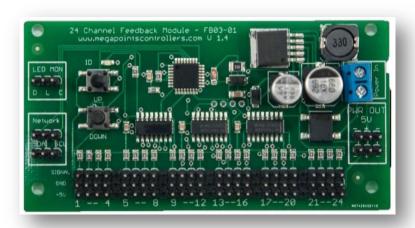# MegaPoints Controllers Feedback Module.

24 channel feedback module for version 2 MultiPanel Processors.

## User guide



## Features include

- No soldering – truly plug and play
- Various sensor types
    - DCC and analogue block occupancy
    - Turnout/points position indication
    - Current sensing
    - Infra red sensing
    - Ambient light sensing
- Provides power for powered sensors
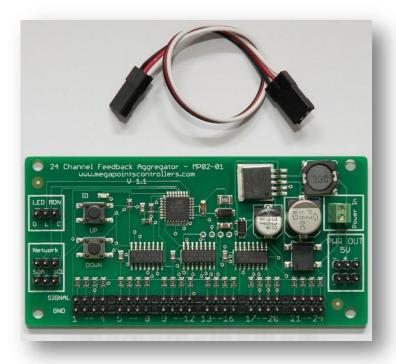- Up to 192 feedback channels

# Contents

# Introduction

The feedback module aggregates various feedback information from switches, current sensors, points position indicators and optical sensors for both DCC and analogue layouts. You are free to mix and match the sensor types across any of the 24 channels per board. A maximum of 8 boards may be connected to any network thereby providing up to 192 feedback channels.

Everything is plug and play and only requires the correct cable to use it. Any version 2 MultiPanel will immediately begin displaying feedback data after the feedback module has been powered and connected to the network.

This product has accompanying instructional videos detailing basic usage and installation. Please see the video section of our web site.

# What's included



The following items are included with each feedback module:

- 1 x Feedback module board
- 1 x Network hook-up cable

## No soldering

All connections are via plug and socket and require no soldering. By using LED or switch cable packs an entire mimic panel can be hooked up and plugged in. It's all plug and play and allows simple reconfiguration as your needs change by moving cable positions.

## Accessible connectors

We've used commonly available connectors so you have the choice to use ready made and pre wired cable packs or make your own. We use 2.54 mm pin pitch spacing making roll your own cables easy and well within the reach of modellers.

## Modular

Designed as a modular system that expands in units of 24, the railway modeller only needs to install what is needed for their layout. Additional modules are available and easily added as required.

MegaPoints Controllers use electronic components that should be handled with care.

Avoid touching any components or the circuit printed on the bottom of the board.

Avoid placing the board on any metallic surfaces including track.

## Flexible sensor accessories

The feedback module can connect to a number of sensor accessories with more being designed on an ongoing basis. The layout operator is free to mix the sensor types as appropriate for their needs.
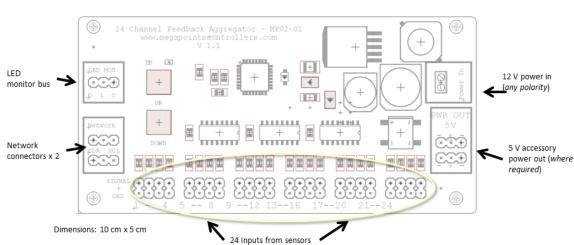
# Requirements

If connecting more than one feedback module a network extender must be fitted. The most basic network extender is a pair of CAN adaptors connected back to back. These regenerate the network signal and coordinate network traffic. These will be placed in front of the master MultiPanel Processor.

## Hooking up

The following picture shows the various connectors on the feedback module. Connect 12 Volt regulated power to the power connector screw terminals. Daisy chain or connect the network cable to the network bus. Observe the same pins SDA match the MultiPanel processor SDA connectors. The feedback module requires a MultiPanel Processor version 2.0 or later to display feedback data. Earlier MultiPanel versions may co exist on the same network, however feedback data will be ignored.

The original board contains two rows of sensor pins across the bottom.



Feedback Module connections

A later edition of the feedback module contains an additional row of pins at the bottom of the board. These supply +5V power to optical powered sensors. The board has part number FB03-01 printed on it.



Feedback Module connections

## Address

There are two buttons labelled "UP" and "DOWN" and an LED labelled "ID". The buttons move the device address up or down the range 1 – 8. Up to 8 feedback modules may be attached to each network and require a unique address.  The address determines the feedback channel range the device will operate on.

| Board Address | Feedback Channel | |
|---|---|---|
| | Lower | Upper |
| 1 | 1 | 24 |
| 2 | 25 | 48 |
| 3 | 49 | 72 |
| 4 | 73 | 96 |
| 5 | 97 | 120 |
| 6 | 121 | 144 |
| 7 | 145 | 168 |
| 8 | 169 | 192 |

When the unit is powered the address will flash on the ID LED as a number of short flashes (address) followed by a longer flash before the unit becomes operational. As an address button is pressed and registered, the ID LED will flash to indicate each change.
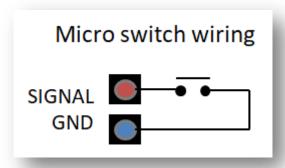
## First time use

Follow these steps to quickly get started with your first feedback module:

- Connect 12 volts regulated power to the power in terminals.
- Connect the network to either of the network connectors.
- Connect an LED expansion board to the feedback bus of the MultiPanel Processor or to the LED monitor bus. Also connect the Power In of the LED expansion board to the 5V accessory power out,
- Ensure all is powered up.
- Connect the SIGNAL to GND pin for channel 1 of the feedback module. Either:
  - Connect a piece of wire
  - Connect a MultiPanel plug and play panel pushbutton
- As the input pin is connected to the ground pin, observe the monitor LED illuminating to indicate the change on the SIGNAL pin.
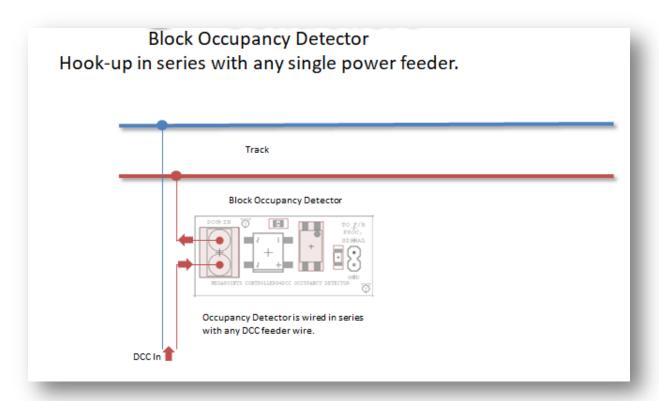
## Connecting sensors

*Micro switch*: If using a micro switch connect it as illustrated on the left.



*DCC Occupancy Block Detector*

This is connected in **SERIES** with any one of the power feeds. Connect the two output pins to corresponding pins on the feedback module.
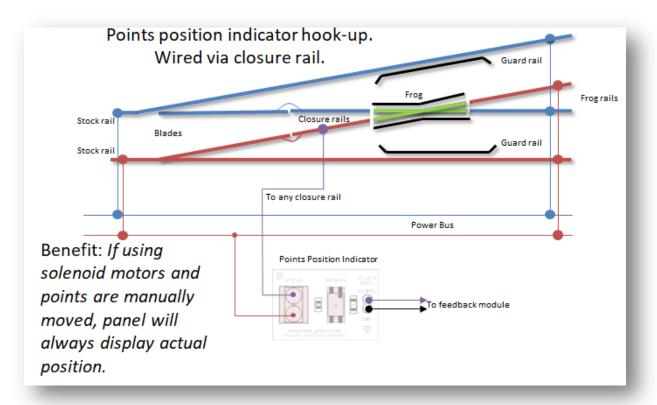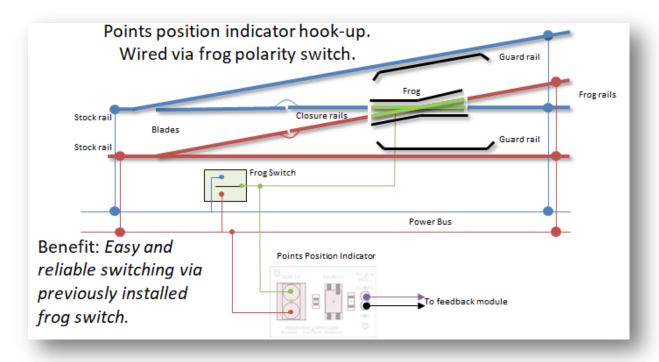


*DCC turnout/points position indicator*

There are several options for connecting to points. If wiring via the closure rail the system will detect a change even if the points are manually thrown.

Closure rail wiring illustrated below.

Insulated frog wiring below:

Points position indicator hook-up.
Wired via closure rail.

Guard rail

Frog

Frog rails

Stock rail

Closure rails

Blades

Guard rail

Stock rail

To any closure rail

Power Bus

Benefit: *If using solenoid motors and points are manually moved, panel will always display actual position.*

Points Position Indicator

To feedback module

Electro frog switch wiring below:

Points position indicator hook-up.
Wired via frog polarity switch.

Guard rail

Frog

Frog rails

Stock rail

Closure rails

Blades

Guard rail

Stock rail

Frog Switch

Power Bus

Benefit: *Easy and reliable switching via previously installed frog switch.*

Points Position Indicator

To feedback module

## Input inversion

Three pin boards shipped after 01-SEP-2018 contain updated software allowing the user to invert the input circuit.

To invert the input circuit hold the "DOWN" button while applying power. You'll observe the LED flash fast for about 8 seconds confirming the inputs have been inverted.

To revert the input circuit hold the "UP" button while applying power. A slower flash will be displayed on the LED for about 8 seconds.

## Specifications

| | |
|---|---|
| Power requirements | 9 – 13.8 Volts DC regulated 0.5 Amp |
| On board sensor connectors | 24 |
| Maximum feedback channels | 192 |
| Network | 2 x $I^2$C connectors, bi directional |
| LED Monitor | 24 channels |
| Power output | 2 x 5 V for sensor power |

## Accessories
### Sensor cable packs

Supplied in 12's pre wired one pair of plugs on each end.

## Contacting us

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If you have any product improvement suggestions we'd be very pleased to hear from you.

*NOTE: We operate a policy of continuous improvement. Colours, specifications and the placement of components may vary from time to time.*