DOVE SYSTEMS

MTX-DE8

8 Channel DMX Decoder

User Manual

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Overview

The MTX-DE8, 8 channel DMX decoder, converts standard DMX-512 digital lighting control signals to analog 0 to 10V control signals. The internal terminal strip with the 8 outputs and common can drive one or more analog control inputs on lighting fixtures or drivers with analog control inputs. It also has options to convert some of those analog outputs to on/off outputs for controlling power switches. The outputs can directly drive solid-state relays or Dove Power Relay products (PR22 and PR44 for example) to control large on/off loads.

The most popular application of the MTX-DE8 is the control of LED lighting fixtures. It is mounted in the lighting grid near the fixtures to be controlled. Two-conductor cables connect the fixtures to the MTX-DE8. Each output terminal on the MTX-DE8 corresponds to one DMX control channel. If several fixtures are to always be driven with the same level, one output can drive these fixtures in parallel. Ten seconds after loss of the DMX control signal, all outputs will be set to 0V.

The main body of the decoder is 8.2” x 3.2” x 3.0”, and its mounting flanges have two screw holes spaced 9.2” apart for easy wall mounting.

The DE8 is available in three versions: MTX-DE8**-WM**, MTX-DE8**-WMH**, and MTX-DE8**-WM+**. Each output of the **-WM** can source up to 20mA but only sink 20µA which is great for most 0-10V individual control inputs driven by a single control source.

However, some applications benefit from having multiple control units with their outputs simply wired together so that the highest voltage takes precedence (HTP) on lights/drivers that *do not require the control to sink current*. This is not possible when the outputs both source and sink current. The **-WMH** only sources current to enable this configuration. For example, multiple Dove House Light Controls (HLCs) can be connected with one or more MTX-DE8-WMHs to control lights. This is often done to allow for manual control of lights via an HLC without powering the DE8 or booting up the DMX control console.

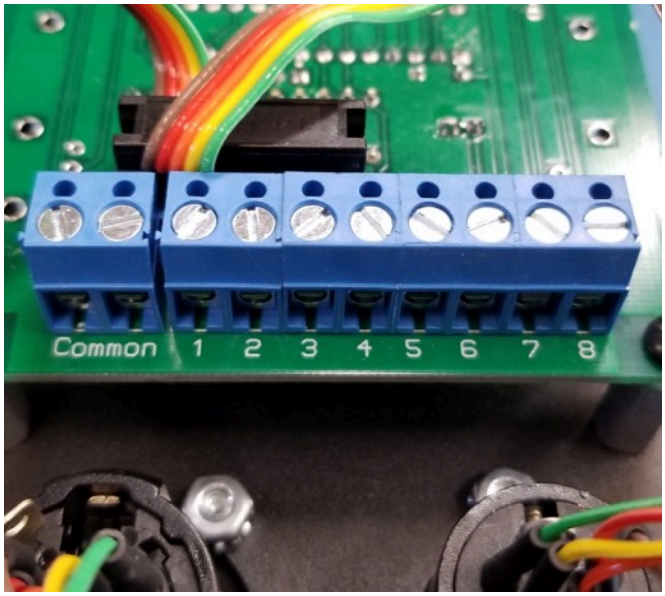
The **-WM+** is the same as the -WMH, but with an added daughter board with more powerful sink-only capability while maintaining the existing HTP input/outputs. This allows controlling many 0-10V sourcing inputs in parallel — ideal for handling installations using architectural 0-10 sourcing inputs (like LED High-Bay fixtures) instead of theatrical 0-10 sinking inputs.

The MTX-DE8 has a DMX input and a DMX output. The input is driven by the lighting control console or a previous device in the DMX string. The DMX output drives the next device in the

DMX string. If no other device is to be driven, the terminate switch on the MTX-DE8 should be turned on to properly terminate the DMX line.

The MTX-DE8 circuitry is not grounded (it floats to the DMX common). If the mount is to be opened, **make sure it is unplugged** to avoid a shock hazard. Devices driven by the MTX-DE8 should also have floating control inputs to avoid a ground loop in the DMX control signal. The DMX common line (pin 1) is connected to the common of the outputs, but is not connected to chassis ground. The chassis is grounded through the third prong of the AC plug.

Quick Start



1. Mount the MTX-DE8 near the fixture(s) it is to control.
2. Make sure the DE8 is unplugged before opening. Unscrew the four screws on either side of the case and remove the cover.
3. Connect the common and an output to the fixture it is to control. Repeat for all desired channels, routing user supplied wiring from the terminal strip through the hole at the bottom of the enclosure to the drivers/fixtures. (For the -WM+, see the next section for this step.)
4. Close the enclosure by replacing the cover and screws.
5. Set the channel select switch to the DMX channel that the first output is to represent. The second output will be this channel +1. The last output will be this channel +7. For example, if the channel select switch is set to 008, the first output corresponds to DMX channel 8, while the last output corresponds to channel 15.
6. Connect the DMX input to the DMX source, whether that be the console or another device on the DMX bus.
7. If this is the last device in the DMX chain, turn on the DMX terminate switch on the MTX-DE8.
8. Apply AC power to the MTX-DE8 and to the fixtures.

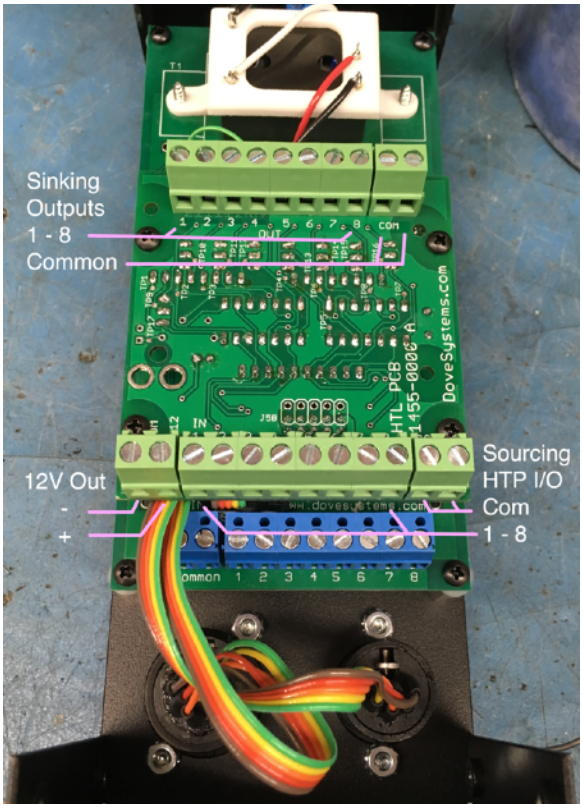
   When AC power is present, the LED on the front of the MTX-DE8 lights:

   - Green if DMX is present
   - Red if DMX is not present

9. As the DMX control is varied, the brightness of the fixtures should vary appropriately.

Note: Some fixtures do not dim all the way to off. If this is the case, you will need to turn off the AC power to the fixtures. Refer to the On/Off Output Options below for more details.

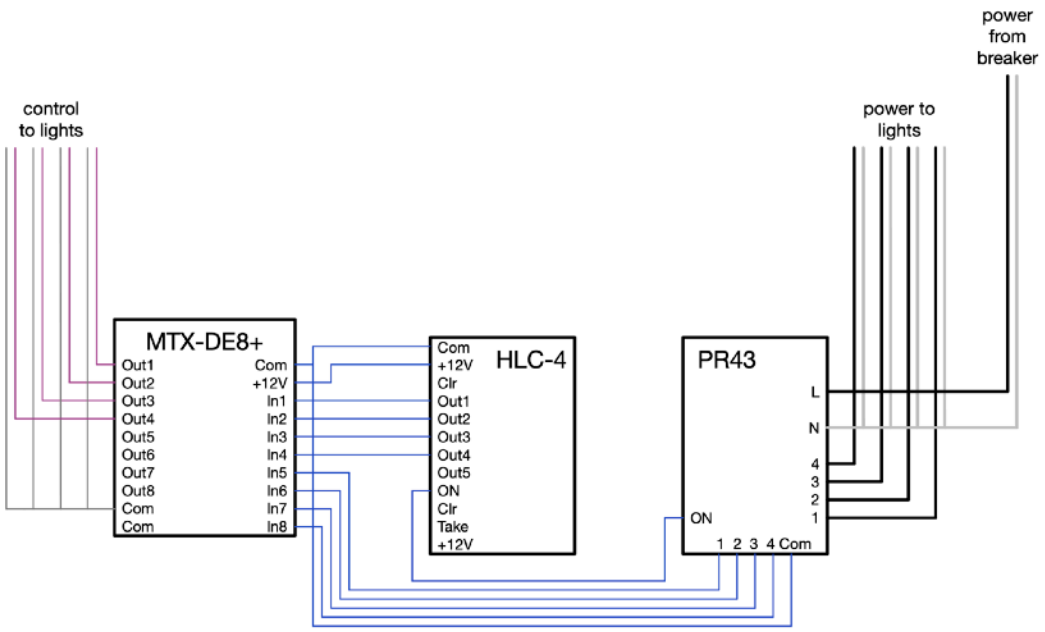
MTX-DE8-WM+ Specific Outputs



Step 3 in the above Quick Start section is modified for the MTX-DE8-WM+ version. It has a special daughter board (also available as a stand alone product, MTX-HTL) that adds 8 sink-only, 0-10V outputs and a +12VDC power output. The +12V & Common outputs are convenient for powering a single HLC-x, House Light Control (larger HLC networks will require their own power source). These strong sink-only outputs are intended to drive many paralleled LED drivers' sourcing inputs at once.

The following wiring example shows the DE8 used in conjunction with an HLC-4 control for local manual control of 4 house light channels and a PR43, power relay, that switches the power to those 4 sets of fixtures. Not shown is the DMX connection to the main control console. When both the DMX and HLC are active, the higher of each channel will take precedence. For this application with the Dove PR43, the DE8's DIP switches for Option 1 and Option 2 (see On/Off Output Options section below) will be set ON so the DMX can control the 4 relays independently.

The 0-10V signals to the architectural LED fixtures are connected directly to Sinking Outputs 1-4 on the MTX-DE8-WM+ while the HLC is connected to the Sourcing HTP I/O terminals 1-4 and the 12V Power Output. Finally, the fixtures receive their power from the PR43 relays which are controlled by the HLC's ON output and the DE8's Sourcing HTP I/O terminals 5-8.



Local Control

The MTX-DE8 can control analog fixtures without a DMX signal. Local control ignores On/Off Output Option settings.

To set a level on the MTX-DE8:

1. Set the first digit of the channel select switch to 6.
2. Set the second digit to the number of the output to be controlled (1 to 8).
3. Set the third digit to obtain the desired brightness from 0 (off) to 9 (full).
4. After a level is set, the second digit can be changed to select another output and adjust that level.
5. These levels will remain set until power is removed from the MTX-DE8 or until the channel select is set to a valid DMX address and a DMX signal is present.

Remember to set the appropriate DMX channel on the channel select switch when returning to DMX operation.

On/Off Output Options

On/Off outputs may be used to command power control to the fixtures with which they are associated. ALL controlling analog outputs must be set to zero for a minimum of 0.4 seconds in order for the on/off output to be 0 instead of 10 Volts. This short delay protects both the switch and load from control channels that may not have a stable zero value.

The number of on/off outputs and which analog outputs control them can be manipulated using Option Switches 1 and 2, located on the MTX-DE8 front panel. There are four variations available with the two option switches. (Option 3 should always be in the Off or 0 position.)

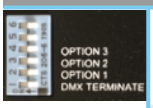
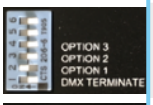
If Option Switches 1&2 are set to:

00: No on/off outputs.
All outputs are analog.

10: Output 8 is on/off.
Output 8 is controlled by analog outputs 1-7.

01: Outputs 7 and 8 are both on/off.
Output 7 is controlled by analog outputs 1-3.
Output 8 is controlled by analog outputs 4-6.

11: Outputs 5, 6, 7 and 8 are all on/off.
Output 5 is controlled by analog output 1.
Output 6 is controlled by analog output 2.
Output 7 is controlled by analog output 3.
Output 8 is controlled by analog output 4.

Option Switches	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8
	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V
	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	On/Off controlled by Outputs 1-7
	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	0 to 10V	On/Off controlled by Outputs 1-3	On/Off controlled by Outputs 4-6
	0 to 10V	0 to 10V	0 to 10V	0 to 10V	On/Off controlled by Output 1	On/Off controlled by Output 2	On/Off controlled by Output 3	On/Off controlled by Output 4

Note: Local Control overrides the On/Off Output functions.

Troubleshooting

First make use of the Local Control feature described above to check that the output of the DE8 works with your fixture/driver. After confirming control sources and loads all have proper power, a voltmeter is useful to check control signal voltage levels. Since the MTX-DE8-WMH version only sources current, make sure that the driver's input is not floating high on it's own. The MTX-DE8-WM should not have an issue with drivers that have an internal pull-up, but multiple outputs can not be connected with this version.

If there is a question as to whether the lighting fixture is working, using a 9V battery to test the driver inputs with the DE8 disconnected is a handy trick for inputs that sink current. Newer driver inputs that source current (often using grey and purple wires) can be tested by just shorting the input terminals or wires together.

The DMX starting channel is selected through the push-button switches on the front panel. Valid starting channels range from 001 to 505 for the DE8. When the decoder controls the *only* lights in the system, the starting channel should be set to 001.

If there is flickering, it is usually caused by improper DMX wiring which leads to signal corruption causing the flicker. Low capacitance, shielded cables are required by the DMX512 Specification. Check the DE8's DMX Termination switch. If there is more than one DMX device in the chain, be sure that termination is only on the last device — termination at more than one device can cause flickering. If ground loop noise is the source, adding an opto-isolator can help.

Sudden failures in previously functional systems frequently involve voltage spikes on the DMX input line to the decoder. Replacing the line receiver IC (MAX488) may repair it. If there is a recurrence, it may be necessary to install an opto-isolator on the DMX line. Sometimes a voltage spike up one of the output lines blows several or all of the chips. Although, a replacement chip set of all the IC's does not guarantee a successful repair.

A failure in one of the LM324 op amps may cause a block of four adjacent channels to stop working. The bad chip may be isolated by swapping chips on the circuit card.

When channels work on an individual basis but start to dip and flicker when more and more are brought up, the connection to control common could be missing. *This is a very common problem when the decoder is being installed for the very first time or being moved from one venue to another.* Remember every fixture/driver requires control signal and common connections to work reliably.

Questions and Comments

We look forward to hearing your comments and questions on the MTX-DE8. You can email comments to sales@DoveSystems.com or contact us using information on the front cover of this manual. If you would like to connect with us over social media, feel free to find us on Facebook and Instagram with the username @dovelightingsystems as well as on LinkedIn with our name Dove Systems.

Service

Should service on the MTX-DE8 be required, it should be returned to the factory. Download and fill out the Repair Form from www.DoveSystems.com, and ship it to us with the unit. We normally complete repairs within a day or two of when we receive the equipment.

LIMITED WARRANTY

The manufacturer agrees that its products shall be free from defects in material or workmanship over a period of one year from date of shipment from the factory. Said warranty will not apply if equipment is used under conditions of service for which it is not specifically intended. The manufacturer is not responsible for damage to its apparatus through shipping, improper installation, physical damage, or poor operating practice.

If any device is found unsatisfactory under the warranty, the buyer should notify the manufacturer, and after receipt of shipping advice, buyer may return it directly to Dove Systems, San Luis Obispo, CA, shipping prepaid. Such equipment will be replaced or put in proper operating condition, free of all charges except transportation. The correction of any

defects by repair or replacement by the manufacturer shall constitute fulfillment of all obligations to the purchaser. Manufacturer does not assume responsibility for unauthorized repairs to its apparatus, even though defective.

Manufacturer shall not be liable for any consequential damage in case of any failure to meet the conditions of any warranty of shipping schedule, nor will claims for labor, loss of profits, repairs, or other expenses incidental to replacement be allowed.

No other representation, guarantees or warranties, expressed or implied, are made by the manufacturer in connections with the manufacture and sale of its equipment. This warranty is non-transferable and applies to the original buyer only.