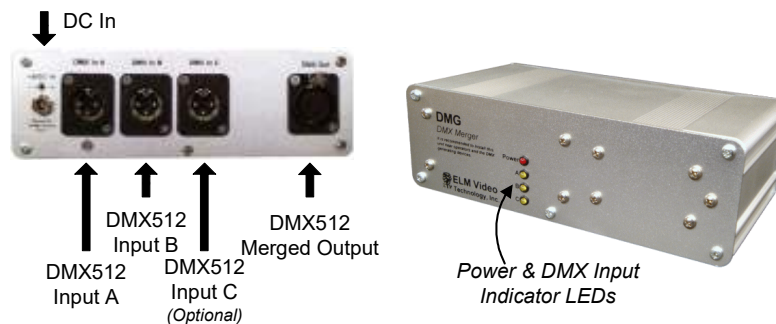


## DMG OVERVIEW

The DMG is a 2, 3, or 4 input dmx merger. With 6 merge types the DMG merges (combines) two or more DMX signals or universes into one universe, by a selected mode type; HTP (Highest Takes Precedence), Append, Backup, LTP (Latest Take Precedence by Universe), LTPC (Latest Take Precedence by Channel), or LoTP (Lowest Take Precedence). With additional input options, 3 or 4 inputs, enables the DMG to merge up to four universes and/or provide multiple functions. By configuring several inputs in different mode types, each can perform a specific merge mode type. For example, input's B and C could be configured to merge two universes into one universe using the HTP mode while input A could be configured to override both B and C once activated (i.e. a backup DMX source with auto switch over).

## CONNECTION

Connect a DMX source into the input connectors (5 or 3 pin) and insure the respective data LED is illuminated (showing data is present). The DMG will work with a single input or any combination. The merged output depends on the merge type selected. The inputs are internally terminated and the inputs should NOT be looped to other devices. The DMX Output connector will source up to 32 DMX devices (*depending on the devices and configuration*). As with any DMX daisy chain, each output must be terminated at the end of each daisy chain.



*While connecting and disconnecting DMX inputs, the output is undetermined until stabilized (1-2 seconds).*

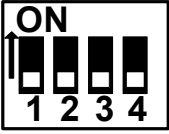
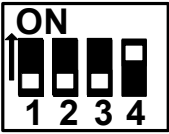
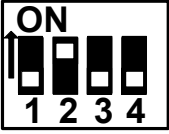

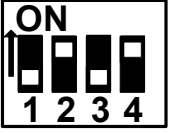
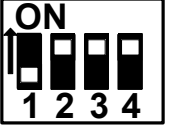
**NOTE** - *It is recommended to install the DMG near operators and the DMX generating devices. Because the DMG generates a DMX signal keeping the unit accessible is recommended in the event of a cable failure or unit malfunction the output may send false data which could cause erratic behavior with the receiving DMX system, could pose a risk to public safety.*

## MODES

If the DCD Display and Programming unit is installed see the page(s) that describe its connection and operation.

To setup the merge mode(s), use a small screw driver and set the dip switch(s) as shown below. For the 3x1 model there are two sets of dip switches. The left dip switch is for the A and B input merge mode, the right dip switch is the C input, the A/B output is merged with the C input.

For the 4x1 model, inputs A, B, and C the dip switches are as described above, the D input is merged with the output of A/B then C then D. To access the D merge mode dip switches, remove the outer most screws on the front of the unit and set the dip switches on the internal PCB.

	<p><b>MERGE HTP</b> The HTP mode will merge 2 universes into one universe using Highest Takes Precedence processing of the level of each channel. In this mode 2 lighting boards (or any two DMX generating devices) can control the same devices.</p> <p>If only one input is connected, the input data (channels, levels, packet size, and start code) are transmitted as received. By adding a DMX signal to other input the 2 sources will be merged with HTP - the highest level will be the transmitted on a specific channel. The packet size will be largest of the three. Input A has start code priority - Input A's start code will always be transmitted, unless there isn't a signal in input A then input B's start code will be transmitted. This mode is useful for controlling the same DMX equipment and devices with two DMX generating devices in one universe. For example a lighting board and a computer controlled DMX controller.</p> <p>HTP Examples: If the A input has a level of 25 on channel 10 and input B has a level of 200 on channel 10 the output will be 200 on channel 10. If A has a level of 5 on channel 100 and B has a level of 12 on channel 100 the output will be 12 on channel 100. If both in puts are 0 the output will be 0 on the respective channel etc.</p>
	<p><b>BACKUP</b> The Backup mode will transmit input A continuously, ignoring input B as long as input A is a *valid DMX signal. If input A's signal is not *valid input B will be transmitted.</p> <p>This mode is useful if a backup lighting board (or any DMX generating device) is always on standby to switch over in the case of a failure, the DMG in the backup mode would AUTOMATICALLY switch over, preventing the user from physically having to switch the connectors. The DMG will switch over in one second of a lost signal. Note-for the 3 and 4 input versions there may be two-three second delay before switching to the preceding input. (A overrides B over C etc.)</p>
	<p><b>LTP</b> The LTP (Latest Takes Precedence) will re send input A or B to the output depending on the input that had the latest level change of +/- 1. If you have two lighting boards respectively connected to input A and B, the last lighting board that made any change would take precedence and would control the output until the other lighting board made a change and then it would take control. Please note that the input sources would need to be digitally controlled, otherwise unwanted switching may occur.</p>
	<p><b>APPEND</b> The Append mode will separate the DMX packet into blocks or groups, i.e. the 2x1 unit = A then B, (3x1 then C, 4x1 then D). The size of each block is set by the "Append Setup" values. In this mode two or more lighting boards (or any DMX generating devices) can control different DMX equipment and devices over one universe (or cable). Another words DMX console #1 (or A) could control the 1st 100 DMX channels, DMX console #2 (or B) could control DMX channels 101 through 200 etc. For example, if the 'A' packet or block size is stored as 100 (channels) then input B channel 1 will be appended and will start at channel 101. And if the DMG is equipped with 3 inputs then the 2nd DMG PCB could be set to start at channel 201, and a 4th input could be set to start at 301 through 512. <b>See the Append Packet Size Setup section for instructions on setting transmit packet size (or channel block size).</b></p> <p><i>NOTE - By APPENDING or changing the DMX channels, each receiving device will need to be set to the new DMX channel. Plan any changes carefully and test each device after any configuration changes.</i></p>
	<p><b>LTPC</b> The LTPC mode (Latest Takes Precedence by channel) will change an individual channels output to the latest level change (+/- 1) on a channel on A or B's input. For example, if the current level on input A channel 10 is 128 and input B channel 10 changes from 100 to 101 the output on channel 10 will now be 101, and all other channels are unchanged. Please note that the input sources would need to be stable or digitally controlled, otherwise unwanted switching may occur as any change of +/- 1 would initiate a switch.</p>
	<p><b>LoTP</b> The LoTP (Lowest Takes Precedence) responds the same way as the HTP mode described above, except the lowest of the two inputs per channel is sent to the output.</p>

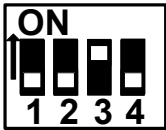
\*A valid DMX signal - an active signal present with consistent start code, consistent packet size, and meets the DMX standard. An invalid DMX signal - if a signal is not present for more than 1 second, or if the start code or packet size change. (If this happens and four continuous packets are received with the same start code within 1 second of the change the signal is still considered valid.)

Plan all DMX changes carefully, understand how each mode will react, and thoroughly test each device after any configuration changes

## APPEND PACKET SIZE SETUP

The packet (or channel block) size is set by one of two ways:

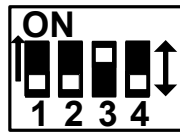
- AUTO DETECT: The packet size of a \*valid DMX signal on the A will auto detect and set the size
- MANUAL BLOCK: Manually program the packet size in 16 channel block increments



### APPEND SETUP AUTO DETECT

1. Set the dip switches to the APPEND SETUP mode shown above
2. Connect a DMX generating device into input A (e.g. lighting board) with a known DMX packet size (output channel count) known or preset.
3. Reset the power - The unit will auto detect the packet size
4. If a \*valid DMX signal is connected to input A, the packet size is stored in permanent memory. LED's A and B will alternately blink indicating completion.

5. Set the dip switches to the APPEND mode shown above
6. Reset the power
7. Test for accuracy



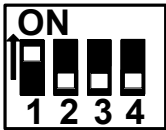
### APPEND BLOCK SETUP

1. Insure there is NOT a DMX signal on input A
2. Select the APPEND SETUP by placing switches as shown
3. Reset the power - The unit enters the setup mode, indicated by LED A blinking
4. Slide switch 4 on and off for each block to be added and assigned (see table below). Input A LED will turn on and off with each on/off cycle indicating each block of 16 additional channels.
5. Set the dip switches to the APPEND mode (off | on | on | off ) as shown above

6. Reset the power
7. Test for accuracy

**Channel Block Size Table**

# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size	# of Taps	Block Size
1	16	5	80	9	144	13	208	17	272	21	336	25	400	29	464
2	32	6	96	10	160	14	224	18	288	22	352	26	416	30	480
3	48	7	112	11	176	15	240	19	304	23	368	27	432	31	496
4	64	8	128	12	192	16	256	20	320	24	384	28	448	32	512



### PROGRAMMING AND DISPLAY UNIT

If the Programming and Display Unit is installed the dip switches must be set as shown. Otherwise the dip switch setting will override and the mode will set to the respective setting.

## OPTIONAL 3 DIGIT SETUP AND DISPLAY

The DCD Display option is only available for the 2x1 merger. If the optional 3 digit display and programming unit is installed, the merge modes can be setup and changed without re-powering and various parameter status's of the merge modes can be viewed. **To activate the programming and display unit, dip switch 1 should be in the ON position and 2-4 should be in the OFF position.**

- HTP [Display: HtP]
- Append - (additional set / view option) Input B's start channel [Display: APd]
- Backup - (additional view option) the current input (A or B) that's being sent [Display: bAc]
- LoTP [Display: L0t]
- LTP - (additional view option) the current input (A or B) that's being sent [Display: LtP]
- LTPC [Display: LtC]
- Bri - Adjust the display's brightness setting (10 steps) [Display: brI]

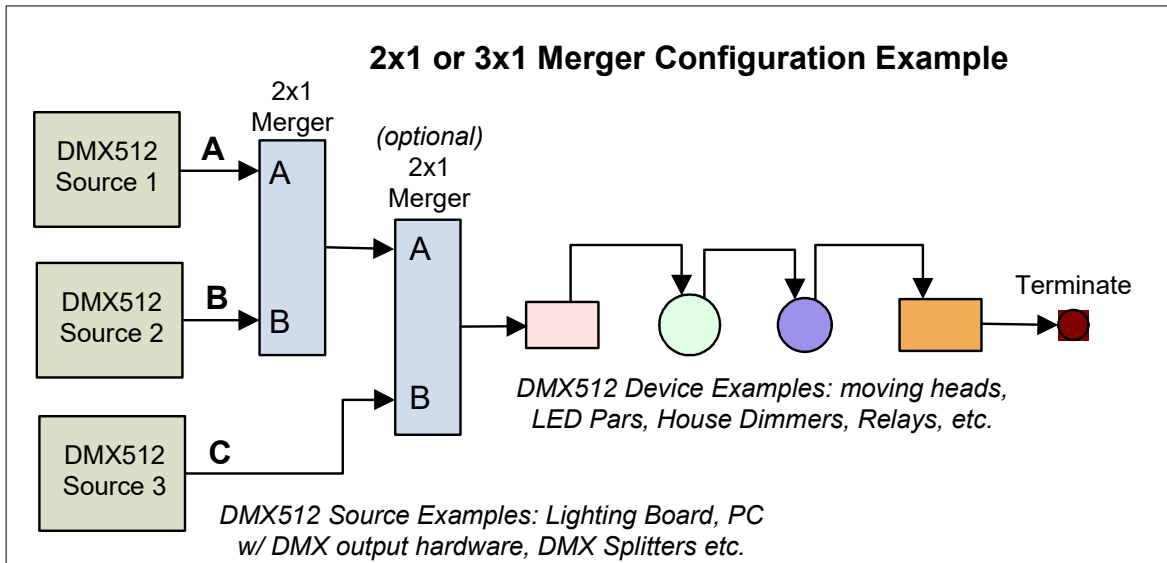
On start up the current mode is displayed. If the current mode is "append", press the SELECT button to toggle between displaying the mode or B's appended start channel. If the current mode is "backup", press the SELECT button to toggle between the mode type and the current input selected (i.e. input A or B). To adjust the brightness select the "bri" selection and press and hold GO. Press the GO or SELECT buttons to increase or decrease the brightness. The unit will resume with the new setting after a few seconds.

To change the mode press and hold the SELECT button until the display blinks then press the



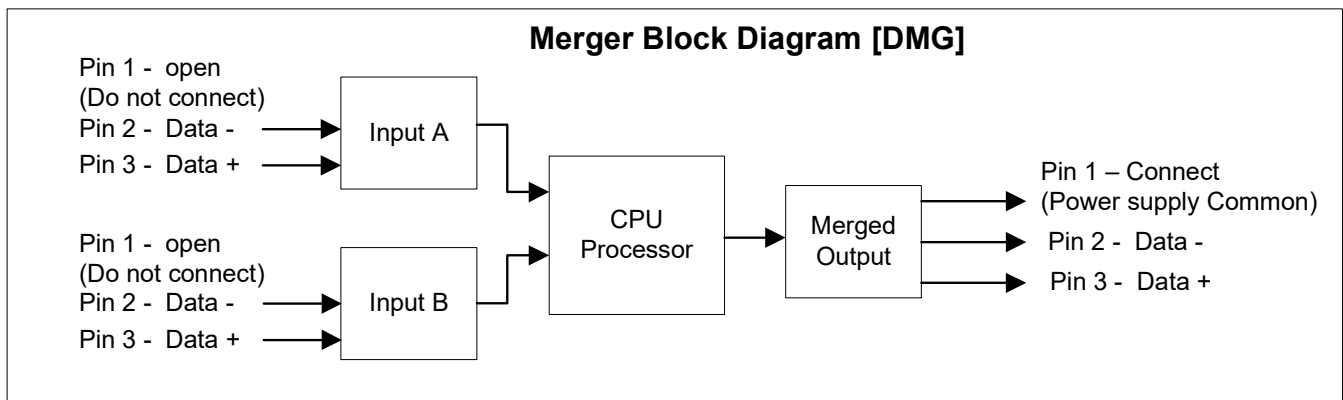
select button to scroll through the options. To execute the new mode, press and hold the GO button. The new mode is immediate and will be recalled on start up or power up. For the Append mode a second display will appear allowing you to set input B's start channel. Once the channel is set press and hold the GO button to execute the change.

## CONFIGURATION EXAMPLE



## PCB BLOCK DIAGRAM

The inputs merge together in the selected mode. If the DMG is a 3x1 or 4x1 unit the C input is merged with the output of A/B, and the 4x1 input D is merged with A/B then C then D.



## SPECIFICATIONS

Chassis:	Anodized Aluminum .093" thick RoHS compliant.
External Power Supply:	+5VDC wall mount
Voltage Input:	100 ~ 132 (or 240) VAC
Current Output:	1 Amps (typical)
Power:	5 Watts (typical)
Polarization:	Positive Center
Output Connector:	Locking Barrel Plug, 2.5mm I.D. x 5.5mm O.D. x 9.5mm
Internal FUSE:	500mA SMT PCB Mount ( <i>through hole option</i> )
Power Consumption:	2x1: Apx 160mA ( <i>output full source</i> ) 3x1: Apx 320mA ( <i>output full source</i> ) 4x1: Apx 480mA ( <i>output full source</i> )
Data Type:	DMX (250Khz)
Data Input:	DMX - 5 (or 3) pin male XLR, <i>Pin 1 - (Shield) Not connected, Pin 2 Data -, Pin 3 Data +</i>
Data Output:	DMX outputs - 5 (or 3) pin female XLR's, <i>Pin 1 - Power supply common, Pin 2 Data -, Pin 3 Data +</i>
Dimensions:	3.7 x 6.7 x 2.1 inches
Weight:	1.5 pounds