



NEWSLETTER

Vol. 36 – No. 5
Sept. - Oct. 2024

Current Central Station 3 Version – 2.5.2 (6)
Current Central Station 2 Version – 4.3.0 (11)
Current Mobile Station Version – 4.15

Digital Consultants
Rick Sinclair
Curtis Jeung

Fall is upon us and the temperatures outside are dropping a bit. It is a good time to get ready for the colder weather by winterizing the LGB outdoor layout and start working on the indoor Märklin / TRIX / LGB layouts!

Our first article is on the different digital locomotive decoders available from Marklin/Trix/LGB while the second article is in reference to Loop Macro function.

Marklin Decoders

Märklin offers several types of decoders and so in this article I will try to explain the details of each one and what they are intended for.

60760 Decoder (MM/FX)

The 60760 is what I call an entry level decoder (Fig. 1). While it is not MFX (it is FX/MM only), it is a great value for the cost. It has basic wiring for front and rear headlights as well as a wire for F1 function, used for smoke, telex, cab or car lighting. There is also a non-wired function for F3 if another telex coupler or light was desired. It is a simple matter to solder a wire to the pad for the F3 function to work (see newsletter Jan/Feb 2017 Vol. 29 – No. 1 for wiring instructions). What makes this such a great deal is that the most common hi-efficiency motor kit (60941) is included with this decoder.

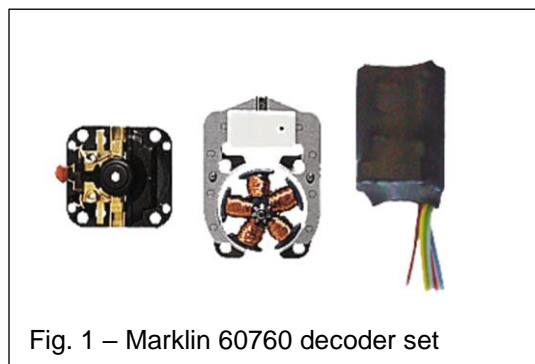


Fig. 1 – Marklin 60760 decoder set

The reason I say this is an entry level decoder is that it is addressable to digital addresses from 1-255, the AVB (Acceleration/Braking delay) is adjusted simultaneously, and the top speed can be set. Also, this decoder has 14 speed steps. This is the only decoder that comes with a motor upgrade.

This decoder came out in 2005 and while it is not in the catalog, it is currently still available. This is a wonderful decoder for those who would like to try their hand at doing their own digital upgrades and it is set up perfectly for a small, medium or shunting locomotive.

60972/60982/60983 Decoder (mLD/3)

The 60972 Decoder is a 21-pin decoder (Fig. 2). It includes an adaptor plate to mount the decoder in the locomotive. This means that the mounting plate gets wired and then the decoder presses onto the mounting plate. This is convenient for programming and allows for a simple swap of a decoder if something catastrophic took place, or just a later sound upgrade.

The 60982/60983 decoders (Fig. 3), have the same features as the 60972 decoder except they are wired decoders for locomotives with limited space or non-Märklin locomotives. Also, a loose 8-pin adaptor (not shown) comes with the 60982 for locomotives with an 8-pin NEM interface while the 60983 decoder comes with the NEM 8-pin plug wired to it.

The 60972/60982/60983 decoders are non-sound. They are full MFX and will respond to MM2 and DCC protocols as well as analog. They are addressable from 1-255 default addresses in MM and 1-10,239 addresses in DCC and have 28 speed steps.

These decoders open the door for up to four physical functions – and headlights. Also, the physical functions can be configured to several blinking patterns or a random pattern for a firebox light. They are MFX and will register into a Central Station or Mobile Station automatically. If a Central Station is to be used, the decoders can be edited easily. Please note that the catalog states the 60982 is a “sound decoder”, it is not. It is only a locomotive decoder.

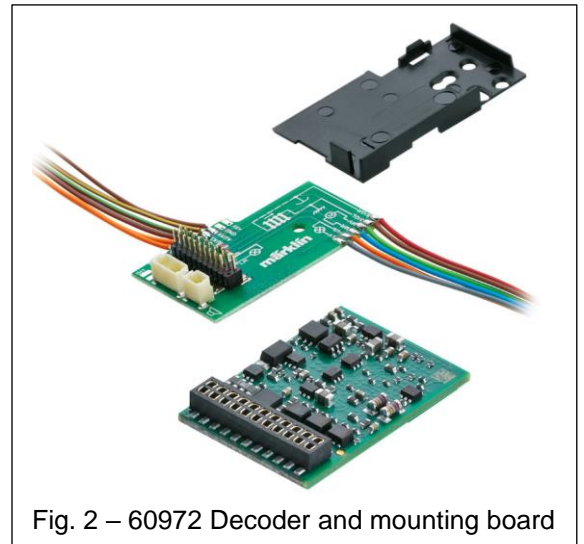


Fig. 2 – 60972 Decoder and mounting board

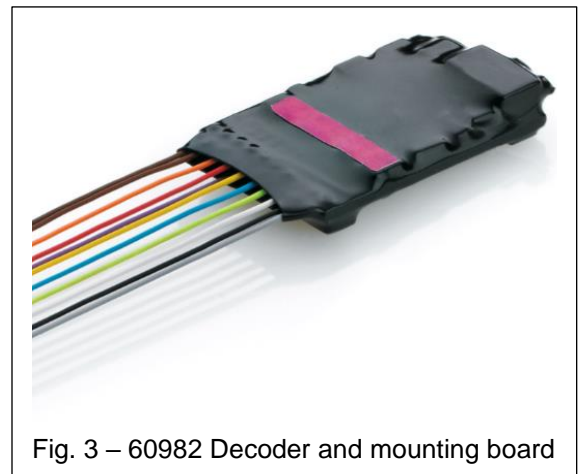


Fig. 3 – 60982 Decoder and mounting board

60906 Decoder

The 60906 decoder (Fig. 4) is unique where it combines all the functions of the previous MFX decoders into one that is made for a field coil motor (AC). This means that the original motor does not need to be changed. It responds to MM/FX and MFX protocols as well as DCC and analog. Except for only having two physical outputs and lights, it is configurable like the MFX decoders I have mentioned above. This is a wired decoder to replace the analog reverse unit.

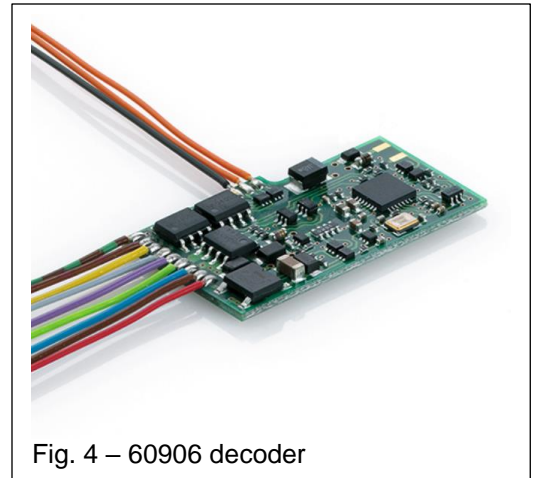


Fig. 4 – 60906 decoder

60975/76/77 – 60985/86/87 Decoders (mSD/3)

These six decoders are basically the same and all are sound decoders. There is a default sound for a steam (60975/60985), diesel (60976/60986), and electric (60977/60987) locomotive already installed. The sounds are installed already so the decoder can be installed and then the locomotive is ready to run with sound. These decoders can be programmed, if desired, with any locomotive sound available using the 60971-programming stick. The decoders also come with two speakers so there is a choice depending on the amount of space inside the locomotive.

The 60975/76/77 decoders (Fig. 5) are 21-pin decoders with a mounting board while the 60985/86/87 decoders (Fig. 6) are wired and come with a loose NEM 8-pin interface.

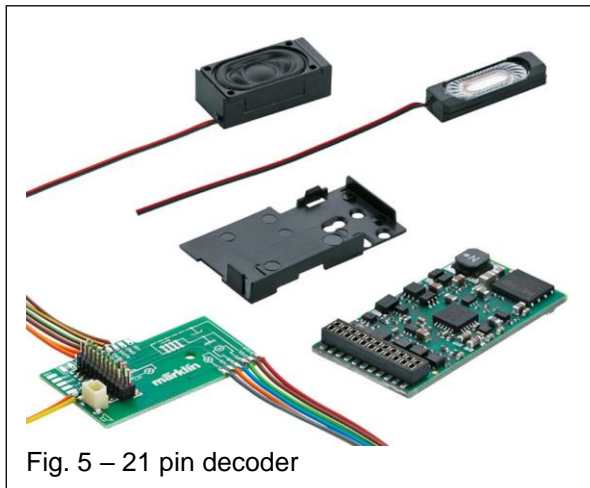


Fig. 5 – 21 pin decoder



Fig. 6 – Wired decoder

60978/60979 Decoders

These two decoders are for specific locomotives. The Märklin/Trix H0 Traxx and Hercules locomotives.

The Hercules locomotive takes a specific decoder (60978) where the TRAXX decoder has a 21-pin interface (60979). Both locomotives were produced in several paint schemes, but they did not have sound. Since these were so abundant, a decoder was created to add sound to them (Fig. 7).



Fig. 7 Hercules and TRAXX decoder

The correct sound is already installed into the decoder and the upgrade for the TRAXX locomotive is as simple as removing the body and swapping out the 21-pin decoder. The sound decoder for the Hercules has two simple solder points to the motor and two solder points to the speaker, then plugging the ribbon cable into the decoder for the lights. Both are very easy upgrades to do.

TRIX Decoders

As I mentioned, the TRIX retrofit decoders are the same as the Märklin decoders mentioned above. In the TRIX line, there is also a decoder with a PLUX 22 interface for converting TRIX locomotive (60996). This decoder has the same features and is programmable like the other mSD/3 decoder with sound, it just has a different interface (Fig. 8). Since there is a different interface, the decoder would need to be programmed with a CS2/3 or the decoder tester 60970. The 60971-programming stick adaptor does not have a Plux 22 interface but the USB portion of it would be needed with the decoder tester 60970 to program this decoder.

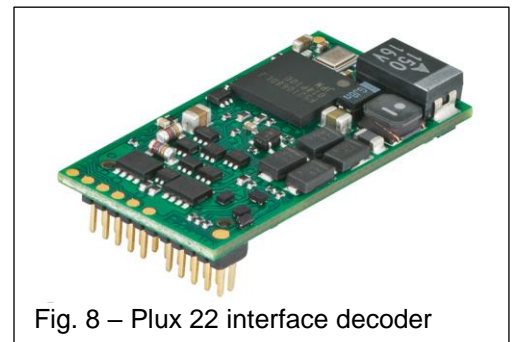


Fig. 8 – Plux 22 interface decoder

All the decoders above are for H0 scale and can be used in Märklin and TRIX locomotives as well as other brands. The only note is that the 60760 is not DCC and it is not set up for can motors.

Minitrix Decoders

When we get into N-Gauge, there are two options.

The 66857 decoder (Fig. 9) is loaded with the old Selectrix/DCC protocol. It has a MTC 14-pin interface for easy installation. This is a non-sound decoder. It is programmable to 111 addresses and 31 speed steps in Selectrix or up to 10,239 addresses and 128 speed steps in DCC.

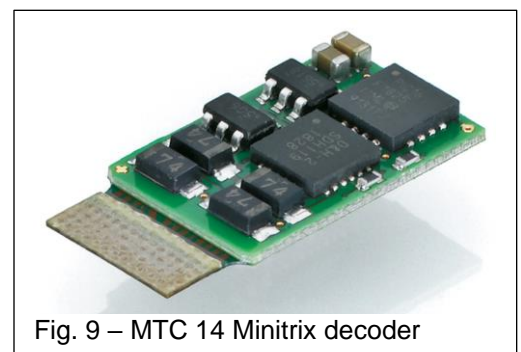


Fig. 9 – MTC 14 Minitrix decoder

There is an MFX version of this decoder that is soon to be released (66856). It has MFX and DCC protocols and the same MTC 14 interface. Also soon to be released is a version of this decoder for a 6-pin interface (66855) with the same MFX/DCC protocol characteristics. Both decoders are non-sound decoders.

LGB Retrofit Decoder

In the LGB line, there is one retrofit decoder (55029). This decoder has the same features as the other mSD/3 decoders, but it is built for larger G-Scale locomotives with one or two motors (Fig 10). It has a 27-pin decoder and mounting board. There is also a 10-pin adaptor (Fig. 11) for those older LGB locomotives with a 10-pin interface (55529).

This decoder is too big to be installed into a small locomotive such as a field locomotive (example: “Chloe”) or a “Stainz.”

I hope this will help some people choose the correct decoder for their locomotives.

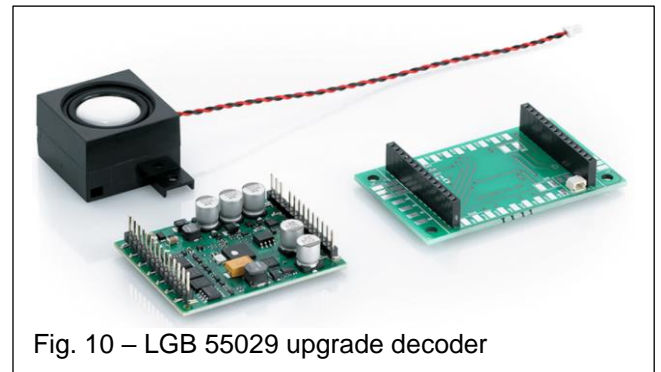


Fig. 10 – LGB 55029 upgrade decoder

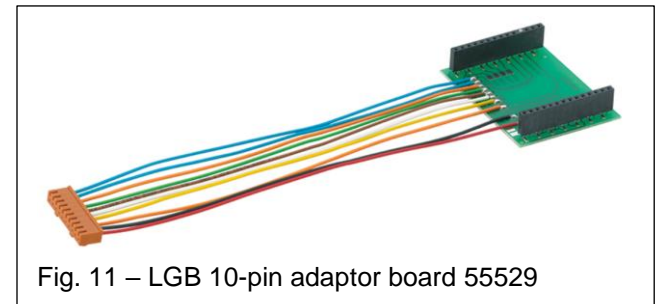


Fig. 11 – LGB 10-pin adaptor board 55529

Enjoy your hobbies

Rick Sinclair

In Depth Look at the Loop

In this article, I will discuss the Loop Macro function on the CS3. The loop function is basically an event cycle that repeats itself indefinitely. In its bare state, it will have no external triggers that influence the events within. In an intermediate level, an external trigger may be used to start and stop the loop cycle. At an advanced level, I will explore if external control triggers can be used to control specific steps within the loop. Also, due to the nature of the looping cycle, I will discuss variations of loop creation that can affect loop timing.

Initially, when looking at the Loop Macro, I could only envision its use in non-track related events. For example: a day/night cycle where you could switch on and off city lights. Random sound effects can be triggered in a loop cycle as well. You may have found something more creative than that.

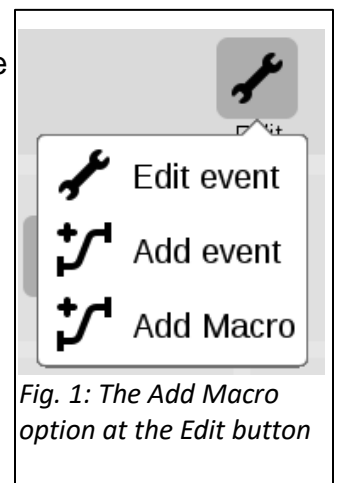


Fig. 1: The Add Macro option at the Edit button

To create the loop, you can select 'Add Macro' from the events panel, then click on the 'Edit' button. The 'Add Macro' option is at the bottom (Fig. 1). You can also add the loop macro from within a specific event, then click on the 'Add' Button (Fig. 2). The difference between the two methods is for the first one, you will need to add the macro into an event. With the second option, you will add into the event automatically, but you'll have to navigate to the loop container to create the looping actions.

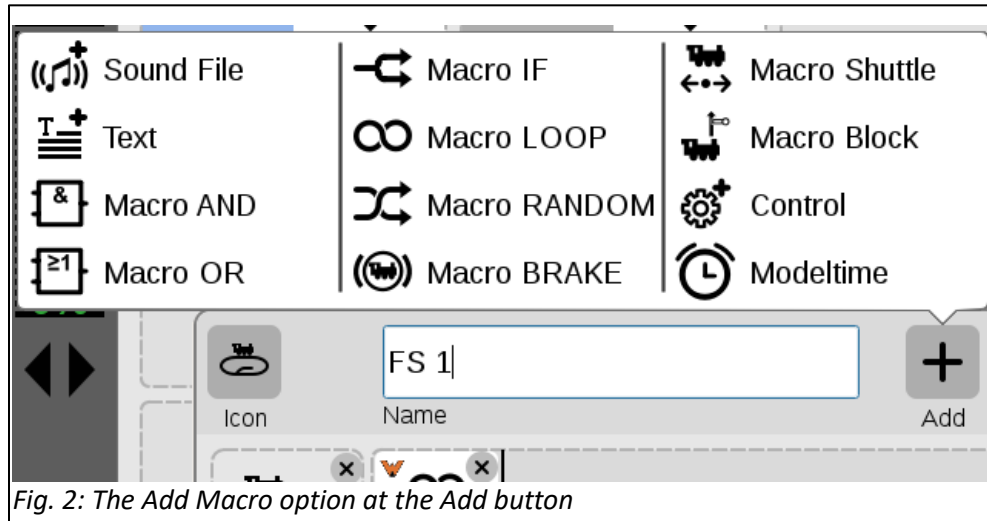


Fig. 2: The Add Macro option at the Add button

Once you have added a Loop Macro, a loop container will be created with the title 'Loop (x)'. Opening the loop container will give you an empty 'event step' window where you will place the actions that you wish to cycle through. A simple sample is shown in Fig. 3, it shows 4 lights that will cycle on and off with a 1 second delay before the following step takes place.

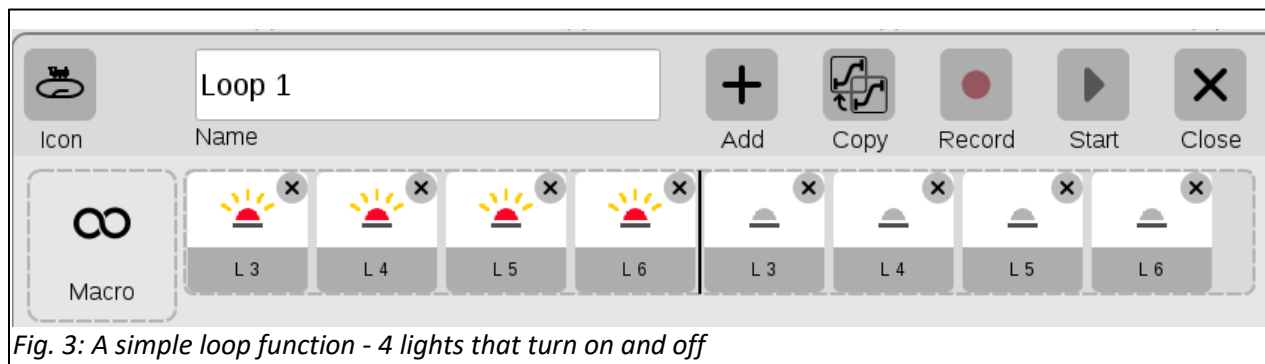


Fig. 3: A simple loop function - 4 lights that turn on and off

Starting a Loop

To start the loop event, there are 3 methods that you can consider. The trigger types are displayed in Fig. 4. The 1st is to start the loop manually by clicking the play button of the event that holds the macro. You can see the play button for the event in Fig. 5.

The 2nd method would be to use a track trigger sensor that is connected to an S88 feedback module. If you're experienced with using track triggers to activate events, then this method is no different.

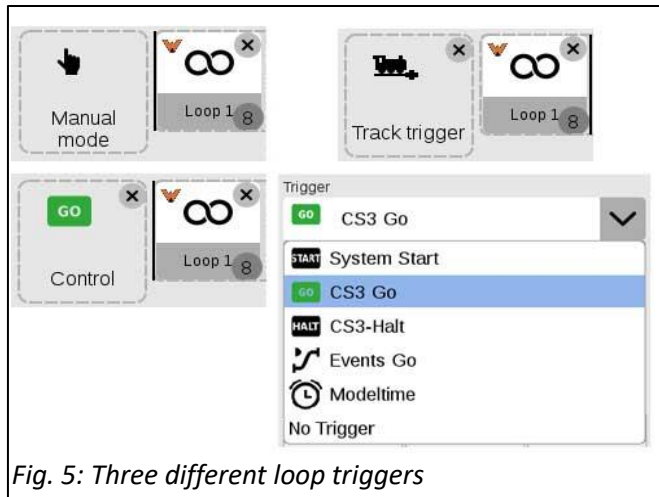


Fig. 5: Three different loop triggers

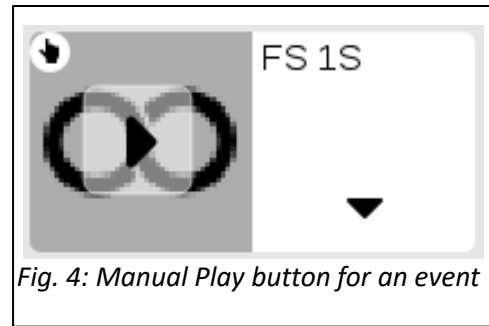


Fig. 4: Manual Play button for an event

The 3rd method is to use a global action to start the loop. You can see the event start options found by clicking on the 'Manual' button of the event editor. Selecting 'CS3 go' will start the loop once you supply power to the track (i.e. stop bar switched to track go).

Once you start a loop, it will continue to run on its own. However, this can be an issue if you do not want the loop to run constantly. When you start a loop, there is no default apparatus that will stop it. To stop a loop from recurring automatically, you will want to add a condition into the loop's step line.

Conditions or Event Controls

A condition basically evaluates an object to determine if it matches the state shown in the event's step line. For example, if you want to check if a signal light shows green, then you would have a green light condition in the event line. If it does not match, then the event will stop at the condition point. A condition may look similar to a regular action item in the event list, but it will have a '?' icon on it. You can use a turnout aspect, a signal or light aspect, or even a sensor contact as a condition. If you do not need a physical device, then you can create a control contact. Control contacts are like regular sensor contacts, but they are not connected to any physical sensor. Fig. 6 has control contact placed within our sample loop.

There is more to consider when interrupting a loop that goes beyond just stopping the event. A complex loop that cycles through multiple actions requires awareness of when you are interrupting the loop sequence. In the example above, the loop will only be interrupted before a new loop cycle begins. If the loop is running at the 3rd step, the loop will complete before it halts at the control contact point.

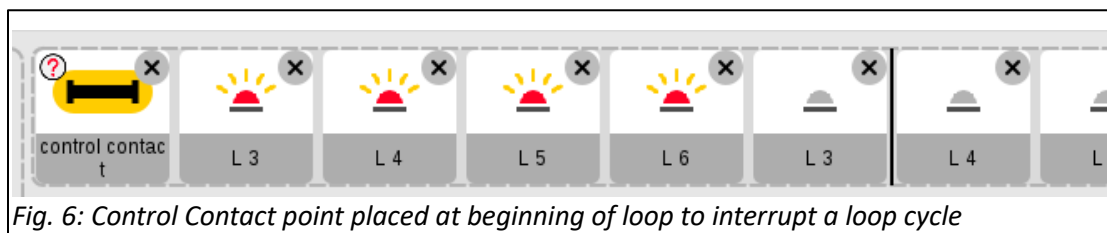


Fig. 6: Control Contact point placed at beginning of loop to interrupt a loop cycle

The solution is to have multiple CC points (Fig. 7). This allows for better control of any actions that can cause any running errors if the loop continues.

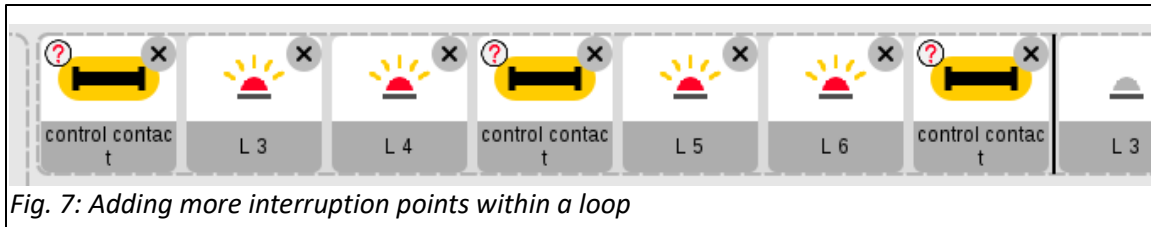


Fig. 7: Adding more interruption points within a loop

Loop Restarts

This level of control only controls the flow of the loop itself. Once stopped, you must have in place procedures that: 1. Resets the control contact so it does not interrupt a re-enabled loop, 2. Restart the loop, using the triggering methods previously described.

Variants of Loop Controls

There may be situations where you will only want to interrupt a loop step, but not the loop itself. In this case, the loop actions need to be created differently. Instead of placing actions directly into the loop steps, actions will need to be placed in separate events. Then the added events will be nested into the loop. This modification allows us to place a control point in the action event which will only halt the action and NOT the loop. Fig. 8 illustrates the changes described.

When dealing with nested events, you need to be aware of any time critical events. All event actions run sequentially and are timed based on the delay setting of each step in the editor. (See example Fig. 9).

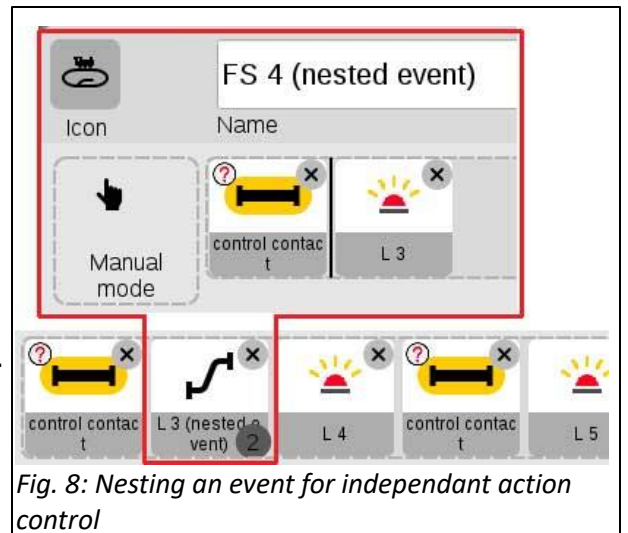


Fig. 8: Nesting an event for independant action control

A nested event will have its own internal timing sequence. If you nest an event that takes 5 seconds to complete, but you have not placed any delay for the primary event, the action after the nested event will take place before the nested event completes. Another precautionary example is when you have multiple nested events in one event. The nested events can run in a parallel fashion (i.e. at the same time), where you might wish to have them run sequentially.

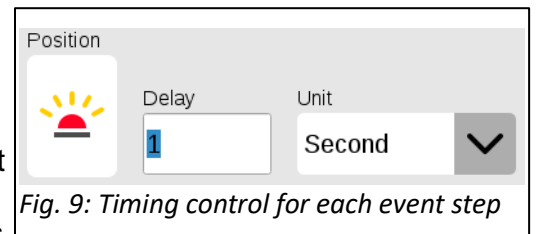


Fig. 9: Timing control for each event step

There are many variables to consider when running a loop with control points, nested events and the loop cycle in general. This article should help you understand those variables for whatever situation you may find.

On a final note, it is helpful to recognize that your controller runs at a continuous loop cycle itself. Its constantly cycling through its track monitoring and locomotive command changes. A loop Macro just creates an independent loop within this master cycle.

Curtis Jeung

Upcoming appearances:

The Great Berea Train Show

Rick Sinclair will be demonstration Märklin Digital in the Ormandy's booth at the train show.

October 5-6, 2024

Middleburg Heights, Ohio

Trainfest 2024

Märklin, Inc. team will be in attendance.

November 23-24, 2024

Milwaukee, Wisconsin

New Location!

Next ONLINE Webinar

Wednesday, October 9, 2024

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

Phone: 650-569-1318 Hours: 7:30am – 4:30pm CT, Monday through Friday

E-mail: digital@marklin.com