märklin DIGITAL CLUB

NEWSLETTER

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Current Central Station 3 Version – 1.4.0 (0)
Current Central Station 2 Version – 4.2.8 (4)
Current Mobile Station 2 Version – 2.7

Now the holidays are behind us and we hit the ground running in January. We attended the Amherst Railway Society Railroad Hobby Show and it was a great show. We had many people come to talk to us and see the products on display and take part in Central Station demonstrations. It was great to see so many Märklin Digital fans at the show. We would also like to thank the Eastern New England Chapter of the ETE (European Train Enthusiasts) for the support they provided throughout the weekend. Please see the list of our upcoming appearances further along in the newsletter.

Firmware Updates: There is a new update for the CS2 and CS3/CS3+. Some of the updates are a cab view and can be set for non-"World of Operation" locos. Also, it looks like the "conditions" have been expanded in the CS3/CS3+. There was no Mobile Station update included in the CS updates.

Our first article will demonstrate how to repair a troubled turnout motor 74490 for Märklin C Track, when the problem might not be the motor itself. In our second article, Curtis discusses questions he has received from enthusiasts over the past year and their solutions.

Repairing a 74490 Turnout Motor

I will begin 2019 with a possible fix for a 74490 turnout motor that is failing. Like many of you, the only recourse I had was to replace the failed turnout motor. The problem motor has been on my demo/test layout for close to 10 years. When operating this layout at shows, this turnout works constantly all day long.

I need to note, the fix only applies to 74490 switch motors, not the current 74491 motor. As of now, I have not had a 74491 motor fail. I will also note I was poking around the Internet and discovered this fix. So I can't take credit for it, but I can pass the information along.

Turnout Motor Dis-Assembly

To start with, the motor must be removed from the turnout. Once you have it on your bench, remove the cover.

Gently pry up the three tabs on the long edge that is not straight (Fig.1). If you like, you can pry the other three, but I have found if I leave them alone, they act as a hinge and the unit opens like a clamshell.

Fig. 1 – Open tab locks on the side that is not straight

Inspection

Once the cover is off, inspect the field magnet windings. If the windings are heat-damaged, then the motor is no good and ready to be re-cycled as e-waste (Fig.2). This motor has over-heated and that is noticeable by the darker field magnet windings (Fig.3). In fact, it has been heated so much, the plunger has melted a little and does not slide smoothly any more. This motor is e-waste now.

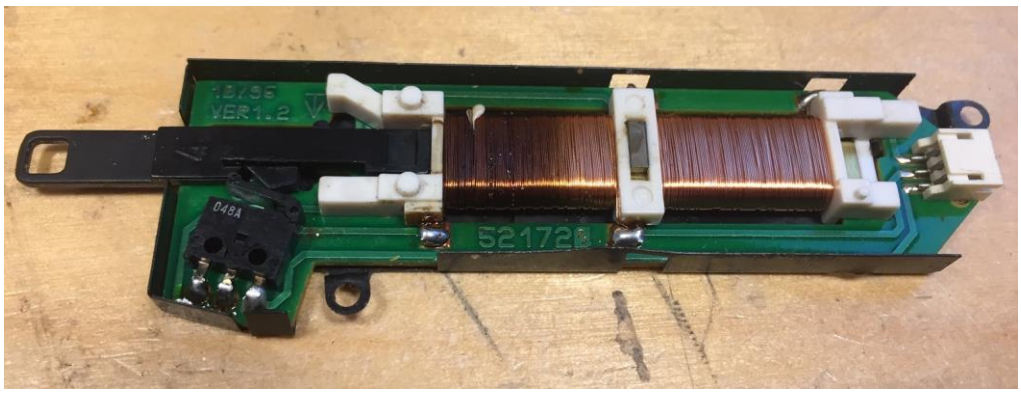
Fig. 2 – Damaged field magnet

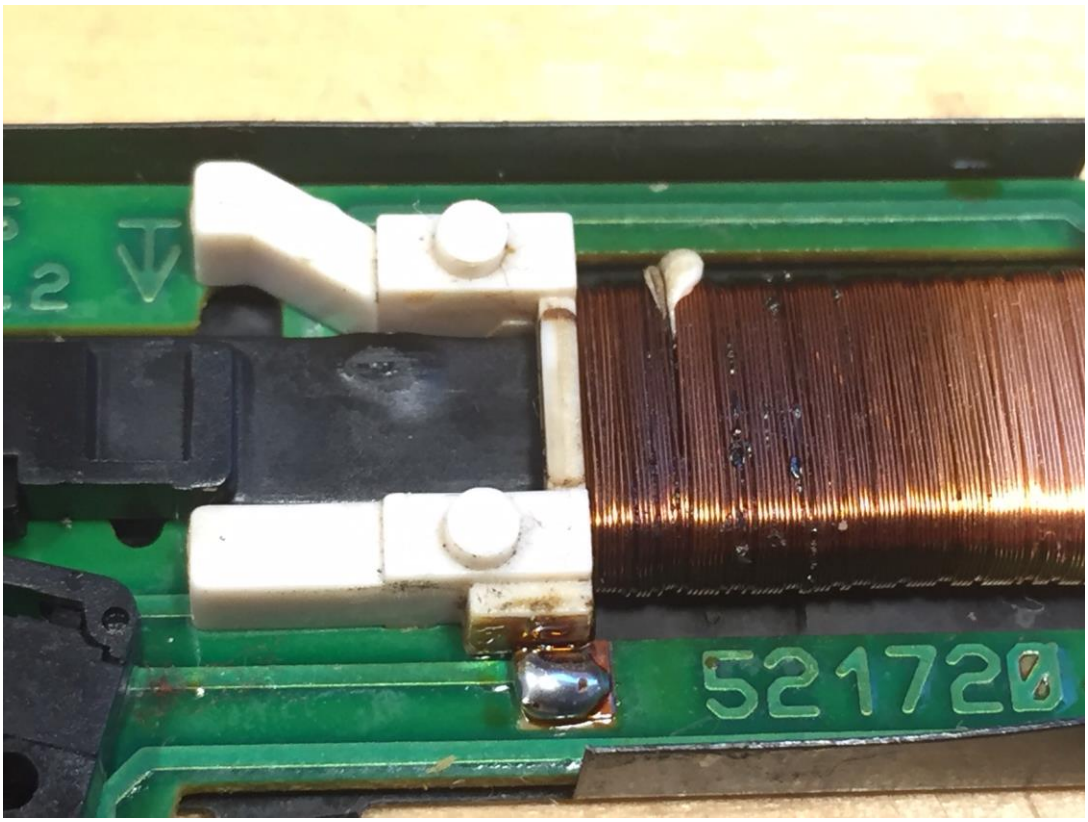

Fig. 3 – Burnt field coil and melted plunger

Fortunately, I have another motor as a candidate. The first turnout motor looks to be a very early version, whereas the second one is a later version. This later version has a limit switch at each end of the plunger throw (Fig 4). Once the plunger is at the end of its throw, this switch cuts off the power to the field magnet so the windings won't overheat. The first motor only has a single limit switch, which has failed and caused the coil to overheat.

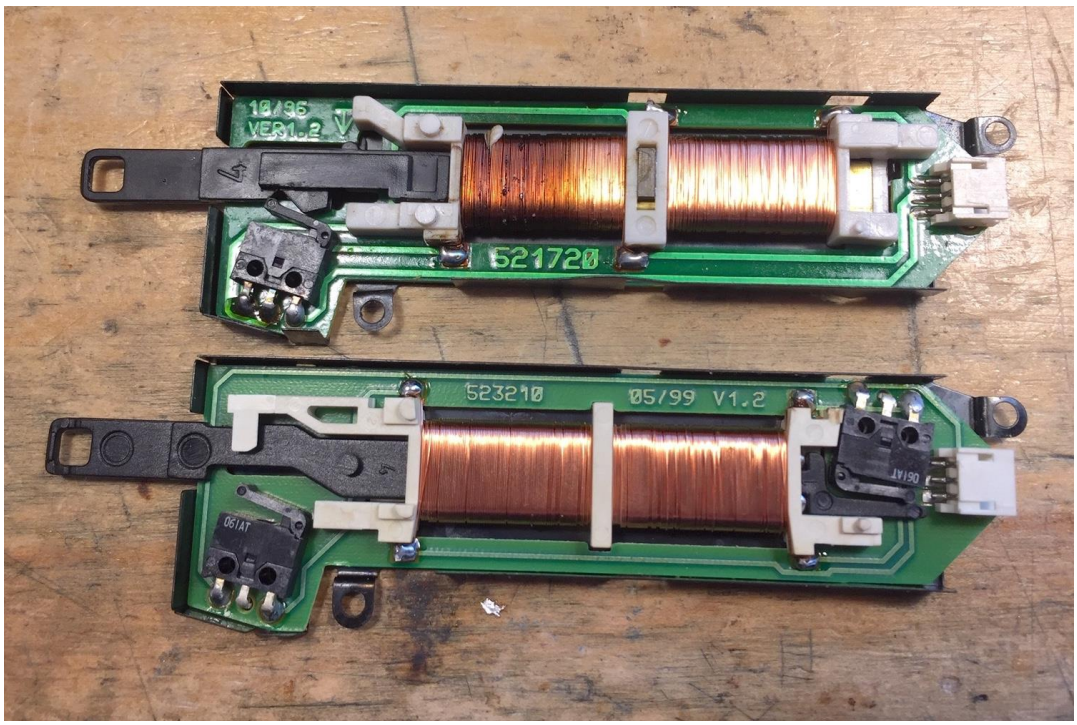

Fig. 4 – Lower unit has two limit switches

Diagnosis

More often than not, this limit switch is the problem. It can occasionally fail, and then the turnout will only throw in one direction. The solution is to by-pass the limit switch.

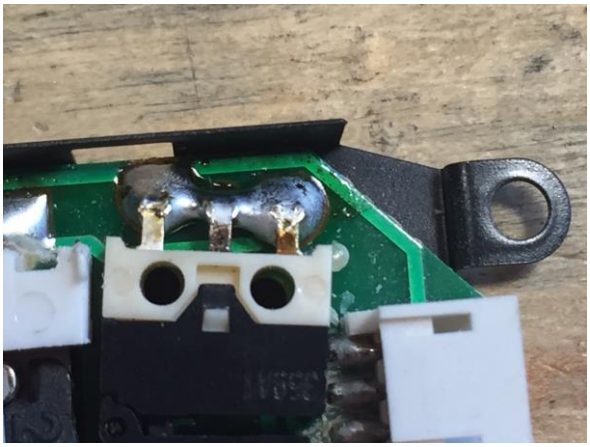

Fig. 5 – By-passed limit switch

Bypass Repair

Since the turnout motor is already broken, I took my soldering iron and bridged the limit switch contacts together effectively bypassing it (Fig. 5).

Once this is done, I re-assembled the turnout motor and tested it. It worked just like new, confirming that a limit switch (or both) was the problem.

Now that the repair is done, I can only use this turnout motor in "Digital Operation." This is because the limit switch is bypassed and if I use an analog control box, there is a chance of pushing the button too long and overheating the field coil inside, making the motor e-waste. A digital controller will send a pulse of about 300ms, which is far too short for any over-heating. So, the very last thing I did was to mark the outside cover designating that this motor has been fixed (Fig.6).

Fig. 6 – Designation for repaired turnout motor

As it turns out, I have three different versions of the circuit board for the 74990 turnout motor. I am sure that there are a few more, but I have not come across them (Fig.7).

This was a simple repair to make and it has extended the life of a turnout motor. As long as I use this in a digital system, it should have a long and useful life.

Enjoy your hobbies!

Rick Sinclair

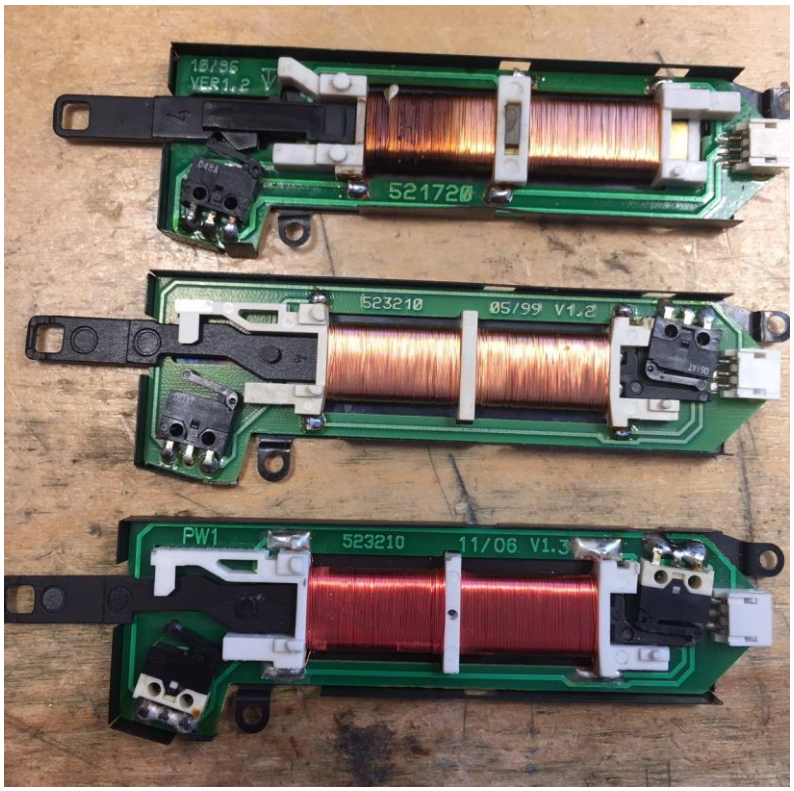

Fig. 7 – Three types of circuit board for 74990

Upcoming appearances:

Rocky Mountain Train Show
Denver Mart
451 E 58th Ave
Denver, CO
March 2 - 3, 2019

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 20 - 21, 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

Introduction from Curtis: For this issue's article, I thought I would share some of the conversations I've had with enthusiasts throughout the past year. I will describe some of the conditions users ran into and try to explain the reasoning behind the solutions I offered.

mfx Mysteries

We have had a few users operating new products that now include the mfx decoder. While the overall experience of using products with mfx decoders is seamless, the way mfx incorporates itself into the Central Station can be a bit of a mystery.

Lost mfx Locomotives

The first question I'll discuss is about missing mfx locomotives. In this situation, we receive correspondence from users who have registered new mfx locomotives into their system, and during their next train operating session they discover the locomotives have disappeared from their data listing. Along with that, we hear some comments that the locomotive won't re-register in an effort to re-acquire the locomotive in their list. As a result, there are a couple of actions that we would look through:

CS3/CS3+: Under the "Locomotives" button, be sure to check that the view list isn't restricting the locomotive you seek. Select the "Show all" box, select the specific type of engine, or be sure all the selections are unchecked. (I say checked/unchecked but it really is just an eye icon, to signify view mode). Fig. 1 (left), shows only the Electric locomotives are selected for viewing.

CS2: When you look at your locomotives list, be sure to select the "All" radio button. Fig. 1 (right), only displays the "Last Used" option and locomotives.

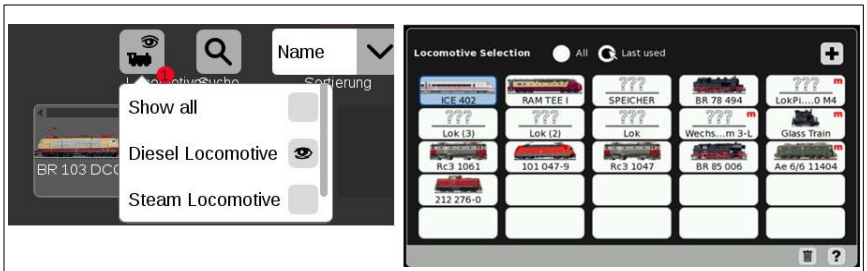

Fig. 1 - CS3 (left) and CS2 (right) locomotive list display options

The second task to review would be to re-discover the mfx locomotives:

CS3/3+: Under the "Edit" button of the "Locomotive" list panel, you can select the "Rediscover lost mfx locomotives" in order to re-read any mfx decoders that may have missed the "Read" cycle. The "Read" cycle, which starts a scan for any mfx locomotives, typically starts when you switch from track power off (Stop bar lights on) to track power on (Stop bar lights off). The cycle may be missed if you place an mfx locomotive on the track while there is power to the track. Fig. 2 (left), displays the "Rediscover lost mfx locomotives" option (red outlined).

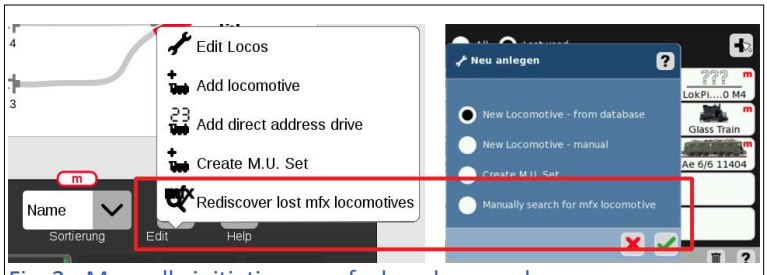

Fig. 2 - Manually initiating an mfx decoder search

CS2: Under the “+” (Add loco) button, the pop-up menu will reveal the “Manually Search for mfx Locomotive” option. Select that to begin re-discovery.

There are some instances when a locomotive is removed or deleted by the user and it will not re-register. This I believe can be caused by an incomplete deletion procedure. Unfortunately, I can’t expand on what may cause this, but it seems like there is remnant data that fools the system into thinking the mfx unit is still in the system. In this case, a system restore can often remedy this particular situation.

At this point, I would like to encourage the method of creating restoration points. In other words, do system saves. Doing a simple shutdown doesn’t guarantee that any of your operating sessions where you add locomotives or any other edits, will be saved for your next session. This will allow you to recover newly added mfx locomotives that may have become “lost.” In this example save before your shut down the CS. In the next topic of customer reports, I’ll give you a reason why it might be smart to create a restore point BEFORE adding a new mfx device.

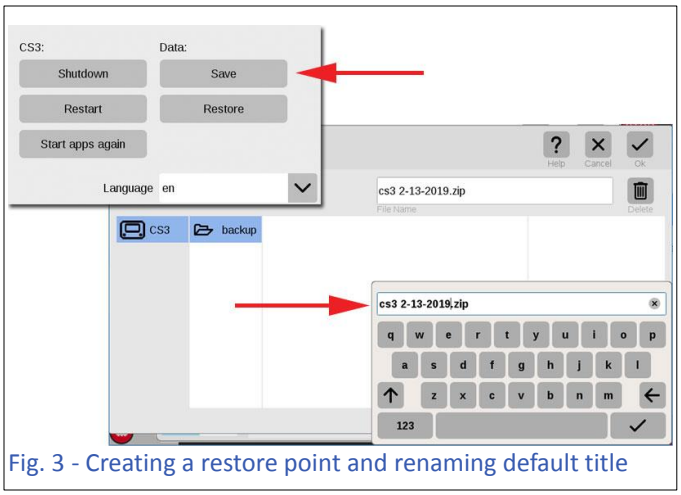

Fig. 3 - Creating a restore point and renaming default title

Fig. 3 illustrates the “Save” button to click and the opened backup file window. The second indicator illustrates the renaming of the default “cs3_backup_001.zip” title.

In Fig. 4, the restoration file to load is now indicated in the restoration list.

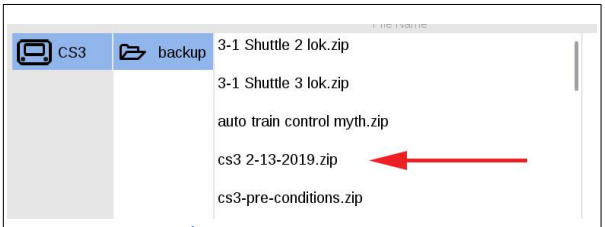

Fig. 4 - Locating the restore point

mfx Device Addressing

Many of our users are now starting to use modules that are upgraded with mfx decoders. Typically these are signal modules, M83, M84 and turnout decoders. These devices can have dip switch settings and are often overlooked in favor of the mfx’s ability to register itself with a unique operational address. What happens is the addressing of the device can create unexpected entry results. This is partially due to the complexity of how mfx addressing works and operates, and the unfamiliarity of the device for the user.

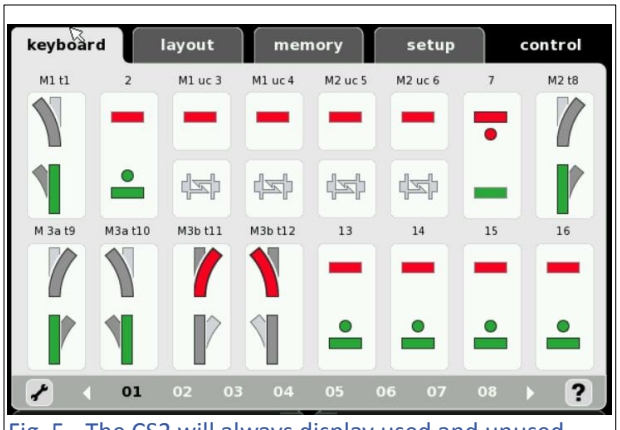

Fig. 5 - The CS2 will always display used and unused address locations

This problem is more evident with CS2 users over the CS3 users. The CS2 displays all pages of possible

keyboard addresses, whereas the CS3 will only display the addresses of 'articles' in use. The most common complaint is the user tries to organize their devices into groups, and the mfx addressing will look for the lowest available slot entry. Fig. 5 illustrates the article display for the CS2 user. So the mfx auto addressing may put a single decoder address into slot 2, or a multi-address device (m83, m84) into slots 13-15. If you are a user who tries to put all signal lights into page 06 and above (see numbers along bottom row), then your mfx addressing would place them into the wrong locations by default.

When users try to remedy this, they usually try to re-address the device, or they delete the device and/or try to re-register by changing the dip switch address. Often the CS won't re-register the device and notifies 'no new device' has been found. They also attempt to manually re-enter the device only to find that the device won't be registered under an mfx marker.

If you run into this problem, then the best method to remedy the situation has been to utilize a restore point. The restore point should be created prior to adding any new mfx device into the system until you become familiar with the behavior of the device. The explanation is similar to the problem with the mfx locomotives. Primarily, we want a clean data point that won't have any prior information regarding the new mfx device. (See Figs. 4 & 5 for the represented screens).

A Save Procedure and Understanding of mfx Addressing

As mentioned earlier, first create a restore point prior to adding your devices. This will give you a clean slate should any of the new entries you add surprise you with undesired results. Give it a date, so you have a better idea of how far back you'll have clean data.

Basics of mfx Addressing

mfx decoders have the benefit of eliminating the worry of duplicate addressing, but a basic understanding of how it works can alleviate some of the mystery. An mfx item may have a duplicate 'core' address, but when combined with an mfx controller it will be indexed. So if you have similar units all addressed at the factory as #03, the system will identify and address the device as 03.0, 03.1, 03.2, etc. The system can handle over 1,000 addresses and multiplying that by over 1,000 indices each, should safely avoid any address conflicts with mfx decoders. Note – non mfx decoders will still require unique addresses as they cannot be indexed.

mfx decoders with dip switch settings may seem redundant, but there is a good reason to have them. If you leave the dip switches untouched from the factory, the mfx protocol will assign their indexed addresses as described. Let's say the DS address is '0' from the factory. Left untouched you'll just be piling up the '0' address indexes (i.e. 0.1, 0.2, 0.3, etc.). This means all accessories, signals, turnouts, M83 and M84 units will all be grouped under address "0." This shouldn't be an issue for most users as it's difficult for even the wealthy to acquire 1,000+ devices.

Dip Switch Addressing

Is there a reason to set the dip switch address on an mfx decoder? As mentioned earlier, some users try to categorize their devices in the CS. For CS2 users, I suggest looking for the first available slots appropriate to your device. Remember that an m83 or m84 will require 4 sequential slots. CS3 users

may not require categorization, because the CS3 has category markers when you add them. Also, the CS3 will only add icons for devices added, unlike the full page listings that are always present with the CS2. You can consider the dip switch (DS) address as a folder label, all devices of that type would fit into that folder.

Now, with all that explained, it would still be relatively transparent to you, the user. Why? Because if you search for an address on an mfx decoder (especially one with a duplicate factory set address, say 3), you wouldn't see 3.x. Instead, what would come up is a not so random number. What you would see is roughly a multiplier result between the factory set address and the index set through mfx. Even then, it's not so simple, because the multiplier isn't fixed on the address. The nearest I can tell is that it can be a fraction or common denominator of the factory address. For instance a factory address may be 24, but it looks like 4, 6, 8 or 3 may have been used as the multiplier.

Reeling it back in

By now, I've either lost you or you've realized it's too much information to worry about just to run trains. In short, set the dip switches on your device by a category, or just let the address ride in the automated mfx entry machine of your CS. If you DO wish to categorize your ds address, be sure to look up the available addresses before connecting the mfx device for reading. But, create that restore point prior to connecting the devices in case you want to make a change.

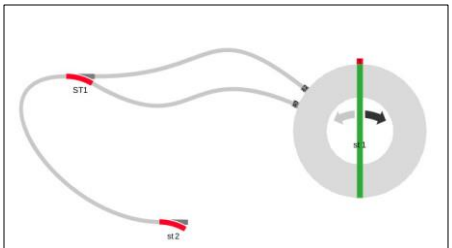

Fig. 6 - Freeform nature of automatic track connection

Track Board (TDCB) Tips

Track Lines are Rough (CS3/CS3+)

CS3 users wrote about the lay lines of their track connections between track elements like turnouts, bumpers etc (Fig. 6). They wrote about the unevenness of their straights and curves. CS2 users had rigid block structures in a more traditional display of track elements, but the CS3 offers more fluid track lines, which allow for more representative track angles.

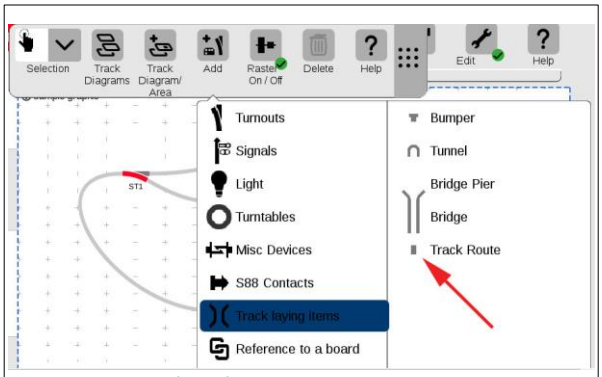

Fig. 7 - Click on 'Add' icon to reveal sub menu location and Track Route element

The solution to many of the track design mishaps lie in the submenu for "Track laying items" (Fig. 7 – the system highlights this in dark blue, so it's hard to read). Here you find non-article items (articles are turnouts, signals or anything else with a decoder). The list includes Bumpers, Tunnels, Bridge and Bridge pier icons. The most important one would be the Track Route icon you may find that you'll need more of these than any other item in the track board diagram. In Fig. 8, I've added Track Routes indicated in the track board. Track Route icons have connection points at each end. These are the same connection points that are seen when you click on a turnout. You use the Track Route icons as a way to 'guide' or 'pin'

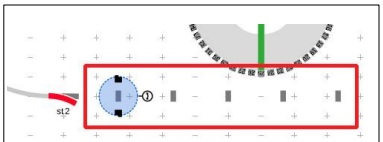

Fig. 8 - Inserted Track Route icons illustrating connection points

your track lines in place. Use them to smooth out unruly curve geometry or to straighten any uneven track lines. Fig. 9 & 10 illustrates the completed edit.

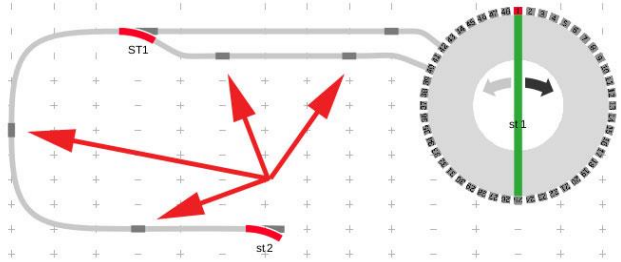

Fig. 9 - Track modification with integrated track route elements in edit window

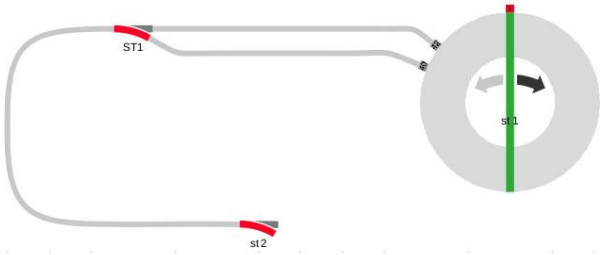

Fig. 10 - Track Route elements hidden in finished track edit.

New Software [1.4.0 (0)] Feature

There is a new feature I would like to mention that also helps with alignment. You can see at the top of Fig. 7 there is a new “Raster On/Off” icon. Currently it is set to on (indicated by the green dot). This sets any moved icon into a grid location so all your placement can be auto aligned in a vertical or horizontal alignment. This will affect all your newly created track boards. For existing boards, they won’t align anything from your created plan. To re-align any existing plan, you’ll have to select each element and move them slightly. This motion will trigger the auto alignment and shift the item into the grid, but you WILL have to move each element. If you turn off the Raster icon, your movements will be free form for any required adjustments. The icons won’t shift to a grid lock.

Track Plan Too Big (CS2/CS3/CS3+)

Users with large or complex layouts asked for a method to make their track boards more manageable or easy to navigate. By default they have either attempted to place their entire layout on a single page, or they would use the pull down selection menu to navigate several pages. For the former solution, the track plan would usually need to be scrolled up, down, left or right to get to a specific area. Or if they could connect it to a PC screen or their mobile device, they could attempt to zoom out, which would make the icons impossible to accurately activate. For the latter attempt, it would require time and motion to get to the proper page. If you’re in a rush, it would be possible to navigate to the wrong page, which is counter-productive to being in a rush (especially when avoiding mishaps).

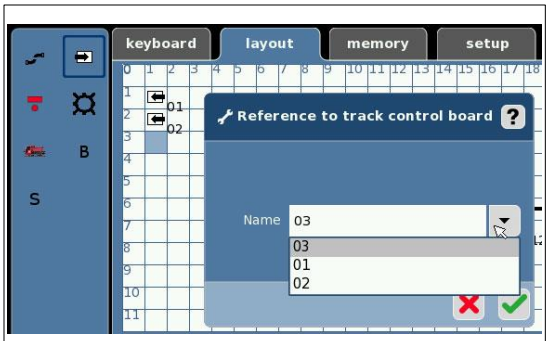

Fig. 11 - CS2 Layout Board link location and selection list of link options

The solution here is to learn to properly set up track links. Track links are specific track connections that will navigate you to the proper section of track from one end point to another, without having to look up the list of track pages (if you have them). Separating the track into several pages allowed the user to keep the layout at usable sections and maintain a usable state of control. No scaling of size or zooming is necessary.

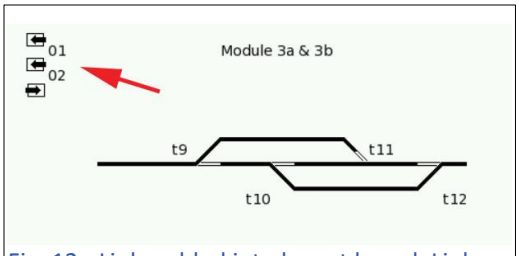

Fig. 12 - Links added into layout board. Links set up for modular layout

On the CS2, the link item is located in the top left of the CS2 layout editor. When you add this item, you'll receive a dialog box where you would set the layout page to switch to (Fig. 11). You'll want to add these links at each end point that goes to another page. Each end point should have a link on two pages, so you can easily go back and forth from a single line.

In Fig. 12, I've added three track board link icons indicated. I didn't attach these to a track line in this particular example, because the track boards are set up for train modules which can be placed in a random order. Therefore, direct track links wouldn't work.

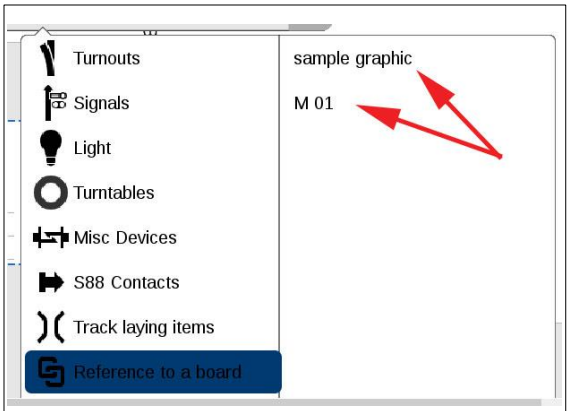

Fig. 13 - CS3 'Reference to a board' submenu location with list of available link destinations

CS3 users will need to go to the "Add" link in the TDCB editor (track board edit page) and click on the 'Reference to a board' icon (again highlighted in Dark Blue). Fig. 13 indicates the Track Board options the link can connect to.

Fig. 14 shows the added link icon. You can see there is a connection point to the icon. And finally in Fig. 15, you can see the completed track link example. Notice how there is a link label that notifies you which board it will connect to.

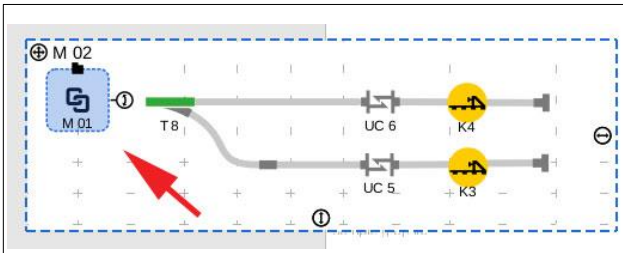

Fig. 14 - Track link icon with track connection point displayed

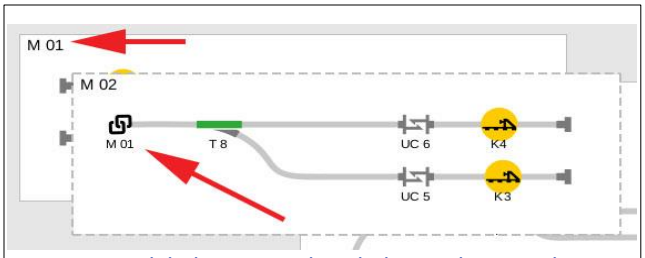

Fig. 15 - Track links in completed plan. Indicators show link reference connection

I hope you have gained some insight and perhaps we have answered questions you may have encountered regarding these systems. We always welcome your questions regarding Märklin, Trix, LGB and digital operations.

Please see page 12 of the newsletter for our annual summary of articles from the previous year.

Thanks for reading!

Curtis Jeung

Summary of Newsletter Articles 2018

As we start 2019, we want to provide you with this summary of the articles and topics we covered in the 2018 *Digital Newsletter*. If you are missing any newsletters, please send an email to club@marklin.com and they will be sent to you.

2018			
Title or Topic	**Edition Vol & No**	**Month, Year**	**Author**
Installation of LED coach lighting kits with minor customization.	30 – 1	Jan – Feb 2018	Rick Sinclair
Advance programming and sensor tactics. Multi line shuttle setup. Event nesting. Multi-train setup. Passing line setup.	30 – 1	Jan - Feb 2018	Curtis Jeung
Locomotive Maintenance	30 – 2	Mar - Apr 2018	Rick Sinclair
M84 (60841-60842) and Hookup with Track lights, stop blocks and constant power accessories.	30 – 2	Mar – Apr 2018	Curtis Jeung
Märklin Motors – overview of the various types of motors and upgrades.	30 – 3	May - Jun 2018	Rick Sinclair
Factory Announcements May 2018	30 – 3	May - Jun 2018	Märklin
Staging Yards – Variation of sensor control. Comparison to base method.	30 – 3	May - Jun 2018	Curtis Jeung
CS3 Update Notice	30 – 4	Jul - Aug 2018	Märklin
7292 Grade Crossing modification and use of M84 for control.	30 – 4	Jul - Aug 2018	Rick Sinclair
Connecting your CS3 to a computer	30 – 4	Jul - Aug 2018	Curtis Jeung
New Grade Crossing 74923 and control with M84.	30 – 5	Sept – Oct 2018	Rick Sinclair
Details on CS3 update version 1.3.3 (1). Highlights new advanced Script/Event features.	30 – 5	Sept – Oct 2018	Curtis Jeung
Replacing signal post on Märklin Grade Crossing	30 – 6	Nov - Dec 2018	Rick Sinclair
Creates a 3 line to 1 line shuttle. Introduces New Event step conditions provide in update 1.3.3 (1). In depth look at event nesting.	30 – 6	Nov - Dec 2018	Curtis Jeung

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To contact Rick and Curtis for help with your Digital, technical and product related questions:

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