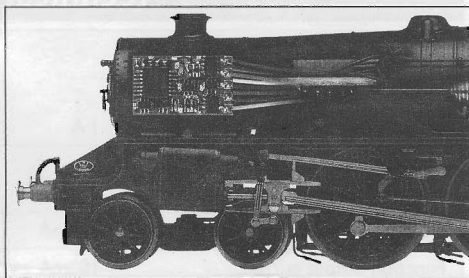


The Hornby locomotive decoders may be used with all standard digital control equipment that conforms to the NMRA standards.

For confirmation please contact your system supplier.

Note the normal running current carrying capacity of the Hornby Decoder is 500mA peaking at 1Amp. If this capacity is exceeded the decoder will cut out. The decoder must not touch any metal parts of the locomotive as this may cause a direct short and permanently damage the decoder.

Do not wrap the decoder in insulating tape as the decoder requires a cooling smooth air flow across its surface. If air is restricted the decoder may over heat and be damaged. As a precaution it is advised that any exposed metal surfaces that the decoder may come into contact with are covered with insulating tape, especially on the surface where the decoder is to be installed.



If there is no decoder housing for the decoder to be located into, the decoder can be fixed in position using double sided tape or pads.

Decoder equipped locomotives must not be operated using an overhead power supply or catenary system. Before installing the Hornby Decoder make sure that the model runs efficiently in DC mode. A poorly running locomotive will not be improved by adding a decoder!

Installation

The R8215 Hornby Decoder is fitted with an NEM652 / NMRA plug. To install the Hornby decoder, remove the locomotive body as per the manufacturer's instructions and locate the decoder socket. Remove the "plug" from the socket and ensuring that Pin 1 of the decoder is aligned with Socket 1 (orange wire) of the plug and then insert. Do not force the plug into the socket as this may damage the pins.

If the locomotive incorporates lights and the decoder is inserted the opposite way round the lights will not work!

Programming the R8215 Hornby Decoder

To programme the decoder consult your digital system handbook.

The locomotive address, acceleration and deceleration plus other features of the Hornby Decoder can be altered as many times as you wish by the standard reprogramming procedure. All the features are "stored" permanently on locations "in" the decoder even when the power is switched off to the locomotive and track.

The locations are known as Configuration Variables or "CVs". The CVs can only be altered once the locomotive is placed on a "live" track or a "Programming Track". The Hornby Decoder is factory set as "No.3" with a speed step setting of 128. The Hornby Decoder may be used immediately after installation but it is recommended that the locomotive should have its operational functions tested on a Programming Track before the locomotive's body is refitted to the model.

If you require more information please contact Hornby or your local stockist.

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SK101-85801
R8215-50-06

Technical Specification

Normal operation

Maximum current carrying capacity of the decoder in sum	1 A
Rated continuous current output in sum	500mA
Continuous motor output current	500mA
Function output current	100mA each
Address	0-255
Speed Steps	14, 28, 128
Dimensions	17 x 10 x 3.5mm

Features

- Control of the motor's rotational speed (load compensation)
- Acceleration and deceleration separately adjustable
- Selectable for operation with 14, 28, 128 speed steps
- Programming on main track
- Four On/Off function outputs. Two of the function outputs are dedicated for the head / tail lights.
- Operation on standard DC systems (analogue operation) possible
- Motor overload current protection
- With NMRA RP-9.1.1 / NEW652 medium plug

Connections Specifications

NMRA plug in No.	Wire colour	In train Decoder	Description
1	Orange	J7	Motor right
2	Yellow	J4	Rear Headlight <small>(Function output 2)</small>
3	Green	J9	Function 1 <small>(Function output 3)</small>
4	Black	J2	Left Rail
5	Grey	J3	Motor Left
6	White	J5	Front Headlight <small>(Function output 1)</small>
7	Blue	J6	Common (V+)
8	Red	J8	Right Rail
		J1	Function 2 <small>(Function output 4)</small>

List of supported CVs

CV	Min-Max	CV Definition	Default Setting
1	1 - 127	Locomotive address	3
3	0 - 255	Acceleration momentum	5
4	0 - 255	Deceleration momentum	5
29	Bit	Decoder configuration 1	
	1	Default direction	0
	2	Speed steps 14, 28, 128	1

All the CVs shown can be programmed in Operating mode, Address-Only mode, register CV mode, paged CV mode and Direct CV mode.

The Hornby Decoder supports programming on the Main.

Some advice on the current draw of the decoder output:

The current for all the decoder outputs is supplied by an internal rectifier with a maximum current of 1 Amp and the rated continuous current is 500mA. The sum of all currents to the motor and the function outputs should not exceed 500mA at normal continuous operation and cannot exceed 1 Amp. If the motor current exceeds 500mA the decoder will automatically cut off power to the motor. Each individual output can only draw up to its limit.

For example if a motor requires as much as 400mA continuously then the function outputs combined should not exceed 100mA.

Therefore, if the directional headlights require 50mA then the load Function 1 and Function 2 should not exceed 50mA.

For more information visit:

www.hornby.com