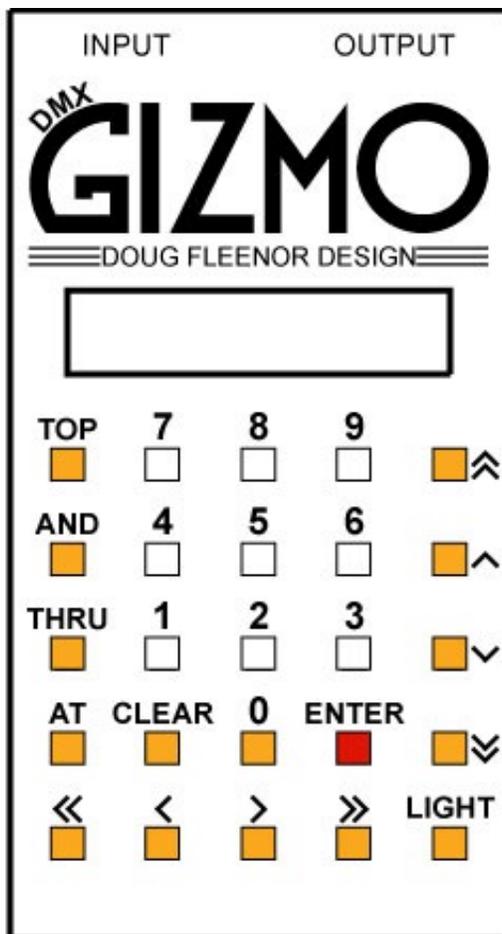


GIZMO DMX512 TEST TOOL OWNERS MANUAL



Doug Fleenor Design
396 Corbett Canyon Road
Arroyo Grande, CA 93420
(805) 481-9599

Overview

The Gizmo is a DMX512 test tool with features useful for lighting system setup, testing, troubleshooting, and commissioning. With the Gizmo you can transmit, receive, save, playback scenes and perform a variety of data and cable tests. It is housed in a rugged chassis made of 0.1" thick aluminum. A fitted carrying case and wall transformer/battery charger are included with each Gizmo. Direct channel access while sending or receiving DMX512 signals is possible through the use of the numeric keypad. The display is a back lit 16 character by 2 line LCD. The Gizmo has a fully opto-isolated DMX512 input. The DMX512 output can function as an isolated pass-thru which also re-times the signal.

Power

The Gizmo is powered by a re-chargeable internal battery or from the included wall transformer. The wall transformer can be used to operate the Gizmo and to recharge the battery simultaneously.

When the wall transformer is connected, the Gizmo will be on regardless of the position of the battery switch on the lower edge of the unit. Under battery power, the Gizmo can be turned on and off using the switch.

The battery should be charged overnight to achieve a full charge (about nine hours). Note that to charge the battery, the Gizmo must be connected to the wall transformer and the battery switch **MUST** be in the ON/CHARGE position. From a full charge, the Gizmo should provide two to four hours of continuous use.

Notes On The Battery

The Gizmo's internal battery is a NiMH 9 volt type. From a full charge, it will typically last a full day's use depending on how much of the time is spent transmitting and whether the display backlight is on or off. User setup items and the 100 backup scenes are recorded in non-volatile memory which requires no battery to be retained.

In order to charge the battery, the Gizmo must be connected to the included wall power supply and the battery switch **MUST** be in the ON/CHARGE position. When the battery switch is in the OFF position, the Gizmo will operate from the wall power supply, but the battery is **NOT** being charged.

If you need to use the Gizmo under battery power and do not have time to charge it, a standard 9 V alkaline battery may be installed. It is important to note that the wall transformer **MUST NOT** be connected to the Gizmo while an alkaline battery is installed. **DAMAGE TO THE GIZMO AND/OR THE WALL TRANSFORMER COULD RESULT.** To change the battery, remove the two screws on the back of the Gizmo. Remove the rear cover and replace the battery as needed.

If the Gizmo is being used on the bench, you may wish to power it from the wall transformer all the time. To do this, simply connect the wall transformer to the Gizmo and put the Gizmo's battery switch in the OFF position.

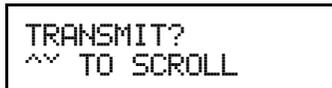
If you need a replacement wall transformer, contact Doug Fleenor Design. For those who want to come up with their own source, the power supply provides 15VDC at 2/3A. The connector is a 2.5mm type with the center conductor as positive.

Using this manual

When reading this manual the keypad of the Gizmo is represented with the following symbols.

[TOP]	Top of menu	[>]	Right / Next
[AND]	AND	[<]	Left / Previous
[THRU]	THROUGH	[^]	Up
[AT]	AT	[v]	Down
[CLEAR]	CLEAR / BACK MENU	[^]	Full / 100%
[ENTER]	ENTER	[v]	Zero / 0%
[LIGHT]	Toggle the backlight On / Off	[<<]	Fast Forward
		[>>]	Fast Rewind

Menu Navigation



The Gizmo always powers up to the top of the menu tree with “TRANSMIT?” as the first option. The [^] and [v] keys are used to scroll to other options. Use the [ENTER] key to select the displayed option. The [CLEAR] key is used to back up the menu tree one level at a time.

Special Buttons

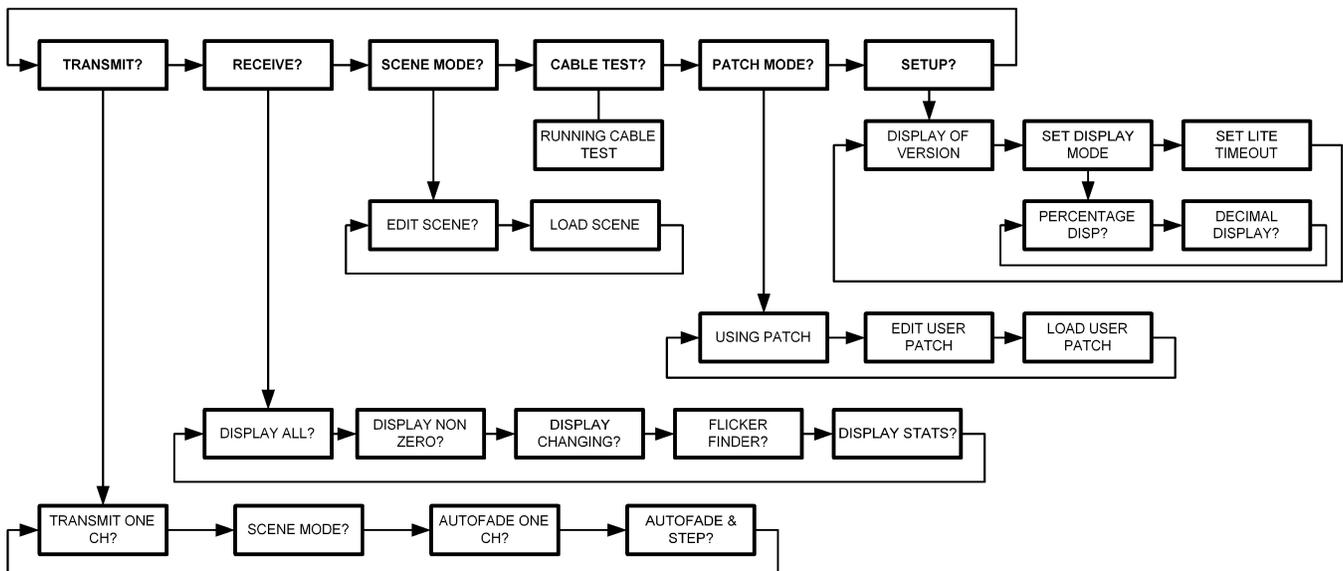
LIGHT button

Regardless of where you are in the Gizmo menu tree, the LCD backlight can be turned on or off by pressing the [LIGHT] button on the lower right corner of the keypad. Turn the backlight off to extend battery life.

TOP button

The [TOP] button is used to jump to the top of the menu tree. Regardless of what mode the Gizmo is in, this button will always take you to the top level menu. This is useful for jumping between modes without having to back out of sub-menus one step at a time.

Menu Tree



Transmit

```
TRANSMIT?  
^v TO SCROLL
```

The TRANSMIT mode is used to generate DMX512 data. By transmitting DMX512 you can assure that DMX512 receiving devices are operating correctly and diagnose problems. In order to transmit no incoming DMX512 can be present on the Gizmo's DMX512 input.

Press [ENTER] to select the TRANSMIT mode. There are four options within this menu. Use the [^] or [v] key to scroll between these options. Use the [ENTER] key to select the desired option.

Transmit one channel

This mode allows selection and control of a single channel. All other channels are set to zero. While in any of the transmit modes, the DMX512 input is disabled.

The channel number to transmit can be selected by using the numeric keypad or by using the [<<], [<], [>], and [>>] keys. The [<<] key moves to the first channel (channel 1). The [>>] key moves to the last channel (channel 512). The [<] key moves to the previous channel and the [>] key moves to the next channel.

The level is set by pushing the [AT] key followed by a level. The level can be set using the numeric keypad or by using the [^], [^], [v], and [v] keys. The [^] key sets the channel to full. The [v] key sets the channel to zero. The [^] key raises the level by one step and the [v] key lowers the level by one step.

When selecting the channel number, the displayed level is applied to the newly selected channel and the previously selected channel is set to zero. This allows the operator to step through a lighting rig for a channel check by pressing a single button.

Scene Mode

This is a shortcut to SCENE EDIT mode branch of the menu tree. SCENE EDIT allows you control more than one channel as well as save and recall stored scenes.

Autofade one channel

The AUTOFADE ONE CH mode operates in the same fashion as the TRANSMIT ONE CH mode to select the channel number. The level for the selected channel will ramp up and down. This is a useful mode to use when a specific lamp needs to be identified.

Autofade and step

This mode operates similarly to the AUTOFADE ONE CH mode. The difference is that when the selected channel fades to zero, the channel number is incremented and it then starts to fade up. This is useful for performing an automated channel check.

Receive

```
RECEIVE?  
^v TO SCROLL
```

The RECEIVE mode is used to monitor the levels of the incoming DMX512 data. While the Gizmo is in any of the receive modes, the levels are also re-transmitted out. The Gizmo is opto-isolated from input to output and the data is re-timed. These features allow the user to accurately diagnose the source of problems and to provide a known source of DMX512 data.

Press [ENTER] to select the RECEIVE mode. There are five receive modes. Use the [^] and [v] keys to scroll through the selections and the [ENTER] key to select the displayed option.

Display All

This display shows channel numbers on the upper line of the display and the levels associated with the channels just below them. The first channel to display, the “channel of interest”, is selected by using the numeric keypad the or by using the [<] or [>] keys. The [>] key scrolls the display to the next displayed channel. The [<] key scrolls the display to previous displayed channel. The [<<] and [>>] keys will take you to the previous or next active channel. If the levels are shown as three dashes (- - -), the Gizmo is not receiving a DMX512 signal.

Display Non-zero

This display shows the current “channel of interest” and the next three channels above 0 (and their current levels). This display will change dynamically as channels move above 0. The numeric keypad can be used to jump to a particular channel to view. The [<] or [>] keys can be used to scroll the display if a large number of non-zero channels are active.

Display Changing

This mode is used to find the first channel in the DMX512 data that is changing. It is useful for locating a particular channel whose level is moving. The level of the channel is displayed as well. A useful application of this mode is to locate the DMX channel which to a control console slider is assigned. This can make diagnosing a patching problem much easier.

Flicker Finder

The FLICKER FINDER mode is used to test a DMX512 data line for unwanted changes in levels. When FLICKER FINDER mode is selected, the current levels of the incoming DMX512 data are captured. If any channel changes, that channel number is placed on the display. If a large number of channels change, the numeric keypad can be used to select the desired channel. The [<<], [<], [>], and [>>] keys can also be used to scroll through the list of channels that have flickered.

If the DMX512 signal stops for any reason, the Gizmo will display a SIGNAL LOST message. This message will remain even if the signal returns.

<pre>FLICKER CHANNELS NO DMX512 SIGNAL</pre>	<pre>FLICKER CHANNELS NONE</pre>	<pre>FLICKER CHANNELS 1 2 12</pre>	<pre>FLICKER CHANNELS SIGNAL LOST</pre>
No DMX512 is present on the input connector	DMX512 is present on the input connector. No flickering channels found	Channels 1, 2 and 12 flickered	During the flicker test DMX512 signal was lost

These features allow the user to leave the Gizmo un-attended and connected to a system for a period of time. Upon returning, any flickers or errors will be shown on the display.

Receive (continued)

Display Stats

This menu option allows the user to examine some of the details of the DMX512 signal being received.

Packet Length

Displays the minimum, current, and maximum number of channels present in the DMX512 packets being received. Dashes will be displayed if no input signal is present.

Note: The allowable number of channels is between 24 and 512.

Break Length

Displays the minimum, current, and maximum break length of the DMX512 packets being received. Dashes will be displayed if no input signal is present.

Note: The minimum allowable break length is 88 μ S or 88 micro seconds.

Mark After Break Length (MAB)

Displays the minimum, current, and maximum mark after break length of the DMX512 packets being received. Dashes will be displayed if no input signal is present.

Note: The MAB is most likely to be no shorter than 8 μ S or 8 micro seconds. However the original DMX512 standard allowed the MAB to be as short as 4 μ S or 4 micro seconds.

Packet Rate

Displays the minimum, current, and maximum update rate (in Hz) of the DMX512 packets being received. Zeros will be displayed if no input signal is present.

Note: The minimum packet rate is 2Hz. The typical packet rate is between 30Hz and 44Hz.

Scene Mode

```
SCENE MODE?  
^V TO SCROLL
```

The Gizmo can record 100 scenes. Each of the scenes contains a level for all 512 channels.

Press [ENTER] to select the SCENE mode. There are two scene modes available. One is used to edit scenes and one is used to play back recorded scenes. Use the [^] or [v] key to scroll to the desired scene mode and the [ENTER] key to select that mode.

Edit Scene

This mode is used to build a complete scene and to record it as one of the 100 backup scenes.

Upon entering the EDIT SCENE mode, you are prompted to enter a channel number. This is done using the numeric keypad. You may enter a list of channels by using the [AND] and [THRU] keys. Pressing the [AT] key then allows you to set the level for the selected channels. Levels may be entered using the numeric keypad or by using the [^], [^], [v], or [v] keys. To begin another list of channels, press the [AND] key followed by the new channel list.

```
 1   2   3   4  
FL% 0%  0%  0%
```

1 [^]

```
 2- 5   6   7  
10% 10% 0%  0%
```

[AND] 2 [THRU] 5 [AT] 1

```
25-100 101 102  
2%  2%  0%  0%
```

[AND] 25 [THRU] 100 [AT] 02

You may navigate the EDIT SCENE display with the [<<], [<], [>], and [>>] keys. The [<] and [>] keys move to the previous or next channel. The [<<] and [>>] keys will take you to the previous or next active channel.

When you have completed the scene, push the [ENTER] key. You will be prompted to either save the scene [ENTER] or return to editing [CLEAR]. Pushing the [CLEAR] key will place the Gizmo back in the SCENE EDIT mode. Pressing the [ENTER] key will cause the Gizmo to prompt you for a scene number to record into. Any scene from 0 - 99 can be recorded.

Capturing a live scene for editing

If a DMX512 signal is being received on the Gizmo's DMX512 input, a copy of that signal's levels will be held in the look to be edited when you enter the SCENE EDIT mode. You can modify the captured levels as needed and save the final results into any of the 100 recordable scenes.

Editing a previously recorded scene

You can edit a previously recorded scene. To do this, first load the scene to be edited by using the LOAD SCENE function (see LOAD SCENE below for details). With the scene loaded, press the [CLEAR] key. Next scroll to the EDIT SCENE mode and press [ENTER]. The levels from the loaded scene will now be present on the output. You can change, add to, or remove values as desired. The final result can be saved to any scene using the same methods as described in the regular EDIT SCENE mode.

Load Scene

Upon entering this mode, you will be prompted to enter a scene number. Use the numeric keypad to enter the desired scene number (0 - 99). Press [ENTER] to start sending the scene. Use the [>] or [<] keys to select the next or previous scene number. There is no fade time associated with each scene. Moving from one scene to another will take place immediately.

Cable Test

```
CABLE TEST?  
^V TO SCROLL
```

Press [ENTER] to select the CABLE TEST mode.

The cable test allows the user to check 3 conductor or 5 conductor DMX512 cables. The cable under test is connected to the input and output connectors of the Gizmo. Pin 1 (shield) must be connected for the test to operate. If pin 1 is open, an error message indicates that condition. The two data pairs are tested independently.

Examples:

If the cable under test has pins 1 - 3 wired, and the cable is good, the display will show:

```
RUNNING CBL TEST  
123:PASS 45:FAIL
```

If a good cable with all 5 pins wired is connected, the display will show:

```
RUNNING CBL TEST  
123:PASS 45:PASS
```

A common mis-wiring configuration is specially identified. If either a 3 pin or 5 pin cable is being tested and pins 2 and 3 are swapped, the display will show:

```
RUNNING CBL TEST  
PINS 2/3 SWAPPED
```

The cable test does not indicate shorts, opens, or other crossed pairs, etc. It's primary purpose is to provide a pass/fail test. You will be getting out the soldering iron and meter to do the repairs so we don't trouble you with un-necessary details for the purposes of this test.

Patch Mode

```
PATCH MODE?  
^~ TO SCROLL
```

In PATCH MODE the Gizmo takes the DMX512 input and reorganizes the channel numbers and transmits them creating a new "patch". The Gizmo can store 10 user defined patches and has two predefined patches, a "1-1" and a "null" patch. Selecting the "1-1" patch sets output channels consecutively, so the input channels are equal to the output channels. Selecting the "null" patch clears all the output channels so no channels are output. The predefined patches provide a starting place for creating user defined patches.

Press [ENTER] to select the PATCH MODE. Upon pressing the enter key the Gizmo begins using its "1-1" patch. There are two patch modes available. One is used to edit patches and one is used to load patches. Use the [^] or [v] key to scroll to the desired patch mode and the [ENTER] key to select that mode.

```
USING 1-1 PATCH  
^~ TO SCROLL
```

Edit User Patch

This mode is used to build a patch and to record it as one of the 10 user defined patches.

Upon entering the EDIT USER PATCH mode, you are prompted by the > cursor to enter an output channel number. This is done using the numeric keypad or by using the [<<], [<], [>], and [>>] keys. Pressing the [AT] key then allows you to set the input channel. This is done using the numeric keypad or by using the [^], [^], [v], and [v] keys. To enter another output channel, press the [AND] key followed by the new channel number. To disable an input channel it must be set to null by pressing the [v] key. The input channel field will display three dashes.

OUT:> 6 7 8 IN: 6 7 8	OUT: 6 7 8 IN:> 1 7 8	OUT: 20 21 22 IN:> 19 21 22	OUT:> 21 22 23 IN: --- 22 23
6	[AT] 1	[AND] 20 [AT] [v]	[AND] [>] [AT] [v]

When you have completed entering your patch press [ENTER] to save the patch. You will be prompted to either save the patch [ENTER] or return to USING PATCH mode [CLEAR]. Pressing the [ENTER] key will cause the Gizmo to prompt you for a patch number to record into. Any patch from 0 - 9 can be recorded. This is done using the numeric keypad. Pressing [ENTER] will store the patch and the Gizmo will respond with "patch saved" and immediately begin using the newly saved patch. Press [ENTER] or [CLEAR] to return to EDIT USER PATCH mode.

Load User Patch

Upon entering this mode, you will be prompted to enter a user defined patch number or select a predefined patch to load. Use the numeric keypad to enter the desired patch number (0 - 9). Press [ENTER] to start using the patch. Alternately you may use the [AND] key to select the "1-1" or [THRU] key to select a "null" patch.

```
LOAD PATCH #  
AND=1-1 THRU=NUL
```

Setup

```
SETUP?  
^~ TO SCROLL
```

Press [ENTER] to select the SETUP mode. There are three options. Use the [^] and [v] keys to scroll through the selections and the [ENTER] key to select the displayed option.

Software Version

Entering the SETUP mode first displays the Gizmo software version which is shown as the release date for the installed software. New software is installed by replacing the socketed processor chip in the Gizmo. Check the Doug Fleenor Design, Inc. web site at www.dfd.com for the latest version. Contact us to make arrangements to get your Gizmo updated.

```
GIZMO 2/14/06  
^~ TO SCROLL
```

Set Display Mode

Entering this menu allows you to select the format which the Gizmo will use to display level information. Selecting the percent mode (the default) causes all levels to be displayed as percentages from 0 - FL. Selecting the decimal mode causes all levels to be displayed as absolute DMX values from 0 - 255. The percentage mode is more "human readable", while the decimal mode allows for more precise level setting. The decimal mode also allows the propeller heads amongst us to confuse the artists. The selected display mode is stored in the Gizmo's non-volatile memory so it will remember your preferred setting when the unit is powered off and on again.

```
1 2 3 4  
FL% 50% 25% 0%
```

display in percent

```
1 2 3 4  
255 128 64 0
```

display in decimal

Set Lite Timeout

```
SET LITE TIMEOUT  
^~ TO SCROLL
```

This feature has not yet been implemented.

Specifications

Input baud rate:	250 Kb/s
Input circuit:	ESD protected EIA-485 transceiver (LT1785)
Input signal:	3 volts minimum, 12 volts maximum
Input connector:	Male Gold plated 5 pin XLR (Neutrik D-1 series). Pin 1 = common, Pin 2 = Data-, Pin 3 = Data+. Cable check on pin 4 and pin 5
Output isolation:	600 Volts
Output baud rate:	250 Kb/s
Output circuit:	ESD protected EIA-485 transceiver (LT1785)
Output signal:	DMX512-A
Output connector:	Female Gold plated 5 pin XLR (Neutrik D-1 series). Pin 1 = common, Pin 2 = Data-, Pin 3 = Data+ Cable check on pin 4 and pin 5
User interface:	25 button keypad and two line 16 character backlit LCD display
Battery:	Provided with 9 Volt NiMH rechargeable or User provided 9 Volt Alkaline (see "Notes On The Battery")
Wall power supply:	Input: 100 - 240VAC 0.5A Max. 50/60 Hz Output: +15V DC 0.666A Connector: 2.5mm type with the center conductor as positive
Power input:	15VDC 0.075A Connector: 2.5mm type with the center conductor as positive
Color:	Front black anodized, rear red clear powder coat
Size and weight:	Chassis 6.75"l X 3.5"w X 1.4"h, 16 ounces Power supply 2.2"l X 1.9"w X 1.0"h, 5 ounces

Warranty

Products manufactured by Doug Fleenor Design carry a five year parts and labor warranty against manufacturing defects. The Gizmo battery is not covered by this warranty. It is the customer's responsibility to return the product to Doug Fleenor Design (at the customer's expense). Doug Fleenor Design will repair the unit and return it to the customer (at Doug Fleenor Design's expense). If a trip is necessary to the customer's site to solve a problem, the expenses of the trip must be paid by the customer.

Note that this warranty is against Manufacturing Defects. It does not include damage due to misuse or abuse. Most non-warranty repairs are made for a fixed \$30.00 fee.