



GEM Digital Point Actuator

(Part no: DPD2001)

Easy point operation for N to O gauge. Simple installation and wiring! Just connect to your power supply, or DCC controller, with two wires⁽ⁱ⁾

- ★ DCC or DC operation!
- ★ Fully NMRA compliant
- ★ Self-contained with:-
built-in Capacitive Discharge Unit
built-in DCC decoder
- ★ DCC address range:-
1 to 2044
- ★ Up to 48 DCC addresses
may be programmed for
automatic route setting

TAKE CARE -
POINTED END!



- ★ Operates down to 11V!
- ★ Low current draw!
- ★ Auxiliary features:-
position indication⁽ⁱ⁾
remote button control⁽ⁱ⁾
- ★ Easy setting up (on layout)
- ★ NMRA "service mode"
programming also
supported

(i) "Live frogs" and auxiliary
features require additional
wiring.

DPD2001 V2.1 - 22/08/14

PLEASE READ IMPORTANT INFORMATION ON THE REVERSE OF THIS PACKAGE

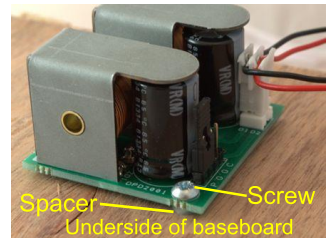
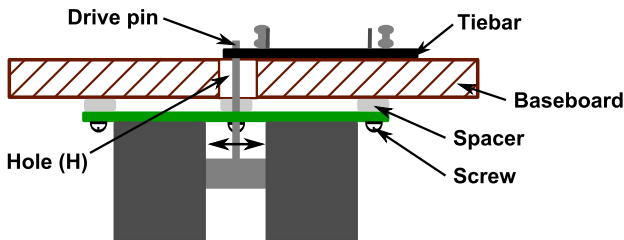
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GETTING STARTED WITH YOUR GEM

MOUNTING THE UNIT

- 1) Position *GEM* under your baseboard, below a previously-drilled hole (H), with its drive pin through the point tiebar. The *GEM* must be aligned squarely with the axis of the tiebar!
- 2) Mark the drive pin 1mm above the point tiebar, then remove *GEM* and cut the drive pin to length.

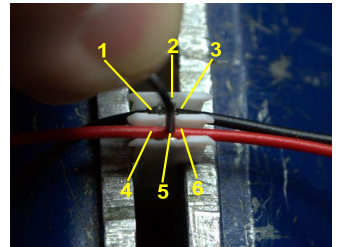


- 3) Drill 3 pilot holes, in the underside of the baseboard, 2mm dia. and approx. 8mm depth, then mount the *GEM* in position, using the supplied woodscrews and spacers.

(TO PREVENT DAMAGE ENSURE SPACERS ARE FITTED AS SHOWN)

USING THE SUPPLIED POWER CONNECTOR - no soldering required

- 4) Carefully press two wires into the connector as shown. Press repeatedly in all 6 positions until both wires are fully and evenly seated. A blunt tool - e.g. Allen key - no larger than 1mm dia., should be used taking care not to damage the metal blades of the connector. Alternatively, special tool HT110031 is available.



NOTE - the wire must be stranded 7/0.2mm type.
GFB Designs part number EW007215⁽ⁱⁱ⁾ is suitable.

(ii) EW007215 - BLACK; EW207214 - RED - see our website for other colours.

You now have two options: DC power or DCC power

WIRING FOR DC

- 5) Wire as shown, with a *double-pole/double-throw* switch - e.g. our part number SW122031.

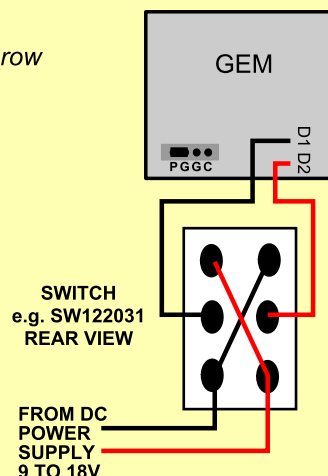
The power must be SMOOTH DC - older model train transformers are NOT suitable.

We recommend using a "wall plug" style supply, for example:-

GFB Designs - part no: PS115017
Rapid Electronics - stock no: 85-2903
Maplin Electronics - stock no: L48BL

The above supplies will power between 6 to 20 units⁽ⁱⁱⁱ⁾.

(iii) Depending upon how many points are switched together



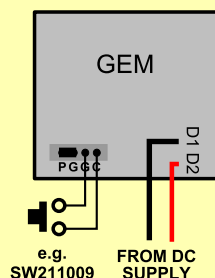
OPERATING ON DC

- 6) The point state is determined by the *polarity* of the DC supply and, therefore, the position of the *double-pole/double-throw* (DPDT) switch.

If the *GEM*'s "D2" terminal is *positive*, the drive pin will snap towards the "A" position (marked on the circuit board in white) and it will snap to "B" when "D2" is *negative*.

ALTERNATIVELY: a push-button switch can be connected to the "G"/"C" terminals as shown here. The point will snap to the opposite position each time the button is momentarily pressed.

In this case several *GEM*s may be connected to one pair of power supply wires (DPDT toggle switches are not needed in this case).

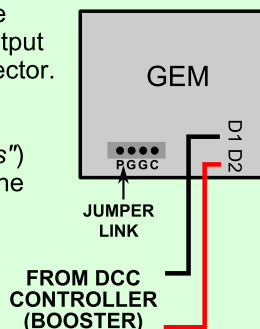


USING DIGITAL COMMAND CONTROL

- 5) For DCC wiring the "D1" and "D2" terminals on the *GEM* should be connected to the main ("track") output from your DCC controller using the supplied connector.

Several connectors can be pressed onto a pair of wires running around your layout (known as a "bus") so that all points on the layout are operated from the same two wires.

Each *GEM* will draw less than 0.15amp of current, for less than 2 seconds, after a change of point state and around 0.01amp (10mA) continuously.



6) Setting the point's DCC address (see diagram above)

- Turn on your DCC controller (*GEM* connected to its "track" output).
- Remove the jumper link from the "P"/"G" pins and push onto "G"/"C".
- Referring to your DCC controller manual, send a *point/switch/turnout*^(iv) *normal/on/closed*^(iv) command to your chosen address.
- Change the position of the jumper link back to "P"/"G".

The *GEM* will "remember" your chosen address and the point will snap to "A" (marked on the unit in white) with *normal/on/closed*^(iv) commands (and to "B" with *reversed/off/thrown*^(iv) commands). If you need the point to work in the opposite sense, then send a *reversed/off/thrown*^(iv) command in step (c) above.

7) Operating with DCC (following address setup)

Simply send *point/switch/turnout*^(iv) commands, as detailed in your DCC controller manual.

(iv) The exact phraseology varies between DCC manufacturers - some refer to *accessories* rather than points!

NOW PLEASE READ THE "FULL USER GUIDE", AVAILABLE AS EITHER A BOOKLET OR VIA: www.gfbdesigns.co.uk

OPENING INSTRUCTIONS



Prise up the tabs from their pockets
THIS PACKAGING IS RE-USABLE



NOTE: This product is not a toy and is not intended for persons under the age of 14 years unless supervised by an adult.

A basic user guide for this product - to get you started - can be found on the inside of this packaging. A Full User Guide, describing all the product's features, is available (free of charge) from *GFB Designs*.



The human body can generate static electricity which can damage electronic equipment - **TRY TO HANDLE THE UNIT BY THE METAL FRAMEWORK ONLY!**



The unit **MUST NOT** make contact with any electrically-conductive parts other than electrical connections specified in the user guides!



DO NOT OVERTIGHTEN the mounting screws. **Under no circumstances must the circuit board be flexed or distorted!**



Always turn off power before making or changing any connections!

DISPOSAL OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT

European law requires that household waste from electrical and electronic equipment is collected separately from normal domestic waste and then properly recycled.

This means that you must return any damaged or "end-of-life" units to your authorised collection centre. *GFB Designs* will provide advice and assistance regarding the correct disposal procedures.

GFB Designs
WE put YOU in control!

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