



NEWSLETTER

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Digital Consultants

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Current Central Station 3 Version – 2.4.0 (5)

Current Central Station 2 Version – 4.3.0 (5)

Current Mobile Station 2 Version – 3.148

Once again Fall has come, and we are about to enter the Holidays. This is a friendly reminder to send your trains in for service before it is too late. Many train shops cannot get the repairs out in time for Christmas because of the volume of repairs that is needed. The wait can even be longer if parts need to be ordered. So, the sooner the better.

Rick's article gives a more in-depth explanation of the turntable (74861) using the Mobile Station 2 controller. Curtis' topic is "A Look at Controlling Contacts."

In my previous article I focused on operating the turntable (74861) with a Mobile Station. I looked at it from an excited user perspective. Meaning I did not refer to the manual very much. I did look at the operational graphic online that gave Mobile Station instructions but not the set-up instructions for programming.

Now there really is not much more to the set-up but I want to at least cover it so people are aware of it and can use it if they choose.

Turntable Manual

Because the turntable is backwards compatible, it opens a door for Mobile Station users. Now the instructions do not specifically say what controller the instructions are for, but it looks like it is written for the older digital 6021/6040 Keyboard era of controller. Since the Mobile Station is basically an advancement of that technology, this technique works for both controllers.

On page 14, the manual describes how to set a new track 1. This may be useful if someone wants to change their layout or perhaps just adding another roundhouse section. Whatever the reason, using this technique, the turntable does not need to be touched. Re-programming track 1 is done in the Mobile Station.

The instructions are easy to follow, but once again, the Mobile Station instructions will need to be referred to on page 15 of the manual once it is downloaded from the Märklin website (Fig 1).

CS2/CS3	6021 (/CS2)	72760	MS2 address	Function
STOP	end		225	Rotation is ended at the next track
↑	input	Button 1	225	Unlocking/Locking the turntable deck (on = unlock)
GO	clear		226	Continuing to run after STOP
↻	turn	Button 2	226	Rotating 180°
step	step	Button 4	227	Deck rotates clockwise to the next track
step	step	Button 3	227	Deck rotates counterclockwise to the next track
↻			228	Preselection of the rotation direction clockwise
↻			228	Preselection of the rotation direction counterclockwise
*			229 – 236	Destination track to be stopped at
16			236	Sound: Announcement of the turntable operator
17			237	Operating sounds off
18			237	Operating sounds on
19			238	Sound signal: „(Locomotive) approaching“
20			238	Sound signal: „(Deck) turning away“
21			239	Light off (inside)
22			239	Light on (inside)
23			240	Light off (outside)
24			240	Light on (outside)

* In the CS 3, you can stop at the tracks by touching the desired track on the display. No special buttons are provided for this.
Note: The turntable accepts no switching commands as long as the locking feature for the deck is open.

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Fig. 1 Mobile Station Instructions hi-lighted.

The operation to set track 1 goes like this:

1. Rotate the bridge to the desired track 1. It does not matter which end of the bridge is at the desired track 1.

2. Press the “STOP” button to turn off track power - now is a good time to scroll to address 225/226 on the Mobile Station as in Figure 2.

3. Press the “STOP” button again and within 5 seconds enter the commands “Clear – Input – Clear” When looking at the online instructions, this translates to pressing the Keyboard buttons “226 Red – 225 Green – 226 Red”.

This will set the current position as track 1.

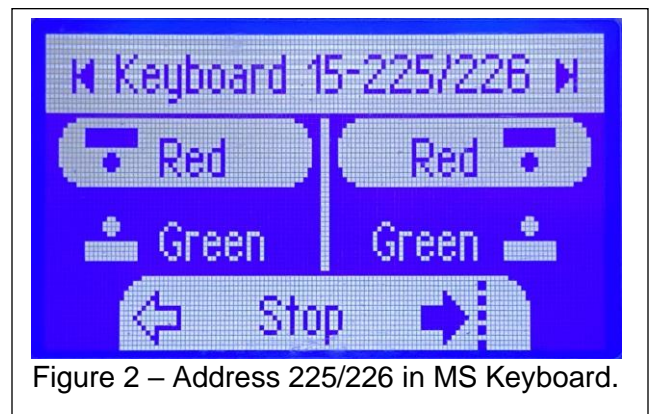


Figure 2 – Address 225/226 in MS Keyboard.

Some of our knowledge comes from our users by answering their questions. Sometimes it leads us to test theories and figure things out. In this case, I was talking to someone about the turntable indexing to each track whether there is a track piece or a blank piece there, and the discussion came up about initialization of the turntable with the Mobile Station. I decided to explore this.

The theory was that if I could initialize the turntable to map (internally) the track and blank sections, then the Mobile Station would not select a “blank” section. Now there is no turntable diagram for the Mobile Station, so I knew there was no getting around that, but I wanted to see what the difference as if I initialized it.

Initialization

Using the same theory that the turntable could be initialized, and by reading the instructions, it was just as easy to initialize as it was to re-set track 1. The process goes like this:

1. Turn the bridge to track 1.
2. Press the “STOP” button. - now is a good time to scroll to address 225 on the Mobile Station as in Figure 2.
3. Press the “STOP” button again and within 5 seconds enter the commands “End – Input – End” When looking at the online instructions, this translates to pressing the Keyboard buttons “225 Red – 225 Green – 225 Red”.

Once this is done the turntable will start to rotate and map the track and blank sections.

After the sequence was finished, naturally I wanted to test it. I chose a random blank section to send the bridge to. To my disappointment, it went to the blank section and stopped.

I had to think what the purpose could be to initialize the turntable with a Mobile Station because it seemed there was no difference. What I realized was that there is no feedback to the Mobile Station to prevent the turntable from following the command to stop at a blank section, but I thought that the turntable might give the “error” tone and not follow through with the command. Obviously neither were true.

After another minute of thinking about it, I tried the “Step” command (227 Red or Green). This moves the bridge to the next track section. The bridge rotated to the next track section and skipped over the blank sections.

Now I realize the benefit of the initialization process is minimal, but it could be convenient in many cases when moving locomotives to and from a roundhouse.

Turntable Sounds

One of the best parts about our job is that we get to experiment. Some experiments work and some do not. We like to show people that we make mistakes too, but we like to share our failures to help others, so they do not repeat our mistakes. Below is just such a scenario regarding the turntable.

I was talking to another friend about the sounds in the turntable. Specifically, he wanted to know if the announcement of the operator could be changed to English. I told him that it could not, nor could the decoder be re-programmed because it is a factory decoder.

This did get me to think that there is a decoder sound project that can be downloaded and installed into a decoder. In doing warranty work on the turntable, I know it has a standard looking 21 pin decoder in it. So, in theory, one could program the decoder with the profile from the Märklin website and add their own operator sound. At least that is how it works in my head.

To test this, I started by downloading the sound/decoder project from the Märklin server. Since there is only one operator sound, I could not add multiple sound files. There is no way to “add” function buttons to the turntable profile, so I inserted my own custom sound where the operator sound was.

Once I installed the decoder into the turntable and connected it to my CS3, to my disappointment it registered as a locomotive. While I was able to make it play the custom sound that I uploaded into the decoder, it was not controllable like the original decoder. There was no indexing or even stopping on a track section. The motor ran like a locomotive. I then tried adding an MFX device to the article list and the turntable would not load as an article either, so this theory (as many in my head) is a bust!

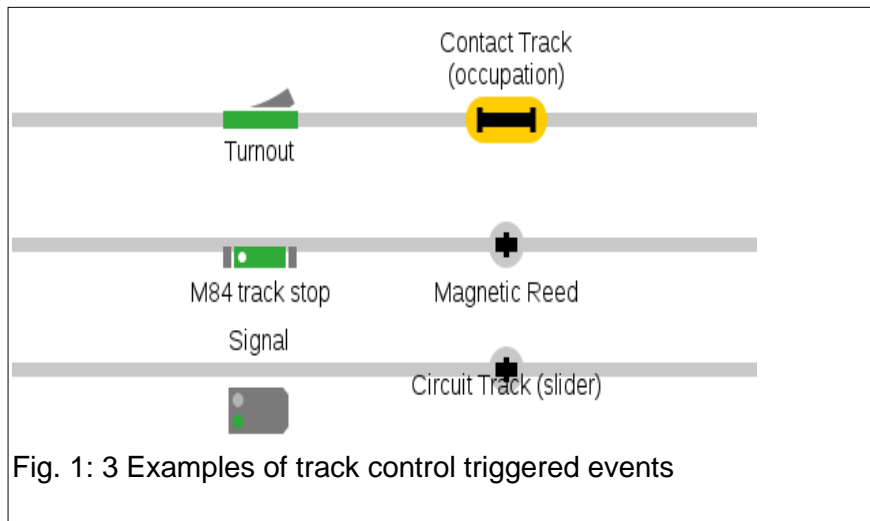
I will have to do some research to see if I can overcome this failure. Or, I just might have to admit defeat.

Enjoy your hobbies!

Rick Sinclair

A Look at Controlling Contacts

As a faithful reader, you've most likely read some of my articles regarding Event (CS3/3+) programming. Events allow the operator to activate many objects (called articles in the CS) either through a single button touch or with automation using track contacts. One aspect of events which has seldom been discussed is 'Controlling Contacts'. In this article, I will explain what the controlling contact does, and how they can be used with your events and event triggers. For beginners, let me first explain what automation event triggers are. They are sensor contacts that tie in track portions to a sensor module, known as an S88. They can be track 'triggers' activated by the center slider (of 3 rail systems), magnetic reeds or wiring setups that detect track

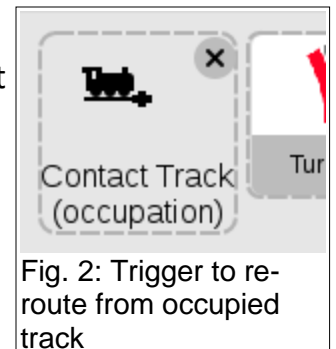


occupation. They send signals to the S88s that tells the controller (CS3/3+, CS2) which sensor on the layout has been triggered. They do NOT tell the controller which loc has triggered a sensor. It only tells the controller that a specific sensor has been triggered.

Some examples of trigger events and how they work are displayed in the figures below. Caution! - the examples simply show what triggers can do, not fulfill the logic of making sure they function properly.

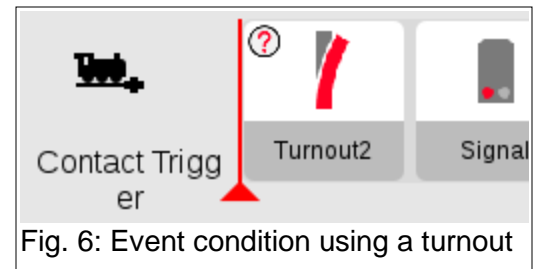
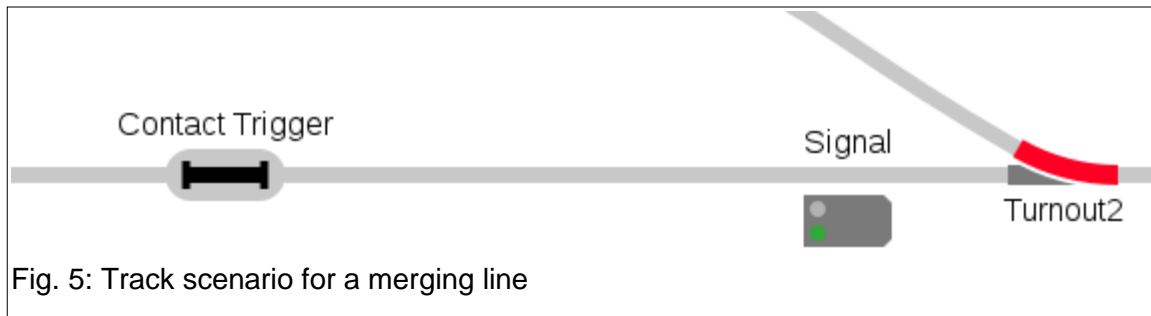
In Fig. 1, the first example is a Contact track sensor. Of the three sensors shown, it is the only one that can be used for track occupation readings.

A trigger like this can be used in the example shown in Fig. 2. When a train triggers this contact, it can set the turnout (behind train) to re-route any incoming travel.



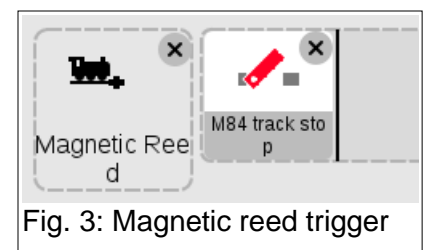
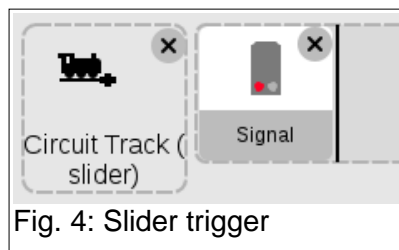
Likewise, in Figs 3 & 4 both triggers can be set to control train stopping devices like the M84 track stop or the signal stop devices. Also, note that the three examples control non-locomotive devices. Call them track or layout control events.

Event Controls



Events can contain more than just action steps such as switching a turnout or altering a signal aspect. Setting the CS3's 'extended modes' functionality, events can contain conditional containers within the event step line. These can be defined as 'control' containers, because when placed within an event line, they act as controls. The types of control they exhibit can either end an event process or allow it to proceed. It all depends on where they are placed within the step line. They are identified by a '?' on the corner of the conditional container. Some examples of event controls and conditional containers are explained in the following examples.

In the first example (Fig. 5), I want to check the condition of Turnout2 to see if the switch is set for incoming traffic. If so, then I will set the signal to stop the train. The event is triggered by the Contact Trigger. The programmed event is shown in Fig. 6.



You can see the condition is evaluated by the control step labeled 'Turnout2'. If the condition is 'true' (turned condition) it will set the signal to 'stop' (red). The event in Fig. 6 is started when a train reaches the contact trigger.

A similar example is shown which uses a Signal as the conditional control (Fig. 7 & 8).

In the example above, the contact trigger will first evaluate if the signal is set to stop traffic. If 'true', the event script will continue to set the switch to the siding. It will also set the entry signal to allow the train to pass under the 'proceed slowly' aspect.

Controlling Contacts

Up to this point, I have described two distinct elements that are unique in their definitions. Trigger elements (sensors) and controlled elements (conditional articles, like turnouts and signals). There is another element which has two forms.

These are called, 'Controlling Contacts'. However, one is labeled within the CS3 software, but the other is not. To understand this, I will describe the similarities in application, and then I will define the unique separation of the second form.

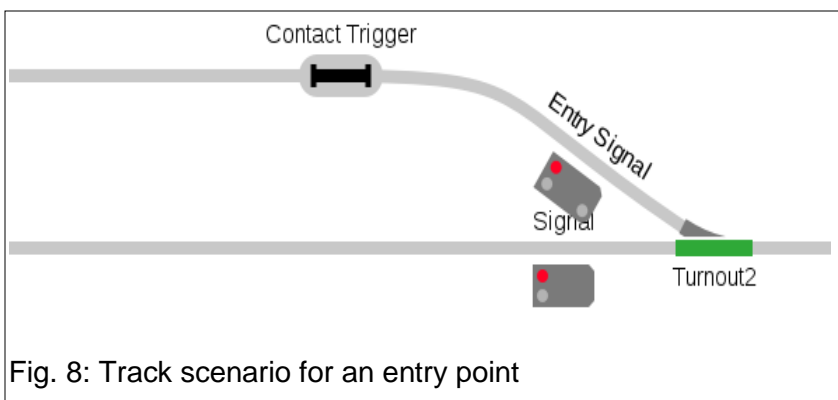


Fig. 8: Track scenario for an entry point

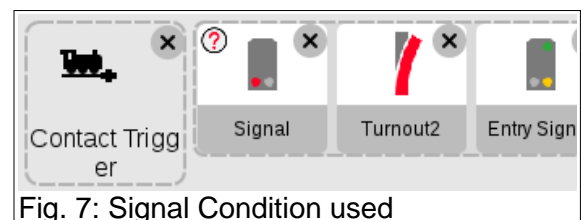


Fig. 7: Signal Condition used

Controlling Contacts essentially use contacts as controls. In the previous track scenario examples, the events used a signal and a turnout to control the event. Rather than evaluating if a signal is red, evaluating a track sensor may be more reliable (the signal may not accurately signify that a train is nearby). In this sense, we would use track contact sensors as the conditional control element. The difference can be seen in the event script example in Fig. 9 & 10.

This method allows the use of a contact track to act as a control condition to allow an event to execute. In Fig. 10, If the contact track displays as 'unoccupied' (gray), the remainder of the event steps will not execute.

The example shown is the style of control contact that you may already be familiar with from previous articles of the digital newsletter.

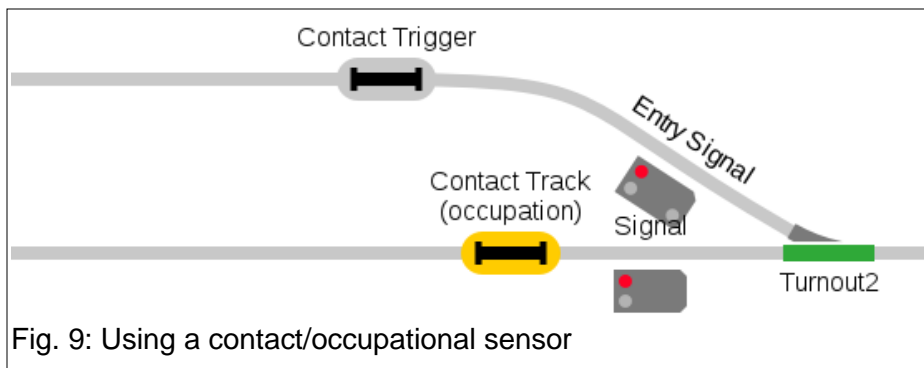


Fig. 9: Using a contact/occupational sensor

The alternate form of control contact is referenced, by label, in the CS3 (Fig. 11). They are very similar in use to any of the control examples mentioned so far, but there is a distinct difference. The 'Controlling Contact' is a software-based contact only. In other words, this style of contact does not require physical connection to a sensor module (S88).

The question is, "How can you have a contact track that has no connection to the physical layout?". To partially explain the existence of this type of device, it is a control device which does not require a physical device to exist. No signal, turnout, light or sensor is required. Calling it a contact is a bit of a misnomer.

The other distinction of the controlling contact is that it is an event switchable device. That is, you can switch its setting to on or off in an event step. Like how you can switch a turnout or signal to one setting or the other. And while S88 contacts can be switched on or off as well, you would not want to because it will interfere with the main purpose of track/train sensory input. The controlling

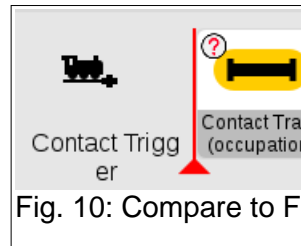


Fig. 10: Compare to Fig. 9

The screenshot shows a software interface with a dropdown menu. The menu is open, showing a list of options: 'Solenoid accessory' (with a checkmark), 'Solenoid accessory' (highlighted in blue), 'LinkS88-1', 'LinkS88-2', 'GFP3-2', and 'Controlling contacts'.

Fig. 11: Controlling Contact listing

contact is essentially a non-track related controllable device (which does not require a sensor module connection).

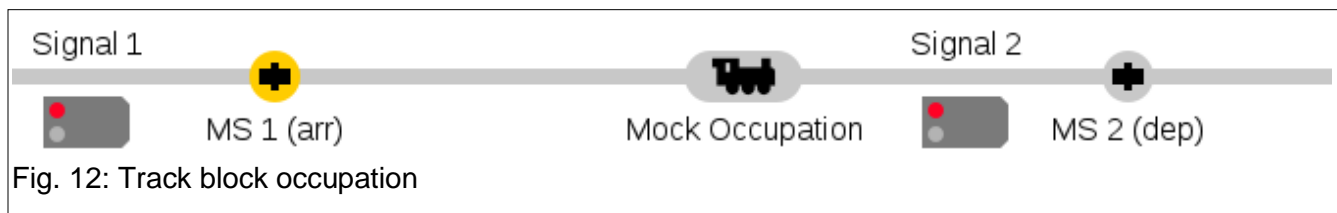
Use of Controlling Contacts

Honestly, when to use a controlling contact may only be a result of finding a need for one. My first use of them was applied in the locomotive tracking article that I wrote about in the Digital Newsletter of 2022- Number 2. This application is well beyond the typical user skillset. Since then, I have searched out some more reasonable applications. I will share them here.

Track Occupancy

I think the first valuable use of the controlling contact will apply to our two-rail track users. In Märklin's 3-rail system, many of our readers should be familiar with track occupation sensors. For the 2-rail systems (Trix, LGB, etc.), occupation detection was not ideal, if not unattainable. Sensory feedback was limited to using either magnet reeds or loc detection only. These are momentary triggers that would switch off almost as soon as they were switched on. Using Controlling contacts is a way to imitate track occupation in a 2-rail system.

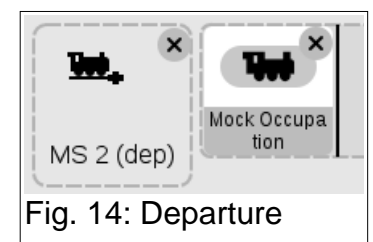
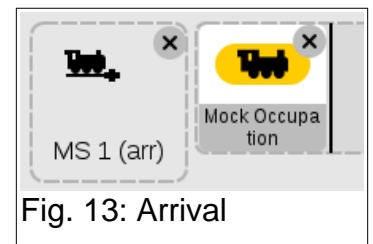
Fig. 12 is an example of a layout setup required for showing track occupation in a 2-rail system.



The example above is a bare minimum approach to setting a track block. It requires one entry point trigger 'MS 1 (arr)', one exit point trigger 'MS 2 (dep)', and a Controlling contact 'Mock Occupation'. The entry point trigger will turn on the 'Mock Occupation' contact, indicating track occupancy. The exit point trigger will shut off the 'Occupation' contact, indicating a vacant track.

Where you place the triggers can depend on length of train, or where and when you want the occupancy readings to display.

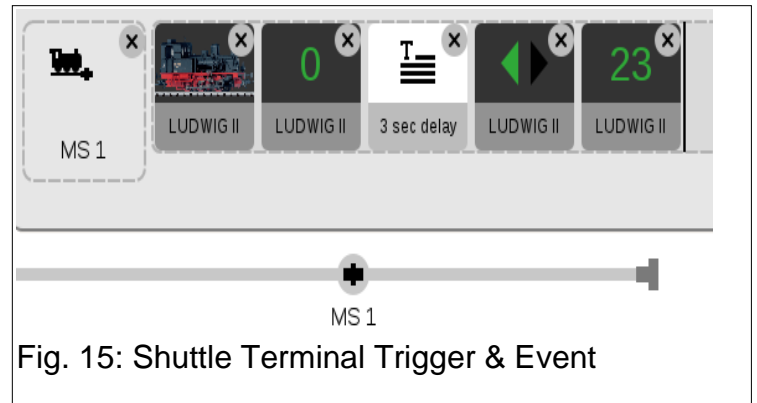
For example, in the above situation, the MS2 may shut off the occupancy while the tail end of your train still resides in the block (track triggers are generally set by the locomotive). The events for these are shown in Figs. 13 & 14.



From this point, you can use similar event blocks using the 'Mock Occupancy' controlling contact as your occupancy condition, like the example in Fig. 10.

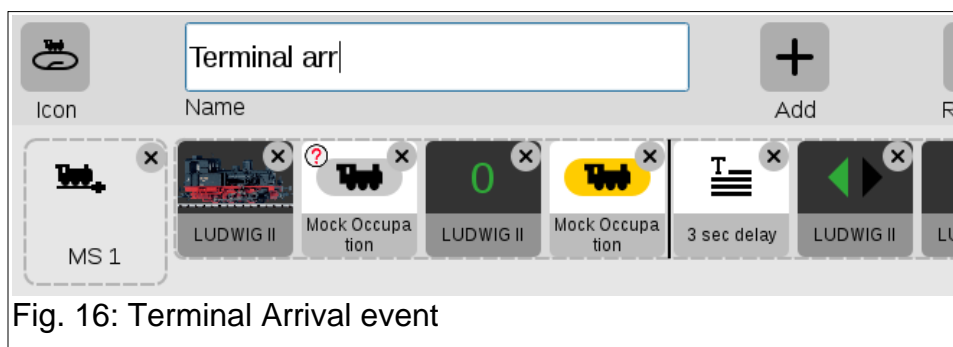
2-Rail Shuttle

The CS3's shuttle macro, and the shuttle system that I've written about, is geared more towards the use of an occupancy track at the terminal end of a shuttle line. The use of momentary triggers in a shuttle terminal is problematic due to the trigger detection itself. The illustration in Fig. 15 shows the event script and the track layout of the terminal trigger.



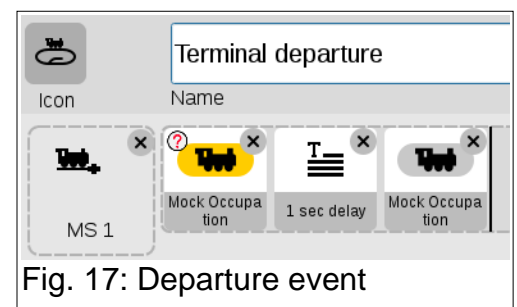
In short, when the magnet triggers the event to stop the train, the magnet will already have moved beyond the trigger. Once the train reverses to the opposite direction, the magnet will re-trigger the event and stop the train before it leaves the terminal station. The potential problem is having a train constantly switch back and forth over the magnet trigger, thus going nowhere.

A possible solution is to create a controlling contact toggle to prevent the terminal trigger from activating in one direction. The first event script is for the train entering the terminal end. Therefore, the terminal end would theoretically be vacant. The modified event is shown in Fig. 16. Included is the condition to see if the controlling contact is off. Then, two steps afterwards, the event sets the control contact on. It is important to note the two uses of the controlling contact.



One is to evaluate ('?'), the other is to control. If you click on either of the icons in the editor, it is set as either an action or a condition. This event will only activate if the control contact is off.

When the train exits, another event is required that is triggered by the same contact (MS 1). The event is shown in Fig. 17. When the train is leaving the terminal end, we don't want any action to take place on the locomotive. However,



we do need to reset the controlling contact so that it is off when the train returns to the terminal.

The use of Controlling Contacts can come in handy when you don't need (or want) an extra S88 sensor contact. As they are switchable, they are useful when track element icons are not appropriate. Overall, they represent a good workaround for occupancy detection with 2-rail systems. I wish you fun in your exploration of these elements.

Curtis Jeung

Upcoming Appearances:

- **Trainfest**
November 12-13
Wisconsin State Fair Park, Milwaukee (West Allis) Wisconsin
- **ONLINE Webinar**
October 19, 2022
Delayed 1 week due to factory trip

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