



PC Model Railway Control System

For Elite and eLink DCC Controllers

Version 1.74 (plus optional *Pro* pack)

(Revision December 2020)

READ THIS GUIDE FIRST

Please read this guide fully. It should only take a couple of hours.

PLEASE NOTE THE SOFTWARE LICENCE IS NOT TRANSFERABLE

If you lose your RailMaster keys or Pro-Pack code you will need to purchase another.

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Preface

Thank you for choosing RailMaster and the Elite, eLink or Select DCC controller to control your model railway layout using a Microsoft Windows-based PC.

RailMaster has been optimised to work with the Hornby Elite, eLink and Select (using the optional Select-a-Link interface cable) DCC controllers to allow you to more easily control your model railway. The key is simplicity. You can very quickly set up your locomotives and design your track layout in RailMaster with little PC or DCC experience, however a basic knowledge of computers is needed. RailMaster shields you from many complex DCC operations, however you should read this guide completely first to fully understand RailMaster's capabilities before installing and using the software.

If you are an analogue model railway user you can still use RailMaster just to control all of your points and signals, yet still control your locos with your analogue controller. This simply requires a separate DCC circuit for signals and points, controlled by accessory decoders.

Of course, part of the fun of owning a model railway is controlling trains, signals and points manually, but think what you can do by automating part of your railway and controlling other aspects manually.

With RailMaster, you can do the following:

- Set up and control locomotives from your PC screen (optimised for touch screens, even on Windows XP, Vista, 7, 8, 10 - with drivers).
- Use a variety of scales including OO, HO, EM, P4, N (UK and Europe), O (UK, Europe and USA), TT and Z
- View up to ten loco controllers on the screen at the same time for control, dependent on screen resolution (1920x1200). You can, however, scroll through up to 192 loco controllers in two columns per loco group with an unlimited number of groups.

- Control up to 29 sound and light functions for each loco from your PC screen (and up to 29 within programs, based on DCC controller and decoder capabilities). Firmware 1.3 or later is needed for the Hornby Elite.
- Switch up to 2048 points and signals from your PC screen just by clicking on them with your mouse or using a touch-screen monitor.
- Operate your locos, signals, points and accessories using a wireless microphone headset and Voice Control. *Pro* Pack only.
- Set quick routes to switch multiple points and signals in one operation.
- Write programs to operate locos, points, signals, turntables and other electrically operated accessories such as the Hornby Conveyor and Hornby Operating Tipper.
- Record layout operation (points, signals, locos) in real time and play back.
- Read and write up to 1023 loco CVs (Control Variables) for each of your locos, depending on the DCC decoder's capabilities.
- Design your track layout on a PC screen with points, signals and labels in the form of a signal box-type MIMIC diagram.
- Multiple heading of locomotives (up to 5 locos in up to 5 headers) with scale speed operation on all locos. With the *Pro* Pack you can also reverse selected locos within multiple headers just like in real life.
- Detect locos, direction of travel, speed and even acceleration/deceleration using the optional Loco Detection System (available soon).
- Select locos and control loco speed and direction using a cordless mouse.
- Put sets of locos into different loco groups for controlling different layouts (periods, regions etc.)

- Operate all Hornby (catalogue, Collectors Club and some special edition) locos going back to 1975, and Hornby International (Rivarossi, Jouef, Electrotren and Arnold locos going back to 2007) all at true scale speed. There are now over 2,500 locomotives built into RailMaster. You can of course use locos from any other manufacturer, as well as other DCC decoder chips in any locomotive.
- Network up to nine Windows-based computers together to control different parts of a large layout as well as different loco rosters.
- Use your iPhone, iPod, iPad or Android phone or tablet with the optional RailMaster HandHeld app, downloadable from www.my-apps.eu. You can even use an older Palm OS 5 or Windows CE or PDA running Windows Mobile PDA. Full details are in the Latest News section of RailMaster.
- Program a variety of popular accessory decoder modules.
- Operate multiple-aspect colour light signals at the touch of a button, including flashing light signals. *Pro* Pack only.
- Watch video tutorials from within the software presented by the RailMaster Head of Development

See the file "Release notes.txt" contained in the RailMaster program folder for more details of new features in this version of the software.

Note: This guide assumes you know your way around a PC, i.e. starting up, shutting down, installing and running programs and device drivers and navigating around your hard drive using Windows Explorer.

This software is not transferrable to another user once activated.

Additional features in the RailMaster *Pro* Pack

RailMaster, in its standard form, is a very powerful and easy to use model railway control system, which is suitable for the majority of users however those requiring more functionality can add the optional *Pro* pack to their RailMaster installation by purchasing the upgrade within the software.

- Voice control of locos, points, signals and accessories using natural speech
- Quick data backup system (locos, plans and programs) to secure your data
- Saving of current multiple headers for use the next time the program starts
- Ability to switch other points or signals when firing any point or signal
- Ability to run programs when clicking any point or signal
- Ability to run programs from the floating button bar
- Additional positionable buttons in track design to run programs
- Larger minimize, maximize and close buttons for touch screen users
- Printing of loco CVs lists
- Setting the order of points and signals settings on start-up
- Multi aspect colour light signals including flashing light signals
- Point and signal IDs shown at all zoom levels on main window
- Support for all Train-Tech colour light signals
- 45 degree point elements on Track Design screen
- Printing of track plan designs on a monochrome or colour printer
- Setting up of 'smart' double slip, single slip and three way points
- Automatic loco profiling system using optional Loco Detection
- Immediate testing of points and signals in track design mode
- Loco decoder reset function in CVs programming window
- Printing lists of timed schedules
- Facility to delete track plans within the track design window
- Facility to delete programs within the program editing window
- Reverse loco setting in loco settings window
- Ability to reverse selected locos within a multiple header
- Collapsible top and bottom window sections to increase track plan view
- Second large pop-up loco controller

- Saving the selected track plan zoom setting when restarting
- Facility to email user if a short circuit or error stops programs

There are several more features within the Pro pack which are not listed above.

You can purchase the RailMaster *Pro* pack upgrade within the “About” screen by completing the card payment form. An additional key will then be emailed to you, which will immediately unlock all of the features of the *Pro* pack.

Checking for updates

When a public RailMaster update has been released a new version number will be applied and when you start RailMaster it will invite you to update your software. You should always do this. From time to time minor updates are released before a public release is made and you can always download and install the latest version from www.rail-master.com/rm_setup.exe. You can check the particular revision number after installation by hovering your mouse over the small yellow version number box at the bottom of the RailMaster window.

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Installing RailMaster – **READ THIS FIRST**

You may have obtained a downloaded evaluation version of RailMaster or wish to install it from a retail CD.

Either way, installation is straightforward and in both cases you have the option of upgrading the product to the full version at any time, if you do not already have it. If asked by Windows “Are you sure you want to run this software?” click the Run button. On Windows Vista and Windows 7 and 8 computers you should right-click on the setup program and choose “Run as an Administrator”. This is particularly important if you have a 64-bit version of Windows.

If you have inadvertently installed RailMaster without right-clicking on the setup file, and experience problems activating then you should right click on the icon you use to run RailMaster, select “Properties” from the pop-up menu then click on the Compatibility tab. After this ensure the box “Run as administrator” is checked. This is not necessary in Windows XP.

On non 64-bit systems the RailMaster program folder is C:\Program Files\RailMaster and on 64-bit systems it is C:\Program Files (x86)\RailMaster. You can download the latest RailMaster setup program from www.rail-master.com/rm_setup.exe and save it to a temporary folder on your hard drive then right click and “Run as administrator” to install if you need to, although RailMaster should prompt you automatically when a new update is available. When manually downloading the latest setup file on Windows 64-bit systems you must save the downloaded file to a temporary folder first then right-click on the downloaded file and “Run as administrator”.

Anti-virus and Firewall Internet security software

Before activating or deactivating RailMaster you should ensure that the program has been added as an exception to your Internet security software otherwise the process may be blocked. Some Internet security programs, including McAfee and Norton, have been found to automatically block the

program without letting you know and then make it quite difficult to add RailMaster as an exception to both the antivirus and firewall elements of the program. You should check your Internet security program's documentation to find out how to add a program as an exception to both the firewall and antivirus. See the separate, dedicated PDF guide installed with RailMaster on adding exceptions to the most popular Internet security packages. If the Internet security guide is not installed on your Windows desktop you can download it from www.rail-master.com/security_en.pdf.

Limitations of the Evaluation Version

The evaluation version of RailMaster will allow you approximately 90 days to try out the software before purchasing. You will, however, only be able to define up to two locomotives, use up to four points and signals (any combination up to four) and write programs to automatically control your layout, of up to ten steps. After the expiration of the evaluation version, you can still activate to upgrade to the full version at any time.

When you have downloaded the software or inserted the CD on which it was supplied, all you need to do is run the setup program (by right-clicking on it and choosing "Run as administrator" on Windows Vista and Windows 7 and 8). This will install the software on to your PC. Currently Windows 98, XP, 2000, Vista, Windows 7 and Windows 8 are supported. Your PC will need at least one USB port to connect it to one or two Elite or eLink DCC Controllers (two controllers will need two USB ports). **Never run a DCC controller through a USB hub or it will not work correctly.**

Important Note: When running the setup program in Windows Vista or Windows 7, Windows 8 or Windows 10 you must run as an Administrator. To do this simply right-click on the setup.exe file name and choose "Run as an Administrator". If you do not do this the program may not activate and deactivate correctly. It may also work erratically. If you have forgotten to do this you can right click on the RailMaster icon on your Windows desktop, select "Properties" then check the "Run as administrator" box within the Compatibility tab.

When you first run the software you will be presented with the following window:-



On this screen you can set the language you prefer for all screen messages and labels and you can also tell RailMaster which DCC Controller you have.

When you have completed the setup screen you will be taken to the main RailMaster program. An error message may be displayed saying “Unable to open the designated DCC controller port”. This will be due to your computer and/or RailMaster not being able to detect your DCC controller yet. See the next section for details on setting up your DCC controller.

Important: if you plan to uninstall RailMaster you must deactivate it first (see later in this guide). Please also note that the RailMaster licence is not transferrable to another user. PLEASE READ THIS GUIDE FULLY AND CONSULT THE TROUBLESHOOTING SECTION BEFORE CALLING OR EMAILING CUSTOMER CARE.

Setting up your DCC Controller

Once the RailMaster software has been installed you can set up your Elite or eLink DCC controller.

If you have not already configured your DCC controller to communicate with your computer then drivers are supplied with RailMaster to allow you to do this.



Hornby Elite connected using high quality shielded USB cable



eLink DCC Interface/controller



Hornby Select using Select-a-Link interface

These instructions assume you are using Windows XP. Windows 98 and Windows Vista, Windows 7, Windows 8 and Windows 10 may be different. See the separate Driver Installation PDF guide if you require more information.

Switch on your DCC controller and connect it to your PC using a high-quality shielded USB cable. Do not connect through a USB hub. Do not connect to your layout at this stage. When the “Found New Hardware Wizard” window is displayed select “No, not at this time” in response to allowing Windows to search on the Internet for a driver if using Windows XP or Vista (Windows 7 and 8 use their own driver and the supplied driver is not needed so in this case you must let Windows search on the Internet for a driver – click “Yes”). Then click “Next”.

The next screen will then show the “CDC RS-232 Emulation Demo” hardware found and you should select “Install from a list or specific location (Advanced)” and click “Next”, only if using Windows 98, Windows XP or Vista. Windows 7

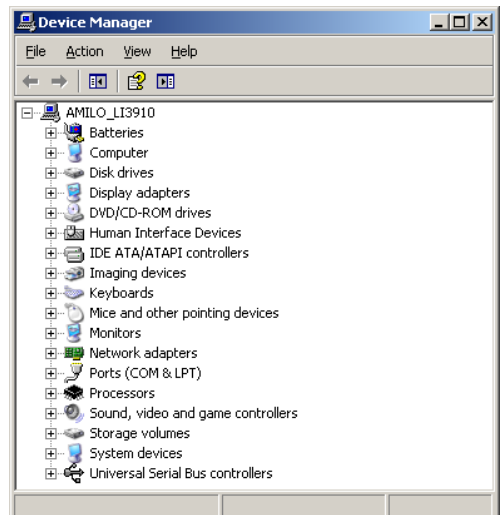
and 8 will download and install its own generic serial port driver and you must allow it to do this.

For Windows 98, XP and Vista using the “Browse” button on the next page, navigate to “C:\Program Files\RailMaster” and click “OK”. Note: this path assumes that you have installed RailMaster in the default folder shown on the setup program, which you should always do unless you have a very good technical reason for not so doing. If you are using a 64-bit version of Windows the path will be “C:\Program Files (x86)\RailMaster”.

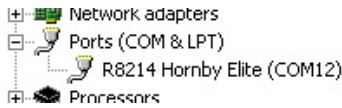
Use the Windows XP driver for Windows XP and the Windows Vista driver for Windows Vista. The “Found New Hardware Wizard” will then say that you are installing the “R8214 Hornby Elite” and ask you to continue or STOP. You should press the “Continue Anyway” button and the driver will then be installed within a few seconds. Windows 7 and 8 will show a generic serial port driver that it downloaded from the Windows Update system.

When the driver installation finishes, you will then need to find out which COM port Windows has made available to use. To do this go into the Windows Control Panel then open the “System” icon. In Windows 7 and 8 just type “Device Manager” in the search box. From within the System Properties window, click on the “Hardware” tab then click the “Device Manager” button. In Windows Vista, Windows 7, Windows 8 and Windows 10 you can also enter “devmgmt.msc” from the Run command on the Start menu to go into the Device Manager. See the separate Drivers Installation PDF guide for more details.

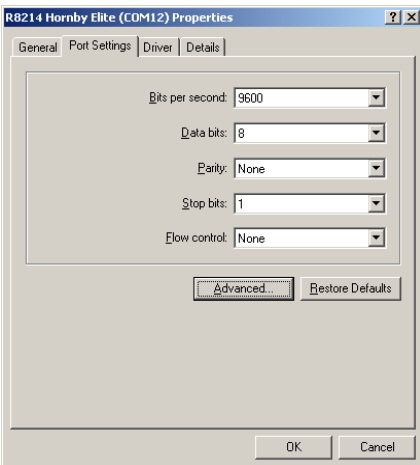
You will see a screen similar to the one on the right.



From this screen, you should open the “Ports (COM & LPT)” section by clicking on the plus sign to the left. You will then see the Hornby Elite controller listed (or generic serial port driver in Windows 7 or 8), depending on which Windows operating system you are using.



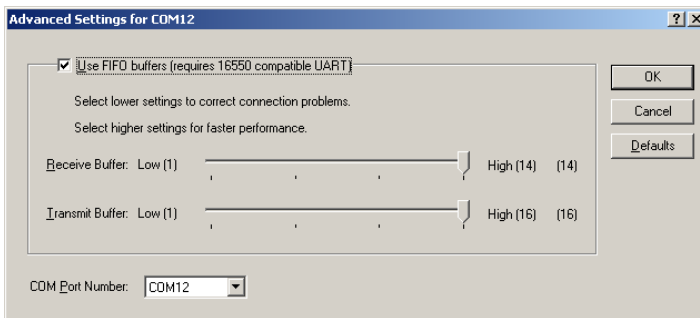
You may see other ports listed, for example if you also have a printer or other serial or parallel devices attached to your PC.



Double-click on the driver line and in the following window select the “Port settings” tab. You will see a window similar to the one on the left. Ensure that the BAUD rate, data bits, parity, stop bits and flow control are set as 19200, 8, None, 1, None for the Elite. The eLink can work at the higher BAUD rate of 115200 and this should be used.

When you have checked the port settings, click the “Advanced” button.

This will show you the currently assigned COM port number for the Elite or eLink controller, which you should make a note of.



If the COM port number is high (above 4) you should ideally change it to a lower number, if that number is available and also if you have any communications problems with the Elite or eLink. Just pull down the “COM Port Number” list and see if a lower number is available. If it is, just select it and make a note of the number. Click OK to save any new settings.

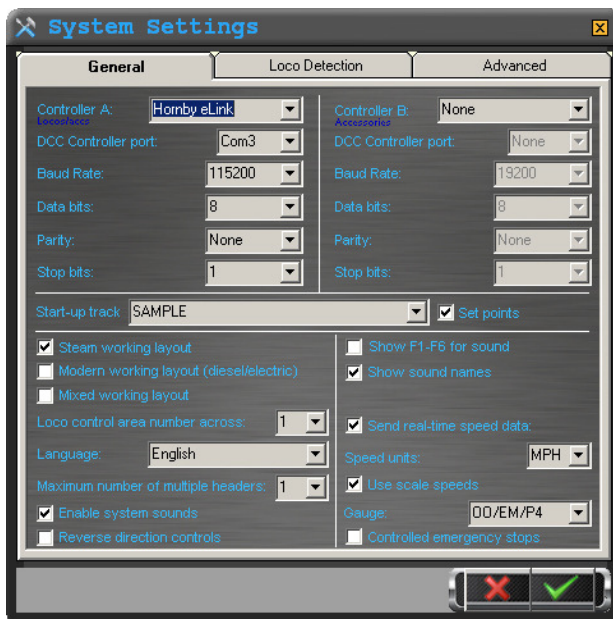
When you have ascertained the COM port number on which your DCC controller is connected you will need to run RailMaster then go into the system settings window. See Troubleshooting if you have communications problems.

Windows 7 and 8

Windows 7 and 8 use their own generic serial port drivers to communicate with the Elite and eLink controllers. You should allow Windows 7 and 8 to use the Windows Update feature to download and install the appropriate driver. If you have difficulties see the separate dedicated Drivers PDF guide for full details.



Press the System Settings button from the RailMaster main window menu bar and the System Settings window will appear.



You will see settings for up to two DCC controllers, named A and B. The controller you first selected when running RailMaster for the first time is Controller A. This controller allows you to control both locomotives and points and signals (through Hornby or other manufacturers' accessory decoders).

The default communications parameters for the DCC controllers are shown above, and should also match the device settings within the Control Panel. You should always set the BAUD rate to 19,200 for the Elite and 115,200 for the eLink.

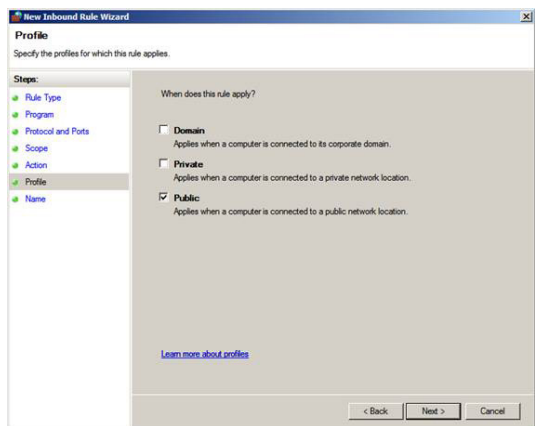
Select the correct DCC Controller port from the pull-down list and click on the green tick to save the settings.

Note: RailMaster supports one or two DCC controllers simultaneously.

Each Hornby Elite unit has a 4amp power supply, which can control up to 20 modern locomotives simultaneously at scale speed and the eLink, with its 1amp supply can control around 8 (at moderate scale speeds), although you can have many more locos on your layout, and many points and signals. If you want to control several locomotives at the same time as well as numerous points and signals you can attach a second controller to another free USB port and dedicate Controller A to locomotives and Controller B to signals and points. This will avoid possible power consumption problems. You can also add an additional Hornby 4amp power booster to the Elite to increase the power delivered to locos and purchase a 4amp power supply with the eLink instead of the supplied 1amp supply.

Windows Firewall and other Firewall Software

When running RailMaster for the first time you may receive



a Windows notification similar to the one on the right.

This pop-up window asks if you wish to allow RailMaster access through your Firewall. You should do this in order to download automatic updates, activate and deactivate and send Help Requests. You must select both options “Private” and “Public” and finish the wizard. The window may look different in Windows 7 and 8.

Troubleshooting DCC Controller Set-up

Sometimes, your Hornby DCC controller may not be recognised by Windows on certain PCs or will not be recognised by RailMaster.

There are several reasons why this can happen, but the primary reasons are the way Windows deals with USB ports and assigns virtual Com (serial RS232) ports to USB ports. The following guide will allow you to progressively check each factor which may cause the DCC controller not to be recognised by Windows.

1. Wrong Port Assigned

Sometimes, Windows will assign an odd Com port number to the controller, even if a lower numbered port is available. If the Com port selected by Windows is above 4 then you should consider altering it within the control panel Device Manager in Windows. There are different ways of getting to the Device Manager depending on which version of Windows you are using.

When you go into the Com Ports section of the Device Manager click on the Advanced button for the Hornby Elite or generic serial port driver port and change the Com port number to a lower one and try again. Some older computers have built in physical RS232 serial (Com) ports (usually com port 1 or 2), and if these are unused, you can disable them within the BIOS settings of your computer (check your computer or motherboard manual for details). Once these ports are released then you can use the Device Manager to let Windows know that it should use one of these ports for the Elite or eLink.

2. USB Overload

USB ports can provide power to external devices and for this reason many USB ports are still on even when the computer is shut down. A simple thing to try is to power down the computer, remove the mains cable and remove the battery, if using a notebook computer. It is important that there is no power attached to the computer, including battery. The computer should then be left for around ten minutes before having power reconnected. You can also press the power on button while the computer is disconnected from the mains and battery to speed up the discharge of internal components.

3. Faulty or low quality USB Cable

It may sound simple but many people do not consider that their USB cable can be faulty or of low quality. With mass production these days, many USB cables fall through the quality control process. Just try a different, shielded cable.

4. Firmware

The Elite must be using firmware version 1.3 (currently 1.41) or later and must be running in “Standard” mode. When you start the Elite it tells you which firmware version is installed. When you update the firmware, the Elite may revert to Classic mode. In this mode, points and signals will not operate correctly through RailMaster so you should set the Elite back to “Standard” mode.

If the firmware version is earlier than 1.3 then you should run the Elite13.exe file within the Elite 1.3 Update folder in the RailMaster program folder. You must first ensure that the Elite can be seen by Windows. For more information on updating the Elite’s firmware see the Hornby forums on www.hornby.com.

The eLink controller must have firmware 1.04 or later installed. This is done automatically the first time you run RailMaster.

5. Connecting through a USB Hub

You **MUST NOT** connect to a DCC controller through a USB hub. Always connect directly to a USB port on your PC or you will experience problems.

6. The wrong driver is installed

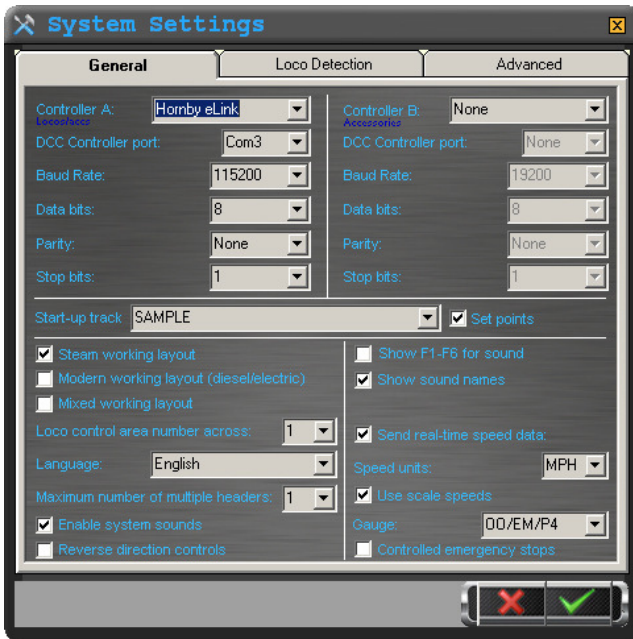
If you are using Windows 98, 2000, XP or Vista you must use the driver supplied in the RailMaster program folder. If you are using Windows 7 or 8 you must let Windows use its own generic serial port driver, which it will download from the Internet. If you have inadvertently used the supplied driver in Windows 7 or 8 then you must uninstall it from the Windows Device Manager and let Windows find the hardware again and use the Windows Update service to install its own driver.

If you still experience problems with the DCC controller connection you can call Hornby Customer Care on 01843 233525 or email customer care@hornby.com. Please do not use the built in Help Request system for issues relating to the Elite or eLink controller, drivers, firmware updates or communications with your PC. The Help Request facility is for issues directly related to the operation of RailMaster once set up.

Note: with the proliferation of different Windows operating systems and the different ways in which they work, if you have any problems installing the Elite or eLink driver then see the separate “Driver Installation” PDF guide which is installed with RailMaster on the Start Menu. It is also present in your RailMaster program folder and installed on your Windows desktop.

System Settings

You have already seen the System Settings windows above when you set up your DCC Controller. There are other settings you can make within this area of the software.



The top half of the window is dedicated to the configuration of up to two DCC Controllers (see previous section).

Start-up Track Plan

In this window you can also set the default start-up track plan. RailMaster allows you to design an unlimited number of railway layouts and you can choose one which will always be loaded when the software starts. To do this, simply pull down the “Start-up track plan” list and all available plans will be shown. All track plans are stored with a .pln extension in the RailMaster program folder. You can rename and delete these files using Windows Explorer, allowing you to exchange plans between PCs and users.

The new plan selected will automatically be loaded when you save the System Settings. You should restart RailMaster to ensure all settings are loaded for the selected track plan.

Set Points

When your selected track plan is loaded each time RailMaster starts, you can select whether all points and signals are set to their default start-up positions by clicking on the “Set points” checkbox. Enabling this setting will cause RailMaster to set all points and signals according to the default start up settings specified in your layout plan when you designed it. You can set RailMaster to ask you each time whether you want to set points. Edit the RailMaster.ini file to do this (see later). You can also set the order of points firing and whether some points are fired or not upon start-up within the Track Design window. This feature is only available in the *Pro* Pack.

Layout Type

You can also tell RailMaster what kind of layout you have. You may have a steam layout, using steam locomotives (and perhaps the odd older diesel) and predominantly semaphore signals (with perhaps the odd two-aspect light signal). Selecting the correct layout type will subtly alter the way RailMaster looks, to enable the comfortable use of the software.

Loco Control Area Number Across

This option allows you to specify how much space on the main screen should be given over to controlling locomotives. The average PC monitor will show four or five locos at once, however if you want to operate a larger number simultaneously, choose “2” for the number on the pull-down list. This will allow you to see up to 10 locos at the same time, in two columns, depending on the resolution of your PC monitor (1920x1200). You can easily scroll through your locos by using the scroll bar or by flicking the list with your finger if you are using a touch screen monitor. If you set zero, no loco controls will be available and the entire screen area will be given over to your track plan for the control of points, signals and turntables.

Language

You will have set the language for all system messages and labels when you started the software for the first time. You can change this at any time. English, French, German, Italian and Spanish are currently supported.

All program labels in all screens will be displayed in the desired language. Please note that all programming commands are in English for compatibility.

Sounds

RailMaster allows up to six main loco sound functions to be operated from the main window simply by pressing a button. When using the pop-up loco controller (see later) up to 29 main light and sound functions can be operated. You can choose whether the sound buttons are labelled F1, F2 and so on, or whether the light/sound function names appear on buttons.

Send Real Time Data

This option allows your PC to send speed and direction data to your DCC controller as you move the slider, in real time. Normally, this function is enabled unless you have a very old or low-powered computer and it cannot handle the volume of data which is transmitted through the USB port, especially when multiple headers are in operation. If this option is not set speed data will only be transmitted to the DCC controller when you release the mouse (or lift your finger) from the slider knob. Most Netbook computers use low powered CPUs and although modern may not perform well if this function is enabled.

Speed Units

Simply select your preferred units, MPH or KPH. All speed units shown throughout the software will appear in the desired format for scale speed. You may need to restart RailMaster for this setting to take effect.

Maximum Number of Multiple Headers

This option allows you to specify in advance the maximum number of multiple headers you are likely to set up at the same time. It is normal, on an average layout, to perhaps set up one or two multiple headers of locos, such as two

sets of joined DMU or EMU sets or a couple of locos pulling a long rake of wagons. This option makes it easier for you to cycle through the creation of multiple headers (see later).

Enable system sounds

Enabling system sounds will cause a beep to occur when you click or touch a screen option, such as buttons, point control lights and so on. This is particularly useful for touch-screen users, to provide feedback. If the beep disturbs you then just disable this option.

Use Scale Speeds

Uniquely among model railway control systems, RailMaster can run locos at true scale speeds as standard and also has a database of over 2,500 fully profiled locomotives built in, complete with images. Scale speed operation allows more realistic operation of trains and also sets limits on the maximum speed a loco can move on your layout, based on the speed of the real locomotive. You can also set up multiple headers in the knowledge that the locos involved will move at the same speed with little or no wheel spin.

Enabling this option will activate scale speed operation throughout RailMaster and at any desired scale. You can revert to having all locos controllable in DCC speed steps (0 to 127) by disabling this setting, although this greatly diminishes the functionality of the software and is not advised.

Gauge

This setting is used in conjunction with Scale Speeds and tells RailMaster how to calculate scale speeds for different model railway scales. This also allows you to run the RailMaster clock at scale speed, i.e. 76 times faster for OO gauge, 87 times faster for HO and so on.

Reverse Direction Controls

Human beings generally associate right with forward and left with reverse, however in real-life locomotive control left means forward and right means reverse. The Hornby Elite's built-in display uses the latter way of working.

If you want RailMaster to follow the same rules then simply check the box “Reverse Direction Controls” and restart the program. Left will become forward and right reverse. The Elite arrows will of course be in reverse as they are unchanged.

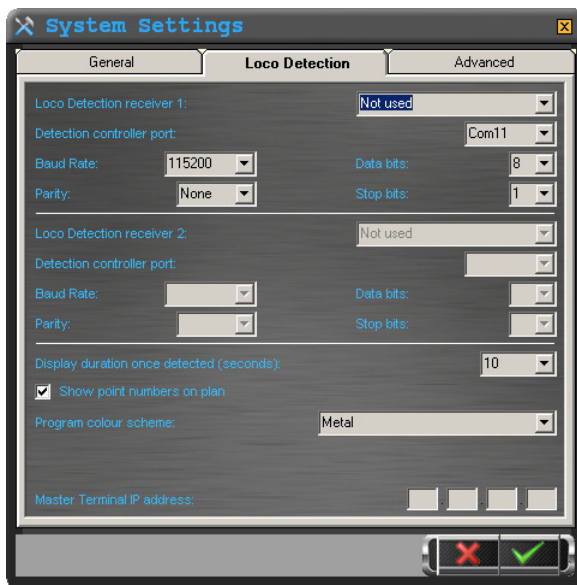
Controlled Emergency Stops

When pressing the red stop button on the Elite all locos stop dead. Whilst this may prevent imminent accidents from happening, it is both inelegant and may damage motors and gears in the long term. By checking this box, when pressing the large red All Stop button within RailMaster, all locos will come to a decelerated stop, elegantly whichever DCC controller you are using.

Of course, this will increase the stopping distance slightly. When pressing the button again (now green) you will be asked if you wish to resume previous speeds. RailMaster will then continue moving all locos where they left off.

Additional Settings

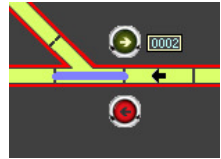
Within the second tab in System Settings you can specify additional options for the optional Loco Detection System (available soon) as well as PC networking.



Parameters for loco detection receivers one and two will be explained in a later update of this guide. See more on networking in the HandHeld guide.

Show point numbers on plan

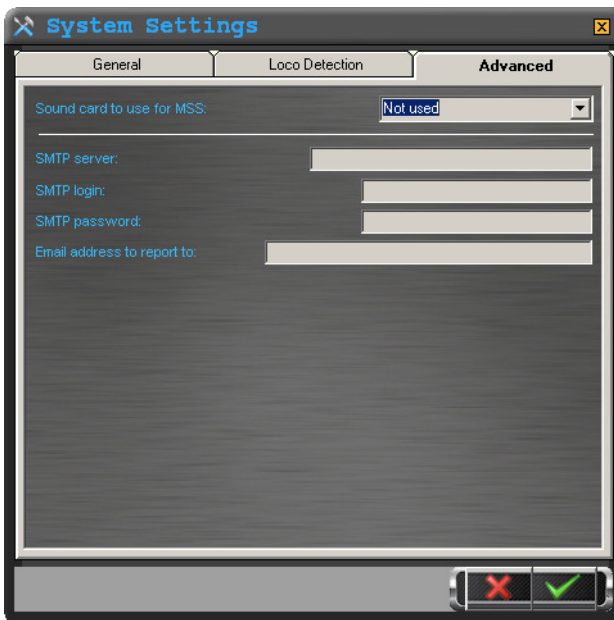
This option, when enabled, instructs RailMaster to show all point accessory decoder port numbers in small boxes next to all points which have been set up in the design



screen only at 100% zoom or at all zoom levels where the optional *Pro* pack has been installed.

Additional Settings (*Pro* Pack only)

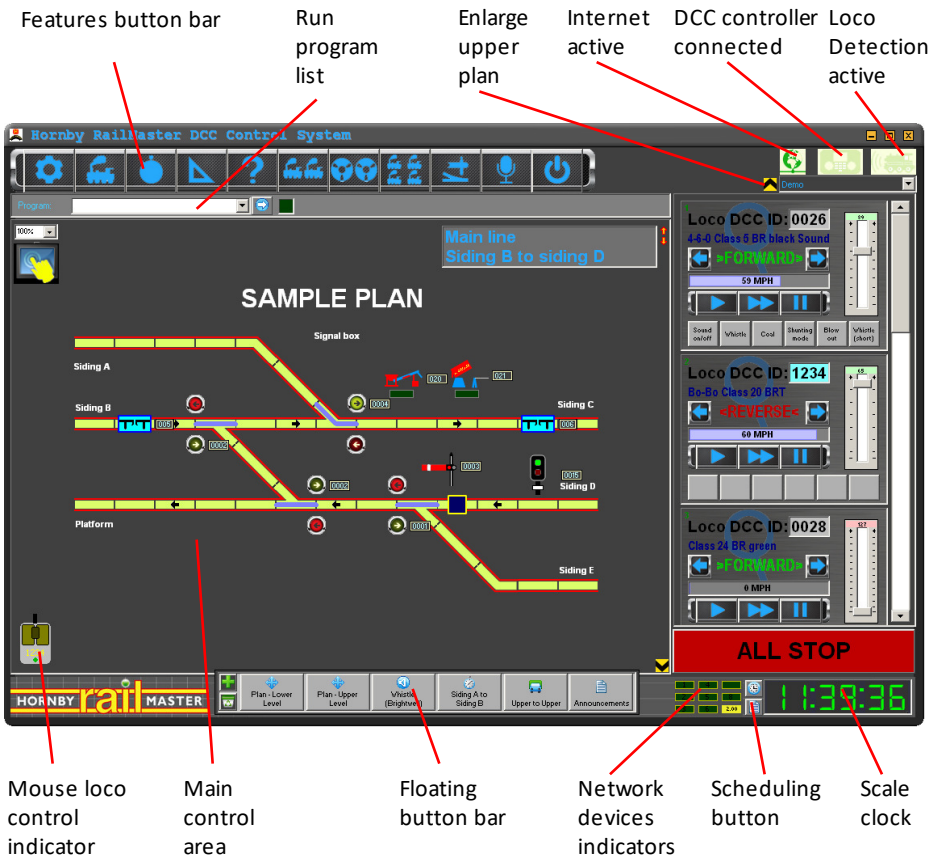
Within the third tab in System Settings you can specify additional options relating to email sending.



The MSS system has not been implemented yet so please ignore the first setting.

You can specify your Internet Service Provider's SMTP (Simple Mail Transfer Protocol Server) address and optional login parameters if you wish RailMaster to send you emails, should an error condition occur. This is useful if you are running a program and a short circuit should occur. An email will be sent to you, perhaps on your mobile telephone, instantly, to notify you of the error. The parameters entered here are also used when auto-profiling locomotives, although you can overwrite them at the time you going into the profiling system.

The RailMaster screen



You can set the zoom level of the track plan between 50% and 150%. If the optional *Pro* Pack is installed RailMaster will use the last zoom setting each time the program start.

Master Terminal IP Address (Networking)

This powerful feature allows multiple Windows computers networked through Ethernet cabling or WiFi to communicate together to enable the running of larger layouts. This is also useful for limiting access to points, signals and locos on certain areas of a layout, for example at exhibition layouts where the public can “play” with only certain functions available to them.

Networking allows slave Windows computers to connect to a single Master Terminal (with the DCC controller attached) and operate locos, points and signals through the Master Terminal. The schematic diagram below shows this.



When networking computers together to run RailMaster it is important that all have a dedicated and unique (static) IP address, within the Windows networking options (see your Windows documentation for details of how to set your computer’s IP address). For example, the Master Terminal could have the address 192.168.0.1 and additional slave PCs could have addresses 192.168.0.2, 192.168.0.3 and so on. The initial three blocks of numbers for each IP address must be the same, for example 192.168.0.

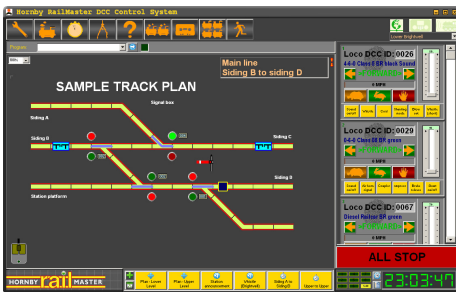
The Master Terminal (with the DCC controller connected) should not have an IP address specified within the “Master terminal IP address” setting in System settings, however you need to specify the IP address of the Master Terminal (in this example 192.168.0.1) in the “Master Terminal IP address” within RailMaster on all slave computers.

When a slave computer connects to the Master Terminal you will notice a networking icon at the top of the RailMaster screen indicating this, instead of a DCC controller icon. When you operate points, signals or locos on a slave computer you will notice them also change on the Master Terminal screen and then on other slave computers and also hand-held devices if you are using them. It may take a few seconds for updates to reach each computer on the network if you have a slow or unreliable WiFi network.

If you are unsure about TCP/IP networking you can search on the Internet, where there are many sources of help. There is more information on networking, including testing, in the RailMaster Hand app PDF guide installed on your Windows desktop. See more in the RailMaster HandHeld guide.

Colour Schemes

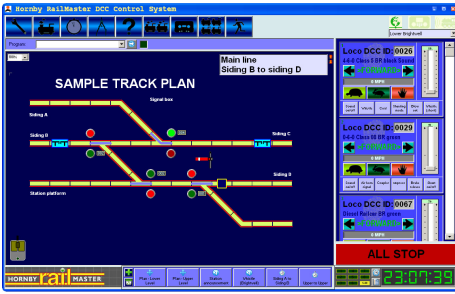
RailMaster incorporates a way of tailoring the look of the program by changing its colour scheme. When first installed, RailMaster defaults to the “Classic” colour scheme (“Metal” theme if using the optional *Pro Pack*), as shown on all screen-shots in this guide. You can select from an additional five schemes:-



Black and Gold



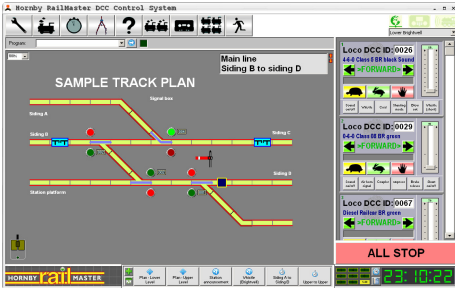
Emerald



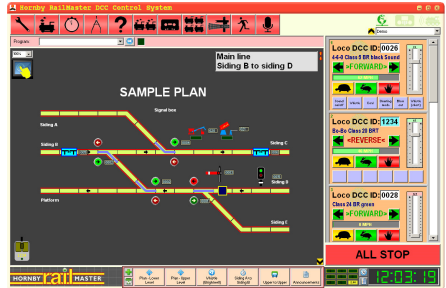
Ocean



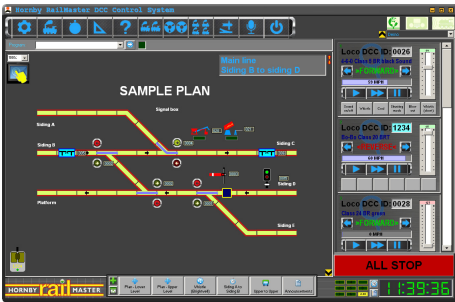
Sunset



White



Classic



Metal (default on *Pro* Pack)

Simply select the colour scheme desired from the pull-down list in the Loco Detection tab of the Settings window.

The new scheme chosen will take effect immediately.

A note about the RailMaster.ini File


Some more technical default system settings can be changed within the railmaster.ini file, which is located in the RailMaster program folder (C:\Program Files\RailMaster or C:\Program Files (x86)\RailMaster on 64-bit systems).

The initially installed RailMaster.ini file will not have all of the following options entered as many of them are optional. You can add them to the bottom of the RailMaster.ini file to override RailMaster's built in default settings for each parameter. You can delete the RailMaster.ini file at any time to reset all parameters to their default settings and RailMaster will create a new file the next time the program starts.

The default settings and descriptions are:-

Tipper speed=80	This sets the speed for the decoder chip running the tipper
Tipper timer=86.4	This is the number of seconds to run the tipper for a cycle
Turntable speed=40	This sets the speed for the decoder chip running the turntable
Turntable timer=19.30	This is the number of seconds to run the turntable
Points timer=0.75	No of seconds to pause between firing points rapidly
Conveyor speed=65	This sets the speed for the decoder chip running the conveyor
TCP start port=30	The IP starting port for networking/hand-helds
Check serial ports=1	Whether DCC controller ports are checked on start-up
Show upgrade button=0	Whether the upgrade (payment) option is enabled – do not change
Allow deactivate=1	Whether deactivation of software is permitted
Use default curves=1	Use default speed curves where no loco profile exists
Polling time=1	No. of seconds for Master/Slave PCs to update points/signals/locos status
Confirm delete=1	1=delete confirmation is displayed in Designer. 0=no confirmation
Show point indicators=1	1=display blue point indicators on main plan. 0=do not display indicators
Uncoupler time=5	This sets the time in seconds that uncouplers should stay up
Classic Buttons=0	0=Use new tortoise, hare, stop graphical buttons. 1=use text buttons
Detection Timeout=5	Sets the number of seconds to wait before aborting a detection read
Button bar vertical=0	0=horizontal floating button bar, 1=vertical floating button bar
Throttle timer=5	No of milliseconds interval to send loco speed data to DCC controller
Ask to set points=1	1=ask user when starting RailMaster if points and signals should be set
Handheld plan area=1,1,135,135	Specifies the left, top, right, bottom grid area to send to device

Program tick sound=1-50	Duration to sound a tick every second when testing programs. 0 = off
PING time=60	Number of milliseconds to time out when checking for hand-held devices
Reset eLink on start=1	1=rest the eLink controller on RailMaster start-up. 0 turns this off
Check controller=0	1=check for the presence of eLink controller every 5 secs. 0 turns this off
Check controller2=0	1=check for the presence of eLink controller on second controller
Enable mouse=1	1=enables remote loco control using mouse. 0 disables this
Warn Static IP=1	1=warn if no static IP address when using hand-helds. 0 disables warning.
Point button arrows=1	1=Show arrows on point control buttons. 0=do not show arrows
Load Hornby locos=1	1=Hornby locos are included in the Loco Settings list of available locos
Load Rivarossi locos=0	1= Rivarossi locos are included in the Loco Settings list of available locos
Load Jouef locos=0	1= Jouef locos are included in the Loco Settings list of available locos
Load Arnold locos=0	1= Arnold locos are included in the Loco Settings list of available locos
Load Electrotren locos=0	1= Electrotren locos are included in the Loco Settings list of available locos
Spoken confirmation=0	0=Plays a ding, 1=says "confirmed" in Voice Control (Pro-Pack)
Controllers on top=1	1=Large pop-up loco controllers are always on top of other windows
Double pulse=1	1=RailMaster will send a double pulse to point motors. 0=Single pulse
Alternative comms=1	0=Use classic comms. 1=Use updated comms for Windows 8.1/10
Alternative comms2=1	0=Use classic comms. 1=Use updated comms for second controller
Elite feedback=0	0=Do not feedback throttle to RailMaster 1=Feedback throttle
Full Controllers=0	0=Show normal large controllers 1=Show expanded controllers
Show animations=0	0=Do not show animation on point buttons 1=Show animations
Expand plan=1	1=Collapse top & bottom panels for full track plan (Pro-Pack only)

You can edit the RailMaster.ini file by clicking on the  icon in the bottom-left corner of the About window.

Not all of the options listed will be visible in the railmaster.ini file as most are optional. If you have made changes which have caused problems and are not sure what you have done then simply deleting the railmaster.ini file will cause RailMaster to build a new default file the next time it starts.

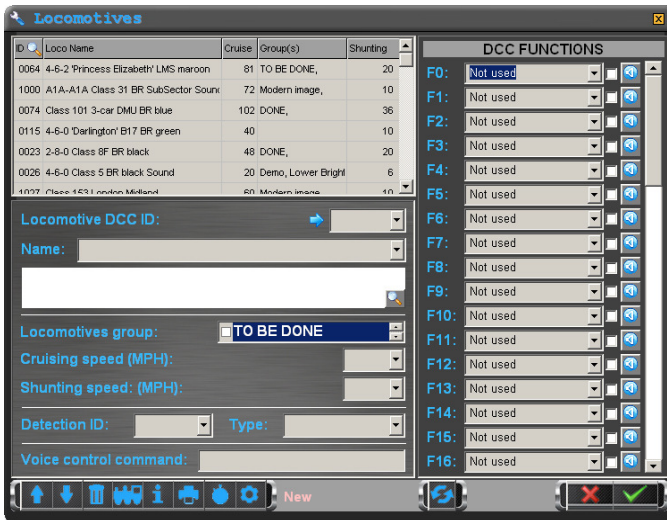
WARNING: You should only change RailMaster.ini file settings if you know what you are doing. We cannot be held responsible for RailMaster operating incorrectly if any of the above settings have been altered.

Setting up Locomotives

In the evaluation version of RailMaster you can set up a maximum of two locomotives. In the full version of the software there is no practical limit to the number of locomotives you can have as the database can store millions.



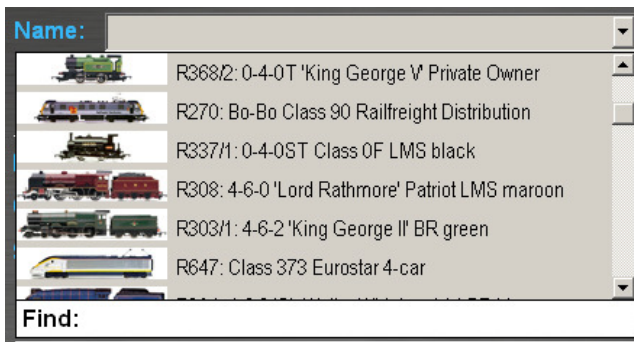
To set up locomotives, press the loco settings button. This will take you in to the locomotives definitions window.



Within this window you can set up locomotives and their particular characteristics.

To set up a new locomotive pull down the “Locomotive DCC ID” list and select the DCC ID you have programmed (or will program) for the desired locomotive. You can also program the locomotive ID and other parameters from within RailMaster. See CVs programming later in this guide.

When you have clicked on the pull-down list of locomotives, you can then select the name of the locomotive from the “Name” pull-down list. You will also see a small image of the locomotive you have.



Over 2,500 Hornby International locomotives can be listed depending on the “Load” options set in the RailMaster.ini file (see earlier), along with images.

Simply select the locomotive you have. If your locomotive is not listed, just type its name or R, HR, HJ etc. number into the “Find:” box instead of using the pull-down list. It is up to you whether you wish to use one of the images from the list. You can leave this blank if desired, or select your own image.


Note: if you have a Hornby International loco you must select the correct version as several different versions of the same loco may have been manufactured over the years, with different running and speed characteristics. It is best to search the list by the number of the loco to be sure you have selected the correct one.

The default cruising and shunting speeds for all locomotives have been pre-defined in the list, after much research, however you can set your own.


As a general rule, larger, faster locomotives should be set to the following:

Cruising speed	80-90mph
Shunting speed	10-20mph

Where cruise and shunting speeds have been defined they are based on figures obtained for the maximum normal operational speed of the loco in real life and the minimum speed at which that particular loco (factory new) will move smoothly across points. These figures can be altered at any time.


You also have available to you up to 29 additional DCC functions controllable through the Elite or eLink (usually found on DCC sound). Because many different locomotives have differing sound sets, all of the popular functions are listed and can be assigned to each function button. You can also check the box to the right of up to six sounds, which will then be available to you on the main operating screen. You can also test the sounds and lights by pressing the  sound test button.

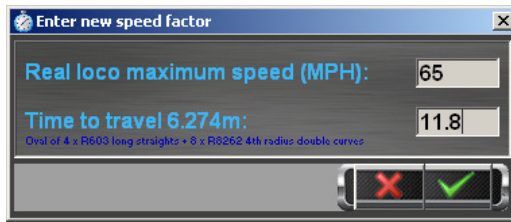
Note: Functions which are latching, i.e. they are meant to stay on until the function button is pressed again, must contain the phrase “on/off” in their description in RailMaster.

If you have the optional *Pro* Pack installed you can set the loco to run in reverse just by pressing the direction indicator  to the left of the loco DCC ID field. The arrow will change from right (forward) to left (reverse). You can also program a loco to run in reverse by setting the reverse bit in CV 29 (see later in this guide).

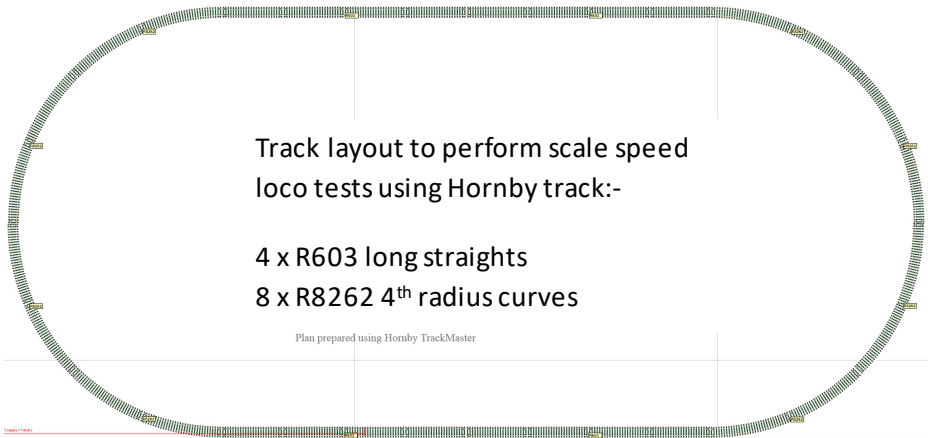
Scale speed for Non-Hornby International Locomotives

All of the Hornby International locos built in to RailMaster have been pre-configured, after much research and profiling, to use scale speeds accurately. This includes over 2,500 Hornby, Rivarossi, Arnold, Electrotren and Jouef locos. This has involved a great deal of work in researching speeds of locos in real life, then running the models at various speeds so that you can experience true scale speed operation on your layout through each locomotive’s motor speed range.

If you wish to add another manufacturer’s loco and have it run at scale speed (or near scale speed) you can do this quite easily by pressing the  scale speed button, measuring the time taken for the loco to complete a loop and enter two parameters. This will display the following window.



Before entering figures, you will need to set up an oval of track exactly 6.274m in length. The easiest way to achieve this using Hornby track is as follows.



If you are planning to set up scale speeds for several locos it is useful to have the above pieces on standby for quick setting up. Please note, you should not use points or level crossings as these can affect the speed tests.

When you have set up the track you should then run the loco at around 75% of its maximum speed using your DCC controller for a minute or two, for the motor to warm up.

Then place a marker at a point along one of the straights so that you know exactly where the loco started from. At full speed (with the DCC controller knob or slider turned to maximum) allow the loco to go once around the track then start a stopwatch at the time the loco passes the starting marker at full speed. When the loco goes around the track once, stop the watch when it

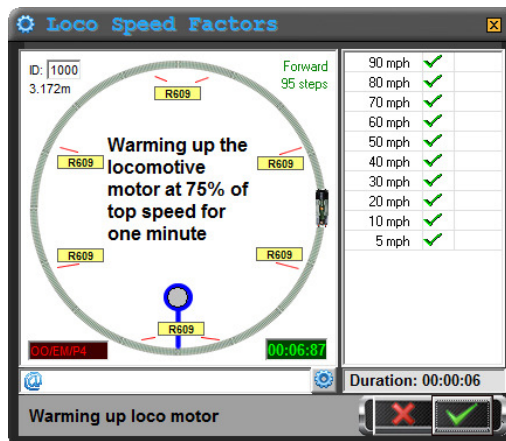
passes the same point on the track again. You should take the average of four or five readings.

When you have obtained the time, as an example 9.53 seconds, enter this figure into the top field "Time to travel 6.274m". You also need to enter the loco's real life speed in the second box. There are two ways of finding this out. 1) if you are entering a non-Hornby or Hornby International loco, but a Hornby version of your loco's class exists in the database, then call up that loco. You will see the maximum speed printed in blue beneath the cruising speed. 2) do research on the Internet or in your local library.

Note: entering a speed factor for a non-Hornby loco, Although 95% accurate (if the timing tests are carried out correctly) measures a factor based only on the top speed of the loco and extrapolates the factors at various other speeds. Motor dynamics for your particular loco may mean that the scale speed is not true across all speeds. Nonetheless, entering a speed factor will make scale speed operation much more realistic than entering nothing at all.

Auto Profiling

You can use the auto profiling function within the *Pro* Pack to obtain more accurate speed curves as RailMaster will test the loco at every 10mph (16kph) down to 5mph (8kph). This requires the optional Loco Detection system.



To set up the auto profiling track you will need curved set-track pieces to form a circle. For OO, EM, HO and P4 scale locos we recommend using Hornby R609 3rd radius curves (8 of). It is important that you use a loop of the correct track or the speed curves will be wrong. For British N scale you should use Peco ST-17 3rd radius track (8 of) and for European N scale you should use Arnold HN8007 3rd radius track (8 of). For O scale (UK, USA or European) use Peco ST-725 set track 2nd radius curves (16 of).



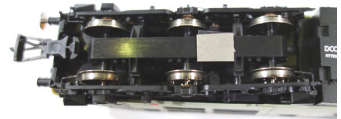
In one piece of track you will need to attach a Loco Detection system track sensor.




For each loco being profiled you will need to add a small reflective strip to the underside of the loco, ensuring that it is between 1 and 4mm from the track sensor. You can use self-adhesive pads to bring the strip closer to the sensor.

When you have connected the Loco Detection system module to a free USB port on your computer and configured it (see the separate Loco Detection system PDF guide for details) you are ready to begin auto profiling.

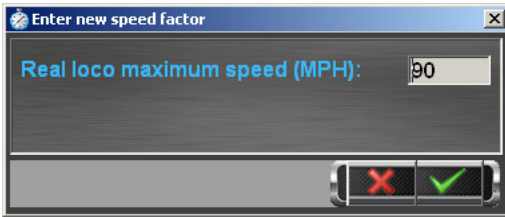
Note: if you are using a long loco you should place the reflective strip over a bogie or very close to wheels otherwise it will not be read, for



example if placed in the centre of the chassis of a long railcar.

When the Loco Detection system has been set up and the locomotive prepared you can begin auto profiling. Within the loco settings window, press the auto profiling button  and you will be taken into the auto profiling window shown above.

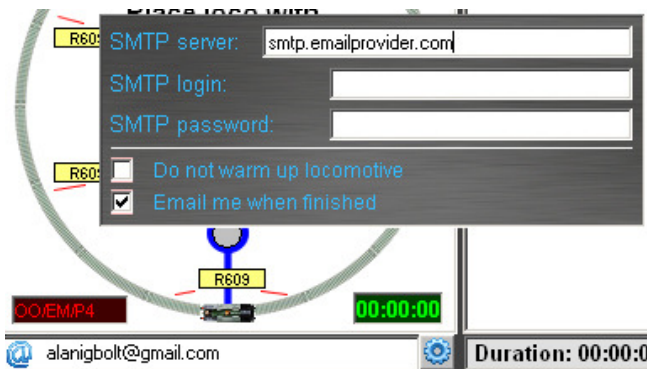
Press on the green tick to start the process and you will be invited to enter the real-life maximum speed of the loco you are profiling.



Once entered RailMaster will begin the auto profiling process and measure all speeds from the loco's maximum down to 8kph

(5mph). This can take anything from 15 minutes to an hour, depending on the maximum speed of the loco. You can leave RailMaster alone to do this while you get on with something else.

You can also tell RailMaster to email you, perhaps to your mobile phone, to let you know if the loco has stopped during the profiling process and also to let you know when the process is complete.



To do this simply press the settings button and enter your email system's SMTP server and the address you wish emails to be sent to. If a loco fails to

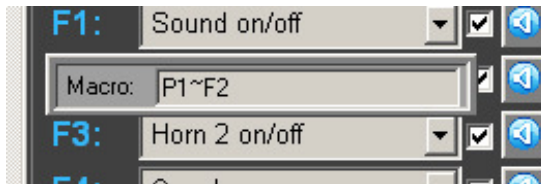
pass the track sensor when RailMaster expects it to the program will send you an email informing you of this.

DCC Sound Macro Editing

Some DCC sound locomotives may not work correctly with some DCC controllers due the nature of the way sound instructions are sent.

Within the RailMaster Locomotive Definition screen there is a facility for you to adjust the way the program sends DCC sound commands to the DCC controller using a simple macro language.

If you click on the label of any function from F0 to F28 a small macro entry panel will appear, where you can enter a short string of characters which send additional commands to the DCC controller every time a function button is pressed.



The commands you can enter include Functions and Pauses. These are simply represented by the first letter P for pause an F for function.

Example:-

The “Whistle (long)” command is a continuous sound when sent from a DCC controller to the locomotive. Therefore, you need to send the command twice from the DCC controller to the locomotive: once to activate it and again, a short while later, to turn it off. This can waste time when operating a layout manually. This is known as a latching function – it is on until turned off again.


RailMaster will send the command to activate the long whistle sound, however, the sound would continue playing unless it is stopped again.

The macro entry “P2~ F2” enables this. This is how it works:

RailMaster already sends F2 to turn the whistle on when you press the function button, then “P2” in the macro tells RailMaster to pause for 2 seconds while the sound plays. Finally, “F2” tells the DCC sound chip to turn the sound off again by sending function 2 a second time. You can alter the pause to suit how long you want the whistle to sound. It is important to separate the P and F commands with the “~” character. You can also use the hyphen and full stop.


This functionality saves you having to spend time monitoring buttons you have pressed when you may wish to operate other locos, point or signals instead.


If your loco does not respond in the way you think it should to sound commands sent from RailMaster, then all you need to do is experiment with the Macro facility and after some trial and error, the sound should work as desired.

In most cases, pressing the  defaults button will cycle through the most commonly used sounds, default buttons and macros for both steam and diesel locomotives. Currently, the profile of all Hornby and Hornby International sound locomotives are loaded when you select the loco so you should not need to alter their macros.

With a little lateral thinking you can program RailMaster function buttons to perform multiple functions on the same button, for example you may have a diesel loco with a low horn and high horn and rather than press numerous buttons to achieve a simple twin horn sound, as is common on railways, you can let RailMaster do the work for you.

Let us say the low horn is on F4 and the high horn on F5 you could create a macro similar to P1~F4~F5~P1~F5 on the F4 button which would sound the low horn for one second, then turn it off, then sound the high horn for a second then turn that off. This assumes that both sounds are latching. If they are not, then the simple macro “F5” on the F4 button will sound the high horn immediately after the low horn.

You can quickly edit any non-Hornby sound loco or loco fitted with a sound decoder. Pressing the  button once sets the sound profile to “steam 1”, which uses the default function settings for the majority of Hornby sound steam locos. Pressing the button again will set “steam 2”, which are the default functions for most Bachmann steam locos. Pressing it again will show “diesel 1”, being the Hornby diesel sound set and once more “diesel 2” will enable the most common Bachmann diesel sound set. You can then fine-tune erroneous sound settings rather than entering each one from scratch.

You can also test each sound as you edit sound macros, directly from the locomotives screen by pressing the  button to the right of each sound/light function.


When you have edited each locomotive just press the green tick to save. The locomotives you created will then be available to control and to use in programs.

Without doing anything else you can now start controlling your locomotives from the main RailMaster screen as we have done all the hard work researching and profiling over 2,500 Hornby International locos for you.

You will see that the locomotives you added are now shown on the right side of the RailMaster screen.

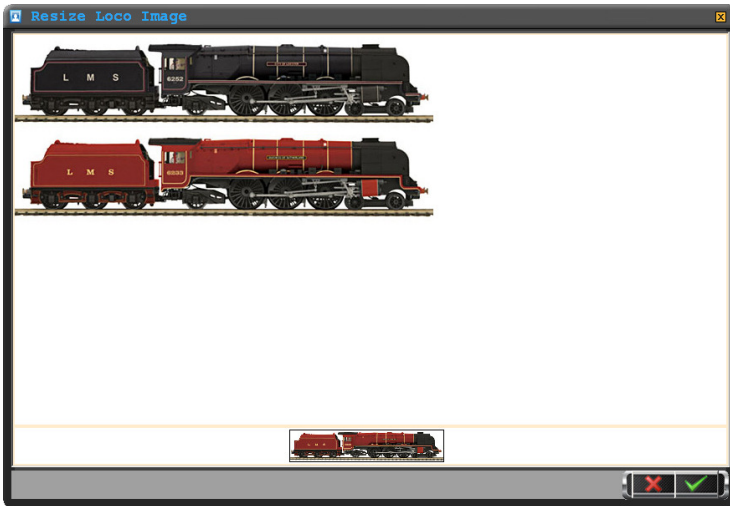
If you selected “one across” within system settings you will see one column of locos, showing up to five controllers, depending on the size of your screen (1920x1200). If you set “two across” then you will see two columns of locomotives, which will also reduce the viewable area of your track plan.

Setting and Resizing your Own Loco Images

RailMaster contains a library of over 2,500 loco images for Hornby International locos going back a number of years, however, you may want to set up a loco for which there is no standard image. By pressing the image button  at the bottom-right corner of the loco image you can specify your

own loco image, perhaps one you have downloaded from the Internet. It is best to copy any images you want to use into the RailMaster Loco images folder, usually C:\Program Files\RailMaster\Locos or C:\Program Files (x86)\RailMaster\Locos on 64-bit Windows systems.

You can navigate to the desired image and open it. If the image is too large, you will be invited to automatically resize it.



When you choose to automatically resize an image, RailMaster will show you the image you have chosen. In the example above, an image containing two Duchess locos has been opened and displayed and only one is needed, but much smaller for use with RailMaster.

All you need to do is to position the mouse cursor at the top, left point where you want to crop the image then slowly drag it to the bottom, right corner. When you release the mouse button the image will be cropped and automatically resized for use with RailMaster. A preview image will be shown at the bottom of the window.

You can crop and resize a loco image as many times as you like within this window. When you are happy with the result, press the green tick button to save your image.

Note: You should always choose the highest quality source image you can as the resizing and reduction process will lose some detail.

When you save the image a copy is saved within the RailMaster Locos image folder on your hard drive and the image is displayed on the locos editing screen.



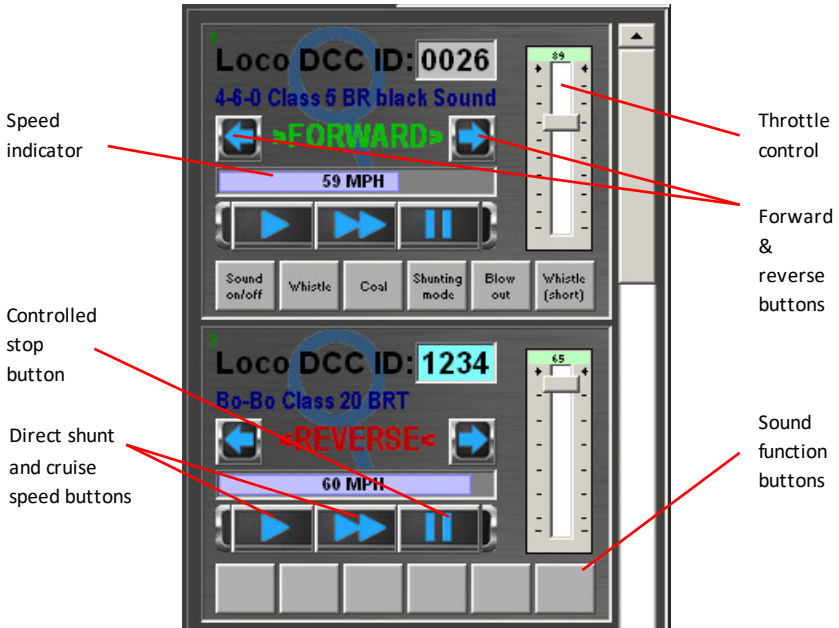
You can, if you wish, use an external imaging packaging such as Photoshop to resize and scale images however you should still place them into the C:\Program Files\RailMaster\Locos folder (C:\Program Files (x86)\RailMaster\Locos on 64-bit Windows systems).

If a Hornby image already exists for your loco then it would be easier to use that image simply by navigating to it in one of the folders above.

Quick search of locomotives

By clicking on the magnifying glass button to the right the ID heading on your locomotives list you are able to enter the DCC ID or name/running number of a locomotive you want to find and it will appear as the first entry on the list when you press Enter.

Controlling Locomotives



From the Locos Control Area, you can set the direction and speed of each locomotive as well as perform an emergency stop. Unlike the emergency stop red button on the Hornby Elite Controller and the ALL STOP button at the bottom of the RailMaster screen, the “STOP LOCOMOTIVE” button will decelerate the locomotive to a controlled and elegant stop, if desired.

The current scale speed of the locomotive being controlled is shown in the indicator on the screen in kilometers per hour or miles per hour.

If you have more locomotives than can be displayed at any one time on the screen, you can scroll up and down quickly to select the set of locomotives you want to control. If you are using a touch screen monitor just flick the locos area up or down to scroll though the list. You may need to practice this a little.

Tip: If you have a favourite list of locomotives you always want to control first, just use the up and down arrows when defining the



locomotive in the first place to set the order of preference on the main loco settings screen.

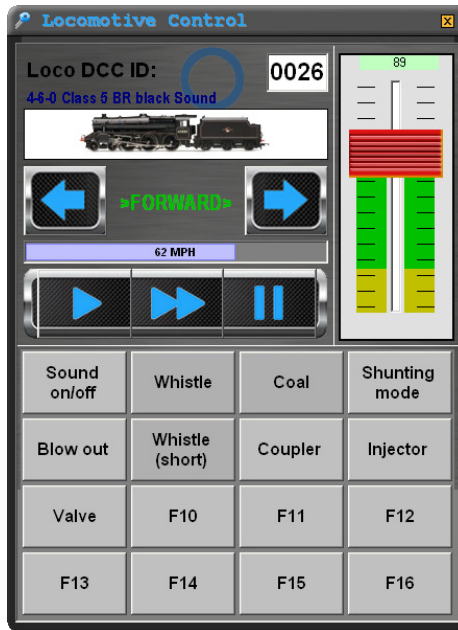
To select the preferred order in which you want to see the locomotives displayed on the main screen just select the locomotive from the list and press either the UP or DOWN arrow buttons to position it in the list. This will then be reflected each time you start the RailMaster software.

You can assign up to six function buttons to carry out the most common functions of the up to 29 DCC enhanced (sound/light) functions built into your locomotive when controlled on the main RailMaster screen. You can select which six sounds you want to have available here by using the locomotives editing screen. See “Defining and Controlling Locomotives” earlier.

On the large pop-up controller you can see up to 26 functions (8 initially and all 29 when the buttons area is dragged up or down). The pop-up controller is particularly useful if you are using a touch screen monitor, or you just want to see the controls larger. To display the pop-up controller just press or click anywhere on the fingerprint or magnifying glass watermark on the locos control area. When you do this a window similar to the following will appear.



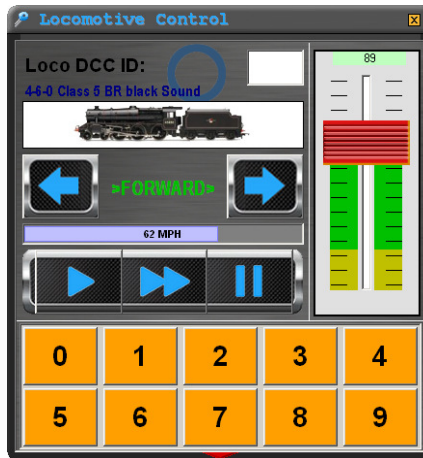
When scrolling the buttons area you will see more functions available.



You can also see additional functions by dragging the button area up or down with your mouse or finger.

You can move the loco control window anywhere on the screen by dragging the title bar and the next time you use it RailMaster will remember where it was, even when you restart the software. If you have installed the optional *Pro* pack you can drag the loco controller by placing your finger anywhere inside it as well as launch two large pop-up controllers.

You can also select a new loco directly by entering its DCC ID while in pop-up controller mode. To do this, simply click on the DCC ID box. A numeric keypad will then appear and you can enter the DCC ID directly using the keypad which now appears.



The new loco selected will then appear in the loco controller when you have pressed the fourth digit of the loco ID. For two or three digit IDs you will need to enter leading zeroes, e.g. 0012 for ID "12".

Mouse Control

RailMaster has the ability to allow the control of locomotives using a standard mouse with a mouse wheel. Using a cordless mouse will allow the wireless remote control of locomotives.



At the bottom left of the main RailMaster window, is a mouse control icon. The icon is normally dull (no activity) however by clicking on any part of a loco's control box on the right side of the screen, then moving the mouse cursor to any blank area of the layout diagram you will notice that the mouse icon highlights and the DCC ID of the loco selected will appear on the mouse icon body.



At this stage you can use the mouse left button to put the loco into reverse, right button for forward and mouse scroll wheel scroll forward and backwards to increase and decrease the loco's speed respectively.

You can also press the mouse wheel momentarily to stop the loco in a controlled fashion (like pressing the STOP button in the loco control area). By keeping your finger pressed on the mouse wheel for more than a second, a window will appear on the screen allowing you to scroll through and select another loco to control, again using the mouse wheel.

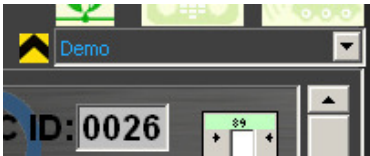
Just use the mouse wheel to scroll up and down then press it to select a new loco. You can switch between any of your locos using this method.

To disable mouse control, simply drag the mouse cursor over the mouse icon and the DCC ID of the currently controlled loco will disappear and the icon will revert to its normal inactive state.

Note: When using a small mouse to control several locos you should apply a little tape over the mouse movement sensor to avoid inadvertently moving the mouse cursor around the screen with the palm of your hand.

When moving the mouse cursor back over the locos control area on the screen, mouse operation of locos ceases. You can also move the mouse cursor back over any blank area on the track plan to resume mouse control.

Loco Groups



If you have set up locos as members of loco groups, you will see a pull-down list appear at the top right of the main RailMaster control window, just above the locos control area.

From this list you can select a group of locos to control. You may wish to run layouts of different regions, or different periods, for example, so you can group locos so that only relevant ones appear for the currently selected group. See Loco Definition, earlier, for details on setting up groups. **Never change a group mid-session otherwise there will be unpredictable results with loco functions.**

Screen Control



Sometimes it is necessary to be able to disable click or touch operations, particularly on touchscreen monitors and where the monitor may be accessible by the public or young children. You can simply enable and disable input by pressing the icon on the

screen.

This icon can be dragged to any desired location within the RailMaster window and its position will be remembered.

Quick Loco Select

If you have more than five locos in your roster, the Quick Loco Select button can be a useful way of accessing a loco for control quickly and easily, and saving you having to scroll the locos control area.

Note: if you have fewer than five locos the Select button will be un-highlighted.



Press the button from the main RailMaster screen and a window showing your current group of locos will be displayed, similar to the following:-



If you have more locos than can be seen on this window simply drag the list of locos upwards with your mouse or finger to reveal more. At any time pressing a loco will make it the topmost item on the control area list. Alternatively, if you know the DCC ID of the loco to control just use the number pad and press the green tick button. This function works particularly well on a touch screen monitor. Up to five locos currently in motion on your layout will be shown on the bottom right section of the quick select screen and updated in real time.

Voice Control (*Pro* pack only)

An exciting new way to control your entire layout has been introduced with the RailMaster *Pro* Pack. This system allows you to speak naturally to your locos, points, signals, turntables and also the RailMaster system itself to give you complete hands-free operation. **You should read this section entirely before using RailMaster Voice Control.**



Requirements

You need RailMaster with the optional *Pro* pack installed or higher in order to use Voice Control. You should also buy a good quality headset with microphone, preferably a wireless one. A desktop or built-in PC microphone is no good and must not be used.

It is recommended that you use a good quality wireless headset as you will be able to move around freely. 2.4GHz wireless headsets give you the greatest freedom, typically with longer wireless ranges than a Bluetooth equivalent. When using the headset you should position the microphone right in front of your mouth so that RailMaster's Voice Control system can work well even when there is low ambient noise.

When training your Speech Recognition system always use the same microphone you will use when operating your layout. Also remember that if your voice changes, through for example having a cold, you will need to re-train the Speech Recognition system if you intend using Voice Control.

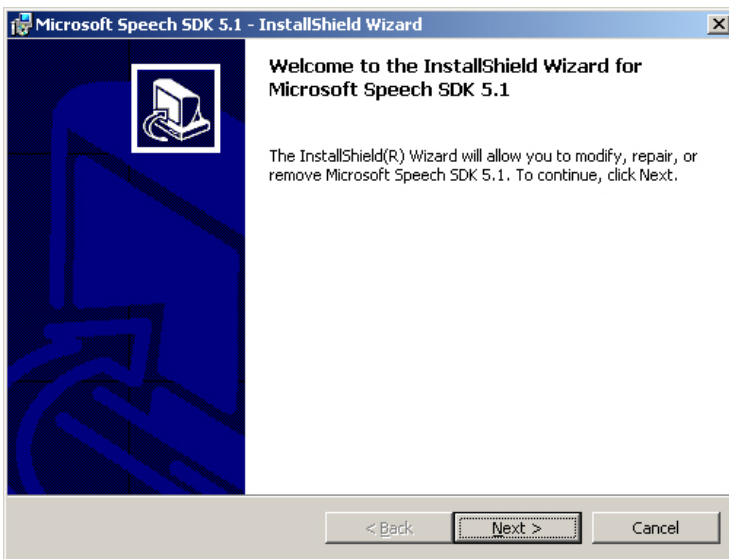
Installation

RailMaster uses the Microsoft Speech Recognition engine, built into all versions of Windows from XP. The installation within Windows, however, is

not complete and additional files must be installed for the RailMaster Voice Control system to work.

If you have a RailMaster 1.56 or later disc then the files needed are contained on it. Ensure RailMaster is not running then navigate to your RailMaster disc's "SpeechEngine" folder. Within that folder double click on the "setup" program to install the software.

If you do not have a RailMaster version 1.56 or later disc then you can download the Microsoft Speech Engine from <http://www.rail-master.com/Speech.zip>. This is a compressed ZIP file containing several other files so after downloading it you will need to decompress it into a temporary folder by right clicking on the file and selecting "Extract here" and then running the "setup.exe" program within the decompressed folder.



Just go through the installation and do not change any of the installation options. Allow the setup program to install in its default folder and so on.

By default this installs the Microsoft Speech Recognition additional files as well as the English speech recognition system. If you are using either French,

German, Italian or Spanish then you may need to install additional Speech Recognition and Text-To-Speech files for your chosen language.

You are also able to speak in English to RailMaster if your accent is not English as long as the Microsoft Speech Recognition training is carried out thoroughly (see later).

Languages

By default, RailMaster Voice Control is designed to work in English, however, you can enable it to understand French, German, Italian and Spanish.

You will first need to download the language files you need from:-

www.rail-master.com/SpeechRecognition_French.msi

www.rail-master.com/TextToSpeech_French.msi

www.rail-master.com/SpeechRecognition_German.msi

www.rail-master.com/TextToSpeech_German.msi

www.rail-master.com/SpeechRecognition_Italian.msi

www.rail-master.com/TextToSpeech_Italian.msi

www.rail-master.com/SpeechRecognition_Spanish.msi

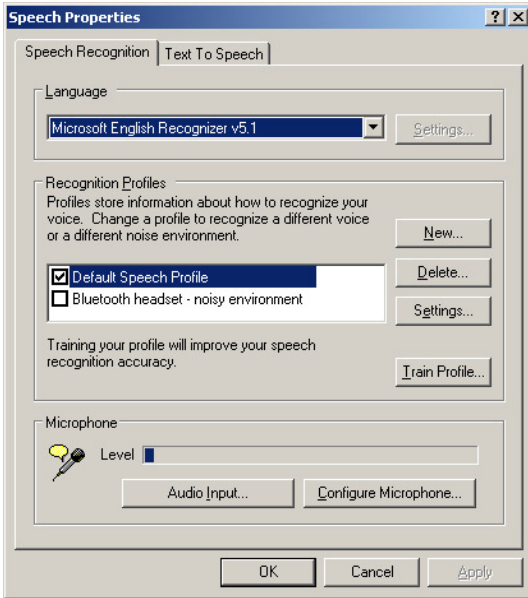
www.rail-master.com/TextToSpeech_Spanish.msi

Once download, just run the installation program (both TextToSpeech and SpeechRecognition for each language).

Configuration and Training



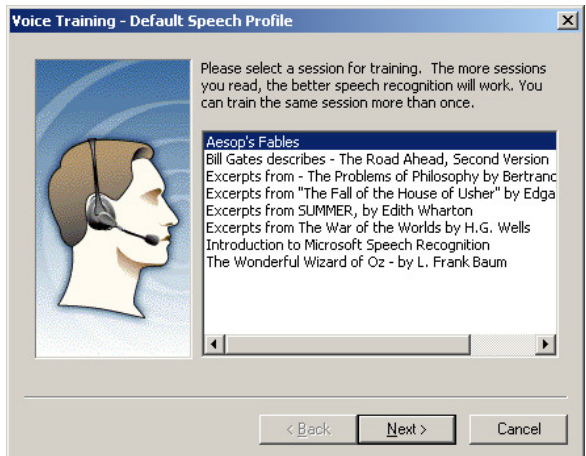
Before using the RailMaster Voice Control system you must train your Microsoft Speech Recognition system first. This is most important or Voice Control will not work correctly. The Microsoft Speech Recognition engine allows you to set up multiple profiles. These can include yourself, a friend or relative, a quiet environment, a noisy environment (not too noisy) and so on.



There are several ways to train the Microsoft Speech Recognition system depending on which version of Windows you have. In Windows XP you need to go into the Windows Control Panel and double click on the Speech icon.

You will then be taken into the Speech Properties window in which you can set up multiple profiles, for example for yourself, a relative and so on.

You should first configure your microphone for best performance (see details later on). You can also begin the profile training by clicking on the “Train Profile” button. When you do this for the first time Windows will take you through the initial training session, which is very basic and not to be relied upon solely. You should complete all of the training sessions as listed before you can use RailMaster’s Voice Control system successfully.



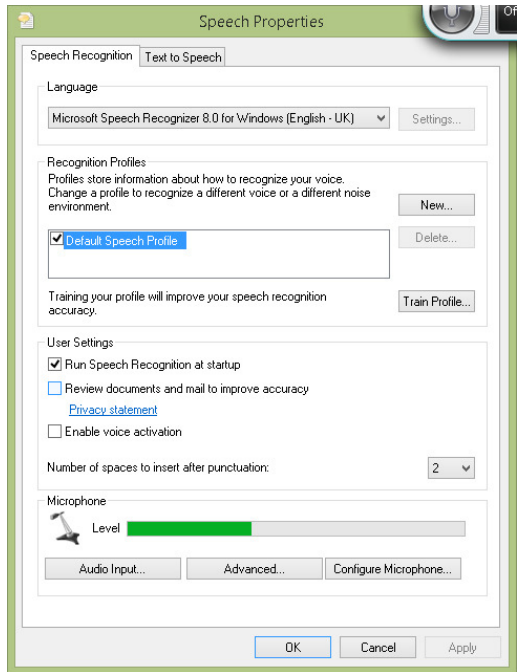
Please do not contact Hornby Support with problems regarding speech recognition if you are not using a high quality headset microphone or have not trained the Microsoft Speech Recognition system completely.



In Windows Vista, Seven and Eight the procedure for training

the Microsoft Speech Recognition system is slightly different. The first thing you need to do is to go into your Windows Control Panel and type “Speech” in the search pane. You will see an entry with a microphone icon. Double clicking this will take you into the Speech Properties window.

You should first configure your microphone, following the on-screen instructions.



Start by telling Windows which audio input you are using (headset) and then what type of microphone you are using. To control RailMaster effectively you must use only a high quality headset microphone. No other type of microphone is satisfactory for Voice Control.



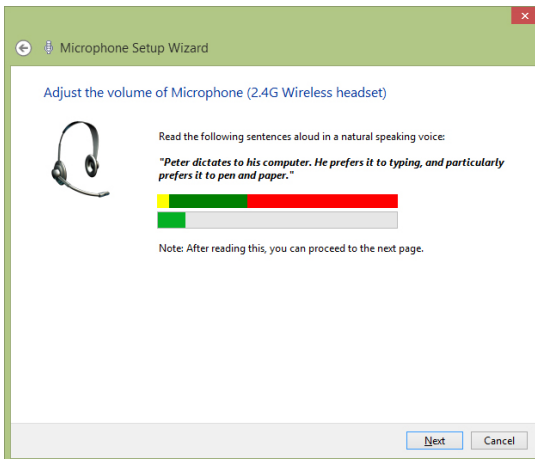
For effective Voice Control of RailMaster you must place the microphone of your headset in front of your mouth as close as possible without touching the microphone. Two or three centimeters is ideal for most microphones.

You can then click on the “Next” button to proceed to configuring the microphone

input level for your particular headset and voice.

When you have chosen the microphone type and pressed “Next” you will be presented with a window explaining how to best position your microphone.

You will be asked to read a simple sentence and you should do this at a normal level, not shouting, in a voice without much intonation (avoiding high and low pitched speech). Speak each word without slurring and when finished click on the “Next” button.



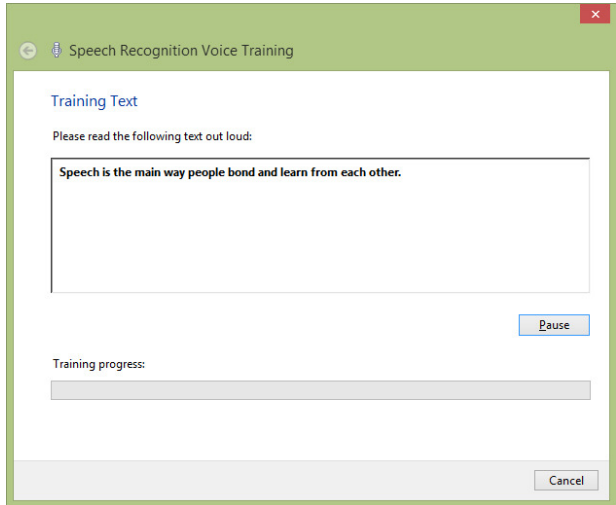
This first part of the Microsoft Speech Recognition system configuration is very important as it sets the level of your microphone for all future Voice Control sessions. It is important that you use the same microphone you configured the system with. If you ever change your microphone you should go through the microphone

configuration and training again.

When you have finished configuring the microphone you can then begin the Speech Recognition training sessions. There are several of these and they are started by clicking on the “Train Profile” button within the Speech Properties window. You will be presented with a series of windows asking you to read passages of text.

As you read each passage Windows will listen carefully and once understood will proceed to the next passage automatically.

It is very important that you read the text clearly, as a newscaster would, not too quickly and without much intonation. You should complete at least three speech recognition training sessions, which will mean pressing the “Train Profile” button three times.



When you have finished configuring your microphone and at least five profile training sessions you are ready to begin using RailMaster’s Voice Control system.

If you use the Voice Control system in a different location, with different acoustic properties, for example an echo, you should train the Microsoft Speech Recognition system again. You can set up an additional profile for that new location so that you can switch between locations at any time.

Note: Please do not contact Hornby Support with problems regarding speech recognition if you are not using a high quality headset microphone or have not configured your microphone or trained the Microsoft Speech Recognition

system at least five times for the location you are using RailMaster Voice Control in.

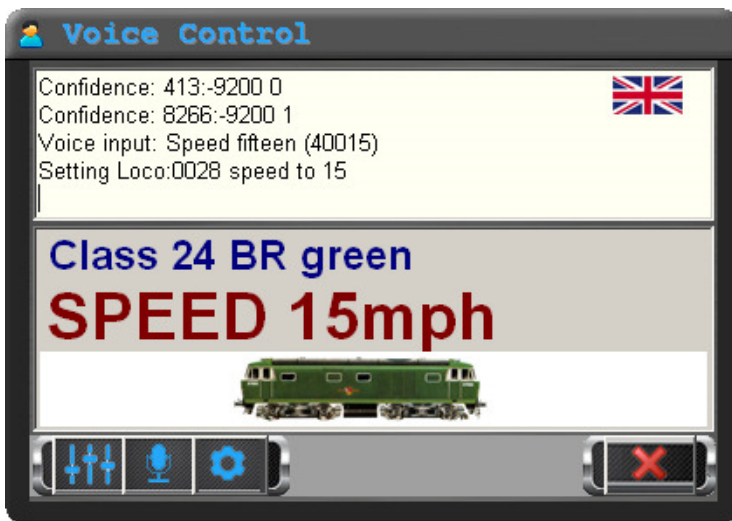
Using RailMaster Voice Control



Once you have configured the Microsoft Speech Recognition system successfully, you can begin operating your layout using Voice Control.

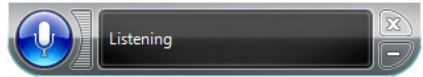
RailMaster Voice Control is smart, in that it can recognise different commands to mean the same thing, for example “Signal three Clear” can also be spoken as “Signal three Green” or even “Signal three Go”. You can also say the first part, for example “Signal three” then wait then say “Clear, Go or Green”

When you launch the Voice Control system by pressing the microphone button on the main RailMaster screen a pop up window should appear and you should hear RailMaster say “RailMaster Voice Control ready”.



The RailMaster Voice Control window gives you a constant visual representation of the commands you speak to the system. This includes controlling locos, points, signals, turntables, tippers, conveyors and RailMaster itself. The above screen shows a loco which has been called up and had its

speed set. On Windows 7 and 8 systems you may need to enable listening mode by pressing the microphone button at the top of the screen.



Locomotives

Locomotives can be addressed in several ways:-

1. RailMaster will take the class name from a loco's name and use that. For example "A1A-A1A Class 31 BR SubSector Sound" can simply be referred to as "Class 31" when speaking to Railmaster.
2. If a loco has a name, e.g. "Duchess of Sutherland" then you can speak this to RailMaster instead. In fact any loco entry with text enclosed in speech marks or inverted commas will cause RailMaster to allow you to speak to it using that name or phrase. CO-CO Class 60 'The Hundred of Hoo' can be referred to either as "Class 60" or "The Hundred of Hoo".
3. You can also set up a user-defined name for RailMaster to understand within the loco settings parameters.



The above example shows the phrase "Big diesel" having been given to a A1A-A1A Class 31 BR SubSector Sound so this loco can now be addressed as "Class 31" or "Big diesel". If it had a name it could also be addressed by that.

4. RailMaster also uses special names to address a loco or train, for example "Brighton Belle". RailMaster has a small database of special named locos or trains built where a loco is known, however its name may not be enclosed in quotation marks or inverted commas.

5. Finally, you can also address a loco by its DCC ID. For example a loco with DCC ID 0026 can simply be addressed as “Loco twenty six”.

You can see from the above that RailMaster’s Voice Control system is flexible in the way it allows you to address locos. This means that you do not have to memorise keywords or sequences.

There are several commands you can use to operate the motion of locos and their functions.

You can change the direction of a loco simply by saying “Forward” or “Reverse”. You can stop a loco by saying “Stop”. You can set a scale speed for a loco, up to its maximum, by saying “Speed twenty one” or any other speed.

To activate loco functions on light or sound enabled locos just saying the name of the function, for example, “Whistle”, “Horn”, “Blowout” and so on.

Points and Signals

Points and signals are addressed by their numbers. Whilst every effort has been made to avoid the use of point and signal numbers within RailMaster this is an area where addressing an accessory by its number is the simplest way.

You should enable the display of point and signal numbers on the track plan, if you have not already done so, to aid operation. This is done within the RailMaster Settings Window. This will allow you to see the number of the point or signal you want to operate on the track plan. Using a point and signal numbering system from one upwards is also beneficial as speaking “Point four left” is much easier than speaking “Point one three five seven left”. This will involve programming accessory decoder ports from number one onwards.

When operating points simply say the word “Point” followed by its number and then either “Left” or “Right” for example “Point four left”. You do not need to pause between words. You can speak the whole sentence in one go. You can also say, for example, “Point four” and then wait as long as you like before saying “Left” or “Right”, or “Red” or “Green”.

Signals can be operated using various commands, for example to switch signal three to danger you can say “Signal three danger” or “Signal three red” or “Signal three stop”. Likewise you can say “Signal three clear”, “Signal three green” or “Signal three go”. When controlling multi-aspect colour light signals you can also say “Signal three yellow”, “Signal three double yellow”, “Signal three flashing yellow”, “Signal three flashing double yellow”, “Signal three flashing green” and “Signal three flashing red”.

Other Voice Control Operations

RailMaster allows you to control other accessories and the RailMaster program itself using speech.

You can carry out an emergency stop by saying “Emergency stop” or “Stop all locos” and you can resume by saying “Resume all” or “Start all locos”.

You can also control turntables by saying “Turntable twenty one” (or the number of your turntable) followed by “Clockwise” to move forward one road or “Anticlockwise” to move anticlockwise through one road”.

Two additional Hornby accessories can be operated using Voice Control, tippers and conveyors. To start or stop a conveyor you can say “Start conveyor” or “Conveyor start” or “Stop conveyor” or “Conveyor stop”. You can similarly control an operating tipper by saying “Tipper start”, “Start Tipper” or even “Empty wagon”. There is no stop command for tippers as they finish automatically after completing a cycle to empty a wagon.

You can also control RailMaster’s track plan by saying “Zoom in”, “Zoom out”, “Move left” or “Scroll plan left”, “Move right” or “Scroll plan right” and “Reset zoom” or “Reset plan”.

RailMaster knows about all of the locos in your current roster and also all of your points, signals and accessories. If you attempt to control a loco, point, signal or other accessory that does not exist, or try to operate a loco at a speed it cannot achieve RailMaster will sound a buzzer. When RailMaster has recognized what you are saying you will hear a short ping in your headset

earphones. This allows you to control your layout without actually looking at the RailMaster screen for visual confirmation. If you hear the buzzer and you know what you have said is correct then simply repeat the command. If you find that you have to repeat yourself several times then you should run through the microphone configuration and speech recognition training detailed above. If you notice that the command is being recognized in the Voice Control status area, however RailMaster is not acting on it, you should consider increasing the recognition level (see later).

RailMaster always remembers the last item you were controlling so, for example, if the last loco you were operating was a class 24 diesel and you then operated a point and a signal, there is no need to say “Class 24” again. Just saying “Forward” or “Speed 23”, for example, and will bring up the class 24 diesel and operate it. If you say “Stop” then RailMaster will apply this to the last item being operated which understands the stop command as this can apply to locos as well as signals.

Quick Reference of RailMaster Voice Control commands and variations

Locomotives	<name of loco> <user defined loco name> Stop Speed <number> Reverse Cruise Whistle Long whistle Function <number from 0 to 28> <any other function names specified for a loco>	Class <loco class> Loco <ID> Forward Shunt Horn Short whistle
Points	Point <number> left	Point <number> right
Signals	Signal <number> danger Signal <number> red Signal <number> go	Signal <number> stop Signal <number> clear Signal <number> green

	Other options include: Yellow Flashing yellow Flashing red	Double yellow Flashing double yellow Flashing green
Turntables	Turntable left Anticlockwise Turntable right Clockwise	Turntable anticlockwise Turntable clockwise
Tippers	Start tipper Activate tipper Tipper run	Tipper start Run tipper Empty wagon
Conveyors	Start conveyor Conveyor start Conveyor run Stop conveyor Conveyor stop	Activate conveyor Run conveyor Deactivate conveyor
Other Track plan	Voice Control pause Pause Voice Control Voice Control Resume Start Voice Control Voice Control exit Move right Plan right Scroll plan right Move left Plan left Scroll plan left Move up Plan up Scroll plan up	Stop Voice Control Suspend Voice Control Resume Voice Control Uncoupler <ID> Exit Voice Control Scroll right* Right plan Move plan right Scroll left* Left plan Move plan left Scroll up* Up plan Move plan up


Emergency	Move down	Scroll down*
	Plan down	Down plan
	Scroll plan down	Move plan down
	Zoom in	Zoom out
	Reset Plan	Plan reset
	Reset zoom	Zoom reset
	Emergency stop	All stop
	Stop all	Suspend all
	Stop locos	Stop everything
	All go	All start
	Start all	Resume all
Resume locos		
Routes	Set route <name of route>	


*These phrases may not be recognized in Windows 7 and 8 as they are reserved by the operating system.

The above shows that RailMaster will accept the control of particular resources on your layout in several different ways using a common sense approach. You do not have to be particularly careful about how you pronounce numbers, for example as RailMaster will understand the number class 2721 as “Class two seven two one” and “Class twenty seven twenty one”. It will specifically not allow “Class two thousand seven hundred and twenty one” as that is a laborious way to control a loco. Similarly when indicating speeds such as “100” you can say “Speed one hundred” or “Speed one zero zero”.

Voice Control Settings

Within the Voice Control window there are several settings you can make without having to go into the Windows Speech Control Panel.

Pressing the  feedback sound button enables or disables feedback sounds to your headset earphones, for example, the buzzer sound when RailMaster does not understand what is being said, ping sounds and voice feedback.

Pressing the  Windows Speech Properties button will take you directly into the Windows Speech Properties window (see earlier) without having to go through the Windows Control Panel.

If Microsoft Speech Recognition is set up correctly then you should find Voice Control a very reliable and simple way to control your layout.

Word/Phrase exclusion

In certain scenarios, perhaps a noisy environment or if you have problems enunciating, short words like Stop and Go can be either triggered by an external noise or misinterpreted.

You can edit or create the file “Exclude.dat” within the C:\Program Files (x86)\RailMaster folder to exclude any of the following words, by putting them on a line on their own:-

Stop	Go	Voice Control Pause
Voice Control Resume	Voice Control Exit	Scroll Left
Scroll Right	Scroll up	Scroll down
Reset plan	Zoom in	Zoom out
All stop	Emergency stop	All go
All start	Reset zoom	Zoom reset
Plan reset	Plan left	Plan right
Plan up	Plan down	Left plan
Right plan	Up plan	Down plan
Scroll plan left	Scroll plan right	Scroll plan up
Scroll plan down	Move plan left	Move plan right
Move plan up	Move plan down	Stop all
Suspend all	Stop locos	Start all
Resume all	Resume locos	Stop voice control
Exit voice control	Pause voice control	Suspend voice control

Start voice control	Resume voice control	Stop everything
Move left	Move right	Move up
Move down	Shunt	Cruise
Loco stop	Forward	Reverse
Left	Right	Danger
Red	Clear	Green

Please do not contact Customer Care regarding Speech Recognition or Voice Control if you have not followed the above instructions precisely.

It is important that you use Voice Control in a relatively quiet room. You can use sound locos, however if they are turned up to full volume this is likely to interfere with Voice Control. Typically, you should reduce the volume of a sound loco by programming CV63 to 20 or lower. Re-training the Microsoft Speech system helps to increase reliability and remember, if you have a cold or something else is affecting your speech you need to re-train the system.

Reading and Writing Locomotive CVs

Using RailMaster you are able to quickly and easily read CVs from your loco and also to write to them. For example, to set a loco's DCC ID (and it is below 127) simply write the value to CV 1. See later for long loco addresses (up to 9999). Your loco needs to be on the programming track, connected to the PROG output of your DCC controller. To test locos (running, functions etc.) you need to place the loco back on the track connected to the TRACK output of your controller.



To read and write CVs, press the button from the Loco settings window (see Setting up Locos earlier). This will take you into the CV listing and editing window.


CV	Description	Value	Status/String
1	Primary address	003	99 20 1 3 117
2	Start voltage	003	99 20 1 3 117
3	Acceleration rate	010	99 20 3 10 126
4	Deceleration rate	010	99 20 4 10 121
5	Vhigh	040	99 20 5 40 90
6	Vmid	020	99 20 6 20 101
7	Manufacturer version	059	Loksound decoder
8	Manufacturer ID	151	Electronic Solutions Ulm GmbH
9	Not used	000	99 20 9 0 126
10	Not used	000	99 20 10 0 125
11	Not used	000	99 20 11 0 124
12	Not used	000	99 20 12 0 123
13	Analogue mode	001	99 20 13 1 123
14	Not used	003	99 20 14 3 122
15	Not used	000	99 20 15 0 120
16	Not used	000	99 20 16 0 103
17	Extended address	195	99 20 17 195 165
18	Extended address	195	99 20 17 195 165
19	Not used	000	99 20 19 0 100
20	Not used	000	99 20 20 0 99
21	Not used	000	99 20 21 0 99

Within this window you can read Loco CVs by specifying the range in the section at the top. 1 to 1023 will read all CVs but could take over an hour.

Note: It can take over an hour to read all 1023 CVs from your locomotive. Most loco decoders have CVs up to 255 however, some complex sound decoders can have up to 1023.

The pause time is the time RailMaster will wait to read a CV. Usually this takes around 11 seconds. You can experiment with this figure until you find a short enough pause which will still work. The lowest is 8 seconds. Different loco decoders work at different speeds.

When you want to write loco CVs, just click on the value of the desired CV and enter a new value into the cell. You can also enter binary values by including the eight binary digits in square brackets [] and RailMaster will convert it. This is for more advanced users. Generally, all you need to do when you acquire a new loco is to set its DCC ID, either by setting the value in CV 1 (for addresses below 128) or by using the Long Addresses button for higher address numbers.


When you are ready to write the CVs you have changed to the locomotive, press the  button. Again, it will take around 11 seconds to write each CV.

Note: Different decoders allow different CVs to be written. For example, the Hornby R8215 and Hornby R8249 are basic decoders which only allow a handful of the 255 CVs to be written to. When you read one of these decoders, RailMaster will show data on the CVs which can be written to. Certain CVs cannot be written to as they contain the manufacturer ID and version number of the decoder. The newer Hornby Sapphire decoder and sound decoders allow many more CVs to be read and written to. Currently all Hornby, Bachman, ZTC, Hattons, ESU and many other decoders, including sound are supported for the purposes of RailMaster letting you know which CVs can and cannot be written. Other DCC decoders will work, but will not be supported in this way.

Specifying long addresses

You can specify a locomotive address from 1 to 9999, however, the way loco addresses are stored differ for DCC IDs 1 to 127 and 128 to 9999.

The NMRA (National Model Railroad Association) specifies that short addresses are stored in CV 1 and long addresses are specified using a formula in CV 17 and CV 18. RailMaster shields you from having to work out what the two values should be for long addresses (those above 127).

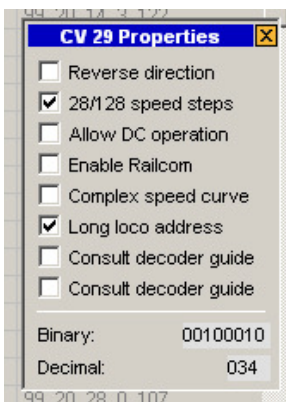
Pressing the  button will prompt you to enter or pull-down a long address from the window on the right. Select the desired address and press the tick button. When you then write all changed CVs RailMaster will write all of the CVs necessary to store the long locomotive address.



When you have finished reading and writing loco CVs remember to place your loco back on the track connected to the TRACK output of your DCC controller in order to test any changes.

Changing CV29


CV29 is of particular interest as it contains several settings in one CV. The decimal value of CV29 is in fact a representation of an 8-bit binary number, that is, there are eight settings within CV29 turned on (1) or off (0).



If you click on CV29, as though you want to change it then double-click on the value, a small panel will appear which allows you to set the individual binary digits of CV29. As you select or deselect each setting you will notice that RailMaster builds up the binary string and also shows you the decimal value that will be written.


When finished, simply press the close (cross) button on the top right corner of the CV29 Properties panel and then you can write to the decoder in the normal way.

Printing the CVs List (*Pro* pack only)

Pressing the print button  will print a list of all CV descriptions and values for a particular locomotive. You can select the printer you want to print to, or a PDF writer, if you have PDF writing software installed on your computer.

CV Settings for loco: A1A-A1A Class 31 BR SubSector Sound (ID: 1000)			
CV No.	CV Name	Value	Result String
1	Primary address	003	99 20 1 3 117
2	Start voltage	003	99 20 1 3 117
3	Acceleration rate	010	99 20 3 10 126
4	Deceleration rate	010	99 20 4 10 121
5	Vhigh	040	99 20 5 40 90
6	Vmid	020	99 20 6 20 101
7	Manufacturer version	059	Loksound decoder
8	Manufacturer ID	151	Electronic Solutions Ulm
13	Analogue mode	001	99 20 13 1 123
17	Extended address	195	99 20 17 195 165
18	Extended address	195	99 20 17 195 165
29	Decoder config	000	99 20 29 34 72
49	Extended config	000	
50	Analogue mode	000	
51	Brake mode	000	

Resetting Locomotive decoder (*Pro* pack only)

Pressing the reset decoder button  will invite you to confirm whether you wish to reset the locomotive decoder to its factory default settings. This will also reset the DCC ID of the locomotive to 3.

If your decoder is not recognized, or the wrong decoder is displayed for the decoder you know you have, you are able to force the choice of decoder by double-clicking on CV7 and selecting the appropriate decoder from the list. You need to be sure that the decoder in your loco matches the one you have chosen.

Programming Accessory Decoders

RailMaster allows you to quickly and easily program accessory decoder modules, for example the Hornby R8247 and older Hornby R8216 modules along with other manufacturers' decoders.

Until now, reading parameters from, and setting up accessory decoder modules has been a fiddly process requiring the use of your DCC controller. RailMaster now makes it very easy to do.



Pressing the Accessory Modules button from the main screen will take you into the Accessory Decoder programming window.



From this single screen you can read all accessory decoder parameters (where modules support this function) and program accessory decoder settings.

The first thing to do is to attach your accessory decoder module to the programming track of the DCC controller (or main track for some modules). This should be done in isolation, i.e. the programming track must not be connected to your layout otherwise other accessory decoders and locos will be reset.

RailMaster already knows which popular decoders support what functions and therefore what can and cannot be done.

Although the Hornby R8247 and R8216 accessory decoders look identical, there are differences in the way they work.


R8216 Accessory Decoder

This is an older decoder module which only supports points switching. You cannot run light signals from this decoder and you cannot vary the pulse time from each output port. This is fixed at 100 milliseconds.

R8247 Accessory Decoder

This is a later Hornby unit, which although identical in appearance to its predecessor, allows you to program each of the four ports as either a pulse output (for point motors) or continuously on (for light signals).


As you select each decoder from the list you will notice functions appear or disappear in RailMaster according to the decoder module's capabilities.

Before programming an accessory decoder module, you should read all settings first. You do this by pressing the  button (the R8216 and some other decoders cannot be read only written to). Depending on your accessory decoder, this may take several minutes. You can alter the delay time, although this is correctly set for the majority of decoders to ensure correct reading and writing. After reading, you will see a Firmware number and the current settings of the various output ports (not all decoders support firmware version reporting).

You will see that on several models of accessory decoder, only the first output port number can be changed. This is because decoders are generally programmed in blocks of four. Setting the first port number will automatically set the subsequent port numbers.

Accessory Decoder Number	Start Port Number
1	1
2	5
3	9

When programming port numbers you should adhere to the above table, which will also make finding faults easier later. It would also help you to label each decoder after programming and before attaching to your layout.

When you are happy with the accessory decoder settings just press the  button to program all settings to the module. This may take several minutes.

Testing

After programming an accessory decoder module, you can test the ports either using a plan you may already have created (you will need to connect the module to the TRACK output on your DCC controller first) or you can use the red/green control buttons to the right of each port in the accessory decoder programming screen. This will set points or signals you may have connected to the module.

Note: Accessory decoders listed that are not manufactured by Hornby are not officially supported by Hornby. You will need to liaise with the supplier or manufacturer of the accessory decoder if you have any problems. RailMaster has introduced probably the simplest way of programming decoders currently available, however you should note that other manufacturers' specifications may change without notice. Accessory decoders listed have been fully tested with RailMaster.

Please also note that some manufacturers' instructions may ask you to connect the power input to the accessory decoder module to the track output of your DCC controller. This does not always work so you may have to connect an external power source to the input of your accessory decoder.

Please also note that all manufacturers' decoders listed in RailMaster have been fully tested with the program and work, therefore you should check your accessory decoder's instructions to ensure you have connected the decoder and set it up ready for programming in the correct manner as some are quite complicated to do.

The Hornby R8247 accessory decoder is the simplest to program, requiring only a two-wire connection from the DCC controller's PROG output.

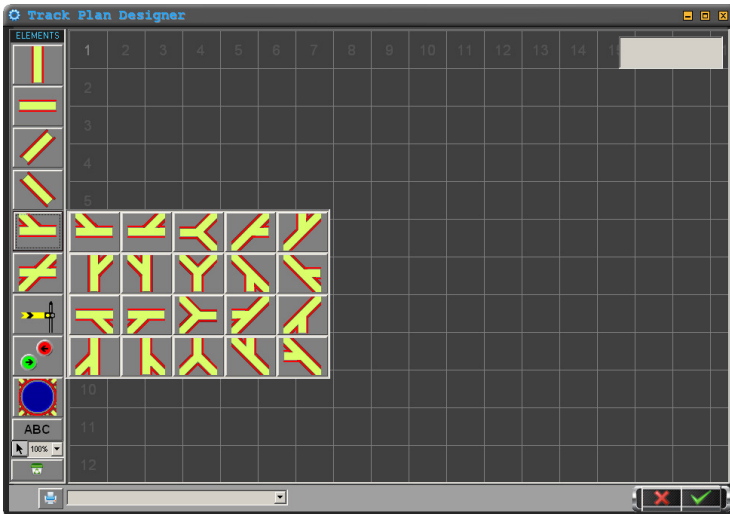
Designing a Track Schematic and Setting up Points and Signals

RailMaster allows you to design any number of track plans for use with different model railway layouts you or friends may have. Then you can use the same PC to operate different layouts (one at a time).

RailMaster comes supplied with one sample plan and Hornby oval and Hornby track packs A to F built in as well as many plans from the Hornby Track Plans Book 2009, which allow you to play with the design facilities of the software, however you can design your own track plans and specify points and signals to be controlled.



Pressing the Track Design button will take you into the track design window.



Within this screen you can lay out track elements, signals and point control buttons as well as text labels. The plan follows the “signal box” MIMIC diagram type schematic plan of horizontal, vertical and 45 degree track angles. Using the track elements available you should be able to design sophisticated

layouts. There is no concept of track radii, so you can have as many parallel tracks and 'curves' as you like.

The total area available (approximately to OO/HO scale) is around 24mx 24m depending on system memory available. You can scroll the plan area simply by clicking and dragging your mouse on an empty area of the grid. This same technique can be used to scroll around the finished plan when actually controlling your model railway. RailMaster also allows the networking of a number of PCs together to allow the control of different parts of the same layout, which is particularly useful for larger exhibition layouts where there is more than one human controller.

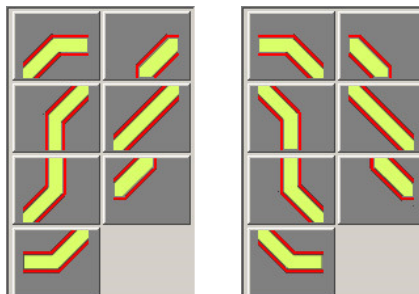
You can add the following track elements to your plan just by clicking the relevant item on the left hand side of the design screen.

Vertical and horizontal elements



These elements will be used more than any other in your track designs and will join up with points and corner elements. You will notice that all track elements snap into each grid square to aid you in setting out your plan as quickly as possible. You can double-click a free area to repeat adding these track pieces without selecting them again.

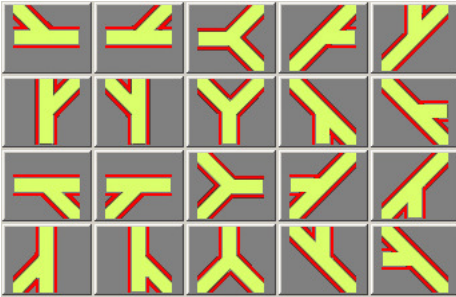
Tight and Loose Left and Right Hand Corners



In RailMaster the concept of first, second, third and fourth radius track does not exist, unlike with model railway set-track, for example.

This is due to the fact the track can only be 'laid' horizontally, vertically or at 45 degree angles. As a result, you can create any number of different radii.

Points (Vertical, Horizontal and Diagonal)

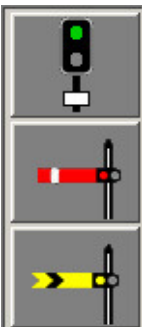


There are twenty different point shapes available, which allow you to create almost any kind of point configuration. These track elements also snap into position and will meet up with vertical, horizontal, corner and other point elements. The eight 45 degree point elements are only

available in the optional *Pro* pack.

If you wanted to incorporate a three way point, such as the type Peco manufacture, just put two points together. This is simpler than having a dedicated three-way point symbol as the former is much easier to control from your PC screen. See later in this guide on setting up single-slip, double-slip and three-way points.

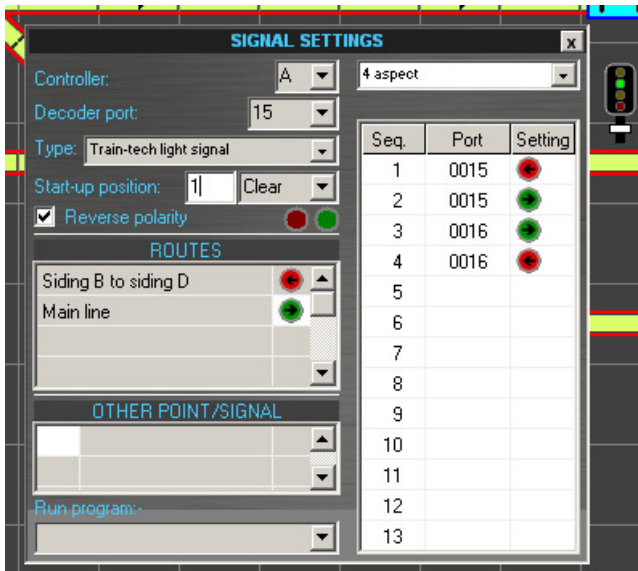
Signals (Light and Semaphore)



You can add two-aspect light signals (as supplied by Hornby), multi-aspect light signals (with the optional *Pro* pack) such as those from Train-tech, Berko and Eckon or use semaphore signals controlled by solenoid motors. Just click on the desired signal type and position it on the plan.

You will notice that signals do not snap into grid squares but allow you to precisely position them anywhere on the plan.

When you have positioned a signal you can tell RailMaster about how you want to control it. To do this, just right-click on the desired signal and a pop-up parameters box will appear on the plan next to the signal.



The signal parameters allow you to select the DCC Controller port, accessory decoder number and start-up position as well as several advanced features. You can also specify a group to which the signal belongs for multiple signal/point switching and what position this should be set to.

When you fire the signal, if the graphic operates in the opposite direction to the signal itself, then you can do one of two things. You can either swap the red and green wires going from the point motor to the accessory decoder or you may find it more convenient to check the “Reverse polarity” box. This will, in effect swap the wires virtually for you.

Controller

RailMaster allows you to connect up to two DCC controllers to your PC (provided you have enough USB ports). The reason for this is that you may wish to control all locomotives using one DCC Controller with its 4 amp power supply and have all points and signals controlled by a dedicated controller with

its own 4 amp supply. When running many locos and switching many signals and points this will reduce erratic running due to possible power consumption issues. In most cases this will be unnecessary, however the function is there should you wish to use it.

If you have just one controller, this setting will always be “A”. This means you are controlling locomotives, points and signals using the same DCC Controller.

Decoder Port

This specifies the port number of the accessory decoder unit that the signal is connected to. The Hornby R8247 accessory decoder, for example, has four ports numbered 1, 2, 3 and 4.



When you program a Hornby Accessory Decoder you should assign the first decoder module (four ports) to 1, then the second module (another four ports) to 5 and so on, in groups of four. Always use the “Reg” writing mode on the Elite to program Accessory Decoder Modules. See the instructions which come with the Accessory Decoder Module for more details. You can also use RailMaster to program accessory decoder ports for a range of popular modules (see earlier).

Start-up Position and Order of Firing

When RailMaster is started it will load the default track plan specified within System Settings and proceed to set all points and signals to their default starting position if the “Set points” checkbox has been ticked. This starting position can be set while designing your track plan.

Clear means that light signals will show a green light and home and distant semaphore signals will be in the UP position.

You can also set the order in which points and signals should fire by specifying a number from 1 to the maximum number of points and signals on your track design. This function is available in the *Pro* Pack only. If you specify the same

number for two or more points or signals they will fire in the order in which they were added to the track plan. If you do not want a point or signal to fire at all on start-up enter zero into the firing order box.

Routes

You can make signals and points members of groups by either selecting the route name from the “Routes” pull-down list or by typing the name of a new route in the Routes box. When you type in a new name you will notice that the new route name is listed on the top-right corner of the design screen.

To delete a route simply delete the entry from all signals and points on the plan. When you have deleted the last one, the route name will disappear from the list on the top-right corner of the design screen.

If you specify a route name, you can also specify the position or setting of the signal when the route is pressed during railway control.

Routes defined will appear on the main RailMaster screen when you are controlling your layout and you can press a group name at any time and you will see all signals and points in the selected route switch to their group positions automatically.

Reverse Polarity

This checkbox allows you, quickly and easily to change the polarity of the signal in case you may have wired it the wrong way around.

Other Point/Signal (*Pro* pack only)

This is a powerful feature, which allows you to switch other points and signals

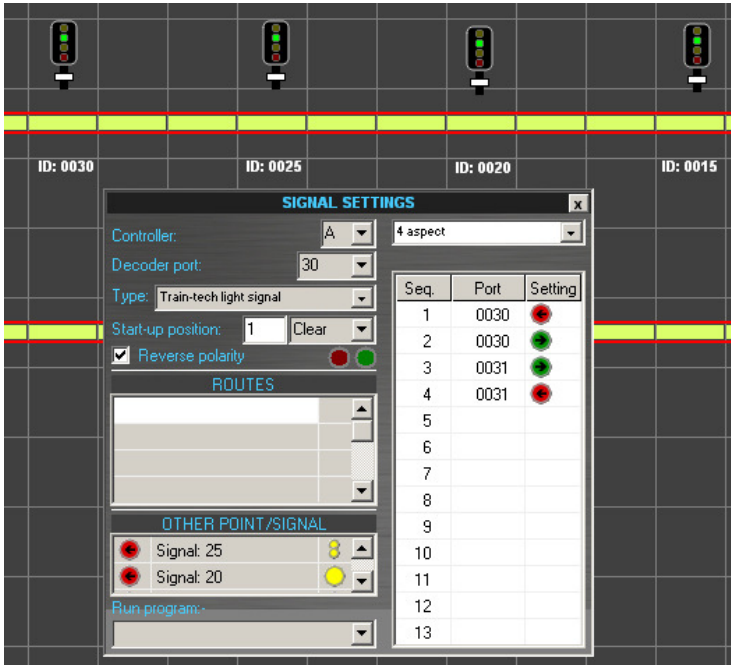


when you switch the current signal. You can specify a point to switch, if desired, for a given signal condition.

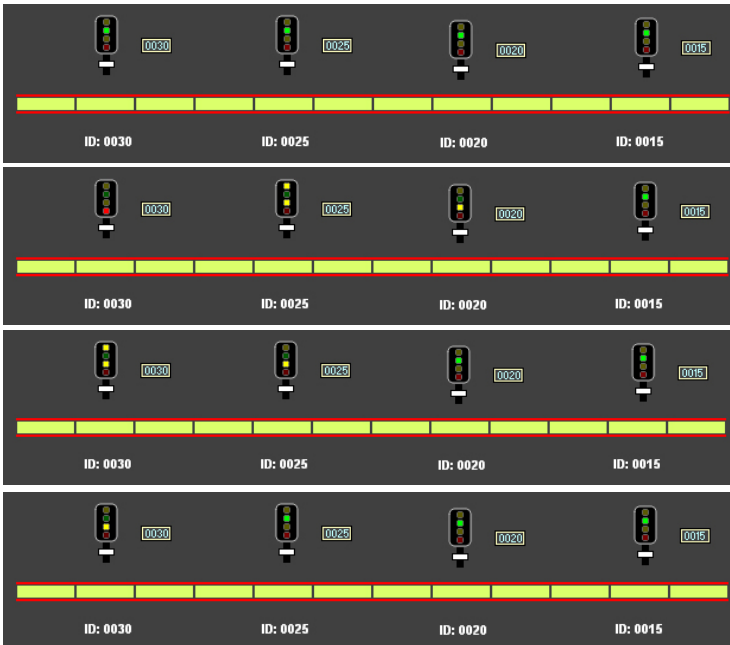
The example on the left shows the switching of a point on port 1 to the left (red) only when the signal is set to green (clear). When the signal is set to red (danger) the point will not be

switched. You can specify up to ten points or signals to switch as a result of switching a signal.

Using this system you can also automatically switch a sequence of other signals, for example in a four-aspect colour signal array as below:-



It is possible to set up an array of signals in such a way that pressing one will automatically set other signals in the path. Pressing again can be set to switch other signals dependant on the setting of the first signal. A typical sequence, when repeatedly pressing signal 20 can look like that below:-



A track plan example is included with RailMaster called “Train-tech signals” which you can load to understand more fully how signal sequence switching works.

Run a Program (*Pro* pack only)

When operating a signal you can specify any program to run when the signal is pressed. **Note: The program will not be run if the signal is fired from within another program.**

4 aspect flashing

Seq.	Port	Setting
1	0015	🔴
2	0015	🟢
3	0016	🟢
4	0016	🔴
5	0017	🟢
6	0018	🟢
7	0018	🔴
8		
9		

Multi-aspect Signals (*Pro* pack only)

This powerful feature allows you to set up almost any type of multi-aspect signal, whether connected to multiple ports of an Accessory Decoder or where the signal itself has a built in decoder, such as those supplied by Train-Tech.

RailMaster contains pre-defined profiles for Train-tech

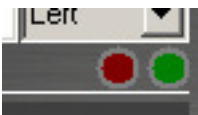
signals. These profiles will also work for signals attached to an accessory decoder, if wired correctly.

You can also set up your own profiles for multi-aspect colour light signals from two-aspect, three-aspect, four-aspect including those with flashing lights and feather route indicators. Simply selecting the type of multi-aspect signal you have from the pull-down list will automatically fill in the sequence.

There are up to 13 sequences for each signal and you can see for the most complex example, a four-aspect colour light signal with flashing lights, that four separate decoder ports are used to obtain the sequence: green, red, single-yellow, two-yellow, green flashing, two-yellow flashing, single yellow flashing and red. You can set any desired sequence, in any order using this system.

Note: when multiple signals and points are switched in one operation during normal railway working, you will notice a delay between each item switching. This is because the Accessory Decoder Module needs time to charge up the built in CDU (Capacitor Discharge Unit), which provides enough power to throw points and semaphore signals. This also applies when the default track plan is loaded at program start-up.

Immediate Testing (*Pro* pack only)



As you build your track plan you can test points and signals in a live environment by pressing either the red or green buttons. These buttons will also allow you to test the polarity of the signal/point wiring.

Point Control Buttons/Lights



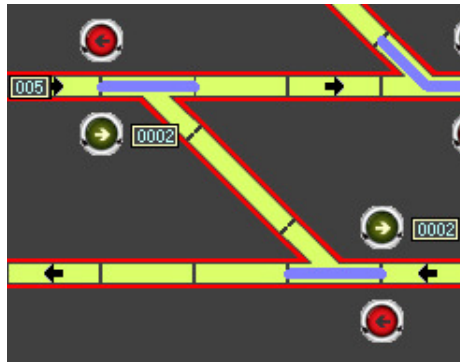
Point control buttons are placed on the track plan in much the same way as signals, and also allow you to specify additional parameters. See the signal parameters section for full details.

When you place point control buttons on to your plan by dragging them into the centre of the desired point, you will notice that they snap to positions either side of the point. Green always controls the right-hand turnout and red the left-hand one. Do not try to force the point control buttons into a different position otherwise the point route indicators on the main RailMaster window will not work correctly.

An example is shown below.



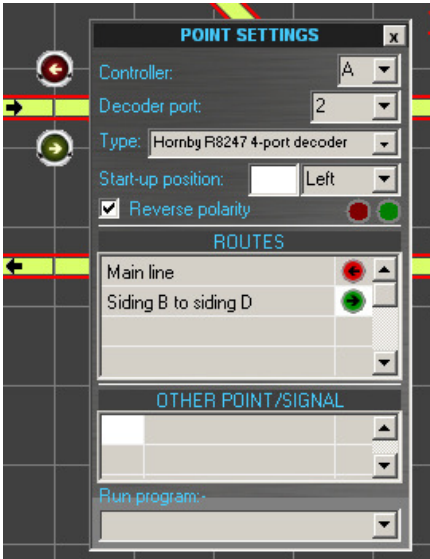
You will notice that the point buttons have snapped onto the cross of the grid squares. Following this general rule, makes for clean track designs which are easy to follow. When running your railway, the current set position will light up then all you need to do is click on the point button to switch the point. If you want to control a line crossover such as the following:-



Simply give each point the same Decoder port number and wire both points into the same Accessory Decoder Module port. Clicking either button will throw both points together. You can also make points members of routing

groups, which allow multiple points to be set in a particular way to set a prescribed route.

When you fire the point, if the graphic operates in the opposite direction to the point itself, then you can do one of two things. You can either swap the



red and green wires going from the point motor to the accessory decoder or you may find it more convenient to check the “Reverse polarity” box. This will, in effect swap the wires virtually for you within RailMaster.

You can enter up to 100 group names (routes) in the grid within point settings. New groups you enter will appear in the groups list at the top-right corner of the design screen. Just click the setting box (green or red) to specify the setting of the point within that group. Points and signals can be fired together within the

same group to set a route.

You can change the “Show button arrows” parameter of the RailMaster.ini file if you do not wish to see arrow indicators in the point control buttons (see earlier).

Other Points/Signals, Single slip, Double slip, Three-way Points (*Pro* pack only)

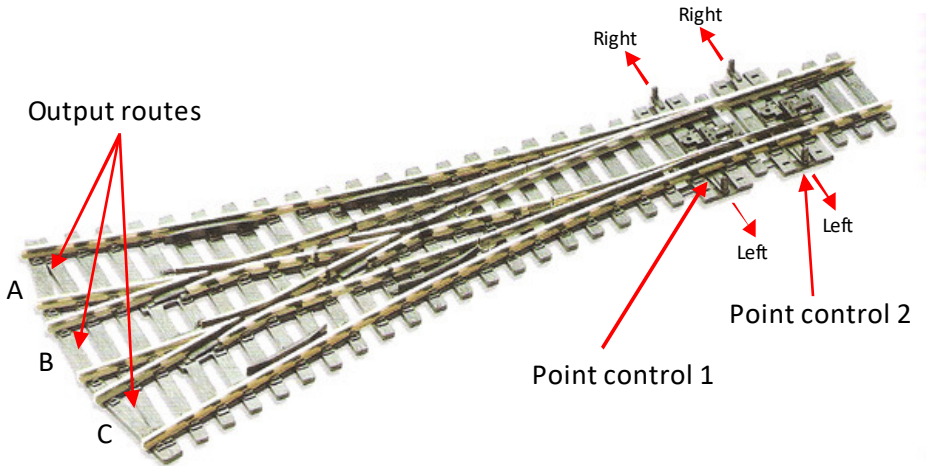
Just as with signals, RailMaster allows you to switch other points and signals. To see how this generally works, refer to the switching of other points and signals in signals above.

Using this system you can set up the 'intelligent' switching of, for example, Peco double slip, single slip and three-way points.

These points all have a particular way of working which cannot be presented merely with two normal point control buttons for each point.

Three-Way Peco Points (*Pro* pack only)

These points work in a similar way to having one point after the other, offering three possible routes, although in a much smaller space.



Peco three-way points work in a particular way depending on which route has been chosen.

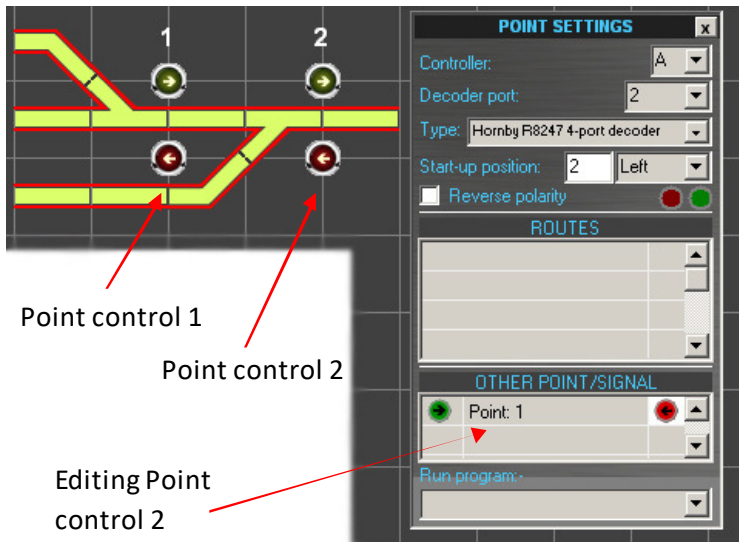
Output route A: To set output A you need to fire the point motor on Point control 2 to the left. You also need to fire Point control 1 to the left. If Point control 1 is already set to the right then firing Point control 2 to the left will automatically push the point blades on Point control 1 to the left. RailMaster has the ability to set up this logic.

Output route B: To set output B you need to fire Point control 1 to the left and Point control 2 to the right.

Output route C: To set output C you need to fire Point Control 1 to the right and also Point control 2 to the right. Again, the blades on Point control 1 will automatically push Point control 2 to the right when fired. Again, RailMaster can be set up with this logic.

To represent a three-way point within RailMaster simply join two points together in a similar fashion to the following:-

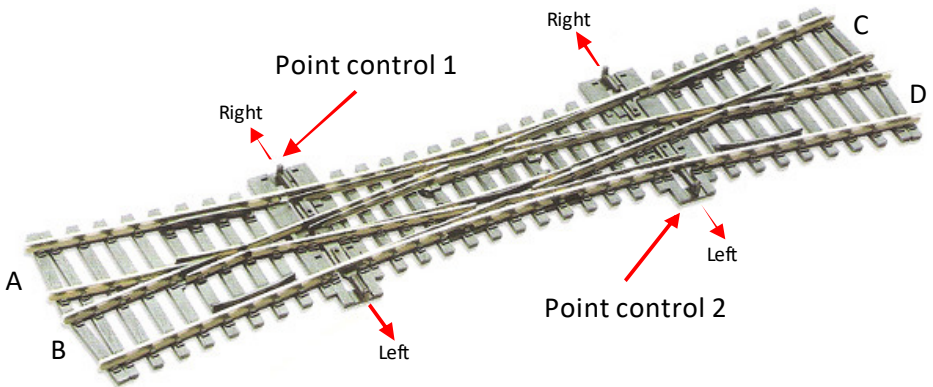
When point control 2 is fired to the right (green) RailMaster has been told to fire point control 1 left (red) to match what will happen on the Peco three-way point.



You can also mimic the operation of the Peco three-way point when set to route C described above. See the “Three way” track design included with RailMaster.

Double-slip and Single-Slip Peco Points (*Pro* pack only)

These points work in a similar way to two standard points set back-to-back although in a smaller space. As with the three-way points, there are some interesting aspects to note regarding switching.



Peco double and single-slip points work in a particular way depending on which route has been chosen. Unlike the three-way point, switching either set of point blades will not automatically switch the other, however, if both sets of blades are not set correctly, depending on the route intended, your loco and wagons will derail. Fortunately, RailMaster allows you to build in the logic to prevent this. The image above shows a double-slip point although a single slip is similar. Whilst a double-slip allows routes A to C and B to D, a single slip will only allow A to C.

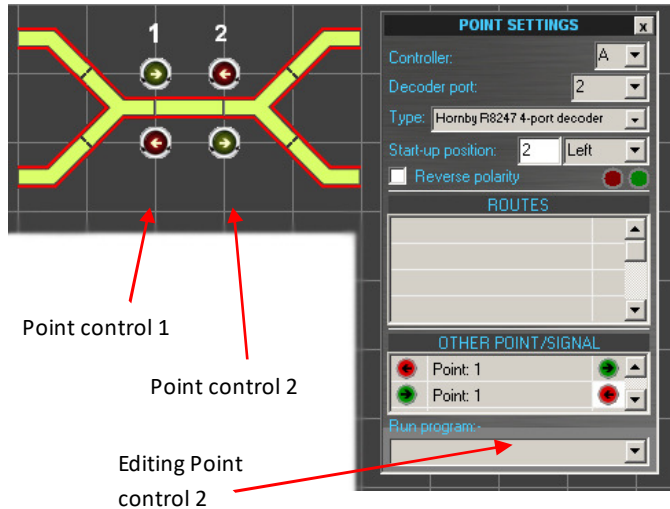
Route A to C: To set route A to C you need to fire the point motor on Point control 1 to the left and Point control 2 also to the left. If either Point control 1 or Point control 2 are set to the right, this will cause a derailment.

Route A to D: To set route A to D you need to fire the point motor on Point control 1 to the right and Point control 2 to the left. If Point control 2 is set to the right this will cause a derailment.

Routes B to C and B to D: These routes work in exactly the same way as the above two routes but are a mirror image. Again, if point points are not set correctly a derailment will occur.

You will see that it is important to get the Point control settings for Peco double slip points set correctly otherwise a derailment will occur. RailMaster takes care of the the logic, as long as you select the relevant slip type from the

pull-down list, to ensure that when you have selected one point the other one is always set correctly.



The settings on the right show how Point 1 is automatically set as a result of switching Point 2 either left or right.

You can use a similar principle to automatically set Point 2 as a result of switching Point 1. A double-slip track design example is included with RailMaster. When firing a double or single slip RailMaster will wait for you to press both point control buttons before deciding how to correctly set the points.

Start-up Position and Order of Firing

When RailMaster is started it will load the default track plan specified within System Settings and proceed to set all points and signals to their default starting position if the "Set points" checkbox has been ticked. This starting position can be set while designing your track plan.

Clear means that light signals will show a green light and home and distant semaphore signals will be in the UP position.

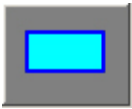
You can also set the order in which points and signals should fire by specifying a number from 1 to the maximum number of points and signals on your track design. This function is available in the *Pro* Pack only. If you specify the same number for two or more points or signals they will fire in the order in which they were added to the track plan. If you do not want a point or signal to fire at all on start-up enter zero into the firing order box.

Immediate Testing (*Pro* pack only)



As you build your track plan you can test points and signals in a live environment by pressing either the red or green buttons. These buttons will also allow you to test the polarity of the signal/point wiring.

Automatic Uncouplers



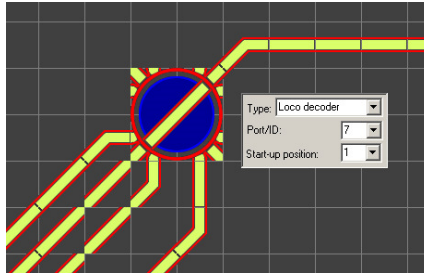
RailMaster allows the insertion of Hornby Uncouplers with point motors on any straight piece of track. Simply drag the uncoupler symbol over any piece of track and drop it in place. By right-clicking on it you can then specify the port settings in the same way as when you set up a point or signal. When using the uncoupler in practice, RailMaster will activate the uncoupler (uncouple the rolling stock) then five seconds later drop it down again. The dwell time can be altered in the railmaster.ini file. This should provide enough time to move the rolling stock.

Turntables



You can add any number of turntables to your layout, although it is unusual to have more than one. Simply click on the Turntable button on the left and drag the turntable to any position on the track plan screen.

You can join up to 12 tracks to a turntable and control the turntable using a loco decoder. If you are using the Hornby R070 turntable then you must first convert it for operation to DCC. The recommended method is to convert it for use with a locomotive DCC decoder such as the Hornby R8249. You can obtain full instructions on how to do this from Hornby's web site.



To control the turntable from your control screen just click (or press on it if you have a touch screen monitor) and the turntable will automatically move to the next position. Press again and it will move to the next position and so on. Pressing on the right part of the turntable will rotate it clockwise and pressing on the left will rotate it anticlockwise. You can repeat presses.

You can operate other manufacturers' turntables, e.g. the Heljan, which incorporate a turn decoder that uses accessory decoder addressing. To do this, simply use point control buttons and place them on entry/exit roads.

You can specify the "Turntable speed=" and "Turntable time=" for the loco decoder-controlled turntable within the RailMaster.ini file. You may need to modify these when using the Hornby turntable to optimize the position of the turntable track at the different output roads. This will involve some trial-and-error.

The best method for timing the movement of the turntable is to start by setting a high number for the "Turntable time=" in the RailMaster.ini file then use a stop watch to time how long it takes for the track to move from the middle of the dwell time at one road to the middle of the dwell time at the next road. Then put this figure into the RailMaster.ini file and you should find that the movement and stopping of the turntable is more accurate.

Operating Conveyor



You are able to add up to ten operating conveyor units (Hornby R8131) to a layout design. Operating conveyors should first be converted to DCC operation by adding a DCC decoder chip to the

motor and, importantly, removing the small black diode from the existing wiring, otherwise the motor will run at full speed for a few seconds then stop.

You should specify the Controller Port and DCC decoder address for the conveyor. When operating the conveyor from the main screen, simply clicking on it will activate it. Clicking it again will turn it off.

You can alter the speed of the conveyor by editing the line "Conveyor speed=" in the RailMaster.ini file contained in the RailMaster folder. A text editor such as Notepad will allow this. If you make errors within the RailMaster.ini file, simply delete the file, re-run RailMaster and the file will be created with its default settings. The default settings should work well.

Operating Tipper

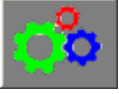


You are able to add up to ten operating tipper units (Hornby R8132) to a layout design. Operating tippers should first be converted to DCC operation by adding a DCC decoder chip to the motor.

You should specify the Controller Port and DCC decoder address for the tipper. When operating the tipper from the main screen, simply clicking on it will activate it for a whole cycle, emptying the wagon then returning the tipper to its normal down position. Clicking it again will turn it off at any time, interrupting the cycle. Each cycle takes around 86 seconds at the default speed setting.

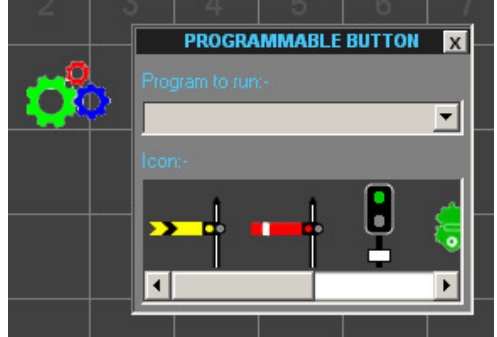
You can alter the speed and time cycle of the tipper by editing the lines "Tipper speed=" and "Tipper timer=" in the RailMaster.ini file contained in the RailMaster folder. A text editor such as Notepad will allow this. If you make errors within the RailMaster.ini file, simply delete the file, re-run RailMaster and the file will be created with its default settings.

Command function (*Pro* pack only)



With the optional RailMaster *Pro* Pack you are able to set up special command buttons and place them anywhere on your plan to perform certain functions.

You can specify any program you have written against a programmable button. This can include programs to play sounds, fire points and signals and indeed perform any other programmable function.



Just right click on the program command icon and specify the name of the program you wish to run when the button is pressed. You can also select a default icon to assign to the button to make it more meaningful for you.



Text Labels



You can position as many labels as you like, anywhere on your track design. Labels can annotate siding numbers, point IDs or even loco starting positions and station names, in fact anything you like.

Like signals and point control buttons, labels can be precisely positioned anywhere on the plan. To edit the text of a label, simply double-click on the text and it will appear with a blue background. You can then delete any existing text and add your own. Right clicking on the label will allow you to set the font name and size, as well as font properties.

Direction Indicators



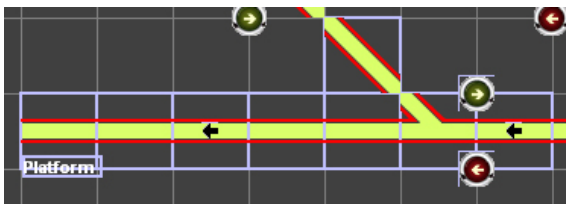
When designing larger layouts it is useful to indicate the normal direction of travel on certain lines. RailMaster allows you to add direction indicators to vertical and horizontal track sections.

Simply right click on any horizontal or vertical track piece and a pop-up menu will appear with a selection of indicators. Click on the desired direction and the arrow will snap to the centre of the track piece. If you want to change an arrow just right click on a free area of the track piece and choose a new direction arrow from the menu. You can remove an arrow by clicking on the Remove entry.


You will need to place arrows on stretches of track when using the optional Loco Detection system.

Moving multiple track elements

You can select multiple track elements by pressing the keyboard Shift button at the same time as clicking on any number of elements on the design screen. You will notice a light dashed line appear around each selected item. When you have finished selecting the required items just click and drag any item selected and all of the others will move with it. When you release the mouse button all of the track elements will snap to their new grid positions.




You can also select multiple elements by dragging a box around the items you wish to select. This saves you having to Shift-click many individual items.

Simply press the  button so that it appears pushed down. Then drag from an empty part of the track design screen until you encompass all of the desired items. Note: You must encompass the entire grid square for each element or they will not be included in the selection.

Note: you should try to position multiple selected track elements as close as possible to their new grid positions as labels and signals can be precisely positioned and do not snap to their new positions, so can look odd after a move.

Deleting track elements

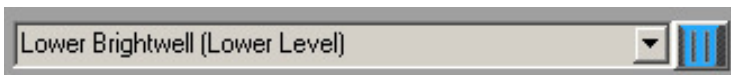
To delete any track element, signal or pair of point control buttons, click on the element you want to delete then press the delete button  or press the Delete button on your computer keyboard. You can suppress the delete confirmation dialog by editing the railmaster.ini file. See System Settings above for more details.

Saving the Track Plan (and deleting track plans)

When you have finished working on a new track design, just type its name in the box at the bottom of the screen and press the green tick button to save.

If you want to make your new design the default track plan, which is loaded when RailMaster starts, just set it within System Settings (see earlier in the guide for details of how to do this).

You can also delete saved track plans if you have the *Pro* Pack installed. To do this simply load the plan in question into the track design windows and click the trash button to the right of the plan name.




You will be asked if you are sure. Answering yes will delete the plan from your hard drive but leave it on the screen. If you do not have the *Pro* Pack installed you can use Windows' Explorer to navigate to the RailMaster program folder and delete or rename any files.

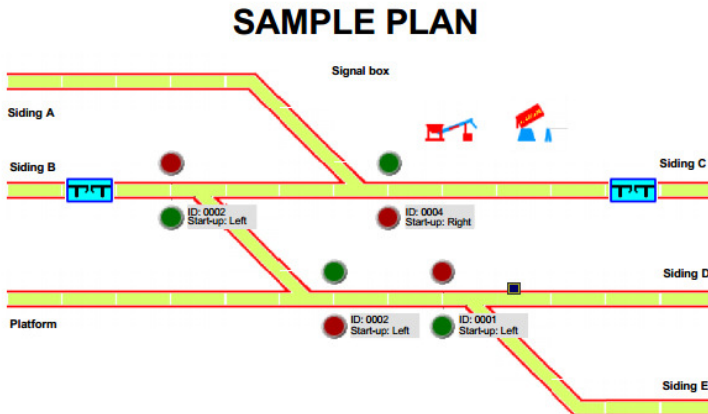
Zooming

You can view the track design at five different levels of zoom, which can be selected from the percentage pull-down list at the bottom left corner of the track plan window. It is best, however, to work on plans at 100% zoom.

Additional functions relating to the optional Loco Detection system will be detailed in a separate guide.

Printing the Track Plan (*Pro* Pack only)

You can print the track plan at any time by pressing the print plan  button. This will render a plan in colour, if you have a colour printer, otherwise it will print in shades of grey.



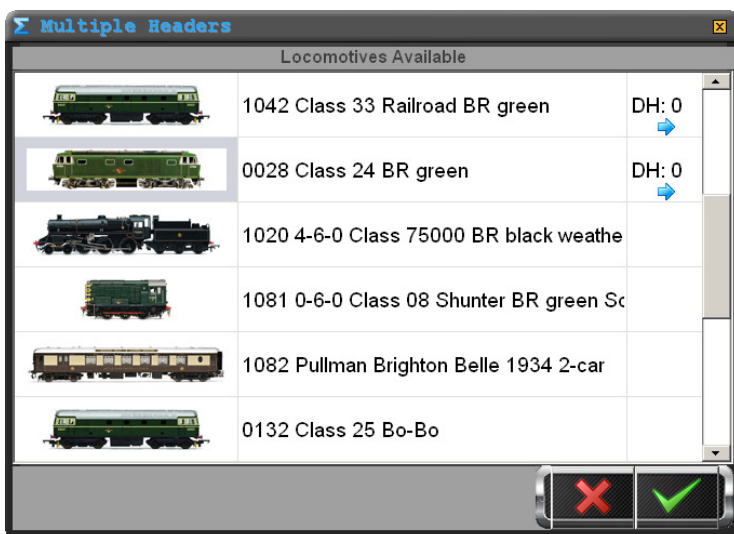
Double Heading Locomotives

In the real world of railways you will see two or more locomotives pulling a long goods train, or a passenger train up an incline. Using RailMaster you can configure up to five multiple headers, each of which can contain up to five locomotives.

Multiple heading in RailMaster is much more powerful than that built into most DCC controllers. This is because RailMaster uses scale speeds to operate multiple locos, so they travel at the same speed. Also, the slowest loco in the header limits the maximum speed of other locos, whichever throttle is used.



To set up multiple headers click on the headers button and a window similar to the following will appear, listing all of your defined locomotives in the current roster (loco group).



Clicking on the right hand column of any locomotive will enter the text “DH: 0”. Repeatedly clicking on this cell will cycle through the available double-header IDs, “DH: 1”, “DH: 2” and so on. You can set up to five multiple headers. The

number of headers to cycle through can be set within system settings so that you are not wasting time cycling through numbers you are not likely to use.

When you have finished adding locomotives to multiple header IDs, just click on the green tick and they will be available to run.

Moving the regulator of any multiple headed loco on the main screen, or pressing a forward or reverse button, will automatically control all locomotives with the multiple-header group containing the same ID.

To dissolve a multiple-header, simply go back into the multiple-headers window and click on the DH: column until the ID disappears. Then click on the green tick and the locomotives will be independently controllable once again.

Touch screen monitor users can activate and deactivate locos within a header ID simply by pressing the DH column. You can also scroll through the list of locos available by flicking your finger on the screen up or down anywhere on the list.

When controlling multiple locos in a header consist, the one with the lowest maximum speed will dictate the maximum speed of all locos (when using scale speeds).

Reversing Locos in a Multiple Header (*Pro* pack only)

RailMaster allows you to reverse the direction of any locos within a multiple header. You will notice that the loco image border fades in and out. This reminds you that you can click on or press the image of the loco and the small blue direction indicator will change. This is useful for setting up multiple headers where two locos are facing each other, as happens in real life.

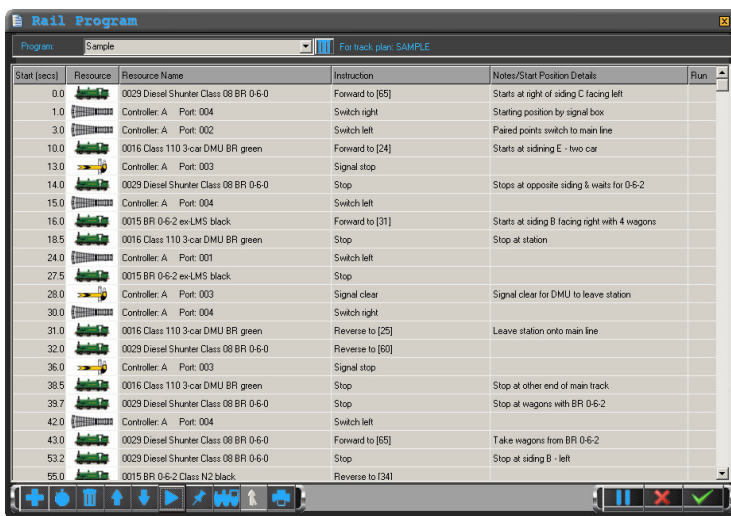
When exiting RailMaster, if a multiple header is currently in place the program will ask you if you wish to save it (*Pro* pack only). Answering yes will ensure that the next time you start RailMaster the previous multiple headers will automatically be set.

Programming to Automate your Layout

Undoubtedly the most powerful aspect of RailMaster is the ability to automate your model railway. By investing a little time writing simple programs you can make locomotives move from any position on your layout to any other, switch points and set signals, as well as activate loco functions, turntables and so on.




Your starting point for developing RailMaster programs is to press the program button on the main RailMaster window however you can also record operations in real time and play them back (see later). This will take you into the programming screen, in which you can set the sequence of events, based on time, that will start and stop locomotives and switch points and set signals.








The first thing you will notice is the name of the default track plan which is loaded. Programs are written using the currently loaded track plan, so if the desired track plan is not displayed at the top of the window then you should set it within System Settings and restart RailMaster then go into the programming screen again.


Adding program steps

To add a program step you can either click on the “Start (secs)” column of the first empty row or press the  button.



You should then click on the “Start (secs)” cell where you will be able to enter the time you want the operation to occur in tenths of a second (for example 0.0). You can specify whole seconds if you wish and then fine tune with fractions of a second later.


Generally, a program will start at 0 (zero) seconds. You can then press on the “Resource” cell, which will show a locomotive. Repeatedly pressing the “Resource” cell image will cycle through  ,  ,  ,  and  or you can select the resource from the list shown. This will enable you to tell RailMaster to select a locomotive, point, signal, ‘other’ resource (such as a turntable or uncoupler) to control or enter a programming command such as setting a loop to repeatedly run a block of the program.


You can then choose the resource based on the resource type. This will list all locomotives you defined earlier or may list all points and signals from your track plan. You can then set the instruction to carry out and optional notes explaining the instruction or situation. A typical program step may look like this:-

Start (secs)	Resource	Resource Name	Instruction	Notes/Start Position Details
0		0003 LNER Class A4 Mallard	Forward to shunt	Starting position at siding A

You can then add more steps, so for example a short program to start a loco, run for seven seconds then stop may look like this:-

Start (secs)	Resource	Resource Name	Instruction	Notes/Start Position Details
0		0003 LNER Class A4 Mallard	Forward to shunt	Starting position at siding A
7		0003 LNER Class A4 Mallard	Stop	

To test-run a program, position the locomotive and points in their starting positions and press the  button to mark all lines to run (or alternatively click



on the “Run” square for each line, then press the  run button to execute to program. As programs are executed you will hear a subtle tick sound every second. This can be turned off within the RailMaster.ini file.

When you are happy with your program, give it a name in the box at the top of the window and press the save (green tick) button.

You will find that it can take a little trial and error to create an accurate program. You may need to run the same instructions several times to get a feel for where a loco may stop as it will not stop at exactly the same position every time. The accuracy of a locomotive is dependent on the quality of the motor inside it, the cleanliness of your track and pick-ups and whether the loco motor is old or warm. You should warm up your loco motor first by running it for more consistent running.

You can move programming steps up and down the listing by using the up and down arrows but remember to ensure the times follow in sequence. You cannot have one instruction followed by another with an earlier start time.


Inserting Time in programs

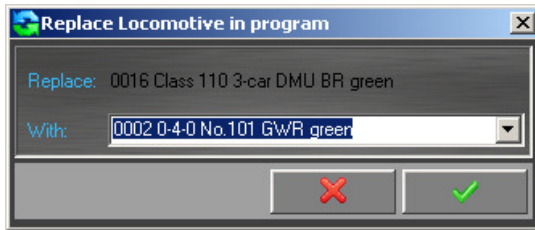
When you have created more sophisticated programs, you will find that you want to shift entire portions of the program on by several seconds, in order to fit in new program lines. You can do this by pressing the  button, which will then ask you how many seconds you want to shift all subsequent lines by. RailMaster will then recalculate the new following timings. You can then use the  button to insert new program lines at the desired position.

Note: When adding steps to produce sound from your DCC sound locomotives you should leave enough time between steps for the sound to be performed, e.g. a “long whistle” may take 3 seconds to complete, so you should leave at least three seconds after this step before performing the next one. This does not apply to all sound locos so you will need to test this with your own locos.

Replacing a loco in a program

You may wish to replace a loco in a program at some point. To do this press

the loco replace button . When you do this the replace loco window will appear.

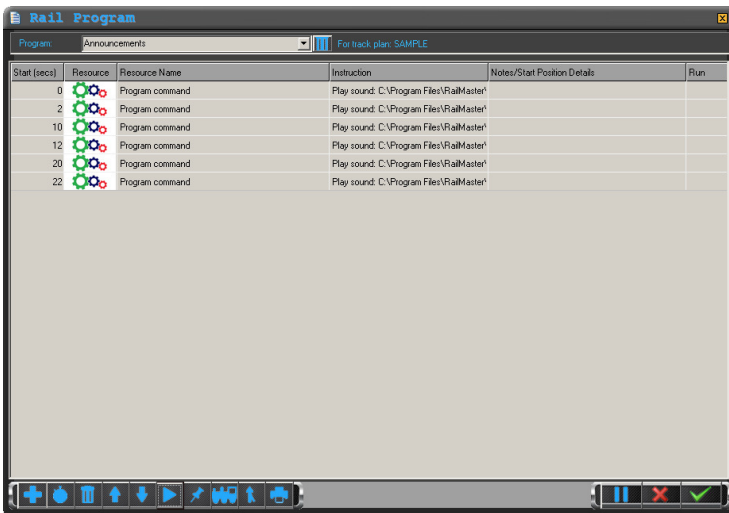



When you have selected a new loco, the existing one will be replaced throughout the current program.

NOTE: When replacing a loco you should bear in mind that expected positions of the loco on your layout, when running the program, will be different due to different motor and gearing characteristics of the replacement loco.

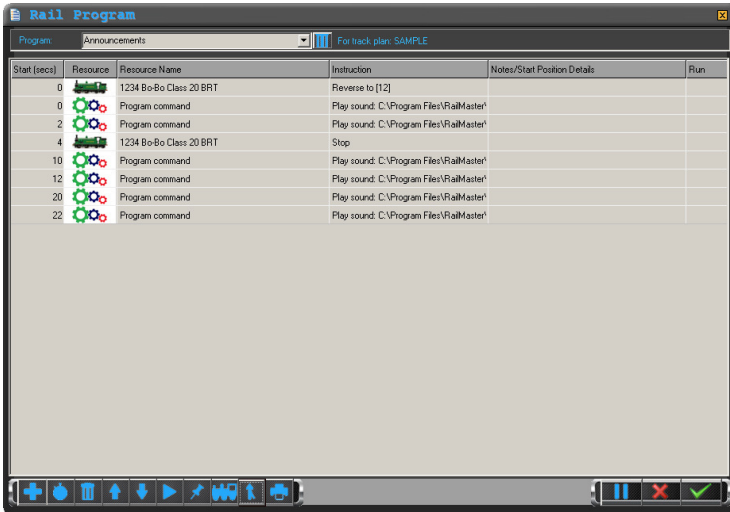
Merging programs

RailMaster allows you to create small programs which can later be merged together. You can load or create an initial program, for example the one shown below.




Then pressing the merge button  will show the Windows open dialog window, allowing you to navigate to another program to merge. Before doing this, you should click on a row (time) where you want the new program to be inserted from. This will then merge the new program to fit in to the timing of the existing one.

An example is shown below, where a second program has been merged with the one above.



You will notice that RailMaster has merged the new program to fit within the timings of the existing one. You should use this function with care by experimenting first. Always save your program before merging so that you can recall it if the merge does not yield the desired results.

Printing programs

You can print a currently displayed program by pressing the print button . This will reproduce the program on your printer, in colour, if your printer supports colour printing.

Deleting Programs (*Pro* Pack only)

You can delete an existing program by loading it into the programming window then pressing the trash can button to the right of the program's name.



You will be asked if you are sure that you want to delete the program. Answering yes will remove the program from your hard disk but leave it in the programming window.

If you do not have the *Pro* Pack installed you can use Windows Explorer to navigate to the RailMaster program folder and delete or rename files.

Recording Program Steps

Using RailMaster, you can record the operation of your layout without having to enter each step manually and thus let RailMaster build the program for you, in real time. This is a good starting point for creating programs.



To record your railway operation, place locos in the starting positions you want them, then when you are ready to start recording press the record button.

This will start the program at zero seconds. From this point, anything you do on RailMaster to run locos, make sounds, switch points and signals will be recorded in real time until you press the record button again.

When you finish recording you will be invited to view the program which RailMaster has generated in the Program editing window. You will notice that all times are shown to the nearest tenth of a second. This increases the accuracy of playback.

From the Program View window you can make changes, add descriptive notes and so on.

Note: When recording programs try not to do too many things in quick succession as the Elite or eLink may miss some of the commands sent to it. For example, making a horn sound from a loco, then immediately switching a point or moving the loco can cause the step after the horn sound to be ignored. You should always wait for a sound to complete playing before issuing any new commands especially if you have set up a sound function macro.


When making sounds from a loco you should always leave a couple of seconds before performing another function.

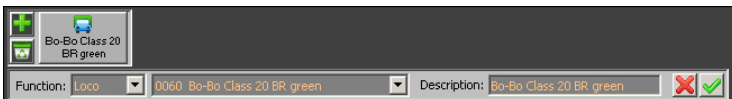
Note: certain sounds will cause the Hornby Elite not to process commands immediately following. For example, the “Blowout” function on a steam locomotive can take five seconds before releasing the Elite for additional commands.

Programmable Floating Keys

RailMaster incorporates a function which allows you to program certain often-used functions such as playing built in sounds (station announcements and ambient sound effects), selecting a locomotive and setting routes more easily than selecting the route from the list on the main screen. Routes are not recorded when using the Record function.



To display the programmable keys box simply double-click anywhere on the RailMaster logo at the bottom of the main control screen. A window similar to the one on the left will appear. To add a new programmable button press the green plus sign key . The programmable floating keys window will expand to look like the following.



You can select the function type for the key by pulling down the Function list. These can include “Loco”, “Sound”, “Route”, “Plan” and “Program”. When you

have selected the type of function you want then you can pull down the second list which will show all available locos, sound files to play, routes which can be set and programs available to run, depending on your first choice.



Finally, give the button a description. This will appear on the button. For example, choosing to operate a loco by choosing the “Loco” function, specifying a loco from the list and entering a description could end up looking like the programmable button on the right.

You can specify up to ten programmable buttons to display and you can also move the buttons window anywhere on the screen by dragging while pressing on any button. When closing RailMaster down and restarting, you will not have to double-click the RailMaster logo and RailMaster will also remember the last position you set.

Loco – selecting a loco

When adding a loco for quick access to the programmable floating keys simply select your loco from the list available. You can also give a unique description to the loco, for the key, which can be different from the loco name. When pressing the loco key in normal use the large loco controller will pop up on-screen.

Sound – playing a sound file

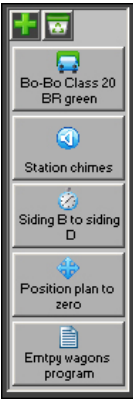
This function allows you to specify a sound file to play when the button is pressed. You can specify a title for the button in the description field. You can choose any of the 200+ sound files built into RailMaster from the Sounds folder or add your own. If you do add your own sounds you should ensure they are in WAV format and stored in the C:\Program Files (x86)\RailMaster\Sounds folder. Ideally, sounds should be produced playing from the left or right channels so that you can play from either the left or right speaker output of your PC's headphone socket.

Route – setting a route in one operation

There is already a way of selecting a quick route to set from the list at the top-right of the RailMaster window, however this function has been optimised for touch screen monitors to allow frequently used routes to be set more easily. Just choose the predefined route from the list and give it a description. You can set up an unlimited number of routes within the plan design screen.

Plan – moving to a plan area quickly

This allows you to quickly position an area of the plan on the screen, to save having to drag it to the desired position every time. To set this, choose "Plan" from the functions list then you can either specify the left and top coordinates of the plan position you want to view (recommended), or simply drag the current plan to the desired position and the coordinates will be filled in automatically. Finish off by giving the plan position a description. This function is particularly useful for larger plans or where you need to quickly go to a section to control particular points and signals.



You can also choose to display the floating button bar in a vertical format if you choose. To enable this you will need to edit the railmaster.ini file in the RailMaster program folder and add or edit the line “Button bar vertical=1”.

See the section detailing how to make changes to the railmaster.ini file earlier in this guide.

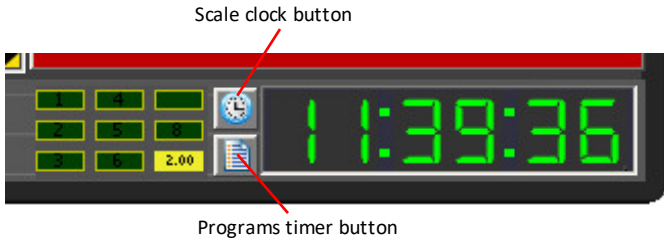
Running a program (*Pro* pack only)

If you have installed the optional *Pro* pack, you can also specify program buttons to run a desired program at the press of a button.

Simply select program from the type of button you wish to add then select a program from the pull-down list and give it a name.

Clock, Programs Timer and Scheduling Trains

The RailMaster digital clock, as well as displaying the current time has additional functions, including scheduling trains.



Setting the clock time

You can set the RailMaster clock simply by double-clicking on the first digit. The first digit of the hour will begin to flash. At this point simply enter the time by pressing the numeric keys on your computer's keyboard. To set mid-day, simply type "120000".

Once the clock is set, RailMaster will run from this time and all programs set to start will commence based on the current RailMaster time. You can also set the clock within programs so you may wish to run a program when starting RailMaster that always sets the clock to a particular time. Also see the `/PROG:` and `/TIME:` command line functions, which allow you specify a program to run automatically and set RailMaster's clock on RailMaster start-up.

Running a scale clock

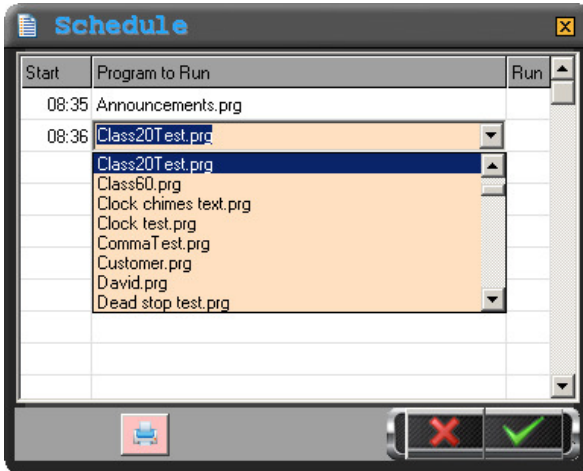
The current system scale (OO, HO, N, O for example) is set within System Settings. By clicking on the scale clock button RailMaster will run the clock at scale speed. For example, OO gauge is 1:76, that is that the models are 76 times smaller than the real thing.



Pressing the scale clock button will cause RailMaster's clock to run 76 times faster (OO scale). In HO scale the clock would run 87 times faster, in N gauge (UK) 148 times faster, in O gauge (UK) 43 times

faster and so on. The colour of the clock numerals will change to remind you that the clock is running at scale speed.

Timing programs to run (Scheduling trains)



You can set up to 100 programs to start at a specific time by pressing the Programs timer button.

A window similar to that to the left will appear where you can set a start time and select the program to run from the pull-down list. Ensure program running times do not overlap.

You can also enable or disable a particular program at any time by enabling or disabling the tick. You can set the clock programmatically in programs using the "Set clock hh:mm:ss" command.

You can also enable or disable the scale clock within programs. See later in this guide.

Using the programs start timer you can set up a scheduling system that will run up to 100 trains. You could set a particular train, e.g. the "12:15 to Newtown" and have the train actually move off at 12:15 (according to the RailMaster clock). If you want to repeat a sequence of schedules just set the RailMaster clock back to the starting time within the last program you run. This way you can repeat all of the schedules endlessly, if desired.

If you repeat train schedules, you should ensure that your program puts the relevant train back into its starting position.

Note: when setting a list of programs to run, ensure you take into account how long a program will run for and do not specify subsequent programs to start at an earlier time or the preceding program will be cancelled at the overlap point. Also note that if other windows are open, excluding the large pop-up controllers, scheduled programs will not run.

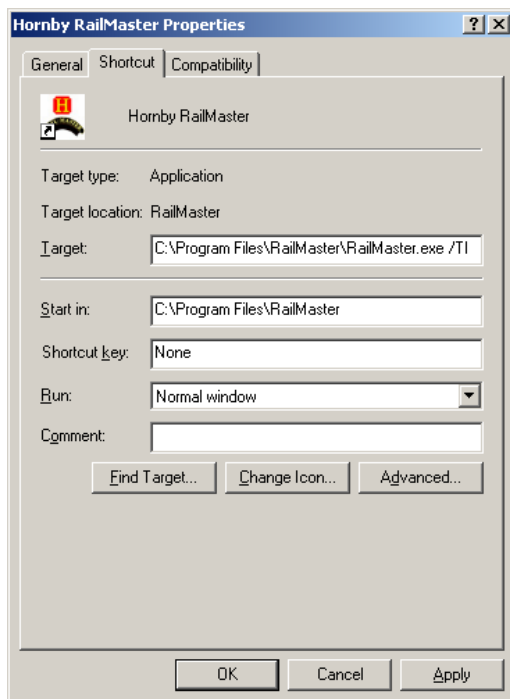
Printing schedules (*Pro* pack only)

You can also print your current list of schedules using the print button at the bottom of the window.

Command Line Options

When starting RailMaster you can specify command line options, which enable you to instruct RailMaster to perform a particular function every time the program starts.

These options are specified on the command line when running the program. You can either add the options to the icon you use to run the program, or enter at the Run command on your Windows Start menu.



When you right click on the icon you use to run RailMaster you can add command line options to the end of the path specified in the Target field.

Using the Run option on the Windows Start menu you can specify exactly the same path and command line options as in the Target field on the icon's properties.

If you wish, you can set up two or more RailMaster icons on your desktop with or without command line options. See Windows documentation for how

to add a program icon to your desktop.

Currently, there are two Command Line Options. /PROG: allows you to specify a program to run every time RailMaster starts and /TIME: allows you to set the time to the same time every time RailMaster starts. This can be useful if you are using the scheduling system (see above).

Setting a program to run on RailMaster start-up (/PROG:)

You can add the /PROG: command line option to your RailMaster program as follows:-

```
C:\Program Files (x86)\RailMaster\RailMaster.exe /PROG:<program name>
```

In this case, RailMaster is being run on a 64-bit version of Windows. If you are running on a 32-bit version of Windows then you do not need to specify “(x86)” after “Program Files”.

Just replace <program name> with the name of the program you wish to run automatically when RailMaster starts. The program must be in the RailMaster program folder and you do not need to specify the .prg file name extension. Please note there is a space before the “/”. You cannot specify the path to a program, just the program name itself. The specified program will only run after RailMaster has fully started. You will be given an opportunity to cancel the start of the program within ten seconds after RailMaster starts.

Setting the RailMaster clock

You can add the /TIME: command line option to set the clock. This is very simple to do. To set the RailMaster clock to 13:15:00 every time the program starts, use the command line:-

```
C:\Program Files (x86)\RailMaster\RailMaster.exe /TIME:13:15:00
```

Please note that the clock will only be set after RailMaster has fully started. If you have a /PROG: program that relies on the RailMaster clock then you should set the /TIME: first then the program to run, for example:-

```
C:\Program Files (x86)\RailMaster\RailMaster.exe /TIME:13:15:00  
/PROG:<program name>
```

You will see that you can specify more than one command line option after the other. It is important that there is no space after the “:” on the option names.

Programming Commands & Functions

This section details all commands and functions used in the programming system of RailMaster.



Locomotive functions

Forward to Shunt and Reverse to Shunt

These functions instruct the locomotive selected to accelerate or decelerate forward or backwards until it reaches the specified shunting speed, at scale speed, if this is set up for the locomotive and scale speeds are enabled in the system. This speed is set in the locomotives database. The locomotive will continue shunting until stopped, reversed or set to move at cruising speed.

The shunting speed is normally the minimum useful speed at which a locomotive can travel, including across points to maintain smooth motion and avoid stopping. RailMaster already includes the optimum shunting speed for over 2,500 locomotives supplied with the software.

Forward to Cruise and Reverse to Cruise

These functions instruct the locomotive selected to accelerate or decelerate forward or backwards until it reaches the specified cruising speed, at scale speed, if this is set up for the locomotive and scale speeds are enabled in the system. This speed is set in the locomotives database. The locomotive will continue cruising until stopped, reversed or set to move at shunting speed.

The cruising speed is normally the working maximum speed (not necessarily true maximum) that the locomotive would have operated in real life.

RailMaster already includes the cruising speed for all locomotives supplied with the software.

Forward to [] and Reverse to []

These functions allow you to specify the exact speed the locomotive should move. Most DCC controllers, including the Hornby Elite and eLink, operate 128 speed steps from minimum speed (0) to maximum speed (127). The locomotive will accelerate or decelerate to the speed specified according to the locomotive DCC decoder's current loco CV settings.

Note: the figure entered in square brackets is the speed in speed steps and not the speed in MPH or KPH. This, in effect allows you to override the scale speed system.

Accelerate/Decelerate Forward/Reverse [a] to [b], i

You may notice that when you issue shunt, cruise or stop commands within programs, acceleration and deceleration may be too fast for some locos. You can, of course, write to a CV setting on the Loco decoder chip and set a slower acceleration and deceleration time, however, you may not want slow acceleration and deceleration at all times, only within programs.

Within programs, you can issue an Accelerate Forward or Reverse command to allow for much smoother and slower acceleration which, on the layout looks more realistic. An example of acceleration from a stand-still to 10mph can be seen below:-

Accelerate Forward [0] to [10]

You can accelerate forward and reverse and also decelerate forward and reverse. To bring a loco to a gradual stop from 20mph issue the command:-

Decelerate Forward [20] to [0]

The default time interval between changing speeds while accelerating or decelerating is one second. In the examples above, therefore, it will take ten

seconds for the loco to accelerate forward from 0 to 10mph and take 20 seconds to decelerate to a standstill.

RailMaster allows a third parameter, the time interval so that you can specify the rate of acceleration and deceleration. For example, the line:-

Accelerate Forward [0] to [10], 0.5

will cause the acceleration to take half the time, 5 seconds. This is because the rate of change of each 1mph is set to half a second. Using the same system you can lengthen the acceleration or deceleration time by specifying “, 1” or “, 1.5”. You can experiment with this until you find the rates that you desire.

The “i” parameter is optional and specifies the interval to update the speed in seconds. The default is 1mph per second. Example 0.5 = half a second.

If an Accelerate or Decelerate function is the last command in a program. The function may not complete. Add a final program function after the Acceleration or Deceleration is due to finish, e.g. “Stop”, leaving enough time for the accelerate or decelerate cycle to complete.

Stop

This function stops any moving locomotive by decelerating it to a standstill. The stop is carried out in a smooth manner, rather than a sudden stop. This is based on the deceleration CV setting in the locomotive’s decoder.

F0: F28

This function allows you to specify which locomotive function should be activated or deactivated. Many locomotives now come with an array of functions built in to control lights and sound. The particular options available will be different on all locomotives. The number of F numbers listed is based

on the functions available within the selected locomotive and also the number of functions your DCC controller is capable of addressing.

Latching and non-latching

Some functions are switched on, then switched off again (latching), however most loco functions are activated for a short period of time.

For example, lights are an on/off function, which means selecting F0: lights on/off will turn the locomotive's lights on. Later in the program, you can choose the same function and the locomotive's lights will turn off again. This also applies to turning the sound on then off again.

Other functions which are non-latching, will only activate for a few seconds. An example may be a whistle. Some whistle sounds, however, can be latching so that they continue to sound until you send the same "F" command. Within RailMaster, most of these types of functions have been predefined, using macros within the locomotives setup screen, to activate for only a couple of seconds, then turn off again automatically. This can be overridden if, for example, you want a **latching** whistle to last for four seconds instead of two seconds.



Point functions

Switch Left and Switch Right

These functions allow you to select the position of any point. The point is first selected from the pull-down list under the "Resource Name" column.



When you select Switch Left, the point will select the left fork (red dot) or right fork (green dot). RailMaster automatically sends two pulses to the point motor to ensure that it has moved.



Signal functions

Signal clear and Signal stop

These functions allow you to set a signal's status. The signal to be operated is selected from the pull-down list under the "Resource Name" column.

Setting "Signal clear" will set a light signal to green and a semaphore signal's arm to up. "Signal stop" will set a light signal to red and a semaphore signal to down.

If you have the optional Pro Pack installed and you are using multi-aspect colour light signals you can additionally set the following functions:-

Signal yellow

Signal double yellow

Signal flashing yellow

Signal flashing double yellow

Signal flashing red

Signal flashing green



Other DCC control functions

Uncouplers – Activate and Deactivate

As well as using passive uncoupling ramps on your layout, you can also activate the solenoid operated uncoupling ramp. When selecting this from the RailMaster screen, the uncoupling ramp rises for approximately five seconds then lowers again automatically. To give you greater control in programming, you can choose to Activate and Deactivate the uncoupler at any time.

You can alter the dwell time that the uncoupler remains in the up position by setting the "Uncoupler time" parameter within the RailMaster.ini file (see earlier in this guide).

Turntable – **Clockwise n** and **Anticlockwise n**

This function allows for the automation of motorised turntables. The Hornby turntable has 14 possible entry/exit lanes and each of these can be selected relative to the current lane.



To move the turntable three lanes clockwise, simply select the command “Clockwise 3”. To revolve the turntable through 180 degrees (to turn a locomotive around) select “Clockwise 8”.

Note: the nature of the motor in the turntable and the lack of feedback from the turntable itself, with regard to position, means that after many movements the bridge may not exactly match up with an entry/exit lane. If this happens, simply use your DCC controller, select the ID of the turntable and rotate it manually until it is lined up.

Operating Tipper – **Empty wagon**

The Hornby Operating Tipper is one of the line of Action accessories, which add a further dimension to model railways.



Like the turntable, a locomotive DCC decoder can be fitted to this accessory and the tipper wagon can be raised and lowered to empty the contents of the wagon, completely controlled by RailMaster. To operate the tipper, simply enter the command “Empty wagon”. This will perform the cycle of raising the tipper, emptying the wagon and lowering the tipper to its start position.

Note: there is no need to use the supplied lever switch.

Operating Conveyor – **Activate** and **Deactivate**

The Hornby Operating Conveyor is another of the line of Action accessories, which add a further dimension to model railways. Like the turntable, a



locomotive DCC decoder can be fitted to this accessory and the conveyor can be activated or deactivate to move coal, or similar material to a waiting wagon. To start the conveyor moving, simply enter the command “Activate”. When the desired contents have been conveyed, enter “Deactivate”. This accessory works best in conjunction with the Operating Tipper.

Note: there is no need to use the supplied lever switch.



Program Commands

- Remark command

Placing a hyphen “-” in front of the timing of any program line, will cause that line not to be run. This is useful for temporarily disabling a program line without actually having to delete it.

When you place a “-” in front of a time the entire line will turn green:-





-00:00  1031 0-6-0 Class 08 BR Late Forward to shunt

Chain program: <program name>




The Chain command is a powerful feature of the programming system, which allows you to create multiple smaller programs and later merge them at runtime to create a larger, more sophisticated program.

You may need to experiment a little with this command to ensure that chained programs do not create conflicts either in the master program or on your layout.



For example, you could create a program which shunts a wagon into a siding:-

00:00		1031 0-6-0 Class 08 BR Late	Forward to shunt
00:05		1031 0-6-0 Class 08 BR Late	Stop
00:07		1031 0-6-0 Class 08 BR Late	Reverse to cruise
00:10		1031 0-6-0 Class 08 BR Late	Stop








And another which runs a branch line train:-


00:00		0048 Class 108 BR Late	Forward to [40]
00:08		0048 Class 108 BR Late	Stop
00:09		0048 Class 108 BR Late	Forward to shunt

Then create a third program, the master program, to merge the above two:-

00:00		Program command	Chain program: shunt
00:02		Program command	Chain program: branch

This will create a merged program at runtime which, although you will not be able to see, will perform the equivalent of the following:-

00:00.C		1031 0-6-0 Class 08 BR Late	Forward to shunt
00:02.C		0048 Class 108 BR Late	Forward to [40]
00:05.C		1031 0-6-0 Class 08 BR Late	Stop
00:07.C		1031 0-6-0 Class 08 BR Late	Reverse to cruise
00:10.C		1031 0-6-0 Class 08 BR Late	Stop
00:10.1		0048 Class 108 BR Late	Stop
00:11.1		0048 Class 108 BR Late	Forward to shunt

Chained programs cannot be run within the program window, only from the main RailMaster screen. Use the  search button to open the program you want to chain.

Note: Chained programs should not contain their own Chain commands. You must also be very careful about the use of Repeat ... End Repeat loops in

chained programs otherwise multiple chained commands could be repeatedly executed causing undesired effects. It is best to avoid the use of Repeat ... End Repeat loops in programs you know will be chained into a master program.

Clock chimes on (left/right) and Clock Chimes off

Using this command brings added sound reality to your layout. Issuing either the Clock chimes on (left) or Clock chimes on (right) commands will cause RailMaster to perform Westminster chimes every quarter of an hour as well as striking the full hour. The sounds are high-quality recordings of a real country clock tower. Using the “left” or “right” variant of the command will cause the sounds to come from either the left or right speakers.

Once the command is issued, the chiming will happen for as long as RailMaster is running, even when the calling program has finished. To turn off the chiming, issue the program command “Clock chimes” off or restart RailMaster.

Execute <program name>

The Execute command allows you to run a simple program from within RailMaster. You should specify the full path e.g.

Execute: C:\Windows\System32\calc.exe

Will open the Windows calculator. You can also specify command-line parameters, e.g. to open Internet Explorer and navigate to the hornby website use:

Execute: C:\Program Files\Internet Explorer\iexplore.exe www.hornby.com

Message [message], n

This command allows you to display a short message during program execution. The message can be set to stay on the screen for n seconds. For example “Message [Nudge loco off the tipper], 5” will display the message “Nudge loco off the tipper” for five seconds.

This command is also useful for doing interactive demonstrations, explaining things on-screen as they happen.

Move plan [x,y]

During program execution you may want to scroll your track plan so that any area of operation is in view. This can be done by using the “Move plan” command.

Simply specify the x-coordinate and y-coordinate of the grid square in your track plan and the plan will put that position in the top, left of the RailMaster window. This command can be used with the “Message” and “Zoom” commands to great effect for demonstrations.

Play sound

Within RailMaster you can play sound files. You can choose any WAV format sound files to play. This allows you place up to two speakers in two locations on your layout, perhaps two stations, and play back station announcements.

RailMaster uses the stereo headphone socket to play sound files to external speakers. You can use the Windows Sound Recorder to record station announcements and other sounds of your own and can choose to record the left or right microphone channels.

This will then cause the played back sound to come through either the left or right speakers.

To play a sound file enter the command “Play <sound file>”. An example may be “Play C:\Program Files\sound.wav”.

The sounds supplied with RailMaster have been optimised for playback on left or right speakers and the sounds are prefixed accordingly “L_” and “R_”. Station announcements also have a slight echo and there is a clock tower chiming facility (see earlier) which you can use to have real-time clock chiming perhaps directed to a church yard, on your layout. See the separate “Clock Chimes on (left), Clock Chimes on (right) and Clock Chimes off commands in this section.








You can also produce your own sounds for playback within RailMaster. If you do add your own sounds you should ensure they are in WAV format and stored in the C:\Program Files (x86)\RailMaster\Sounds folder.

Ideally, sounds should be produced playing from the left or right channels so that you can play from either the left or right speaker output of your PC’s headphone socket.

Repeat [n] Times End Repeat

Sometimes it is useful to repeat a section of programming steps. To do this place the Repeat [n] Times command at the beginning of the section you want to repeat and then “End Repeat” at the end of the section. Simply put a number instead of n, e.g. “Repeat [3] Times” will repeat the subsequent section of program three times.

An example would be:-

Start (secs)	Resource	Resource Name	Instruction
0		0003 CO-CO 'The Hundred of Hoo' EWS Sound	F1: Sound on/off
4		Program command	Repeat [2] Times
5		0003 CO-CO 'The Hundred of Hoo' EWS Sound	Forward to shunt
10		0003 CO-CO 'The Hundred of Hoo' EWS Sound	Reverse to shunt
15		0003 CO-CO 'The Hundred of Hoo' EWS Sound	Stop
16		Program command	End Repeat
17		0003 CO-CO 'The Hundred of Hoo' EWS Sound	F1: Sound on/off

The above example will turn the locomotive sound on, then shunt the locomotive forwards and backwards two times, then stop and turn the sound off again. You can place a Repeat ... End Repeat block anywhere in your program.

Additional commands relating to Loco Detection will be detailed in a later dedicated PDF guide.

Set clock hh:mm:ss/Actual

This program command allows you, within running programs, to set RailMaster's internal clock. This does not affect your computer's clock. If you want to set the clock to 12:30:00 then simply add the command:-

Set clock 12:30:00

This will change the current RailMaster time to 12:30 when the instruction in the program is processed. This command is particularly useful for running programs according to timetables. See also Scale clock on/off.


You might want to use this command in conjunction with the program timers (see clock) to set programs to run at particular times.

You can, in effect, set the clock to a time when another program is due to run at the end of a current program.

To set RailMaster's clock back to your computer's time use:-

Set clock: Actual

Scale clock on/off

You can use this command in conjunction with "Set clock hh:mm:ss" to run RailMaster's internal clock at scale speed. This is the same as clicking the  scale speed button to the left of the clock.

To set scale clock running on within programs simply select:-

Scale clock on

And to use normal timing select:-


Scale clock off


Zoom

During program execution you can set the zoom level of your track plan programmatically. This can be useful to prepare for manual operation of part of a layout (when used with the Move plan command).

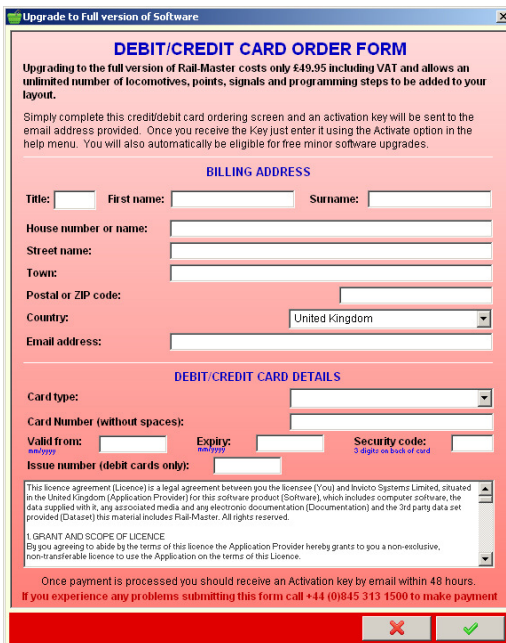
Simply choose the desired zoom level from the command list on the program line.

Upgrading and Activating the Software

You may have downloaded or installed the RailMaster software from a CD. In either case, once installed, the software is an Evaluation package. If you purchased the software on a CD with an Activation Key then you should press the  Activate button on the main RailMaster screen to enter the Activation Key and register the software to the full version. **Please note the software is not transferrable from one user to another once you have activated it.**

If you are using the Evaluation version of the software and wish to upgrade to the full version, then you should click the  upgrade button to purchase the full version of the software (where available). You need an Internet connection to activate or upgrade. The upgrade button may not be available, depending on which country you live.

Upgrading – Skip this if you have an Activation Key



The screenshot shows a window titled "Upgrade to Full version of Software" with a red border. The main heading is "DEBIT/CREDIT CARD ORDER FORM". Below this, a message states: "Upgrading to the full version of Rail-Master costs only £49.95 including VAT and allows an unlimited number of locomotives, points, signals and programming steps to be added to your layout." A paragraph follows: "Simply complete this credit/debit card ordering screen and an activation key will be sent to the email address provided. Once you receive the Key just enter it using the Activate option in the help menu. You will also automatically be eligible for free minor software upgrades." The form is divided into two sections: "BILLING ADDRESS" and "DEBIT/CREDIT CARD DETAILS". The "BILLING ADDRESS" section includes fields for Title, First name, Surname, House number or name, Street name, Town, Postal or ZIP code, Country (a dropdown menu currently showing "United Kingdom"), and Email address. The "DEBIT/CREDIT CARD DETAILS" section includes a Card type dropdown, Card Number (without spaces), Valid from (month/year), Expiry (month/year), Security code (3 digits on back of card), and Issue number (debit cards only). Below these fields is a scrollable area containing the license agreement text: "This license agreement (Licence) is a legal agreement between you the licensee (You) and Innoto Systems Limited, situated in the United Kingdom (Application Provider) for this software product (Software), which includes computer software, the data supplied with it, any associated media and any electronic documentation (Documentation) and the 3rd party data set provided (Classes); this material includes Rail-Master. All rights reserved." Below the agreement is a section titled "GRANT AND SCOPE OF LICENCE" which states: "By you agreeing to abide by the terms of this licence the Application Provider hereby grants to you a non-exclusive, non-transferable licence to use the Application on the terms of this Licence." At the bottom of the form, a message reads: "Once payment is processed you should receive an Activation key by email within 48 hours. If you experience any problems submitting this form call +44 (0)845 313 1500 to make payment". At the very bottom of the window are two buttons: a red 'X' button and a green checkmark button.

Before you Upgrade the software you should ensure you have a reliable Internet connection and your debit or credit card details to hand. When you click on the Upgrade button you will be presented with the window of the left.

You should complete the details correctly and press the green tick button to submit the order. All of your details will be securely encrypted for transmission and debit and credit cards will NOT be processed or stored on-line,

thus adding a further level of security.

When your upgrade order has been submitted and processed successfully you will receive an Activation Key by email to the email address you specified in the order. Please note this can take up to 48 working hours.

It is important that RailMaster has been added as an exception to both your antivirus and firewall or the upgrade ordering process will fail.

Software Activation

When your upgrade order has been received and processed successfully you will be issued with an Activation Key, or you may already have an activation key if you purchased a full retail copy or as part of an eLink pack or eLink train set, which you should enter on the following screen:-

Software Activation by Internet

Current Registration: **Evaluation Version**

Title: First name: Surname:

House number or name:

Street name:

Town:

Postal or ZIP code:

Country:

Email address:

Activation Key:

The Activation Key can be found on a yellow label attached to the back page of the manual contained within the software case, or in an email sent to you, if you downloaded this software.

This licence agreement (Licence) is a legal agreement between you the licensee (You) and Invecto Systems Limited, situated in the United Kingdom (Application Provider) for this software product (Software), which includes computer software, the data supplied with it, any associated media and any electronic documentation (Documentation) and the 3rd party data set provided (Dataset) this material includes RailMaster. All rights reserved.

1. GRANT AND SCOPE OF LICENCE
By you agreeing to abide by the terms of this licence the Application Provider hereby grants to you a non-exclusive, non-transferable licence to use the Application on the terms of this Licence.

Again, you should ensure that your PC is connected to the Internet to allow the Activation to be processed. Once processed, you will have the full version of the software available.

Important: If RailMaster was not installed with Administrator rights, you may not be able to activate the program. You can ensure this by right clicking on the icon you use to start RailMaster, selecting "Properties", clicking on the Compatibility tab and ensuring the box "Run as administrator" is checked.

You should also ensure that RailMaster has been added as a full exception to your antivirus and firewall software, including the Windows firewall.

You will be eligible to receive free updates until a next major version is released, eg. 1.xx to 2.xx or 2.xx to 3.xx. Also note, the software license key is not transferrable from one user to another. It is also important that RailMaster has been added as an exception to your antivirus and firewall software or the activation process will fail. A separate Internet Security PDF guide has been installed with RailMaster and placed on your Windows desktop which you should read before activating and deactivating.

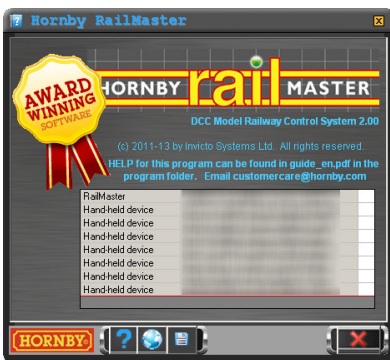
If you lose your RailMaster keys or Pro-Pack code you will need to purchase another.

Deactivation

RailMaster can be deactivated should you wish to re-install and activate the software on another PC (not to another user, as the software is not transferrable). In that event the current software will be reduced to the evaluation version, allowing loading and control of up to two locos, four points/signals and up to ten programming lines per program.




To deactivate the software press the About button and a window similar to the following will appear.



If you have purchased the option Pro-Pack, deactivating RailMaster will also deactivate your Pro-Pack Unlock Code, however you need to deactivate any RailMaster HandHeld licences separately.. When reactivating on the same or another computer you will need to activate your main RailMaster key first, followed by the Unlock Code. You can then activate any

Hand-Held licenses.

This will list all of your licenses. You will have the basic RailMaster license and may also have purchased additional licenses for hand-held devices. If this is the case it is important that you deactivate the hand-held licenses before the RailMaster PC license.

Pressing the deactivate button  will cause RailMaster to ask if you are sure. You must have an Internet connection available in order to deactivate the software. You should also make a note of your license key, which is shown on the “About” window. When your software has been deactivated successfully it will revert to an evaluation copy and you will be able to use the activation key you were provided on another PC.

If you have set up locos, designed track plans or created programs you can copy these to the new PC you wish to activate on. All files are stored in the RailMaster program folder C:\Program Files\RailMaster (or C:\Program Files (x86)\RailMaster on Windows 64-bit systems). The files to copy are:-


Resource.mdb	This contains all locos you set up
*.pln	Plan files
*.prg	program files
Groups.dat	Loco groups you have set up

If you have the optional Pro-Pack you can use the backup function instead.

Deactivating does not delete any work you have done in RailMaster.

Note: You will be eligible for free minor software updates for any version of RailMaster and the program will check regularly for new files or updates available. This may include new locos, images, program enhancements and so on. If asked by Windows whether you would like to allow access by RailMaster to the Internet connection you should always answer yes. You will also be informed when a new major update or Pro pack is available, e.g. version 1.xx to version 2.00 or version 2.xx to version 3.00 and will be invited to purchase a Pro-Pack upgrade from within RailMaster directly.

Latest News

Pressing the Latest News button  within the About screen will show the latest live developments of RailMaster within a dedicated web browser window. Check often to see what is happening in the world of RailMaster.



When there is news available RailMaster will automatically invite you to view it the next time you start the program. If you choose not to view any latest news, RailMaster will not remind you again, however you will be able to view the latest news at any time from the About screen.

You are advised to answer yes when asked if you want to view the latest news as this can contain some important announcements.

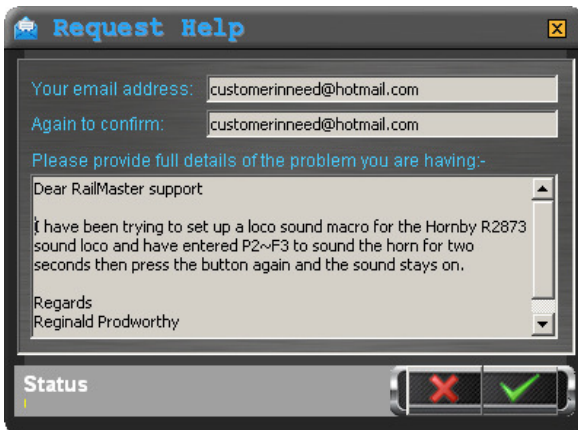
The latest news also contains details about where you can download the RailMaster HandHeld app for your Apple or Android phone or tablet. It also has a link to the RailMaster HandHeld PDF guide, which should already be installed on your Windows desktop.


Requesting help using the Help Request system

A function is built in to RailMaster to request help on-line, from directly within the program, provided you are connected to the Internet and your Internet security software is not blocking the program.

You should only use this function if you have completely exhausted this guide, the RailMaster Handheld app guide, the Drivers installation guide, the Internet security software guide and on-line forums. Please do not use it to ask questions where answers are in this guide, such as how to set up points, locos etc. Please also do not use the Help Request system to ask for details about up-coming products.

If you have any issues with your Elite or eLink controller, drivers, firmware update or communications between your PC and the controller please contact Hornby Customer Care at customercare@hornby.com or telephone +44 (0)1843 233525. Not adhering to these requests will mean that you will receive a response asking you to refer to the guide or contact Customer Care.




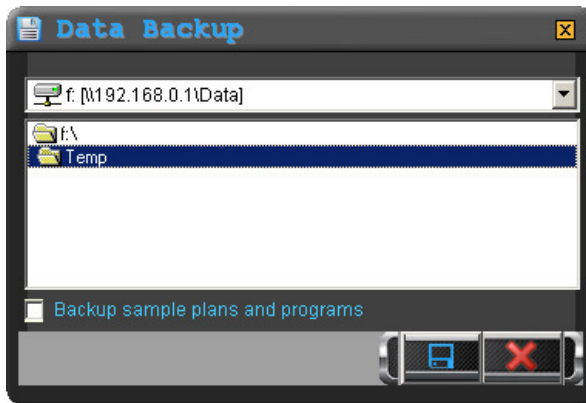
To request help, click on the request help button  within the About screen. A window similar to that on the left will appear, which allows you to specify your email address and a detailed message.

Please ensure that the message contains full details of the problem you are experiencing, not just a single line. If your Help Request involves activating or deactivating RailMaster, please include your RailMaster Activation Key, full name and address in the message.

Note: When the message is sent, your current RailMaster settings, start-up program, start-up track plan, current computer screen shot, certain Windows settings (free RAM, hard disk space etc.) and RailMaster program log file will be sent automatically to allow the RailMaster Support Team to help you as efficiently as possible.

Backing up Data

The RailMaster *Pro* Pack includes a facility to back up data. Within the “About” screen simple press the  data backup button.



Within the backup screen you can select the destination to backup your data. If you check the box “Backup sample plans and programs”, all sample plan files and programs will also be backed up, in case you may have modified them.

You can also back up your data manually from C:\Program Files (x86)\RailMaster:

Resource.mdb	This contains all locos you set up
*.pln	Plan files
*.prg	program files
Groups.dat	Loco groups you have set up

Playing Tutorial Videos

RailMaster includes a facility to play a series of tutorial videos from within the program itself and these are currently being produced. If you purchased RailMaster on a DVD (not CD) the first demonstration video will already be installed on your hard drive.



RailMaster will automatically download new tutorial videos as they become available and the check is made each time you go into the tutorial video window.

Simply select from the downloaded video you want to watch from the pull-down list and it will begin playing. You can pause or stop the video at any time and using the timeline slider you can fast forward or reverse through the video.

Important Notes on Scale Speeds and Accurate Loco Control

Built in to RailMaster are over 2,500 locomotives, going back to 1975 in many cases, including Hornby, Rivarossi, Jouef, Arnold and Electrotren. There are some important factors which determine how well your layout will operate at scale speed.

Age of Locos

Generally, the older the loco, the more likely it is that motors and gears will be worn. This may make older locos run inconsistently.

Not all Motors are the Same

Even motors in locos manufactured at the same time may exhibit tiny differences in performance, so two of the same loco, manufactured at the same time, may run at slightly different speeds. This is more applicable to older locos.

Lubrication of Parts

There is no doubt that the performance of a loco is affected by lack of lubrication of moving parts or by dirty or old lubrication. You should, periodically, remove old lubrication and ensure that all moving mechanical parts have a tiny drop of good quality oil on them.

Dirty Track or Wheels

One of the most fundamental aspects of smooth loco control is to have clean loco wheels making contact with clean track. Loco wheels can be cleaned regularly with methylated spirits on a cotton bud and rubbing all around the wheels carefully. The same method can be applied to cleaning the track. You can also use a machine such as the Dapol B800 cleaning wagon, which is a motorised DCC controlled wagon which can brush, vacuum and polish track while being pulled by a loco. This can even be incorporated into a RailMaster

program to clean your entire track layout automatically while you do something else.

A great deal of time has been spent profiling almost every Hornby and Hornby International loco in order to find its true maximum scale speed and slow speed performance (shunting).

Speed curves have also been added to take into account motor performance at different speeds.

This is unprecedented in the world of model railway control and sets a new standard in loco control realism. Due to the above factors, locos may not move at the exact scale speeds, however, accuracy will still be far greater than using DCC speed steps. For example, the Hornby 08 diesel shunter, as made from 2008 onwards actually runs at a scale speed of 35 miles per hour. The maximum speed of the loco in real life was only 15 miles per hour, so RailMaster builds in that limit and scales the speed down. The loco can appear to move very slowly on the track at full speed, however, this is the correct scale speed.

Although one loco may run at a slightly different speed to another, when double heading, you will find that the difference is so slight that the two or three locos will still run with no wheel spin or tugging evident as their performance will be balanced out.

Correct Choice of Loco

You should ensure that you have selected the correct loco from the list as the same loco may appear several times. For example, the Flying Scotsman loco in the UK is on the list over 20 times because it has been released in several different formats, with different motors and gearing arrangements. You should therefore choose your loco by its R, HJ, E and so on number.

Accurate Running of Programs

In order to achieve the accurate and successful running of programs, you should ensure that all of the above points are borne in mind. You should also

ensure that your track has been laid well and that power is delivered to all parts of your layout evenly, thus ensuring that all locos run without stopping.

If you are running an exhibition layout, or want to reduce the likelihood of locos stopping on your track, especially when running at slow speeds, you should avoid using locos with very few electrical pick-ups, e.g. 0-4-0 and some 0-6-0 locos.

When available, Loco Detection will allow RailMaster to know where each loco is on your track and to take action accordingly. This allows locos to stop at the correct position each time at stations and to set signals automatically when a loco passes a particular point. Until then, to achieve correct position of trains on large ovals within programs, you may want to consider having a train come off onto a siding, perhaps in a hidden area or fiddle yard and run very slowly into buffers for a few seconds, then return to the main line, thus calibrating the loco's position.

You can also use this method on end-to-end layouts, where a train can move into a terminus and then, very slowly, almost invisibly, move against end buffers for a couple of seconds, then out again.

Troubleshooting Guide

Activation – RailMaster will not activate

Most activation problems are as a result of Internet Security software running on the PC blocking the process. Some antivirus and firewall software packages are more aggressive than others and do not always warn you that they are blocking a program. McAfee and Norton are the best examples of these.

It is important that you add RailMaster as an exception to both your antivirus and firewall software. Check the instructions supplied with your Internet security software or search the Internet for details of how to do this as it is different for all Internet security programs. A separate, dedicated Internet Security guide will have been installed on your Windows desktop when you installed RailMaster. This covers the most popular Internet security packages and shows you how to add RailMaster as an exception.

Another possible issue is that the software may not have been installed with Administrator rights, particularly on 64-bit Windows systems, where this is a must. When installing it is important that you right-click on the setup program file and choose “Run as administrator”. It is also important that RailMaster is allowed full access through the Windows firewall.

To ensure you are running RailMaster with Administrator rights simply right click on the icon you normally use to run the program, select “Properties” from the pop-up menu which appears, click on the Compatibility tab and ensure the option “Run as administrator” is checked.

When you install the software, you should ensure you are using the latest version of the program, by downloading the latest setup file from www.rail-master.com/rm_setup.exe and running it. You should first ensure that RailMaster is not currently running. When installed RailMaster automatically downloads the latest setup file and runs it for you. If it does not do this correctly, this is a sure sign that either your Internet security software is interfering with the operation or RailMaster does not have administrator access rights.

If you are running Windows Vista you should also check in the compatibility tab for RailMaster that the program is running in “Windows XP SP3” compatibility mode.

Elite/eLink Driver installation – Elite/Elink not recognised

If Windows is not recognising the Elite or eLink try using a different USB port and USB cable. In any event, due to the high throughput of data you should use a short, shielded USB cable to ensure that all commands and feedback are processed correctly. Refer to the separate Driver Installation PDF guide.

If you are using the eLink DCC controller and Windows 10 or above, ensure the following lines are contained in your RailMaster.ini file, which you can edit by clicking on the small cog icon in the Help window:

```
Alternative comms=1  
Check controller=1
```

For eLink and Elite controllers using Windows 8 or lower the lines should be:

```
Alternative comms=0  
Check controller=0
```

If you still experience difficulty, you should contact RailMaster Support by email at support@rail-master.com

Erratic loco/points/signals control

This can be caused by several factors, each of which should be looked at in turn.

1. If using the Hornby Elite ensure it is using version 1.3 of the firmware or later. This can be seen when powering the unit up. Current firmware is 1.41 available from www.hornby.com/downloads.

2. Ensure the Elite is in “Standard” mode. RailMaster does not work properly with the Elite in “Classic” mode.
3. If using the eLink DCC controller, ensure that RailMaster has upgraded its firmware to at least 1.06. If RailMaster cannot communicate with the eLink at all then continue checking the following.
4. Use a short, high quality (shielded) USB cable
5. Try using a different USB port on the PC and changing the Com Port number (in control panel) to one below 5. If you have a built in physical RS-232 serial connector on your PC, which is unused and assigned to Com1, disable it in the BIOS of the PC and use Com1 for the DCC controller driver.
6. Ensure the com port settings are the same in the Windows Control Panel and within RailMaster settings.
7. Reset the DCC controller by disconnecting the power lead, waiting a few seconds then reconnecting.
8. In rare cases you will need to switch off your PC, unplug the mains cable, remove the battery (if a laptop) then press the power button to discharge all internal capacitors. You should leave the PC for a further five minutes then power up again.
9. If using Windows 7, Windows 8 or Windows 10 you should be using Windows’ own generic serial port driver for both the Hornby Elite and eLink controllers. If you have installed the Hornby-supplied driver then uninstall it and allow Windows to use its Update feature to find the correct driver.
10. You must not connect a DCC controller through a USB hub. It must be connected directly to your computer’s USB port.

11. If all else fails, and you have access to another Windows computer, install the evaluation version of RailMaster onto it and see if the DCC controller will work on that machine. If it does then something else on your original computer is causing the problem.

Only when you have tried all of the above should you contact Hornby Customer Care.

OCX file registration problems after installing

This is usually caused by an older software product with an outdated version of the MSINET or MSCOMM controls, not allowing RailMaster to update them in the Windows Registry. You can download an updated setup file from www.rail-master.com/rm_setup.exe, which resolves this issue. You should save this file to a temporary folder on your computer, say c:\install then run it by right-clicking on the file and choosing "Run as administrator". You may need to uninstall RailMaster first and delete the C:\Program Files\RailMaster folder. The setup file name and location may change. If you cannot download it, please contact Hornby Customer Care or use the Help Request system.

Programs – locos not stopping in the same place each time

This can be caused by a number of factors, mainly relating to maintenance of track and locos. Older locos will mostly be affected as will locos which run at high speeds. For general information, see the previous section. It is also very important that your track is laid correctly (perfectly flat) and kept clean.

Programs – points, signals loco operations being 'missed'

The most common cause for this is poor communications between your computer and the DCC controller. See the heading "Erratic loco/points/signals control" for a possible solution.

If none of these things work and the problem occurs at the same point in the program every time it is run and there is a loco sound function being operated just before the missing steps then it could be that you have not allowed enough time to allow the sound function to be processed. This can happen

especially if the sound function is a latching one where RailMaster sounds the function, pauses, then switches it off again or where the sound function contains a sound macro. In these circumstances the next program step should not be activated until the sound has completely finished.

Points or signals switching the ‘wrong’ way

This is rectified quite simply by swapping the wires (red and green) over from the point or signal to the accessory decoder. You can also set the “Reverse Polarity” option in design mode for signals and points.

Single slip, double slip and three way points

Single slip, double slip and three-way points (from manufacturers such as Peco) are supported in the optional *Pro* Pack. You can emulate these, to a certain extent, using two standard points in RailMaster, one after the other. Please bear in mind, however, that the logic of single and double slip and three way points will not be fully emulated without the *Pro* Pack.

Points and signals do not work correctly after upgrading Elite firmware

When upgrading the Elite’s firmware to 1.4 this automatically sets the controller to “Classic” mode. You will need to set it back to “Standard” mode to allow points and signals to work again. See the Elite manual for details of how to do this. If problems persist contact Hornby Customer Care at +44 (0)1843 233 525 or email customercare@hornby.com.

eLink firmware update is not successful

When RailMaster tries to automatically upgrade the eLink firmware it fails with an error message. In this case locate the latest firmware version in the C:\Program Files\RailMaster folder (C:\Program Files (x86)\RailMaster folder on Windows 64-bit systems) and install the firmware manually. The file name will be eLinkNNN.exe where NNN is the firmware version number. If there is

more than one file, select the one with the latest NNN number. Ensure that RailMaster is closed down before updating the firmware.

Although this should allow the firmware to be updated the question “Why does it not update through RailMaster” should be asked. You should check all communications settings, as detailed above.

If you have problems that are not covered by the contents of this Guide, the dedicated Driver installation guide and the dedicated Internet security guide, and for problems not involving the Elite or eLink then you should use the Help Request system built into RailMaster.

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