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Quick Start Manual
Datagate MK2 70044
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DATAGATE MK2

Box Contents

- Datagate Mk2 (pn: 70044)
- Straight connect Ethernet lead (pn:79102)
- IEC power cord (country dependent plug)

Features

- 8 DMX ports isolated up to 1500V
- Gigabit Ethernet Connection
- LCD display provides network and status information
- DMX refresh rate configurable for each DMX port (1Hz to 44Hz) default is 35Hz.
- Break time/MAB configurable for each DMX port
- All configurations are made through web browser and saved as Profiles.
- Graphical User Interface for creating and editing ports is flow-chart oriented and documents data flow as you configure it.
- OSC support
- DMX Generator and Stream snapshot feature (web)
- Supports numerous protocols for DMX over Ethernet:
  - ESP
  - Art-Net
  - KiNet (input only)
  - sACN

Note: RS232 is not supported by Datagate RevC Mk2 family devices manufactured after April 2020.

Additional Features

- Stream Auditor: A status monitoring web-screen that includes data throughput statistics, un-matched DMX over Ethernet data streams (streams that are not included in the current profile), and other information for troubleshooting, available through web page
- Merging:
  - HTP
  - LTP
  - A/B Priority
    - Priority merging gives priority to a particular source for as long as the DataGate MK2's is receiving data from it. If the DataGate loses connection it will maintain the previous frame and begin its count to the user defined fall over time. If this is reached, the output will be switched to the secondary source. If data returns before the user defined time is reached the switch over will not happen and the first source will continue to be used
- RDM Tools (refer to RDM tool section description)
- RDM Sensors on enabled fixtures (refer to RDM sensors section description)

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Safety

- Do not expose the Datagate Mk2 to rain or moisture, doing this will void the warranty
- Do not remove the cover, there are no serviceable parts inside
- This unit is intended for indoor use only

Basic Setup

Right out of the box the unit is setup as Art-Net to DMX (8 universe) node. Because of this, you can use the device with applications, consoles, desks, or controllers that are compatible with Art-Net to distribute Art-Net data via Ethernet network.

With the default profile, each DMX Port is mapped to it's respective Art-Net Universe, allowing you to directly plug-in Art-Net without any changes or configuration necessary.

Getting Started

To begin your installation please follow these steps.

1. Unpack the unit from the box. Inspect the Datagate Mk2 for any damage that might have occurred in shipping, and verify that it looks to be in good condition before plugging it in to power.
2. The Datagate Mk2 occupies a single unit (1U) in a 19 inch rack. You may attach it to the rack either at this time or later after configuring it, if desired.
3. Attach a power cord with mains voltage (supplied) to the IEC input on the back.
4. Using an Ethernet Cat5, Cat5E or Cat6 cable, connect the unit to an Ethernet Network.
5. Datagate Mk2 is set to DHCP by default, so it can be connected to your existing network (router or switch), and the IP address, if needed, can be changed from LCD or web browser.
6. The LCD displays the IP address of the unit at all times (except when it's booting), but if not possible to check the LCD, NMU App (available for Windows & Mac) can be used to detect the Datagate Mk2 on your network. NMU can be downloaded from the ENTTEC website.

Profiles

Profiles are essential to the operational philosophy of the Datagate. With a profile selected, the device knows how to utilize the many resources it can make use of to perform lighting control tasks.

Each Profile contains configuration information for some or all of the following:

DMX Ports
> These are the physical DMX ports 1 to 8.

Ethernet Streams
> These are the DMX over Ethernet universes. (Art-Net, ESP, KiNET, ACN)

Routing Diagram
The routing diagram is the visual representation of the Profile itself and it tells the Datagate how frames are moved or routed inside the routing engine, as well as what to do with multiple sources of data that need to be merged, when that option is engages. Other special operations can be part of a diagram as well, such as Merging, Channel Shifter, Output Switch, etc.

Factory Profiles

The Datagate Mk2 has a set of factory profiles, to start you off. You're likely to see the following**:**

- **Art-Net to DMX:** This profile will take 8 DMX over Ethernet signals using the Art-Net protocol and convert them to 8 DMX signal on ports 1 to 8.
- **DMX to Art-Net:** This profile takes 8 DMX signals on ports 1 to 8 and send them over Ethernet using Art-Net protocol.
- **DMX Splitter:** This profile inputs DMX on port 8 and the signal is replicated onto ports 1 to 7
- **4 In 4 Out Isolator:** This profiles is used to isolate 4 DMX streams, signal on input 1 is replicated to port 2, signal on port 3 is replicated on port 4
- **7 to 1 Merger:** This profile does an HTP merge of DMX inputs 1 to 7 and send the result onto DMX port 8

These profiles are just an example of what can be done with the Datagate Mk2, you can modify the factory profiles to accommodate your particular need (copy and then edit), or create your own profile from scratch.

Changing from one profile to another can be done in a web browser window, or with the touch of a few buttons on the front panel menu

LCD Menu

The LCD Menu is navigated through the four panel buttons on the front of the unit.

The Menu button acts as the "Back" button, which takes you to the previous Menu/screen.

The Enter button goes into the selected option on the screen, and activating the option.

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The Top & Bottom button are used to navigate/scroll through the options on any screen. The currently selected option is highlighted with a white background on the screen.

Main Menu

> **DG-MK2 - ART-NET-TO-DMX**
> **IP: 192.168.10.200**
> **Packets: 25 / S**
> *press a key to enter*

Line1: displays the System Name and currently Selected Profile.
Line2: displays either the current IP address / DHCP Failed / disconnected, highlighting the current status of the network interface. The IP address is where the web interface can be accessed.
Line3: displays the number of packets currently passing through the Datagate Mk2. This number of packets per second, can be used as an indicator of the activity of DMX on your network.
Pressing any of the panel buttons/keys will activate the next screen on the LCD Menu.

Selection Menu

> **1-load profile**
> **2-Setup**
> **3-Status**
> **4-Lock Unit**
> **5-Restart**

1-Load Profile

Lists all available profiles on the Datagate Mk2, list can be scrolled using up & down keys. Scrolling indicator is visible when the list allows scrolling.
Pressing Enter at the selected profile will activate the profile

2-Setup

> **1-Change IP**
> **2-Factory Reset**

Setup screen allows changing the IP address of the unit via "Change IP" or doing Factory Reset.

Change IP

This screen further gives two options DHCP or Static IP. When Static IP is selected, the screen allows you to change the IP address using the top and bottom button to scroll the digits and the menu & enter buttons to select the segment. Once you are on the last segment of the IP address, pressing the Enter button, will activate the IP address. It will take a few seconds for the change to go through, please wait 30 seconds, before attempting to try again.

> **Change IP Address**
> **IP: 192.168.001.003**

Factory Reset

Activating Factory Reset, leads to a simple prompt confirming your action. Once confirmed, the Factory Reset will take a few seconds to run. It will end up deleting all your user created profiles, as well as any saved settings. Please use this only when needed, or as directed by ENTTEC support team.

> **F-Reset in progress**
> **please wait …**

3-Status

Status Screen, allows the following two options:

> **1-System**
> **2-Network**

Both the Status screens are read-only and provide information about the system and Networking.
These require no user-input and serve as a way of checking the performance of the unit.

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4-Lock Unit

The option to lock your device by disabling the web interface has been added to provide a level of security to your installation and is available on RevB models. By locking your device, the web server becomes inactive meaning that your configuration cannot be modified. To lock and unlock your device follow these simple steps on the devices LCD menu.

1. press **enter** on the units LCD menu
2. Navigate to option **4-Lock Unit** and press **Enter**
3. Select **Yes** to lock or **No** to unlock.
4. Wait 10 seconds for this to take effect.
5. Done!

ENTTEC strongly recommend you secure your network using best practice methodologies with relevant precautions in place. Do not connect devices carrying DMX or ArtNet data to the outside world unless absolutely necessary and with relevant precautions in place.

Note: Factory resetting a device will not unlock the device. This must be done using the LCD menu.

5-Restart

Restart Screen, when activated, prompts for the user to confirm the selection.

```
1-YES
2-NO
```

Once confirmed, Datagate Mk2 will stop the engine and restart the system. While rebooting the LCD screen will change between a couple of screens, and the LCD Main Menu will only be visible, once the system is fully ready. (usually takes a minute).

```
System Restarting
Please wait ...
```

Web Interface

The Datagate Mk2 is configured, controlled and programmed through a web browser interface running on a computer system located on the same Local Area Network. Any modern web browser, such as Chrome, Firefox, Internet Explorer, Safari or Opera, running under any operating system, including Windows XP or Vista, Mac OS X or Linux can be used.

Throughout the Web Interface, helpful hints are displayed when a user hovers the mouse over the "Help" icon?

Web: Profiles

From this screen you can manage your profiles.
As you will notice in the "Remarks" column, the factory default profiles are read only. If you wish to modify one of them, you will first need to copy the profile to some other name. Once the profile has been copied you can modify it to fit your particular needs.
Clicking on the Profile name will launch the profile in the profile-editor window.

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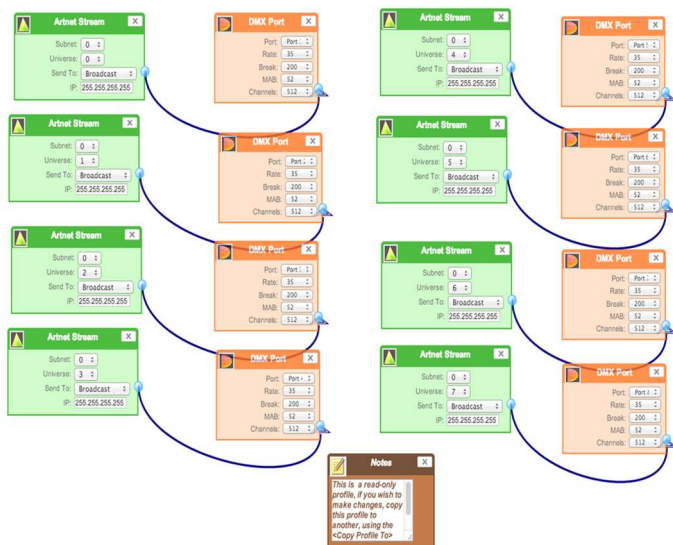
Web: Profile Editor

Create a new profile or edit an existing one using the profile-editor. Opens up in a new page in your web browser. Select a module on the left and the right panel will provide help about that panel. Connect a module to another using wires from one point to another.

The direction of the wire (arrow) is important, the arrow signifies output, and reflects the flow of data.

Web: Profile Modules

Each profile is made up of two or more connected Modules or Actions. The relationship between them forms the layout of the data flow within the profile. The following modules are available:
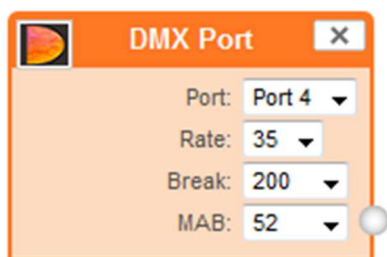
The DMX port represents one of the physical ports on the rear of this unit, select which port you want to use by using the drop down.

- Rate: refresh rate to send DMX (frames per second)
- Break: Break time (micro sec) between each DMX frame (default is 200)
- MAB: Mark After Break time (micro sec) default is 52
- Channels: Number of channels to send in 1 Universe (default is 512)

Limitation: Same DMX port cannot be re-used in the same profile.

Art-Net Stream: "Send IP address": is the destination address used when the stream is sending data only (Unicast).
Use the left node to connect a stream with ArtRDM to a physical DMX port (up to the first 256 ArtNet universes).
Use the right node for ArtNet without ArtRDM.

ESP Stream: ENTTEC Show protocol DMX over Ethernet stream (ESP). IP address is the destination address used when the stream is sending data only.


Kinet Stream: For example: You can connect Kinet Stream to an Art-Net Stream to convert and output as Art-Net. (Kinet stream is supported as input only)
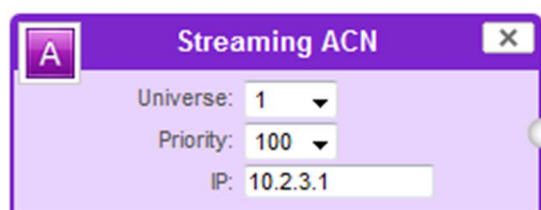
Streaming ACN: "IP address" is the destination address used when the stream is sending data only (default is disabled = 0.0.0.0)
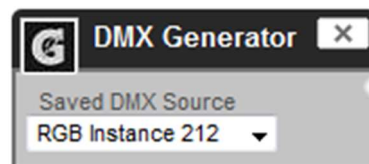
DMX Generator: Define your own custom DMX Channel values and assign the selected ones.
Snapshot feature can be used to capture values from an input stream. All modifications can be done using the DMX Grid Page.

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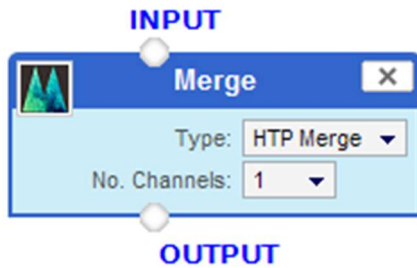
Merge: HTP or LTP merge operator, drag as many lines to the input node as you wish to merge
- HTP Merge: Higher Takes Precedence – The biggest DMX value will be output per channel
- LTP Merge: Latest Takes Precedence – The latest DMX value will be output per channel

Shifter: can be used to shift a number of channels to another spot in the INPUT DMX frame
Channels not defined will be left at 0 value
Example: To Shift 100 channels from 10 to 210:
Setup as "start listening at": 10 and, "start sending at": 210, "number of channels": 100
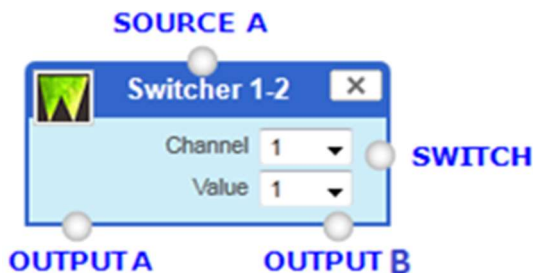
Switcher 1-2: Controllable Switch operator, when the trigger channel (Switch) is greater than the set value, OUTPUT B is output, in other cases OUTPUT A is output. Must have all input sources and output sources connected
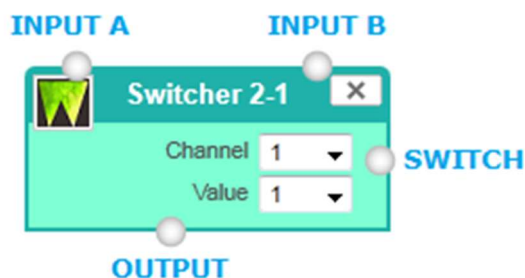

Switcher 2-1: Controllable Switch operator, acts as a normal Input A to Output Action, but when the trigger

value is greater than the set Switch it does Input B to Output Action

Must have all input sources and output sources connected.
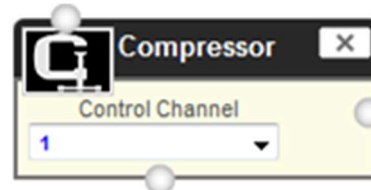
Compressor proportionally reduces all channels of the input according to the value on the control channel.
For example: if control value input is 127 all the values on the input will be reduced to 50% at output.
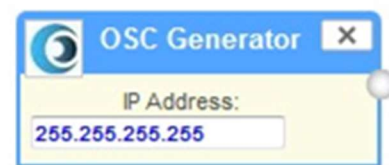
This OSC module will allow control from an OSC controller on port 8000.

In each OSC message, there is another argument to convey level which is a float between 0 and 255.

Limitation: Only one OSC module allowed in the profile

OSC Instructions:

OSC Generator module:
- Send DMX from Datagate using OSC commands
- IP address is not used
- Send OSC on port 8000 to Datagate's IP address

TouchOSC Examples:

/dgmk2/4 220 : sends value 220 on 5th DMX channel
/dgmk2/127 125 : sends value 125 on 128th DMX channel

How to send OSC packets using UDP:

OSC packet needs to be in multiple of 4 bytes and spaced accordingly.

OSC packet must be sent in 3 segments (tag, format, value)

tag=/dgmk2/<ch>
format= ,f
value= <float>

Each segment must be a multiple of 4 bytes. Pad with 00 at the end, if required

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Some examples:

To change DMX channel 5 to value 200:

ASCII: (tag, f value)
/dgmk2/4\00\00\00\00,f\00\00CH\00\00

HEX:
2f 64 67 6d 6b 32 2f 34 00 00 00 00 2c 66 00 00 43 48 00 00
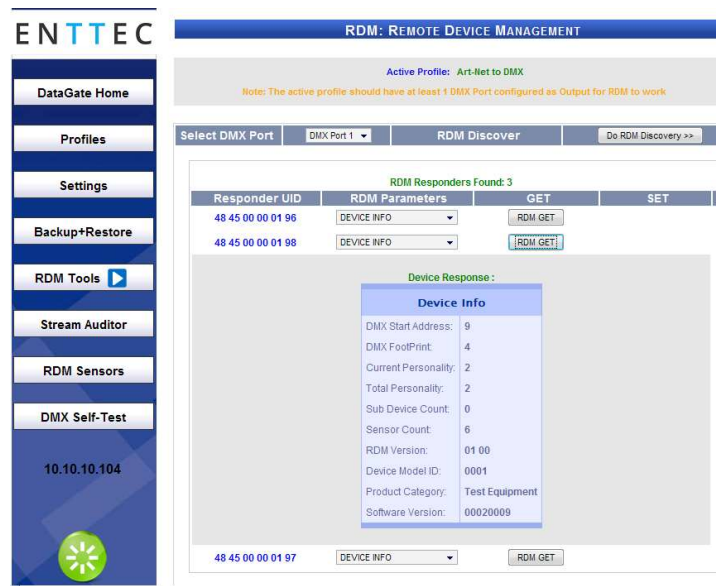
To change DMX channel 121 to value 50:

ASCII:
/dgmk2/120\00\00,f\00\00BH\00\00

HEX:
2f 64 67 6d 6b 32 2f 31 32 30 00 00 2c 66 00 00 42 48 00 00

Web: RDM Tools

RDM tools page, with DMX ports set as output, can be used to discover RDM device, and allow user to access and control below 10 PIDs without relying on external RDM controller. Each RDM device, has its' own set of functions and buttons, so multiple devices can be handled easily. Clicking on the device ID, opens a new page to handle this device separately.

PIDs

1. DEVICE INFO
2. DMX START ADDRESS
3. DMX PERSONALITY
4. LAMP ON MODE
5. DEVICE DESCRIPTION
6. MANUFACTURING LABEL
7. DEVICE LABEL
8. FACTORY DEFAULTS
9. SOFTWARE VERSION
10. SUPPORTED PARAMETERS

Web: RDM Sensors
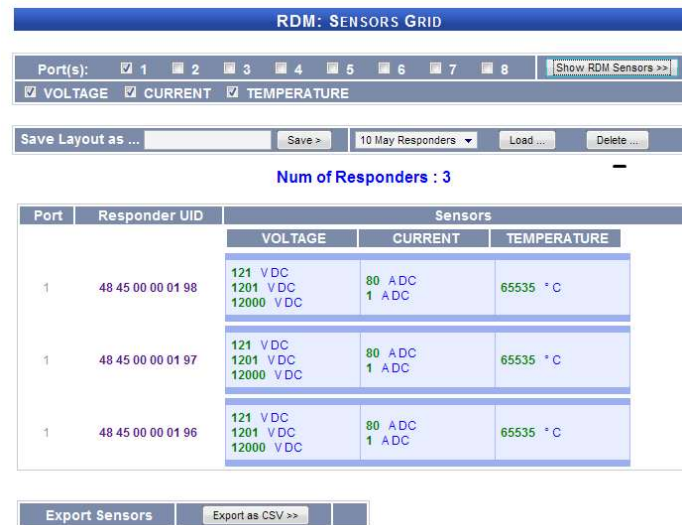
RDM Sensors page, allows discovering all RDM devices and monitoring all sensors supported by RDM tool. Examples include: Temperature, Current and, Voltage sensors.

Values can be exported, or emailed at intervals set using the settings page. Sensors layout can be saved and loaded, to minimize any delay in discovering them again and again.

Firmware Update

You can update the firmware on the Datagate Mk2, via the web browser. Firmware files are available on the ENTTEC website.

Always check your Datagate Mk2's hardware revision, (Rev A, B or C on the device homepage, to ensure you are downloading firmware that is compatible with your device).

Download the firmware to your desktop and then follow instructions on the **Datagate Mk2's** Settings page.

Note: While the firmware is being updated, please do not power off the unit, please wait until the web-page is processing. (up-to 5 minutes)

If the web-page does not refresh automatically, please open the home page on the browser manually, and verify that the update has succeeded.

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NMU
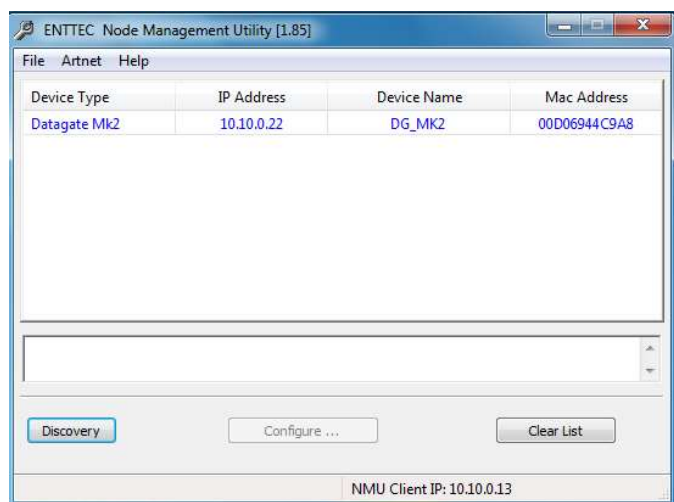
NMU (Node Management Utility) is a free Windows and OSX application that is used to manage compatible ENTTEC DMX over Ethernet nodes.

NMU will not directly allow you to configure the Datagate Mk2 itself, but it can help you find your unit's IP address and then open a browser window to make the required changes.

To employ the NMU, follow this set of instructions:

- Please download and install the application from the ENTTEC website
- Ensure that your Datagate Mk2 is hooked up physically by Ethernet cable to the same physical network as the computer on which you will run the NMU.
- Start the application.
- Press the Discovery button.
- Select Datagate Mk2.
- An IP Address will be shown next to any Datagate Mk2 which are located.

Connector pin out

5pin DMX:

Pin 1:	Ground (0V)
Pin 2:	Data -
Pin 3:	Data +
All Other Pins:	NC

RS232 DB9:

Note: RS232 is not supported by Datagate RevC Mk2 family devices manufactured after April 2020.

Pin 2:	TX
Pin 3:	RX
Pin 5:	Ground (0V)
All other Pins:	NC

Art-Net Send Test

NMU can also be used to troubleshoot the DMX output on your Datagate Mk2. Art-Net Test can be accessed from the top menu: Artnet → **Artnet Test**.
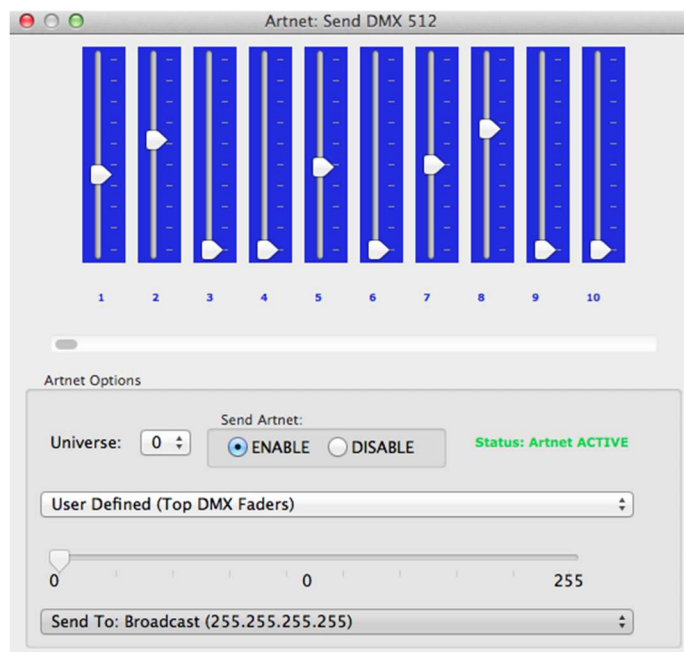
When first opened, the Art-Net is set to Disabled, please set it to Enabled, and then you can use either the DMX faders to test one or more DMX channels, or use the test-patterns from the options available.

The Datagate MK2 should be set to Art-net to DMX profile

Ordering Information

The Datagate MK2 and related products can be ordered from our website or through your ENTTEC dealer using the following part numbers:

Part Number	Description
70044	Datagate MK2

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Specifications

Due to continuous improvements and innovations of all ENTTEC products, specifications and features are subject to change without notice.

Item	Value
Input Voltage	85 - 264V AC
Input Frequency	47 - 63Hz
Weight	1.8kg / 3.96lbs
Shipped Weight	2.6kg / 5.78lbs
Length	463.1mm / 18.25"
Width	111mm / 5"
Height	1.72"
Op Environment	0-50 Celsius
Connectors	8x 5-Pin Female RDM enabled XLR for DMX input/Output 1x 5-Pin male XLR for DMX input 1x RJ45 Ethernet Connector 1x DB9 (RS232) Connector **(un-used on RevC Datagate Devices)** 2x USB Host Connectors **(un-used)**
Certification	CE, FCC certified

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