

# PC2 - Quad Point DCC Controller for momentary solenoid type point motors & actuators

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

This DCC Point controller can control most standard 12-16V solenoid type motors by most DCC controllers or PC systems able to control DCC accessories. *Before using we recommend you first fit and test your point motor by using a conventional switch and supply voltage.*

### 1 CONNECTIONS

**Switch off power before connecting!**

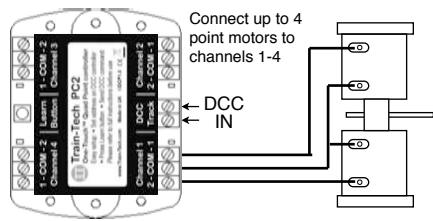
#### Connecting the PC2 to DCC

Connect the 2 DCC input terminals to nearby rails or direct to the DCC controller output.

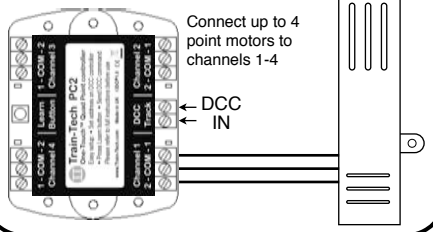
#### Connecting the PC2 to the point motor

The PC2 has 3 connections for each point motor - one common and one for each coil. For 4 terminal motors connect a terminal of each coil together to make a common. Many point motors already have wires attached - beware that wire colour functions vary between manufacturers so check their instructions!

#### Connecting to an open frame type point motor Eg Peco PL10, Hornby R8014, Seep PM-1 etc



#### Connecting to a surface mount point motor Eg Peco PL11, Hornby R8243, etc



### Troubleshooting

- Check that the PC2 LEDs are lit - if not and DCC locos etc run correctly check all the connections between your DCC Controller and Point Controller.
- If the PC2 LEDs are lit but do not flicker when you send a command 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.
- If the LEDs on the PC2 flickers when you send a command and you can hear a point motor make a noise but not move the point, check alignment and cleanliness of the point/motor and also keep wire lengths to the motor short (see section on right).

Note that the PC2 incorporates a built-in Capacitor Discharge Unit (CDU) to improve the power available to energise the coil. If changing the multiple points quickly this can result in a short delay while the capacitor recharges. This is a feature which helps ensure more reliable operation and is quite normal.

If these checks fail please contact your supplier or DCP for advice and Technical support.

### Other useful tips and information

- Wire colours on point motors  
Note that there is no recognised standard colour code for point motors and although Red, Black and Green are often fitted, their function varies between manufacturers, so be sure to check instructions!
- If you intend to fit lots of different DCC accessories and lights etc around your layout you may find it is better to install a 'bus-bar' system instead of using the track to carry the load for everything. A bus-bar can be made simply of 2 thick wires which you distribute around the underside of your baseboard - thick solid copper wires stripped from some surplus heavy mains cable can be ideal.

### 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. The PC2 has 4 output channels and you can either set them to consecutive addresses (eg 60, 61, 62, 63) or give each any arbitrary address you choose.

#### Setting up

- Switch on the power and your DCC controller. The 4 LEDs on the PC2 should light. Set up your controller to control DCC **accessories**.

#### Setting outputs to 4 consecutive addresses

- Set your controller to the DCC accessory address you choose for channel 1 (eg 60)
- Press the 'Learn button' once - all 4 LEDs on the PC2 will flash. Then send either a ◀ or ▶ 'direction' command from your controller - the LEDs will stop flashing and your PC2 output channel 1 is now set to the address you set (eg 60) & automatically channel 2 set to the next (eg 61), 3 to next (62) and 4 to next (63).

#### Setting outputs to 4 arbitrary addresses

- Set controller to DCC accessory address you choose for the output you wish to set (eg 60)
- Press the 'Learn button' once - all 4 LEDs on the PC2 will flash.
- Press Learn button again until the LED next to 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 60).
- 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 you set up the PC2 will always energise the point motor coil which is connected to terminal 1, so if you want to change it just go through the set process again but press the other ◀ or ▶ 'direction' command.*

### 3 CONTROLLING POINTS

Control your point by setting your controller to the DCC *accessory* address of the point and sending a ◀ or ▶ 'direction' command from your controller to change the point (actual terms used for accessory control vary between different controllers so refer to its instructions)

#### In our example

- Set DCC controller to Accessory address 60
- Press ◀ or ▶ direction on your controller  
*Channel 1 LED will flicker to indicate it has received a command & the point should change*
- Repeat this for any channels you have set

Each point can be controlled independently with its own unique address or can be easily synchronised to other DCC points or signals etc by giving them the same address as each other. For example you could set a signal to automatically show Red when a point is set against a train going towards it! Or have 2 Points in a passing loop or route always change together. To do this simply set all of the accessories you want to synchronise to the same DCC accessory address as each other. Synchronising addresses is especially easy to do with Train-Tech One Touch DCC™ Point controllers and Signals 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 an address command - all will then be linked and respond together on that address.

#### Mounting the PC2

You can either mount PC2 under the baseboard or hide it in a suitable building or under scenery. *Note there are terminals underneath the PC2 so never mount it onto a metal surface!*

### DCC control

DCC is a system which transmits both power and digital commands down 2 wires or rails to control and power locomotives and accessories. At Train-Tech we believe that DCC technology should make life easier to build, program and use model railways, so we have designed a range of DCC Signals, Controllers and accessories which all connect using 2 wires and are all programmed using just one touch. The PC2 can connect directly to the nearest DCC track to minimise wires - it takes both its commands and power from the rails. As well as changing points can also be used to actuate semaphore signals & uncouplers (eg Hornby R8244 uncoupler). The PC2 incorporates a CDU (Capacitor Discharge Unit) which uses a capacitor to store power from the DCC system for a few seconds and then release it quickly to activate a point motor with more energy. This means it does not take the large amount of power needed for a solenoid all at once which might overload your DCC system and just takes a few seconds to recharge before you can operate a point again.

### Using multiple PC2's and accessories on a layout

DCC is designed to allow lots of locos and accessories to all be connected and controlled at the same time, but of course there is a practical limit of how many things can be powered which depends on your DCC controller and associated power unit. Low cost starter controllers tend to have power capabilities of 1 amp or so, whereas larger systems can offer 4 amps or more. A PC2 takes very little power when not being used, but when first switched on or after operating a point motor it takes around 0.15 amps for 2 seconds to recharge. As you are unlikely to ever want to change every point on your layout at exactly the same time this should never cause a problem, but if you have a lot of PC2's and other DCC items like locos and lights which all get switched on at once when you power up your layout, potentially this could overload your DCC controller. Ultimately may need to invest in a bigger power supply or controller, but you may be able to reduce this 'switch on surge' by ensuring that Locomotives with sound (which can take more than 0.5amp each!) are all shut down properly before you switch off, and if you are using lots of PC2's you can reduce this initial switch-on surge by having a simple switch to disconnect 2 or more zones of your layout for just a few seconds after switch on while the capacitors charge up.

### Point Motors

Although called point 'motors', most are actually solenoids or electromagnets which push or pull a steel bar to move point blades in one action. For good operation Point motors need to be fitted carefully to ensure they control the point reliably and because they take quite a lot of current (2 amps or more) they should ideally have short relatively thick wires. We have designed the PC2 to be located close to point motors and get its DCC from nearby track to keep the wires short - it also makes wiring easier and neater.

The PC2 can be fitted below or above your baseboard - if above it can be disguised by some scenic materials or a lineside building etc - make sure it mounted on a non-conductive surface as there are terminals underneath!

Small surface mounting point motors (which mount on top of the baseboard) such as the Peco PL11 or Hornby R8243 can be quicker to fit, but in our experience often need more careful setting up positionally and free-moving points. Other point motors are available which are larger and have more powerful electromagnets and so can be more reliable when operating stiff points, but these tend to be fitted underneath the baseboard. Some point motors come with short wires already fitted and some you have to connect your own, so be sure to follow the instructions supplied with your point motor and if there are 2 terminals for each coil connect one from each coil to make a single COMmon connection.

The PC2 is designed to control just one point motor and although you may safely connect two together, reliable operation cannot be guaranteed. You can connect 2 points to separate channels of the PC2 but set them to the same address to make them work together. Other kinds of Point actuators using small electric motors are available (eg Tortoise) which move blades slowly, but they tend to be more expensive and are not usually suitable for control by the PC2.

## 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:**  
**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

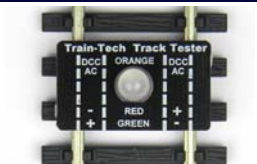
**LFX6 Quad LED Lighting Controller**  
 Controls 4 sets of LEDs on and off using separate DCC addresses. Directly powers 4 LEDs per output (DCC only)

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

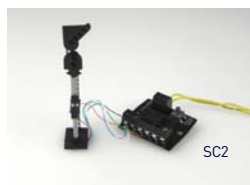


- Quickly tests track for power faults
- Low cost and easy to use
- Works on N, TT, OO or HO Track
- Indicates the DC polarity, or DCC, or a fault
- Small enough to check point frogs

**TT1 Track Tester**

## 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



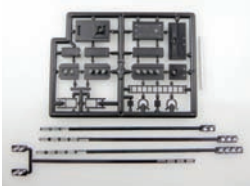
**SC2 3 or 4 aspect or 2 aspect+route signal control**  
 Controls one 3 aspect or one 4 aspect or one 2 aspect + route signal. Compatible with Train-Tech SK4, SK5, SK6 and most other manufacturer's LED signals

**SC3 Dual Dapol 00/N Semaphore 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 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

## PC2 Quad Point DCC Controller

- Control up to 4 solenoid point motors on DCC
- Easy One Touch™ DCC • Built-in efficient CDU

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

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