

ENTTEC



DIN ETHERGATE

71030

User Manual



Two-Universe bi-directional eDMX - DMX/RDM gateway in a compact 4-module DIN-rail form factor.

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Safety



Ensure you are familiarized with all key information within this guide and other relevant ENTTEC documentation before specifying, installing, or operating an ENTTEC device. If you are in any doubt about system safety, or you plan to install ENTTEC device in a configuration that is not covered within this guide, contact ENTTEC or your ENTTEC supplier for assistance.

ENTTEC's return to base warranty for this product does not cover damage caused by inappropriate use, application, or modification to the product.

Electrical safety



- This product must be installed in accordance with applicable national and local electrical and construction codes by a person familiar with the construction and operation of the product and the hazards involved. Failure to comply with the following installation instructions may result in death or serious injury.
- Do not exceed the ratings and limitations defined in the product datasheet or this document. Exceeding can cause damage to the device, risk of fire and electrical faults.
- Ensure that no part of the installation is or can be connected to power until all connections and work is complete.
- Before applying power to your installation, ensure your installation follows the guidance within this document. Including checking that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices and factor in overhead as well as verifying that it is appropriately fused and voltage is compatible.
- Remove power from your installation immediately if accessories power cables or connectors is in any way damaged, defective, shows signs of overheating or are wet.
- Provide a means of locking out power to your installation for system servicing, cleaning and maintenance. Remove power from this product when it is not in use.
- Ensure your installation is protected from short circuits and overcurrent. Loose wires around this device whilst in operation, this could result in short circuiting.
- Do not over stretch cabling to the device's connectors and ensure that cabling does not exert force on the PCB.
- Do not 'hot swap' or 'hot plug' power to the device or its accessories.
- Do not connect any of this device's V- (GND) connectors to earth.
- Do not connect this device to a dimmer pack or mains electricity.

System Planning and Specification



- To contribute to an optimal operating temperature, where possible keep this device out of direct sunlight.
- Any twisted pair, 120ohm, shielded EIA-485 cable is suitable to transmit DMX512 data to or from the DIN ETHERGATE. The DMX cable should be suitable for EIA-485 (RS-485) with one or more low capacitance twisted pairs, with overall braid and foil shielding. Conductors should be 24 AWG (7/0.2) or larger for mechanical strength and to minimize volt drop on long lines.
- A maximum of 32 devices should be used on a DMX line before re-generating the signal using a DMX buffer/ repeater / splitter.
- Always terminate DMX chains using a 120Ohm resistor to stop signal degradation or data bounce-back.
- The maximum recommended DMX cable run is 300m (984ft). ENTTEC advises against running data cabling close to sources of electromagnetic interference (EMF) i.e., mains power cabling / air conditioning units.
- This device has an IP20 rating and is not designed to be exposed to moisture or condensing humidity.

- Ensure this device is operated within the specified ranges within its product datasheet.

Protection from Injury During Installation



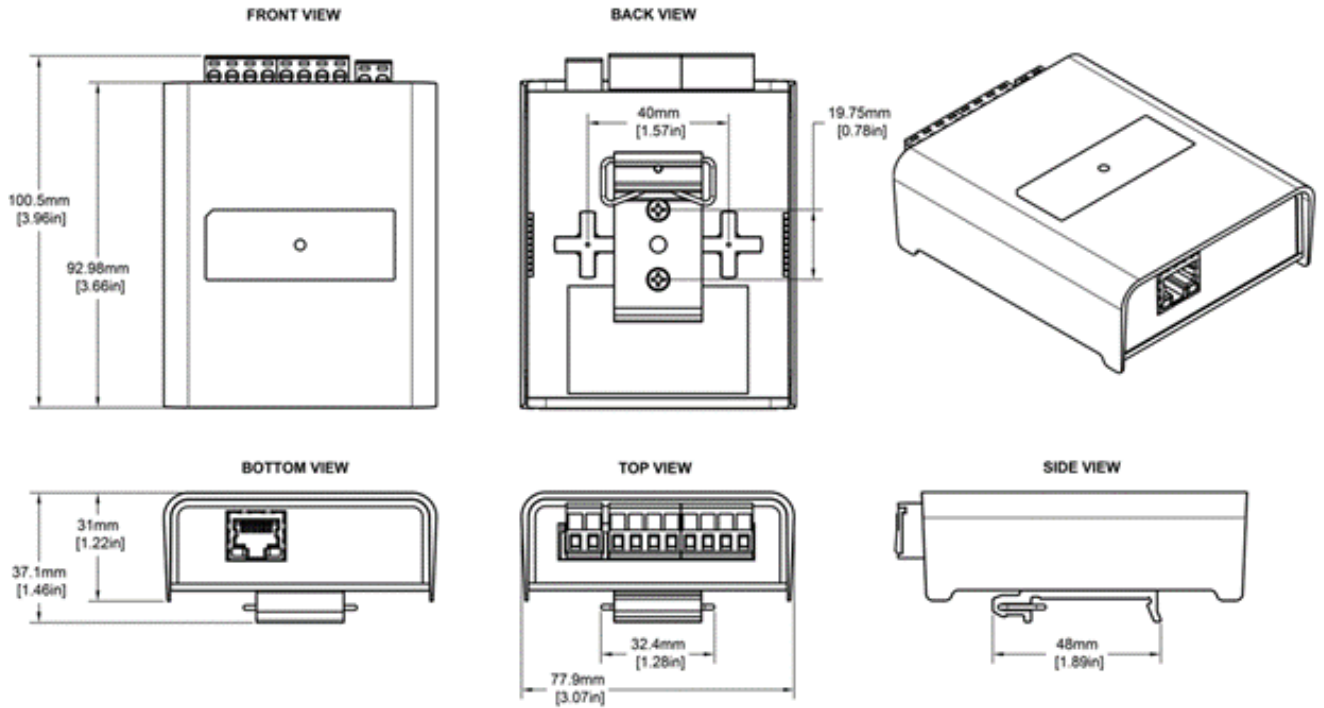
- Installation of this product must be performed by qualified personnel. If ever unsure always consult a professional.
- Always work with a plan of the installation that respects all system limitations as defined within this guide and product datasheet.
- Keep the DIN ETHERGATE and its accessories in its protective packaging until final installation.
- Note the serial number of each DIN ETHERGATE and add it to your layout plan for future reference when servicing.
- All network cabling should be terminated with an RJ45 connector in accordance with the T-568B standard.
- Always use suitable personal protective equipment when installing ENTTEC products.
- Once installation is completed, check that all hardware and components are securely in place and fastened to supporting structures if applicable.

Installation Safety Guidelines



- The device is convection cooled, ensure it receives sufficient airflow so heat can be dissipated.
- Do not cover the device with insulating material of any kind.
- Do not operate the device if the ambient temperature exceeds that stated in the device specifications.
- Do not cover or enclose the device without a suitable and proven method of dissipating heat.
- Do not install the device in damp or wet environments.
- Do not modify the device hardware in any way.
- Do not use the device if you see any signs of damage.
- Do not handle the device in an energized state.
- Do not crush or clamp the device during installation.
- Do not sign off a system without ensuring all cabling to the device and accessories has been appropriately restrained, secured and is not under tension.

Physical Dimensions



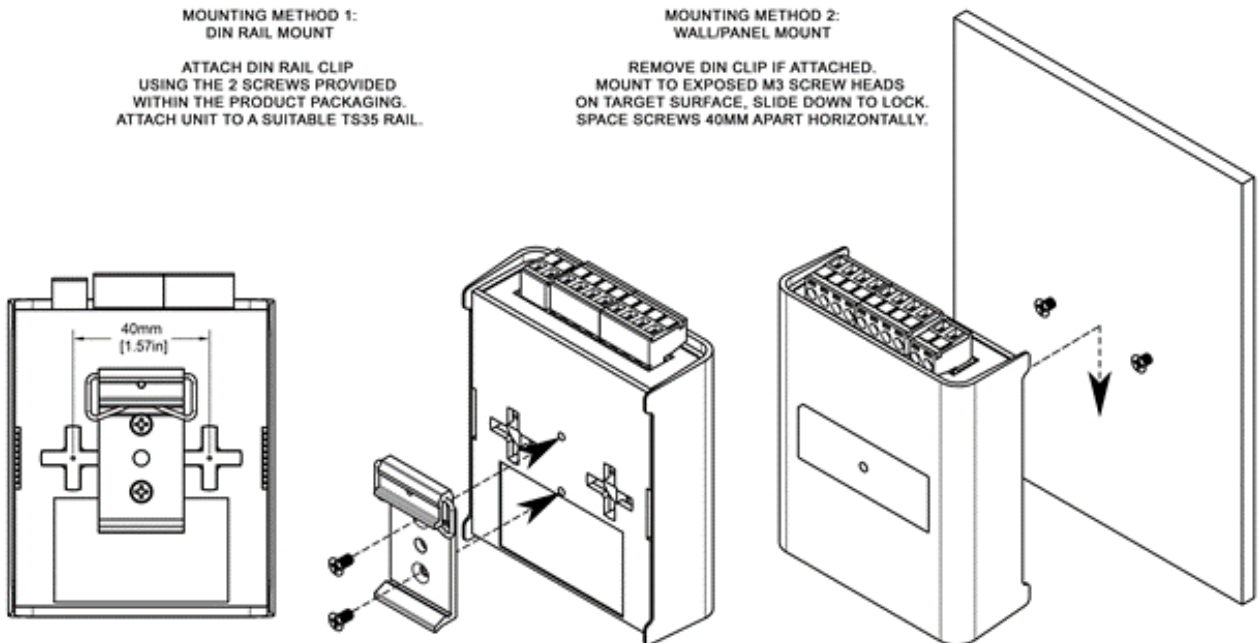
Mounting Options

MOUNTING METHOD 1: DIN RAIL MOUNT

ATTACH DIN RAIL CLIP USING THE 2 SCREWS PROVIDED WITHIN THE PRODUCT PACKAGING. ATTACH UNIT TO A SUITABLE TS35 RAIL.

MOUNTING METHOD 2: WALL/PANEL MOUNT

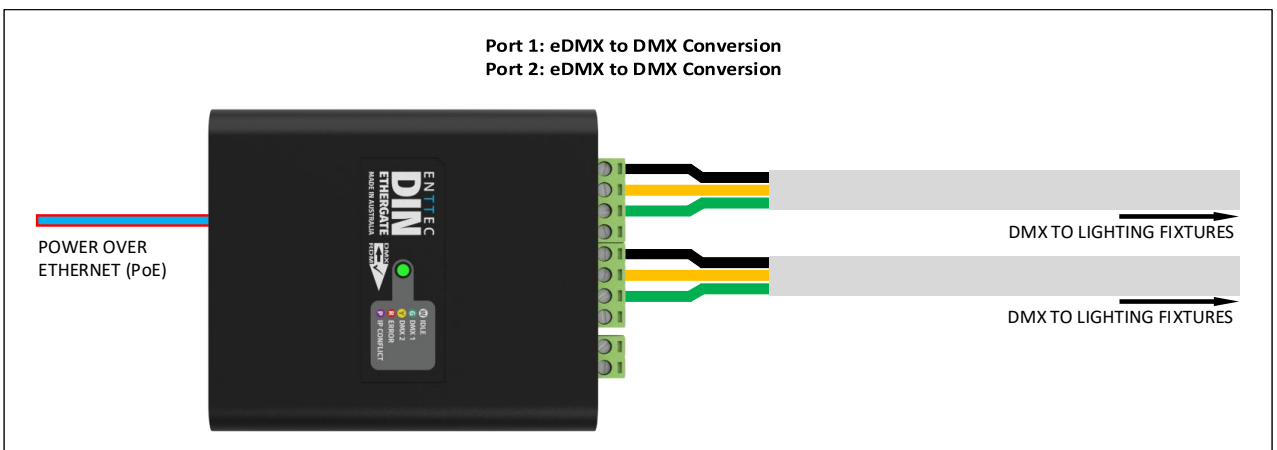
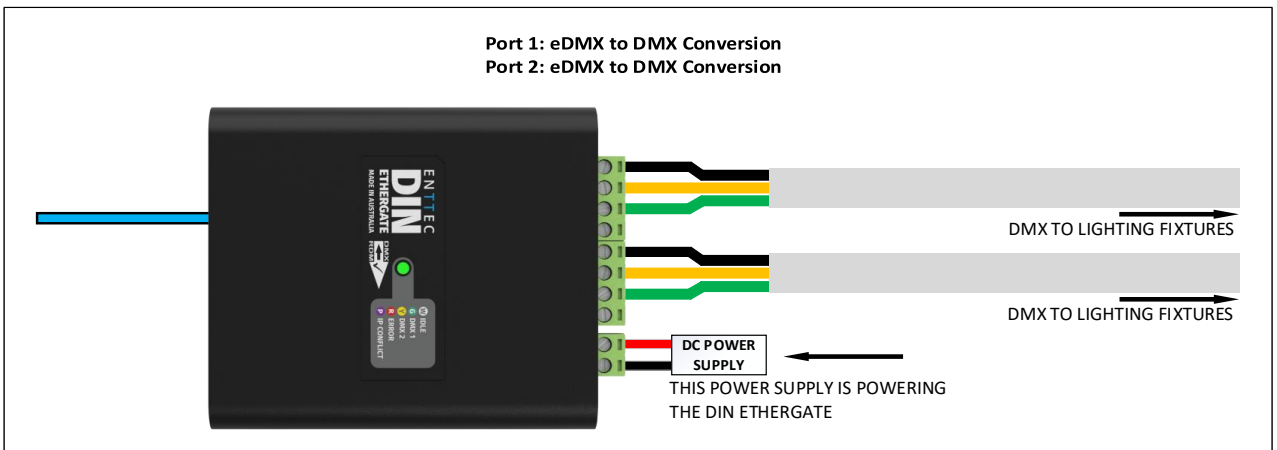
REMOVE DIN CLIP IF ATTACHED. MOUNT TO EXPOSED M3 SCREW HEADS ON TARGET SURFACE. SLIDE DOWN TO LOCK. SPACE SCREWS 40MM APART HORIZONTALLY.

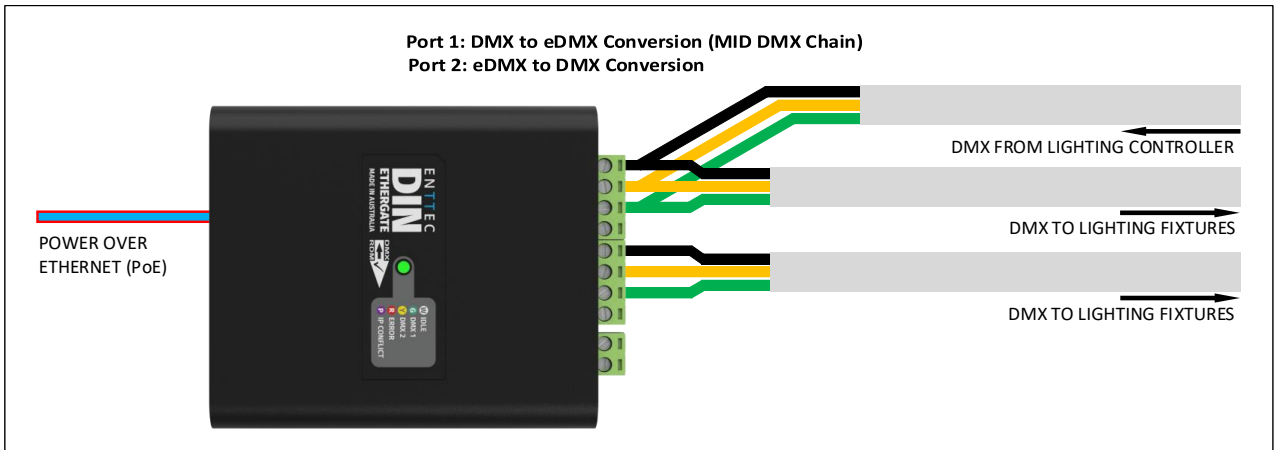
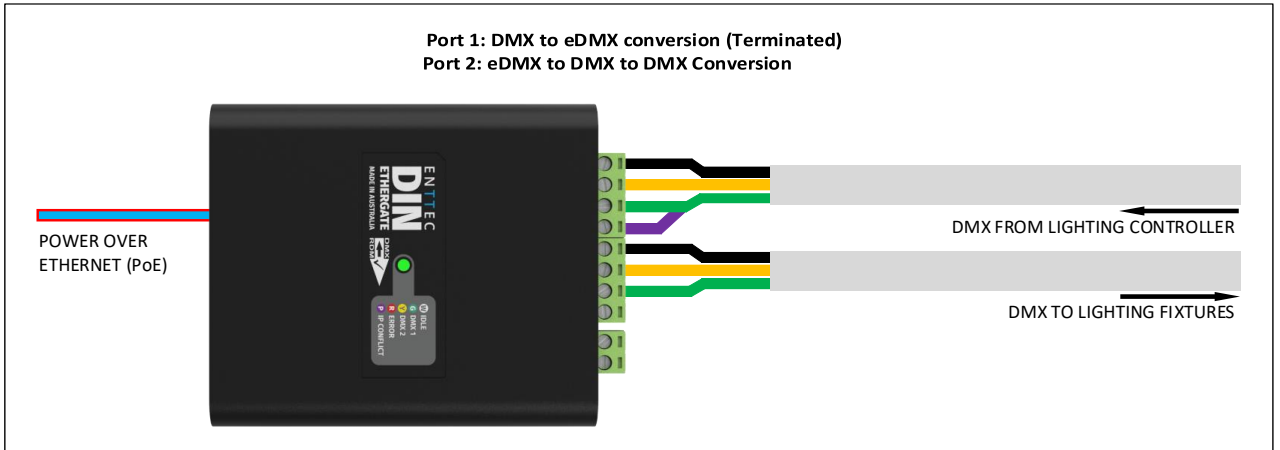
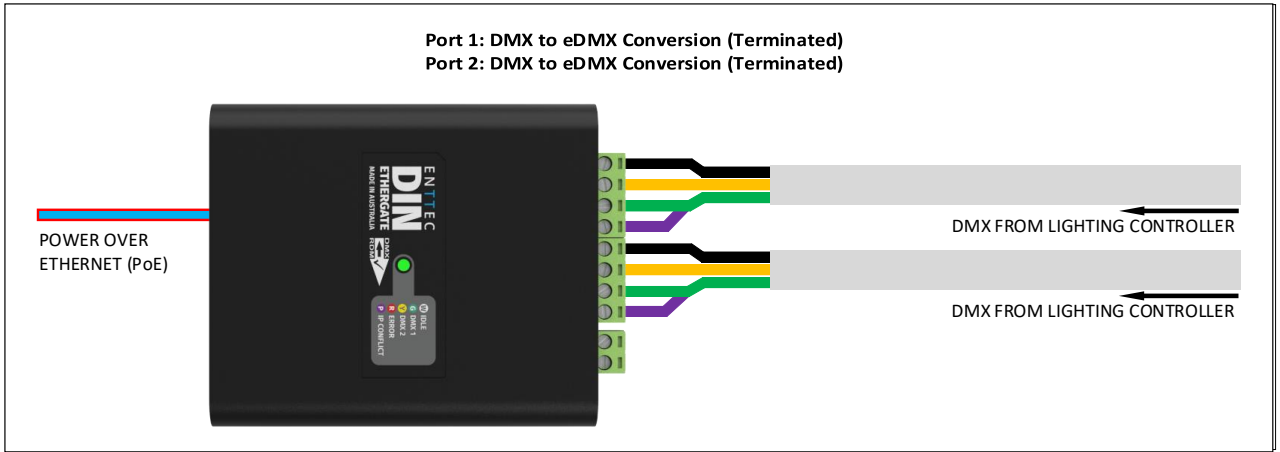


Wiring Diagrams



- To reduce the likelihood of voltage or Electro Magnetic Interference (EMI) being induced on the DMX lines, where possible, run control cabling away from mains electricity or devices that produce high EMI, (i.e., air conditioning units).
- To ensure a reliable connection, ENTTEC recommends the use of cable ferrules for all stranded cables connected to the DIN ETHERGATE's screw terminals.
- The DIN ETHERGATE's RJ45 network connector accepts cabling terminated to the TIA/EIA networking standard.
- Network cabling should be terminated with an RJ45 connector in accordance with the T-568B standard.
- The DIN ETHERGATE supports IEEE802.3af PoE only (active 48v).
- The maximum cable distance DMX can be run without re-buffering is 300m (ft 984ft).
- Never exceed 32 devices in a DMX chain without an intermediary DMX splitter or buffer (i.e. ENTTEC's DIN RDS4).
- Terminate all DMX chains with a DMX terminator to eliminate signal bounce back. When using the DIN ETHERGATE as a DMX-> eDMX device, if it is the last device in the chain, connect another wire from DMX+ to the DMX termination phoenix connector to terminate the chain.





Functional Features

- Two bi-directional DMX/ E1.20 RDM ports with optional termination and RDM support.
- Support for Art-Net, sACN and ESP to DMX conversion.
- HTP/LTP merging support for up to 2 DMX sources.
- Configurable DMX output refresh rate.
- Intuitive device configuration and updates through the inbuilt web interface.
- 'Current Port Buffer' allows live DMX values to be viewed.

Bi-directional eDMX Protocols and USITT DMX512-A Conversion

The DIN ETHERGATE's primary functionality is to convert between Ethernet-DMX protocols and USITT DMX512-A (DMX). The DIN ETHERGATE can support eDMX protocols including Art-Net, sACN and ESP which can be received and converted to DMX with the HTP or LTP Merging options, or DMX converted to eDMX protocols with the options to Unicast or Broadcast/Multicast.

Art-Net <-> DMX (RDM Supported): Art-Net 1, 2, 3 & 4 are supported. Each port's configuration can be defined using the DIN ETHERGATE's web interface to define a universe in the range 0 to 32767.

RDM (ANSI E1.20): When the DIN ETHERGATE is set to 'Output (DMX Out)' and configured with 'Art-Net' as the Protocol, it becomes compatible with RDM.

A checkbox will then appear in the setup, enabling the device to convert Art-RDM to RDM (ANSI E1.20). This allows the DIN ETHERGATE to act as a gateway, facilitating the discovery, configuration, and monitoring of RDM-enabled devices on the DMX line by RDM solutions.

Note:

- The device functions as a gateway and does not support remote configuration through Art-Net.
- ENTTEC advises disabling RDM when not needed for your fixtures. Older fixtures compatible with the DMX 1990 Specification may exhibit erratic behavior with RDM packets present on the DMX line.

sACN <-> DMX: sACN is supported. Each port's configuration can be defined using the DIN ETHERGATE's web interface to define a universe in the range 0 to 63999. sACN priority of the output can be defined (default priority: 100). The DIN ETHERGATE supports a maximum of 1 multicast universe with sACN sync. (i.e. both universe outputs set to the same universe).

ESP <-> DMX: ESP is supported. Each port's configuration can be defined using the DIN ETHERGATE's web interface to define a universe in the range 0 to 255.

The additional flexibility that the DIN ETHERGATE can provide, means that each of the two ports can be configured individually:

- Both outputs can be specified to use the same universe and protocol, i.e., both outputs can be set to output use universe 1.
- Each output is not required to be sequential i.e. port one can be set to universe 10, port two can be set to input universe 3.
- Protocol or data conversion direction doesn't have to be the same for each port.

Merging

Merging is available when the DIN ETHERGATE 'Type' is set to Output (DMX Out). Two different Ethernet-DMX sources (from different IP addresses) values can be merged if the source is the same protocol and universe.

If the DIN ETHERGATE receives more sources than expected (Disabled – 1 source & HTP/LTP – 2 sources) the DMX Output will send this unexpected data, affecting the lighting fixtures, potentially causing flicker. The DIN ETHERGATE will display a warning on the home page of the web interface and the status LED will blink at a high rate.

Whilst set to HTP or LTP merging, if either one of the 2 sources stop being received, the failed source is held in the merge buffer for 4 seconds. If the failed source returns the merge will continue, otherwise it will be discarded.

Merging options include:

- **Disabled:** No Merging. Only one source should be sending to the DMX output.
- **HTP Merge (by default):** Highest Takes Precedence. Channels are compared one to one and the highest value is set on the output.
- **LTP Merge:** Latest Takes Precedence. The source with the latest change in data is used as the output.

Hardware Features

- Forward facing LED status indicator.
- Electrically insulated ABS plastic housing.
- Surface mount or TS35 DIN mount (using included DIN Clip accessory).
- Two bi-directional DMX ports.
- Inbuilt DMX termination.
- IEEE 802.3af PoE (active PoE).
- Link & Activity LED indicator built into RJ45 port.
- 2 Pin DC power input phoenix 12->24v.
- Pluggable terminal blocks.

Phoenix Pinout

The DIN ETHERGATE is equipped with two 4-Pin Phoenix Connectors that can function as either DMX input or DMX output, based on the settings configured in the Web Interface.

These connectors adhere to the DMX standard (0V, Data-, and Data+), and include an extra port named "Term." When using the DIN ETHERGATE as a DMX to eDMX converter, the TERM port substitutes the Data+ port and serves to terminate the DMX line.

PoE (Power over Ethernet)

The DIN ETHERGATE supports IEEE 802.3af Power over Ethernet. This allows the device to be powered via the RJ45 Ethernet connection, reducing the number of cables and the ability to remotely deploy the DIN ETHERGATE without the need for a local power source close to the device.

PoE can be introduced to the Ethernet cable, either through a network switch which outputs PoE under the IEEE 802.3af standard, or through an IEEE 802.3af PoE injector.

Note:

- DC power input has higher priority over PoE. In the event of DC power input disconnection, please expect approximately 1 minute down time before DIN ETHERGATE reboots for PoE to take over.
- Passive PoE is not compatible with the DIN ETHERGATE.

LED Status Indicator

The DIN ETHERGATE comes with a forward facing RGB LED indicator. The LED signifies the related activity:

LED Colour	Status Description
White	Idle Indicates normal operation of the DIN ETHERGATE.
Green	DMX input or output on Port 1 Solid Green: DMX activity on Port 1 Flashing Green: RDM activity on Port 1
Yellow	DMX input or output on Port 2 Solid Yellow: DMX activity on Port 2 Flashing Yellow: RDM activity on Port 2
Green/Yellow	DMX input or output on Port 1 and 2 Flashes between green and yellow to indicate DMX or RDM activity from both ports.
Cyan	Multiple merge sources Indicates detection of more than 2 sources for the same universe. User action is required to allow proper DMX output merging.
Purple	IP Address Conflict Signals an IP address conflict with another device on the network. Manual IP address change or DHCP enablement is needed.
Red	Boot / Error Indicates a booting or error state. No DMX activity will occur. Requires firmware update or reboot.

Out of the Box

The DIN ETHERGATE device default settings as below:

- Device Name: DIN Ethergate 2 Port
- Enables DHCP
- Static IP 192.168.0.10 / Netmask 255.255.255.0.
- Both ports are set to DMX OUT.
- Protocol is set to Art-Net.
- Merging is disabled.
- Port 1 Universe 0.
- Port 2 Universe 1.
- RDM is enabled.

Networking

The DIN ETHERGATE can either be configured to be a DHCP or Static IP address.

DHCP: On power up and with DHCP enabled, if the DIN ETHERGATE is on a network with a device/router with a DHCP server, the DIN ETHERGATE will request an IP address from the server. If the DHCP server is slow to respond, or your network does not have a DHCP server, the DIN ETHERGATE will fall back to the default IP address 192.168.0.10 and netmask 255.255.255.0. If a DHCP address is provided, this can be used to communicate with the DIN ETHERGATE.

Static IP: By default (out of the box) the Static IP address will be 192.168.0.10. If the DIN ETHERGATE has DHCP disabled, the Static IP address given to the device will become the IP address to communicate with the DIN ETHERGATE. The Static IP address will change from the default once it's modified in the web interface. Please note down the Static IP address after setting.



Note: When configuring multiple DIN ETHERGATE's on a Static network; to avoid IP conflicts, ENTTEC recommends connecting one device at a time to the network and configuring an IP.

- If using DHCP as your IP addressing method, ENTTEC recommends the use of the sACN multicast, or Art-Net Broadcast. This will ensure that your DIN ETHERGATE continues to receive data if the DHCP server changes it's IP address.
- ENTTEC does not recommend unicasting data to a device with its IP address set through DHCP server on long term installations.

Web Interface

Configuring the DIN ETHERGATE is done through a web interface which can be brought up on any modern web browser. A Chromium based browser (i.e. Google Chrome) is recommended for accessing the DIN ETHERGATE web interface.

Identified IP address: If you are aware of the DIN ETHERGATE IP address (either DHCP or Static), then the address can be typed directly into the web browsers URL field.

Unidentified IP address: If you are not aware of the DIN ETHERGATE's IP address (either DHCP or Static) the following discovery methods can be used on a local network to discover devices:

- ENTTEC EMU software (available for Windows and MacOS), which will discover ENTTEC devices on the Local Area Network, will display their IP addresses and open to the Web Interface before opting to configure the device.
- An IP scanning software application (i.e. Angry IP Scanner) can be run on the local network to return a list of active devices on a local network.
- Devices can be discovered using Art Poll (i.e. DMX Workshop if set to use ArtNet).
- The device Default IP address 192.168.0.10 is printed on the physical label on the rear of the product.



Note:

- As the DIN ETHERGATE is hosting a web server on the local network and does not feature an SSL Certificate (used to secure online content), the web browser will display the 'Not secure' warning, this is to be expected.
- Ensure the controller and configuration device for the DIN ETHERGATE share the same LAN and IP address range. For example, if the DIN ETHERGATE is set to 192.168.0.10, your computer should be around 192.168.0.20. Keep consistent Subnet Mask settings across all network devices.

Home

The landing page for the DIN ETHERGATE web interface is the Home tab. This tab is designed to give you a read-only device overview. This will display:

System Information:

- Node Name
- Firmware Version

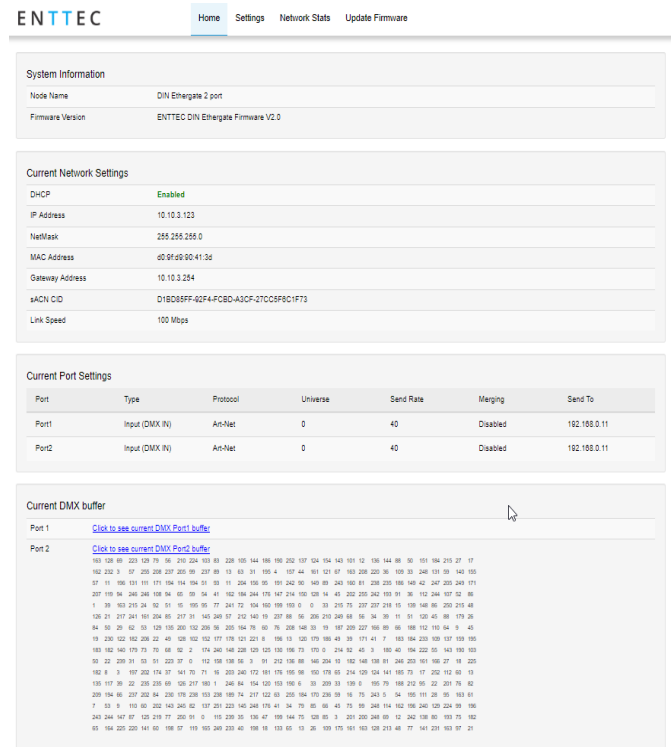
Current Network Settings:

- DHCP Status
- IP Address
- NetMask
- Mac Address
- Gateway Address
- sACN CID
- Link Speed

Current Port Settings:

- Port
- Type
- Protocol
- Universe
- Send Rate
- Merging
- Send to Destination

Current DMX Buffer: The Current DMX buffer displays a snapshot of all current DMX values when refreshed manually.



Settings

The DIN ETHERGATE settings can be configured within the Settings tab. Changes will only take effect after being saved; any unsaved changes will be discarded.

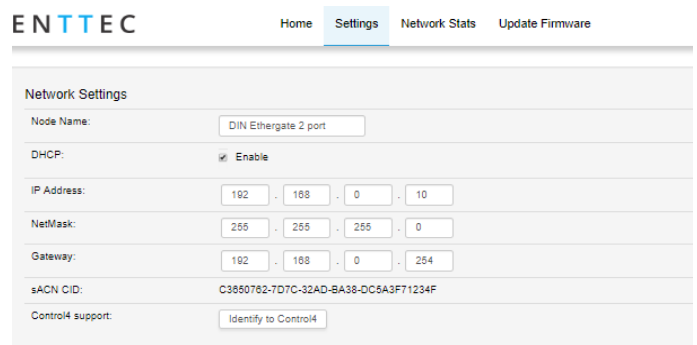
Node Name: The name the DIN ETHERGATE will be discoverable with in Poll replies.

DHCP: Enabled by default. When enabled, the DHCP server on the network is expected to automatically provide the IP address to the DIN ETHERGATE. If no DHCP router/server is present or DHCP is disabled, the DIN ETHERGATE will fall back to 192.168.0.10.

IP Address / NetMask / Gateway: These are used if DHCP is disabled. These options set the Static IP address. These settings should be set to be compatible with other devices on the network.

sACN CID: The DIN ETHERGATE's unique sACN Component Identifier (CID) is displayed here and will be use in all sACN communication.

Control4 Support: Pressing this button will send a SDDP (Simple Device Discovery Protocol) packet to allow easier discovery in Control4's Composer software.



Type: Choose from the following options:

- Disabled
- Input (DMX IN)
- Output (DMX Out)

Protocol: Choose between Art-Net, sACN and ESP as the Protocol.

RDM: RDM (ANSI E1.20) can be selected using the tick box. This is only available when the Type is set to Output and the Protocol is Art-Net. More information can be found in the Functional Features section of this document.

Universe: Set the Ethernet-DMX protocol's input Universe.

Refresh Rate: The rate at which the DIN ETHERGATE will output the Data from its DMX port (40 Frames per second is default). It will repeat the last received frame to comply with DMX standard.

Options: additional configuration is available depending on port type and protocol.

- **Input Broadcast/Unicast:** Choose either broadcasting or a specified unicast IP address. Broadcast address is based on the subnet mask shown. Unicast allows you to define a specific single IP address.
- **Input sACN Priority:** sACN Priorities range from 1 to 200, where 200 has the highest priority. If you have two streams on the same Universe, but one has the default priority of 100 and the other has a priority of 150, the second stream will override the first.
- **Output Merging:** When enabled, this can allow the merging for two DMX sources from different IP address whilst sending on the same Universe in either a LTP (Latest Takes Precedence) or HTP (Highest Takes Precedence) merge. More information can be found in the Functional Features section of this document.

Save settings: All changes must be saved to take effect. The DIN ETHERGATE takes up-to 10 seconds to save.

Factory Default: Restore the DIN ETHERGATE to the factory default. Refer Out of the Box section in this document for more details.

Restart Now: This allows restarting the device without physically access to the device. Please allow up-to 10 seconds for the device to reboot. When the web interface page refreshes the DIN ETHERGATE is ready.

Network Stats

The Network Stats tab is designed to provide an overview of network data. This is categorised into DMX over Ethernet protocols statistics which can be located within the tabs.

The Summary provides details regarding total poll, data or sync packets depending on the protocol.

Art-Net Statistics also provide a breakdown of Art-Net DMX packets sent and received. As well as a breakdown of RDM over Art-Net packets including packet sent and received, sub device and TOD Control/Request packets.

Art-Net Statistics	
Summary	
Total Packets Received	13
Poll Packets Received	11
Last IP	10.10.3.187
Last Port	8464
Art-Net DMX	
DMX Data Packets Received	13
DMX Sync Packets Received	0
DMX Data Packets Sent	11
RDM over Art-Net	
RDM Packets Received	0
RDM Packets Sent	0
RDM TOD Control Packets Received	0
RDM TOD Request Packets Received	0
RDM TOD Data Packets Sent	0
RDM Packets Dropped	0

Update Firmware

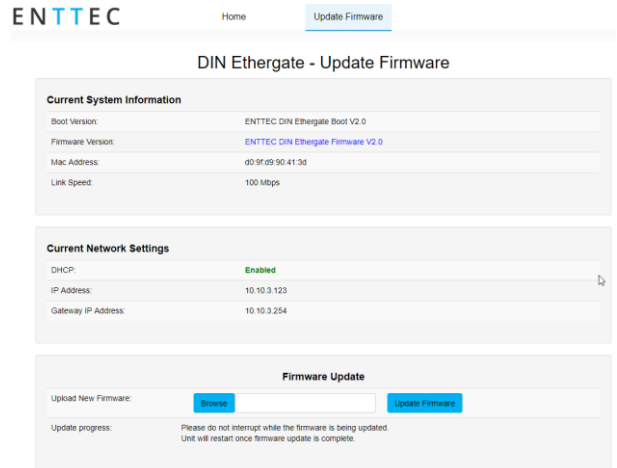
When selecting the Update Firmware tab, the DIN ETHERGATE will stop outputting and the web interface boots into the Update Firmware mode. It may take a while depending on the network setting. An error message is expected as the webpage is temporary unavailable in boot mode.

This mode will display basic information regarding the device including current Firmware Version, Mac Address and IP address information.

The latest firmware can be downloaded from www.enttec.com. Use the Browse button to access in your local computer for the latest DIN ETHERGATE firmware file which has a .bin extension.

Next click on the Update Firmware button to begin updating.

After the update has completed, the web interface will load the Home tab, where you can check the update was successful under Firmware Version. Once the Home tab has loaded, the DIN ETHERGATE will resume operation.

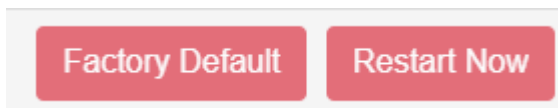


Reset to Factory Defaults

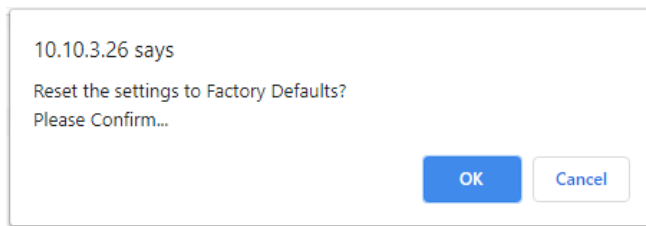
The OCTO MK2 can be reset by either the web interface or the reset button on the device. It resumes the device's settings back to factory default, see

Resetting via Web Interface

The 'Reset to Defaults' command can be found under the Settings tab of the DIN ETHERGATE's locally hosted web interface.



Once the command is pressed, a pop-up would appear as shown in the image below:




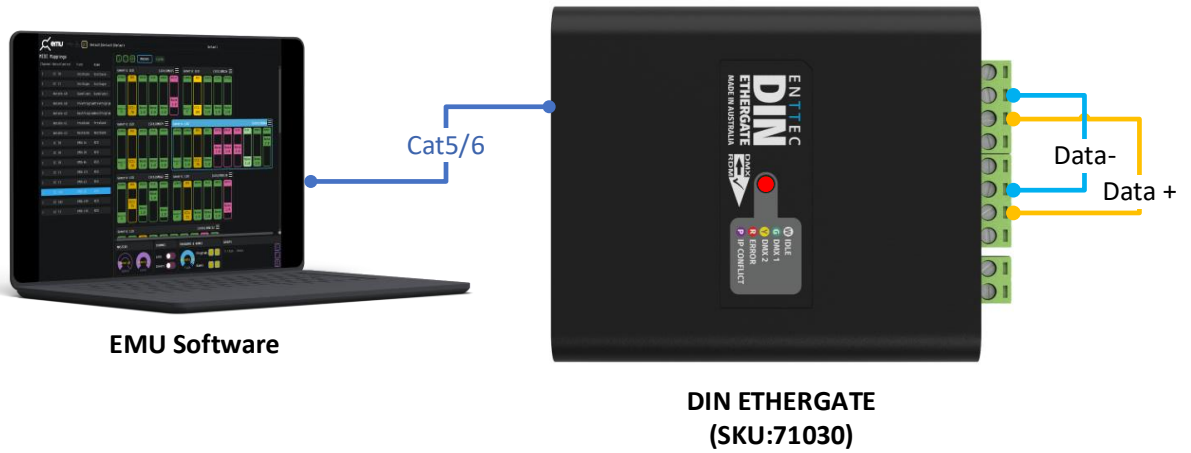
Resetting via Boot Page

In certain scenarios, you may require access to the boot mode for tasks such as firmware updates or performing a factory reset in case of unstable firmware.

To access the boot, follow these steps:

1. Wire both the Data+ and Data- ports between Port 1 and Port 2.
2. Connect the DIN ETHERGATE to a computer via an Ethernet cable and the LED will flash in red indicating it is in boot.

3. Launch the EMU Software on your computer and select  from the DIN ETHERGATE discovered. The EMU Software will prompt you to access the boot page for firmware updates or other maintenance tasks.



Note:

Resetting through boot page feature is available from firmware V2.5 onward.

Servicing, Inspection & Maintenance



- **The device has no user serviceable parts. If your installation has become damaged, parts should be replaced.**



- **Power down the device and ensure a method is in place to stop the system from becoming energized during servicing, inspection & maintenance.**

Key areas to examine during inspection:

- Ensure all connectors are mated securely and show no sign of damage or corrosion.
- Ensure all cabling has not obtained physical damage or been crushed.
- Check for dust or dirt build up on the device and schedule cleaning if necessary.
- Dirt or dust buildup can limit the ability for a device to dissipate heat and can lead to damage.

The replacement device should be installed in accordance with all steps within the installation guide.

To order replacement devices or accessories contact your reseller or message ENTTEC directly.

Cleaning

Dust and dirt build up can limit the ability for the device to dissipate heat resulting in damage. It's important that the device is cleaned in a schedule fit for the environment it is installed within to ensure maximum product longevity.

Cleaning schedules will vary greatly depending on the operating environment. Generally, the more extreme the environment, the shorter the interval between cleaning.



- **Before cleaning, power down your system and ensure a method is in place to stop the system from becoming energized until cleaning is complete.**



- **Do not use abrasive, corrosive, or solvent-based cleaning products on a device.**
- **Do not spray device or accessories. The device is an IP20 product.**

To clean an ENTTEC device, use low-pressure compressed air to remove dust, dirt and loose particles. If deemed necessary, wipe the device with a damp microfiber cloth.

A selection of environmental factors that may increase the need for frequent cleaning include:

- Use of stage fog, smoke or atmospheric devices.
- High airflow rates (i.e., in close proximity to air conditioning vents).
- High pollution levels or cigarette smoke.
- Airborne dust (from building work, the natural environment or pyrotechnic effects).

If any of these factors are present, inspect all elements of the system soon after installation to see whether cleaning is necessary, then check again at frequent intervals. This procedure will allow you to determine a reliable cleaning schedule for your installation.

Package Contents

- DIN ETHERGATE
 - TS35 DIN-Rail clip
 - 2 * Attachment Screws
- (Power supply is not included)

Revision History

Please check your serial number and artwork on your device.:

- DIN ETHERGATE with Serial Number up to 2345061 is only compatible with Firmware version up to V1.3.
- The followings are implemented from Serial Number 2361126 onwards (July 2022):
 - Firmware version V2.0
 - DC input voltage range changed from 7V-24V to 12V-24V.
- The followings are implemented after Serial Number 2361625 (August 2022):
 - Boot version V2.1
 - Firmware version V2.1

Ordering Information

For further support and to browse ENTTEC's range of products visit the [ENTTEC website.](#)

Item	Part No.
DIN ETHERGATE	71030

enttec.com

MELBOURNE AUS / LONDON UK / RALEIGH-DURHAM USA / DUBAI UAE

Due to constant innovation, information within this document is subject to change.