SC2 - Signal Controller for a 3, 4 aspect or 2 aspect +route indicator LED signal using DCC

CAUTION - ALWAYS SWITCH OFF POWER TO YOUR LAYOUT BEFORE CONNECTING THIS CONTROLLER

This Signal Controller incorporates a DCC decoder to enable it to be wired directly to the track and be operated by any controller or computer which is capable of controlling DCC accessories. Please read these instructions before connecting or fitting your controller.

1 CONNECTIONS

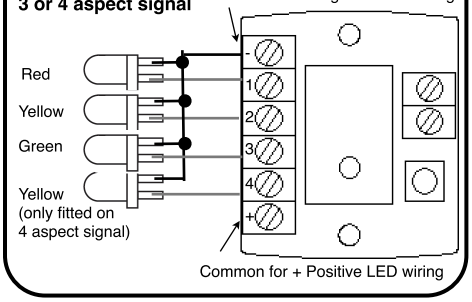
The SC2 is a Signal Controller designed to control a 3 or 4 aspect LED signal or a 2 aspect plus route indicator LED signal using DCC.
Switch off power before connecting!

Connecting the SC2 to DCC
Connect the SC2 DCC input terminals to nearby rails or the DCC controller output.

Connecting the signal LEDs
There are a wide range of LED Colour Light signals available and they are usually supplied with LEDs already preconnected. LEDs are polarised and so only light when connected one way. Either the + or - pin of every LED needs to be connected together as a 'common' wire connection - this is often prewired by the signal manufacturer and the instructions for the signal should show the polarity connections.
The SC2 works with either common + or - connected LEDs, just connect the common wire to either + or - as marked under the SC2.
The example below shows common negative.

Note you do not need to use resistors in series with LEDs as they are built into the controller (unless you want to make them less bright).

Example 1:
3 or 4 aspect signal

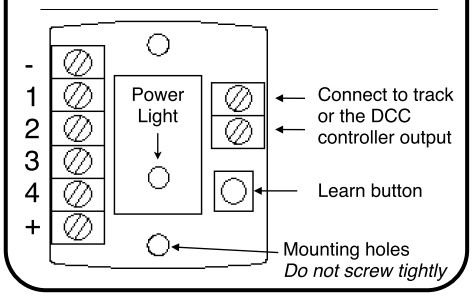


2 SETTING THE SIGNAL ADDRESS

You need to choose a DCC address for your signal. Because a DCC address can only have 2 or 'directions' or 'states' your multi aspect signal needs two addresses and so will use the address you choose and the next consecutive address, so ensure both addresses are unused for other accessories before programming.
In our example we will use address 86 and so this signal will use both address 86 and 87.

• Set up your controller to control DCC *accessories* (your controllers instructions will show how to do this) and set your controller to the address you choose for this signal.

To program the signal controller address briefly press the 'Learn' button until the signal lights flash, then send either the ◀ or ▶ 'direction' command from your controller which you want to signal green. The signal will stop flashing, light up green and your signal is now programmed to the address you chose and also the next consecutive address.



3 CONTROLLING THE SIGNAL

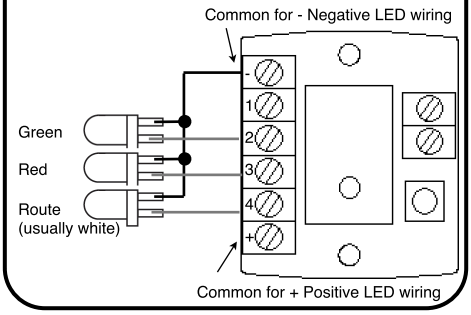
Control the signal by setting your controller to the DCC *accessory* address you chose and sending a ◀ or ▶ 'direction' command from your controller to change the signal colour (actual terms used for accessory control vary between controllers so refer to its instructions)
In example 1 with a 3 or 4 aspect signal
Address (86) ◀ or ▶ = Red or Green
Address (87) ◀ or ▶ = Yellow or Double Yellow

Each signal can be controlled independently with its own unique address or can be easily synchronised to other DCC signals or points etc by giving them the same address as each other.

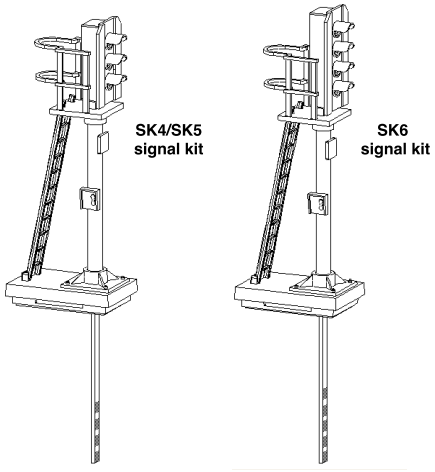
Using a 2 aspect signal with route indicator
A 2 Aspect signal with a route indicator, such as a feather, can also be controlled effectively with the SC2. Wiring it as below only allows the route indicator to light if the signal is green.

Controlling 2 aspect signal with route indicator
Address (86) ◀ or ▶ = Red
Address (87) ◀ or ▶ = Green or Green+ Route

Example 2:
2 aspect signal + route indicator



Using Train-Tech signal kits with the SC2
We offer a range of low cost Signal Kits which are accurately modelled to British Outline OO scale and make ideal partners for our Signal controllers. Signal kits SK4/5 are 3 aspect & SK6 is 4 aspect (see over). Refer to the instructions supplied with your signal to identify the connections you need for each colour to this controller - you do not need to use resistors.



Using other manufacturers LED signals
Many other manufacturers LED signals are also widely available for both British Outline and overseas, many of which were tested with the SC2 in development. Most Colour Light Signals based on LEDs should be compatible, though check that you can remove or bypass resistors if fitted because these are already included inside the SC controller and will make LED lights quite dim if left connected. If white LEDs are used in signals like route indicators check that they can be connected independently because white LED's require a higher voltage than other colours and if prewired in series may not light or work correctly.
Note: If you wish to control 2 aspect signals the SC1 is better suited and controls two 2 aspect signals.

Plug-In Digital Signals with DCC built in also available
For more details seeTrain-Tech.com

Troubleshooting
Step 2 above is the 'One Touch' DCC stage which programs the Signal address into the controller.

If it does not work:
- Check that one of the signal LEDs is lit - if not and DCC locos etc run correctly check the connections between your DCC Controller, the Signal Controller and between the LEDs and the controller

- If a Signal LED is lit double check that your DCC controller is in *accessory* addressing mode - note that these are completely different to Locomotive addresses and should be explained in your controller instructions. If not check carefully that your controller will control DCC accessories - most do but some of the low cost starter controllers such as the Bachmann E-Z command and Prodigy Express models do not.

- Try fitting the signal to another section of track (or use pieces of wire to temporarily connect it to another track)

If these steps fail please contact your supplier or Train-Tech for advice and Technical support.

Note
The Signal Controller module may get slightly warm when used for long periods which is quite normal.

Location board labels
These legends can be cut out and fitted to your signal. We suggest you use the DCC address you have programmed into your signal controller which will make the signal easier to identify and operate.

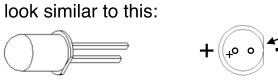
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
AD	CA	DA	ES	EN	GE	GY	MY	PN	NW
ABCDEFGHIJKLMNOPQRSTUVWXYZ									
ABCDEFGHIJKLMNOPQRSTUVWXYZ									

General information on using LEDs with models
LEDs are really useful lights which, unlike their conventional filament bulb predecessors, are robust, low power and if used correctly can effectively last forever. But there are important considerations to using them. Firstly LED stands for *Light Emitting Diode* and a diode is an electronic component which only works electrically in one direction, so always need to be fitted the correct way round to work correctly and last. Whilst LED's will work on AC (alternating current) for a while, continuous use on AC or reverse connection will reduce the life.

Most standard miniature LEDs which a modeller will use must only have a maximum voltage of 2 to 3 volts applied, so current flowing through the LED needs to be reduced and this is usually done by a resistor in series (in between), typically 1000 ohms for a 12 V supply. However to make wiring easier for modellers all Train-Tech LFX or Signal LED controllers already have resistors built in so that LEDs can connect directly to the module without the need for any resistors.

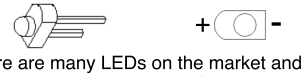
Train-Tech also offer packs of various LEDs for modellers and these always come with instructions and also suitable resistors for using them on a standard Model Railway 12V DC supply.

Connecting LEDs
As explained previously LEDs have a polarity and must be connected the correct way round to light. The most popular LEDs come in 3mm and 5mm diameter cases and look similar to this:



The best indication of polarity on this type of LED is to find the flat side on the round base. This side usually indicates the negative (Cathode) connection and the other wire the positive (Anode) connection to power.

Another really small LED we supply for some Train-Tech products looks like this:



There are many LEDs on the market and it is good to experiment, but check manufacturers data for specific connection information as there are no real standards.

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