



IMP Digital Servo Driver

(Part no: DSI1001)

Operate semaphore signals, crossing gates and other accessories with ease! Simple installation and wiring! Just connect to your power supply, or DCC controller, with two wires⁽ⁱ⁾ - then plug in a servo⁽ⁱⁱ⁾.

- ★ DCC or DC operation!
- ★ Fully NMRA compliant
- ★ Self-contained with built-in DCC decoder, servo driver and setup controls
- ★ DCC address range: 1 to 2044
- ★ Up to 48 addresses may be set (to operate in groups)
- ★ Operates down to 9volts!
- ★ Low current draw!
- ★ Auxiliary features: position indication⁽ⁱ⁾ remote button control⁽ⁱ⁾
- ★ Easy setting up - (on layout)
- ★ NMRA "service mode" programming also supported

(i) Auxiliary features require additional wiring

(ii) Servo not included. Most types are suitable. GFB Designs RCS0009 is recommended.

DSI1001 V2.1 - 22/08/14

PLEASE READ IMPORTANT INFORMATION ON THE REVERSE OF THIS PACKAGE

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GETTING STARTED WITH YOUR IMP

The *IMP* drives a model control servo between 2 endpoints using "on/off" instructions from either a switch or DCC system. A typical setup is shown here.

Auxiliary lead

Servo

Output arm

Linkage to accessory

Servo connector

Power leads
UNDERSIDE OF BASEBOARD

You have two options: **DC power** or **DCC power**

WIRING FOR DC

- 1) Wire the unit as shown, with a *double-pole/double-throw* switch - e.g. *GFB Designs* part number SW122031.

The power supply must produce SMOOTH DC - older model train controllers or transformers are NOT suitable.

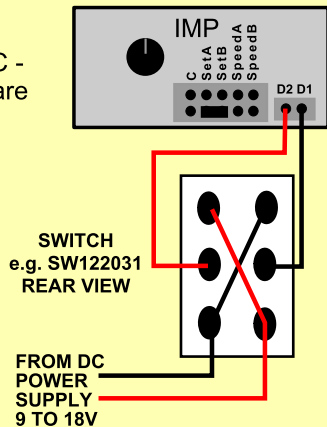
We recommend using a "wall plug" style supply, for example:-

GFB Designs - part no: PS115017

Rapid Electronics - stock no: 85-2903

Maplin Electronics - stock no: L48BL

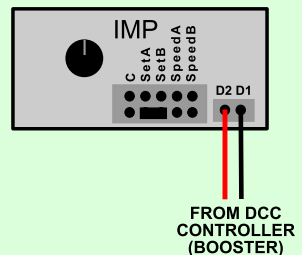
The above supplies will power up to 4 units, depending upon the type of servo used.



WIRING FOR DIGITAL COMMAND CONTROL

- 1) For DCC wiring, the "D1" and "D2" terminals on the *IMP* 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 accessories on the layout are operated from the same two wires.

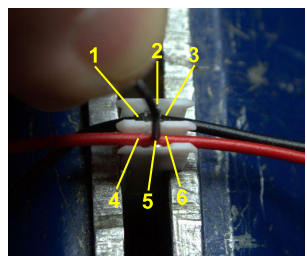


THE SUPPLIED POWER CONNECTOR - no soldering required

- 2) 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.

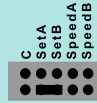
NOTE - the wire must be stranded 7/0.2mm type. GFB Designs part number EW007215⁽ⁱⁱⁱ⁾ is suitable.

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



SETTING THE SERVO ENDPOINTS AND SPEEDS

Setup utilises the jumper link - shown here in its *inactive* position:
With the link as shown below, the *ADJUST* knob alters the setting.
The *IMP* "learns" the setting when the link is removed.



- 3) **To set endpoint A:** move the link to the position shown here:
The servo will follow the movement of the *ADJUST* knob so that you can set endpoint A as required.



- 4) **To set endpoint B:** follow step (3) with the link placed here:



- 5) **To set the speed to endpoint A:** place the link as shown here:
The speed ("to A") can now be set on the *ADJUST* knob, between 2 to 500 degrees per second. The servo will not move during speed setting.



- 6) **To set the speed to endpoint B:** follow step (5) with the link here:



- 7) Replace the link to its inactive position when satisfied with your settings.

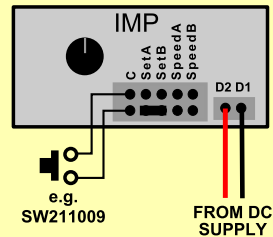
OPERATING ON DC

- 8) The servo arm position is determined by the *polarity* of the DC supply and, therefore, the position of the DPDT switch.

If the *IMP*'s "D2" terminal is *positive*, the servo will drive to endpoint "A" (as setup above) and it will drive to endpoint "B" when "D2" is *negative*.

ALTERNATIVELY: a push-button switch can be connected between the "C" pins as shown here.
The servo will drive to the opposite endpoint each time the button is momentarily pressed.

In this case several *IMPs* may be connected to one pair of power supply wires (DPDT toggle switches will not then be needed).



USING DCC

- 8) **Setting the accessory's DCC address and operating sense**

- Turn on your DCC controller (*IMP* to "track" output).
- Place the jumper link in this position:
- Referring to your DCC controller manual, send a *point/switch/turnout*^(iv) *normal/on/closed*^(iv) command to your chosen address.
- Move the jumper link back to its inactive position, thus:



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

- 9) **Operation with DCC (following setup)**

Simply send *point/switch/accessory*^(iv) commands, as detailed in your DCC controller manual, and the servo will drive between your set "A" and "B" endpoints.

^(iv) The exact phraseology varies between DCC manufacturers - some actually refer to "accessories"!

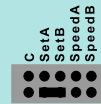
NOW PLEASE READ THE "FULL USER GUIDE", AVAILABLE AS EITHER A BOOKLET OR VIA: www.gfbdesigns.co.uk

IMP - GETTING STARTED SUPPLEMENT

The *IMP* now has a "bounce" feature, which is intended to simulate the movement of semaphore signals as they "rebound" at the end of their travel. (This feature is available in all *IMPs* having software version 2.1 or later - DCC users can read CV7 to determine the software version - see the Full User Guide.)

ENABLING OR DISABLING "SIGNAL BOUNCE"

Like the main setup, this uses the jumper link - shown here in its *inactive* position - and the *ADJUST* knob, with power turned on.



a1) To enable (turn on) bounce: Turn the *ADJUST* knob fully **CLOCKWISE**, then move the link to the position shown here:
(Make sure you set the knob **BEFORE** moving the link!)



a2) Wait for 3 to 4 seconds.

a3) Replace the link to its inactive position.

b1) To disable (turn off) bounce: Turn the *ADJUST* knob fully **ANTI-CLOCKWISE**, then move the link to the position shown here:
(Make sure you set the knob **BEFORE** moving the link!)

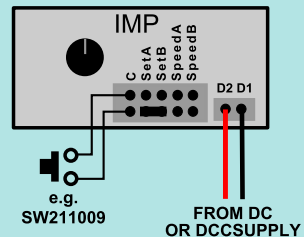


b2) Wait for 3 to 4 seconds.

b3) Replace the link to its inactive position.

(NOTE: The *IMP* is supplied with signal bounce disabled)

ALTERNATIVELY: a push-button switch can be connected between the "C" pins as shown here. Hold the push button for 3 to 4 seconds, after setting the knob, to turn "bounce" on or off.



NOTE FOR DCC USERS

Enabling or disabling "signal bounce" can be combined with the setting of the *IMP*'s DCC address - see (8) in the main "GETTING STARTED" guide. Ensure that the *ADJUST* knob is set **before** placing the jumper link on the "C" pins.

If, however, you only want to enable or disable "bounce" without changing the DCC address you must ensure that no DCC accessory commands are sent from your controller whilst the jumper link is on the "C" pins!

Verify that the link is replaced to its inactive position - shown here - before attempting to operate the *IMP*.



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 AVOID TOUCHING THE PINS FOR THE JUMPER LINK OR CONNECTORS!**



DO NOT make any electrical connections other than those specified in the user guides!



DO NOT OVERTIGHTEN the mounting screws as this could damage the plastic case!



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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