

# Ether2DMX Router

user manual



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<b>Introduction</b> .....	<b>4</b>
Features .....	4
Safety information .....	4
<b>AC power</b> .....	<b>5</b>
Voltage selection .....	5
Plug Installation .....	5
<b>Data connections</b> .....	<b>6</b>
Ethernet connection .....	6
DMX connections .....	6
Other data connections .....	6
<b>Setup</b> .....	<b>7</b>
Default settings .....	7
DMX Port Configuration .....	8
IP address .....	9
Subnet Mask .....	10
Optional settings .....	10
<b>Operation</b> .....	<b>13</b>
Status display .....	13
Ethernet/DMX conversion .....	14
Ethernet bridge .....	14
DMX routing .....	15
Utilities .....	16
<b>Advanced functions</b> .....	<b>17</b>
General purpose I/O .....	17
MIDI / RS-232 .....	18
<b>1-based decimal to 0-based hex table</b> .....	<b>20</b>
<b>Specifications</b> .....	<b>21</b>

# INTRODUCTION

# 1

## FEATURES

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Thank you for purchasing the Martin Ether2DMX Router. This device provides bidirectional conversion of 4 universes of DMX data to and from ArtNet Ethernet.

The Ether2DMX Router allows you to

- route DMX data via ArtNet Ethernet,
- add DMX outputs to the Maxxyz controller,
- build a DMX to Ethernet to DMX bridge,
- channel DMX input to the Martin ShowDesigner,
- patch DMX input to multiple DMX outputs.

## SAFETY INFORMATION

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The Ether2DMX Router is not for household use. For safe operation, read this manual before use and follow the safety precautions listed below. If you have questions about how to operate the device safely, please contact your Martin distributor or dealer.

- Disconnect the device from AC power before removing fuses or any part, and when not in use.
- Always ground (earth) the device electrically.
- Use only a source of AC power that complies with local building and electrical codes and has both overload and ground-fault protection.
- Do not expose the device to rain or moisture.
- Never attempt to bypass fuses. Always replace defective fuses with ones of the specified type and rating.
- Refer all service to a qualified technician.
- Do not modify the device or install other than genuine Martin parts.

# AC POWER

# 2

## VOLTAGE SELECTION

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Before using the Ether2DMX Router for the first time, set the voltage selection switch on the rear panel to the setting closest to the local mains AC voltage. The switch allows you to select between 115 and 230 volts.


## PLUG INSTALLATION

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The fixture's mains lead requires a grounding-type cord cap that fits your power distribution cable or outlet. Consult a qualified electrician if you have any doubts about proper installation.

**Warning!** *For protection from dangerous electric shock, the fixture must be grounded (earthed). The AC mains supply shall have overload and ground-fault protection.*

Following the cord cap manufacturer's instructions, connect the yellow and green wire to ground (earth), the brown wire to live, and the blue wire to neutral. The table below shows some pin identification schemes.

Wire	Pin	Marking	Screw color
brown	live	"L"	yellow or brass
blue	neutral	"N"	silver
yellow/green	ground		green

## ETHERNET CONNECTION

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### DIRECT CONNECTION TO CONTROLLER

To connect a single Ether2DMX Router to a controller, use a category 5 (CAT5) unshielded twisted pair (UTP) crossover cable between the RJ-45 jack labelled “10BaseT” on the rear panel of the Ether2DMX Router and the Artnet Ethernet jack on the controller. On the Maxxyz, this jack is labelled “EtherDMX”. Note: the maximum Ethernet cable run is 100 meters.

### CONNECTION OF MULTIPLE ROUTERS

A suitable network is required to connect multiple Ether2DMX Routers to a controller. Though network configuration is beyond the scope of this manual, at minimum the network will consist of a multiport hub and CAT5 UTP network cables.

You can use as many Ether2DMX Routers as required to provide the maximum number of DMX universes supported by the controller.

## DMX CONNECTIONS

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The Ether2DMX Router provides 4 DMX-512 outputs on 5-pin female XLR connectors and 4 DMX-512 inputs on 5-pin male XLR connectors. There is no contact on pins 4 and 5. The DMX ports are completely isolated to protect the device and other ports from faults on the DMX line.

Terminate the DMX data links properly to avoid signal transmission problems.

## OTHER DATA CONNECTIONS

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Please refer to “Advanced functions” on page 17.

The Ether2DMX Router's DMX ports, IP address, and subnet mask must be configured for your application. Section 5 describes some sample applications and their setup requirements. Section 6 describes additional setup options for advanced applications.

## DEFAULT SETTINGS

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The default settings are suitable for outputting DMX universes 9 - 12 when connected directly to a Maxxyz controller with ghost version 1.0.4 or later. The default settings are shown below.

<b>Setting</b>	<b>Default</b>
IP address	2.1.128.2
Subnet mask	255.0.0.0
ID	000
Output A	Enable, 9 (08)
Output B	Enable, 10 (09)
Output C	Enable, 11 (0A)
Output D	Enable, 12 (0B)
Input A	Disable
Input B	Disable
Input C	Disable
Input D	Disable
MIDI / RS232	Disable
Display Auto	On
Universe numbering	Decimal
Name	Maxxyz EtherDMX

## To restore factory settings

Clear All ?  
Press Up + Down

**Important!** *This procedure deletes all user settings.*

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 17, “Clear All”, with the arrow keys or scroll wheel. Press ENTER.
- 3 Press both arrow keys at the same time to restore the factory default settings, or press MENU to escape.
- 4 Press MENU to exit setup mode.

## DMX PORT CONFIGURATION

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The DMX ports can be enabled or disabled. When disabled, there is no DMX signal. Enabled ports must be assigned to a DMX universe. While each input must be patched to a unique universe, two or more outputs can be patched to the same universe.

### ABOUT PORT NUMBERING

Ports are labelled 1, 2, 3, 4 on the back panel and A, B, C, D on screen. “IN 1” corresponds to “Input A” and so on.

### ABOUT UNIVERSE NUMBERING

In normal operating mode, the Ether2DMX Router displays universe numbers in 0-based hexadecimal. The universe numbers run from 00 to FF. On controllers, though, universe numbers are typically displayed in 1-based decimal format, and run from 1 to up to 256.

The default universe numbering setting displays universe numbers in 1-based decimal in setup mode to make patching more intuitive.

There is a 0-based hex to 1-based decimal conversion table for your convenience on page 20.



## To configure a DMX port

```
Output A:enable  
Universe: 0-0
```

- 1 Press MENU to enter setup mode.
- 2 Navigate to the menu for the desired DMX input or output port, for example menu 4, “Set Output A Routing”, with the scroll wheel or arrow keys. Press ENTER.
- 3 To activate the output, select “enable”, otherwise, select “disable”. Press ENTER.
- 4 Scroll to the desired universe number. Note that the number is displayed in 0-based hexadecimal.
- 5 Press ENTER to save the setting and return to the setup menu.

## IP ADDRESS

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When used with the Maxxyz (ghost version 1.0.4 or later), the Ether2DMX Router must be given a unique IP address from 2.0.0.1 through 2.255.255.254 with the exception of 2.1.128.1 and 2.1.128.254, which are reserved for the Maxxyz. The recommended IP address space 2.1.128.2 / 253.

For use with other Ethernet DMX controllers, consult the controller’s user manual.

## To set the IP address

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 1, “Set IP Address”. Press ENTER.
- 3 Press the arrow keys as required to move the cursor to the first (left-most) IP address field. Scroll to the desired value. (2 for Maxxyz)
- 4 Move the cursor to the second field. Scroll to the desired value. (1 recommended for Maxxyz)
- 5 Move the cursor to the third field. Scroll to the desired value. (128 recommended for Maxxyz)
- 6 Move the cursor to the fourth field. Scroll to the desired value. (2 - 253 recommended Maxxyz)
- 7 Press ENTER to save the setting. Press MENU to exit setup mode.

## SUBNET MASK

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There are three possible subnet mask settings. For use with a Maxxyz console, use subnet mask 255.0.0.0.

### To set the subnet mask

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 2, “Set Subnet Mask” using the scroll wheel or arrow keys. Press ENTER.
- 3 Select the desired subnet mask. (255.0.0.0 for Maxxyz)
- 4 Press ENTER to save the setting. Press MENU to exit setup mode.

## OPTIONAL SETTINGS

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### USER ID

You can define an ID number to keep track of multiple routers.

### DISPLAY MODE

With “Display Auto” > “On”, the Ether2DMX Router displays three status screens at fixed intervals. With “Display Auto” > “Off”, the display does not scroll but you can change views manually with the scroll wheel or arrow keys.

### DEVICE NAME

You can edit the text displayed to the right of the software version number in the port status display. The displayed text may be 15 characters long.

### UNIVERSE NUMBERING

With “Display Universe Mode” > “Decimal”, universes are displayed in 1-based decimal format when patching universes in setup mode. “Hexadecimal” displays universe numbers in 0-based hexadecimal format. Note that the status display always uses hexadecimal format.

## To set ID



Set ID: 001

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 3, "Set ID". Press ENTER.
- 3 Select a position with the arrow keys. Select characters with the scroll wheel.
- 4 Press ENTER to save the setting. Press MENU to exit setup mode.

## To set display option



Display Auto:On

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 14, "Set Display Mode". Press ENTER.
- 3 Select "On" or "Off" with the arrow keys or wheel.
- 4 Press ENTER to save the setting. Press MENU to exit setup mode.

## To edit name text



Name Edit  
Maxxyz EtherDMX

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 16, "Edit Name". Press ENTER.
- 3 Move the cursor with the arrow keys. Select characters with the scroll wheel.
- 4 Press ENTER to save the setting. Press MENU to exit setup mode.

## To set universe numbering format

A screenshot of a router's configuration menu. The text 'Display Universe Mode: Decimal' is displayed in a white, monospaced font on a blue rectangular background. This background is centered within a larger black rectangular frame.

Display Universe Mode: Decimal

- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 15, "Display Universe Mode", with the arrow keys or scroll wheel. Press ENTER.
- 3 Select "Decimal" or "Hexadecimal" with the arrow keys or wheel.
- 4 Press ENTER to save the setting. Press MENU to exit setup mode.

# OPERATION

## STATUS DISPLAY

---

```
Maxxyz EtherDMX  V1.0  Maxxyz EtherDMX
Output: A  B  C  D  Input: A  B  C  D
```

```
Output Routing      Input Routing
A 00 B 01 C 02 D 03 A -- B -- C -- D --
```

```
IP Address          Subnet Mask        ID
1010.020.082.080   255.000.000.000   ---
```

Status information and option menus are displayed on a 20 x 2 character LCD screen. When you turn on the Ether2DMX Router, it enters operation mode and displays status information.

The LED labeled “LAN” indicates, when lit, that there is a working Ethernet link. If this LED does not light, there may be a problem with the Ethernet cable or a hardware defect in the unit.

The “RX” LED blinks to indicate that the unit is receiving data. If it fails to blink, it is likely due to an incorrect address or port setting.

### PORT STATUS

The port status display shows a fixed name text, the firmware version, and a user-defined text on the top line. The second line displays DMX port

status: a check mark to the right of the port letter indicates data transmission through the port.

### **DMX ROUTING**

The second status screen displays the DMX universe patched to each DMX port.

### **ETHERNET ADDRESS**

The third screen displays the unit's IP address, subnet mask, and a user-definable ID number.

## **ETHERNET/DMX CONVERSION**

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In this application, the devices converts DMX to the ArtNet Ethernet protocol and vice versa.

### **To convert Ethernet to DMX**

- 1 Connect the Ether2DMX Router to the ArtNet Ethernet jack on the lighting controller.
- 2 Connect the DMX data links to the DMX output jacks on the rear panel of the Ether2DMX Router.
- 3 Configure the router's IP address and subnet mask.
- 4 Enable the DMX outputs and patch them to DMX universes as desired.

### **To convert DMX to Ethernet**

- 1 Connect the Ether2DMX Router to the ArtNet Ethernet jack on the lighting controller.
- 2 Connect up to four DMX universes to the DMX inputs on the rear panel of the Ether2DMX Router.
- 3 Configure the router's IP address and subnet mask.
- 4 Enable the DMX inputs and patch each one to a unique DMX universe.

## **ETHERNET BRIDGE**

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Two Ether2DMX Routers can be connected to provide an Ethernet bridge for 4 DMX universes. DMX input to the first unit is converted to Ethernet, travels to second unit, and is converted back to DMX.

## To build an Ethernet bridge

- 1 Connect two Ether2DMX Routers directly with a CAT 5 crossover cable, or through an ArtNet Ethernet network.
- 2 Give both routers a different IP address and the same subnet mask.
- 3 Connect up to four DMX universes to the DMX inputs on the first Ether2DMX Router. Enable the inputs and patch each one to a unique universe.
- 4 Connect up to four DMX data links to the outputs of the second Ether2DMX Router. Enable and patch the DMX outputs as desired.

## DMX ROUTING

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Both DMX and Ethernet input can be patched to the Ether2DMX Router's DMX outputs. This allows the router to function alone, without an Ethernet connection, as a 4-port DMX splitter. A more likely application is to combine the routing and bridge functions to provide DMX output at both ends of the bridge.

Note: the Ether2DMX Router does not support DMX merge: each input must be assigned to a unique DMX universe.

## To route DMX input/output

- 1 Connect up to 4 sources of DMX data to the DMX inputs. Enable and assign each input port to a unique universe.
- 2 Connect up to 4 DMX data links to the DMX outputs. Patch the outputs as desired.

# UTILITIES

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## DMX VIEWER

The Ether2DMX Router provides a low resolution DMX viewer to help troubleshoot addressing and configuration problems. The viewer is in the form of a bar graph. Each bar represents a DMX channel and has 8 steps. Each step represents 32 DMX values. The viewer shows 40 channels at a time.

### To view DMX values



- 1 Press MENU to enter setup mode.
- 2 Navigate to menu 13, "View DMX Values". Press ENTER.
- 3 Select the DMX port to view with the arrow keys or scroll wheel. Press ENTER.
- 4 Scroll to the channel area to view. The scroll wheel increments the display 1 channel at a time and the arrow keys move the display 40 channels up or down.
- 5 Press MENU 3 times to exit setup mode.



# ADVANCED FUNCTIONS

## GENERAL PURPOSE I/O

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The General Purpose I/O port may be used for sensor input or similar purposes.

**Warning!** *Improper connection to the General Purpose I/O port can damage the device. Use this port only if you have experience in the field of electronics. Do not use the port to switch heavy loads or devices connected to the main supply.*

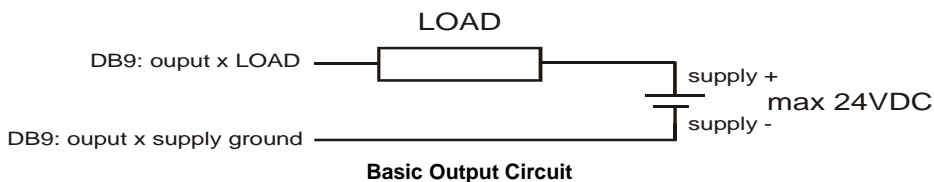
### GP I/O DB9 PINOUT

Pin	Function
1	Ground
2	Output 1 LOAD
3	Output 2 LOAD
4	Input 1
5	Input 2
6	Output 1 supply ground
7	Output 2 supply ground
8	Ground
9	Ground

### OUTPUTS

Optocouplers on the main PCB isolate the outputs from internal circuits.

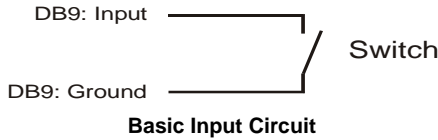
- Maximum voltage: 30 VDC
- Maximum delivered current: 6 mA



## INPUTS

A clamping circuit on the main PCB offers limited input protection. The inputs are pulled high internally. A switch, relay, or an open collector circuit may be used to pull down the input.

- Maximum voltage: 75 VDC
- Minimum voltage: 0 VDC



## MIDI / RS-232

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The Ether2DMX Router can send MIDI or RS-232 data over the Ethernet. You can not use both protocols at the same time, however, because the MIDI and RS-232 ports are electrically connected.

The Ether2DMX Router has 1 MIDI output on a female DIN-5 connector and 1 MIDI input on a female DIN-5 connector.

RS-232 is brought out on a DB9 connector.

### To configure MIDI/RS232 port

MIDI/RS232 Port Type: disabled

- 1 Use the scroll wheel to select one of the following port types:
  - RS 232
  - MIDI InOut
  - MIDI Out
  - MIDI InThru
- 2 Use the arrow keys to navigate through the port settings. Use the scroll wheel to adjust the settings of the selected port type.
  - Speed (RS232 only): Data rate of the port in bps.

- Input: This is a unique number that the controller software uses to identify the source of received data.
  - Output: This is a unique number that the controller software uses to specify the destination of the data.
- 3 Press ENTER to save settings and return to the setup menu.

# 1-BASED DECIMAL TO 0- BASED HEX TABLE

# 7

Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
1	0	33	20	65	40	97	60	129	80	161	a0	193	c0	225	e0
2	1	34	21	66	41	98	61	130	81	162	a1	194	c1	226	e1
3	2	35	22	67	42	99	62	131	82	163	a2	195	c2	227	e2
4	3	36	23	68	43	100	63	132	83	164	a3	196	c3	228	e3
5	4	37	24	69	44	101	64	133	84	165	a4	197	c4	229	e4
6	5	38	25	70	45	102	65	134	85	166	a5	198	c5	230	e5
7	6	39	26	71	46	103	66	135	86	167	a6	199	c6	231	e6
8	7	40	27	72	47	104	67	136	87	168	a7	200	c7	232	e7
9	8	41	28	73	48	105	68	137	88	169	a8	201	c8	233	e8
10	9	42	29	74	49	106	69	138	89	170	a9	202	c9	234	e9
11	a	43	2a	75	4a	107	6a	139	8a	171	aa	203	ca	235	ea
12	b	44	2b	76	4b	108	6b	140	8b	172	ab	204	cb	236	eb
13	c	45	2c	77	4c	109	6c	141	8c	173	ac	205	cc	237	ec
14	d	46	2d	78	4d	110	6d	142	8d	174	ad	206	cd	238	ed
15	e	47	2e	79	4e	111	6e	143	8e	175	ae	207	ce	239	ee
16	f	48	2f	80	4f	112	6f	144	8f	176	af	208	cf	240	ef
17	10	49	30	81	50	113	70	145	90	177	b0	209	d0	241	f0
18	11	50	31	82	51	114	71	146	91	178	b1	210	d1	242	f1
19	12	51	32	83	52	115	72	147	92	179	b2	211	d2	243	f2
20	13	52	33	84	53	116	73	148	93	180	b3	212	d3	244	f3
21	14	53	34	85	54	117	74	149	94	181	b4	213	d4	245	f4
22	15	54	35	86	55	118	75	150	95	182	b5	214	d5	246	f5
23	16	55	36	87	56	119	76	151	96	183	b6	215	d6	247	f6
24	17	56	37	88	57	120	77	152	97	184	b7	216	d7	248	f7
25	18	57	38	89	58	121	78	153	98	185	b8	217	d8	249	f8
26	19	58	39	90	59	122	79	154	99	186	b9	218	d9	250	f9
27	1a	59	3a	91	5a	123	7a	155	9a	187	ba	219	da	251	fa
28	1b	60	3b	92	5b	124	7b	156	9b	188	bb	220	db	252	fb
29	1c	61	3c	93	5c	125	7c	157	9c	189	bc	221	dc	253	fc
30	1d	62	3d	94	5d	126	7d	158	9d	190	bd	222	dd	254	fd
31	1e	63	3e	95	5e	127	7e	159	9e	191	be	223	de	255	fe
32	1f	64	3f	96	5f	128	7f	160	9f	192	bf	224	df	256	ff

# SPECIFICATIONS

## PHYSICAL

Size (L x W x H) .....482 x 160 x 43 mm (19" 2U rack)  
 Weight..... 2.8 kg (6.1 lb)

## CONSTRUCTION

Housing..... sheet steel and aluminum  
 Finish ..... electrostatic powder coating

## ELECTRICAL

AC Power ..... 90-130 V / 200-260 V, 50-60 Hz  
 Power and current consumption (@ 230 V, 50 Hz)..... 8 W, 45 mA  
 Power and current consumption (@ 120 V, 60 Hz)..... 8 W, 90 mA  
 Main fuse .....0.125 A T (time delay), P/N 05020002