rail still supplies power to train

There is more significance to this difference between the AC and DC type S88s when used as track occupation sensors. When the power to the track is shut off in "STOP" mode, the DC loses its ability to monitor the occupation signal. The AC 3-rail connections have the ability to monitor the status whether the train controller is in "STOP" or "GO" mode. This is important and affects the manner of how you use occupation tracks.

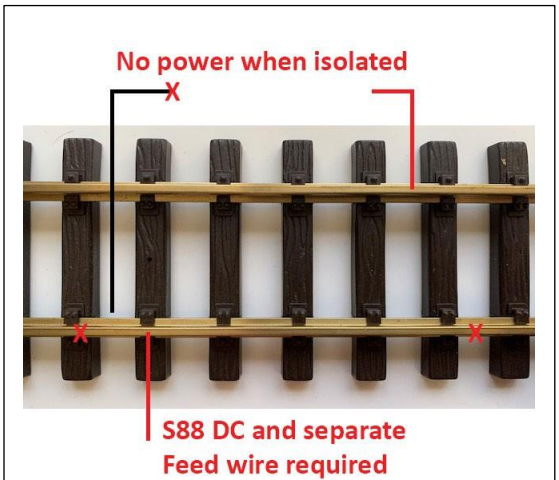

Fig. 9 - S88 DC and wiring consideration for 2-rail track occupation

If your intention is to use occupation tracks to monitor whether or not a section of track has a train on it, like a

yard line or a terminal station line, then you'll have to pay attention if these sensors will require an entry point script activation trigger. That is, it includes a script when a train makes contact with the occupation track. This is problematic with the S88 DC, because if a train rests on this contact and the power to track is turned off, the contact will shut off (reading as unoccupied). But, when you resume power to the track and a train is sitting on this sensor, it will activate an entry point script. To clarify the problem, if a train is already sitting on this sensor it has already activated its entry point script. Resuming power to track will reactivate the entry point script again.

In a situation like a multi-line shuttle (written about in previous articles), I use entry point scripts to start trains in other lines. When I resume power to the layout where I have many shuttle trains on active sensors, they will all get hit with entry point commands, thus sending multiple trains onto the shuttle track at once. In shuttle automation cycles, only one locomotive should be activated to move at a time. So in this situation (multi-line shuttle, contact tracks on 2-rail layouts are not ideal, because they require the S88 DC module. The solution to a multi-line shuttle (or event some staging yards) is to use an S88 AC, with magnetic reed contacts. The S88 **AC** does not mean you can't use it with DCC 2-rail track systems, as it has its place in a 2-rail layout.

This article should help clarify the differences with the three S88 offerings available. Deciding which to buy could be dictated by any existing equipment that you may already have. It should help you understand there is a specific application with the S88 DC device and any caveats that may arise with use. It dispels the idea that AC and DC is specific to 3-rail and 2-rail layouts.

Cheers!

Curtis Jeung

Upcoming appearances:

NMRA National Train Show
Mountain America Exposition Center
9575 S State St
Sandy, UT
July 12 - 14, 2019

EuroWest
Hiller Aviation Museum
601 Skyway Rd
San Carlos, CA
July 27 - 28, 2019

National Garden Railway Convention Public Show
Doubletree by Hilton Portland
1000 NE Multnomah St
Portland, OR
August 31, 2019

Trainfest
Wisconsin State Fair Park Expo Center
8200 W Greenfield Ave
West Allis (Milwaukee), Wisconsin
November 9-10, 2019

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