

# 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

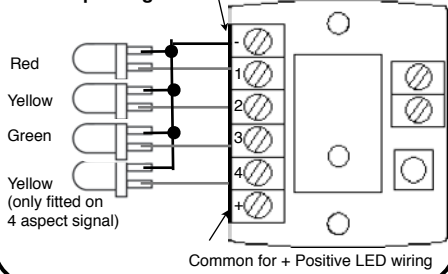
There are a wide range of LED Colour Light signals available and they are usually supplied with LEDs already preconnected. LEDs are polarised and so only light when connected one way. Either the + or - pin of every LED needs to be connected together as a 'common' wire connection - this is often prewired 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.

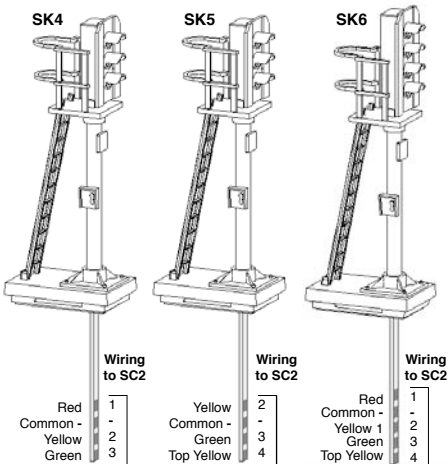
*Note that you should NOT use resistors with the LEDs as they are built these into the controller.*

#### Example 1: 3 or 4 aspect signal



#### 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). Wiring details to connect them to this controller are shown below - simply wire each connection to the numbered terminal on the SC2 - no resistors needed:



#### 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.

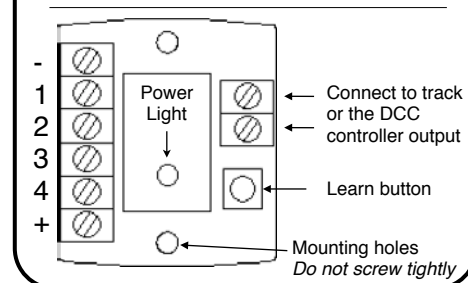
Plug-In Digital Signals with DCC built in also available  
More details from [Train-Tech.com](http://Train-Tech.com) or [dcpexpress.com](http://dcpexpress.com)

### 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.



#### 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 DCP 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
ABCDEF	GHIJKL	MNOPQR	STUVWXY	Z					

### 3 CONTROLLING THE SIGNAL

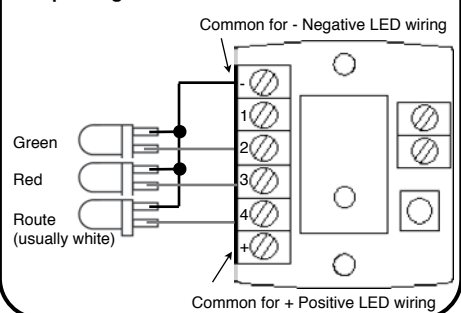
Control the signal by setting your controller to the DCC accessory address you chose and sending a ◀ or ▶ 'direction' command from your controller to change the signal colour (actual terms used for accessory control vary between controllers so refer to its instructions)  
In example 1 with a 3 or 4 aspect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



#### General information on using LEDs with models

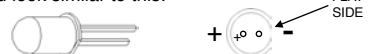
LEDs are really useful lights which, unlike their conventional filament bulb predecessors, are robust, low power and if used correctly can effectively last forever. But there are important considerations to using them. Firstly LED stands for *Light Emitting Diode* and a diode is an electronic component 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.

## One-Touch DCC™ Digital Signals

DCC WIRE FREE OO HO



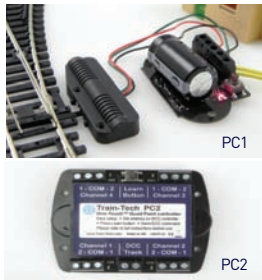
- Signal with DCC decoder built into base
- Can just plug direct into track – no wires!
- Easy to fit and use – no CV programming!
- Can sync to other signals & points

**DS1 Home:** Red (R) and Green (G)  
**DS2 Distant:** Yellow (Y) and Green (G)  
**DS3 Home Distant:** (R) (Y) (G)  
**DS4 Distant:** (Y) (G) (Y)  
**DS5 Outer Distant:** (R) (Y) (G) (Y)  
**DS5HS Outer Dist:** (R) (Y) (G) (Y) (High Speed mainline)  
**DS6 Dual Head Home:** (R) (G)  
**DS7 Dual Head Distant:** (Y) (G)  
**DS8 Stop-Caution:** Red (R) and Yellow (Y)

Track not included

## One-Touch DCC™ Point Controllers

DCC OO HO N Z



- Control points and uncouplers using DCC
- Easy to use – No CV programming!
- Work with most solenoid point motors
- Just connect 2 wires to nearby DCC rails
- Easy screw terminals – no soldering
- Built in CDU for efficient operation
- Can sync to other points and signals

**One-Touch DCC™ Point controllers**  
**PC1 DCC Single Point Controller**  
**PC2 DCC Quad Points Controller**

Point motor and track not included

## Buffer Lights

DC DCC WIRE FREE N OO HO



- Add realistic stop light to any siding
- Simply clips onto track – No wires!
- Fits next to most buffer stops & kits
- Or at platform end or free standing
- Low cost, easy to fit and use
- On DCC both lights are on constantly
- On DC one light is on & varies with speed
- Helps bring your layout to life!

**BL1 OO/HO gauge Buffer Light**  
**BL2 N gauge Buffer Light**

Track and buffer stop not included

## Automatic Tail, Firebox, Loco & Coach Lights

Auto WIRE FREE ANY GAUGE



- No switch – senses motion & turns on!
- Turns off automatically 4 minutes after stop
- No pickup, wires or soldering – LED plugs in
- Fit in brake vans, coaches, loco, wagons etc
- Runs for ages on small button battery

**Single output modules:** **Dual output modules:**  
**AL1 Flashing Tail light** **AL21 Flashing + constant**  
**AL2 Flame Tail / Firebox** **AL22 Flame + constant**  
**AL3 Constant lighting** **AL23 Sparkarc + constant**  
**LEDs & battery included** **AL24 Doors open + constant**

## LFX Lighting Effect Controllers

DC DCC ANY GAUGE



LFX1 shown with supplied LEDs fitted to a Peco barrier kit – not included

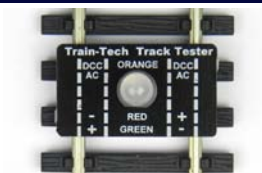
**LFX1 Level Crossing Barrier**  
 Controls Amber and Red LED's as seen at level crossings. Can power up to 4 sets of steady amber and flashing red LEDs

- Add lighting effects to your layout
- LEDs screw in – no resistors or soldering
- Powered by either 12-16V DC or DCC:
- On DC the effect is on when powered
- On DCC the effect can be controlled

**LFX2 Home & Shop Lighting**  
 Randomly controls lights in houses, shops, stations, pubs  
**LFX3 Traffic Lights**  
 Controls one pair of timed traffic lights (Tip: You can adapt one of our Signal kits to make traffic lights)  
**LFX4 Log or Camp Fires**  
 Controls amber, yellow, red LEDs for a realistic fire effect  
**LFX5 Welding effects**  
 Realistic electric arc welding effects with bright LEDs  
**LFX6 Quad LED Lighting Controller**  
 Controls 4 sets of LEDs on and off using separate DCC addresses. Directly powers 4 LEDs per output (DCC only)

## Track Tester

DC DCC N OO HO



- Quickly tests track for power faults
- Low cost and easy to use
- Works on N, TT, OO or HO Track
- Indicates the DC polarity, or DCC, or a fault
- Small enough to check point frogs

**TT1 Track Tester**

## One-Touch DCC™ Signal Controllers

DCC ANY GAUGE



- Control LED & Semaphore signals by DCC
- Easy to set up & use – No CV programming!
- Easy screw terminals – no soldering
- Can sync to other points & signals

**SC1 Dual 2 aspect colour light signals controller**  
 Controls one or two 2 aspect colour light signals. Compatible with Train-Tech SK2, SK3, SK7, SK8 and most other manufacturer's LED signals



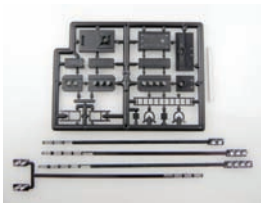
**SC2 3 or 4 aspect or 2 aspect+route signal control**  
 Controls one 3 aspect or one 4 aspect or one 2 aspect + route signal. Compatible with Train-Tech SK4, SK5, SK6 and most other manufacturer's LED signals

**SC3 Dual Dapol OO/N Semaphore signal controller**  
 Controls one or two standard OO or N Dapol motorised semaphore signals by DCC. Signals connect direct to the SC3 – no modifications or power supply needed.

Dapol Signals for photo – not included

## Self Assembly Colour Light Signal Kits

DC DCC OO HO



- Every kit includes the head, post and base plus detailing kit inc ladder, handrails, etc
- Aluminium 'post' included with each kit
- Low cost – adapt to your own design
- Control by switches or a signal controller

**General purpose signal kit:**

**SK1 Basic kit 2/3/4 aspect & dual heads – no LEDs**

**Signal kits with LEDs and resistors**

**SK2 Home 2 aspect kit with Red (R) Green (G) LEDs**

**SK3 Distant 2 aspect kit with (Y) (G) LEDs**

**SK4 Home Distant 3 aspect kit with (R) (Y) (G) LEDs**

**SK5 Distant 3 aspect kit with (Y) (G) (Y) LEDs**

**SK6 Outer Distant 4 aspect with (R) (Y) (G) (Y) LEDs**

**SK7 Dual head Home 2 aspect with (R) (G) LEDs**

**SK8 Dual head Distant 2 aspect with (Y) (G) LEDs**

The LEDs are pre-fitted onto a long narrow PCB stick to pass through your baseboard. Just attach your signal control wires to PCB

SEE WWW.TRAIN-TECH.COM OR CONTACT DCP FOR FREE COLOUR BROCHURE



**Train-Tech**

Model Technology Made Easy

## SC2 DCC Signal Controller 3 or 4 aspect or 2 aspect with route

- Control your Signals by DCC controller or PC
- Easy One-Touch DCC™ – no CV programming!
- Works with most LED colour light signals
- Just 2 wires to nearest track – reduces wiring
- Connect Signal LEDs direct – no resistors!
- LEDs fade as they change – just like real thing!
- Can synchronise to other Signals and points

[www.Train-Tech.com](http://www.Train-Tech.com)

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