SC1 - Signal Controller for controlling one or two 2 aspect LED signals

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 which is able to control DCC accessories. Please read these instructions before connecting or fitting your controller.

1 CONNECTIONS

The SC1 is a Signal Controller which will directly control most commercial or home built 2 aspect LED colour light signals using DCC. ***Switch off power before connecting!***
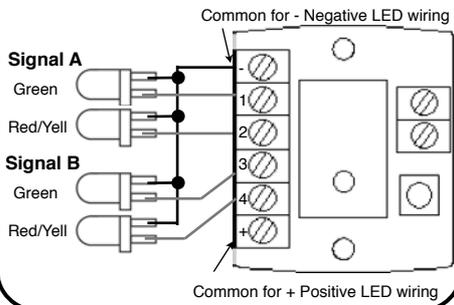
Connecting the SC1 to DCC
Connect the SC1 DCC input terminals to nearby rails or the DCC controller output.

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 have a + and - polarity and 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 SC1 works with either common + or - connected LEDs, just connect the common wire to either + or - as marked under the SC1. The example below shows common negative.

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

Common for - Negative LED wiring

Signal A
Green
Red/Yell

Signal B
Green
Red/Yell

Common for + Positive LED wiring
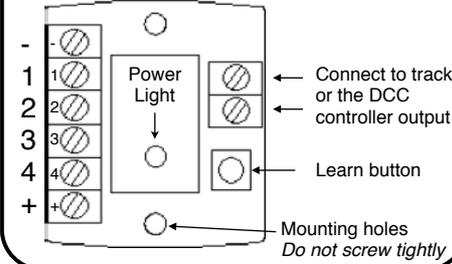
2 SETTING SIGNAL ADDRESSES

The SC1 can control one or two 2 aspect signals and you need to choose a DCC address for each signal. For this example we will use address 72 for signal A and 84 for B.

• Set up your controller to control DCC *accessories* (refer to controllers instructions), then set your controller to the DCC accessory address you choose for Signal A (eg 72).

• To program signal A touch the 'Learn button' once - signal A lights should flash, then send either the ◀ or ▶ 'direction' command from your controller which you want to control and show green. The signal will stop flashing, show green and is now programmed to the address (eg 72).

• To program Signal B, set your controller to the address you want to give B (eg 84), press the Learn button twice and Signal B lights should flash. As before send either the ◀ or ▶ command from your controller which you want to control green and Signal B will stop flashing, show green and is now set to respond to the other address (eg 84). Your signal will retain your chosen address unless you change it, which you can do by repeating this step.

Power Light

Connect to track or the DCC controller output

Learn button

Mounting holes
Do not screw tightly

3 CONTROLLING THE SIGNALS

Control the signals by setting your controller to the DCC *accessory* address of the signal 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 our example
Address (72) ◀ or ▶ = Signal A Red or Green
Address (84) ◀ or ▶ = Signal B Red or Green
Yellow can replace Red for Distant signals

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.
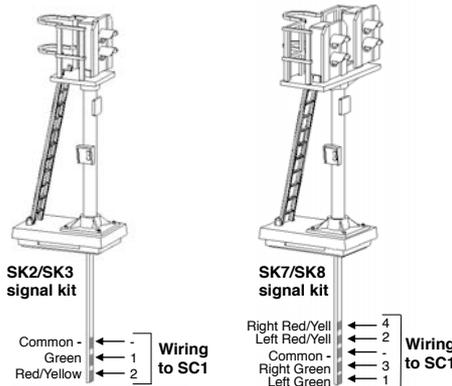
For example you could program a two aspect Home Signal with the same address as a two aspect Distant signal, then the Distant will automatically show the state of the following Home signal.
Or you could set a signal to automatically show Red when a point is set against a train going towards it! Again all you need to do is set the Signal to the same DCC accessory address as the point controller address.

Synchronising addresses is especially easy to do with Train-Tech One Touch DCC™ Point and Signal controllers because all you need to do is press the Learn buttons of all of the Signal and Point Controllers you want to sync and then send the address command - all will then be linked and respond together on that address.
Tip
*Remember that whichever ◀ or ▶ command you use when you program the signal address dictates the command which will always set the signal to **Green**.*

Using Train-Tech signal kits with the SC1
We offer a range of low cost Signal Kits which are accurately modelled to British Outline OO scale and which make ideal partners to our Signal controllers. SK2/3 are single head & SK6/7 dual head (see over). Wiring details to connect them to this controller are shown below - simply wire each connection to the numbered terminal on the SC1 - no resistors needed:

SK2/SK3 signal kit

Common - → -
Green → 1 | **Wiring to SC1**
Red/Yellow → 2

SK7/SK8 signal kit

Right Red/Yell → 4
Left Red/Yell → 2 | **Wiring to SC1**
Common - → -
Right Green → 3
Left Green → 1

Connections for Signal A shown Signal B connections are 3 & 4

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 SC1 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 a 3 or 4 aspect signal, or a signal with a route indicator or feather, you will find the SC2 controller is better suited.

Plug-In Digital Signals with DCC built in also available More details from Train-Tech.com or dcpexpress.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 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
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 work to fit 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:

FLAT SIDE

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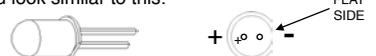
The best indication of polarity on this type of LED is to find the flat side on the round base. This side usually indicates the negative (Cathode) connection and the other wire the positive (Anode) connection to power.

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

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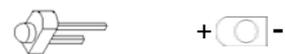
There are many LEDs on the market and it is good to experiment, but check manufacturers data for specific connection information as there are no real standards.

One-Touch DCC™ Digital Signals

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

DS6/7
DS1/2
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
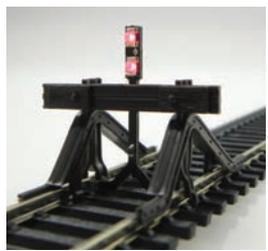- Can sync to other points and signals

One-Touch DCC™ Point controllers
PC1 DCC Single Point Controller
PC2 DCC Quad Points Controller
Point motor and track not included

PC1
PC2

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:
AL1 Flashing Tail light
AL2 Flame Tail / Firebox
AL3 Constant lighting
LEDs & battery included

Dual output modules:
AL21 Flashing + constant
AL22 Flame + constant
AL23 Sparkarc + constant
AL24 Doors open + constant

Fits in N scale upwards
Rolling stock not included

LFX Lighting Effect Controllers

DC · DCC · ANY GAUGE

- 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)

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

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

0313

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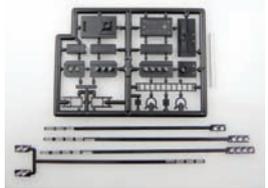
SC3 Dual Dapol OO/N Sempahore signal controller
Controls one or two standard OO or N Dapol motorised semaphore signals by DCC. Signals connect direct to the SC3 - no modifications or power supply needed.

SC2
SC3
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 Ⓡ Green Ⓖ LEDs
SK3 Distant 2 aspect kit with Ⓨ Ⓖ LEDs
SK4 Home Distant 3 aspect kit with Ⓡ Ⓨ Ⓖ LEDs
SK5 Distant 3 aspect kit with Ⓨ Ⓖ Ⓨ LEDs
SK6 Outer Distant 4 aspect with Ⓡ Ⓨ Ⓖ Ⓨ LEDs
SK7 Dual head Home 2 aspect with Ⓡ Ⓖ LEDs
SK8 Dual head Distant 2 aspect with Ⓨ Ⓖ 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

SC1 DCC Signal Controller
Controls two x 2 aspect LED signals

- 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