PC1 - DCC Single Point 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.*

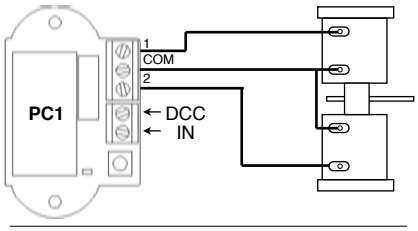
1 CONNECTIONS

Switch off power before connecting!

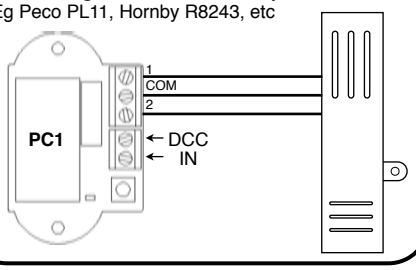
Connecting the PC1 to DCC
Connect the 2 DCC input terminals to nearby rails or direct to the DCC controller output.

Connecting the PC1 to the point motor
The PC1 has 3 connections - 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 the instructions supplied with your motor carefully!

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



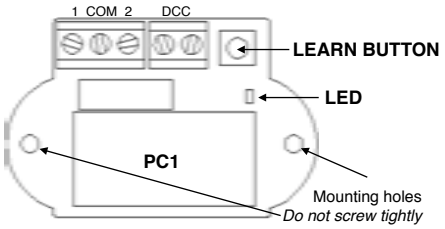
2 SETTING THE POINT ADDRESS

Each DCC accessory needs an 'address' assigned to it and with Train-Tech One Touch™ DCC this is very quick and easy to set up.

• Switch on the power and your DCC controller. The LED on the PC1 should light.

• Set up your controller to control DCC ***accessories*** (refer to controllers instructions), then set your controller to the DCC accessory address you choose for your point (eg 66).

• To set the address touch the 'Learn button' once - the LED on PC1 should flash. Then send either a ◀ or ▶ 'direction' command from your controller - the LED will stop flashing and your point is now programmed to the address you set (eg 66).



Note that whichever ◀ or ▶ 'direction' command you use when you set up the PC1 will always energise the point motor coil which is connected to terminal 1, so if you want to change it press the learn button again and press the other ◀ or ▶ 'direction' command.

3 CONTROLLING THE POINT

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 your controller to Accessory address 66
Press ◀ or ▶ direction
The LED on the PC1 will flicker to indicate it has received a command and the point should change

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 PC1
You can either mount PC1 under the baseboard or hide it in a suitable building or under scenery. *Note there are terminals underneath the PC1 so never mount it onto a metal surface!*

Troubleshooting

- Check that the PC1 LED is lit - if not and DCC locos etc run correctly check all the connections between your DCC Controller and Point Controller.

- If the PC1 LED is lit but does 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 LED on the PC1 does flicker when you send a command and you can hear the 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 PC1 incorporates a built-in Capacitor Discharge Unit (CDU) to improve the power available to energise the coil. If changing the same point 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 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.
- A 4 channel version of this unit is also available called the Train-Tech PC2

Document Ref D779615/3

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 PC1 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 PC1 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 PC1'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 PC1 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 PC1'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 Locos 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 PC1s 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 '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) should have short thick wires. We have designed the PC1 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 PC1 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 PC1 is designed to control just one point motor and although you may safely connect 2 reliable operation cannot be guaranteed. 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 suitable for control by the PC1.

Advanced users - changing the 'power-on' time
We supply the PC1 ready to go and work straight away with most standard point motors. As supplied it delivers power to the point motor coil for 0.3 seconds which should be fine for most, but this time may be adjusted from between 0.1 and 1.0 seconds if required. To change this time Press and Hold the Learn button for 2 seconds - the LED will flash a number of times which corresponds to the on-time X 0.1 seconds, so three flashes would be 0.3 seconds. To adjust this press the button and each time it will increment the time by 0.1 seconds and then repeat the cycle. When you reach the value you want press and hold the Learn button for 2 seconds again and the LED will stop flashing. The PC1 will use this new 'power-on time' until you change it.

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

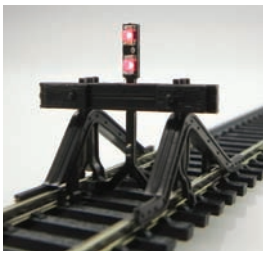
DCC · 00 · HO · N · Z

- 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:	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 · 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

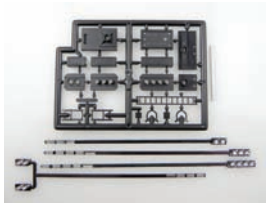
SC2 3 or 4 aspect or 2 aspect+route signal control
Controls one 3 aspect or one 4 aspect or one 2 aspect + route signal. Compatible with Train-Tech SK4, SK5, SK6 and most other manufacturer's LED signals

SC3 Dual Dapol 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.

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

PC1 Single Point DCC Controller

- Control solenoid point motors using DCC
- Easy One Touch™ DCC - NO CV programming!
- Works with most standard point motors
- Just 2 wires to nearest track or DCC lines
- Easy screw terminals - no soldering
- Built-in CDU for efficient operation
- Can synchronise to other signals or points

www.Train-Tech.com

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