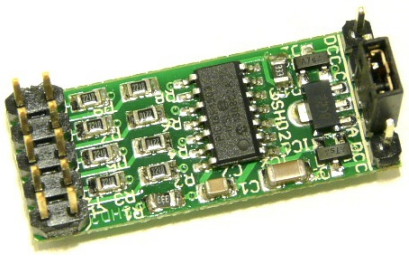
TEAM DIGITAL

Improving the world of DCC

SHD2

Dual Signal Head Decoder



Features

> DCC compatible signal accessory decoder
> Control 2 signal heads (4 aspects each)
> Easy signal mast wire connections
> Built-in resistors for LED drive
> Prototypical lamp fade
> Brightness adjustment
> Independent control of lunar aspects
> JMRI signal head compatible
> Digitrax signal mast compatible

> Included: SHD2, connector pins and heat shrink tubing

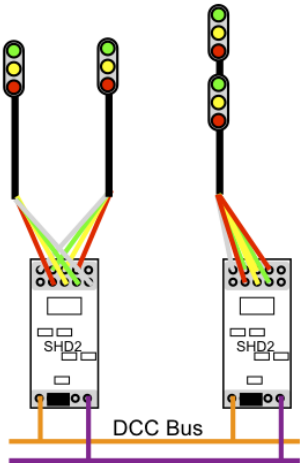
Description

The SHD2 is a DCC compatible signal head accessory decoder. It can control up to two signal heads and is compatible with JMRI Signal Heads. It can drive four individual LEDs (4 colors) per head. A total of eight outputs.

A signal mast may have one or more heads. Using the SHD2 each head requires a unique address. Since the SHD2 can control two heads it has two addresses. If a mast has only one head than the SHD2 can control two masts (1 head per mast).

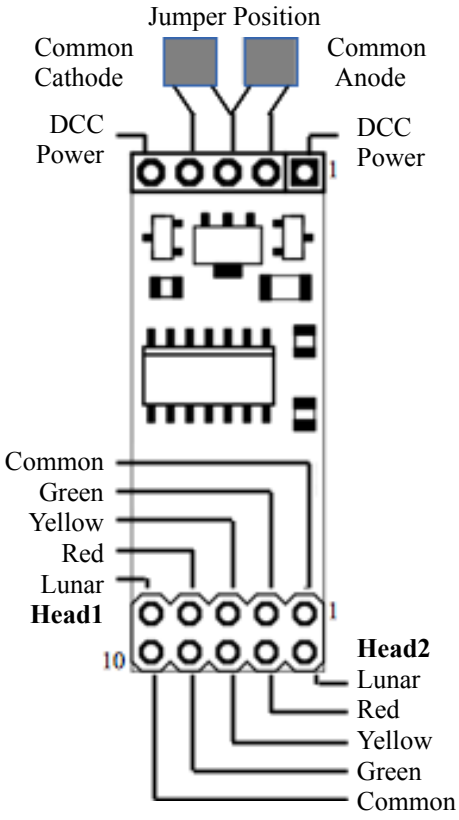
The SHD2 is pre-programmed with a DCC Signal address 1 for head 1 and address 2 for head 2. Additional SHD2s will require address changes. For address change, brightness change and 3 lead bi-color see Configuration Variables. Common anode or cathode LED signals are selected by the jumper position.

The SHD2 is controlled and powered by a DCC bus. Multiple SHD2s can be connected to the same bus. DCC Signal decoder addresses are a different type than turnout or locomotive decoder addresses. So a signal, turnout and loco decoder can each have the same address number without a problem.



Operation

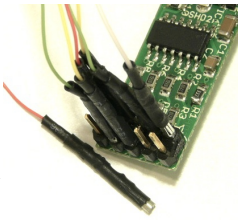
When power is applied, lunar and green then yellow then red will light at full brightness. Then red will light at the brightness level set by the CV value. It will stay red until a different aspect number with a matching address is received.



The SHD2 responds to DCC signal decoder packets as defined by the JMRI 'DCC Signal Decoder'. The 'DCC Signal Decoder' aspects# are:

Red	0	Flashing Red	4
Yellow	1	Flashing Yellow	5
Green	2	Flashing Green	6
Lunar	3	Flashing Lunar	7
Dark	8		

Electrical Connections



Solder the female connectors to the mast wires. The long ears of the connector may have to be trimmed or bent so the tubing can slide over. Use the heat shrink tubing to cover the connector to avoid shorts when plugged in. When ready to install the mast, feed the connectors one at a time though the hole in the bench. Then push the connectors on the related SHD2 pins. With POWER OFF connect the two SHD2 Power pins to the DCC bus.

Configuration Variables (CVs)

The SHD2 supports **Paged Mode Programming in Service Mode**. To program in paged mode, connect the Power pins to the programming track. The SHD2 does not have built in feedback like a mobile decoder. Therefore, some systems may show a "no decoder on track" error or "can not read CV". However it still is programmed. If there is a LED connected to head 1 green output it will flash when a CV value is programmed. For CV read back, LEDs should be connected to head 1 and 2 RYG outputs. **Note:** may not work with all DCC systems.

Configuration Variables Summary

CV#	Function	Default Value
1	N/U	-
2	Address	1
3	Address Adder	0
4	Reserved	-
5	Special Turnout Address	0
6	Special Turnout Address Adder	0

20	R1 Brightness Level, max 250	128
21	Y1 Brightness Level, max 250	128
22	G1 Brightness Level, max 250	128
23	L1 Brightness Level, max 250	128
24	R2 Brightness Level, max 250	128
25	Y2 Brightness Level, max 250	128
26	G2 Brightness Level, max 250	128
27	L2 Brightness Level, max 250	128
29	Decoder Configuration*	0

*For multiple options add the values together
Option 1: Value = 1 - 3-lead bi-color LED
Option 2: Value = 2 - Lunar on solid, use for position signals

Signal Head Addresses

The address is made up of two CV values. An address CV and an address Adder CV. To change the address, program CV2 (max value = 255) and CV3 (max value = 7) with the desired numbers. For a DCC Signal address, Head 1 will have the programmed address and head 2 will have the next higher address.

If an address greater than 255 is needed then use the address adder. The address adder value represents a number that is added to the address value to give the 'actual' address. The Address Adder table shows the CV value to use for the adder.

Example: for an address starting at 260, CV2 = 4 and CV3 = 1

Special Turnout (Switch) Address for only Lunar outputs

If the lunar aspect (color) is not required, those two outputs can be used to drive two LEDs using a turnout address independent of the other aspects. This is a different address than those used for control of the normal aspects. If a turnout address greater than zero is programmed, the lunar outputs can be used for turnout indication. To change the address, program CV5 (max value = 255) and CV6 (max value = 7) with the desired numbers. If an address greater than 255 is needed then use the address adder. This feature is disabled if Option 2 is enabled.

Address Adder

CV Value	0	1	2	3	4	5	6	7
Add	0	256	512	768	1024	1280	1536	1792

Note: Not compatible with incandescent lamps, LEDs with integrated resistors or 2-lead bi-color LEDs. Signals with LEDs wired in series will have a lower brightness and may not be acceptable to some.

WARNING: This product contains a chemical known to the state of California to cause cancer, birth defects or other reproductive harm.