



Rail-Split extreme

User Guide

Serial numbers 151 upwards



Please read these instructions before using the product.

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

Unless directed in the instructions there are no user serviceable parts inside the outer case of this product.

Always disconnect from the power supply when not in use.

Any specific IP rating, where appropriate, is given in the instructions. Unless otherwise stated this product is designed for indoor use only. If used outdoors it **MUST** be installed in an appropriate IP rated cabinet. Do not allow this product to be exposed to rain or moisture. Do not allow liquid to penetrate the product.

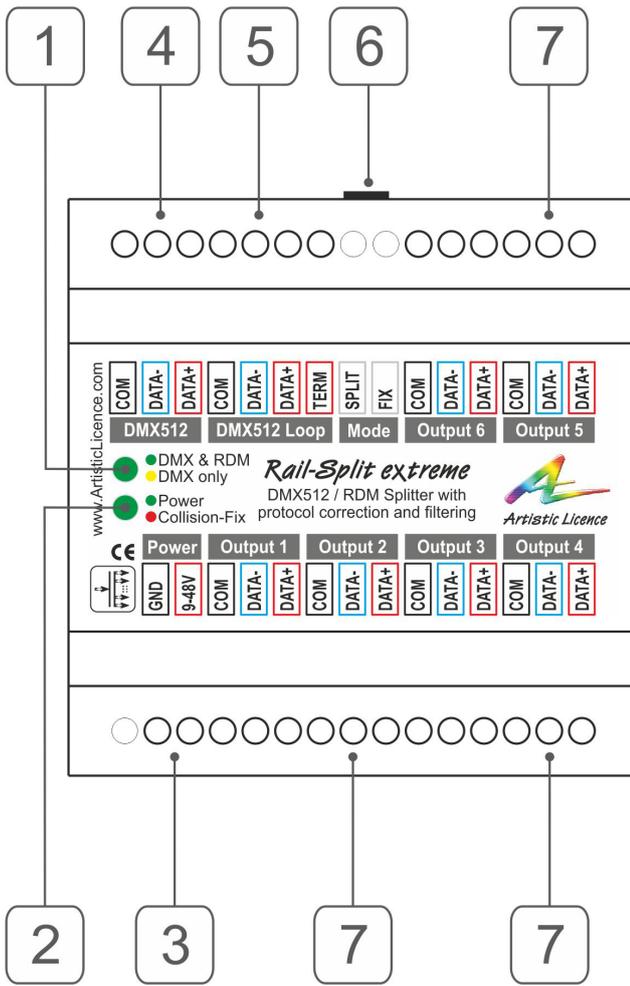
Please recycle all packaging.

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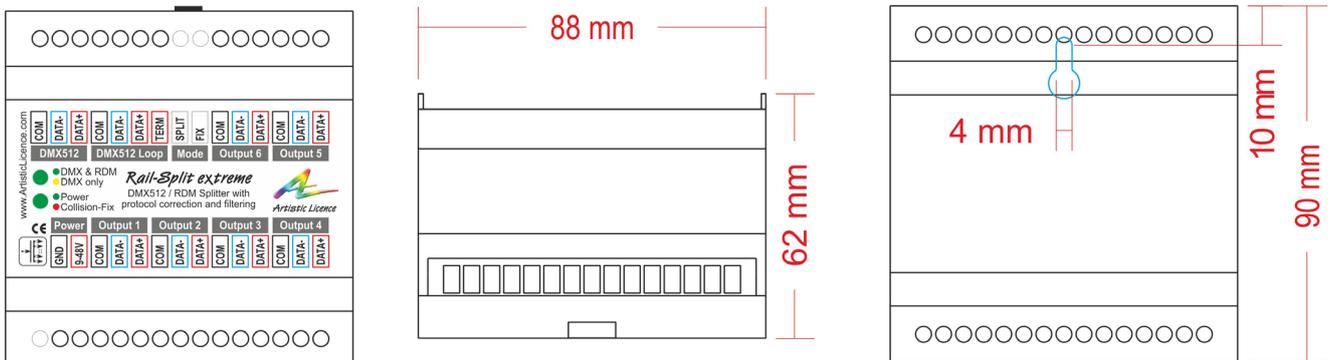
Connections



Reference	Type	Description
1	LED	Data Good
2	LED	Power / Fix
3	Connection	Power Input
4	Connection	DMX512 Input
5	Connection	DMX512 Loop & Term**
6	Switch	Split / Fix Mode
7	Connection	Splitter Outputs

** A passive loop-through connection allows onward connection to other DMX512 devices. If this feature is not required then the signal must be terminated. The product contains an internal termination resistor. This is enabled by fitting a wire link between **Term** and **DAT+**.

Mounting Diagram



DMX512 Wiring

XLR Pin (Convention)	Function	Colour
1	Ground	Black
2	Data -	Blue
3	Data +	Red

Overview

Rail-Split extreme is a fully bi-directional DMX512 splitter and distribution amplifier, with the added feature of a 'data fixer' for DMX. The latter functionality is used for resolving flickering problems arising from product incompatibility issues - see 'Fixer Mode' on page 6 for more information.

Rail-Split extreme offers all the functionality of its sister product, Rail-Split RDM. Both products feature electrocution protection (self-healing) on the input, loop and all outputs (up to 425 VAC continuous connection).

Additionally, Rail-Split extreme provides surge protection. This feature is aimed at protecting the product and connected equipment against voltage surges of the type generated by lightning. The protection is sacrificial which means that after a certain number of protection events, the protection circuitry will be destroyed (see Specification on page 7).

Key features

- Input Optical Isolation
- Six independent outputs
- Bi-directional outputs
- Optimized for electrically noisy environments
- Mains electrocution protection (self-healing) on input, loop and outputs
- Surge protection (sacrificial) on input, loop and outputs
- RDM (Remote Device Management Draft & Standard V1.0)
- DMX512-A compatible
- Microprocessor controlled
- Surface mount or DIN rail mounted
- DMX-Fix mode to handle compatibility issues

Connections

Input

The DMX512 input is attached via three screw terminals. Please refer to the connections diagram.

Loop-Through

A passive loop-through connection allows onward connection to other DMX512 devices. If this feature is not required then the signal must be terminated. The 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+).

Output

Six DMX512 outputs are provided. Each output is capable of driving 32 additional DMX512 devices. It is not necessary to terminate any outputs that are not connected. However, a terminator must be connected to the final DMX512 device.

Internal Earth and Isolation

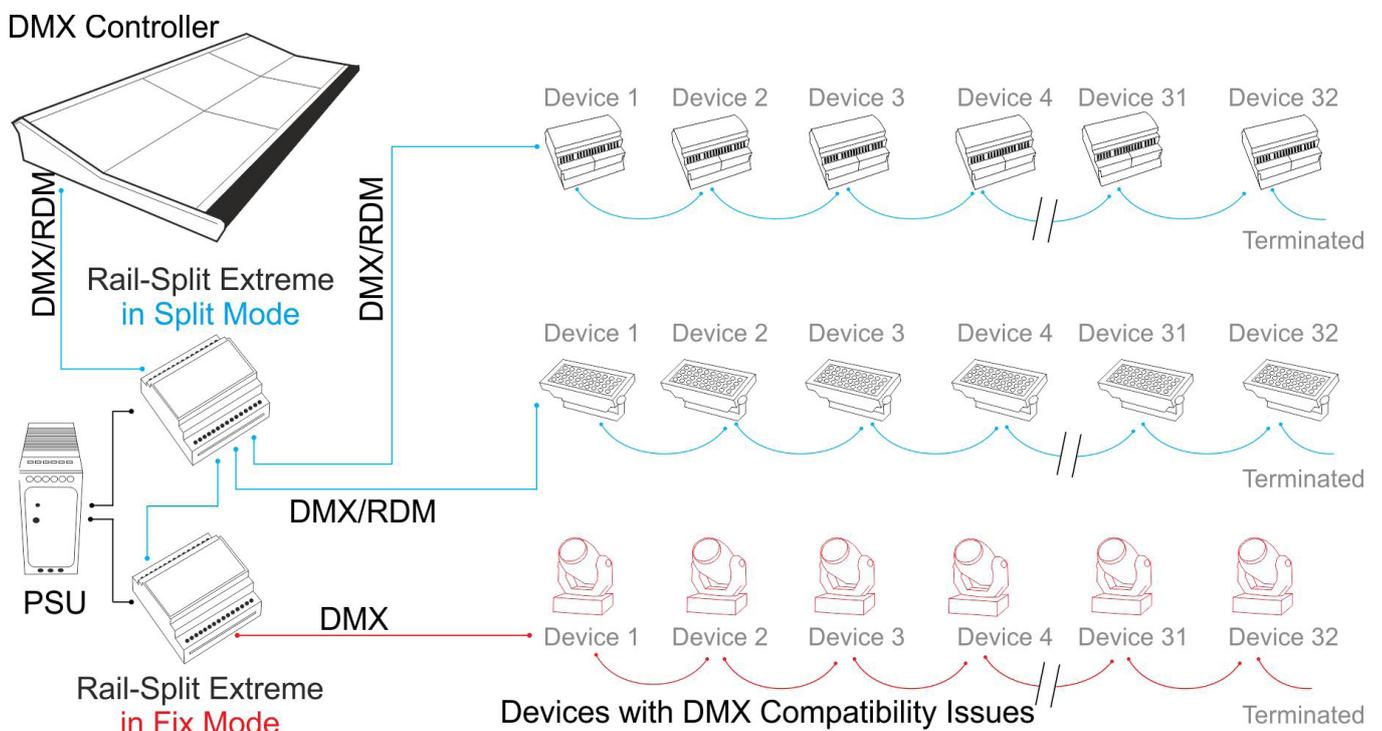
The following table summarises the internal earth interconnection and isolation.

Please note that we use the term Earth-Ground to avoid international confusion. In Europe Earth-Ground is called Earth; in the USA, Earth-Ground is called Ground.

Circuit	Description	
DMX512 Input (including Loop Through)	Type:	Isolated
	Pin 1:	Connects to internal isolated circuit. No connection to Internal Logic Ground
DMX512 Outputs	Type:	PSU referenced
	Pin 1:	Connected to Internal Logic Ground
Internal Logic Ground	Connected to power supply 0V. If the selected PSU has a connection between Earth-Ground and 0V the DMX outputs become Ground Referenced. Otherwise the DMX outputs are Floating. When the recommended PSU is used, DMX outputs are Floating.	

Application Diagram

The diagram below shows how Rail-Split extreme could be utilised in a typical application.



Operating Modes

The product can operate in two modes. In its default mode, the product is a fully-featured RDM Splitter. In the second mode, it acts as a DMX Fixer.

Splitter Mode

In splitter mode, all six outputs operate as bi-directional RDM ports and all DMX data received is passed onto the outputs. The indicators have the following meaning:

Top (Data):

OFF = no data received

Green = DMX and RDM received

Yellow = DMX only received

Bottom (Power):

Green = Power

Red = Data error or collisions detected

Fixer Mode

Fixer mode is intended to solve product compatibility problems. Unfortunately, there are numerous products on the market which will not accept the wide range of legal DMX timings and data. Fixer mode attempts to clean-out any unusual or non-standard timing and data before sending to the output. This includes stripping out all non-zero start codes (including RDM), forcing a 512-channel footprint and calming any timing jitter. Indicators have the following meaning:

Top (Data):

As above

Bottom (Power):

Green = Power

Red = I am fixing something

Detailed Fix Specification

Accepts and corrects break in range 56 μ s – 1000 μ s and outputs 250 μ s

Accepts and corrects MaB in range 5 μ s – 1000 μ s and outputs 30 μ s

Accepts and corrects MaB in range 0 μ s – 1000 μ s and outputs 30 μ s

Accepts channel count 1 – 512 and outputs 512

Accepts refresh period from 23 ms – 1000 ms and outputs 30ms

Filters out multiple consecutive breaks

Re-times bytes of 1 stop bit to 2 stop bits

Filters out all non-zero start code packets

Re-times digital signal

Rail-Split extreme Specification

Mechanical <ul style="list-style-type: none">• Housing: DIN rail case• Material: Lexan Plastic - UL94-V0 rated• Overall dimensions: 90 mm (H) x 88 mm (W) x 62 mm (D)• Weight: 0.2 kg• Mounting: 35 mm DIN rail or surface mount• Country of manufacture: UK	DMX512 Input & Loop <ul style="list-style-type: none">• Mode: Optically isolated• Isolation: 1 kV• Electrocutation protection: Input & Loop protected against continuous connection to 425 VAC (self-healing)• Surge protection (sacrificial):<ul style="list-style-type: none">- IDC 30,000A (8/20uS) 1 operation- IDC 20,000A (8/20uS) 10 operations- IDC 20A (10/1000uS) 1500 operations
Environmental <ul style="list-style-type: none">• Operating temperature: 0°C to 40°C• Storage temperature: -10°C to +50°C• Operating relative humidity (max): 80% non-condensing• IP rating: IP20 indoor use only• Certification: CE, WEEE, RoHS• Warranty: 2-year (return to base)	Control <ul style="list-style-type: none">• Input Protocols: DMX512, DMX512 (1990), DMX512-A, RDM V1.0 (E1.20 - 2006 ESTA Standard)• Output Protocols: Same as input
Power & Electrical <ul style="list-style-type: none">• Input voltage: 9-48 VDC• Input connector: 2-pin screw terminal (1 no.)• Input power (max): 8 W• Duty cycle: 100% @ 25°C• DC fuse: internal resettable fuse for control electronics	Data Connections <ul style="list-style-type: none">• 3-pin Screw Terminal DMX Input (1 no.)• 3-pin Screw Terminal DMX Loop (1 no.)• 3-pin Screw Terminal DMX Output (6 no.)
DMX512 Outputs <ul style="list-style-type: none">• Mode: PSU referenced• Isolation: n/a• Electrocutation protection: All outputs protected against continuous connection to 425 VAC (self-healing)• Surge protection (sacrificial):<ul style="list-style-type: none">- IDC 30,000A (8/20uS) 1 operation- IDC 20,000A (8/20uS) 10 operations- IDC 20A (10/1000uS) 1500 operations	LED Indication <ul style="list-style-type: none">• Power / DMX / RDM
	Package Contents <ul style="list-style-type: none">• Rail-Split extreme• User guide
	Ordering Info <ul style="list-style-type: none">• Product code: Rail-Split extreme
	Accessories (not included) <ul style="list-style-type: none">• PSU-9-1.5-FER

Compliance

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

Waste Electrical & Electronic Equipment (WEEE)

Artistic Licence is a member of a WEEE compliance scheme and will happily recycle any of our products that you, at your expense, return to us.

Warranty

All products are covered from date of purchase by a two-year return to base warranty.

By return to base, we mean that the customer is responsible for all costs of transport to and from Artistic Licence.

Returns will not be accepted without prior authorisation. In order to discuss a request to return goods, please email:

Sales@ArtisticLicence.com

CE Compliance

Rail-Split extreme is CE compliant when installed in a shielded and earthed metal case



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Due to our policy of continuing product improvement specifications are subject to change without notice

