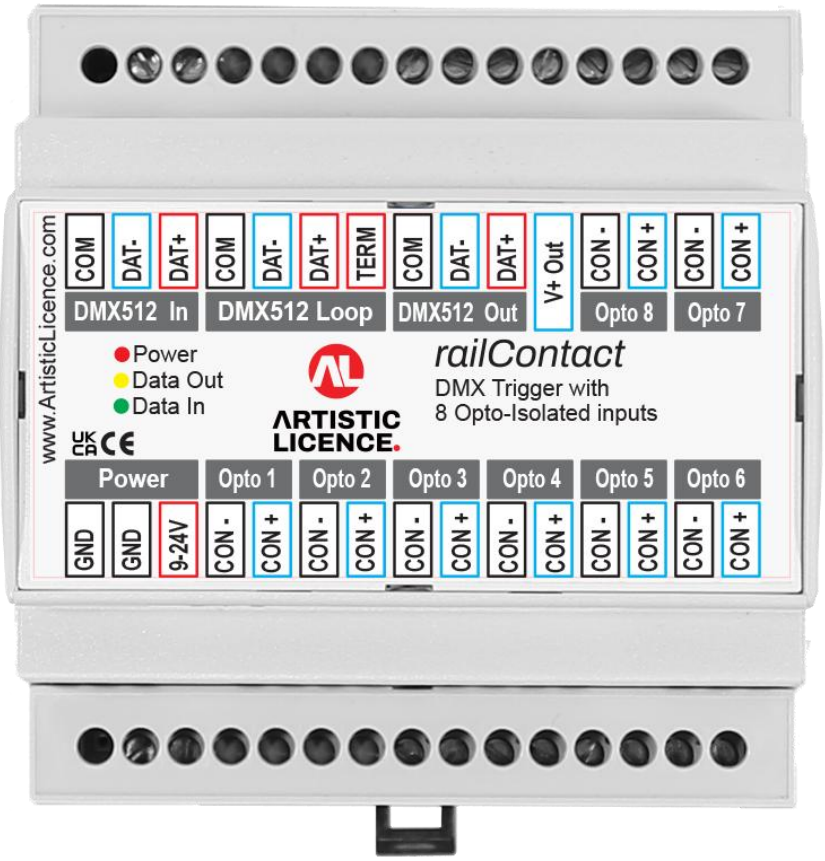

railContact

User Guide

General information

Safety Information

PLEASE READ THESE INSTUCTIONS BEFORE USING THE PRODUCT

CAUTION

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not allow this product to be exposed to rain or moisture. Do not allow liquid to penetrate the product.

CAUTION

Unless directed in the instructions there are no user serviceable parts inside. REFER SERVICING TO QUALIFIED SERVICE PERSONEL.

Compliance

European Community Compliance Statement

All Products manufactured or sold by Artistic Licence Engineering Ltd are fully compliant with the appropriate CE, UKCA, and RoHS regulations. Product specific information is available on request

FCC Compliance Statement: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.

DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications may void your authority, granted by the FCC, to use the product.

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warranty

Unless otherwise stated this product is covered by a 5-year limited warranty. The first 2 years include both parts and labour. Warranty is return-to-base, meaning the product must be returned to Artistic Licence Engineering Ltd for repair. Customers are responsible for all shipping costs associated with returning the product.

Please note that the warranty is void if the product is misused, damaged due to improper handling, or modified in any way.

For full details, please refer to our comprehensive warranty policy at www.artisticlicence.com

Returns under warranty

To discuss a fault please contact support@artisticlicence.com, if it is ascertained that a fault requiring further investigation or repair is necessary an RMA (Return Merchandise Authorisation) number will be provided. This number must be clearly marked on outside of the box containing the product being returned.

Shipping

To ensure safe transit, all products must be securely packaged using the original packaging or equivalent protective materials. Improper packaging may result in additional repair costs or void the warranty.

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Overview

railContact **provides 8 opto isolated contact closure inputs, enabling simple triggering of DMX channels based on activation of external sensors, volt-free switches, beam-breaks or other input devices.**

It is possible to cascade up to 2 *railContacts* together to increase the number of inputs.. When connected together, railContacts automatically set their DMX addresses consecutively, 1-8, 9-16.etc.

Installation

DINrail Mounting

railContact is designed to be installed inside a suitable DINrail enclosure.

- Step 1. 'Hook' the device on to the top rial of the DINrail
- Step 2. Clip the device on to the bottom rail by applying gentle pressure to the lower half of the device. The unit should engage its sprung tab(s) with a 'click'.

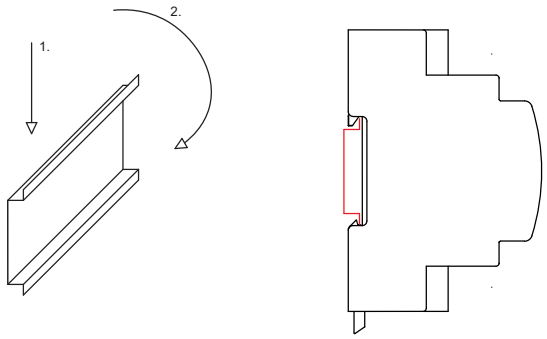


Fig.1

This product has been designed for professional use only. It should only be installed by a suitably qualified person and in accordance with electrical regulations in the country of use.

LED indicators

railContact has several LED indicators, each providing information to the installer or user as to its status.

INDICATOR	COLOUR	STATE	MEANING
POWER	Red	Off	Unit is not energised
		On	Unit is energised
DMX DATA IN (WHERE USED)	Green	Off	No DMX is being received
		On	DMX is being received
DMX DATA OUT	Yellow	Off	No DMX is being sent
		On	DMX is being sent

Connections

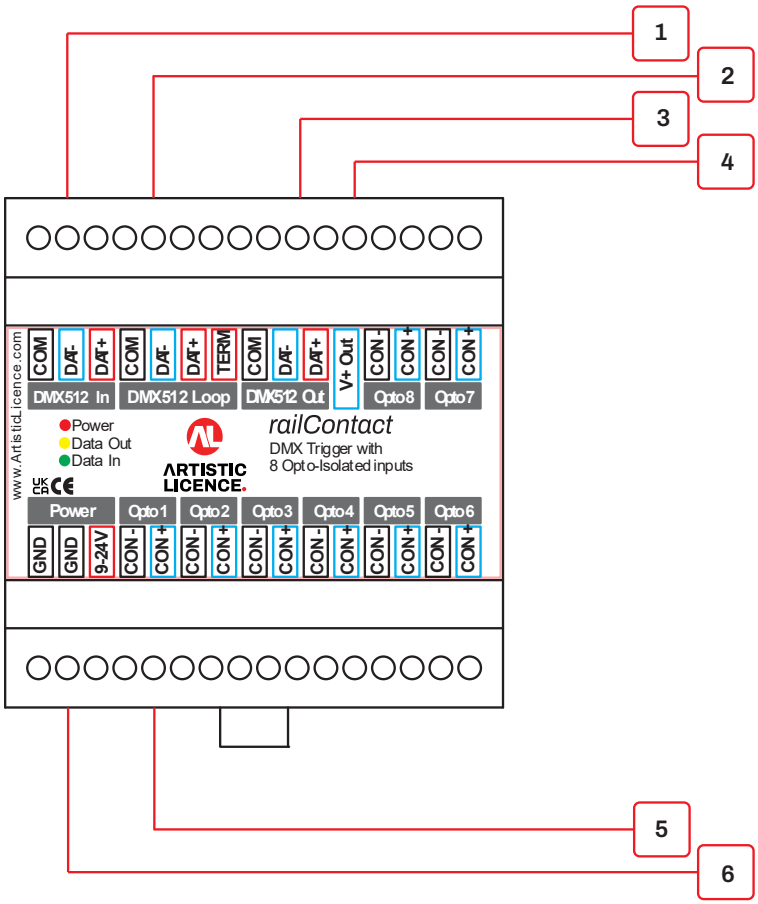


Fig .2

REFERENCE	DESCRIPTION
1	DMX Input (only from another *railContact*)
2	DMX Loop (Not currently utilised)
3	DMX Output
4	+V Output
5	Opto-Isolated Inputs
6	Power Supply

Internal Earth and Isolation

The following table summarises the internal signal common interconnection and isolation.

REFERENCE	DESCRIPTION	
DMX Input (Including Loop through)	Type	Non-Isolated
	Pin 1:	Connects to Internal Logic Ground
DMX Output	Ground referenced	
Contact Closures	Opto-Isolated	
Internal Logic Ground	Connects to Ground Power Input	

Powering the device

railContact is powered via an external 9-24V DC power supply, connected via the 2-pin screw terminal.Fig.2 - (6)

It is recommended that a ferrite core be fitted onto the DC power lines as close as possible to the *railContact*. This protects the unit from any electrical spikes that appear on the DC line.

As the product is normally installed alongside other devices one power supply can be used to power multiple devices. Please ensure the selected power supply has sufficient capacity to power the connected device(s) and that the polarity of the connections is observed.

1. To power the device, first connect the power supply, only energise the power supply once all connections are made.
2. To power off the device simply de-energise the power supply.

Connection to DMX

DMX Output

The DMX output is connected via the 3-pin screw terminal. Fig.2 - (3) Use this output to connect to a DMX receiver/ input device or another railContact to cascade units. Ensure to set the DMX port of your controller as an input.

DMX Input

If multiple *railContacts* are cascaded, to provide greater than 8 channels of triggering, the DMX output from the first unit should be connected to the DMX input of the second unit.

If multiple units are cascaded, then the last railContact must have a terminating wire link fitted.

It is not recommended to have any other DMX devices connected on the same DMX line/ universe as a railContact, as this is an output only device and clashing of signals and channels may occur if other types of device also exist on the line

The DMX Loop terminals should not be used for connection to another railContact, this connection should only be via the DMX output. This ensures that the DMX channels are automatically configured correctly.

The DMX input is connected via the 3-pin screw terminals. Fig.2 – (1), 2 - (2)

Termination

This product contains an internal termination resistor. This is enabled by fitting a wire link between the screw terminals that will terminate the DMX line (Term and DAT+). Fig.2 - (3)

Connection to Inputs

Contact Inputs

The 8 contact closure inputs each have 2 terminals labelled Con+ and Con- connected via 2-pin screw terminals.Fig.2 - (5) and are polarity sensitive.

Internally, these connect through an opto-isolator via a current limit resistor.

The current limit resistor is set to regulate current to the range 2-3 mA over a range of input voltages of 9 - 24 VDC. 24VDC being the maximum permissible input voltage.

When the voltage is applied, it activates an opto-isolator and triggers a full (255) DMX value to be transmitted on the associated DMX output channel.

Voltage Output

The single-pin screw terminal voltage output Fig.2 - (4) allows for easy connection to volt free items such as switches and relay contacts. The voltage output pin will be the same voltage as the power input. It is current limited to 250mA by an electronic auto-resetting fuse.

It can be used as the positive supply to the opto-isolator inputs if the isolation feature is not required.

Configuration

Operation

railContact monitors the state of the 8 contact closures and translates this into a value on DMX channels 1 to 8. When a contact closure is active the corresponding DMX value is 255 and the Data out LED on the device illuminates

If two or more *railContacts* are linked in series using the DMX out of the first device to the DMX input of the second device, the 8 channels of the second *railContact* in the chain are automatically re-patched to channels 9 to 16 and so on for further railContacts. The channel assignment is non-user configurable.

It is expected that in normal usage, the opto-isolated inputs will be used to provide protection from electrical noise arising from long cable distances from triggering devices. (see Fig.3 'Input Configuration'). There is no requirement for external voltage sources to be current limited as the contact inputs contain their own current limiting resistor. The maximum input voltage of the opto-isolated inputs is 24VDC.

railContact however also provides a voltage output which can be used when connecting to local volt-free items - such as switches (see Fig.4 'Input Configuration').

Inputs

Connections to Inputs – Diagrams

Isolated Mode

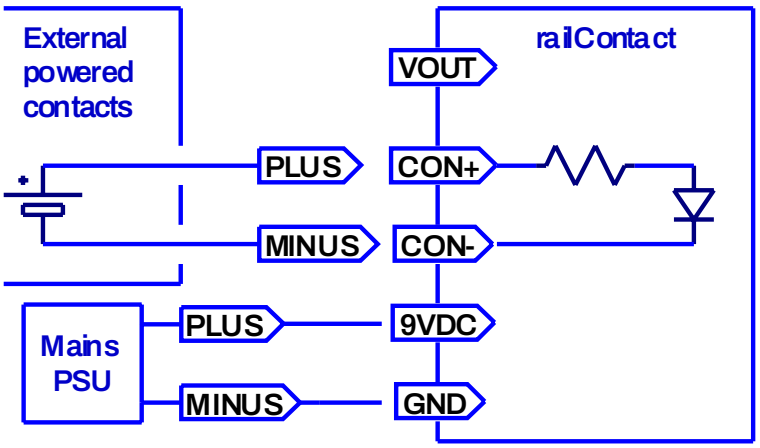


Fig.3

Non-Isolated Mode

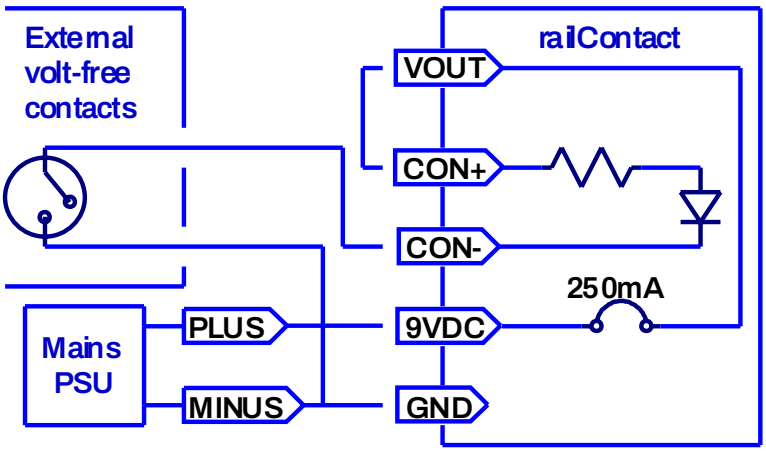


Fig. 4

Application Diagram

The diagram below shows how *railContact* could be utilised in a typical application.

Fig.5

In this example, two *railContact* units are linked together to provide channels of trigger control. The 8 channels of the second unit are automatically re-patched to channels 9 -16.

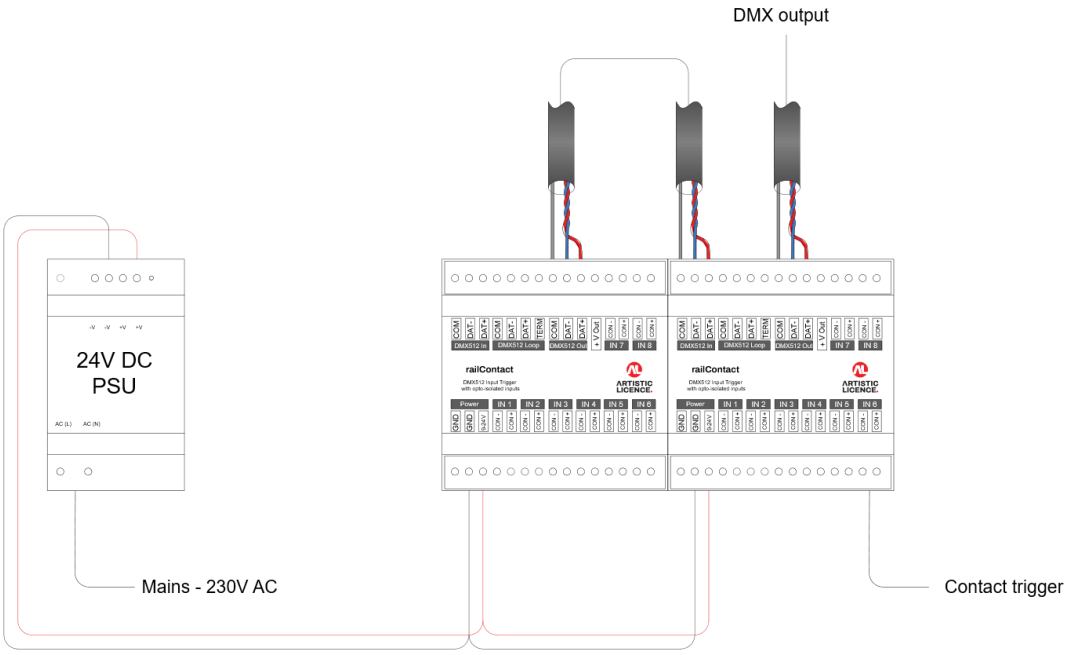
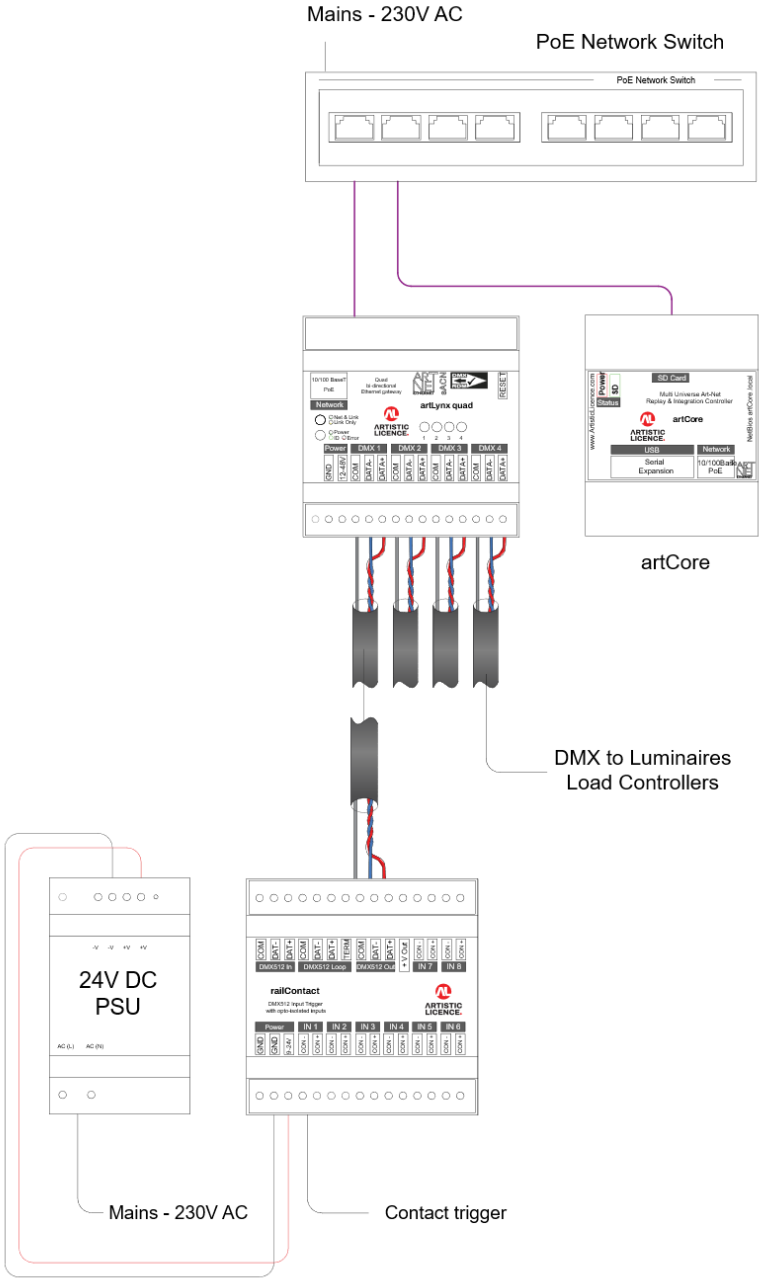


Fig.6

This example shows a *railContact* being used to trigger an Artistic Licence *artCore* controller via Art-Net. The *artLynx quad* converts the DMX output of the *railContact* into Art-Net. The *artCore* controller in turn triggers a scene (a full universe of DMX levels recorded in the *artCore*).

Please refer to the *artCore* integration manual for more information on this application.



Troubleshooting

OBSERVATION	DESCRIPTION
Power LED is not illuminated	Check the power supply to the unit is energised
	Check the polarity of the connection to the *railContact*. The device is polarity sensitive.
	Ensure the power supply to the railContact, outputs a minimum of 9VDC and a maximum of 24VDC.
Power LED/ off or inconsistant	The power LED should be static green. If it is not, please check the external power supply voltage and ensure it has adequate current output available to power the *railContact* and any other loads using the same power supply.
No power on V+ Output	The voltage output of the *railContact* has a maximum current rating of 250mA. Ensure the total of any sensors connected to this terminal do not exceed this current rating.
	Ensure any wiring connected to this output is not shorted to ground. On removal of the fault the internal fuse will auto reset.
Data In LED not illuminated	If only one railContact is being used on a DMX line then this LED will remain off and is normal behaviour.
	If multiple railContacts are cascaded then only the last device in the chain should have a terminating wire link fitted.
	When cascading railContacts ensure all devices in the chain are powered, and that the DMX input is correctly connected to the DMX output of the previous unit.
Inconsistent operation	The railContact is an output only device and should only exist by itself or other railContacts on the same DMX line/ universe.
	A maximum of 32 devices can be connected in cascade on any DMX line/ universe. Remaining under this number limits signal reflections and signal degradation
DMX Data not received	Ensure your DMX receiver (Lighting console etc.) is configured to receive DMX data on the port that the railContact is connected to.
	All DMX splitters and Art-Net nodes must be able to support using an output as an input
DATA OUT LED NOT ILLUMINATED	Data out LED will only illuminate when one of the 8 contact colosures on a railContact are active. This LED does not illuminate for any data received from other units in a cascade.
	Ensure sensors are connected such as wiring diagrams Figure 3 & 4. External sensors must provide 9-24VDC to trigger the input and their connection is polarity sensitive

For further information or support visit www.artisticlicence.com