LFX6 - DCC Quad LED Lighting Controller

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

The DCC Quad LED Lighting controller enables up to 4 sets of LEDs to be easily controlled by almost any DCC controller or computer which is able to control DCC accessories. Please read these instructions before connecting or fitting your controller.

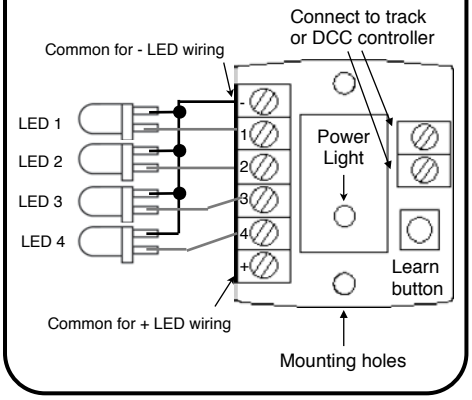
1 CONNECTIONS

The LFX6 controls up to 4 sets of LEDs on & off using separate DCC accessory addresses.
Switch off power before connecting!

Connecting the LFX6 to DCC
Connect the LFX6 DCC input terminals to nearby rails or the DCC controller output.

Connecting LEDs to the outputs
The LFX6 is compatible with most standard low voltage LEDs which can be connected directly to the output terminals. We suggest that you connect the negative wire of every LED together and connect them to the **-** terminal as the drawing shows, though alternatively you can connect them the other way around with all positives to the + terminal (see below for general information on LED polarity etc).

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



2 SETTING POINT ADDRESSES

Each DCC accessory needs an 'address' assigned to it and with One Touch™ DCC this is very quick and easy to set up. It is easiest to set up when LEDs have been connected. The LFX6 has 4 LED outputs and you can either set them to consecutive addresses (eg 20, 21, 22, 23) or give each any arbitrary address you choose.

Setting up
• Switch on the power and your DCC controller. The LFX6 LED should light. Set up your controller to control DCC ***accessories***.

Setting outputs to 4 consecutive addresses
• Set your DCC controller to the DCC accessory address you choose for output 1 (eg 20)
• Press the 'Learn button' once - all LEDs connected to the LFX6 will flash. Then send either a ◀ or ▶ 'direction' command from your controller - the LEDs will stop flashing and your LFX6 output 1 is now set to the to the address you set (eg 20) & automatically channel 2 set to the next (21), 3 to the next (22) & 4 to next (23).

Setting outputs to 4 arbitrary addresses
• Set controller to DCC accessory address you choose for the output you wish to set (eg 20)
• Press the 'Learn button' once - all LEDs you have connected to the LFX6 will flash.
• Press Learn button repeatedly until LED on the output channel you wish to set is flashing.
• Send either a ◀ or ▶ 'direction' command from your controller - LED will stop flashing and that channel is now set to your address (eg 20).
• Repeat this procedure for each output channel you want to set - you can do this at any time.

Note that whichever ◀ or ▶ 'direction' command you use when the address is set the LFX6 will set the output +, so if your LEDs are wired as common negative - this will switch them on. To change it go through the set process again but press the other ◀ or ▶ 'direction' command.

3 CONTROLLING THE LED's

You can control the LEDs by simply setting your controller to the DCC *accessory* address of the LED output you wish to control and sending a ◀ or ▶ 'direction' command from your controller to switch it on or off (actual terms used for accessory control vary between controllers, so please refer to its instructions)

Using the addresses used in our example:

Address (20) ◀ or ▶ = Controls LED 1 on or off
Address (21) ◀ or ▶ = Controls LED 2 on or off
Address (22) ◀ or ▶ = Controls LED 3 on or off
Address (23) ◀ or ▶ = Controls LED 4 on or off

Synchronising with other DCC devices
The LEDs can be controlled independently with their own unique addresses as shown, but some or all of them can also easily be synchronised to other DCC signals or points etc by giving them the same address as each other. For example you might want to do this to use LEDs on a Plan of your layout to indicate the position of a DCC controlled point or status of a signal (see below).
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 assigned the same addresses and respond together in the future.

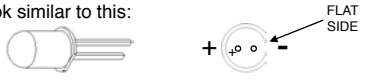
Tip
Remember that whichever ◀ or ▶ command you use when you set the LED address dictates the command which will always set the output to + positive (usually LED on if common -)

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.

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

If it does not work:

- Check that the LFX Power Light 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 LED(s) are lit but will not respond 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 lowest cost starter controllers such as the Bachmann E-Z command and Prodigy Express models do not.

- You can connect up to 4 LEDs to each of the four outputs, but note that if connecting multiple LEDs of different colours or types to the same output, the brightness of each may vary depending on voltage and current specification of each LED. However you can control different types of LEDs on the same DCC address by connecting them to different outputs but setting the outputs to operate on the same address.

- Try connecting the LFX to another DCC connection or 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 LFX Controller module may get slightly warm when used for long periods which is quite normal.

Ideas for using the LFX6
Probably the most popular application for the LFX6 is to control LEDs which light buildings, street lights, signs and various other lighting on a layout. An LFX6 can power a maximum of 4 LEDs per output, but if you wish to control more you can either set other outputs on the same LFX to the same address so that they operate together, or alternatively use more LFX6 modules which are set to the same addresses.
As well as lighting your layout the LFX6 can also be used to indicate the current state of points or signals etc which are being controlled by other DCC decoders. LEDs indicating these states or even complete routes can be mounted behind a scale plan of your layout with pictures of points, signals, track etc. This is often called a Mimic Diagram and represents what many real life signal boxes use. To make the LEDs mimic the other DCC devices you simply need to set the LFX6 to the same address as each accessory you are mimicing - see 'Synchronising with other DCC devices' above.

Suitable LEDs
There are thousands of different LEDs on the market available from a variety of sources and most basic low cost low voltage types will work with LFX modules like the LFX6. Train-Tech also offers packs of various types for use with its LFX modules and these are available from dcpexpress.com or your local model shop.

LED2: Pack of 10 assorted 5mm LEDs
Pack of various colour LEDs, 5mm diameter

LED10: Pack of 10 assorted subminiature LEDs
Pack of red, green, yellow and amber small LEDs

LED1: Level Crossing Barrier LED set (3 sets of 3)
Set of 6 more subminiature red and 3 subminiature amber LEDs (same as LEDs supplied with the LFX1)

LED3: Traffic Light LED set (3 sets of 3)
Set of 3 extra subminiature red, 3 amber and 3 green LEDs (same as LEDs supplied with the LFX3)

LED4: Pack of LEDs for Log or Camp Fire
Pack of 2 each of red, yellow and amber superbright LEDs (same as LEDs supplied with the LFX4 module)

LED5: Arc Welding Effect LED set (2 pairs)
Set of 2 Superbright Red and 2 Cool-White LEDs (same as LEDs supplied with the LFX5 Welding effect set)

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One-Touch DCC™ Digital Signals

DCC · WIRE FREE · 00 · HO

Track not included

- 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 Ⓨ

One-Touch DCC™ Point Controllers

DCC · 00 · 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 · 00 · HO

Track and buffer stop not included

- 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 00/HO gauge Buffer Light
BL2 N gauge Buffer Light

Automatic Tail, Firebox, Loco & Coach Lights

Auto · WIRE FREE · ANY GAUGE

Rolling stock not included

- 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

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

LEDs & battery included

LFX Lighting Effect Controllers

DC · DCC · ANY GAUGE

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

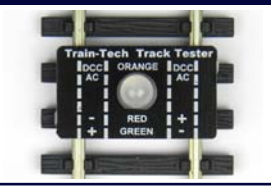
LFX1 Level Crossing Barrier
Controls Amber and Red LED's as seen at level crossings. Can power up to 4 sets of steady amber and flashing red LEDs

- 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 · 00 · HO



- Quickly tests track for power faults
- Low cost and easy to use
- Works on N, TT, 00 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

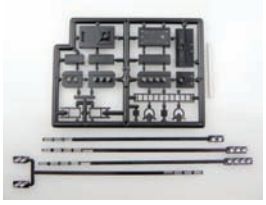
SC2 3 or 4 aspect or 2 aspect+route signal control
Controls one 3 aspect or one 4 aspect or one 2 aspect + route signal. Compatible with Train-Tech SK4, SK5, SK6 and most other manufacturer's LED signals

SC3 Dual Dapol 00/N Sempahore signal controller
Controls one or two standard 00 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 · 00 · HO



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

- 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

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

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Train-Tech
Model Technology Made Easy

LFX6 DCC Four channel LED Lighting Controller

- Control LED lights by DCC controller or PC
- Switch 4 sets of 4 LEDs with separate addresses
- Use to control LED lighting around your layout
- Or mimic panel to show points, signals, routes
- Easy One-Touch DCC™ - no CV programming!
- Standard LEDs fit directly - no resistors needed
- Can be synced to other DCC signals, points etc

www.Train-Tech.com

See our website, your local model shop or contact us for a free colour brochure
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