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HOBBIES**

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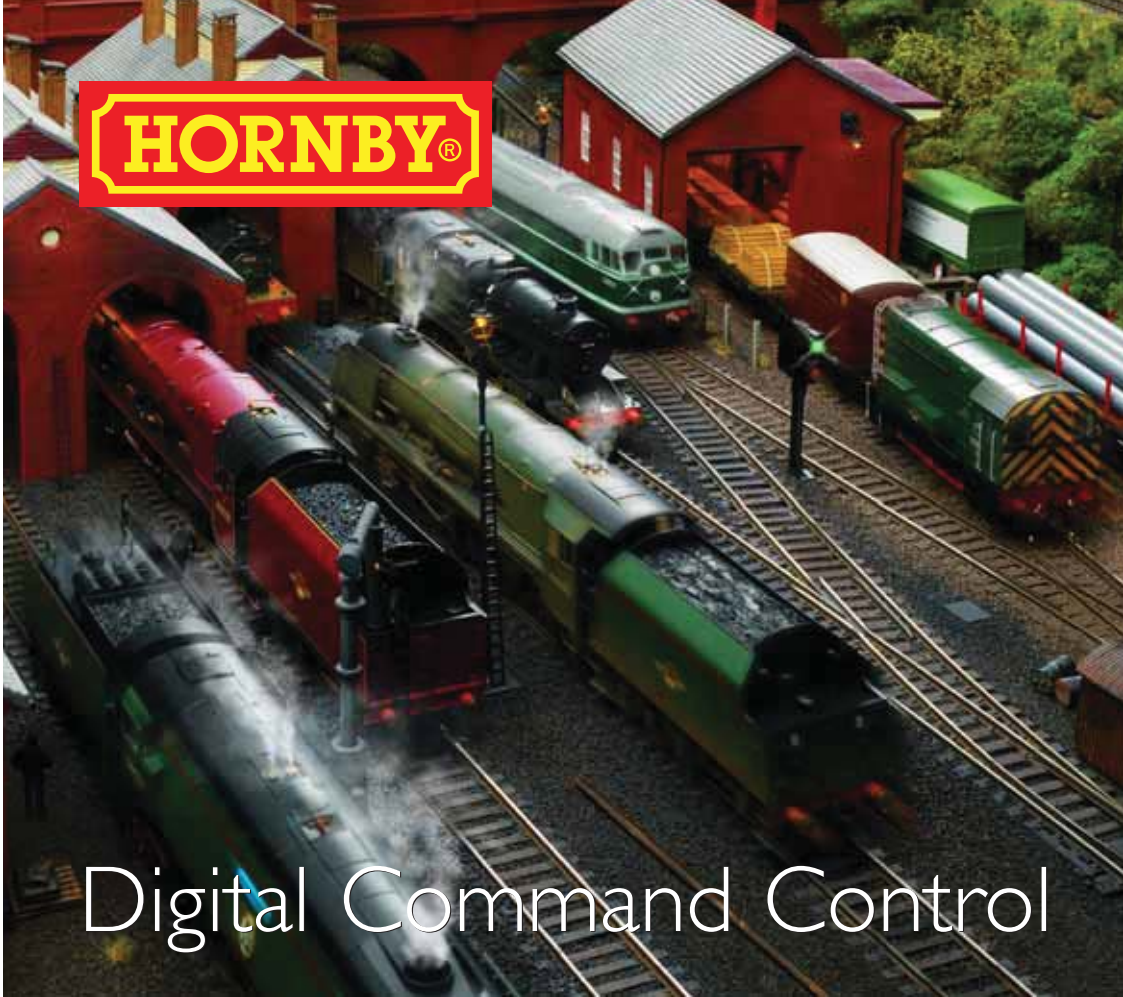
**TRAIN**

**CONFIG**

**DIGITAL**

**DIGITAL**

**'Select' Unit - Operators Manual**



# Digital Command Control

Welcome to the digital Hornby World of model railways. You are about to enjoy a new and exciting experience when it comes to controlling and operating a model railway.

Using the keypad that is on the **Select** unit locomotives can be “called up” individually and operated just like the real thing. Imagine a busy marshalling yard where the locomotives are positioned close together and where by using the **Hornby Select Digital Controller**, Hornby digital locomotives can be manoeuvred from one place to another without having to worry about the complexities of having to connect metres of wiring to a bank of switches and isolating sections and hoping the whole thing will work!

The Hornby **Select** Digital Control has the ability to address 59 DCC locomotives and 39 points or accessories. The following instructions are a guide on how to get the best from your Hornby **Select** Digital Control. Please take a little time to read carefully through the instructions before you start to assemble the track. Should you have any questions then you can contact Hornby via the website.

For more information visit: [www.hornby.com](http://www.hornby.com)

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# Select Unit - Fact File



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## Keypad

The keypad has 16 keys used to register and programme locomotives or accessories, set inertia or acceleration levels, direction settings, and for emergency stopping! The **Select** allows for 59 locomotives to be registered to the unit and 39 accessories. Each locomotive can be coded with up to 99 levels of acceleration or deceleration rate.

Locomotives have an ID number allocated to them from 1 - 59 and similarly accessories are given numbers of 61 - 99.

## Rotary Control

Once the locomotive required to run has been "called up" and the direction of travel has been decided the model is ready to go. By turning the rotary control clockwise the locomotive will move off with the speed being proportional to the amount the control knob has been rotated.

If an acceleration level has been chosen then a more gradual acceleration can be expected depending on the setting. To slow the locomotive down, the knob is turned anti-clockwise and similar to the acceleration programming, if a deceleration setting has been programmed into the loco the model will gradually slow.

## LCD Display

The LCD Display screen of the **Select** shows the number of the locomotive or accessory which is in the process of being selected. This number will flash until the **SELECT** button is pressed.

The number will remain on the screen until another locomotive or accessory is chosen. The screen also displays various other functions and operating instructions that the **Select** features.

## Power

The **Select** is powered by a 220-240V AC wall-mounted Switch Mode 1 Amp power supply.

The power supply allows the **Select** to supply 15V AC power to the track as well as power to an uncontrolled outlet, which can be used as an alternative electrical source to provide power for accessories etc.

A larger 4 Amp power supply is available for use with the **Select** unit, which will provide additional power to the tracks allowing for more locomotives to be run simultaneously.

# Setting Up

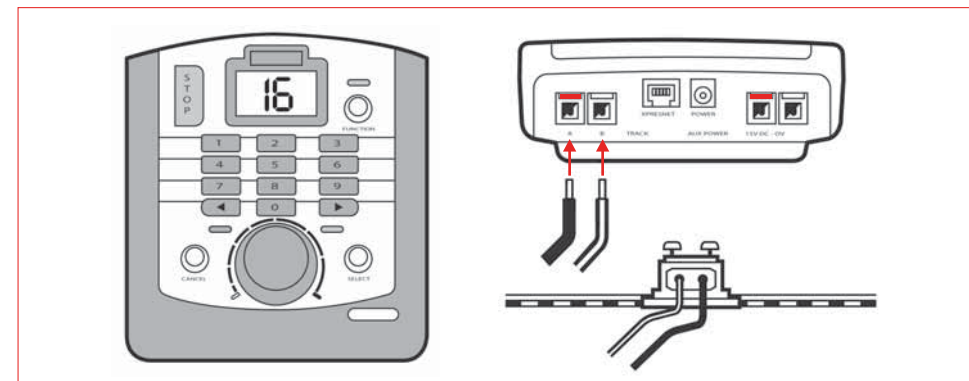
If your **Select** came with a train set please assemble the track as per the instructions with the set.

For DCC to operate at its full potential, it is important that the locomotives receive a strong and consistent signal from the **Select**. Ensure the track and connecting fishplates are clean and all fishplates are secure. It is also advisable to secure the track using R207 Hornby Track Pins to prevent movement and loose connections.

## Connecting the Digital Control Unit

1. Locate the terminals at the rear of the **Select** unit labelled 'Track'.
2. Locate the Track to the Controller Link Wire, and insert the black lead into Socket **A** and the black and white lead into Socket **B**. (These wires must not be inserted into mains socket outlets).
3. Locate the Power Input Track section on the track circuit.
4. Press down on the left hand button on the Power Input Track section and insert the black and white lead of the Link Wire into the socket and release the button.
5. Repeat the process, inserting the black lead into the right socket of the Power Input Track.

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## Connecting the Power Supply

1. Locate the Power Transformer with integral cable.
2. Locate the Power Input socket on the rear of the unit.
3. Take the Power Supply cable and insert the plug into the Power Input socket situated at the rear of the **Select** unit.
4. Plug the Power Transformer into the mains socket and switch on the power.

**Please Note:** There is no On/Off switch on the **Select** unit. Always ensure that the power supply is disconnected from the mains when not in use.

For more information visit: [www.hornby.com](http://www.hornby.com)

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# Quick Start

1. Place a "new" locomotive on the track. i.e. a new locomotive will have the default address "03" because it has never been programmed with any other address. If your locomotive has previously been programmed with an address, please turn to page 11.
2. Once the **Select** has powered up, '03' will automatically be shown on the LCD (Liquid Crystal Display).
3. Turn the Control Knob on the **Select** clockwise until the locomotive has reached the desired speed.
4. To slow down and stop the locomotive, turn the Control Knob anti-clockwise.

Direction of travel is controlled using the Direction arrows on the unit keypad. The currently selected direction is indicated by a green LED (Light Emitting Diode) below the button.

5. To change the direction of the locomotive, press the opposite direction button to the one currently selected. (Indicated by green LED under the direction arrow.)

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IT IS RECOMMENDED YOU STOP THE LOCOMOTIVE BEFORE CHANGING DIRECTION.

# Adding Locos - Programming

When you want to add further DCC locomotive to your layout you will need to programme their DCC decoders with unique addresses.

All locomotives are set to default address 03 at the factory. To change the code from No. 3 to another address follow the procedure below.

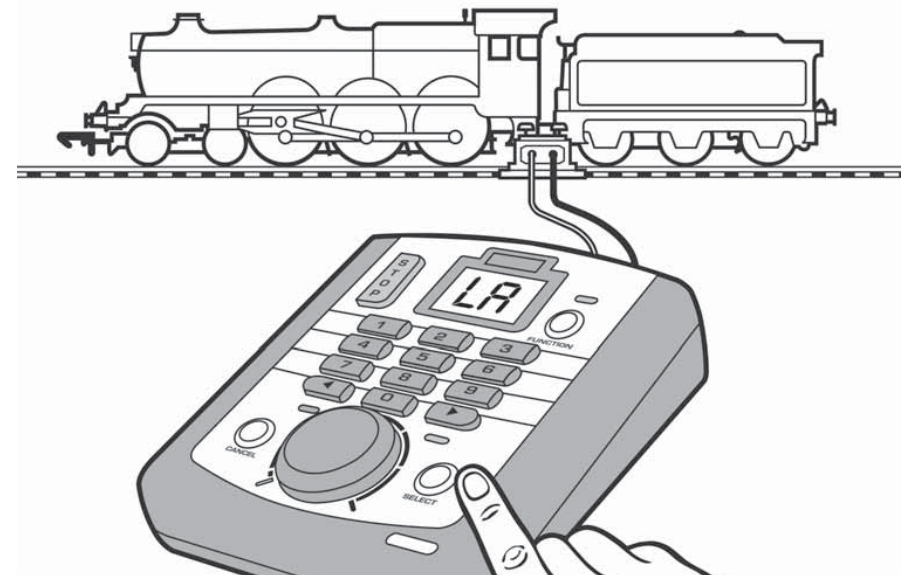
In the example below we are programming the decoder with address 1. The procedure is identical for any address that the **Select** can support.

PLEASE ENSURE THAT ONLY THE LOCOMOTIVE TO BE PROGRAMMED IS ON THE TRACK AND DISCONNECT ANY ACCESSORY DECODERS IF PRESENT.

## Address Programming

Note: For locomotives the **Select** is limited to address numbers between 1 and 59.

1. Place the locomotive you wish to program on the track.
2. Press and hold the "SELECT" button for 2 seconds. The LCD display will flash "LA" (Locomotive Address).
3. Press button **1** on the unit keypad. The LCD display will flash "01".
4. Press the "SELECT" button again to programme the locomotive decoder with address "01".  
The red LED will flash up to seven times during which the decoder will be accepting the new address. If the LED flashes eight times, it is advisable to reprogramme the Decoder again.
5. The locomotive is now programmed as No. 1.



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# Locomotive Acceleration and Deceleration


## Introduction

In real life a locomotive's mass affects how long it takes to accelerate to speed or decelerate i.e. slow down/stop.

All DCC decoders have programmable Acceleration and Deceleration rates. This allows a more realistic or "life like" control of the locomotive other than the usual "instant stop and start" of DC control systems.

The **Select** can separately programme both a decoder's Acceleration and Deceleration rates with any value between 1 and 99. The larger the number the longer the loco will take to reach the speed set by the **Selects** throttle. The Deceleration rate set will affect the time the loco takes to slow to a set speed or stop.


### Acceleration Programming:

1. With the locomotive on the track, Press and hold "SELECT" button until LCD flashes "LA".
2. Choose the locomotives address on the keypad. The LCD will now flash the locomotives address.
3. Press and release Direction button . The LCD will flash "AC" indicating "acceleration".
4. Using the keypad enter a new value for acceleration between 0-99.
5. Press and release the "SELECT" button. Acceleration programming is now complete.
6. Turn the Control Knob and the locomotive will gradually accelerate at the rate that was entered.

#### Please Note:

1 second per acceleration level (e.g. an acceleration level of 10 equals 10 seconds approximately).

### Deceleration Programming:

1. As point 1 above.
2. As point 2 above.
3. Press and release Direction button . The LCD will flash "dE" indicating "deceleration."
4. Using the keypad enter a new value for deceleration between 0-99.
5. As point 5 above. Deceleration programming is now complete.
6. Turn the knob anticlockwise and the locomotive will gradually decelerate at the rate entered.

# Running Locomotives and Throttle Control




## Running a Locomotive

1. Place one locomotive on the track and enter its address using the keypad. Press the "**Select**" button to select this locomotives address.
2. To operate the locomotive, turn the Control Knob on the Control Unit clockwise until the locomotive has reached the desired speed.
3. To slow down and stop the locomotive, turn the knob anti-clockwise.
4. Direction of travel is controlled using the direction arrows on the unit keypad. Generally the current selected direction is indicated by a green LED below the button. To change the direction of the locomotive, press the opposite Direction button to the one currently selected.

IT IS RECOMENDED YOU STOP THE LOCOMOTIVE BEFORE CHANGING DIRECTIONS.

## Running Multiple Locomotives

It is possible to have more than one locomotive running on the same track at the same time with the **Hornby Select Digital Control** unit. As an example it is assumed that there are three locomotives on the track with addresses 1, 2, and 3.

1. Press  on the keypad and then "SELECT". Turn the Control Knob and locomotive No. 1 will begin to move.
2. Press  on the keypad and then "SELECT". Turn the Control Knob and locomotive No. 2 will begin to move. Locomotive No. 1 will continue to run but will not respond to the controller until it is re-selected as per Step 1.
3. Press  on the keypad and then "SELECT". Turn the Control Knob and locomotive No. 3 will begin to move. Locomotives No. 1 and No. 2 will continue to run but will not respond to the controller until re-selected again as per Step 1 or Step 2.

## Running Multiple Locos and Throttle Control

When running many locos and reselecting a loco which you previously manually controlling, once the selected locomotive is chosen the control knob will not affect the speed of the selected locomotive until the knob is turned and reaches the last speed setting for that loco. Once reached the controller will once again become active and the speed of the locomotive can be changed.

This system of control avoids situations where a slow loco is selected after controlling a fast loco (i.e.. the control knob is left set at a high throttle setting) and then the slow loco suddenly accelerates.

# Further Tips and Notes

## Tip: Selecting Locomotives

The **Select** control units feature two methods of "calling up" locomotives that are stored in the unit's memory. The keypad can be used to enter locomotive addresses directly, or the "**Select**" button can be pressed to cycle through the list of stored addresses.

**Method 1:** To select a locomotive address directly using the keypad.

1. Enter the locomotive address on the keypad.
2. Press "SELECT" to confirm.  
The LCD Display will show the new locomotive address.

**Method 2:** To cycle through the locomotive address stored in the control unit's memory...

1. Press "SELECT" repeatedly until the locomotive required shows on the LCD display.
2. The locomotive displayed can then be directly controlled.



## Note: Locomotive Direction

It is a commonly accepted practice in the United Kingdom that when a locomotive is in operation, other than when shunting, the front of the locomotive normally faces to the left.

This is easy to determine when operating steam locomotives but not quite so obvious where a diesel or electric locomotive have double cabs. As a rough guide the front of a diesel has the roof fan closest to the front, while an electric locomotive's front is determined by having the pantograph furthest away. These are general guides but are not necessarily absolute.

After assigning an address to a Locomotive, it may not move in the direction indicated by the green LED on the control unit. This can be corrected by the following procedure.

## Correcting Locomotive Direction:

1. Ensure the locomotive is selected and stationary.
2. Press and hold "0" key and then press either the (  or  ).  
The LCD will display either "Fd" or "rd" for one second.  
The red LED will flash twice.
3. Turn the Control Knob clockwise to move the locomotive.
4. The locomotive will now move off in the corresponding direction.

This procedure can be used when for operational reasons on a layout it would be more convenient if the locomotive ran in the opposite direction from what is considered "default."

# Emergency Stop!

Running multiple locomotives on one layout has the potential for accidents and collisions to take place, if not properly managed. To help avoid such incidents, the **Select** features an Emergency Stop button. Pressing this button causes all activity on the layout to cease.

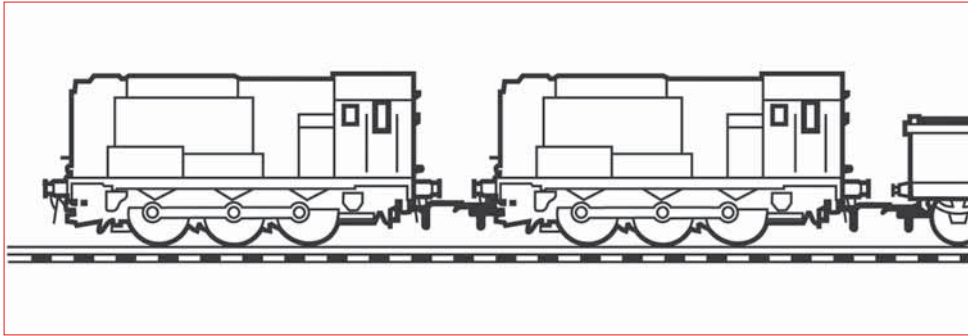
## Emergency Stop Procedure:

1. Press the "STOP" button located on the **Select** unit.  
The LCD display will flash "E5" (Emergency Stop).  
All locos will be commanded to stop. However, the rails will remain powered.
2. Turn the Control Knob fully anti-clockwise.
3. Press STOP again to cancel the "STOP Command." It will be noticed that all locomotives will remain stationary. To commence movement, each locomotive will need to be reselected and a throttle setting applied. This will give the operator time to reorganise each locomotive's movements.

# Double/Triple Heading (Basic Consisting)

## Double Heading

The **Select** is capable of controlling 2 locomotives at the same time as if they are one entity.



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### Creating a Consist: (Double Heading)

1. Place the locomotives you wish to Consist on the track. These should be programmed with individual addresses and set to the same direction.
2. Enter the address (between 0 and 59) you wish to use for the Consist, and press "SELECT". Ensure that the address used is different from the two locomotives you wish to Consist or any other loco on the layout. The LCD displays the chosen address.
3. Press and hold "FUNCTION" for 1 second. The LCD display will flash "A1".
4. Using the keypad, enter the address of the first locomotive you wish to add to the Consist.
5. Press **Select** to confirm. The LCD display will flash "A2".
6. Using the keypad, enter the address of the second locomotive you wish to add to the Consist. Press "SELECT" and the LCD will display the Consist address.
7. The locomotives will now be Consisted, and can be controlled together.

#### Please Note:

When locomotives are placed in a Consist the levels of acceleration and deceleration will automatically default on the Consist locomotives to "0". If acceleration and deceleration levels are required follow instructions as per page 8. Note: When the Consist is dissolved the levels of acceleration and deceleration will remain at the levels set during Consist.

## Triple Heading

To consist with 3 locomotives use one of the 3 addresses as the Consist address. For example, use the following steps to create a Consist using 3 locomotives with Addresses, No. 1, No. 2 and No. 3.

1. Place the three locomotives you wish to Consist on the track.
2. Enter the address you wish to use for the Consist, in this example No. 1, and press "SELECT". The LCD displays the chosen address.
3. Press and hold "FUNCTION" for 1 second. The LCD display will flash "A1".
4. Using the keypad, enter the address of the first locomotive you wish to add to the Consist (No. 2).
5. Press **Select** to confirm. The LCD display will flash "A2".
6. Using the keypad, enter the address of the second locomotive you wish to add to the Consist (No. 3). Press "SELECT" and the LCD will display the Consist address.
7. The three locomotives will now be Consisted, and can be controlled in unison.

#### Please Note:

The **Select** can Consist a maximum of 3 locomotives.

### Dissolving a Double or Triple Consist:

1. Ensure all locomotives in the Consist are on the track.
2. Enter the address of the Consist you wish to delete and press "SELECT". The LCD displays the chosen address.
3. Press and hold "CANCEL" for 1 second. The LCD display will flash "CA".
4. The LCD will flash each locomotive address in the Consist for 2 seconds each.
5. The Consist has now been dissolved.

#### Please Note:

As the **Select** is equipped for basic consisting some speed disparity between locomotives may occur. When the Consist is dissolved the levels of acceleration and deceleration will remain at the levels set during the Consist.

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# Analogue Locomotive Control

The **Select** is capable of controlling a standard DC/analogue locomotive, i.e. a locomotive that is not fitted with a DCC decoder. However, this practice is not recommended, it is better to fit decoders to all your locomotives. This feature is accessed by selecting address "zero" (00) on the **Select** controller.

Note: There is no locomotive actually programmed with "0" as an address, this is not possible. But, selecting "0" on the **Select** tells the **Select** to control a DC (analogue) locomotive by altering the DCC signal on the track.

## Running an Analogue Locomotive:

1. Press  on the keypad. Press "SELECT" to confirm. The LCD will display 00.
2. Turn the Control Knob clockwise to move the locomotive.  
Pressing the  or  buttons on the keypad controls the direction of the locomotive. The acceleration and deceleration of the locomotive is controlled via the Control Knob only.

### Please Note:

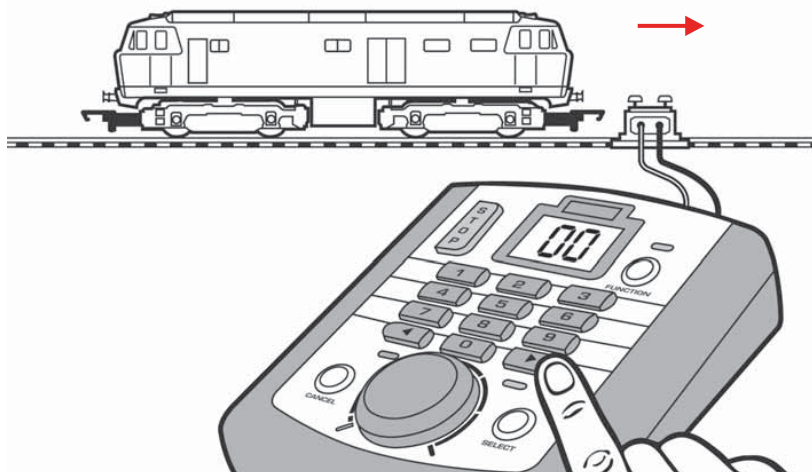
If a digital locomotive is called up for operation the analogue locomotive will continue to run at the speed set prior to the digital locomotive being operated.

It is not possible to program into the analogue locomotive acceleration or deceleration levels.

When an analogue locomotive is placed on the track it will emit a high pitched noise when stationary, which will become louder when running, this is normal.

Only one analogue locomotive can be run on a digital layout at any one time.

If you do not intend to run any analogue locomotives on your layout it is recommended that DC running capability is disabled. See page 19 regarding "resetting" the **Select**.



For more information visit: [www.hornby.com](http://www.hornby.com)

# Locomotive Function Control

The **Select** unit is capable of remotely switching on and off up to 29 functions (F0-F28) which may be incorporated in to some locomotives. For example the locomotive may be fitted with lights, engine running sounds and a horn or whistle. Using the **Select** each function can be switched on or off.

Note: When using the **Select** to control functions, some consideration should be given to the type of function being controlled. Functions, e.g. lighting, require a simple ON/OFF toggle function. The **Select** offers exactly this type of function control. However, some decoder functions may activate for a short period of time and then switch OFF. This may be the case with a "whistle" on a sound decoder. These types of functions require momentary switching where the function is turned ON and then OFF again after a short duration.

On the **Select** once the function key is enabled it remains "ON." If a specific sound is designed to play once for a predetermined duration, the function key will need to be pressed again to return the **Select** to "function off" status before it is possible to activate the same function again.

## Turning ON/OFF F0.. (usually the locos lights.)

Make sure the desired locomotive's address is on the display.

1. Assuming that the lights are currently OFF. Quickly press the "Function" button. The lights will turn ON.
2. The display will then show for about 3 seconds the text "On" confirming the function action you have just carried out. The display will then revert to the locomotive address.

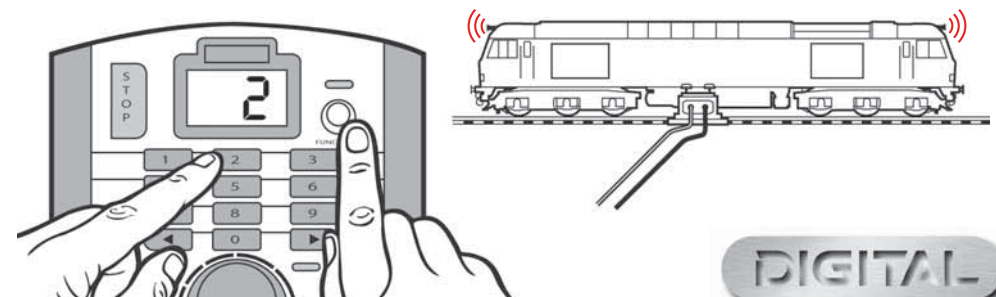
To turn the lights OFF again press the "FUNCTION" button again "oF" will be displayed.

This is an example of "toggle" action switching.

## Turning ON/OFF .. Decoder Functions F0 to F28...

1. With the desired loco's address displayed "on screen." Simply enter the function number you wish to control, then press the "FUNCTION" button. The function will turn ON or OFF depending on it's current state.
2. The display will then show for about 3 seconds either "On" or "oF" confirming the function action you have just carried out.

The display will then revert to loco address.



DIGITAL

# How many locos can the Select run?

## Control Up to 10 Locomotives

The **Select** unit can have stored in its memory 10 digitally controlled locomotives i.e. any one time the **Select** can have running (providing the power is available) or on standby, 10 locomotives.

This is more than sufficient for an above average layout, however should an eleventh loco be "called up", one of the previous 10 locomotives will be removed from **Select's** memory. The locomotive that is removed, will be the locomotive that has the lowest current Speed address compared to the other 9.

Alternatively, if all 10 locomotives are stationary, the locomotive with the lowest address number will be removed.

## 18 Power Boosters

The transformer included with the **Select** unit will probably provide enough power to allow for three locomotives to be running at any one time, providing the models used are fitted with power efficient motors. Should more power be needed the **Select** unit is capable of being connected to a R8113 Hornby 4 amp Power Unit which should provide enough power for an average layout.



If under special circumstances even more power is needed it may become necessary for a "Booster" unit to be fitted. This will entail the track circuit to be broken up into isolated sections to which the Boosters are connected. Please contact your Hornby dealer or Customer Care for more information regarding the use of Boosters and how to connect them to your layout.

# Re-setting the Select



Re-setting the **Select** will remove all previously assigned addresses from the unit's memory (with the exception of No. 3). Groups created for Double Heading will also be cleared from the units memory.

RE-SETTING THE CONTROL UNIT DOES NOT REMOVE ADDRESSES FROM LOCOMOTIVES.

To perform a reset:

1. Press and hold the STOP button +  + . The LCD display will display "C5" (Command Station).
2. Press **Select**. The LCD will display "0".
3. Press **Select**. The red LED will flash 5 times to confirm the settings. The LCD will display "03".
4. The **Select** unit will now be restored to its factory settings.

## How to switch OFF Analogue/DC locomotive Support

1. Press and hold the "STOP" button +  +  for 1 second. The LCD display will display "C5" (Command Station).
2. Press "FUNCTION" to toggle between C5 (Control Station) and HC (Hand Controller) modes. Ensure C5 is shown.
3. Press "SELECT" to select C5 mode. The LCD will flash twice and display "0".
4. Press "FUNCTION" to toggle between 0 (enable) and -0 (disable) to enable/disable analogue locomotive modes.
5. Press "SELECT" to confirm your choice.  
The RED LED will flash 5 times to confirm the settings.  
The LCD will display "03".

# Walkabout Mode

The **Select** unit is capable of having up to 7 Select Walkabout units connected to it. A "Walkabout" **Select** is basically any **Select** controller connected to a designated master **Select**. A single **Select** is supplied with a train set or as a boxed item is supplied with its own wall mounted power supply. When used as a "walkabout" the power supply is not used. It is possible to buy the **Select** without a power supply. This is supplied in a box designated "Select walkabout."

The addition of **Select** "walkabouts" to the first **Select** will provide independent control of up to 8 locomotives providing electrical power is available. It is also possible that a locomotive can be passed from one controller to the next and then the next in much the same way as a full size train is handled on the main line.

## Please Note:

When the **Select** and a **Select** "Walkabout" are connected together, power is only connected to the "Master" **Select**. The Master **Select** is connected to the track and supplies the power for any "walkabout" connected to it.

Please see the diagram for information re the correct way to connect **Select** "walkabout" on page 22.

The **Select** may also be used with the Hornby ELITE advanced controller as a "walkabout." However, it should be remembered that the **Select** is preprogrammed with address ranges for locomotives (1-59) and accessories (61-99) which may not be suitable for operations with your ELITE system and layout.

## Connecting the Walkabout

1. Locate the XpressNet port situated at the rear of the designated "Master" **Select** Command Station unit and insert an RJ12 buddy cable. LCD will display "03". It is recommended that you use cable R8266 for interconnection of **Selects** and **Select** "walkabout". Other off the shelf RJ12 cables may not operate correctly.
2. Locate the XpressNet port at the rear of the **Select** Walkabout unit and insert the other end of the RJ12 buddy cable. LCD will display "HC".
3. Press "SELECT" to confirm. LCD will display "Ad" (Address).
4. Insert a number (1-31) which will be the Walkabout's address. For this example, press "1" and the "SELECT". Red LED will flash 5 times. LCD will then display the default setting/locomotive "03".
5. The Walkabout is now ready for use.

## Operation 1 - Control of one locomotive by the Select and Walkabout

### Example 1a: Using Locomotive #1

**Select Unit** Press "1" and then "SELECT". LCD will display "1".

**Walkabout:** Press "1" and then "SELECT". LCD will display "1".

Both units will now have the ability to control locomotive No. 1.

### Example 1b: Using Locomotive #1

1. Turn the **Select** control knob so locomotive No.1 starts to move.
2. Next turn the Walkabout control knob.  
The LCD, on the **Select** will flash "01" to indicate control of the locomotive is now being handled by the Walkabout.
3. Now turn the **Select** control knob so that the locomotive stops and the Walkabout LCD will start to flash. This denotes that the **Select** unit now has control.
4. Next turn the Walkabout control knob so that the locomotive starts to move. The **Select** LCD display will not flash, indicating that the **Select's** control knob is fully in the "Stop" position.

## Operation 2 - Controlling two or more different locomotives

**For this example locomotive Nos. 1 and 2 are assigned to the Select and Walkabout.**

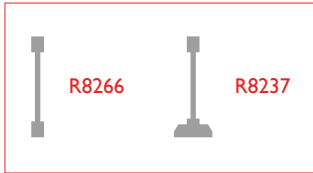
1. Assign locomotive No. 1 to the **Select**.  
The LCD will display "01"
2. Using the Walkabout key pad assign locomotive No. 2 to the Walkabout.  
The LCD will display "02"
3. Both units will now operate independently from each other.
4. Both units can be used to "call up" and address other locomotives as per the Operating Instructions. (See page 10).

It is possible for locomotives to be interchanged between the **Select** and the Walkabout while they are in motion. During this operation the locomotive concerned will remain at the set speed before being transferred. Once the control knob is moved full control is obtained.

Either the **Select** or the Walkabout can be used to programme locomotives. To program a locomotive, ensure all locomotives are removed from the track, other than the one to be programmed, and disconnect all point decoders. It is recommended that a Programming Track is used. See page 25.

If the the Master Select or "Walkabout" **Select/s** take control of the locomotive you are currently controlling then the display on the "non-controlling" units will flash the locomotive address.

# Master Select Connected to Select 'walkabout' Units

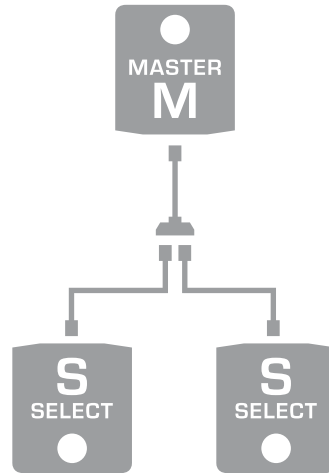


**Note:** The interconnection architecture is an 'inverted Xmas tree'  
**Note:** Only connect power to the Master Controller.  
**DO NOT CONNECT POWER TO ANY 'walkabout' SELECT**  
**Note:** Only the designated "Master" **Select** is connected to the track.

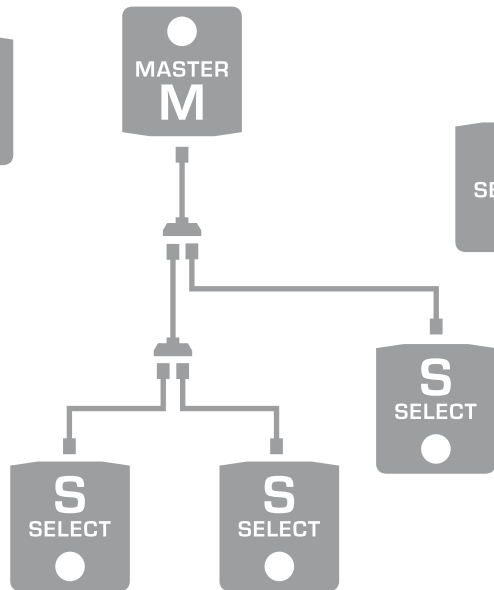
1 'walkabout' Units



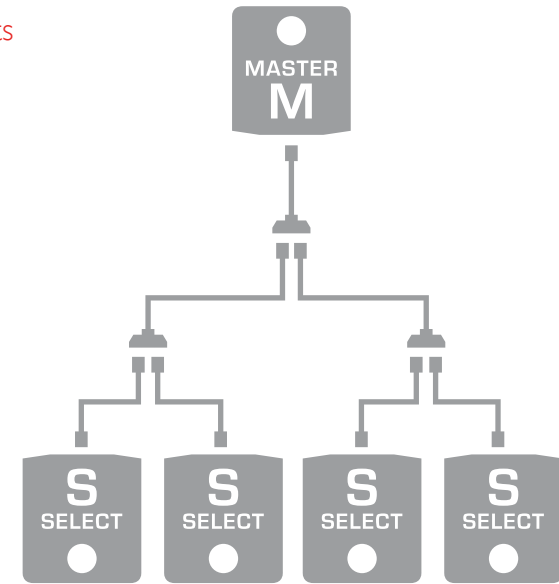
2 'walkabout' Units



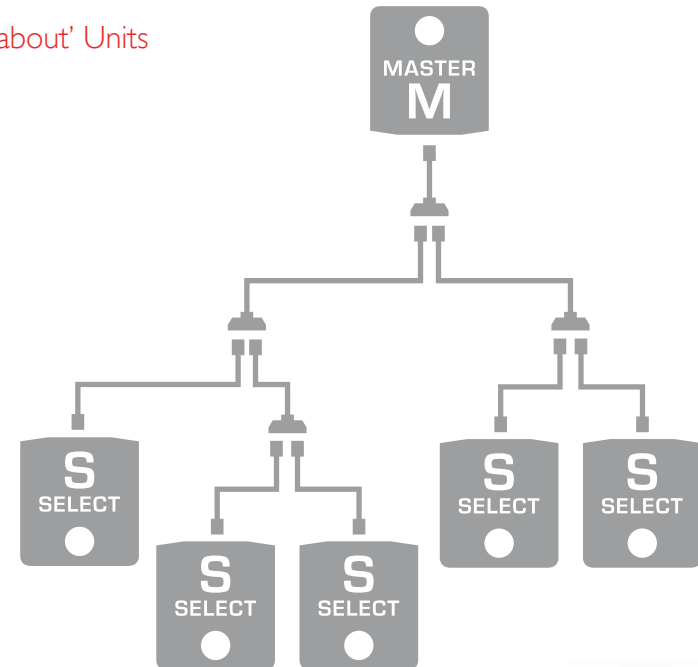
3 'walkabout' Units



4 'walkabout' Units



5 'walkabout' Units



# Speed Step Change

The **Select** by default divides the full speed range for a locomotive decoder into 128 discrete speed steps. This suits most modern decoders. However, in addition to the default 128 speed steps the **Select** can be set to transmit 14 or 28 speed steps to control the full speed range. This is set on a per locomotive basis, thus allowing varying speed step capability for all locomotives on the layout.

**Note:** Fewer speed steps will give a coarser control of the locomotive when compared to the full default 128 speed steps.

**Note:** All Hornby decoders are optimised for 128 speed steps.

**Note:** Changing speed steps is a controller function. Nothing will be changed in the decoder: i.e. you do not have to have the locomotive on the main or programming tracks when carrying out this procedure.

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There may be occasions when locomotives fitted with older generation decoders/motors may be required to be controlled by the **Select**. To get optimum control with these locomotives, it may be necessary to change the speed step range sent from the controller.

## Changing speed steps associated with a loco:

In the procedure described below we will change the number of speed steps transmitted to locomotive 1.

With the locomotive address of the locomotive to be affected by the speed step change on the **Selects** display.

1. Press and hold "FUNCTION" + "CANCEL" for 1 second.
2. The Speed Step will increase with each press of "FUNCTION" + "CANCEL", 14, 28, and H5 (128).
3. Press "SELECT" to confirm the required Speed Step setting.

For more information visit: [www.hornby.com](http://www.hornby.com)

# Programming Track

When addressing locomotives and Hornby Point/Accessory Decoders it is important that all other locomotives are removed from the track. It is also important that all point decoders are disconnected from the layout.

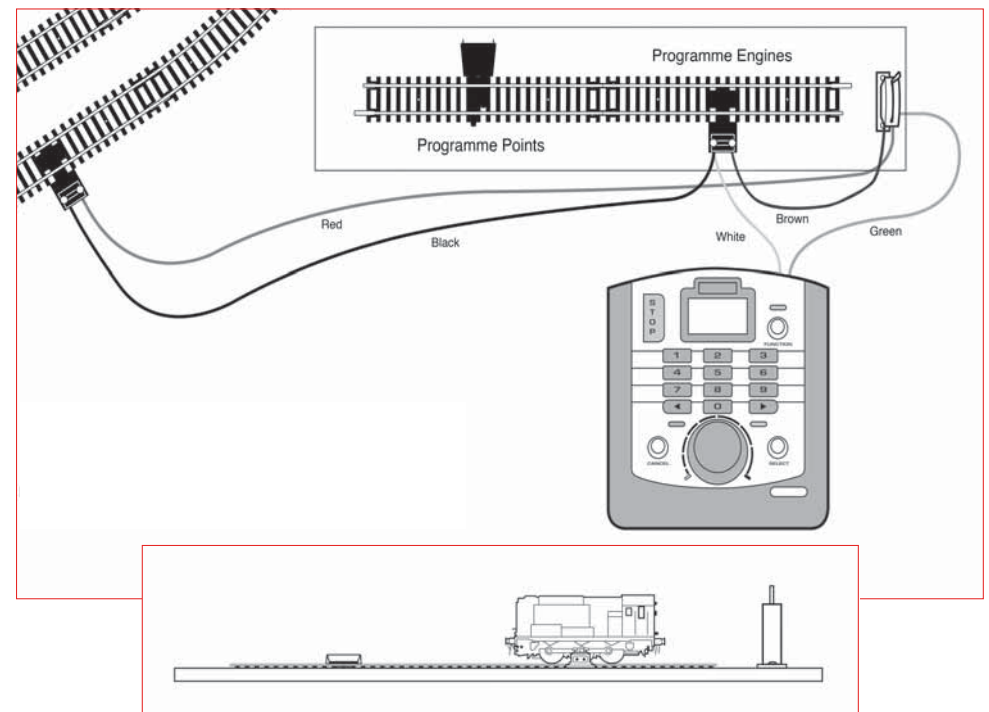
This can become rather difficult at times, therefore it is suggested that a Programming Track is used for the allocation of addresses. A Programming Track is a length of track electrically isolated from the main circuit comprising one Hornby R8206 Power Track and an R046 lever switch. To initiate the Programming Track. (see diagram below) use the Lever switch to disconnect the **Select** from the "main" track and connect "Programming track."

When you have completed programming, return the lever switch to its original position to resume locomotive control.

To programme a locomotive follow the instructions on Page 9.

In respect of the older R8216 and the current R8247 Point/Accessory Decoders it is not necessary for them to be in position and connected to their respective point motors for them to be programmed. It is much easier if they are programmed on the Programming Track. This is simply done by connecting the Point/Accessory Decoder to the track, (using the R602 Power Clip) supplied with the unit this will allow for the programming to be carried out as described on Page 26.

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DIGITAL

# Hornby Digital Decoders

The four function R8249 **Hornby Digital Decoder** features:

**Load compensation (Back EMF):** Locomotive will run at a consistent speed either on the "flat" or on gradients.

**Four ON/OFF function outputs:** Two of the function outputs are dedicated for the direction of lights-front and rear.

**Analogue operation:** Locomotives fitted with a **Hornby Digital Decoder** can be operated on an analogue system but without the benefits of digital control.

**Overload cut-out:** The R8249 decoder is rated at a 500mA continuous current and 1Amp for a short period. Should this be exceeded then the decoder will overload and cut out. This action protects not only damage to the decoder but also the locomotive.

### Important Note:

**The locomotive must be removed from the track before installing or removing a locomotive decoder.**

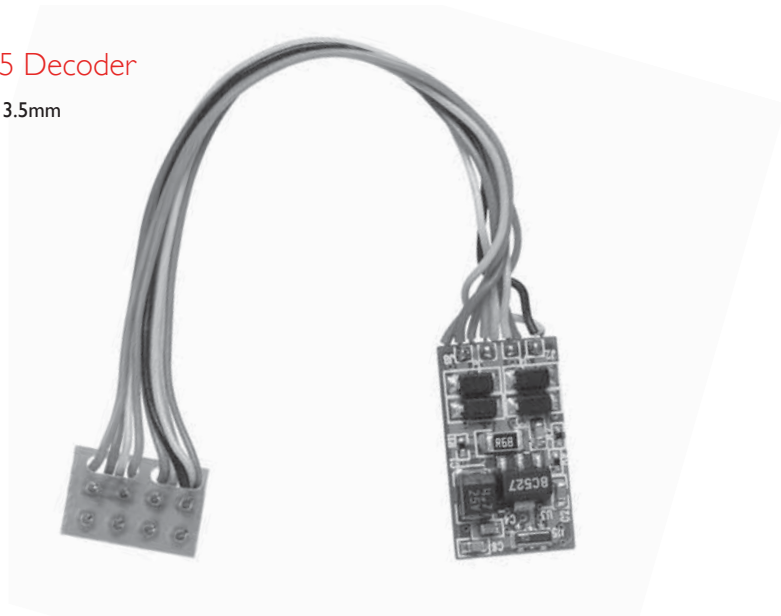
**To prevent the risk of electro-static damage occurring to the decoder, NEVER directly touch the component parts of the decoder circuit board. Always handle by the "edges."**

**Note:** The current R8249 decoder replaces the older R8215.

Also, available from Hornby is the R8245 Sapphire decoder which has many advanced features. Call Customer Care for more information.

## Hornby R8249/R8215 Decoder

Dimensions: 17mm x 10mm x 3.5mm



For more information visit: [www.hornby.com](http://www.hornby.com)

# Hornby Point/Accessory Decoders

The Hornby **Select** Digital Control is capable of operating up to 39 points or solenoid operated accessories when used in conjunction with the Hornby R8247 Points Decoder Module. The Point Decoder Module can operate up to 4 points or solenoid operated accessories.

## Fitting the Hornby Point/Accessory Decoder:

1. Connect the wires from the point accessory motor to the first available input terminals on the decoder. Then connect the wires from the point decoder to the track or Programming Track (see page 22). Full wiring instructions are supplied with each Module.

## Addressing Points/Accessories:

Addressing a point motor or accessory that uses a solenoid motor is very similar to addressing a locomotive. For consistency it is advisable that the first point motor / accessory is addressed No 61. Once addressed, the other three outlets will be automatically programmed to 62, 63, 64. Thereafter, the Accessory Decoder should be programmed in consecutive blocks of 4 (i.e. 65, 69, 73, 77 etc). When programming Point/Accessory Decoders, ensure that other Point Decoders are disconnected from the track. Alternatively, connect the Point and Accessory decoder to be programmed to a programming track if present. Ensure that you have selected the programming track with the lever switch before carrying out the programming procedure. See page 25.

## Programming:

1. Press and hold "SELECT". The LCD display will flash "LA".
2. Enter the first address (61) on the keypad, and press "SELECT". The red led will flash up to seven times during which the decoder will be accepting the command. If the LED flashes eight times, it is advisable to re-programme the Decoder again.
3. The point/accessory is ready for use. The other outlets have been automatically coded 62, 63, 64.

### Please Note:

1. If address 60 is programmed, only one port of the Point Decoder will be programmed.
2. If address 97 is programmed, a block of four addresses will be programmed (97, 98, 99, 100) but, it is only possible to access three ports of the Point Decoder because address 100 is not selectable on the **Selects** display.

## Operation:

Using the direction buttons (◀ and ▶) the points/accessories can be controlled.

With the address of the accessory to be controlled on the **Selects** display.

1. Press ▶ Point changes. The LCD will display "P5" for one second. The corresponding green LED will illuminate for one second.
2. Press ▶ Point changes. The LCD will display "P6" for one second. The corresponding green LED will illuminate for one second.

DIGITAL

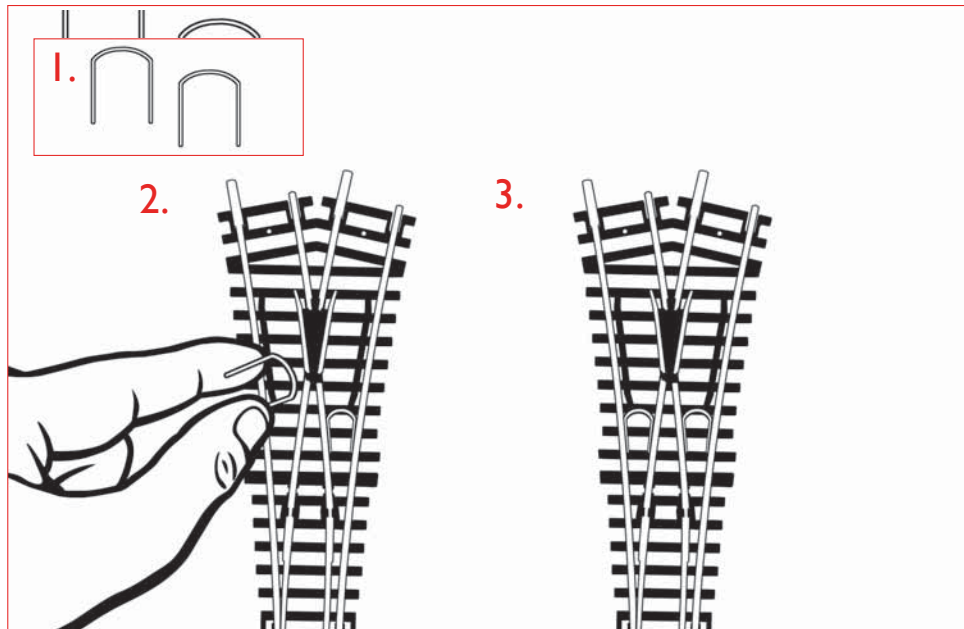
# Making Points 'Live'

For your layout to operate efficiently it is essential that all the track is "live."

Hornby points are self isolating therefore it is necessary to fit each point with 2 x R8232 **Hornby DCC Electric Point Clips** in order that power will be fed to all track connections from the point.

Please note that these clips are adequate for situations where you wish to make a siding live. However, if your point configuration allows locomotive to move from one track loop to another it is recommended that power is supplied via "link wires" to the other track section.

Some of these clips are included in the Hornby DCC sets, further clips and wire links are available from Hornby stockists.



## Please Note:

Always use Hornby Point Motors with Hornby Points.

When wiring a Hornby Point Motor to a Hornby Digital Point/Accessory Decoder, the connections are:

- + Red wire
- c Black wire
- Green wire

# Glossary

## Acceleration

It is possible to change the rate at which a locomotive accelerates via programming functions of the controller. See page 10.

## Accessory Decoder

An electronic decoder designed for use in track side accessories such as points or signals. An accessory decoder is not for use in a locomotive.

## Address

A number used to identify a locomotive or accessory that is either equipped or linked to a Decoder.

## Bus

See "Power Bus".

## Command Station

The Command Station is the 'brains' of a DCC system. A Command Station is in essence a micro-computer/controller that communicates with the decoders that are located either in a locomotive or connected to accessories. The computer transmits signals to the decoders instructing them what to do, such as accelerate, decelerate, brake or switch lights on or off.

## Configuration Variable (CV)

A technical term referring to the operating information of the particular locomotive or accessory that is stored on the specific decoder. This information will remain "set" until changed using the Command Station.

## Consist/Consisting

Consist is an American term, but in the UK it is known by Double or Triple Heading. This is where two or more locomotives are brought together and function as one.

There are three types of Consisting (1) Basic consisting where the locomotive decoders in the Consist have the same address. (2) Universal Consisting where the Consist information is stored in the Command Station. (3) Advanced Consisting is where the Consist information is stored inside the decoder.

## DCC

**D**igital **C**ommand **C**ontrol. The application of computer technology to control the movements of locomotives. Each locomotive is fitted with a decoder (or 'chip') which is uniquely programmed and recognises its own identity and responds only to those control signals which are addressed to it.

DCC also allows a wide range of extras including controllable lighting and on-board sound. The accepted standards have been laid down by the NMRA (National Model Railroad Association) an American Association.

# Glossary (Continued)

## Deceleration

It is possible to change the rate at which a locomotive decelerates via programming functions of the controller. See page 10.

## Feedback (Load Compensating)

This allows a locomotive to remain at a constant speed regardless of loads being pulled or incline being negotiated.

## Locomotive Decoder

A small PC board which contains a 'chip' that stores control information; normally fitted in locomotives. The Command Station sends coded information to the decoder which can then control the locomotives speed, direction and any operating functions that the locomotive may have, eg. lights.

Locomotive Decoders can be fitted to accessories that have a motor as a drive such as the R8131 Hornby Operating Conveyor or the R8132 Hornby Tipper set.

## Occupancy Decoder

A unit that can detect the presence of a locomotive on a specific section of track and can provide the appropriate information as 'return' data.

## Power Bus

Copper strip or heavy gauge wires that are used to distribute power from the Select/Elite/DCC Controller or a Power Booster to many locations around a track/layout.

## Power Booster/Power Station

A Power Booster or Power Station is, as the name implies, there to provide a boost of power to the track. This can occur if a larger than normal quantity of locomotives are required to be running on the track at the same time. If the transformer already fitted cannot handle this number then it will be necessary to section the layout and fit a Power Booster.

This Booster will not only provide more current to the drive locomotives but also boost the signals to the Decoders. It is suggested that all power wiring to the track is optimised before introducing power boosters. Please contact Customer Care for more information.

## Programming

The process of assigning an Address to a locomotive or accessory (points or signals). The process of programming sends a signal containing a numerical identifier to the locomotive being programmed.

## Programming Track

A section of track isolated from the main layout purposely for programming locomotives. Programming on a Programming Track negates the requirement of removing other locomotives from the main layout.

## Speed Steps

The full speed range for a locomotive decoder is usually divided into 128 discrete speed steps. This suits most modern decoders etc. However, in addition to the default 128 speed steps the **Select** can be set to transmit 14 or 28 speed steps to control the full speed range. This is set on a per locomotive basis thus allowing varying speed step capability for all locomotives on the layout.

## Stall Current

Stall Current is the maximum current draw in amperes that a locomotive is capable of when stalled. If the armature of a motor is prevented from turning and the maximum voltage is applied the current draw of the motor is known as the 'Stall Current'.

## Throttle Notches

Determines whether a locomotive is controlled with 14, 28 or 128 speed steps.

## XpressNet

A high-speed communication protocol used for connecting Digital input devices together.

## XpressNet (XBUS) Input Devices

Devices using the XpressNet protocol to control a digital layout.

### LCD Display Guide

<b>LA</b>	Locomotive Address.	<b>CA</b>	Clear All
<b>AC</b>	Acceleration	<b>ON</b>	You have turned "ON" a function
<b>dE</b>	Deceleration	<b>oF</b>	You have turned OFF a function
<b>Fd</b>	Forward Direction	<b>C5</b>	Control Station
<b>rd</b>	Reverse Direction	<b>HC</b>	Hand Controller
<b>E5</b>	Emergency Stop	<b>H5</b>	Speed Step 128
<b>A1</b>	Consist Address One	<b>CE</b>	Command Error from XpressNet
<b>A2</b>	Consist Address Two	<b>OL</b>	Short Circuit or Overload Please see Trouble Shooting for full details.



# Trouble Shooting

## Locomotive will not run

Check that all the wiring is correctly connected to the track and Controller and that the transformer is plugged into the wall and is switched on.

Ensure that the correct loco address is displayed on the LCD.

Check that the "STOP" button has not been pressed accidentally.

## The trains do not run smoothly

The locomotives require a clean track so that they can receive their information from the **Select**, therefore ensure that the track is clean. Use an R8087 Track Rubber to remove dirt from the track and wheels of the locomotive. Do not use any other abrasive material as this will permanently damage the track and/or wheels.

## All locomotives move off together

Make sure that a locomotive has not been given a new address while other locomotives have been on the same track. To avoid this it is advisable to use a Programming Track to add new addresses to locomotives and Hornby Point/Accessory Decoders. See page 25.

All locomotives appear to have the same Acceleration/Deceleration levels.

## System keeps cutting out

Check that there is no metal across the track that may be causing a short circuit. Also check that the system is not being overloaded by too many locomotives trying to run at the same time.

The 1 amp transformer included with the **Select** should within reason be capable of providing enough power to run three locomotives. If in doubt consult your local dealer or the Hornby DCC Helpline.

**Do not** connect any other controller to the Hornby **Select** other than a Hornby Elite or another Hornby **Select** Unit. When using a **Select** with the Hornby Elite ensure that the **Select** is not connected directly to a mains transformer. Similarly, when using two **Selects** which are connected together only one of them must be connected to a mains transformer.

**Do not** run coreless motored locomotives on a DCC layout without them having a decoder fitted.

If in doubt please contact Hornby or your local dealer for advice.

Tel. +44 (0)1843 233525 Web. [www.hornby.com](http://www.hornby.com)

Hornby PLC, Westwood Industrial Estate, Margate, Kent CT9 4JX.

## Overloads Explained

The **Select** will indicate an overload condition in one of two ways, please see below for a full explanation.

## Select Overload Indication

### Select Power Supply Options..

The standard **Select** comes supplied with a 1 Amp Power Supply (P9100W). It is also possible to increase the power available to the track by using the **Select** with the optional 4 Amp power supply (P9300W or the older C7024.)

### Overload Protection

The **Select** is capable of handling up to 4 Amps of current to enable the use of the 4 Amp power supply. This means that the overload detection system in the **Select** is set to trigger at approx 4 Amps. Clearly if the **Select** is used with a 1 Amp power supply (standard) the power supplies' own protection system is going to operate before the **Selects** built in system.

A track short will cause a current overload condition... i.e. either the **Select** or the 1 Amp power supply will detect the overload.

### Overload indication Select and 1 Amp power supply.

The 1 Amp power supply detects the overload state and self protects by supplying a reduced voltage to the **Select**. The **Select** can't detect the overload as it is designed run at up to 4 Amps. Due to the reduced voltage the **Select** will react by restarting.. if the overload is still present a "dimming" of the LCD display will happen and some display elements will be missing.. i.e. the version number at start up will attempt to be displayed either 10 or 11.

### Overload indication Select and 4 Amp power supply.

The **Select** will detect the overload as it has a slightly lower overload detection threshold than the 4 Amp power supply's own protection system. This means the **Select** will shutdown its output to the track; and indicate "OL" on its LCD display. The **Select** does not "restart" as the power supply voltage has not been reduced.

## Diagnosing the cause of an Overload i.e. is the short being caused by the Select or something on the layout?

In the case of an overload indication please carry out the following procedure.

1. Switch the **Select** off.
2. Disconnect the track from the track output of the **Select**. If you have the AUX Output connected to any accessories etc, disconnect this as well.
3. Turn the power on.

If the **Select** still indicates an overload.. contact Customer Care to arrange a repair of the unit.

If the **Select** starts up normally, finishing showing 03 on the display in the usual way, then the problem will be on the track/layout.

## Diagnosing Layout and Track issues that cause overloads.

**Only carry out the following procedures once you have identified that the Select is OK... see above.**

The main diagnostic process is a process of elimination. Only diagnose one thing at a time.. i.e. the Track output or the AUX output if used. Take a look at the example below for a basic guide to layout diagnostics.

With only the Track connected, with the **Select** powered off, remove all locos and power up the **Select**, if the **Select** starts up normally, the short is being caused by a loco. You will need to go through a process of elimination to work out which one.

If the "overload short" persist with no locos on the track, then the issue maybe a track short. Examine the track for any debris that may be causing the problem. If the "short" is not obvious, again you will have to apply a process of elimination to pinpoint the cause/location of the overload.

## The Select display is dim or looks wrong?

See the section below re "Overloads"

## The Select is dead?

Is it on?

## The Select is "dead" when disconnected from my layout.

Contact Customer Care to organise a repair.

## Why does my loco move when the control is set to zero?

Sometime when a loco is placed on the main track it starts to move without touching the controller's throttle.

A previously accessed address has had the throttle set to "go." i.e. "Speed greater than zero" Try going through the loco addresses in the controllers memory and setting each to zero throttle.. this may resolve the problem. Remember you can quickly cycle through all loco addresses in the **Selects** memory by repeatedly pressing the "SELECT" button.

## My DC analogue loco runs in the wrong direction?

Reverse the track connections. This will not change the direction of running of locomotives fitted with DCC decoders.

## Safety Notes

This product is not suitable for children under 14 years because of small parts which can present a choking hazard. Some components have functional sharp points and edges. Handle with care.

This product is intended for indoor use only.

This **Select** Digital Control system is only to be operated with the Hornby recommended transformers.

The transformer included is not a toy; it is a "Transformer for Toys".

Before use the transformer should be examined for damage to the casing, plug pins and cables. In the event of such damage, the **Select** unit should not be used until the transformer is replaced with a new Hornby recommended unit. Never attempt to open the unit yourself.

Before cleaning any part, disconnect the transformer from the mains electricity supply.

Do not use liquid for cleaning.

Wires without a connecting means are not to be inserted into outlets.

The output terminals of the transformers must not be connected directly, or indirectly, to the output of any other mains power supply.

Please retain these details and the address for future reference.

## Guarantee

All Hornby products are guaranteed against defects in materials and workmanship for a period of 6 months and Hornby Digital electronics for 1 year from the date of purchase.

To qualify for the guarantee, the product must have been used and maintained according to the manufacturers instructions, and will only be covered when used in conjunction with officially approved Hornby accessories and components. While every possible care and attention has been taken by Hornby to ensure that the product arrives to you in pristine condition, we cannot accept liability for any subsequent misuse of the product. It is the responsibility of the consumer to ensure that the product is maintained as per the servicing details provided.

For reliable programming it is important that the track and wheels of all locomotives and wagons used with the **Select** Digital system are kept clean. If any defect occurs during the guarantee period, then the item in the first instance should be returned to the place of original purchase. Alternatively, if any such defect occurs during the period of guarantee, then please contact your Hornby Service dealer for advice. Or, the product (or component), may be forwarded to Hornby Hobbies Ltd, carefully packed, with a covering letter enclosed giving full details to:

**Repairs Department, Hornby Hobbies Ltd, Westwood, Margate, Kent CT94JX. UK.**

Please include a copy of the original sales document showing the product reference number, date of purchase and from where purchased and any other requested information relating to the product. Please obtain a Certificate of Posting at the time of despatch.

## Exclusions

Subject to the exclusions below, the product will be repaired or replaced free of charge, if the problem is found to be due to either workmanship or materials. The repair/replacement will be provided as promptly as possible without significant inconvenience to the consumer:

The fault has been caused or is attributable to mis-use, negligent use or used contrary to the manufacturers recommendations.

Accidental physical damage.

This guarantee is valid for products purchased in the United Kingdom and is in addition to, and does not diminish, your statutory rights. For further advice about your statutory rights contact your local authority Trading Standards Department or Citizens Advice Bureau.

This warranty only covers Hornby manufactured items. Please retain these details and address for future reference.



Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice.