

DIN ETHERGATE – User Manual



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



ENTTEC's DIN ETHERGATE is a robust and reliable installation grade DMX node engineered to take any architectural, commercial or entertainment project to the next level.

With 2 universes of bi-directional eDMX -> DMX conversion and ArtRDM support, the DIN ETHERGATE is a flexible, cost effective method to connect physical DMX devices to your network infrastructure.

All configuration is managed through the localhost web interface to simplify commissioning.

The DIN ETHERGATE's slim, 4 DIN-module electrically insulated housing supports TS35 DIN and surface mounting for fast installation. Pluggable terminal blocks with inbuilt termination line make wiring simple.

Power the DIN ETHERGATE using power over ethernet (PoE) or 7-24v DC input.

Features

- **Two bi-directional DMX/ E1.20 RDM ports with optional termination and RDM support.**
- **IEEE 802.3af PoE (Power over Ethernet) or DC 7-24v input.**
- **Surface or TS35 DIN rail mount.**
- **Support for Art-Net 4, sACN and ESP to DMX conversion.**
- **Support for DMX -> Art-Net (Broadcast or Unicast) / DMX -> ESP (Broadcast or Unicast) / DMX -> sACN (Multicast or Unicast).**
- **HTP/LTP merging support for up to 2 DMX sources.**
- **Pluggable terminal blocks and inbuilt DMX termination.**
- **Configurable DMX output refresh rate.**
- **Intuitive device configuration and updates through the inbuilt web interface.**
- **Surface or TS35 DIN rail mount.**
- **10/100 Mbps network speed.**
- **'Current Port Buffer' allows live DMX values to be viewed.**

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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 and verify 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 devices 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.

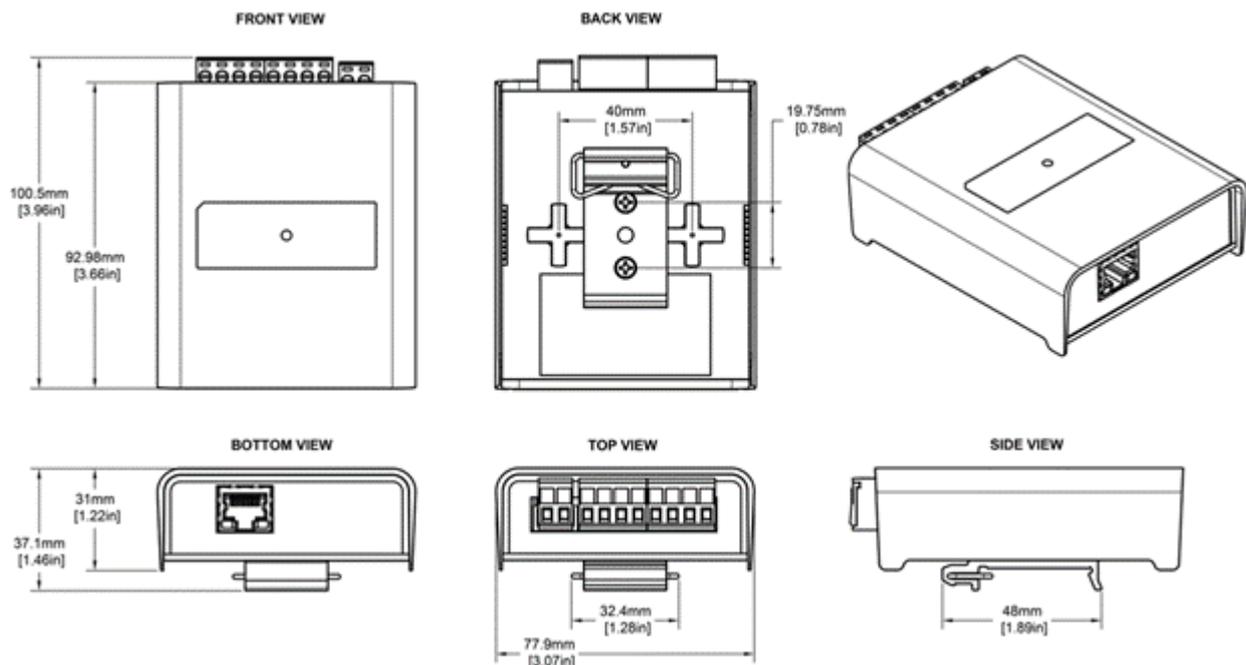
- Keep the DIN ETHERGATE and its accessories in its protective packaging until final installation.
- Note the serial number of each DIN ETHERGATE and add it to your layout plan for future reference when servicing.
- All network cabling should be terminated with an RJ45 connector in accordance with the 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



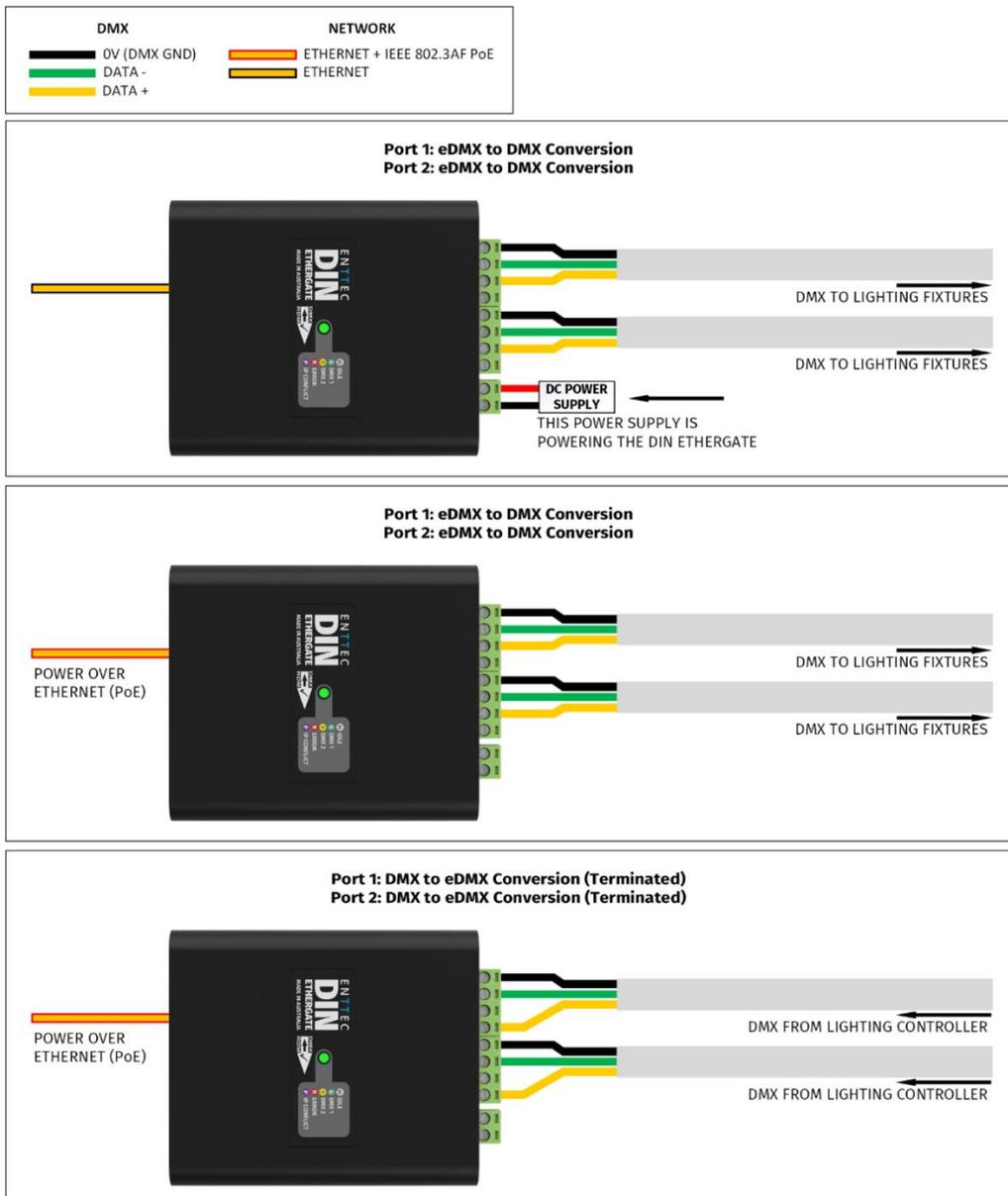
- The device is convection cooled, ensure it receives sufficient airflow so heat can be dissipated.
- Do not cover the device with insulating material of any kind.
- Do not operate the device if the ambient temperature exceeds that stated in the device specifications.
- Do not cover or enclose the device 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.

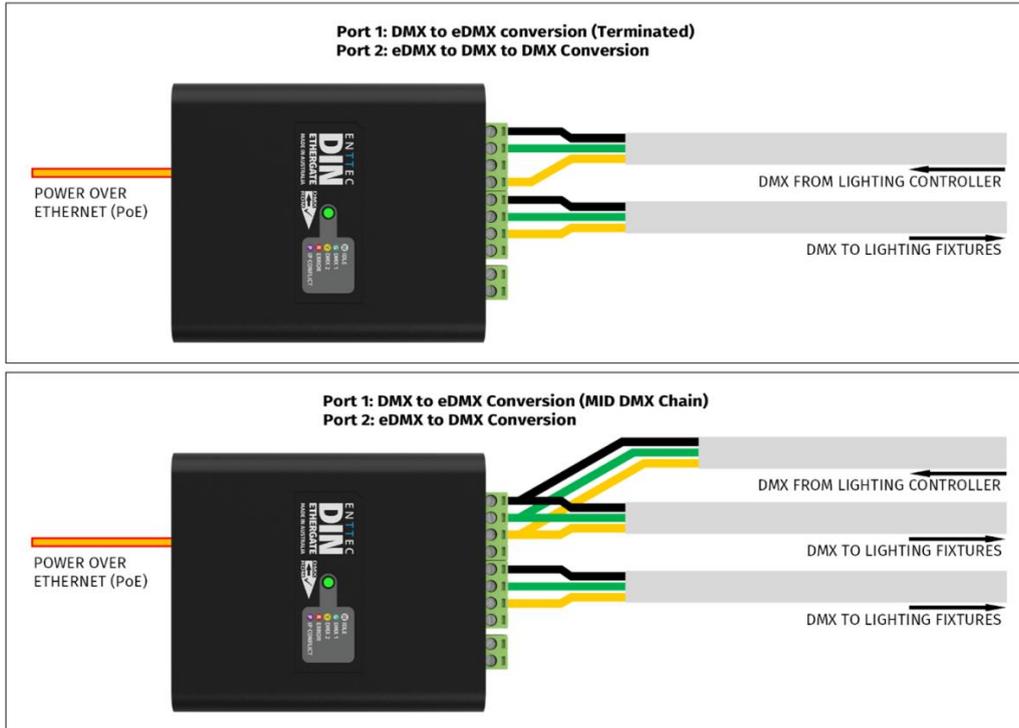
Physical Dimensions



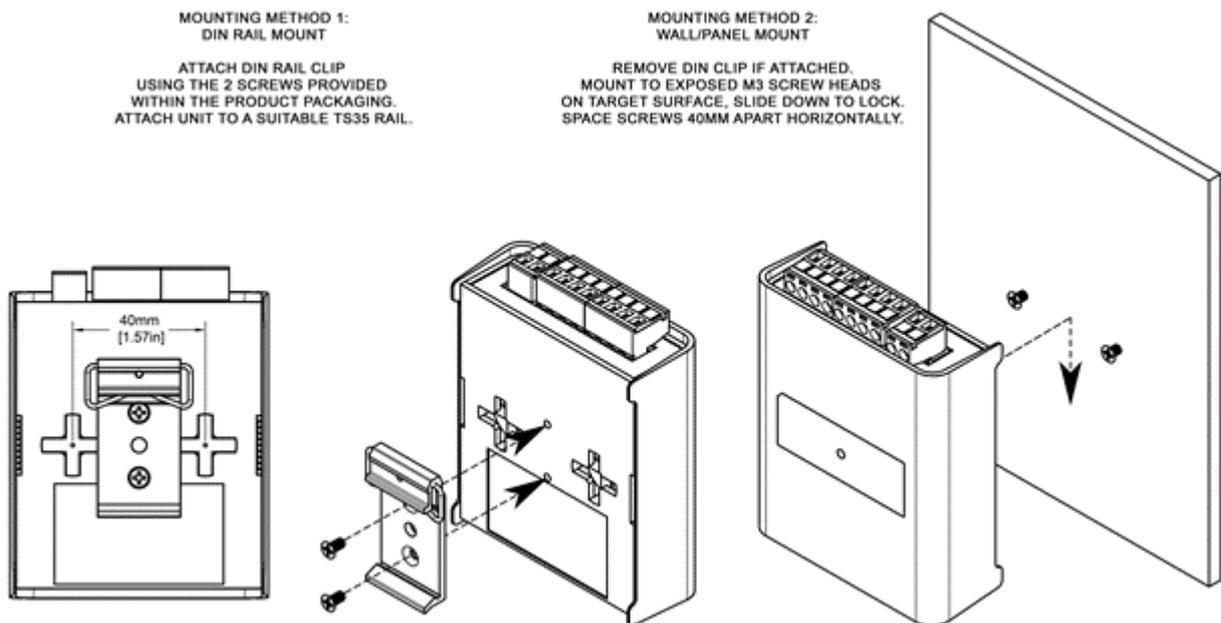
Wiring Diagrams

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 - 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, wire DMX+ to the DMX termination phoenix connector to terminate the chain.





Mounting Options



Functional features

eDMX Protocol Support

Art-Net / ArtRDM

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 32768. Art-Net can be received and converted to DMX, or DMX to Art-Net with the option to Unicast or Broadcast.

By ticking 'RDM Enabled' in the port configuration when setting the port as an output an ArtRDM enabled controller on the network will be able to use the DIN ETHERGATE as a gateway to discover, configure and monitor RDM capable devices on the DMX line connected to the port.



The DIN ETHERGATE does not support remote configuration through Art-Net.

sACN

sACN is supported. Each port's configuration can be defined using the DIN ETHERGATE's web interface to define a universe in the range 1 to 64000. sACN can be received and converted to DMX, or DMX to sACN with the option to Multicast or Unicast. 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

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. ESP can be received and converted to DMX or DMX to ESP with the option to Unicast or Broadcast.

Each input / output port can be defined using the DIN ETHERGATE's web interface to define a start universe in the range 0 to 255.

eDMX Protocol to USITT DMX512-A

The DIN ETHERGATE's primary functionality is to convert between Ethernet-DMX protocols and USITT DMX512-A (DMX). The following conversions are available with the DIN ETHERGATE:

- Art-Net to DMX (ANSI E1.20 RDM supported).
- DMX to Art-Net.
- sACN to DMX.
- DMX to sACN.
- ESP to DMX.

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.

RDM

RDM (ANSI E1.20) is supported whilst the DIN ETHERGATE's conversion 'Type' is set to Output (DMX Out) and the Protocol is set to Art-Net. When this is the case, a check box appears which will need to be ticked to enable RDM. This will convert Art-RDM to RDM (ANSI E1.20).

Type: <small>What this port should do.</small>	Output (DMX Out) ▼
Protocol: <small>DMX Protocol to use</small>	Art-Net ▼ <input checked="" type="checkbox"/> RDM Enabled

ENTTEC recommends disabling RDM if your fixtures do not require it. Some older fixtures that support the DMX 1990 Specification can sometimes behave erratically when RDM packets are on the DMX line.

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 latest source received 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 7->24v.
- Pluggable terminal blocks.

PoE (Power over Ethernet)

The DIN ETHERGATE supports IEEE 802.3af Power over Ethernet. This allows the device to be powered via the RJ45 EtherCon 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: 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's signifies the related activity:

LED Color	DIN ETHERGATE Status	Description
White (static)	Idle	This signifies that the DIN ETHERGATE is operating normally.
Green	DMX input or output on Port 1	The LED will fade from white to green. Please disable Port1 if you don't want it to function.
Yellow	DMX input or output on Port 2	This will fade from white to yellow. Please disable Port2 if you don't want it to function. Flashing Yellow indicates RDM.
Red over Green	Multiple merge sources	Multiple DMX Sources detected, either Merging is disabled in the web interface or number of sources exceed 2 (for the same universe). User action is required to allow proper DMX output.
Purple (static)	IP Address Conflict	One or more devices on the network already has the same IP address as the DIN ETHERGATE. Please change the IP address manually or enable DHCP.
Red	Booting / Error	No DMX will be input or output in this state. Requires a firmware update or needs to be rebooted.

Out of the Box

The DIN ETHERGATE will be set to a DHCP IP address as default. 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 Static IP address which will be 192.168.0.10 as default. The DIN ETHERGATE will also be set as DMX OUTPUT as default, listening to the first two Art-Net Universes - 0 (0x00) and 1 (0x01) - converting them to DMX512-A on the two Phoenix Connectors.

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 Static IP address. 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 or if the DIN ETHERGATE falls back to the Static IP address after being unable to find a DHCP server, the Static IP address given to the device will become the IP address to communicate with the DIN ETHERGATE. The fall-back address will change from the default once it's modified in the web interface.



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 protocol, 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 it's 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.

- Note: A Chromium based browser (i.e. Google Chrome) is recommended for accessing the DIN ETHERGATE web interface.
- 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.

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 IP address (either DHCP or Static) the following discovery methods can be used on a local network to discover devices:

- 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 will be printed on the physical label on the rear of the product.



Note: The eDMX protocols, the controller and the device using to configure the DIN ETHERGATE must be on the same Local Area Network (LAN) and be within the same IP address range as the DIN ETHERGATE. For example, if your DIN ETHERGATE is on Static IP address 192.168.0.10 (Default), then your computer should be set to something such as 192.168.0.20. It is also recommended that all devices Subnet Mask are the same across your network.

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:

- Node Name
- Firmware Version
- Serial Number
- DHCP Status
- IP Address
- NetMask
- Mac Address
- Gateway
- sACN CID
- Link Speed
- Output Port
- Output Type
- Output Protocol
- Output Universe
- Output Send Rate
- Output Merging
- Output Send to Destination

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



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 the static IP address.

IP Address / NetMask / Gateway: These are used if DHCP is disabled or unavailable. 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 SDDP Discovery: Pressing this button will send a SDDP (Simple Device Discovery Protocol) packet to allow faster configuration in Control4's Composer software.

Type: Choose from the following options:

- Disabled - will not process any DMX (input or output).
- Input (DMX IN) – Will convert DMX from the 5-pin XLR to a DMX over Ethernet protocols.
- Output (DMX Out) – Will convert Ethernet-DMX protocols to DMX on the 5-pin XLR.

RDM: RDM (ANSI E1.20) can be Enabled 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.

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

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 - 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. If they both have the same priority, the streams will merge on an HTP (highest-takes-precedence) basis.

Options - 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.

Options - 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.

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

Factory Default: Factory resetting the DIN ETHERGATE results in the following:

- Resets the device name to defaults.
- Enables DHCP.
- Static IP 192.168.0.10 / Netmask 255.255.255.0.
- Output protocol is set to Art-Net.
- Merging is dissabled.
- Port 1 universe 0.
- Port 2 universe 1.
- RDM disabled.

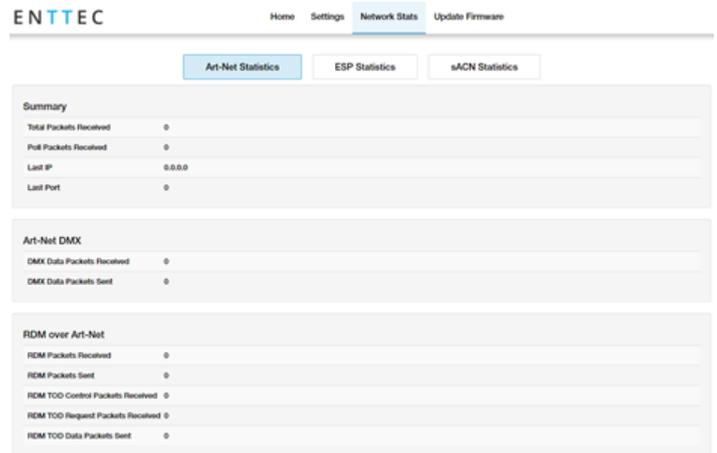
Restart Now: Please allow up-to 10 seconds for the device to reboot. When the web interface page refreshes the DIN ETHERGATE is ready.

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 packets sent /received, alongside Poll packets, last IP address and Port.

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, Subdevice and TOD Control/Request packets.



Update Firmware

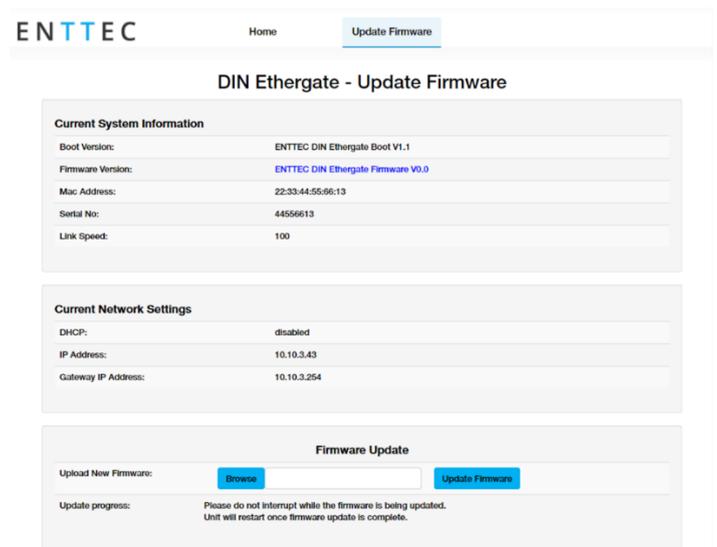
When selecting the Update Firmware tab, the DIN-ETHERGATE will stop outputting and the web interface boots into the Update Firmware mode takes up-to 10 seconds.

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

Using the Choose File button, browser your local computer for the latest DIN ETHERGATE firmware file, this will have a .bin extension. The latest firmware can be downloaded from our website.

Next click on the Update Firmware button to begin updating.

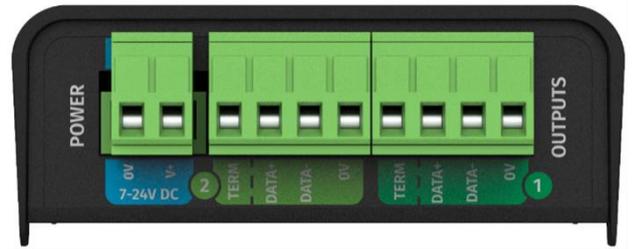
After the update has completed, the web interface will load the Home tab, where you can check the update was successful under Firmware Version. Once the Home tab has loaded, the DIN ETHERGATE will resume operation.



Phoenix Pinout

The DIN ETHERGATE features two 4 Pin Phoenix Connectors, which can be used either for DMX in or DMX out, depending on the settings set within the Web Interface.

The Phoenix connectors feature the DMX standard ports (0V, Data - and Data +), with an additional port called Term which is used when the DIN ETHERGATE is being used as a DMX to eDMX converter. The TERM port will replace the need for the Data + port and will provide termination to your DMX line.



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 an 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

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

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