

## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

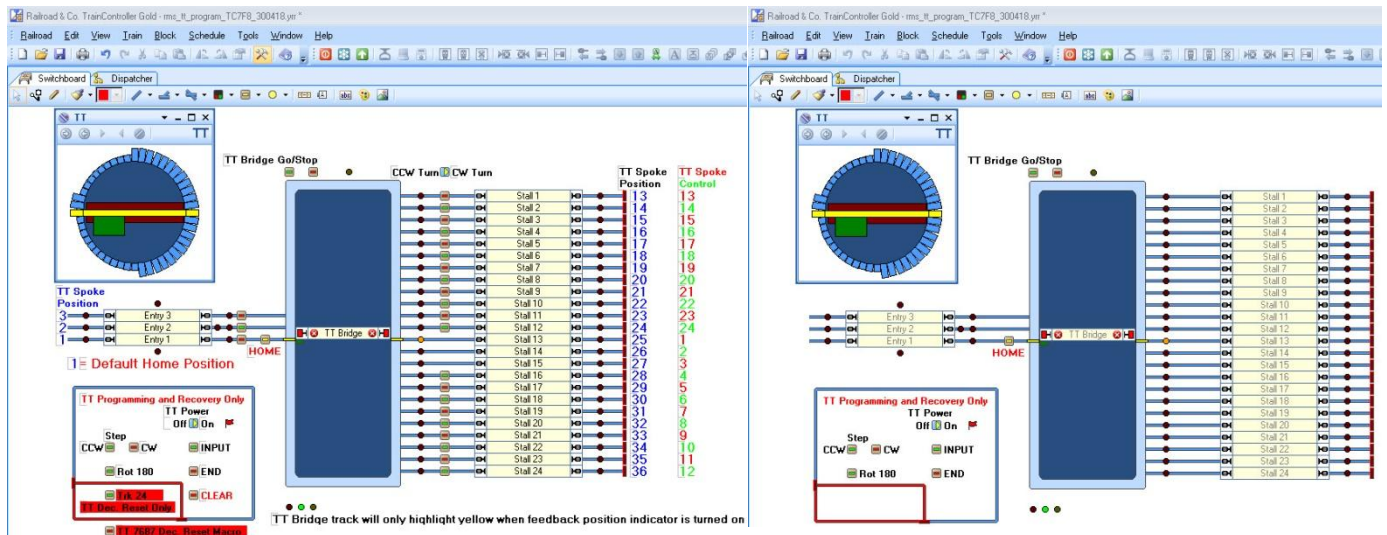
Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

Hi All,

Lately I have been helping my friends to configure the Märklin 7686/7687 Digital turntable and have built a small switchboard to help program the turntable and test that it is programmed correctly. The supplied switchboard will help speed up data entry by using copy and paste, edit some data to match the user's setup and you are ready to enjoy using the turntable with TrainController. This overcomes not having a dedicated 6040 Märklin switchboard to program your turntable.

### The supplied files to suit TC7.0F8

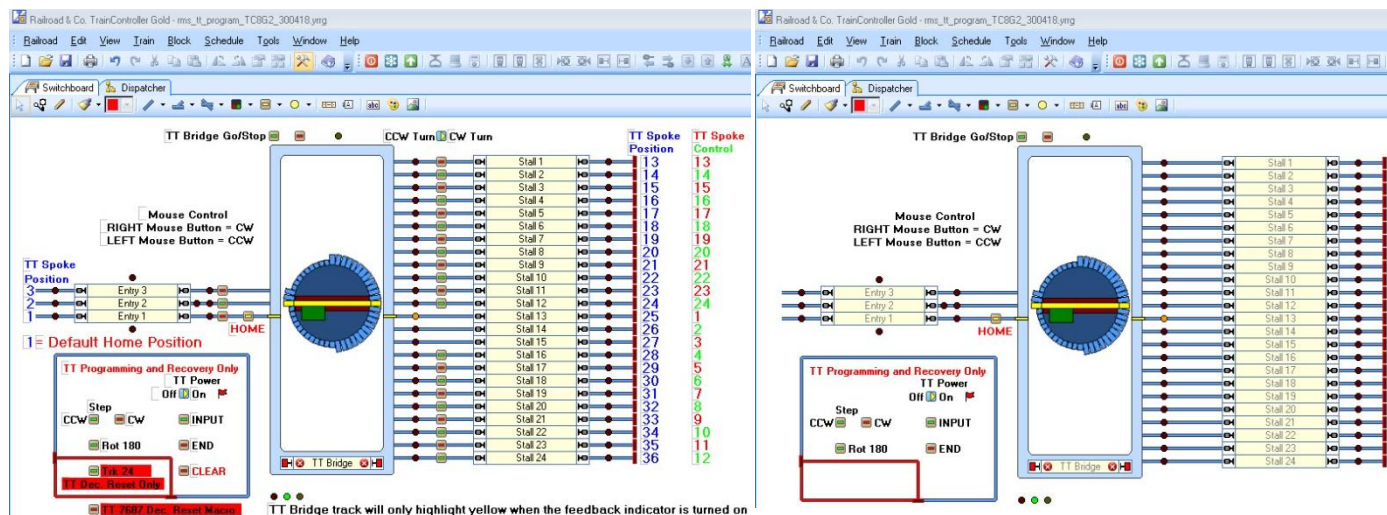
[rms\\_tt\\_program\\_TC7F8\\_300418.zip](#) can be seen below.



The diagram on the left shows it in **EDIT/Program** mode and the diagram on the right is in **RUN** mode.

### The supplied files to suit TC8.0G2

[rms\\_tt\\_program\\_TC8G2\\_300418.zip](#) can be seen below.



The diagram on the left shows it in **EDIT/Program** mode and the diagram on the right is in **RUN** mode.

The reason to supply both revisions is that TC8 has some new display and control features but there are still many people using TC7 who might like the revised information.

## Recommendations

Before proceeding to read this document, make sure you have read the latest **RR&Co Users Manual** and the **Online Help for Turntables** as you will need both sources to find all required information.

Program the turntable decoder using switchboard 15 on the CS2 or ECoS instead of the programming switches as supplied with the TrainController file.

### 7687 Firmware Reset with the ECoS and TrainController as a Working Solution 30-04-2018

See pages 27-31 for a solution to reset the 7687 decoder using the ECoS.

### TC Problem with ECoS and a Working Solution 12-03-2018

See pages 32-33 for a solution to control the Märklin 7686-7687 turntable with the ECoS using TrainController.

## Märklin Manuals

I have supplied links to the Märklin turntable manuals as there are wiring differences between both revisions of the decoder controllers. Read both manuals to get the best information that suits your requirements.

See pages 12-14 for my supplied wiring diagrams in this document to show a few options that are mentioned in the manuals but not shown.

[7686](#)

[7687](#)

Follow the links above and use the [Return](#) link at the end of each section to return to this page.

## Document Goals

This document is a record of how I programmed the digital turntable and the important points required to successfully achieve that goal.

The supplied “\*.yrr” file to suit your revision of software is an example for the maximum 24 track positions and can be used to cut and paste items to speed up data entry.



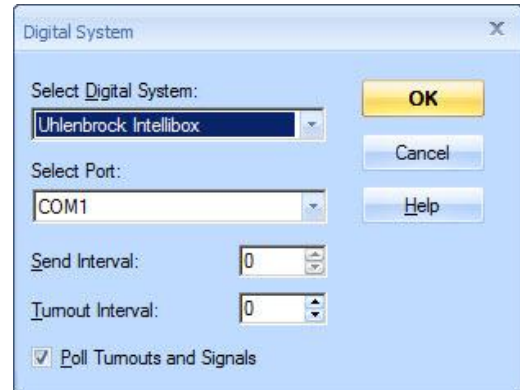
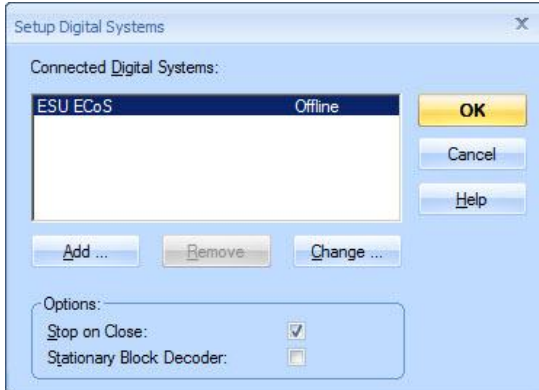
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### Copying the supplied TrainController files

First unzip the supplied files to suit the software revision you are using. (I will only mention the latest revision as an example) then copy “rms\_tt\_program\_TC8B4.yrr” “rms\_tt\_program\_TC8B4.yrs”, “rms\_tt\_program\_TC8B4.yrw” to your local disc under “C:\login\_name Documents\Railroad &Co\TrainController”

Start TrainController Gold (this file will only work with ‘Gold’)



Select the ‘Railroad’ Menu item and select “Setup Digital Systems” then select the ‘Change...’ button

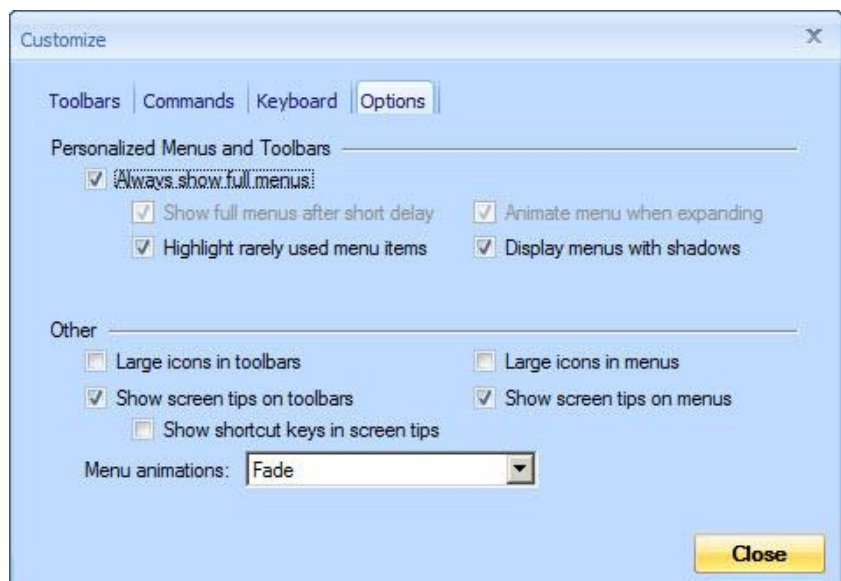
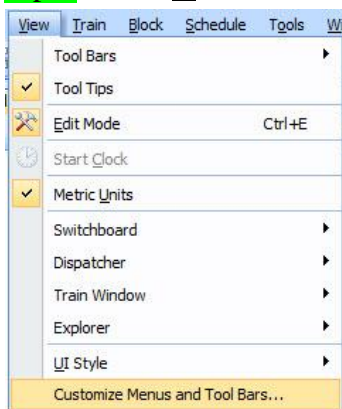
Select the digital system you are using and the Com Port/IP address that matches your setup, then hit the OK button in both windows and you are ready to program the turntable.

Take the time to look at the properties on the different items in the switchboard to discover how things are setup.

### Data Entry for Your Layout

Deciding what to do first for a beginner can be a little daunting. There are no rights or wrongs adding your turntable to the switchboard as long as the final information is correct to suit your requirements. I chose to draw and enter information in the following manner. Dealing with the turntable is an advanced subject and below is a tip to show all possible menu items for easy data entry.

**Tip: -** Under View in the main menu select “Customize Menus and Tool Bars...”



On the ‘Options Tab’ tick the box “Always show full menus” then Close the window.




## Tip - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

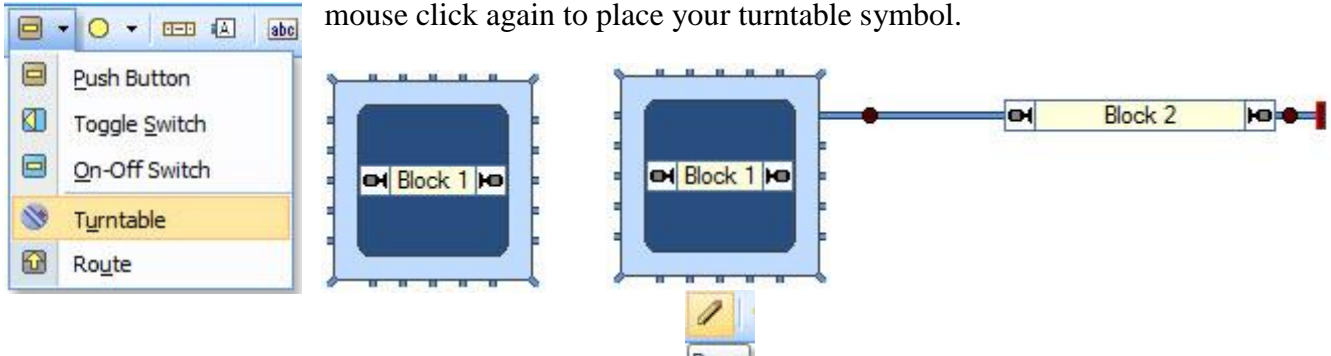
Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020


### Let's begin

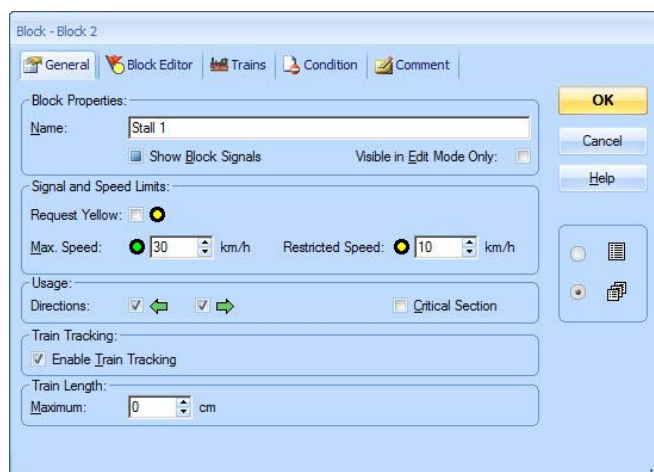


Above is the switchboard menu. Select the pull down arrow to the right of the pushbutton menu to get to the Turntable symbol.

Click on the turntable and this spinner  will appear. Position it in your switchboard window and left mouse click again to place your turntable symbol.

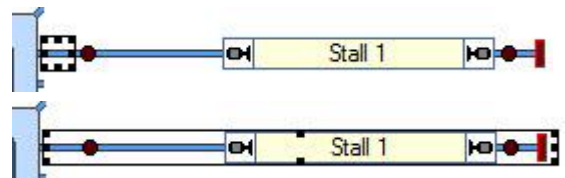


For fast and efficient data entry I next clicked on the  menu item to place a track to the right of the turntable then added a block and two indicators (as shown above right)

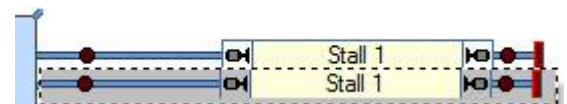


Left mouse click the select menu item and double left mouse click on the “Block 2” block. In the **General Tab** give the block a meaningful Name. Now set the “Max. Speed” and “Restricted Speed” shown in the example on the left. Hit the OK button when complete.

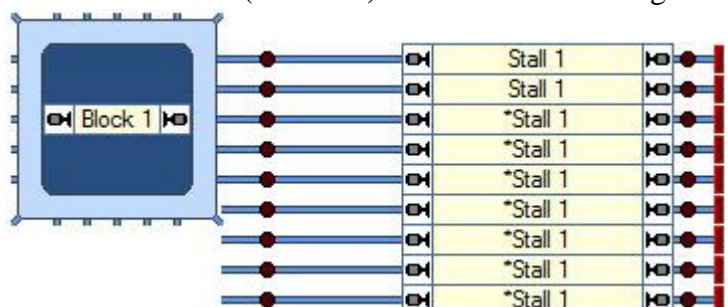
Now place the Selection box on the track just to the right of the turntable symbol and stretch it to include the block and the end of the track.



With the selection now hit **Ctrl + C** to copy the data. Place the selection box to the right of the next track stub then hit **Ctrl + V** to paste the copied data in the next position.



Continue with pasting the copied data using left mouse click then (**Ctrl + V**) for all Stalls to the right of the turntable symbol.

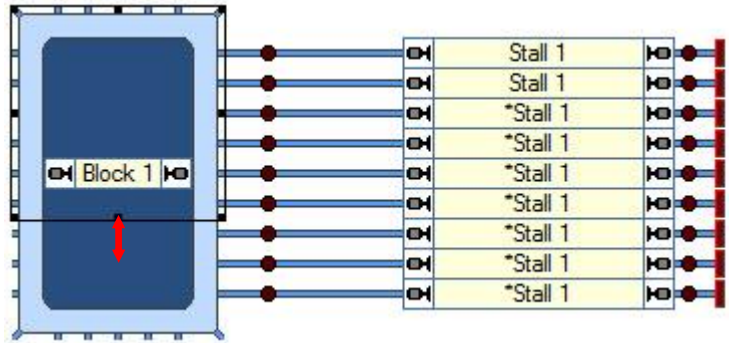


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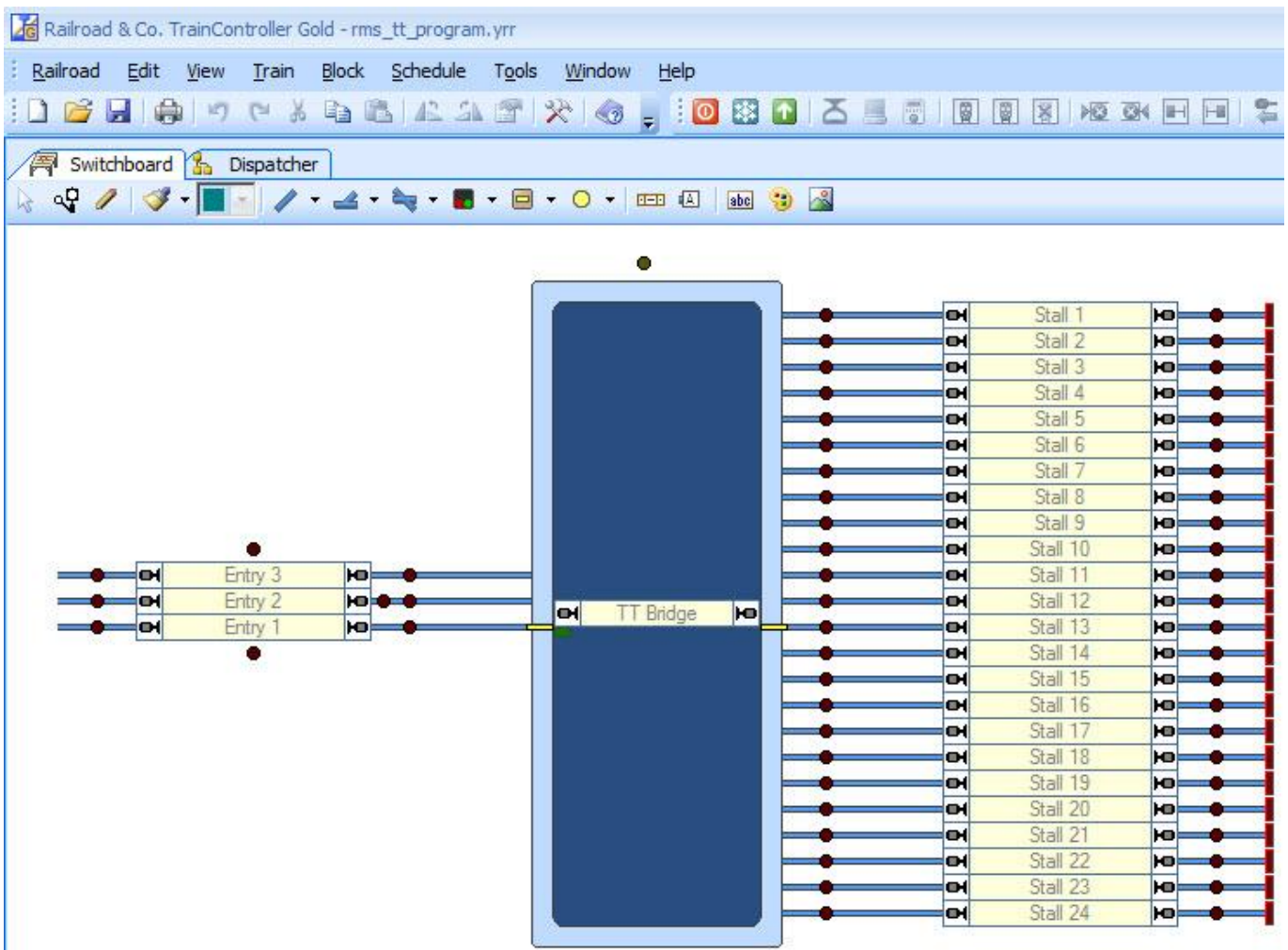
Now it's time to stretch the turntable symbol down to include all stall tracks.

Place the cursor over the black dot at the bottom of the selected symbol and an arrow will appear (shown in red). Now hold the left mouse key down and drag/stretch the turntable symbol to its new location.



Using the above method data can be entered very quickly and was shown as an example. The rule here is “do what is most comfortable for you”.

Now complete your basic drawing to match your layout as the next step will be to edit properties on all the data that represents your turntable area.

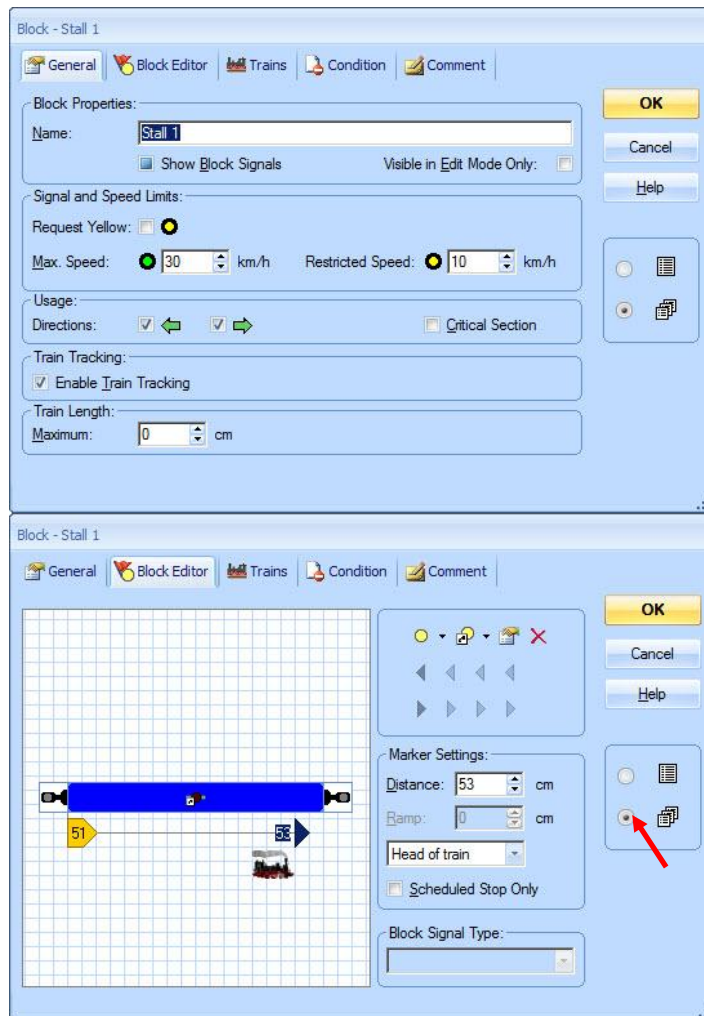


The diagram above shows the basic elements for the maximum 24 positions. All the blocks have been edited to have unique names. The indicators (s88 contacts) have unique names and the addresses should be set to match your layout requirements.

## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

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### Typical Stall Block



In the **General Tab** I gave the block a meaningful name and set the Maximum and Restricted speeds.

Because the block was copied the name only had to be corrected for each stall block. The speed limits shouldn't need changing at this time.

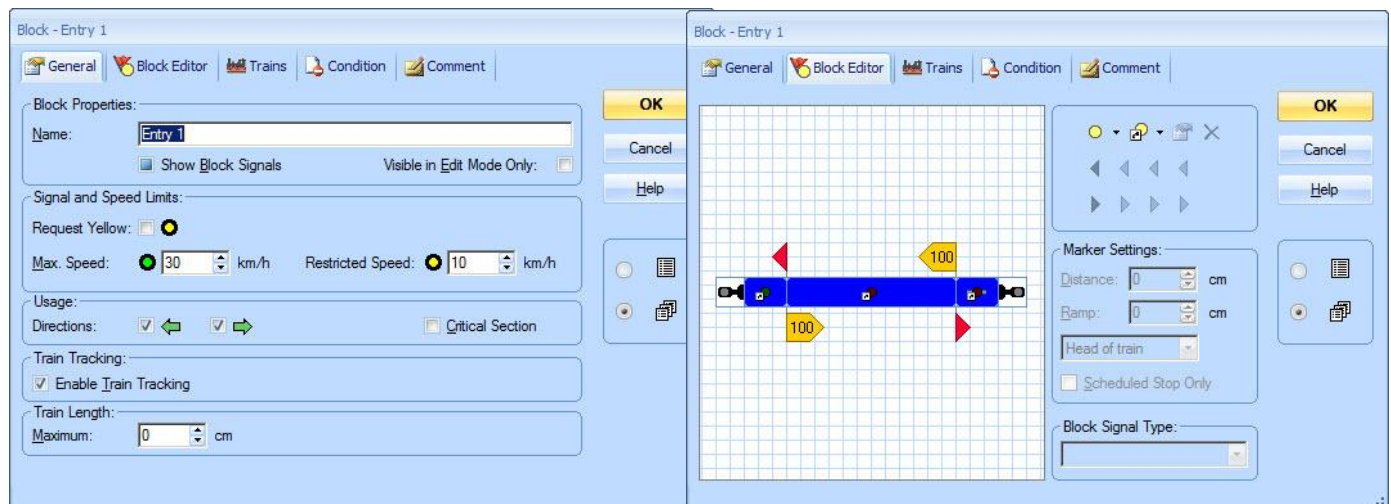
In the **Block Editor Tab** I assigned the required s88 contact to the block by selecting the block then selecting "Insert an existing Indicator" the contact will be used as a combined brake and stop for the Stall track.

The orange brake marker was assigned by selecting the block then the brake symbol with the correct direction and applying a **Ramp length of 51cm**.

The red stop marker was inserted using the same method as above but by holding the left mouse key down you can slide it to a position that graphically shows an offset. I also set the **offset distance to 53cm**. Head of Train was left as the default.

By having the multiple pages set (red arrow) and the block properties complete, just click on the next block and repeat the process.

### Typical Entry Block



The **General Tab** properties for the Entry block are the same as the Stall block.

The **Block Editor Tab** shows it has three associated indicators (s88s). The indicator on the left is a **Stop** marker, the indicator in the middle is a **Brake** marker with a Ramp of 100cm for both directions and the indicator on the right is another **Stop** marker.



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### Defining the Turntable(General)

In the **General Tab** I gave a meaningful name “**TT**”, defined a Turntable and set the Tracks to **48**. Orientation/Default Home Position was Horizontal in my case and the Turn Time was 65 seconds.

### Caution: -

If you select the Help button the online help explains what the options do. Below I have shown the portion on orientation/default position in *italics* as this is very **IMPORTANT** and I feel that it needs further clarification.

#### **Orientation / Default Position:**

*With this option you can align the display of the turntable on the computer screen to the actual orientation or default position of the turntable or transfer table on your model railroad.*

*Select, whether the default (zero) position of the turntable shall be aligned horizontally or vertically.*

*For transfer tables select, whether the bridge of the transfer table moves horizontally or vertically.*

#### **Orientation / Default HOME Position revised.**

With this option you can align the display of the turntable on the computer screen to the actual orientation or default **Home** position (**Spoke 1**) of the turntable or transfer table on your model railroad.

Select, whether the default (**HOME**) position of the turntable shall be aligned horizontally or vertically. The default horizontal home position can only be at 9 o'clock and the default vertical home position can only be at 12 o'clock.

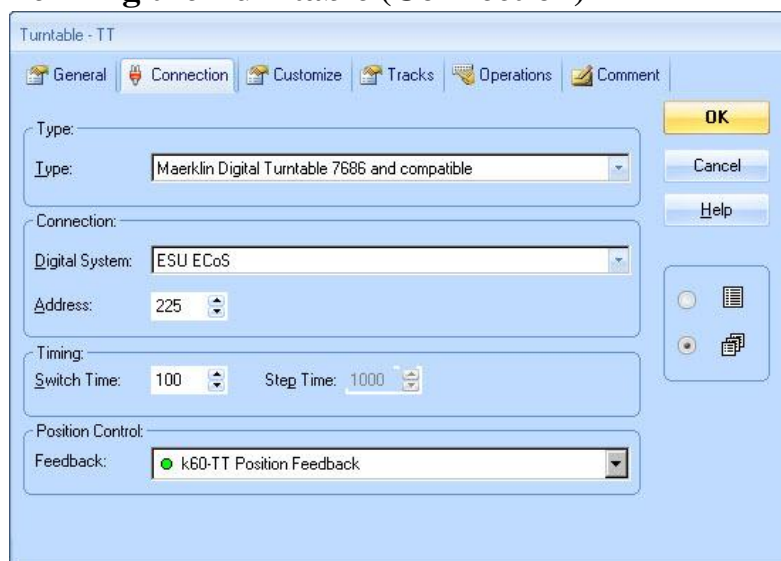
**The default home position (track 1) of the turntable symbol/turntable window must coincide with the physical turntable Spoke1/Track1 default position.**

For transfer tables select, whether the bridge of the transfer table moves horizontally or vertically.

## Tip - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

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### Defining the Turntable (Connection)



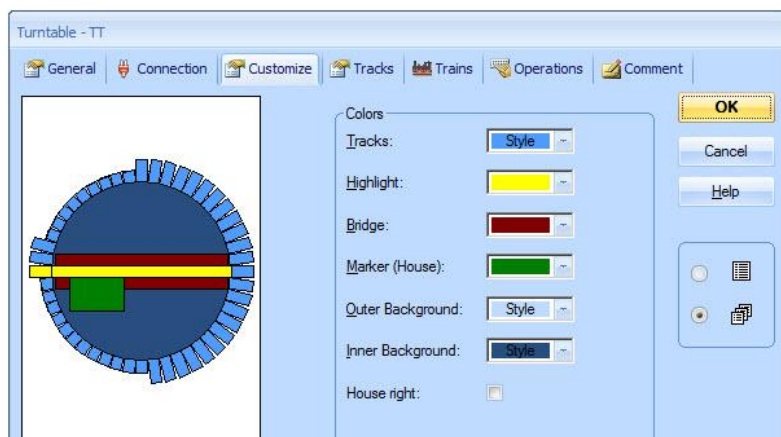
In the **Connection Tab** I chose the Märklin/Maerklin Digital Turntable 7686 and compatible.

My friend's digital system is an ESU ECoS and I set the Base Address to **225**.

See online help for "turntable Maerklin 7686" as this explains all the addresses for turntable using Keyboard 15 as the default.

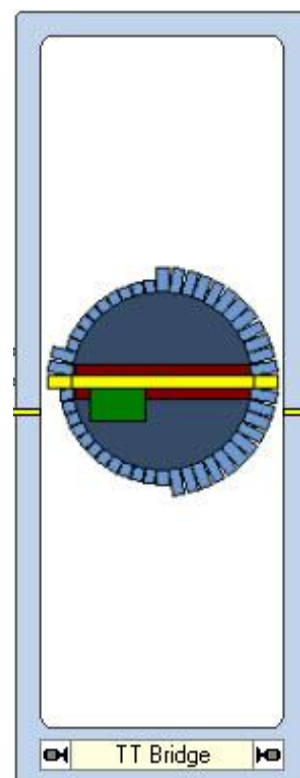
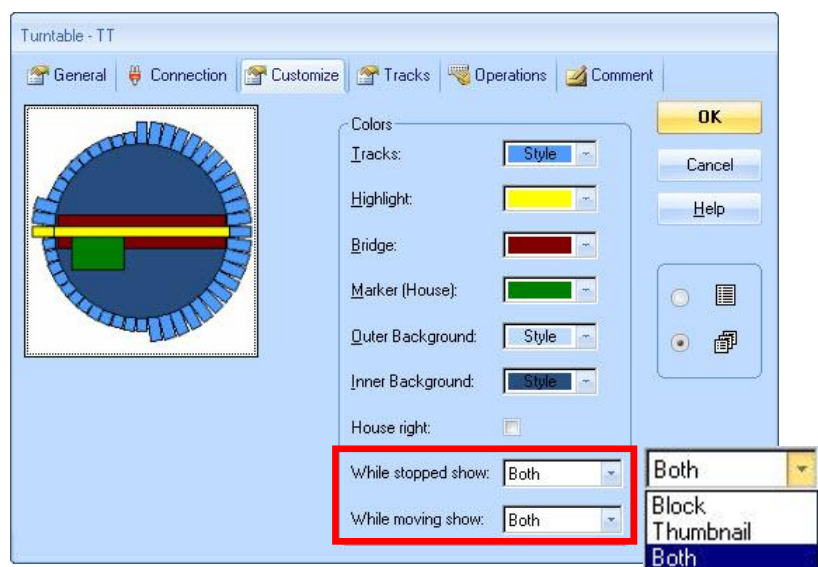
Also see the **Quick Reference** tables at the end of this document.

### Defining the Turntable (Customize)



Feel free to experiment here.

## TC8.0B4

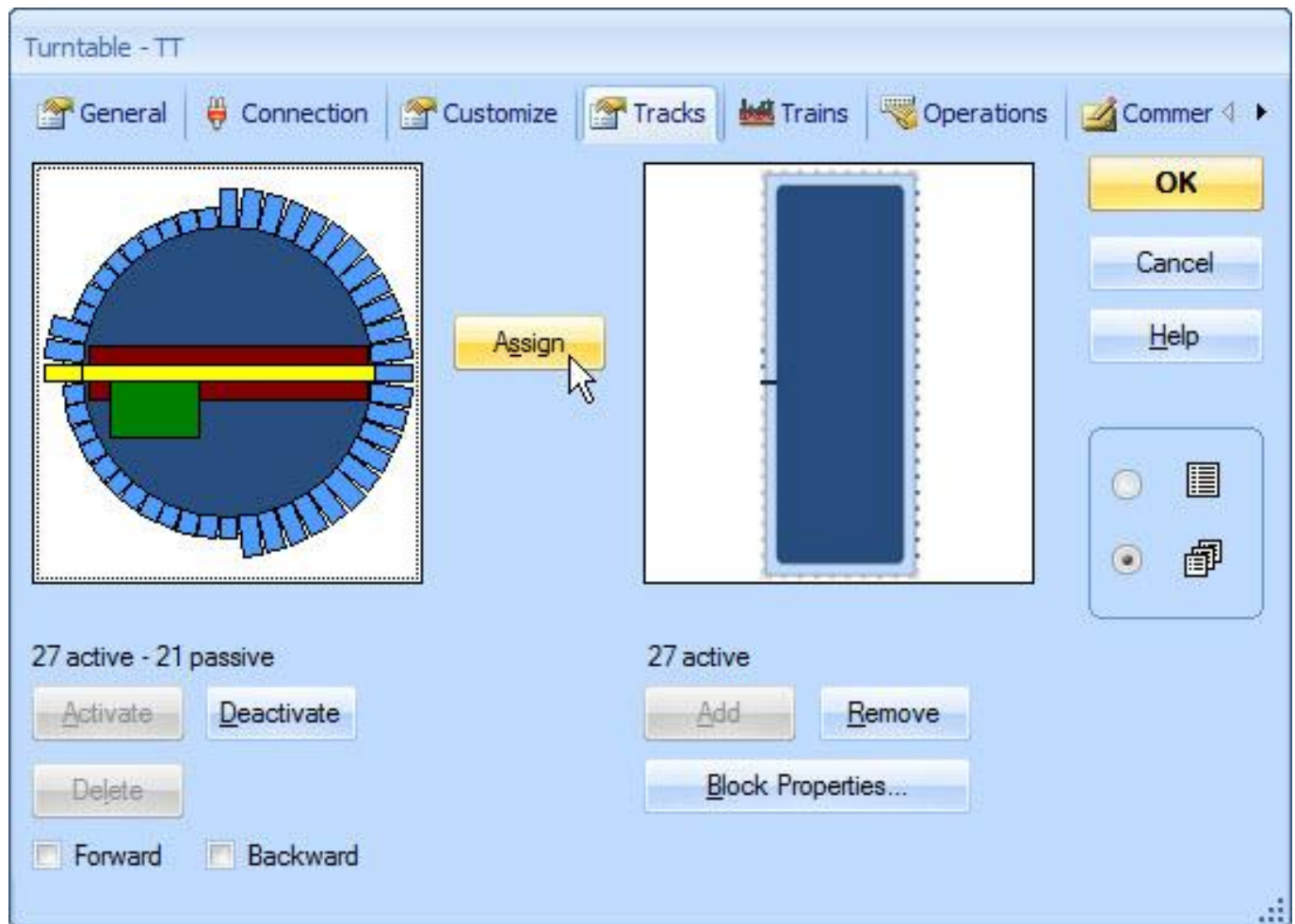


In the TC8.0B4 Customize Tab two new options are available which allows a display selection of the Block, Thumbnail or both when the turntable is stationary or moving. The example shows both.

<http://members.ozemail.com.au/~rossstew/rms/marklin.html>



## Defining the Turntable (Tracks)



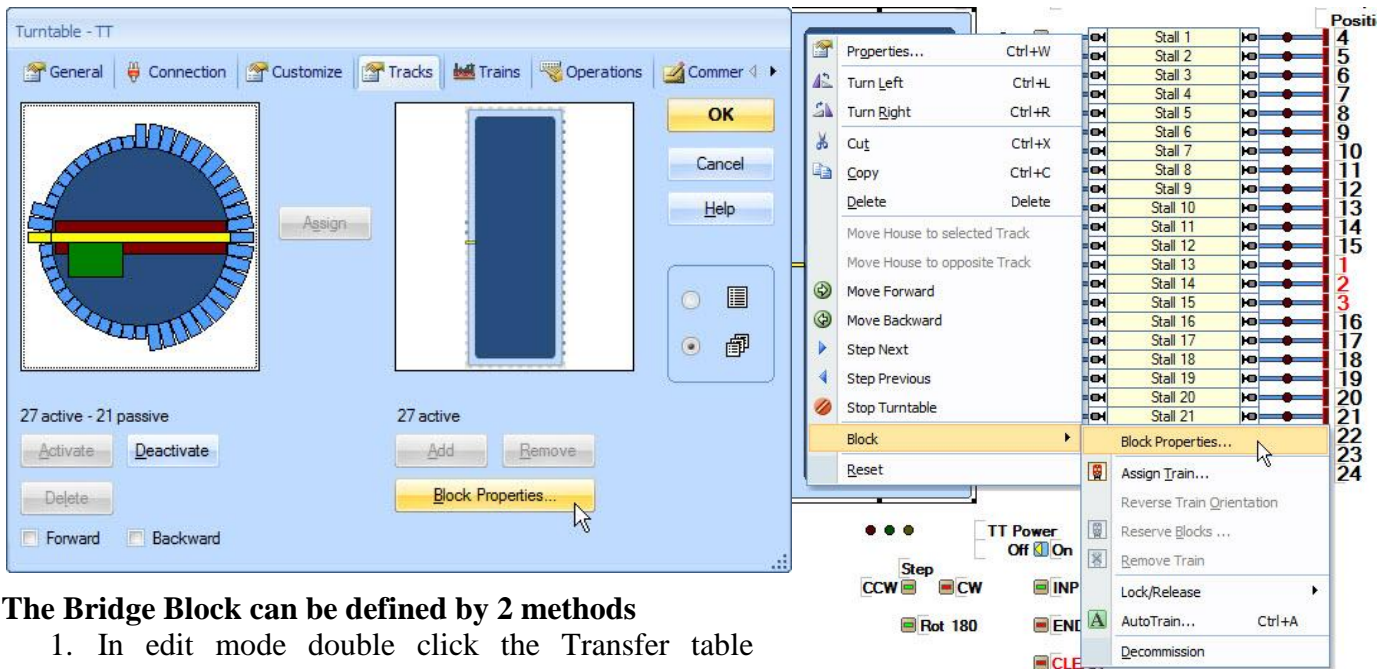
In the **Tracks Tab** you define the Logical connections (left) to the tracks in the Switchboard symbol (right). You will notice that the Logical connection has **27 active – 21 passive** tracks and the Switchboard symbol has **27 active** tracks. The number of active connections **must match on both sides also the Sum of the active and passive tracks on the left side must be even.**

I first worked on the logical symbol (left) by deactivating tracks not required. This was done by left mouse click (LMC) on the track then LMC on the Deactivate button.

Next I removed all track stubs on the switchboard symbol (right) not required, by LMC on track stub then LMC on the Remove button for each track stub not required.

Once the symbols are correct the final task is to “**Assign**” the logical connection to the switchboard symbol and this is very easy. Left mouse click (LMC) on the **HOME** track stub in the logical symbol, then LMC the **HOME** track stub in the switchboard symbol and finally LMC the “**Assign**” button. By default all tracks will be assigned in a clock wise direction. You can test that by LMC on any of the active track stubs in the logical symbol and you will see the corresponding track stub in the switchboard symbol highlight.

## Defining the Turntable Bridge Block



### The Bridge Block can be defined by 2 methods

1. In edit mode double click the Transfer table symbol in the Switchboard and go to the **Tracks Tab** and click on the **Block Properties** button.
2. Right hand mouse click over the Transfer Table and select **Block → Block Properties**

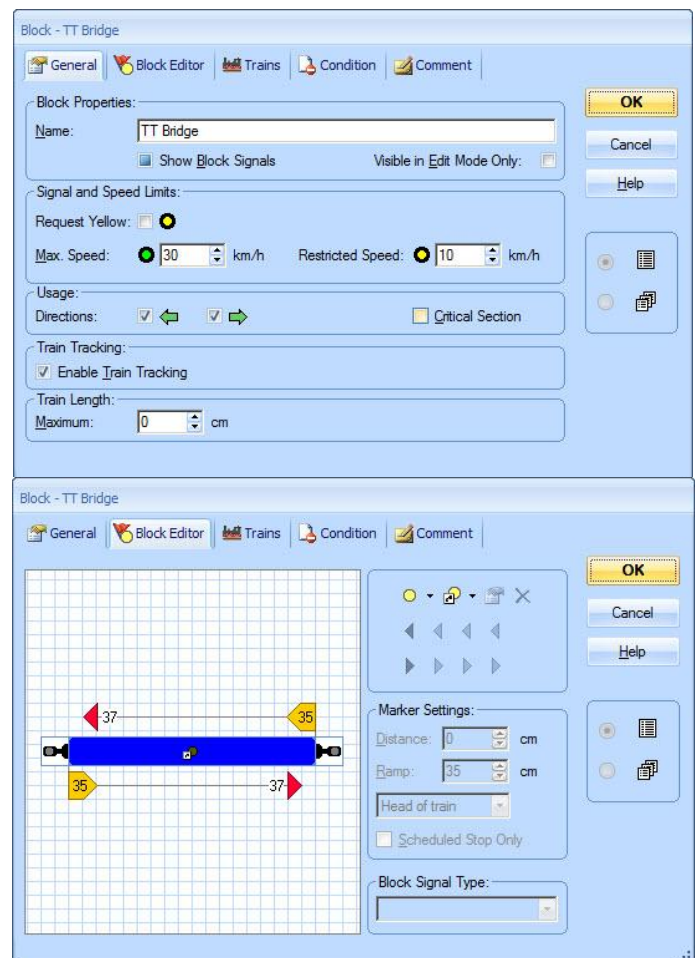
The Block properties form will appear. Select the **General Tab** and give a meaningful name “**TT Bridge**” and set the “Max. Speed” and the “Restricted Speed”.

In the **Block Editor Tab** I assigned the required s88 contact to the block by selecting the block then selecting “Insert an existing Indicator” The indicator which will be used as a combined brake and stop in both directions.

An orange brake marker was assigned by selecting the block then the brake symbol with the correct direction and applying a **Ramp length of 35cm**. This was repeated for the other direction

The red stop marker was inserted using the same method as above but by holding the left mouse key down you can slide it to a position that graphically shows an offset. I also set the offset **Distance to 37cm** and did it for both directions.

You will note that stop/brake length is longer than the turntable bridge as it includes one turntable stub length of 75mm.

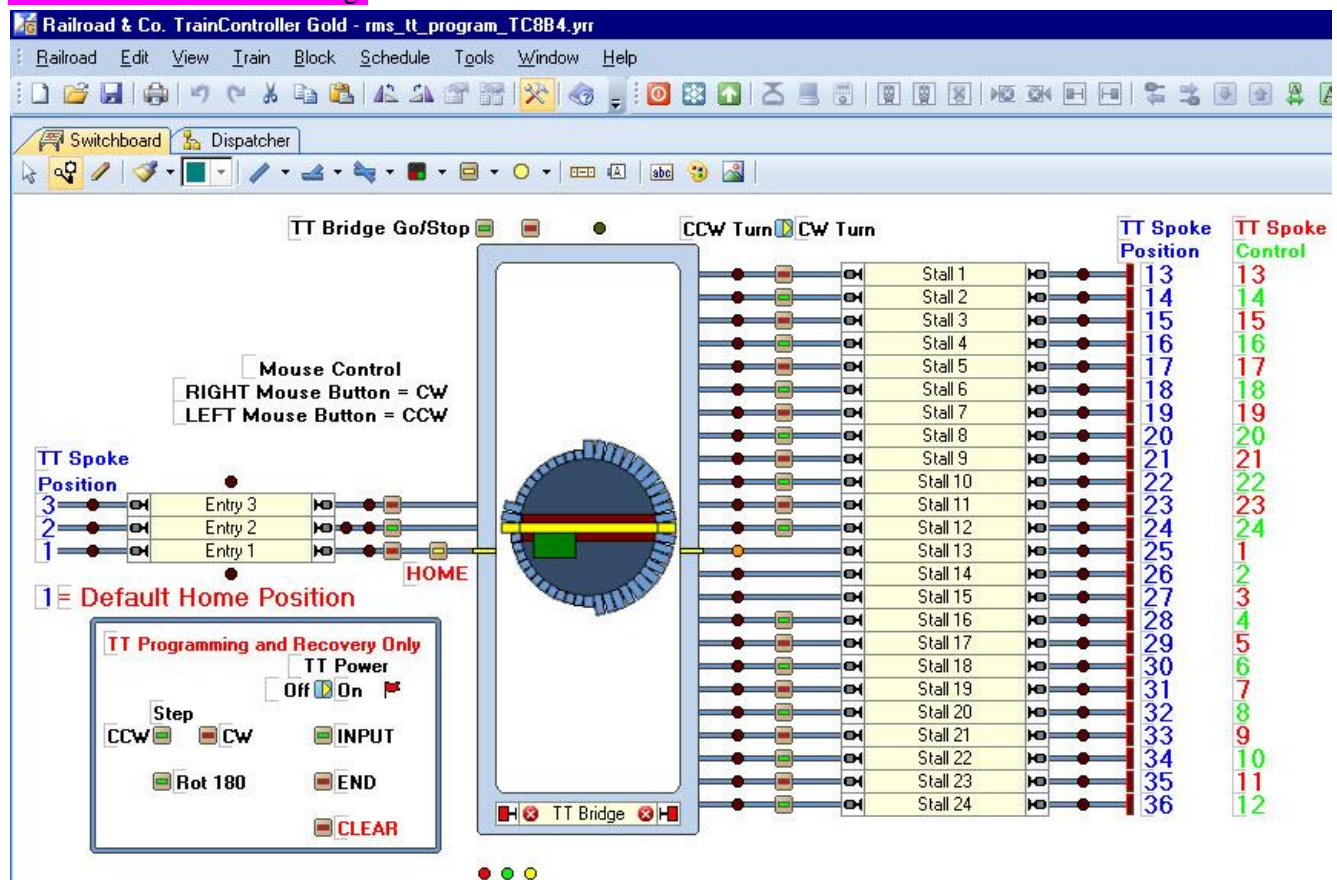


## Defining Control and Programming Switches

### I (Only required if you don't have a CS2 or ECoS)

On the switchboard is a turntable symbol with the maximum number of 24 tracks. Above the turntable symbol is a contact indicator for the turntable bridge. To the right of the TT symbol is a column of contact indicators that are wired to the centre rail studs on the turntable stub tracks which are isolated. This is a nice to have if the turntable is located some distance from the computer as you can see which spoke the bridge is at on the computer screen but not essential to the programming or operation of the turntable.

Next there is a column of pushbuttons used to test the turntable. The toggle switch above is used to set the direction of rotation then a push button is switched and the turntable will turn directly to the set location to test that the turntable has been programmed correctly. These switches are for completeness only to demonstrate the function commands and the control of the Märklin 6040 switchboard and are not required for normal turntable testing.



A block with one contact to the right is assigned to each spoke/track. The TT Bridge and the spoke/tracks must have an assigned indicator.

The three contact indicators below the TT symbol monitor the different functions of the turntable. They are nice to have to allow you to lock and unlock the turntable bridge block and also set the position control feedback of the turntable. (See **Defining the Turntable Connection**) page 8.

The **TT Spoke Position** numbers indicate the true turntable spoke locations starting at the home position (9:00 o'clock) and move in a CW direction (1-48) possible locations. The **HOME** PB is used to return the bridge house to the home position (1)

The **TT Spoke Control** numbers indicate the true function control switch commands Red/Green for direct spoke location indexing. See the **Quick Reference** tables at the end of this document.



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The TT Bridge Block Go/Stop pushbuttons allow manual locking and unlocking of the turntable bridge block. Two macros “TT Bridge Block Stop” and “TT Bridge Block Go” are required for the pushbuttons and the monitoring indicators. (See page 18)

### Switchboard Switches to Program the Turntable.



The **TT Power** toggle switch controls the k84 relay to turn the turntable **OFF/ON**. **See recommendations below for the 7686 or 7687 decoder control.** The toggle switch address should be edited to match your system requirements.

The red flagman is triggered on when the Power is on and after 2.5 seconds the INPUT pushbutton is switched to allow turntable position recovery or to program the turntable.

You can **Step** the TT Bridge **CCW** (counter clockwise) and **CW** (clockwise)

The **INPUT** pushbutton inputs the new spoke/track position.

The **END** pushbutton ends programming or ends recovery procedures.

The **CLEAR** pushbutton clears all programmed spoke/tracks and can only be used and seen in

Edit mode. All switches will operate when you select the operate icon within Edit mode.

The '**Rot 180**' pushbutton rotates the TT bridge 180 degrees.

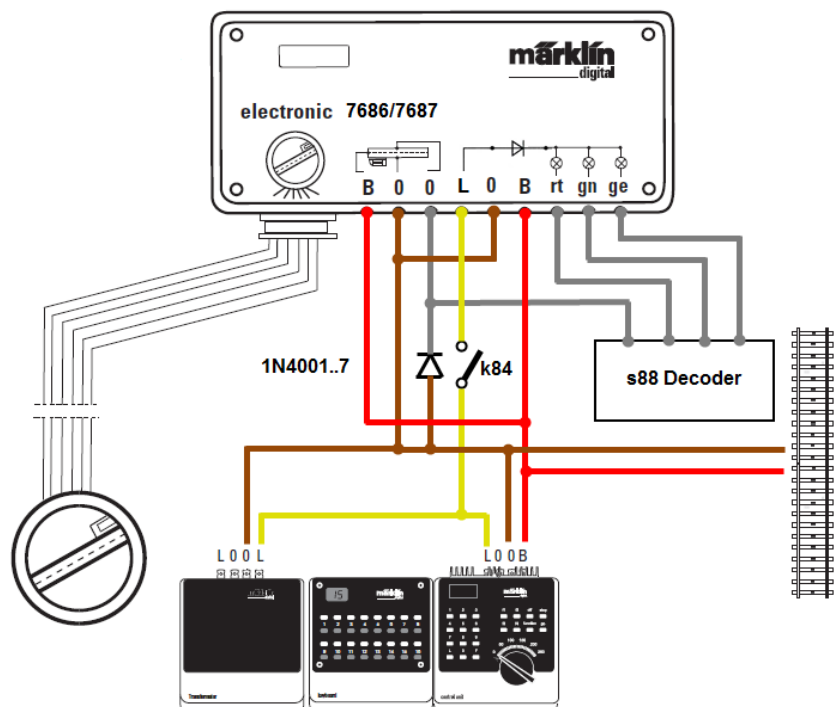
### 7686 + 7687 (old type with the (L) connection) Recommendations

I **recommend** that the **yellow** (L) connection of the 7686 or 7687 digital controller be wired to a k84 contact then you can power OFF and ON the turntable without turning off the entire layout. I will explain how to use this further on in the text.

This circuit is an example how the 7686/7687 is wired for direct s88 monitoring without external lights or LED's.

The 1N4001 diode is the “Diode Trick” to allow power on the rail that is being monitored with an s88 contact.

The turntable bridge track and connected entry and stall tracks is on the same circuit.



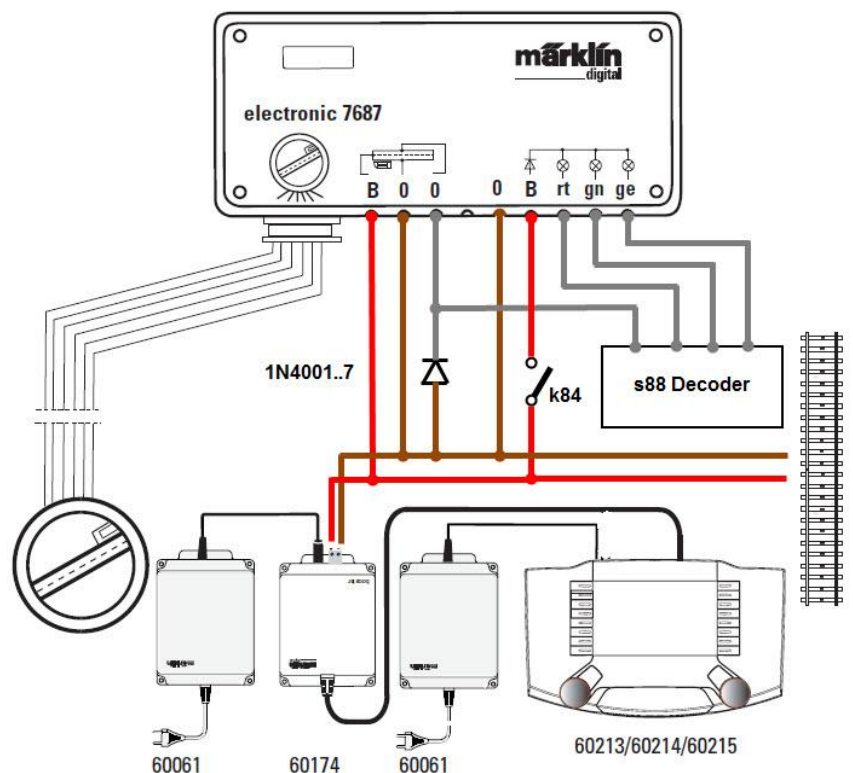
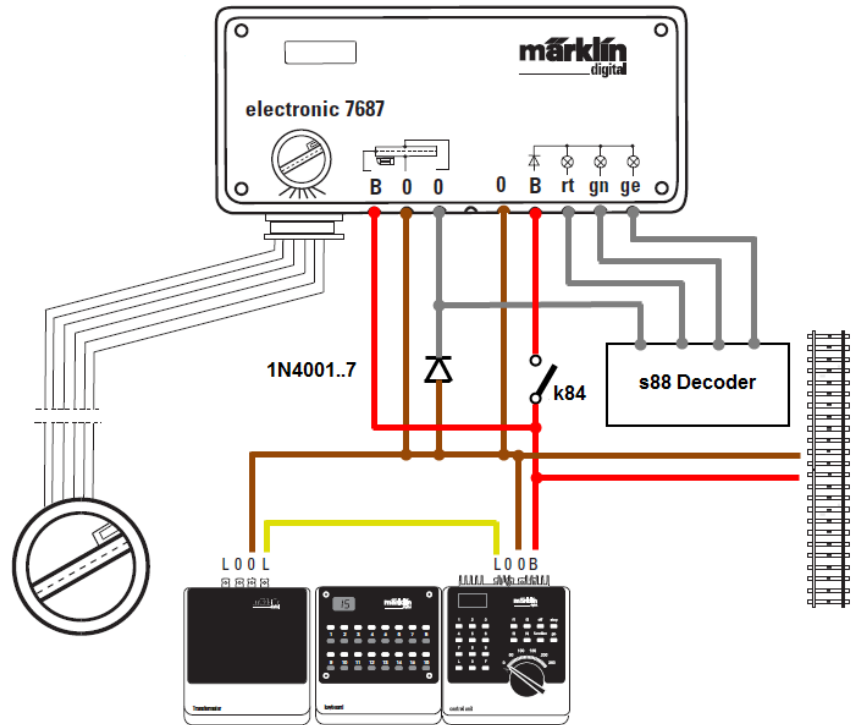
## 7687 (new type without the (L) connection) Recommendations

I recommend that the red (B) connection of the 7687 digital controller be wired to a k84 contact then you can power OFF and ON the turntable without turning off the entire layout. I will explain how to use this further on in the text.

This circuit is an example how the 7687 is wired for direct s88 monitoring without external lights or LED's.

The 1N4001 diode is the "Diode Trick" to allow power on the rail that is being monitored with an s88 contact.

The turntable bridge track and connected entry and stall tracks is on the same circuit.



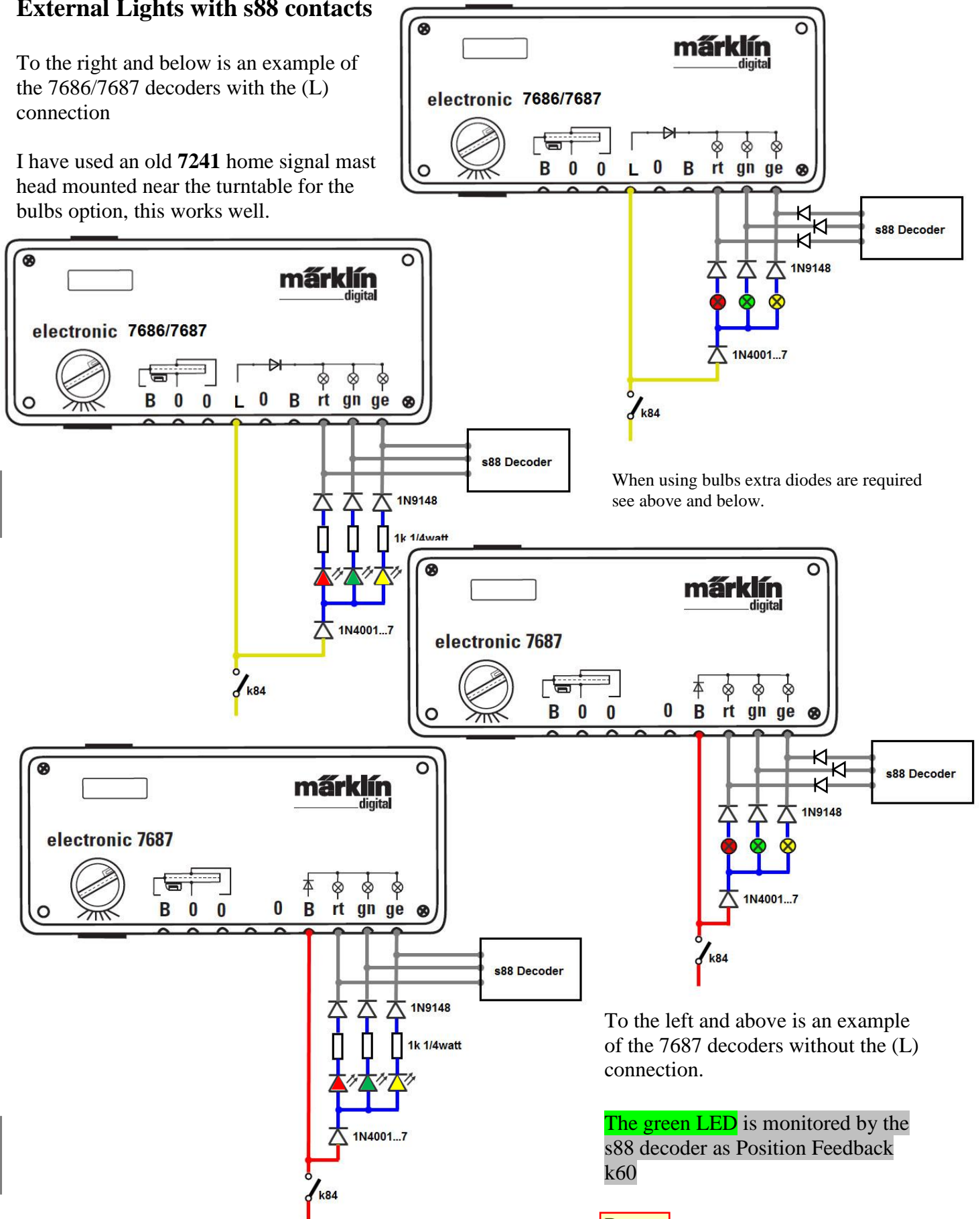
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## External Lights with s88 contacts

To the right and below is an example of the 7686/7687 decoders with the (L) connection

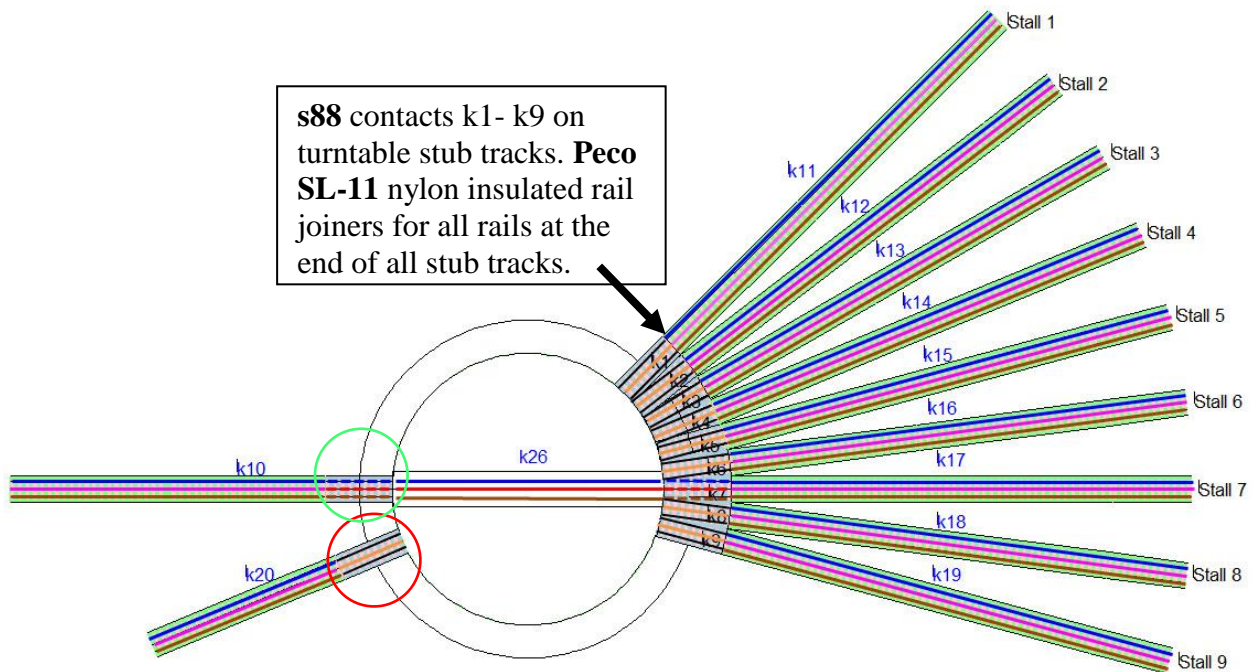
I have used an old 7241 home signal mast head mounted near the turntable for the bulbs option, this works well.



[Return](#)



## Wiring Schematic Diagram of Track Blocks



A “Thank you” goes to Thomas Bursk and Walter Dorman for their questions on the location of turntable contacts and isolation points around the turntable.

From each turntable stub track (the piece that clips around the turntable) (See **red** circle) wire the centre rail — to an s88 contact, this must also be insulated from the Stall track or Entry track. There should be no connection of power to the centre rail or the outside rails, the power is supplied when the turntable bridge aligns with the required stub track and activates the s88 contact. (See **green** circle.)

### Entry Tracks and Stall Tracks:-

The stall centre rail — can have permanent power to it.

The stall rails that connect to the turntable stub track should be isolated on both rails (I use **Peco SL-11** nylon insulated rail joiners) One rail — will be ground and the other — will be wired to another s88 contact.

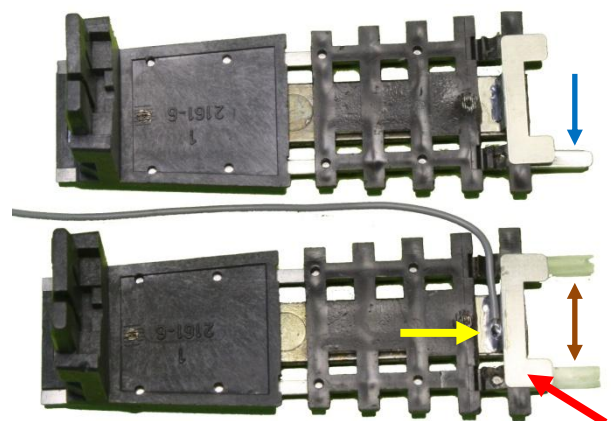
### Turntable Bridge:-

Wire one rail — to an s88 contact and the other to the ground (masse). —

Wire the centre rail — to the same circuit as all the Stall centre rails. —

For all stub tracks remove the metal rail joiner (**blue** arrow) and add **Peco PL-11** nylon insulated rail joiners to both rails (**brown** arrow)

Solder wire for the s88 contact here (**yellow** arrow)



Make sure the centre rail connection (red arrow) is isolated from the centre rail of all stall tracks at this point.

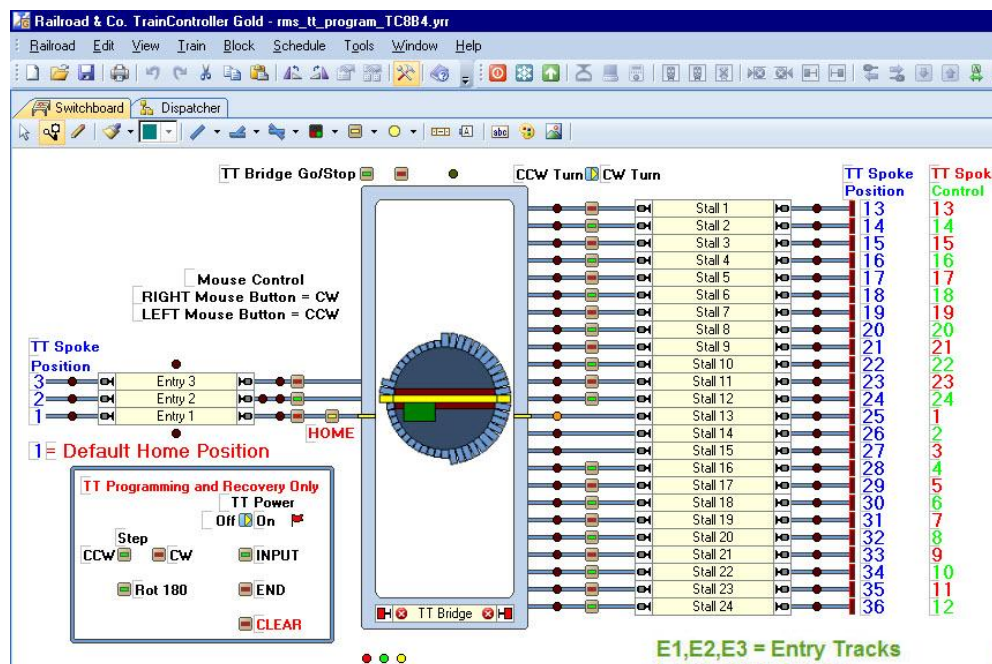
## Programming the Turntable

Refer to pages 25-26 for a one page summary on the 7686 Turntable Key Functions and addresses, Function Monitoring and Programming and Recovery procedures before programming your turntable.

Märklin recommends that **ALL spoke tracks** are programmed. **Remember both ends of the turntable bridge are programmed together** which isn't mentioned in the manuals. The Home/Spoke 1 position must coincide with **RR&Co** Turntable Home position.

The turntable can only be programmed in **Edit Mode** with the supplied files (using switches).

### Planning your programming steps



The switchboard layout is a symbolic representation of the turntable.

Use both the symbolic and logical diagrams to plan the minimum programming steps required.

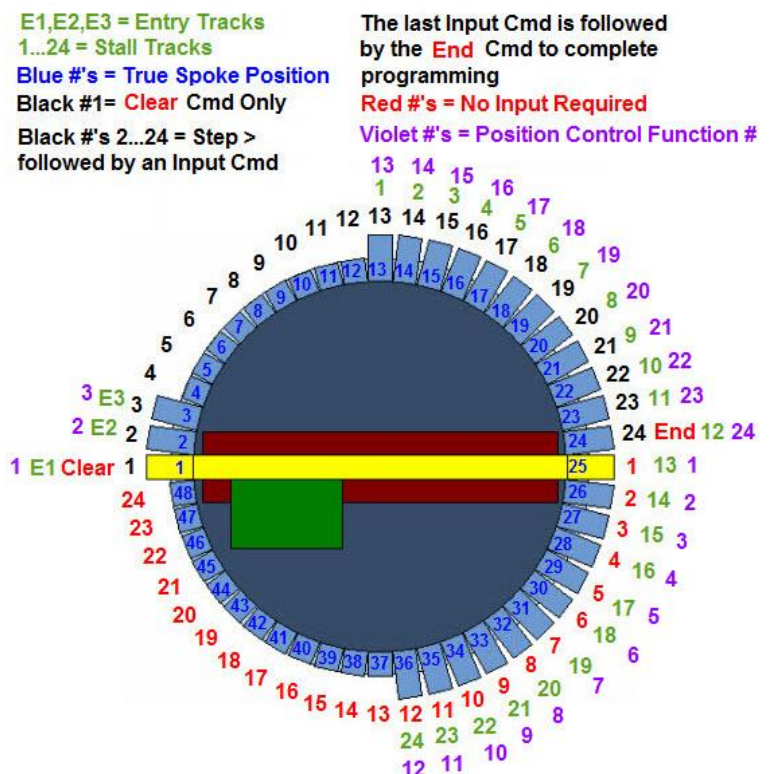
### The Physical/Logical Turntable

Because all 24 positions are being programmed the process is very straight forward.

I printed out a view of the Turntable Window and numbered the minimum number of steps required. (See **black #'s**) You will notice that numbers **4-12** are passive but the spokes at the non house end of the turntable bridge are active tracks so they will be programmed. Hence the house end of the bridge doesn't have to program any of the positions marked with **red #'s**.

After step **24** the **End** command is given and the turntable will turn to the home position (**1**) with the house pointing at 3 o'clock (**25**). Use the **Turn 180** push button to rotate the bridge to the 9 o'clock (**1**) home position to get the logical and physical turntables in sync.

<http://members.ozemail.com.au/~rossstew/rms/marklin.html>



## Programming Examples

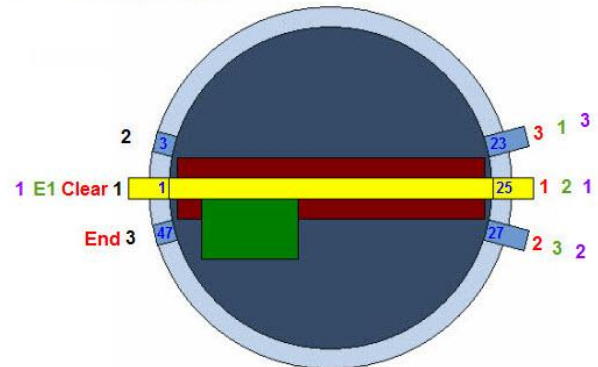
### Example 1

Enter turntable programming within 5 seconds of power being turned on with the **Input** PB. Wait until you hear the acoustic sound finish or the turntable stops moving before the next step.

1. Position the turntable house end pointing at the entry track using the step CW or CCW pushbuttons. **This position 1 is the Home Position**
2. Hit the **CLEAR** PB
3. Step **CW** x2 then hit the **Input** PB
4. Step **CCW** x4 then hit **Input** PB
5. Finish programming by hitting the **END** PB. The turntable should then rotate to the home position which could be the turntable house pointing at stall 2.
6. To get the physical turntable and the switchboard symbol in sync hit the **Turn 180** PB if required.
7. The turntable should now be programmed and in sync with the symbolic and logical turntable.

E1 = Entry Track  
1...3 = Stall Tracks  
Blue #'s = True Spoke Position  
Black #1= Clear Cmd Only  
Black #'s 2...3 = Step < or > followed by an Input Cmd

The last Input Cmd is followed by the **End** Cmd to complete programming  
Red #'s = No Input Required  
Violet #'s = Position Control Function #



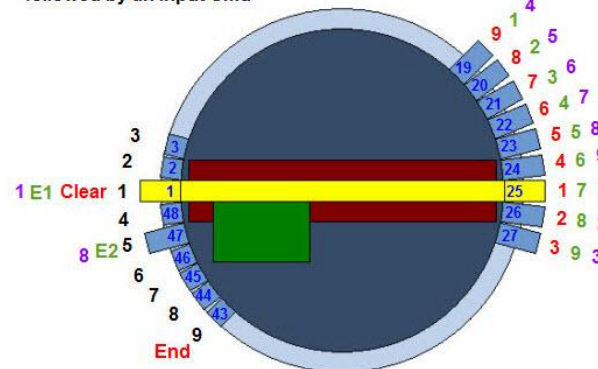
### Example 2

Enter turntable programming within 5 seconds of power being turned on with the **Input** PB. Wait until you hear the acoustic sound finish or the turntable stops moving before the next step.

1. Position the turntable house end pointing at the entry track using the step CW or CCW pushbuttons. **This position 1 is the Home Position**
2. Hit the **CLEAR** PB
3. Step **CW** x1 then hit the **Input** PB
4. Step **CW** x1 then hit the **Input** PB
5. Step **CCW** x3 then hit **Input** PB
6. Step **CCW** x1 then hit the **Input** PB
7. Step **CCW** x1 then hit the **Input** PB
8. Step **CCW** x1 then hit the **Input** PB
9. Step **CCW** x1 then hit the **Input** PB
10. Step **CCW** x1 then hit the **Input** PB
11. Finish programming by hitting the **END** PB. The turntable should then rotate to the home position which could be the turntable house pointing at (25).
12. To get the physical turntable and the switchboard symbol in sync hit the **Turn 180** PB if required.
13. The turntable should now be programmed and in sync with the symbolic and logical turntable.


E1,E2 = Entry Tracks  
1...9 = Stall Tracks  
Blue #'s = True Spoke Position  
Black #1= Clear Cmd Only  
Black #'s 2...9 = Step < or > followed by an Input Cmd

The last Input Cmd is followed by the **End** Cmd to complete programming  
Red #'s = No Input Required  
Violet #'s = Position Control Function #





## Programming the Turntable Commands Summary

All switches will operate when you select the  operate icon within Edit mode.



### Option without using the k84 isolating contact

Switch the **Layout ON** and within 5 seconds click the **INPUT** pushbutton. Wait until the turntable stops moving or you hear the acoustic sound finish before the next step.

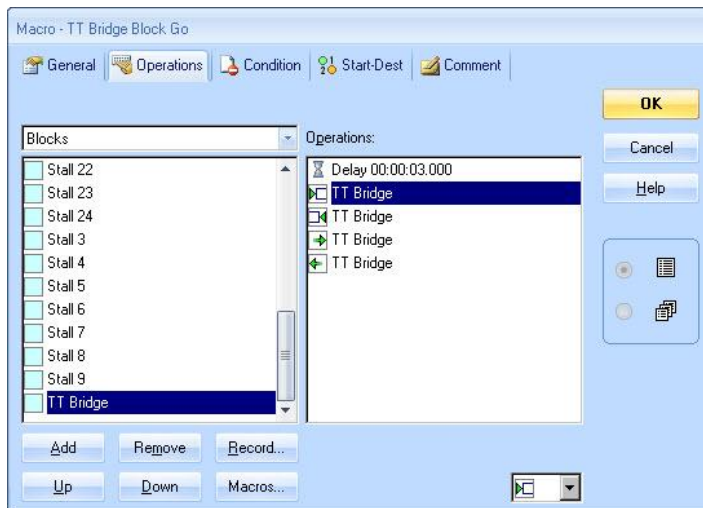
### Option using the k84 isolating contact

Switch the **TT Power** toggle switch **ON** and the red flagman is triggered on and after 2.5 seconds the **INPUT** pushbutton is switched to allow turntable position recovery or to program the turntable. Wait until the turntable stops moving or you hear the acoustic sound finish before the next step.

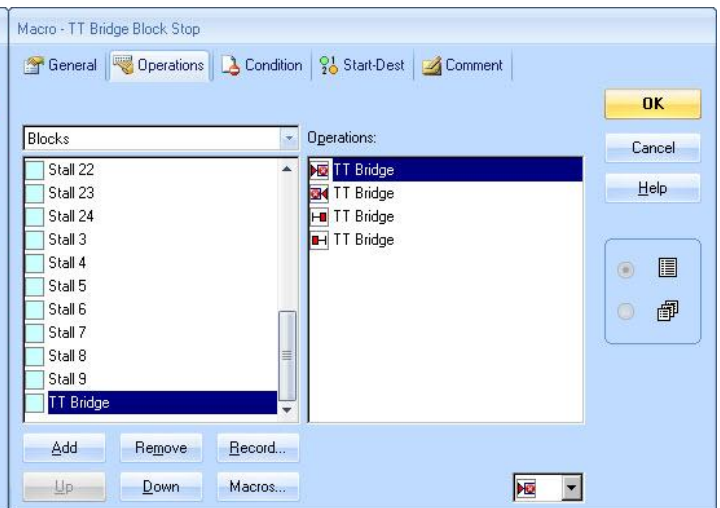
Using the **Step CCW/CW** pushbuttons locate the new spoke track 1, **remember the Home/Spoke 1 position must coincide with RR&Co Turntable Home/track 1 position**, by pressing the **CLEAR** pushbutton all Spoke track positions previously stored in memory will be deleted and the new Spoke track 1 will be entered.

Now using the **Step CW** or **CCW** pushbutton locate the next Spoke track and press the **INPUT** pushbutton before turning the turntable to the next position. Repeat this procedure until ALL spoke tracks have been entered; end the programming procedure by pressing the **END** pushbutton. The turntable is now programmed and all spoke tracks are automatically numbered clockwise from position Home/track 1 position for function controls. Now the turntable is ready for testing.

## Macro's



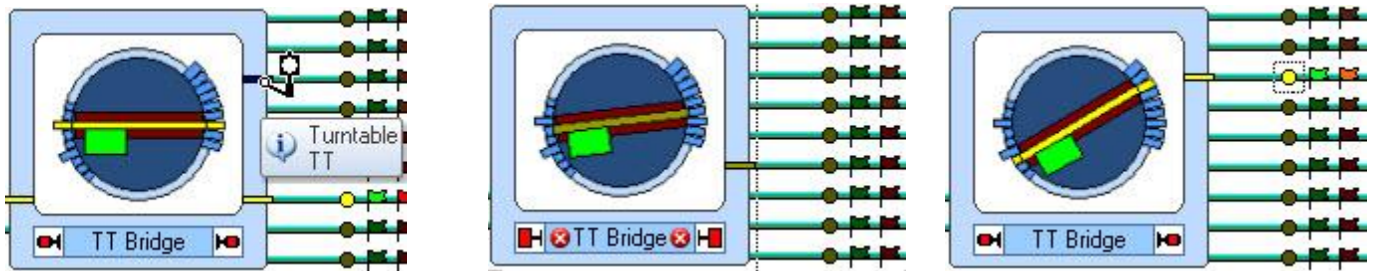
TT Bridge Block Go



TT Bridge Block Stop

## Testing the Programmed Turntable

In **Run** mode do the following



1. Place the mouse cursor in the light blue area of the turntable symbol and a lantern will appear. Left mouse click (LMC) on the desired spoke and the turntable will turn in the shortest direction to that location.
2. The turntable will lock the TT Bridge block whilst it is rotating.
3. On arrival at the new location it will stop and after 3 seconds the bridge block will unlock

Click all spoke locations to ensure the turntable is programmed correctly.

**Congratulations** if the above tests are successful, you have now configured and programmed the turntable.

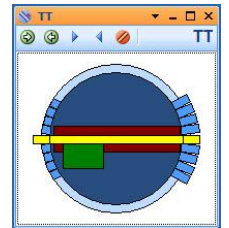
## Using the Thumbnail image or using the “Turntable Window”.

For TC7.0F8 users only the “Turntable Window” applies.

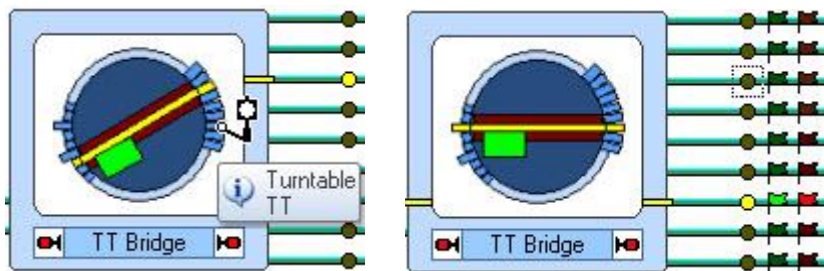
**LMC** = Left mouse click, rotates the turntable CCW (counter clockwise).

**RMC** = Right mouse click, rotates the turntable CW (clockwise).

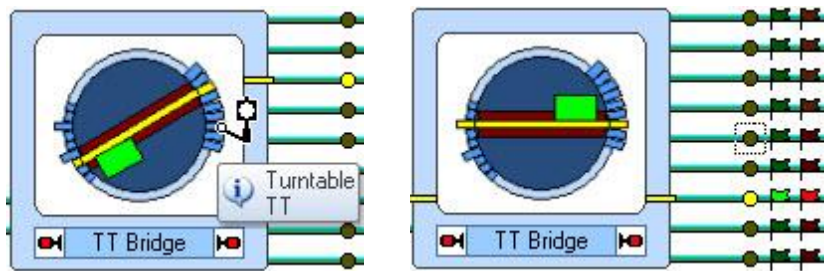
**PC Home key** returns the Turntable to its HOME/track1 position as long as the window is highlighted as shown.



Select a track stub using the left or right mouse buttons and the turntable should go directly to that Spoke track location. Test the **PC Home Key** to make sure the turntable returns to its **HOME** position.

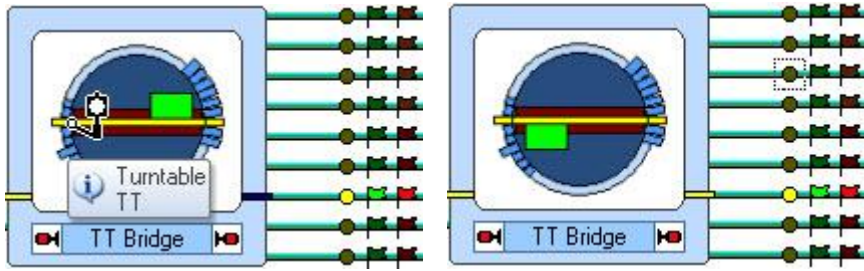


In the left image RMC the selected track and the turntable will rotate CW

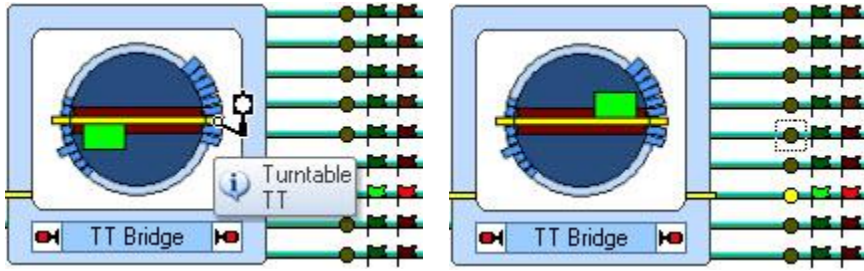


In the left image LMC the selected track and the turntable will rotate CCW

## Rotate 180 Degree



In the left image **LMC** or **RMC** the spoke that is opposite the turntable bridge house. The turntable will rotate 180 deg. and the direction will depend on which mouse key you used.



In the left image **LMC** or **RMC** the spoke that is opposite the turntable bridge house. The turntable will rotate 180 deg. and the direction will depend on which mouse key you used.

## Home Position

I have provided a home key that will rotate the turntable bridge house to the Home position from any other position.

## Start and Shutdown Recommendations

### Shutdown

I recommend turning the **TT Power** toggle switch **OFF** before exiting TrainController as this will avoid possible damage to the turntable controller when you next power up your layout and you forgot to ensure that the turntable bridge is clear to turn causing an overload to the controller.

### Start Up

Use the recovery procedure to start up your turntable the next time you power up your layout.

Press the **INPUT** button within the **first 5 seconds** after turning the **TT Power** toggle switch **ON**.

Position the turntable to spoke track 1 using the **STEP < >** buttons **if required** and press the **END** button when the turntable is in the correct position for Home/spoke track 1.





## Position Control Feedback

Throughout the text I have mentioned in places “Position Feedback” but haven’t specified its use in the control of the turntable until now, so let’s tie up a few loose ends. Please see pages 8, 11, 25 and 26.

### **Position Control: Direct from Online help in TrainController**

*This option can be used to detect the end of bridge movements. Specify a **feedback indicator**, if it is possible to detect the end of bridge movements with an indicator. When this indicator is turned on while the bridge is moving to a certain track, then it is assumed, that the bridge has reached its destination position. It is not only possible to specify **contact indicators** here. **Flagman indicators** can also be used, if the termination of the movement can be detected by means of more complex conditions.*

**TIP: - Only implement the Position Control Feedback indicator once the turntable is operating as required.**



On the switchboard below the turntable symbol you will see three contact indicators which provide turntable decoder monitoring see pages 1 and 11.



Contact Indicator  
k59-TT Operating  
1: ESU ECoS - S88 Module with 16 Input Ports  
Address 4 / 11

The red indicator monitors the turntable is operating see pages 11 and 25.



Contact Indicator  
k60-TT Position Feedback  
1: ESU ECoS - S88 Module with 16 Input Ports  
Address 4 / 12  
Comment:  
TT Bridge track will only highlight yellow when the feedback indicator is turned on

The green indicator monitors the TT bridge has reached its required position. See page 25.

Note the comment. This refers to k58 which is the TT bridge contact indicator and this is the reason for my TIP above.

If you have any problems, turn off the position control until you fix all problems.



The yellow indicator monitors the TT decoder memory see page 25

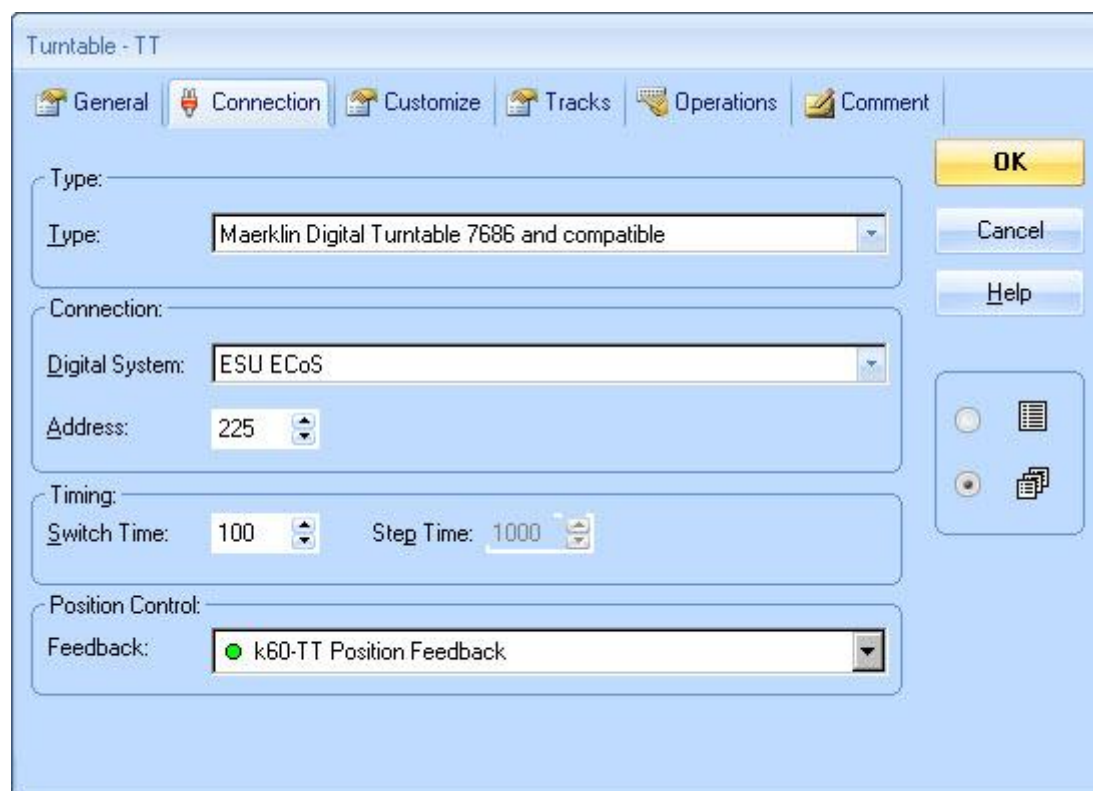


Contact Indicator  
k61-TT Memory  
1: ESU ECoS - S88 Module with 16 Input Ports  
Address 4 / 13

**Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4**

Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

**Position Control Feedback** continued



Turntable - TT

General Connection Customize Tracks Operations Comment

Type: Maerklin Digital Turntable 7686 and compatible

Connection: Digital System: ESU ECoS Address: 225

Timing: Switch Time: 100 Step Time: 1000

Position Control: Feedback: k60-TT Position Feedback

OK Cancel Help

In the properties form for the turntable select the Connection Tab and enter the Position Control Feedback indicator.

## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

### Bonus Time

To speed up data entry for all the pushbuttons and text, the next step is to copy data from “rms\_tt\_program\_TC8B4.yrr” to your\_layout.yrr

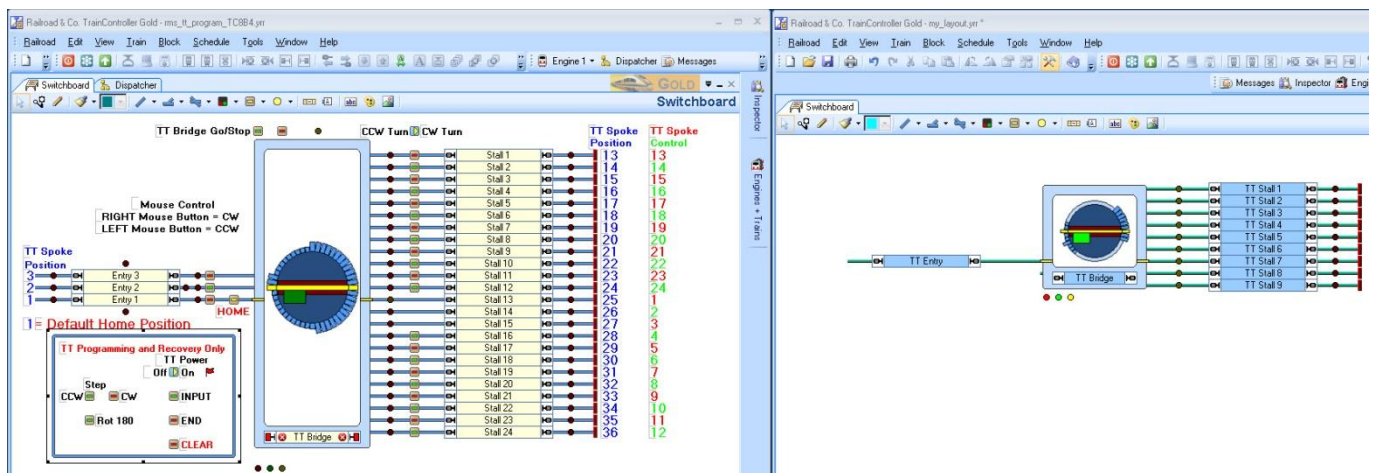
The essential things to copy is the programming switches as shown because all the addresses for the pushbuttons are correct and have been tested.

### Copying data from one \*.yrr file to another \*.yrr file

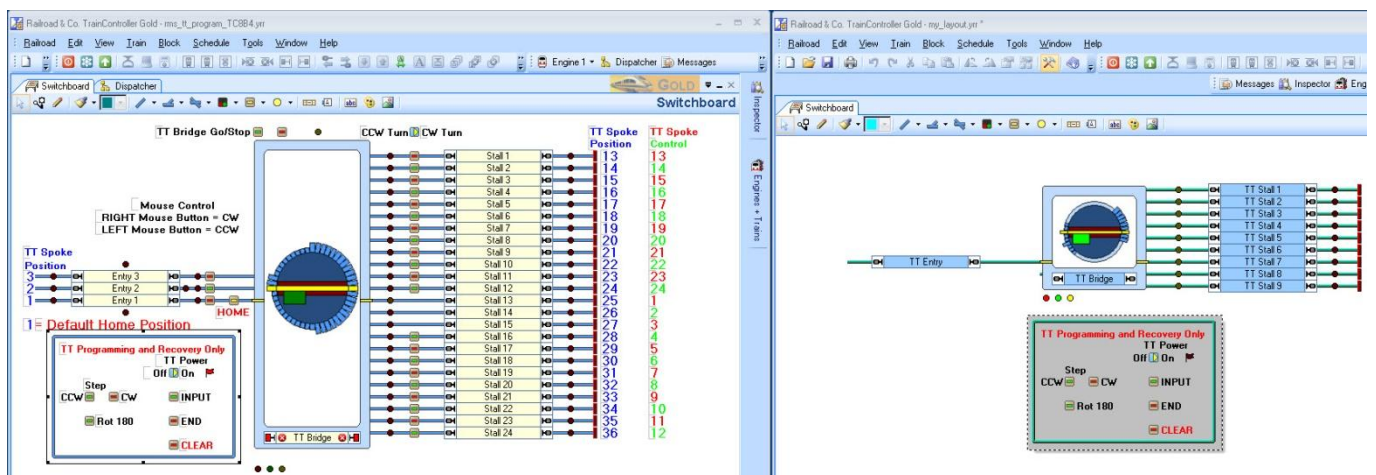
To do this process you must start another TrainController (you will have two TrainControllers running) and resize both windows so they are side by side.

In the example shown below

“rms\_tt\_program\_TC8B4.yrr” is open in the left side TrainController and “your\_layout.yrr” is open in the right TrainController



In the **left** TrainController all the items required are selected in a window then hit **Ctrl + C** to copy items.



In the **right** TrainController LMC (left mouse click) the location you want to place the items and Hit **Ctrl + V** to paste items. Do another LMC away from any other item in the right TrainController to finally place the items in your\_layout.yrr

**Most Important Tip.** When you have finished copying items from “rms\_tt\_program\_TC8B4.yrr” **Exit** the program running that window **without saving**, then **save** “your\_layout.yrr” as the only program window which is open.

**Rule:** the last TrainController window is the one that you want to save i.e. “your\_layout.yrr”

<http://members.ozemail.com.au/~rossstew/rms/marklin.html>



## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

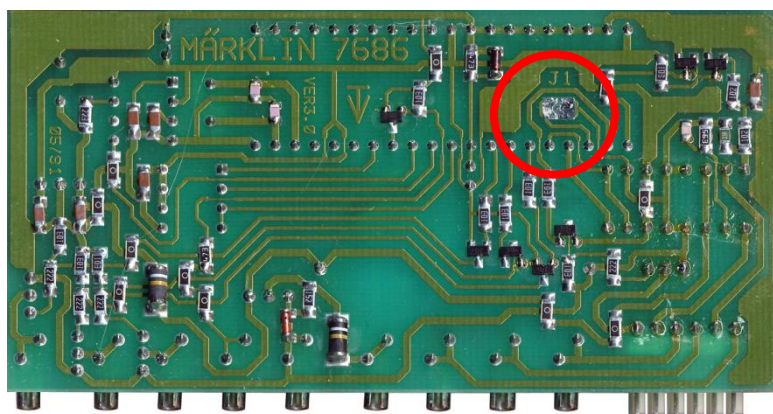
I recommend you recreate the macros on page 18, fix the flagman trigger next to the TT Power toggle switch and under the operations Tab for the flagman fix the script by adding the Input pushbutton twice. Compare the original flagman in "rms\_tt\_program\_TC8G2\_300418.yrr" for further details.

Make sure you plan your programming steps as it will result in less frustration and more success.

### Using a Second Turntable with Switchboard 14

For the 7686 decoder Märklin suggest having the address changed at the factory, but with the 7687 decoder Märklin give details how to change the address, so I have showed both.

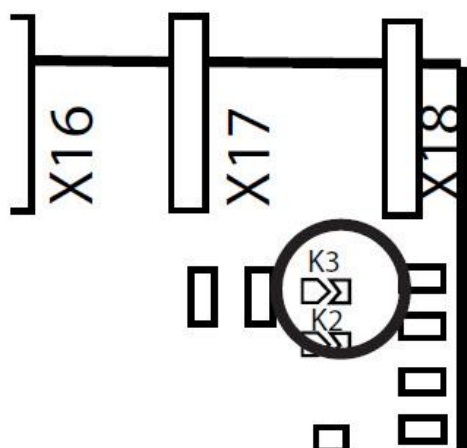
#### 7686 Change Address Details



Solder Bridge	Address	Keyboard
J1 	15	on
J1 	14	on

#### 7687 Change Address Details

Extracted from page 13 of the 7687 manual



Position of the soldering bridge on the circuit board

Solder Bridge	Address	Keyboard
K3 	15	on
K3 	14	on

Changing the address by closing or opening the solder bridge



There is a danger of **burning yourself** when working with a soldering station.



As always enjoy your model trains.

## Märklin 7686 Turntable Quick Reference for Switchboard 15 (Default)

Märklin Switchboard 15		
KEY SET	FUNCTION BUTTONS	SUCCESSIVE ADDRESS
1	END INPUT	m225r m225g
2	CLEAR TURN 180	m226r m226g
3	STEP CW > STEP CCW <	m227r m227g
4	SELECT CW ► SELECT CCW ◄	m228r m228g
5	SPOKE 1 SPOKE 2	m229r m229g
6	SPOKE 3 SPOKE 4	m230r m230g
7	SPOKE 5 SPOKE 6	m231r m231g
8	SPOKE 7 SPOKE 8	m232r m232g
9	SPOKE 9 SPOKE 10	m233r m233g
10	SPOKE 11 SPOKE 12	m234r m234g
11	SPOKE 13 SPOKE 14	m235r m235g
12	SPOKE 15 SPOKE 16	m236r m236g
13	SPOKE 17 SPOKE 18	m237r m237g
14	SPOKE 19 SPOKE 20	m238r m238g
15	SPOKE 21 SPOKE 22	m239r m239g
16	SPOKE 23 SPOKE 24	m240r m240g

### Programming for the first time or when changes are required.

Press the **INPUT** button within the **first 5 seconds** after turning on the digital layout. The turntable will rotate automatically to the last stored position for spoke track 1 and sounds a beep.

Use the **STEP < >** buttons to locate the new spoke track 1, by pressing the **CLEAR** button all spoke track positions previously stored in memory will be deleted and the **new Spoke 1 track will be entered.**

Using the **STEP < >** buttons, position the new spoke track location and press **INPUT** button before turning the turntable to the next position

When all spokes tracks have been entered end the programming procedure by pressing the **END** button. The turntable is now programmed and the memory remains in effect even when the digital layout is switched off.

### Recovery procedure when correct indexing is lost

If the spoke track position no longer corresponds to the button assigned to it. The digital layout must be turned off, wait a few seconds then turn it on again.

Press the **INPUT** button within the **first 5 seconds** after turning on. Position the turntable to spoke track 1 using the **STEP < >** buttons and press the **END** button when the turntable is in the correct position for spoke track 1.

**TIP:** Wire the 7686/7687 digital controller to a k84 contact then you can power off and on the turntable without turning off the entire layout.

**Warning,** don't press the **CLEAR** button during this procedure, as all stored spoke track locations will be deleted from memory.

The pushbuttons on the TrainController switchboard use the address shown in the table to the left

Function Monitoring for Märklin 7686 Turntable			
Red (rt)	Green (gn)	Yellow (ge)	Functions
		✕	Ready for programming
●		✕	Positioning
	●	✕	Position 1 reached
		●	Spoke track not stored in memory k61
	●	●	Spoke track stored in memory
●		●	Looking for spoke track
●			Turntable in operation k59
	●		Spoke track reached k60 position feedback
✕		✕	Disturbance
● = ON			
✕ = BLINKING			

## Märklin 7686 Turntable Quick Reference for Switchboard 14

Märklin Switchboard 14		
KEY SET	FUNCTION BUTTONS	SUCCESSIVE ADDRESS
1	END INPUT	m209r m209g
2	CLEAR TURN 180	m210r m210g
3	STEP CW > STEP CCW <	m211r m211g
4	SELECT CW ► SELECT CCW ◄	m212r m212g
5	SPOKE 1 SPOKE 2	m213r m213g
6	SPOKE 3 SPOKE 4	m214r m214g
7	SPOKE 5 SPOKE 6	m215r m215g
8	SPOKE 7 SPOKE 8	m216r m216g
9	SPOKE 9 SPOKE 10	m217r m217g
10	SPOKE 11 SPOKE 12	m218r m218g
11	SPOKE 13 SPOKE 14	m219r m219g
12	SPOKE 15 SPOKE 16	m220r m220g
13	SPOKE 17 SPOKE 18	m221r m221g
14	SPOKE 19 SPOKE 20	m222r m222g
15	SPOKE 21 SPOKE 22	m223r m223g
16	SPOKE 23 SPOKE 24	m224r m224g

Please note the Märklin digital decoder 7687 can only be set to two possible addresses.

The default address is set for Switchboard 15 but upon request to Märklin the decoder address can be set to switchboard 14.

If you have two turntables then the Base address for Switchboard 14 must be set to **209** and the pushbutton addresses must be set as shown in the table to the left.

Turntable - TT

General Connection Customize Tracks Operations Comment

Type: Maerklin Digital Turntable 7686 and compatible

Connection: Digital System: ESU ECoS Address: 209

Timing: Switch Time: 100 Step Time: 1000

Position Control: Feedback: k60-TT Position Feedback

OK Cancel Help



## 7687 Firmware Bug Workaround (30-06-2014)

The title above is my opinion and the solution is an unpublished workaround from Märklin Customer Service.

### The problem

I have experienced firsthand with my friend Greg Tesoriero when trying to integrate the turntable with TrainController software. The turntable jammed because the locomotive wasn't fully on the turntable bridge and as the bridge turned the 7687 decoder went into self protection mode and from that time the turntable was uncontrollable using direct control with the CS2 or control using the TrainController software.

### The symptoms

The turntable will move and go through the motions of programming the turntable decoder using the CS2, but after the End Program button, all you get is a clicking sound when you try to control the turntable using the step buttons, the 180 turn button, or by selecting a track.

### The Workaround/Solution

Greg sent an email to Märklin Customer Service and was advised to try the following from [Frank Mayer](#).

When you start the initialization of the turntable, what happens?

Does the turntable run to track 1?

Is it possible to turn the turntable by 180 degrees? If not, please program the following sequence.

1. Stop-function. The current is switched off
2. Stop-function: the current is switched on again
3. In the next 5 seconds push button "input" at the keyboard for this turntable
4. Next step: Push "track 24"
5. Next step: Push "end"
6. Now please check, whether the function step left or right or the turn by 180 degrees will function.

Greg tried the above and now the turntable seems to be working. I have also sent this workaround to Craig Ericks and he has also confirmed that he has been successful in regaining control of his turntable.

Note: This works using Switchboard 15 on the CS2 (confirmed) and the ECoS ([confirmed](#)).

### Opinion Time

The above instruction set is a reset of the decoder and I suggest this is a firmware oversight/bug which should have been reset when the power is turned off then back on.

### Advice

If the problem persists and you get tired of doing the above procedure contact Märklin Customer Service and ask for an upgraded turntable decoder.

[Return](#)

## 7687 Firmware Reset with the ECoS and TrainController as a Working Solution 30-04-2018

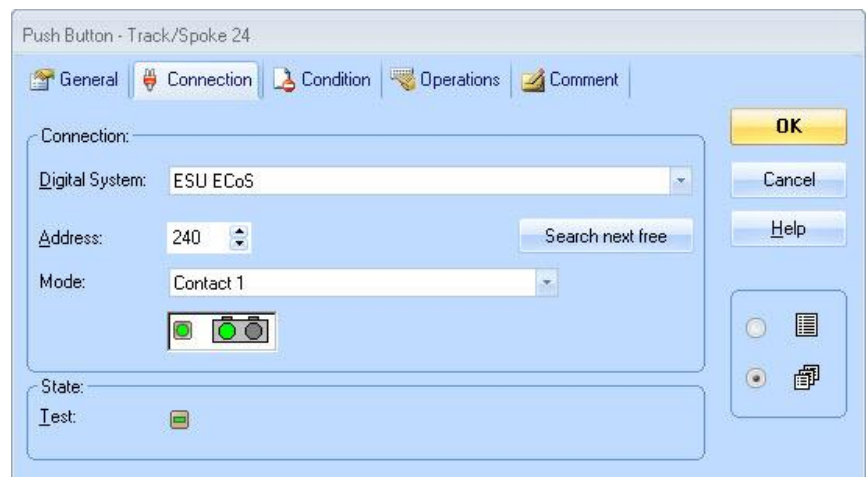
After six weeks operating the Märklin turntable Mike Jagoe contacted me for help on how to reset the 7687 decoder using the ECoS with TrainController. As described on the previous page Mike was only getting a clicking sound when he tried to control the turntable using the step buttons, the 180 turn button, or by selecting a track.

### TrainController Solution

I advised Mike to insert a pushbutton into his TrainController switchboard with the address of **240 green** which Märklin suggest to address **track/spoke 24** (see quick reference table for the Default Switchboard 15 on page 25).



The supplied files have been updated to include the new **Trk 24** pushbutton which can only be seen in edit mode.



In the Comments tab of the pushbutton I suggest a quick how to, on resetting the 7687 decoder.



## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

If this firmware problem occurs at regular intervals I have also provided another pushbutton that executes a macro to automate the 7687 decoder reset. This will only work if the turntable power is controlled with a relay.



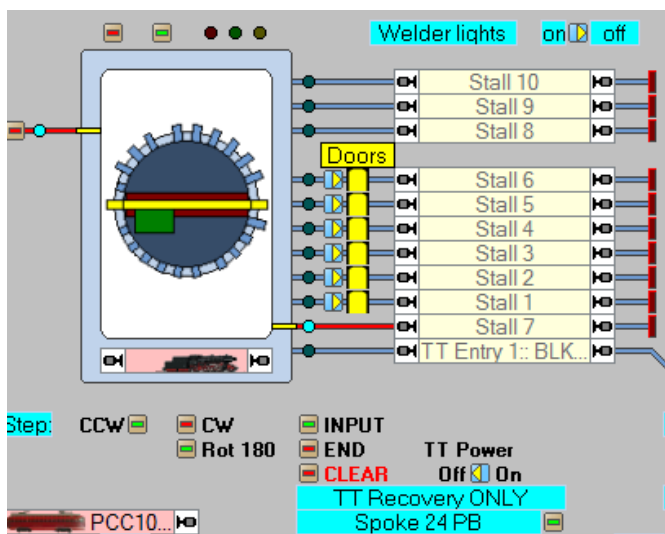
Under the Operations tab I have inserted the macro “TT Decoder Reset Macro” after creating it as shown.



- Message "TT Decoder Reset Start"
- TT Power Off/On
- Delay 00:00:01.000
- TT Power Off/On
- Delay 00:00:02.500
- TT Input
- Delay 00:00:00.200
- TT Input
- Delay 00:00:01.500
- Track/Spoke 24
- Delay 00:00:00.200
- Track/Spoke 24
- Delay 00:00:00.200
- TT End
- Delay 00:00:00.200
- TT End
- Delay 00:00:00.200
- Message "TT Decoder Reset Complete"

Please note that the time highlighted in the macro may have to be adjusted to make sure the turntable has stopped moving and the audible sound is heard before the Track/Spoke 24 PB is executed.

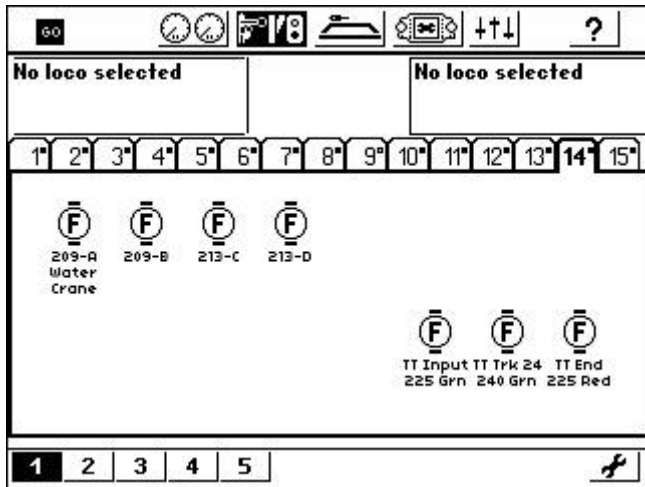
Mike has informed me that this method of resetting the 7687 decoder has worked and he has retained the programmed tracks.



This is Mike's TrainController switchboard showing the spoke/track 24 pushbutton (blue text background at the bottom of the picture).

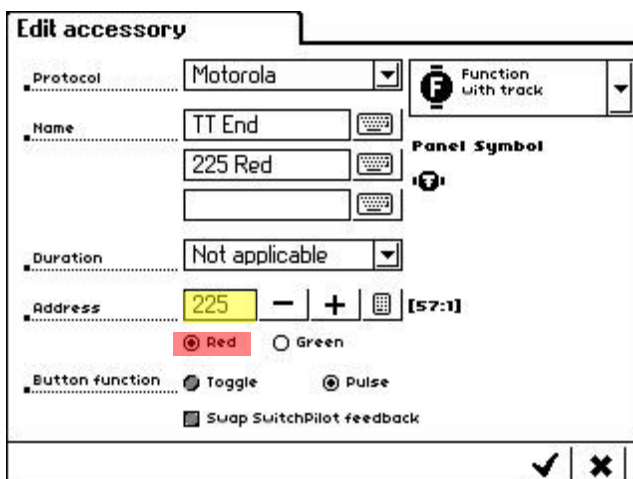
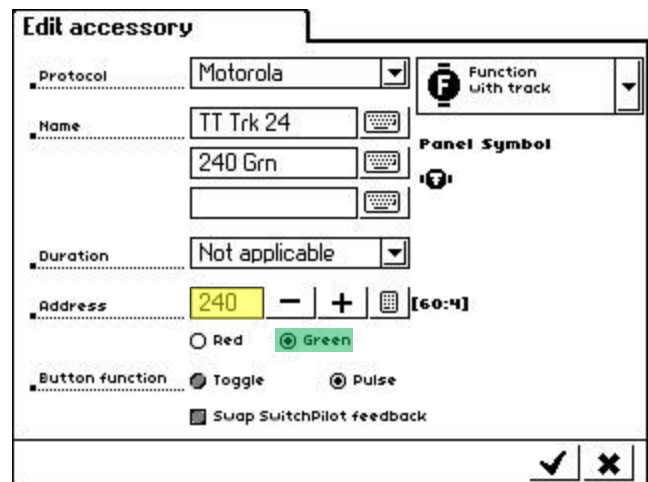
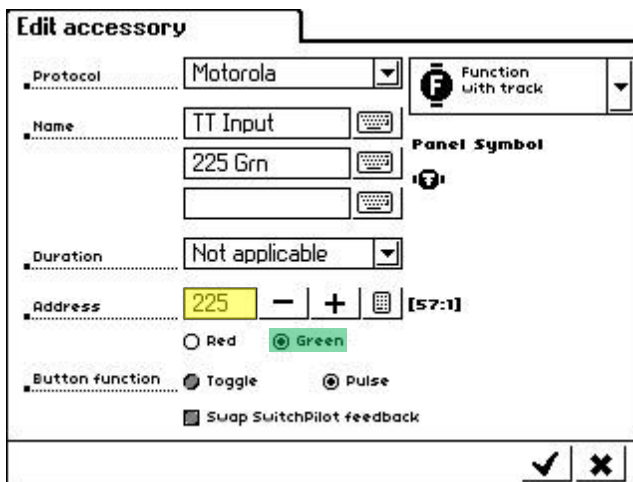


## Resetting the 7687 Decoder with the ECoS Only



People may be using the ECoS and the Märklin turntable with the 7687 decoder only and encounter the firmware problem as stated on page 27 and need a solution to reset the decoder.

My suggestion (untested at this time) is to create three function switches as shown on an ECoS switchboard. **If someone tries this please inform me that it works.**

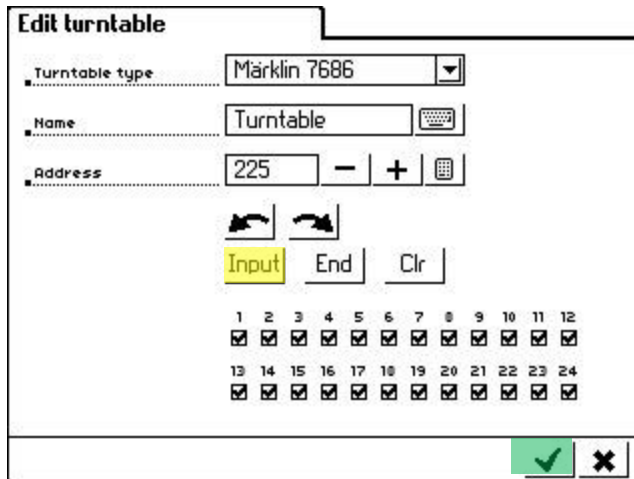


## Procedure to reset the 7687 decoder

- Hit the ECoS **Stop** button (TT power off)
- Hit the ECoS **Go** button (TT power on)
- Hit the **TT Input** Function switch within 5 seconds of turning the TT power on
- Wait until the turntable has stopped moving and you hear an audible sound.
- Manually rotate the turntable bridge to the home position (position 1)
- Hit the **TT Trk 24** Function switch
- Hit the **End** Function switch
- Test turntable operation

## Resetting the 7687 Decoder with the ECoS Only (Theory only at this time)

If someone tries this please inform me that it works.



On the ECoS select switchboard 15 with the turntable.

Edit the turntable and make a record of the 1-24 positions used.

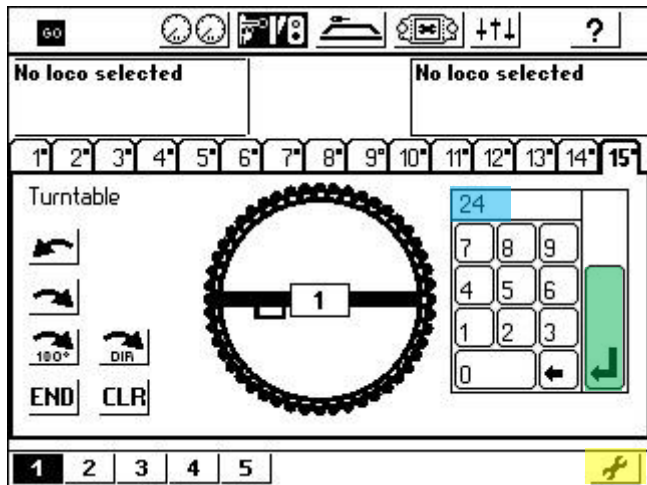
Use the ECoS **Stop** to turn the power Off

Use the ECoS **Go** to turn the power On

Within 5 seconds click on the **Input** PB

Now tick all unused positions as shown for a complete selection

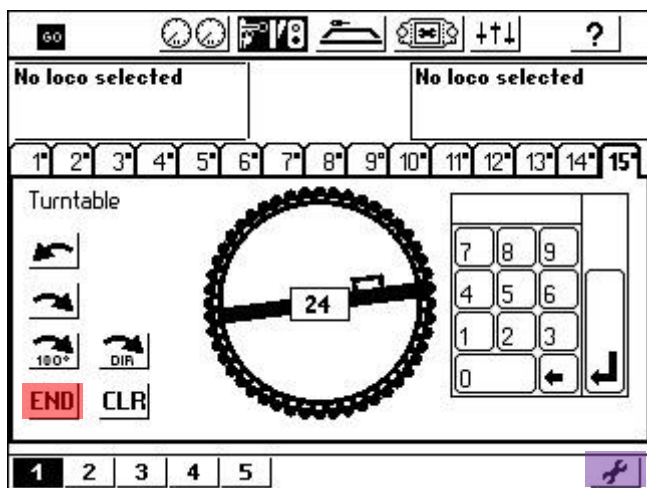
Now select the **tick**



Exit out of edit mode by hitting the **spanner**

Use the key pad to select **24**

Hit the **Enter** key



With the bridge at position 24 hit the **END** key

Now hit the **spanner** and edit the turntable.

Refer to your list of used positions and un-tick the positions not required.

Now select the **tick** (top diagram)

Exit out of edit mode by hitting the **spanner** (middle diagram)

Manually adjust the turntable bridge to the Home position (position 1)

Check the operation of the turntable has been recovered.

**Return**

## TC Problem with ECoS and a Working Solution 12-03-2018

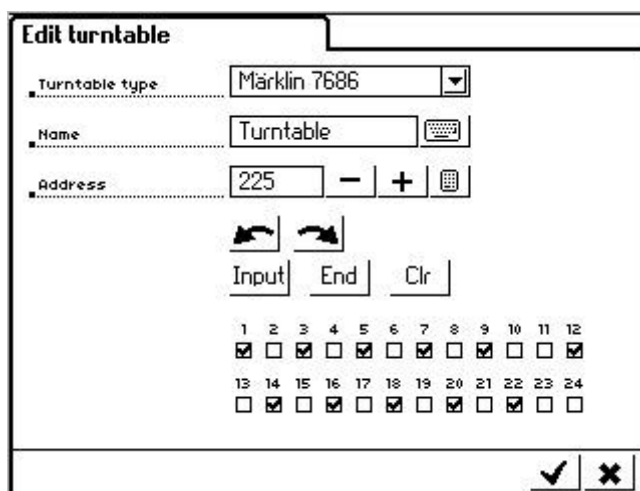
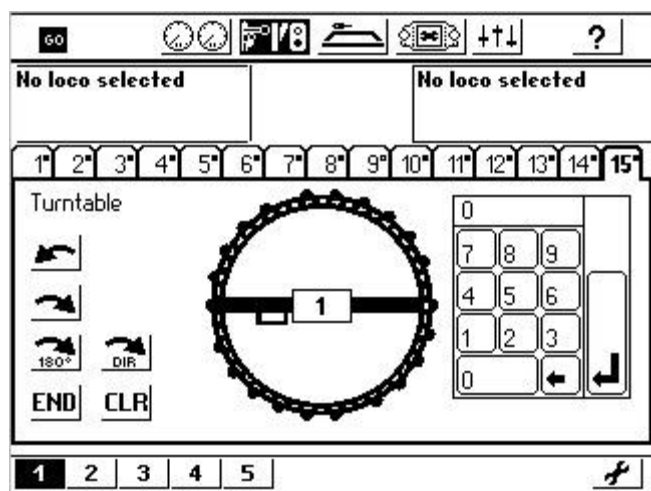
While helping Mike Jagoe to configure the Märklin turntable connected to an ECoS and Controlled by TrainController we encountered the following problem.

### Problem

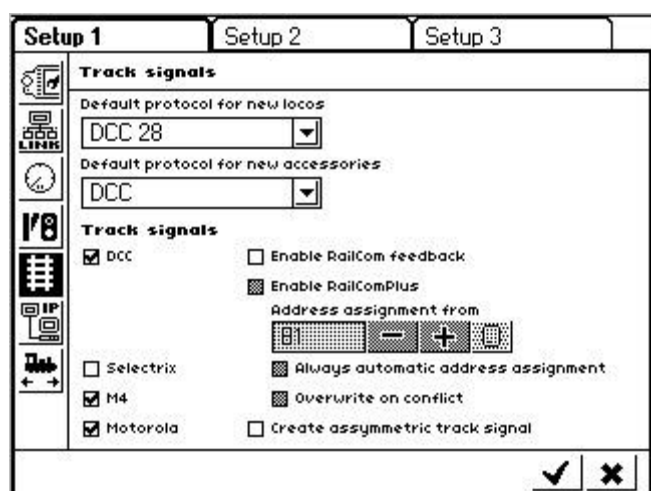
TrainController was unable to control the Märklin turntable from the turntable window or direct from the turntable symbol within the TrainController switchboard.

The turntable 7687 decoder was programmed direct from the ECoS and functioned well using the ECoS accessory switchboard.

### ECoS Settings



Accessory Switchboard 15 shown above with the settings when in edit mode.



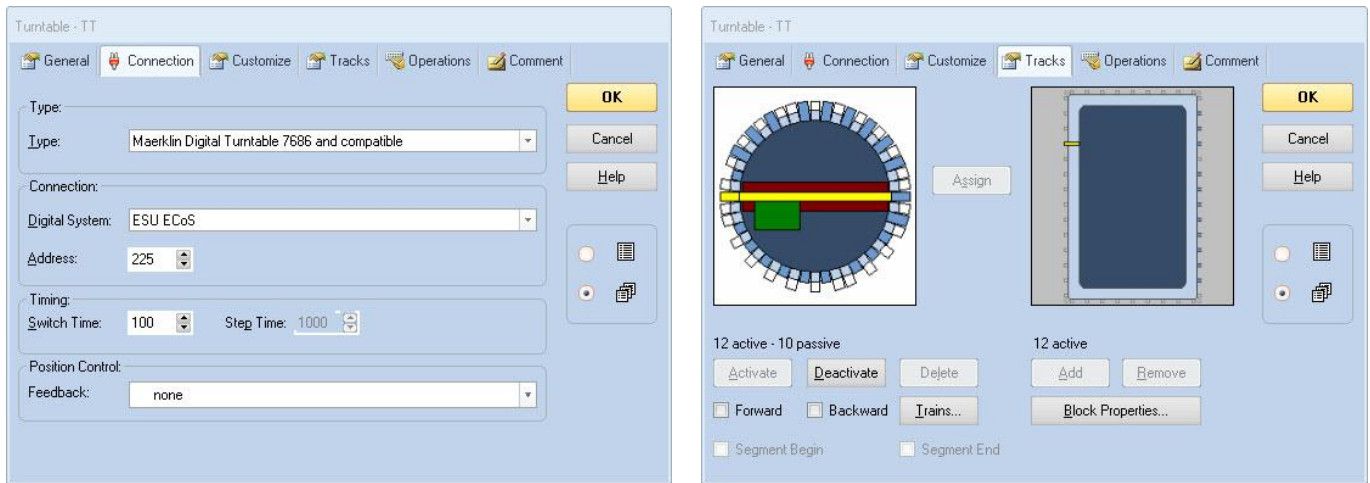
Under **Setup 1** the track Signals where set for DCC, M4 (mfx) and Motorola.



## Tip: - Configure/Program the Märklin 7686/7687 Turntable with TC Gold Ver. 7.0F8 and 8.0B4

Date: 26-01-2010 Add 27-09-2013 Add 30-06-2014, Add 21-07-2016, 12-03-2018 TC Problem 30-04-2018 Add, Links 15-04-2020

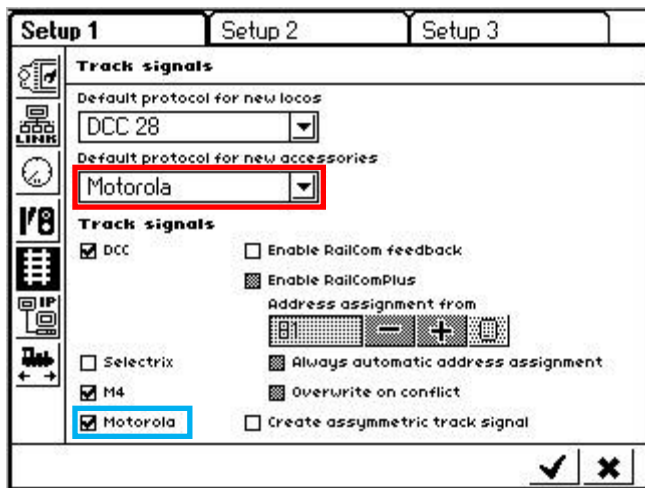
### TrainController Settings



The Connection tab was set to the **ECoS** with a base address of **225** and the 12 active tracks in the physical turntable symbol matches the 12 active tracks in the logical TrainController symbol.

## The Solution

The solution was very simple after much trial and error as we only had to change one setting on the ECoS.



The default protocol for new accessories was changed to **Motorola**.

I don't understand this requirement as the protocol was ticked for **Motorola** and the turntable type on the ECoS was set to Märklin 7686.

### Decoder Versions Tested

Märklin decoders **7686** and **7687** require the **Motorola protocol**.

### TrainController Versions Tested

**TCG8.0G2** and **TCG9.0A3** require the ECoS default protocol for new accessories be set to **Motorola**.

### ESU ECoS Versions Tested

ECoS **50000 (4.2.2)** and ECoS **50200 (4.1.2)**

[Return](#)