

# DXRL (DPM-RL) DMX RELAY DRIVER

## With optional 0-10 Volt Converter

DXRL sr-1.xx

## DESCRIPTION

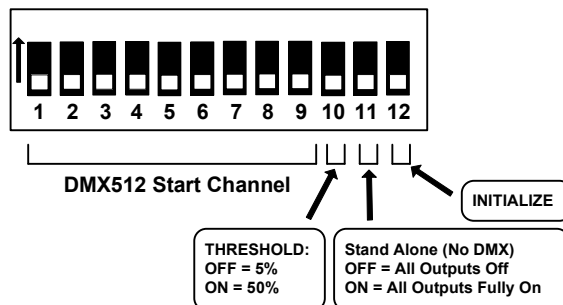
The DXRL (DPM-RL) is a DMX to relay driver and controller, with an optional 0 to 10 volt converter. Control 12VDC relays up to 100mA each from any DMX console or any DMX generating device. Control any devices that can be controlled by power relay's.

With the optional 0 to 10 volt converter, control any 0-10 volt device with simultaneous relay control if desired. This functionality provides a 0~10 volt variable control signal and then at the low end of the variation provides the capability to shut off the power to the respective driver or device. See the 0-10V Option on page 3.

The DXRL (DPM-RL) is equipped with dip switches for setting the DMX Start Channel, Threshold setting which sets the DMX level to trigger the relay's on and off, Stand Alone Mode (no DMX) relay and output setting, and an Initialize switch for installing a 0~10 volt convert option. Also equipped with a 120 ohm DMX input termination switch, and LED indicators: red 12V power input, yellow DMX and status, and 8 green for relay status.

## SETTINGS

*Reset Required After Any Changes*



### DIP SWITCH LEGEND

**RESET REQUIRED**

- 1-9 DMX Start Channel
- 10 THRESHOLD  
OFF=5%  
ON=50%
- 11 Stand Alone Mode  
OFF=All outputs off  
ON=All Outputs Fully On
- 12 INITIALIZE

**NOTE – A RESET / RE-POWER IS REQUIRED FOR ANY DIP SWITCH SETTING CHANGES**

OFF (down position) / ON (up position)

**DIP Switch's 1~9 DMX START CHANNEL:** sets the DMX512 start channel (see the *DMX512 CHANNEL ASSIGNMENT TABLE* document). The 1<sup>st</sup> Relay is controlled (and optional 10 volt output) by the assigned DMX channel, the remaining channels respond to subsequent DMX channels.

**DIP Switch 10 THRESHOLD:**

- OFF = 5% The respective relay will turn on at 7% and turn off at 4%
- OFF = 50% The respective relay will turn on at 49% and turn off at 51%

**DIP Switch 11 STAND ALONE:** (i.e. no valid DMX is present on the input terminal)

- OFF = All of the relay's will be in the Open position (If the 0-10 volt option is installed all of the outputs will be at 0 volts).
- ON = All of the relay's will be in the Closed position (If the 0-10 volt option is installed all of the outputs will be at 10 volts).

**DIP Switch 12 INITIALIZE:**

- Factory setup of 0-10V option (Perform only if necessary)
- OFF = Normal operation
- ON = Initialize function

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## CONNECTIONS

**POWER:** Connect a +12VDC regulated to the +12V screw terminal input noting polarity (reversed or over voltage may damage the unit), the red LED will illuminate.

***WARNING!*** *Damage may result if REVERSE VOLTAGE or OVER VOLTAGE is applied to the input voltage terminals. Take great care that the +12V and ground connections are connected as marked on the PCB.*

**RELAY'S:** If the DXRL (DPM-RL) is equipped with internal relay's and screw terminals, connect the external equipment with respective in/out relay connections – Relay 1 input labeled "1 IN" is the supply power input, and the output labeled "1 O" is the relay "closed" circuit output that connects to the relay controlled equipment. *See the unit legend or the specification page for information regarding the power ratings of internal relay's. Also see the wiring examples on examples page.*

If the relay's are outboard or customer provided, connect the relay control lines using the DB9 connector. *See the wiring examples on examples page.* Install the relay's in an electrical box or adequate enclosure and securely connect wiring with the appropriate gauge wire for the current rating of the installation, e.g. 10-12 AWG recommended or 16-20 Amps. If spade terminals are used, crimp /solder .25" wire terminals to the wires, Insert the LINE IN voltage connection to the relay COM terminal by firmly pressing the wire connector until it is seated all the way down. Insert the LINE OUT voltage connection to the relay N.O. terminal - insure it's seated all the way down. **CAUTION:** *If double poled relays are used the N.C. terminal will have line voltage connected if the relay is off. If the N.C. terminal is not needed the LINE IN and OUT connections can be reversed to prevent voltage at this terminal.* When activate, the relay's will generate a small amount of heat without a load, insure the relay's don't exceed the maximum heat specs under full load and environmental conditions. *See the specification page for information regarding the power ratings of the relay control outputs.*

***NOTE:*** *A QUALIFIED ELECTRICIAN may be required to interface the connections and all local electrical codes must be followed. See the specifications page of the DXRL (DPM-RL) for the proper voltage and current rating of the relays and connections to insure they are within range. The user is responsible for all uses and connections of the DXRL (DPM-RL).*

**VARIABLE 0~10 OUTPUTS:** If equipped with the 0-10 volt option, connect the 0~10 volt outputs to the respective controllable input of devices. *See the connection diagram in this document for an example of connecting 0~10 volt LED driver(s).* The 'C' is the common connection and outputs 1-8 are the variable 0~10 volt outputs. **NOTE:** *The 0~10 volt outputs are low current control voltages only-see specifications page for drive capabilities.*

**DMX512 INPUT:** Connect a DMX512 signal to the input connector, (pin -2 and +3). The factory default of the terminating switch is ON (terminated) if the unit is not equipped with a DMX loop through, or OFF (un-terminated) if a loop through connector is provided. If the DMX input terminal is looped to another DMX device (limit 32) then set the terminating switch to "OFF".

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## OPERATION

**WITH VALID DMX:** The DXRL (DPM-RL) will respond on the respective relay when the DMX level is equal to or greater than the threshold settings (see *the dip switch threshold settings pg 1*). If equipped with the 0~10 volt option, the respective 0-10 volt outputs will vary the voltage linearly in respect to the DMX level.

**WITHOUT DMX:** With DIP switch 11 in the OFF position all of the relays will be in the OPEN position (if equipped all of the 0~10 volt outputs will be set to zero). With DIP switch 11 in ON, all of the relays will be in the CLOSED position (if equipped all of the 0~10 volt outputs will be set to 10 volts).

**REINITIALIZE HARDWARE:** This is factory performed and not needed unless a communications error persists. To initiate: turn off the power to the PCB, set the INITIALIZE switch to the ON position, repower the PCB. The yellow LED will flash confirming the initialization. Then turn off the INITIALIZE switch and repower. If the error persists contact technical support.

### LED INDICATORS

RED POWER LED: +12DC is applied

YELLOW DATA/STATUS LED:

OFF = Indicates no DMX data is being received and the unit is in Stand Alone Mode

SOLID ON = Indicates DMX data is being received

SLOW BLINK = DMX communications or receive error has occurred (*reset clears, If error persists-reinitialize hardware*)

GREEN RELAY STATUS LED's: Indicates the respective relay is closed

### 0-10 VOLT OPTION

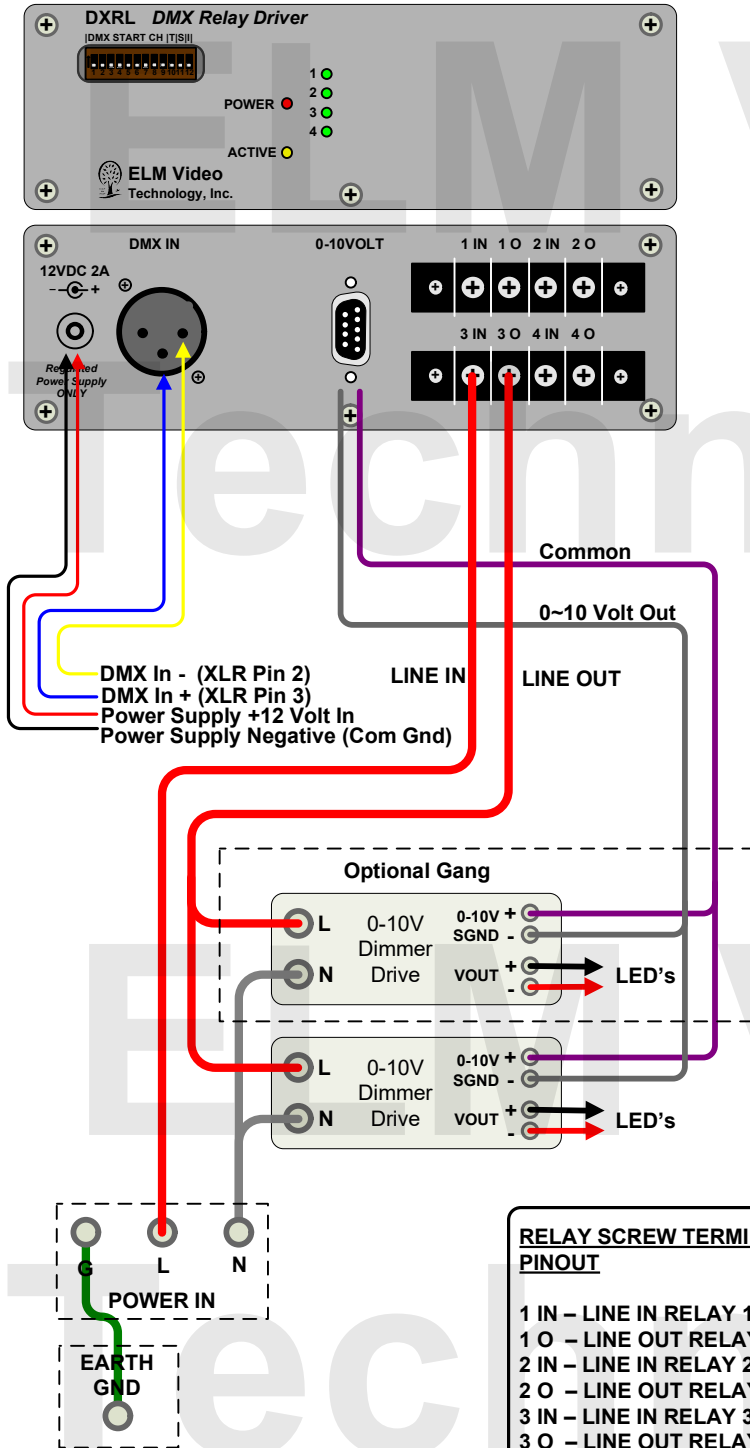
If the DXRL (DPM-RL) unit is equipped with the 0-10 volt output option, the outputs will control devices with a 0-10 volt control input. For example, some LED drivers only dim from 100% down to 10%, the DXRL (DPM-RL) provides the variable voltages to dim the LEDs. Some LED drivers are limited to dimming down to 10% or even 1% but not completely turning of the LED's and some light is still being emitted. The solution is to control the power to the fixture using relay's that are controlled by DMX. Once the DMX level drops below 10% the relay's are OPENED to disconnect the power to the fixtures. When the DMX level is raised above 10% then the power is re connected to the fixture and then the DMX level will dim from 10% up to 100% as normal. The DXRL (DPM-RL) may have up to 8 relay control outputs and 0~10 volt variable outputs. Both sets of outputs respond together, that is, output 1 has a 0~10 volt output and a relay control output, both set to respond to the same DMX channel. For example, if the DMX start channel is set to 100, then output 1 of the 0~10 volt variable control and output 1 of the relay will respond to DMX channel 100. Insure the relay's are capable of controlling the fixture or connected equipment power requirements. If multiple fixtures are wired together to create zones, insure the total power requirements are considered.

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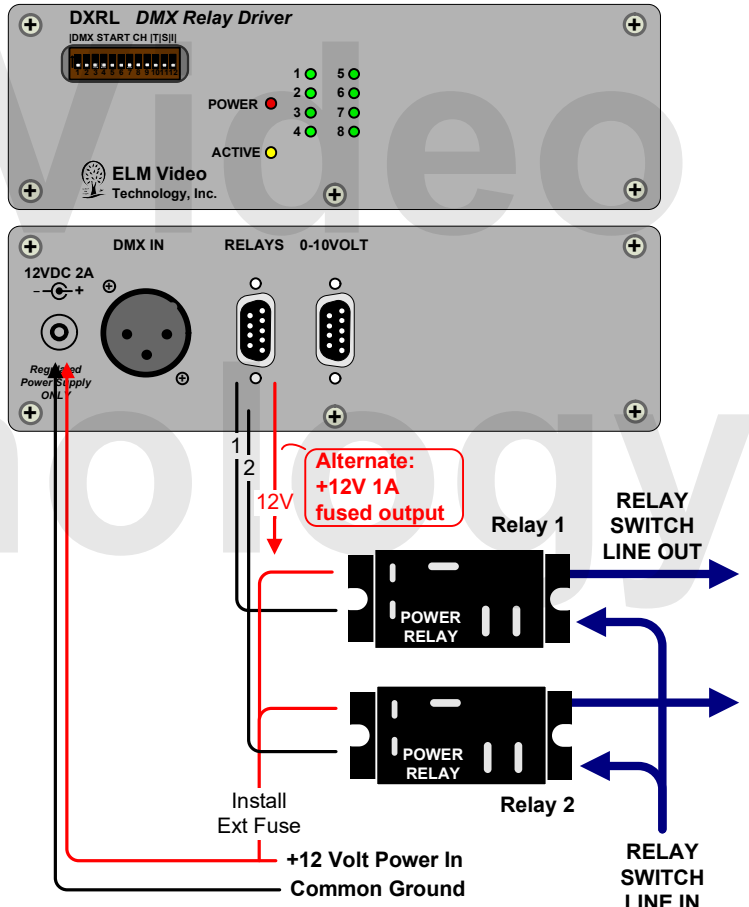
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### EXAMPLE: 4 Channel Internal Relay with 0-10 Volt Wiring Controlling 0-10V LED Driver(s)



### EXAMPLE: 8 Channel External (Outboard) Relay Controller with optional 0-10 Volt Converter Outputs



#### RELAY SCREW TERMINAL PINOUT

- 1 IN - LINE IN RELAY 1
- 1 O - LINE OUT RELAY 1
- 2 IN - LINE IN RELAY 2
- 2 O - LINE OUT RELAY 2
- 3 IN - LINE IN RELAY 3
- 3 O - LINE OUT RELAY 3
- 4 IN - LINE IN RELAY 4
- 4 O - LINE OUT RELAY 4

#### 0-10 VOLT OUTPUT CONTROL PINOUT

- PIN 1 - GROUND/COM
- PIN 2 - 0-10 V OUT 1
- PIN 3 - 0-10 V OUT 2
- PIN 4 - 0-10 V OUT 3
- PIN 5 - 0-10 V OUT 4
- PIN 6 - 0-10 V OUT 5
- PIN 7 - 0-10 V OUT 6
- PIN 8 - 0-10 V OUT 7
- PIN 9 - 0-10 V OUT 8

#### RELAY CONTROL PINOUT

- PIN 1 - RELAY 1
- PIN 2 - RELAY 2
- PIN 3 - RELAY 3
- PIN 4 - RELAY 4
- PIN 5 - RELAY 5
- PIN 6 - RELAY 6
- PIN 7 - RELAY 7
- PIN 8 - RELAY 8
- PIN 9 - +12VDC 1A FUSED OUTPUT

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## SPECIFICATIONS

**DMX CONTROL WARNING:** NEVER use DMX data devices where human safety must be maintained. NEVER use DMX data devices for pyrotechnics or similar controls.

**MANUFACTURER:** ELM Video Technology

**PRODUCT NAME:** DMX Relay Driver with optional 0-10 Volt Controller

**DESCRIPTION:** The DXRL (DPM-RL) converts a DMX-512 input to relay control with optional corresponding variable 0 to 10 volt analog outputs.

**MPN:** DXRL-4C16A-0-10V

**MODEL:** DXRL (DPM-RL)

**+12VDC INPUT FUSE:** PCB +12VDC - SMT 2A Slow

**+12VDC RELAY POWER OUTPUT FUSE:** PCB SMT 1A Slow

**POWER INPUT CURRENT:** 1030mA (65mA + [8] relay's closed at 100mA ea, + [8] 0~10 volt outputs at 20mA)

**RELAY OUTPUT CURRENT:** 100mA Max each at +12VDC

**0~10V SOURCE OUTPUT CURRENT:** 20mA Max each (500 ohm minimum load)

**0~10V SINK OUTPUT CURRENT:** 10mA Max each

**DATA TYPE:** DMX512 (250Khz) [*Pin 1 Shield (not connected on input), Pin 2 Data -, Pin 3 Data +*]

**DIMENSIONS:** 2.1" H x 6.7" W x 4.1" D

**WEIGHT:** 1.5 pounds

**AMBIENT TEMPERATURE MAX:** 32°F to 85°F

**PCB AND RELAY OPERATING TEMPERATURE MAX:** 32°F to 125°F (*Air cool if necessary*)

**STORAGE TEMPERATURE:** 32°F to 120°F

**HUMIDITY:** Non condensing

**REFRESH RATE:** 571 per second w 8 channels (*amount of times per second the outputs are updated*)

**POWER SUPPLY:** +12VDC wall mount (UL listed)

Voltage Input: 100 ~ 132 (or 240) VAC

Current Output (Min): 2 Amps

Power (Min): 24 Watts

Polarization: Positive Center

Output Connector: Locking Barrel Plug, 2.5mm I.D. x 5.5mm O.D. x 9.5mm

### RELAY SPECIFICATIONS IF EQUIPPED WITH FACTORY INSTALLED RELAYS:

**RELAY VOLTAGE MAX:** 120VAC

**RELAY CURRENT MAX:** 16 Amps each

**UL LISTINGS:** +12VDC power supply and pre populated PCB are UL listed, (populated PCB: NO)

**RELAY APPROVALS:** UL E58304; CSA LR48471

**RELAY CONTACT DATA:** Contact arrangement: 1 form A (NO), 1 form B (NC), 1 form C (CO)

**RELAY CONTACT MATERIAL:** AgSnOInO, AgCdO

**RELAY MIN RECOMMENDED CONTACT LOAD:** 1A, 5VDC or 12VAC

**RELAY FREQUENCY OF OPERATION:** with/without load 360/3600hr

**RELAY OPERATE/RELEASE TIME MAX,** including bounce: 15/15ms

**RELAY MECHANICAL ENDURANCE:** 10x10<sup>6</sup> operations