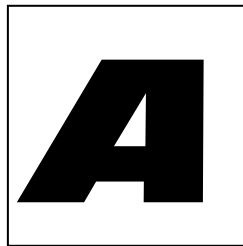


New York Railway Supply

Turntable Indexing That Works

***PTC Model III
Programmable
Turntable Controller***



Automatic Power Router

Installation Instructions

New York Railway Supply

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APR Model I

Automatic

Power Router

Installation Instructions

OVERVIEW

The Automatic Power Routing Module (APR) provides a method for removing power from turntable service tracks and optionally the turntable lead track when the bridge is not pointing to them. The APR can control up to 48 service tracks (47 if you are going to switch power on the lead track). It will reduce the amount of wiring necessary on the layout by not requiring switches on a control panel to be connected to the service tracks. The APR can be installed at anytime and does not have to be part of your initial installation of the PTCIII.

The APR will work only with the PTCIII turntable controller with versions stamped on them of at least 10.1 for rotary and pushbutton or 11.1 for keypad track selectors. Contact NYRS for information on upgrading your controller to these versions. The type of system used to power the track does not matter for the APR. DC, AC, DCC are all compatible.

TECHNICAL OVERVIEW

The PTCIII communicates with the APR via an RS-232 interface. Upon power up the PTCIII transmits its current position to the APR. After each position change the PTC transmits the new bridge position to the APR. The APR disconnects the power to the existing track at the end of the move and applies power to the newly selected track.

The APR controller unit can switch up to 48 tracks. A remote relay board is required for every 12 tracks. These boards are connected to the APR unit via a ribbon cable. There are four connectors on the back panel of the APR. An internal jumper block permits the option of including up to 3 lead tracks in this count. If included the lead tracks would be switched off when the bridge is not in position. This would preclude engineers or runaway locos from driving off into the pit. The other option is to not switch the lead tracks and this would provide the means to switch additional service tracks.

Please review these instructions thoroughly before you begin to set up your system.

APR - PARTS LIST

The Automatic Power Routing Kit includes the following parts:

- APR control unit
- Interconnect cable to PTCIII
- Relay board for each 12 tracks to be switched.
- These instructions.

ADDITIONAL ITEMS

- Power Supply for Relay Board – Either your own or optional wall supply from NYRS. See **Track Power** section on Page 4.
- Mounting Hardware -To complete the installation, you will need to some means to mount the relay boards to your benchwork. We recommend some nylon spacers and wood screws obtainable from any hardware store. See photos.

INSTALLATION

1. **SETTING UP** – The APR I may be set directly on top of the PTC III. The modular cable for connecting the two control boxes may be plugged in at this time. The APR I does not need a power connection as all power comes from the PTC III.

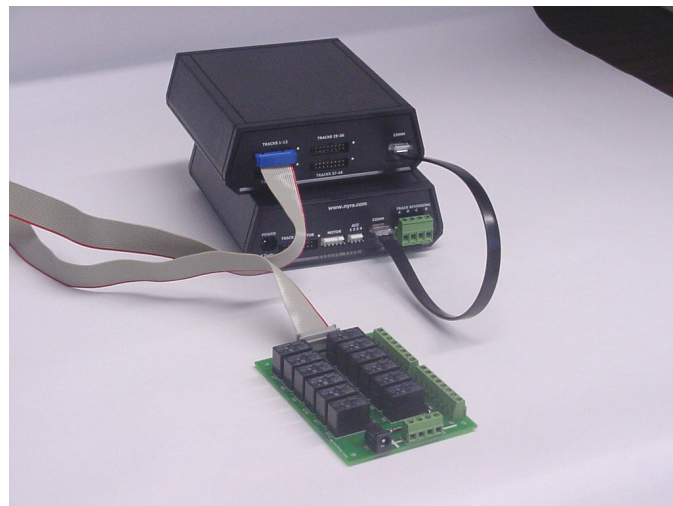


Figure 1

2. **SURVEY RELAY BOARD MOUNTING AREA** – The relay boards can be mounted in several ways. The easiest way would be to mount it directly to the benchwork, near the turntable. This would keep the discrete wires to the rails short and manageable. The boards could be stacked with spacers in between them or laid out around the turntable. When the boards are mounted you are ready to begin the wiring.
3. **CONNECT APR TO RELAY BOARD** – See figure 1. Carefully connect the ribbon cable from the appropriate output on the rear of the APR. Pay close attention to cable polarity. Damage may result if plugged in backwards See Figure 2 for correct orientation of cable. Make sure cable is coming from bottom of connector as shown. Figure 8 shows the correct orientation for the relay board connector.

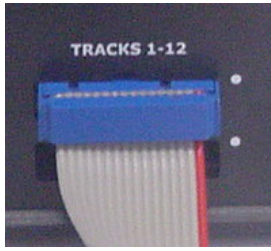


Figure 2

- 4. SETUP OPTIONS** – Depending on user preferences up to three yard lead tracks can be ignored by the APR. Basically the question to be answered is, do you want to switch the power off of one or more yard lead tracks when the bridge is not pointing to one of them. We recommend that the yard lead tracks be switched for the length of your longest locomotive. You won't have locomotives accidentally running into the pit this way. The worst scenario is having a locomotive fouling the pit when the turntable is running. The PTC III stepper motor has enough torque to cause damage to the bridge if it gets caught on an errant locomotive. See Appendix A for example setups. If the yard leads are switched the relay assignments start with track 1, and progress around in a clockwise direction regardless of the numbers skipped in your PTC keypad assignments. It skips unused positions on the rotary switch as well. See Figure 3.

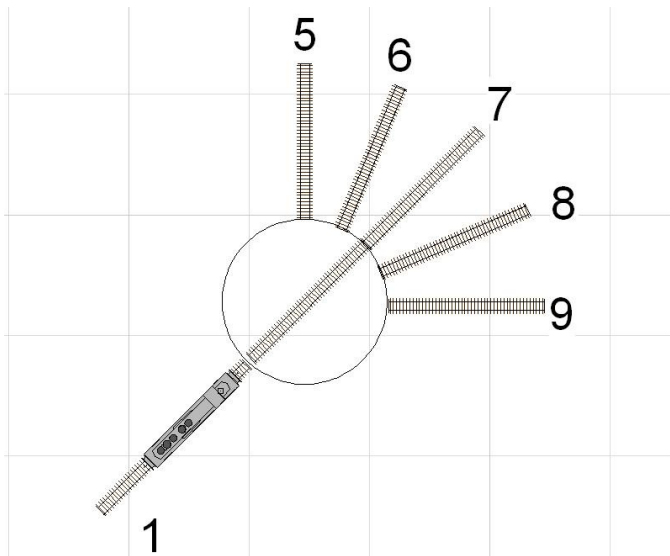


Figure 3

This example applies to both the keypad and rotary track selectors. Tracks 2 thru 4 are skipped but these track positions are not wasted on the APR. You would connect your service tracks to terminals 1 thru 6 on the APR Relay board. On the keypad selector it doesn't matter if you skip numbers or number them backwards. The APR counts them in a clockwise direction from track 1.

SETTING APR OPTION BLOCK - The jumper block is located on the printed circuit board inside the control box. The default setting is to switch the power to all tracks including any lead tracks. To change the setting remove any cables connected to the controller and

open the box by removing the four screws on the bottom of the case. Locate the jumper block at the front of the unit. See figure 4 The jumper block is labeled J4.

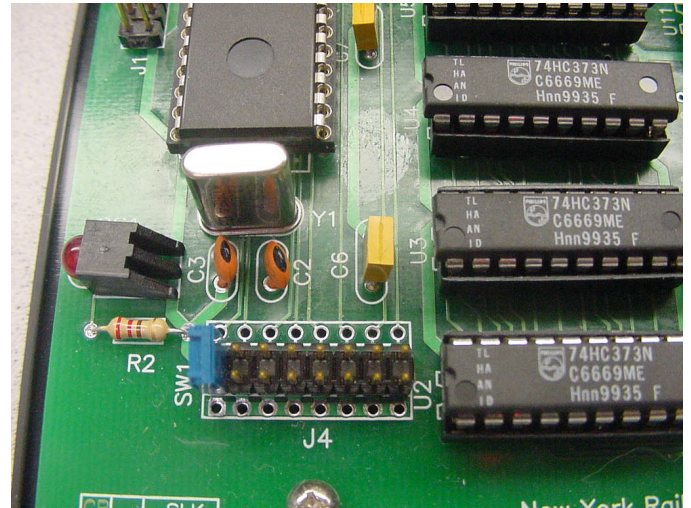


Figure 4

Figure 5 indicates how to set the jumpers. The illustrations in Appendix A also show jumper settings for the sample installations

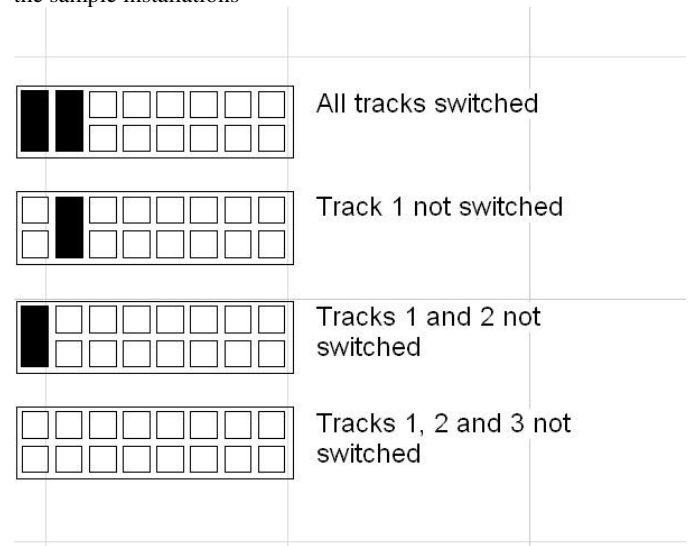


Figure 5

WIRING

- 1. POWER** – The relay board requires 12v DC to operate. This may be delivered in one of two ways. If you have a 12v accessory bus running around the layout you can connect it to the connector labeled P2. Be sure to observe the polarity markings on the board. There are two plus and two ground terminals on the board so you can daisy chain the relay boards together. The other option is to use a 12v wall transformer and plug it into the connector labeled P1. Figure 6 shows the power connectors. Be careful if using the wire terminals to observe polarity markings. You may daisy chain more relay boards to the J2 connector and you would only need one wall transformer for all of your relay

boards. There are two terminals for ground and two for plus.

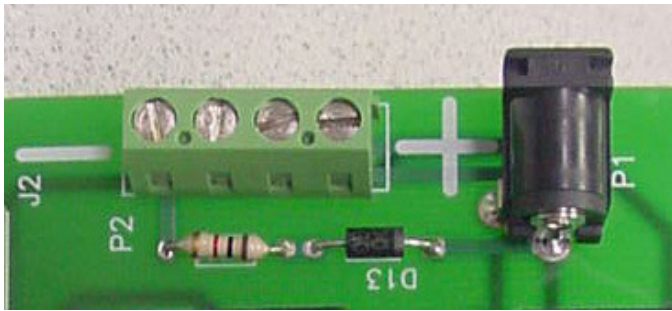


Figure 6

2. **TRACK POWER** – Figure 7 shows one of the terminal blocks on the relay board. The left most two terminals are connected together and track power line that is to be switched is connected into one of these terminals. The other terminals are connected to the rail to be switched. See examples in Appendix A. The relay board has two of these terminal blocks on it. The Track Power terminals of these two blocks **are not connected**. You must connect them to the track power individually or connect a wire between them using one of the two terminals. The power to the to blocks are not connected together to provide additional flexibility to the user. A master override toggle switch could switch the power to these blocks for example.

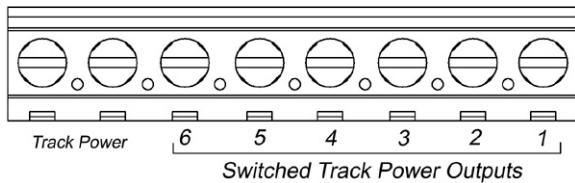


Figure 7

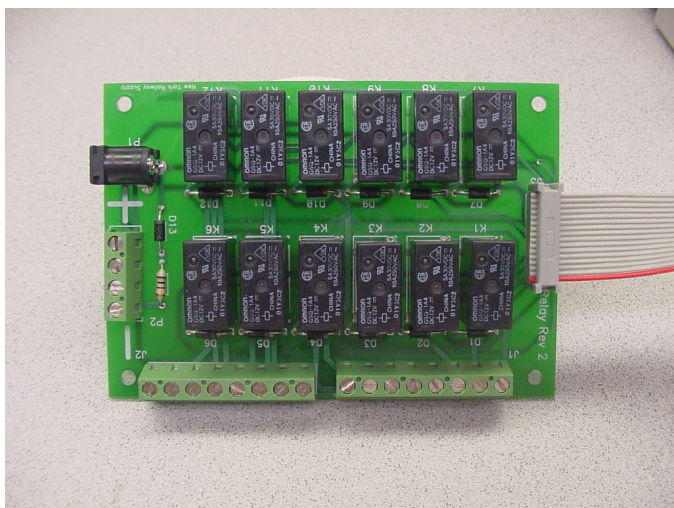


Figure 8

Each relay board has the capability of switching 12 tracks. If the board is connected to the ‘Track 1 – 12’ output on

the APR Controller box the tracks will be 1 thru 12. If connected to the ‘Track 13 – 24’ output, the tracks will be 13 thru 24, etc. See Figure 9.

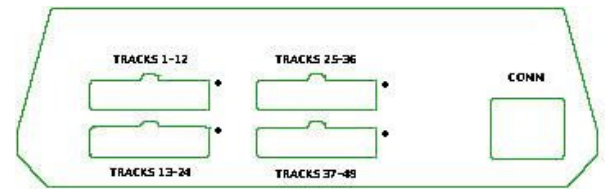
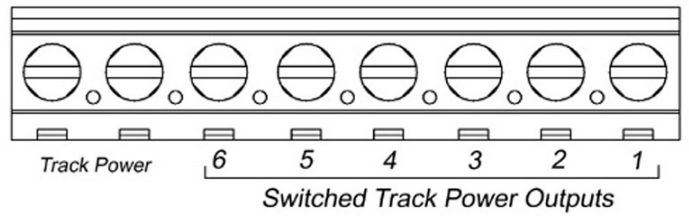
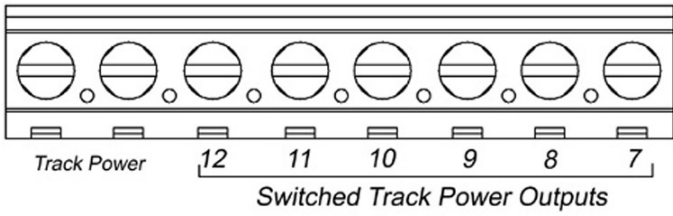


Figure 9

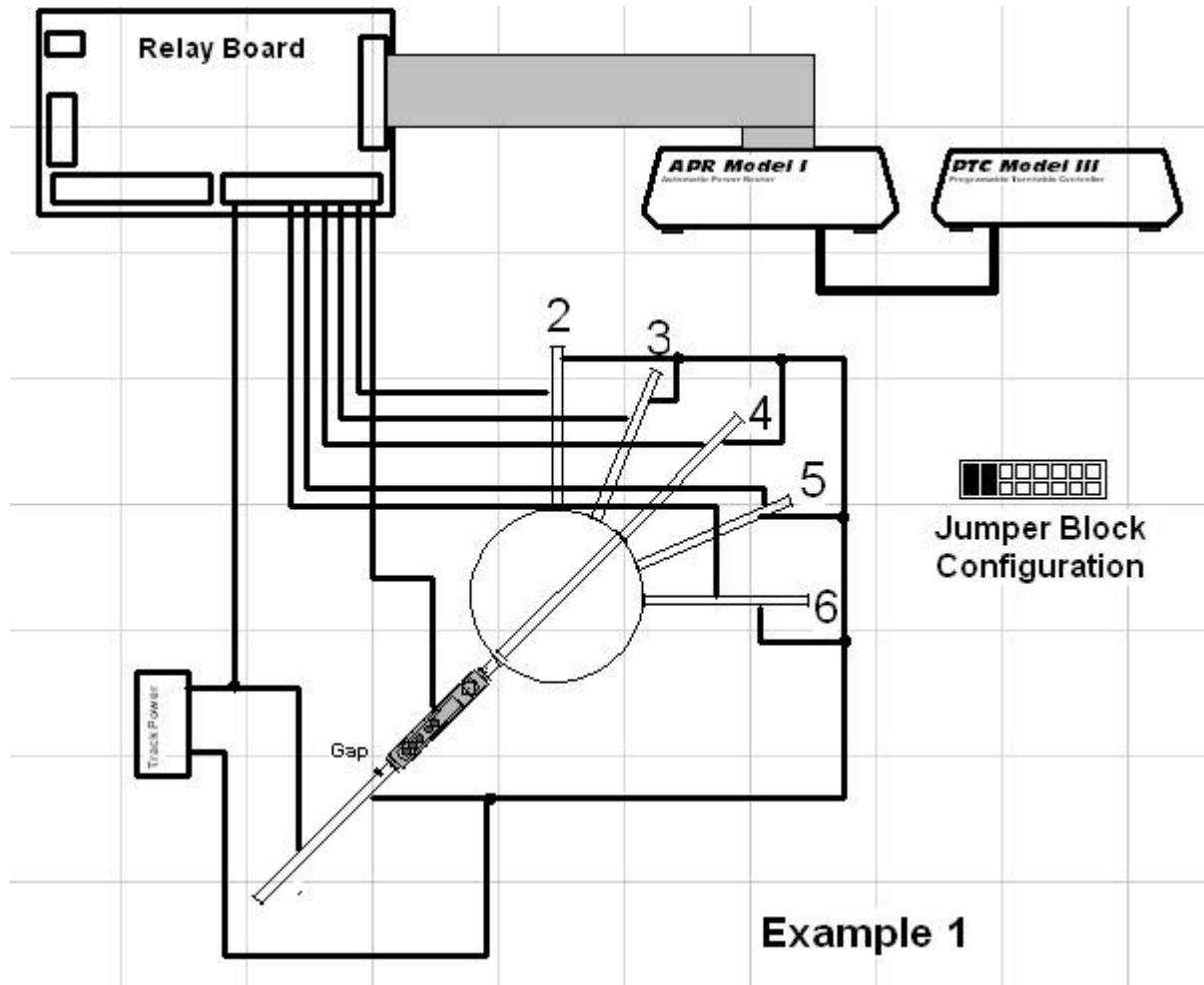
3. **CUSTOM RELAY APPLICATIONS** – Some users might require special switching requirements for their application. The relay output lines in the controller are open collector, darlington drivers capable of sinking 500ma and withstand output voltage of up to 50v.

4.

APPENDIX A – Example Setups



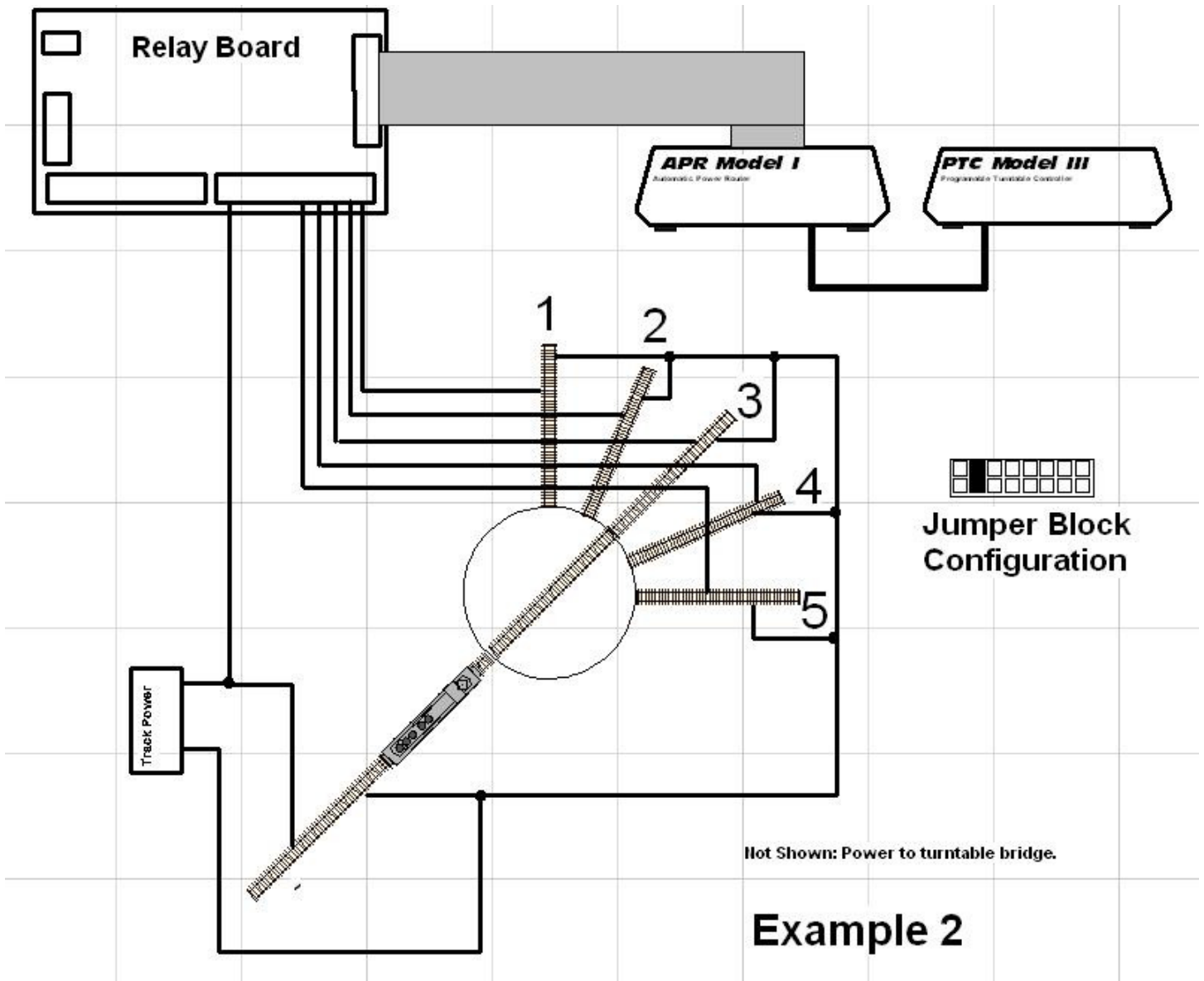
Terminal Block Detail



Lead Tracks – 1

Service Tracks – 5

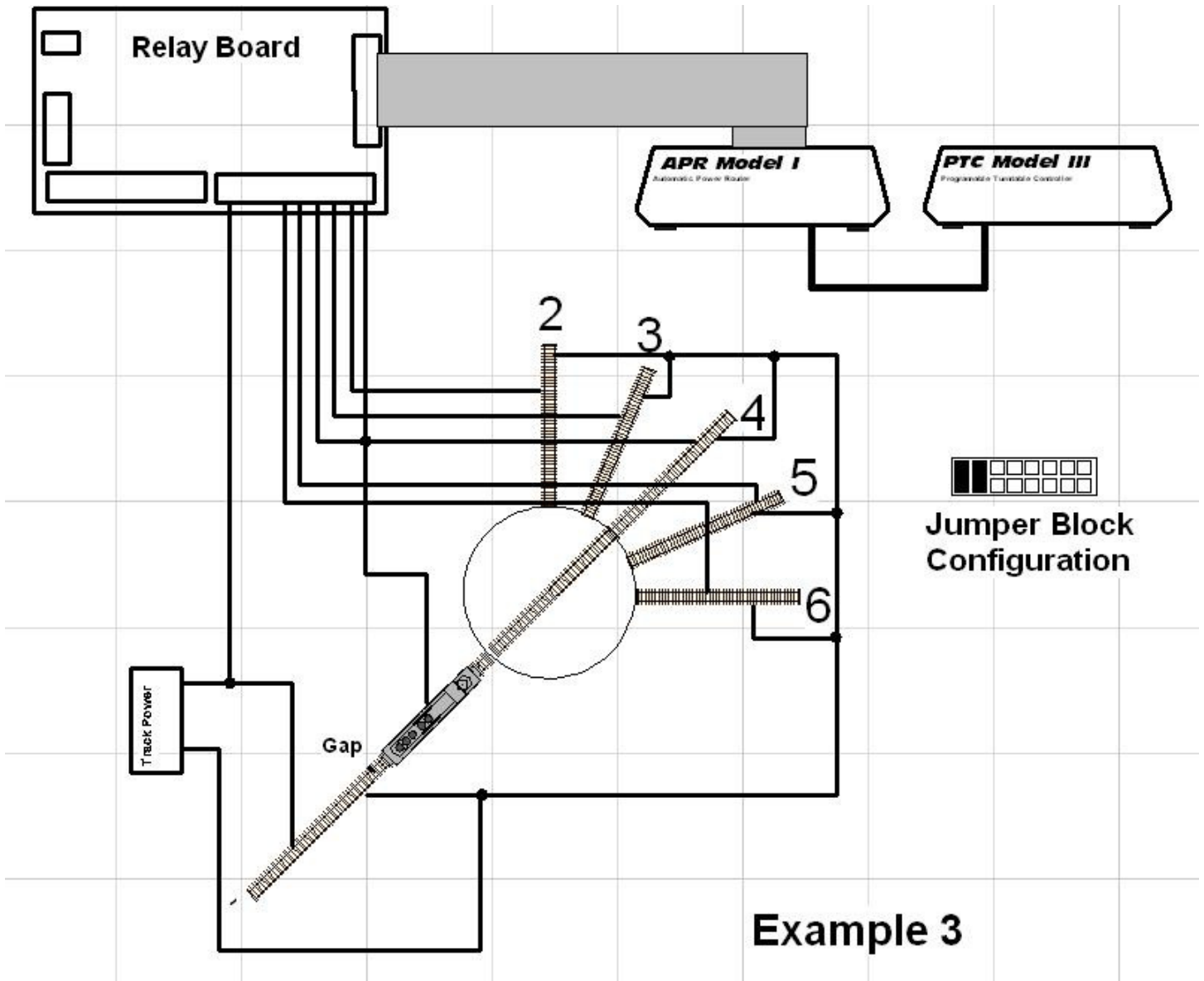
All tracks are switched using outputs 1 – 6 of APR.



Lead Tracks – 1

Service Tracks – 5

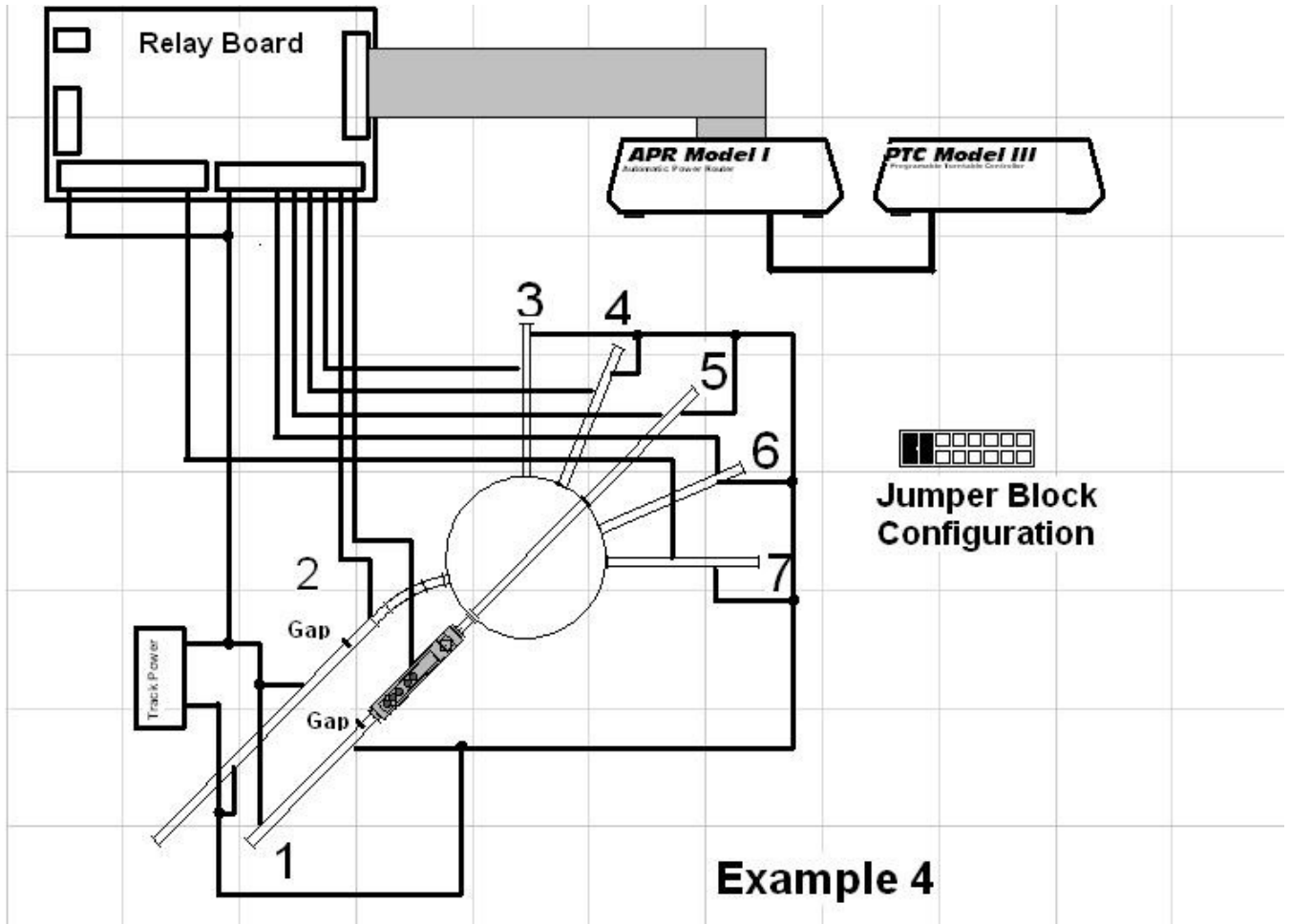
All service tracks are switched using outputs 1 – 5 of APR. Lead track is not switched.



Lead Tracks – 1

Service Tracks – 5

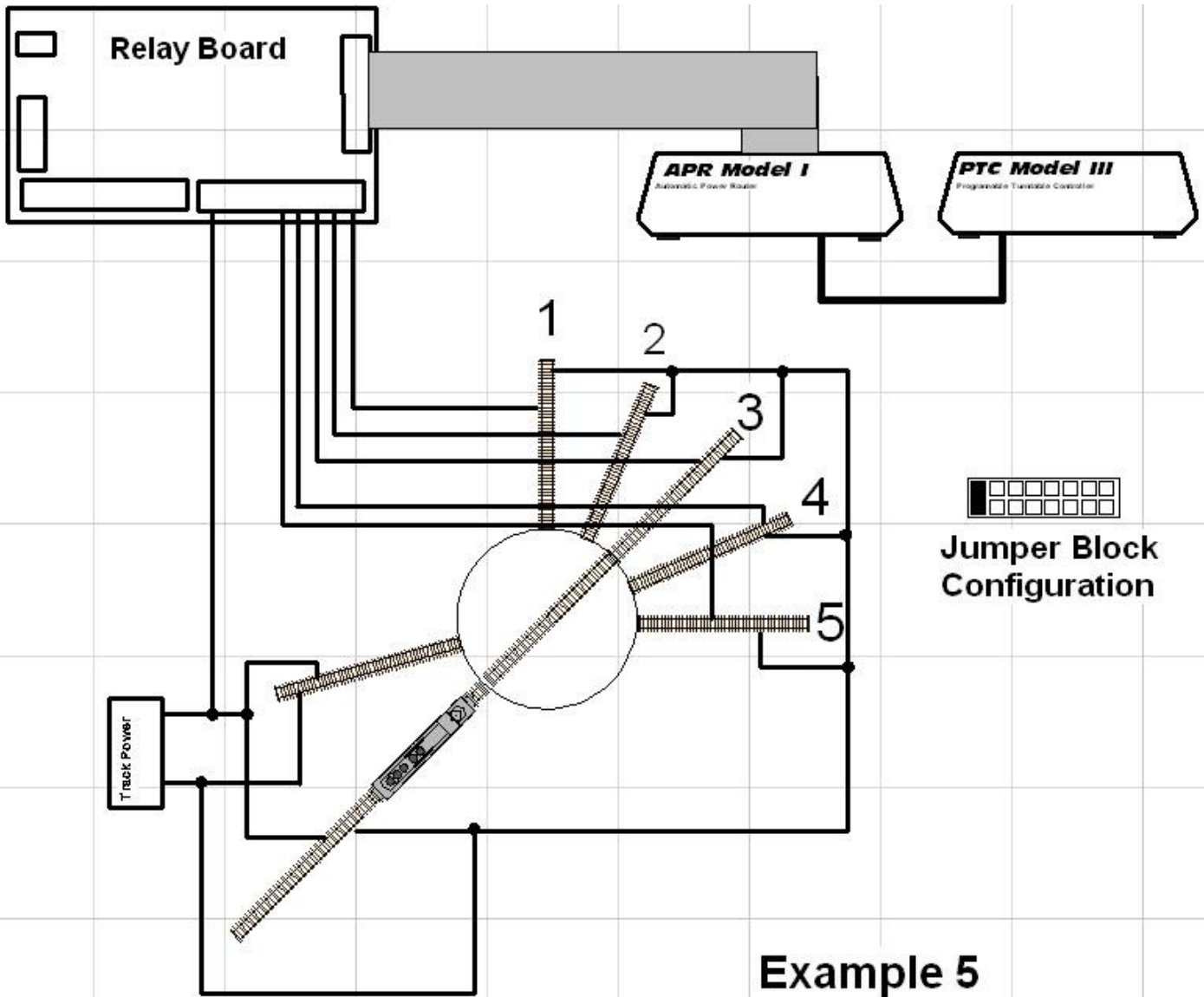
In this configuration the lead track (Track 1), and Track 4 are wired together. Power will be routed to both tracks whenever one of them is selected since they are in line a locomotive can drive from the lead, across the bridge and onto the service track. If the bridge is not pointing to track 1 or 4 both 1 and 4 will be turned off.



Lead Tracks – 2

Service Tracks – 5

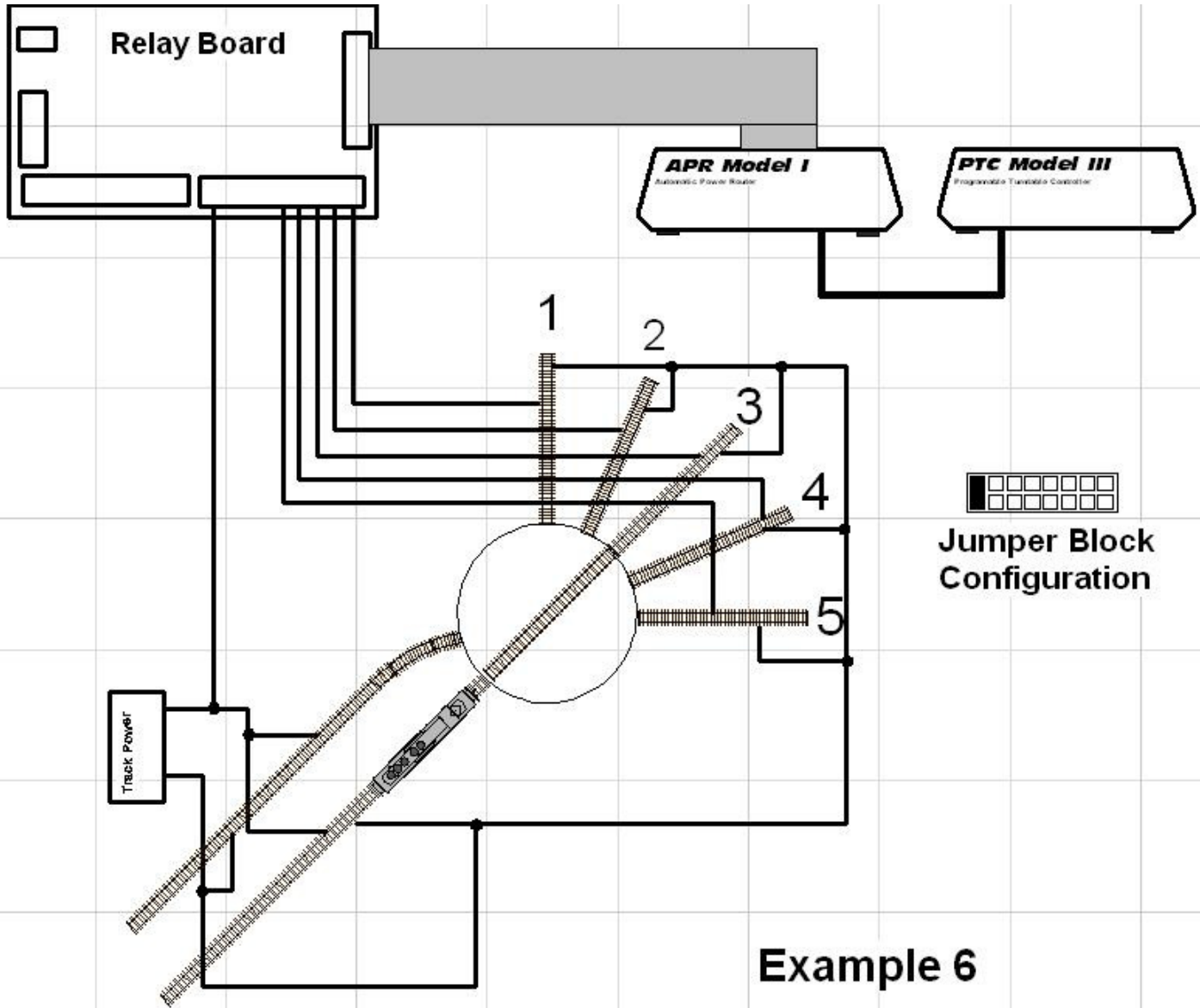
All tracks switched.



Lead Tracks – 2

Service Tracks =5

The lead tracks are not switched. This conserves switching outputs of the relay board.

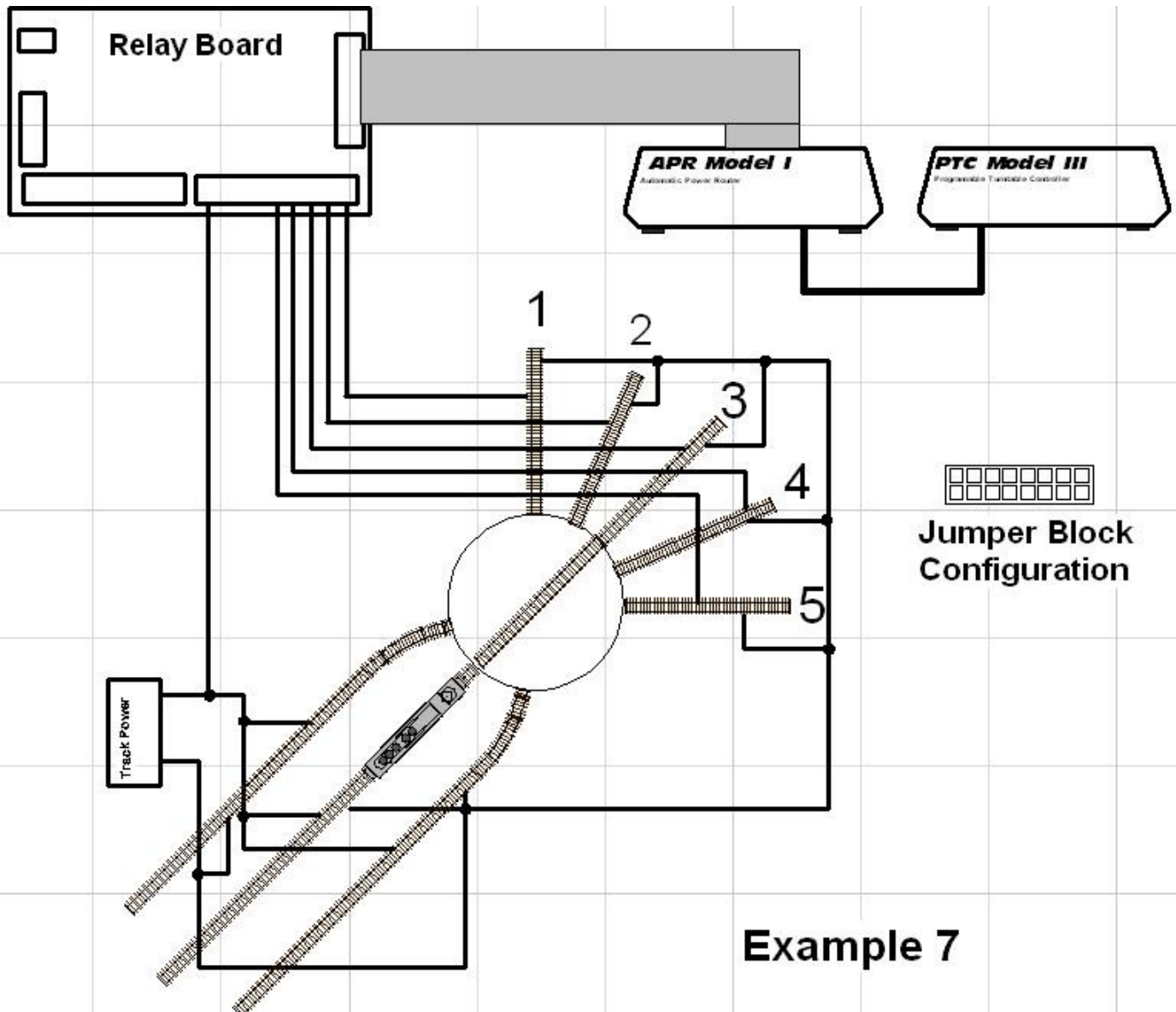


Example 6

Lead Tracks – 2

Service Tracks =5

The lead tracks are not switched. This conserves switching outputs of the relay board.



Lead Tracks – 3

Service Tracks =5

FOR MORE INFORMATION

This document and others are available in downloadable format at our web site, noted below. Feel welcome to call or write us at:

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