

Introduction

The E1.31 DMX Bridge is an interface intended to be used as part of a system to operate a lighting display that consists of DMX or Renard controlled dimmers. To form a complete system, the E1.31 Bridge is used together with a power supply, one or more dimmers, and a PC equipped with an Ethernet port and lighting display software that supports the E1.31 DMX over Ethernet lighting protocol.

The E1.31 Bridge installs near the power supply, and acts as the bridge between the dimmers and the PC. The E1.31 Bridge receives the lighting intensity signals from the computer via a network (LAN) connection, and converts them into a form suitable for driving the DMX devices.

Feature Summary

Single PC board, 3.3" x 4.8"

Medium parts count, through-hole components (with exception of optional surface mount MAC IC).

DMX data input via E1.31, DMX over Ethernet, up to 4 universes, eliminates the need for multiple DMX 'dongles' at the controlling PC.

Simple programming via a web page

Specifications:

Input: E1.31, streaming DMX over Ethernet, **multicast format**, up to 4 universes, for a total of up to 2048 DMX channels. **The E1.31 Bridge does not support unicast E1.31.**

Output: Four RJ45 connectors for up to 512 channels of DMX or Renard protocol per connector.

Power: Terminal block connection for power, with an option jumper for selecting either the on-board 5 volt regulator, or an external 5 volt regulated source. This gives the ability to power the board from 5 to 12 volts DC.

The jumper 'JP5' near the power terminal block is used to select this option.



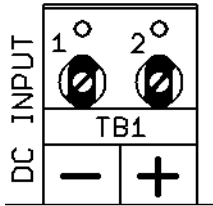
Programmable options are set using a web page. This page also displays basic operating statistics and the current configuration data.

Making Connections

There are three types of connections to the E.31 Bridge: Power input, Ethernet and DMX outputs.

Power:

Power is connected to the 2-terminal screw block on the lower left side of the board marked "TB1". There is a legend silk-screened on the board below the terminal block for the - and + voltage connections.



Power for the E1.31 Bridge can be supplied in one of two ways:

There is a jumper between the power input terminal "TB1" and the 5 volt regulator, which is marked "JP5". This is option used to select whether the 5 volt power source for the board logic will be provided by the on-board regulator, or from an external 5 volt regulated source.

If a power source is between 8 and 12 volts DC (which may be unregulated) is connected to TB1, then jumper JP5 should be placed in the "INT" (center and bottom pins) position so the internal 5 volt regulator will provide the regulated 5 volt source for the board logic.



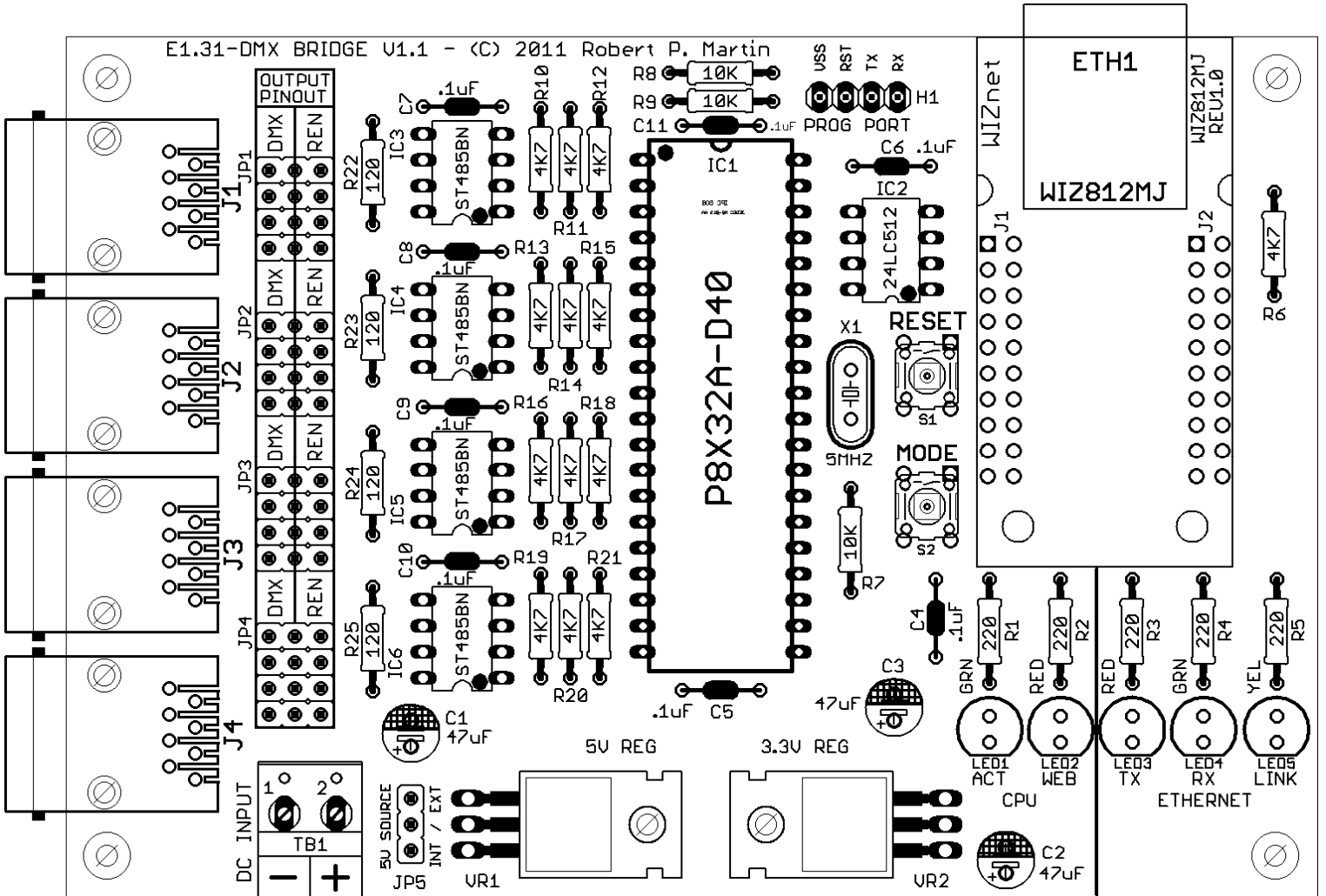
If you choose to power the E1.31 Bridge from an external **regulated** 5 volt source, such as a power supply used for other devices such as LED Pixels, then JP5 should be placed in the "EXT" (center and top pins) position. **Care must be taken with JP5 in the "EXT" position to ensure that the input voltage is a *REGULATED* 5 volts or your E1.31 Bridge may be damaged!**



Ethernet:

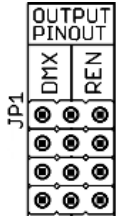
The Ethernet jack on the WIZ812MJ Ethernet module must be connected to your LAN, or directly to the LAN card of the PC that will be controlling your system. The E1.31 Bridge LAN port is capable of running at 100mb/sec.

PC BOARD LAYOUT



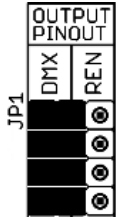
Outputs:

There are four sets of 4x3 rows of jumpers on the left side of the board labeled JP1 through JP4, just next to the output jacks with positions labeled 'DMX' and 'REN'.



These jumpers are used to set the **electrical** connection type for each of the four J1 through J4 output RJ45 jacks, respectively, for either DMX or Renard pinouts.

DMX: When the four jumpers are placed in the left positions in line with the 'DMX' markings, this sets the output RJ45 jack pinouts to ESTA standard for DMX over RJ45 as follows:



RJ45 Pin1 = Data +
RJ45 Pin2 = Data -
RJ45 Pin3 = Not connected
RJ45 Pin4 = Not connected
RJ45 Pin5 = Not connected
RJ45 Pin6 = Not connected
RJ45 Pin7 = Ground
RJ45 Pin8 = Not connected

RENARD: When the four jumpers are placed in the right positions in line with the 'REN' markings, this sets the output RJ45 jack pinouts to Renard standard as follows:



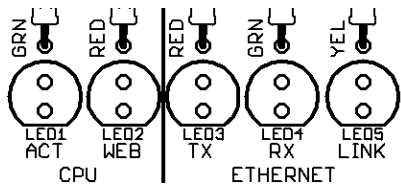
RJ45 Pin1 = Ground
RJ45 Pin2 = Ground
RJ45 Pin3 = Not connected
RJ45 Pin4 = Data -
RJ45 Pin5 = Data +
RJ45 Pin6 = Not connected
RJ45 Pin7 = Not connected
RJ45 Pin8 = Not connected

NOTE: This does not change the output protocol, only the output electrical connections. The output protocol is set to DMX by default, so if you need Renard protocol for your dimmers, it can be changed via the configuration web page described later.

Initial Startup

The recommended procedure is to supply power and a LAN connection to the E1.31 Bridge, access the web page to configure your particular setup, then connect your dimmers to the output RJ45 jacks and then test.

There are 5 LEDs on the board, along the bottom right-hand edge.



The right three (LED 3,4,5) LEDs are for the Ethernet module status RED for TRANSMIT, GREEN for RECEIVE and YELLOW for LINK. These LEDs indicate activity on the Ethernet link.

The left two (LED 1,2) LEDs are used for displaying E1.31 Bridge CPU status, and for selecting options at system start-up.

During normal operation, the left green LED will flicker whenever an E1.31 DMX data packet is received, and the red LED will light whenever the web server is running. You can only access the E1.31 Bridge configuration web browser when the red LED is lit.

References to the Green and Red LEDs in the following text refers to the two left CPU Green 'ACT' and Red 'WEB' LEDs.

There are 2 pushbuttons on the right of the large CPU chip. The upper one is RESET, pressing it at any time resets the processor. The lower button is the MODE button, it is used to perform certain operations at start-up, such as forcing the web server to start, or forcing specific network modes.

LED Activity during Startup

During startup, after a few seconds of delay, the left green LED will flash one or more times to indicate the current network configuration:

- 1 flash = Current saved IP MODE is DHCP, and an IP address was obtained from a DHCP server.
- 2 flashes = Current saved IP MODE is Static, and the last STATIC IP address saved in memory page 0 was used. **Default IP is 192.168.1.206**
- 3 flashes = IP address was obtained from DHCP, because it was forced by the pushbutton.
- 4 flashes = IP address was set as the last saved STATIC IP address, because it was forced by the pushbutton.
- 5 flashes = Current saved IP mode is DHCP, but no DHCP server responded, so our IP address has been set to 169.254.74.73
- 7 flashes = IP address was forced to DHCP by the pushbutton but no DHCP server responded, so our IP address was set to 169.254.74.73

Note that for blink codes 5 and 7 there will be about a 10 second delay before the code is flashed. During this the time the system is waiting for a DHCP server to respond.

After this flash code, the red LED will then either come back on again and stay on, or remain off. The final state of the red LED indicates whether or not the web server is running. Note: The web server doesn't operate continuously because the E1.31 Bridge is only capable of 4 simultaneous internet connections. So, although the first 3 connections can be dedicated to receiving DMX dimmer data full-time, the last connection has to be shared between receiving E1.31 DMX and running the web server.

Forcing a Specific IP Mode at Startup

By default, the E1.31 Bridge is configured to use a static IP address of 192.168.1.206. If you need to use another IP address, you will need to force the IP mode to DHCP using the procedure detailed below.

It is possible to temporarily over-ride the default saved network configuration, if necessary, using the on-board MODE pushbutton.

At power-up, or after restarting by pressing the RESET button, immediately **press and hold** the MODE button.

After a few seconds, the red and green LEDs will begin flashing on and off together at a rate of about one flash per second. To over-ride, release the MODE button:

After 1 flash to force the web server to start without affecting the network mode.

After 2 flashes to start the web server, and force the IP mode to be **STATIC**.

After 3 flashes to start the web server, and force the IP mode to be **DHCP**.

These functions are in place to allow you to communicate with your E1.31 Bridge via a web browser, regardless of the state it is configured for. For example, you may have your E1.31 Bridge configured for a static IP address, but you've moved it to a new network where that address isn't available. Or perhaps it's configured for a static IP, but you don't know the saved address. Or perhaps in your configuration you have disabled the web server.

Using the over-ride option at startup, you can force your E1.31 Bridge to enable its web server, and you can force it to get an address via DHCP, or force it to static address 169.254.74.73 then can you access the E1.31 Bridge configuration page with your browser, change the configuration, and save it.

If the E1.31 Bridge is plugged into your LAN, it should obtain a network address automatically from your router.

To see what address has been assigned you will need to connect to your router with a web browser, and access its "DHCP Clients" table. You can identify which connection belongs to the E1.31 Bridge either by its name "E131_DMX_BRIDGE", or by the fact that it's MAC address will always begin with 4A:49:4D (or 00:04:A3 if the MAC IC has been installed). See your router's documentation for its specific procedure to access the DHCP client table.

Once you learn the assigned IP address from your router, you can type that IP address directly into your web browser's address bar to access the E1.31 Bridge. A typical IP address in a small LAN would be 192.168.0.xxx or 192.168.1.xxx

An alternative method to access the web page is to connect an Ethernet cable directly between the PC (that is configured for DHCP) and the E1.31 Bridge, and power both up. At startup, if you're not sure of the saved configuration, or you know it's configured for a static IP, force the E1.31 Bridge to DHCP mode using the pushbutton procedure detailed above. Since no DHCP server will be found by the E1.31 Bridge or by the PC, they will both have assigned addresses in the 169.254.x.x range. After bootup, type 169.254.74.73 in the address bar of your browser and press ENTER. This should bring up the E1.31 Bridge web configuration page. From there, you can use the system configuration commands described later to reconfigure the E1.31 Bridge to use a static IP address that is available in your network.

It is recommended that you assign each E1.31 Bridge a permanent static IP address on your network. That way you won't have to access your router to find out what the IP address of a particular unit is.

Although typically the IP address assigned by your router with DHCP will be the same every time you start up the board, it's possible that it could change from time to time. Also please be aware that at this time the E1.31 Bridge does not support "renewing" of DHCP addresses. Again, in the vast majority of cases this shouldn't cause any issues, however the recommended practice is to use DHCP for initial access to the E1.31 Bridge, then to reconfigure it to use a static IP address.

The procedure to select an appropriate static IP address is beyond the scope of this document. Briefly, on a typical network that uses IP addresses beginning with "192", the first 3 number of every IP address will be the same, only the last varies, so we'll just refer to the addresses on the LAN by the value of the last number. Typically your router will use "1". 255 and 0 aren't allowed. You will also need to avoid the range of IP addresses that your router assigns automatically. Refer to your router's documentation to learn which addresses these are.

Recovery Mode

A special recovery mode has been included in this version of firmware (Ver 1.00) to allow a DEFAULT configuration to be written to EEPROM in case of memory corruption, or if for any reason you need to set the board back to its "as shipped" default settings.

At power-up, or after restarting the board by pressing the RESET button, immediately **press and hold** the MODE button.

After a few seconds, the red and green LED's will begin flashing on and off together at a rate of about one flash per second. To select the function, release the MODE button:

After 8 flashes, clears all 8 memory pages and resets them to default.

After 10 flashes, clears all 8 memory pages and resets them to default, then generates a new (if no MAC IC is installed) MAC address.

This function was added in case of a duplicate MAC address. The firmware normally sets up a random generated MAC address on first use (if no MAC IC has been installed) and this provides a way to regenerate the MAC address in the rare case of a duplication.

NOTE: If the MAC IC has been installed, this function will have no effect as the board will always use the MAC address read from the MAC IC.

Accessing the Web Configuration Page

Please familiarize yourself with the information listed earlier regarding IP addressing, particularly "Forcing a Particular IP Mode at Startup". Using the techniques described there, you should be able to know the IP address of your E1.31 Bridge, either from your routers DHCP client table, or if no DHCP address was successfully assigned, it will be 169.254.74.73

Make sure the 'CPU' right Red LED stays on after the startup sequence. If it doesn't, you'll need to use one of the over-rides to force the web server to come on. **You will not be able access the E1.31 Bridge web interface with your browser if the RED LED is off.**

Type the E1.31 Bridge's IP address into your web browser's address bar and press ENTER. This should bring up a web page similar to this one:

E1.31 to DMX Bridge Configuration Page

Current Network Mode is: Normal Static

IP Address: 192.168.001.206 Subnet Mask: 255.255.255.000
Gateway: 192.168.001.001 DNS Server: 192.168.001.001
MAC Address: 00:04:A3:2E:81:B2
System Up-Time: 0114:58:19 Firmware Rev: 1.00 Web Server Timeout in: 300 Seconds

E1.31 Packet Statistics:	Socket S1	Socket S2	Socket S3	Socket S4
Universe Number	1	2	3	4
Packets Received	16,516,699	16,516,685	16,516,332	16,514,521
DMX Channel Count	512	512	512	512

Global Configuration:

Static Network Information:
IP Address: 192.168.001.206 Subnet Mask: 255.255.255.000
Gateway: 192.168.001.001 DNS Server: 192.168.001.001

Default IP Mode: STATIC Web Server Mode: 3 Bootup Initial Mode: 0

Output Configuration:

Output#	Universe	Protocol
1	1	DMX
2	2	DMX
3	3	DMX
4	4	DMX

NOTE: Protocol changes require SAVE 0 and BOOT 999 to take effect

Command:

Once you have the web page displayed, put your cursor on the command box and type this command: QUIT 999. This tells the web browser not to time out. If you don't do this, the web browser may (depending on how it's configured from the last setup) timeout after 5 minutes of inactivity. The "Web Server Timeout in" entry on the web page tells you the seconds until the server will timeout.

Note: The displayed E1.31 Bridge web page is ALWAYS static, in other words it NEVER updates by itself. It page will stay as-is until you either hit refresh or type in a command. The times and statistics shown on the page are as of the last time the page was displayed.

What's displayed on the Web Page

First we'll talk about the information that you see on the web page, and what every entry means. Then we'll talk about the commands that you can enter to change that information.

The line beginning with "Current Network Mode is" displays information about the current network connection. Network mode will be "Normal" or "Forced", followed by "Static" or "DHCP", and optionally "Failed". Normal means the mode, static or DHCP, was selected based on the saved configuration. Forced means the current network mode was forced using the MODE pushbutton at startup, over-riding the stored setting. DHCP or Static shows the type of address currently in use, and failed means the E1.31 Bridge tried to use DHCP, but no server was found.

The next few lines display the IP address, the Subnet mask, the Gateway, and the DNS server. If this is a STATIC IP, this will be from information that was previously saved in the E1.31 Bridge's memory, if this is a DHCP address, it will be information that was assigned by the DHCP server on your network.

The DHCP server, if not 0.0.0.0, is the IP address of the server that gave the E1.31 Bridge an IP address. Usually it will be the IP address of your router.

There are some limitations of the DHCP capabilities of the E1.31 Bridge at present, and one of them is that it will not attempt to renew a lease. Once it has obtained an IP address by DHCP, it will keep that address until the next reboot. **Once again, the preferred method is to assign every E1.31 Bridge a unique STATIC IP address.** Life will be simpler.

MAC address is this board's unique MAC address, it will always begin with 4A:49:4D (or 00:04:A3 if the MAC IC is installed).

System up-time is hours, minutes, and seconds since the last restart. Also displayed on this line is the version number of the E1.31 Bridge firmware, and the remaining time in seconds, until the web server shuts down. If the latter shows as "---", it means the server won't time out.

The next few lines show statistics of the E1.31 data that has been received, and which DMX universes are assigned to the available four internet connections, or "sockets".

The first line is the "socket", or connection number. There are 4 sockets on the E1.31 Bridge, numbered s1 through s4.

The next line displays which DMX universe is assigned to each socket. These numbers may range from 1 to 63999. Any valid universe number may be assigned to any of the four E1.31 sockets. Normally they would be consecutive, e.g., 1,2,3,4, but any assignment can be made. Note that the four assigned universe numbers should be unique, so do not use the same universe number twice.

The next line shows the total number of E1.31 packets received since the last restart of the E1.31 Bridge.

The next line shows the number of DMX channels, or "slot" count. This channel count is dynamic and is derived from the received E1.31 packet for each socket.

When you change the channel count from the sending application E1.31 plug-in, this number will change to reflect the actual number of DMX channels received.

The number of channels sent out of the channel output RJ45 jack associated with the socket is dynamic and will also update to this channel count.

The next section of the web page is the global configuration data, in other words all configuration options that aren't related to the outputs.

This is where the static IP information is entered: IP address, Subnet Mask, Gateway, and DNS Server. Other entries in this section include:

Default IP Mode: Determines whether the normal system network mode will be STATIC or DHCP.

Web Server Mode: This defines when the web server will be operational. One of the limitations of the Ethernet module used in the E1.31 Bridge is that it can have a maximum of 4 simultaneous connections. Normally these are all used for receiving E1.31 DMX data, hence the total number of available DMX universes is four. In order to operate a web server, one of those four channels must be temporarily reassigned as a web server. During the time the web server is up, DMX data may only be received on the first three universes, and the fourth will be used for the web server.

The specific Web Server Modes are:

0) Web server does not ever start. If you select this mode and save it, the only way to restart the web server is to use the MODE pushbutton over-ride at start-up.

1) The Web server comes up for 5 minutes after any system restart.

2) The Web server comes up after a loss of incoming DMX data on socket 4. About every 3 seconds, socket 4 will alternate between looking for web connections and looking for DMX data.

3) The Web server comes up for both (1) and (2) conditions combined.

Bootup Initial Mode: **NOT YET IMPLEMENTED**

Output Configuration: There are four rows with three columns of information here. Each row can have different settings for each output, independent from the others.

The first column is the output number, which is related the output RJ45 jack. Output 1 is J1, output 2 is J2, etc.

The second column is the universe number, which can range from 1 to 63999.

The third column is the protocol for that output number. Currently there are two choices, DMX and Renard. When the Renard protocol is active, the baud rate will be displayed as "Renard @ 57,600" or "Renard @ 115,200" depending on baud rate configuration.

The command box at the bottom of the page is where we type in commands to modify the E1.31 Bridge setup. After modifications are made, the current configuration data can be saved to any one of 8 memories to be recalled later.

That sums up the information displayed on the web page.

Now we'll look at the commands that you can use to configure the system to your needs.

Configuration Commands

Every command consists of a command word followed by 1 or more numeric values. Only the first two letters of the command word need to be entered, more won't hurt, but only the first two are checked, so "GRoup" is the same as "GRope". Upper or lower case may be used.

Numeric commands must be separated from the command word, and from each other, by one or more characters that aren't digits. Values are always positive integers. The following commands would all be interpreted the same:

```
Universe 4 quantity 1
UN 4 1
UN 4.1
UN 0004-001
```

We'll divide the commands into groups:

First we'll look at the commands that allow you to load and save the configuration data. There are 8 memory pages in the E1.31 Bridge, numbered 0 through 7. Each page stores the entire board configuration, from networking information, to output information. By having multiple pages, you can have more than one saved configuration that you can recall easily. **When the system starts up, it always loads memory page 0.**

The multiple memory pages are handy if you want to experiment with different commands, but don't want to disturb your basic configuration. First save the current configuration into another memory page, say page 1. Then play around as much as you like with the configuration. To see the effect of your changes on the outputs, type SAVE 0. When finished, if you want to go back to your original setup, just LOAD 1, then SAVE 0, and you are back where you started.

When you make configuration changes using the web commands, those changes will be shown immediately on the web page, but they are not automatically saved to system memory, so they won't be immediately shown on the outputs. Only the SAVE command does that, it stores the configuration data shown on the web page, in one of the 8 memory pages. So please remember, after making changes, SAVE them.

Remember: the E1.31 DMX BRIDGE will ALWAYS operate on whatever configuration was last saved into page 0.

NOTE: As shipped, page 0 is preset to a default configuration profile.

SAve n where n is a memory page number from 0 to 7
Writes the currently displayed configuration to the specified memory page

LOad n where n is a memory page number, 0-7
Loads the specified memory page and displays the information on the web page.

The BOOT command either sets the default boot-up mode (not yet implemented), or forces a restart of the E1.31 Bridge.

BOot 999 will restart the system. Make sure you do a SAVE first if you have made any changes or your changes will be lost!

The QUIT command is used if you have finished making (and saving!) changes, and want to shut down the web server to allow socket 4 to resume receiving DMX data. One gotcha: If your last command was QUIT, and you later bring the web server back up and press F5 or 'refresh' on your browser, it will send the same command (quit) again. Be aware of this.

Normally you would use QUIT when the web browser isn't running continuously. If socket 4, for example, is hunting between looking for DMX data and looking for web 'hits', your first access to the page will bring the web server up with a 5 minute timeout. This automatic timeout is there in case you forget to quit the browser manually. So, first use the QUIT command as QUIT 999 to 'lock' the browser on. Make you changes, save them, then type QUIT.

The web server will shut down 10 seconds later and you're back receiving DMX on all 4 sockets. The value used with the quit command can't be less than 10. This is to give you time to re-enter a different quit command if you enter a quit command in error.

Quit n Tells the web server to stop running. If nonumber is entered, it will stop in 10 seconds, if a number between 10-998 is entered, it will stop in that many seconds.
QUIT 999 will keep the web server running forever.

The following groups of commands are used to set the configuration data displayed in the Global Configuration portion of the web page.

Every configuration page has an area to store a static IP address. Even if you set the network mode to DHCP, you can still save static information. This eliminates the need to re-enter the static information every time you switch from DHCP to static. There are 4 entries here, Static IP, Subnet Mask, Gateway, and DNS Server. Usually, DNS and Gateway will be the same, the address of your router. In most small LANs this will be either 192.168.0.1 or 192.168.1.1. Subnet mask in a '192' LAN will be 255.255.255.0, or just 24.

The commands are:

IP a.b.c.d Where a.b.c.d is any valid IP address

SUBnet a.b.c.d or SUBnet n Where a.b.c.d is any valid subnet mask value, or n is the size of the subnet in bits.

Gateway a.b.c.d where a.b.c.d is any valid internet address. Usually the address of your router.

DNS a.b.c.d where a.b.c.d is any valid internet address. Usually the address of your router.

If you are only using DHCP (not recommended), you can leave the static IP areas unused. Network addressing (static or DHCP IP) is only needed to access the configuration page with a web browser. Once configured, no IP address is needed for normal operation, as it is only needed for the purpose of accessing the web configuration page.

The Default IP Mode, Web Server Mode, No Data Timeout, and Test Pattern commands affect what happens when the system starts up.

Default n where n is 0 or 1. DE 0 sets a default network mode of DHCP, DE 1 sets a default network mode of STATIC.

Web n where n is 0 to 3. 1=start server for 5 minutes on every restart, 2=start server if no DMX data received on slot 4. 3 is both of the above. 0 means never start the web server.

NO n where n is 0-255. If non-zero, after n seconds of no DMX Data being received, outputs will go dark. **NOT YET IMPLEMENTED.**

TEst n Where n is a test pattern number. **NOT YET IMPLEMENTED.**

The final group of commands is where you enter the configuration information associated with the physical output banks. We will discuss these commands in the order the information appears on the web page.

All of these commands have more than one numeric value. The first numeric value is always the output bank number 'b' from 1-4, and the second 'n' value represents the numeric value entered.

The **UNIVERSE** command is used to map E1.31 DMX universe numbers of the E1.31 Bridge's four Ethernet connections, or sockets, to the physical RJ45 jack J1 through J4 outputs. This information is displayed in the E1.31 Packet Statistics section of the web page. In a simple configuration, the first E1.31 Bridge might be assigned to universes 1-4, the second E1.31 Bridge to universes 5-8, etc. But these assignments can be made using any four universe numbers, and universe numbers can range from 1 to 63,999.

Important: please make sure that there are no duplications, in other words don't assign the same universe number to more than one socket. It won't work. Command Example:

UNiverse 1 1000 this command would assign DMX universe #1000 to Output J1.

UNiverse b n Where **b** is the RJ45 output jack number, from 1 to 4
and **n** is universe from 1 to 63999.

The **Protocol** command is used to set the protocol for each of the four output RJ45 jacks. The current valid protocols are DMX and RENARD (v1.00 firmware).

PRotocol b n Where **b** is the RJ45 output jack number, from 1 to 4
and **n** is 1 for DMX protocol and 2 is for Renard protocol.

The **Baud** command is used to set the baud rate for each of the four output RJ45 jacks.

NOTE: This command is only used for the Renard protocol. Baud rate will not be displayed when the DMX protocol is selected.

BAud b n Where **b** is the RJ45 output jack number, from 1 to 4
and **n** is 1 for a baud rate of 57,600 or 2 is for a baud rate of 115,200.

The Renard protocol refresh rate at 57,600bps for 512 channels is approximately 90ms and at 115,200bps the refresh rate for 512 channels is approximately 45ms.

The DMX protocol refresh rate is preset to 25ms.

This concludes the command definitions.

Remember, any changes aren't saved until you do a SAVE command.

Changes won't affect the output operation until you do a SAVE 0 command.

NOTE: If any changes to output protocol are made, then after doing a SAVE 0 the board must be reset with either a B0ot 999 command, or by pressing the RESET button on the board for the changes to take effect.