

# eDIN Model 1004 rev5 • DMX Demultiplexer Manual

## OVERVIEW

Pathway eDIN Demultiplexer converts DMX512 signals into 16 channels of analog control voltage. The Demultiplexer can also control Mark 7-type fluorescent ballasts, solid state relays or LEDs. The module is RDM discoverable and configurable.

## CONNECTIONS

The eDIN Demultiplexer features terminal strips that can be removed from the card to facilitate easy wiring installation or replacement. Make the following connections, **WITH THE POWER TURNED OFF.**

### POWER

The Demultiplexer will operate on a range of voltages from 9-30 volts DC. Each eDIN module requires 250mA. Observe the correct polarity when connecting to V+ and V-. A second set of terminals are provided as a thru connection to other eDIN modules. The EARTH GND terminal must be connected to the enclosure's chassis or electrical ground terminal to ensure EMC compliance.

### DMX

DMX connections consist of a shield and a data pair. A optional second auxiliary data pair is also occasionally employed. DMX IN usually comes from a control console, Pathport® node, architectural controller or opto-splitter. DMX THRU provides a means to daisy-chain DMX to other eDIN modules. Connect DATA+ and DATA- to D1+ and D1-. Observe the same polarity convention throughout the system. Connect the cable shield or common to the SHLD COM terminal.

### ANALOG OUTPUTS

Sixteen analog output terminals are provided in groups of four, each with a common terminal. All common terminals are internally connected, so only one needs to be tied to the device being controlled. Outputs are rated up to 15 volts DC, 10mA per channel, sourcing, or 30mA per channel, sinking. Maximum wire run is 150 meters (500 ft.).



## STATUS INDICATORS

- POWER IN** *Blue.* Glowing steadily indicates power supply OK; off indicates no power.
- PROCESSOR** *Green.* Glowing steadily indicates processor is OK; off when POWER IN is lit indicates processor failure.
- DMX INPUT** *Amber.* Glowing steadily indicates data signal received; off indicates no signal present.
- FUNCTION** *Amber.* Indicates the menu function associated with the numeric display.

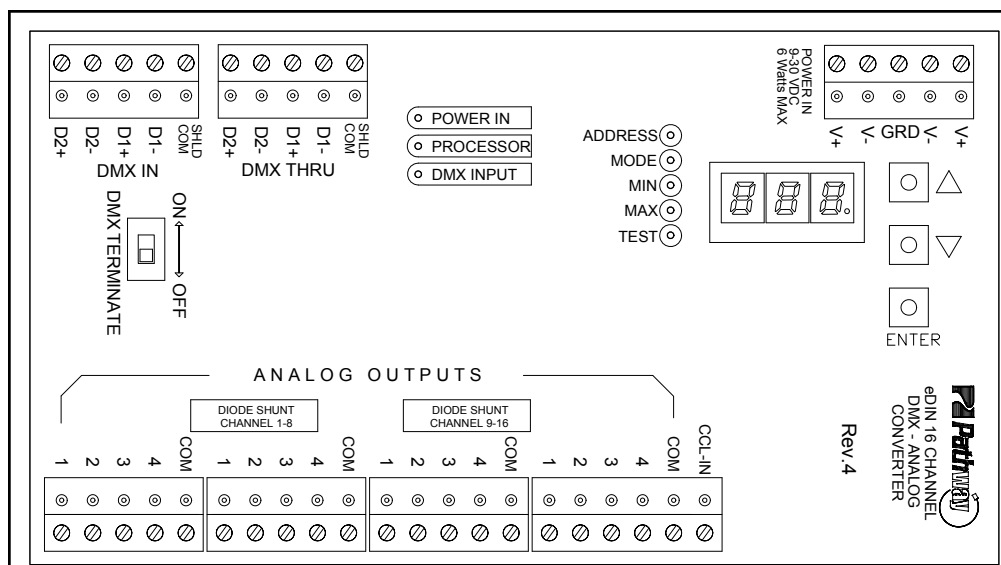
## DMX TERMINATE

DMX rules require the final device in line have a terminating resistor. If no devices or modules are connected to the DMX THRU terminal, the DMX TERMINATE switch should be ON. If other devices or modules are connected to DMX THRU, the DMX TERMINATE should be OFF.

## CONFIGURATION

To configure, first press the ▲ or ▼ buttons to select the desired function, as indicated by a lit LED next to ADDRESS, MODE, MIN, MAX, or TEST. Once chosen, press and hold the ENTER button until a dot appears on the right hand display. The function is now editable.

When done editing a parameter, press ENTER. The dot will disappear, the new value will be saved and the unit will be ready for operation.



## SET DMX ADDRESS

Once in ADDRESS edit mode, press ▲ or ▼ to change the start address to the desired value. Press ENTER to save the address. Valid addresses range from 1 to 512.

## SET OPERATING MODE

Once in MODE edit, choose from the following:

- Mode 1: 0—10VDC Output (MAX will read 158)**
- Mode 2: 0—5 VDC Output (MAX will read 79)**
- Mode 3: 0—15VDC Output (MAX will read 237)**
- Mode 4: 0—2.5 VDC Output (MAX will read 40)**
- Mode 5: Custom D-to-A (set your own voltage)**
- Mode 6: EFBC/LED Control—10% threshold**
- Mode 7: Non-Dim (see below)**
- Mode 8: EFBC/LED Control—1% threshold**

## SET MIN AND MAX VOLTAGE OUTPUT LEVELS

To set a custom output voltage, confirm the DMX start address is set to 1. Connect a voltmeter between output 1 and COM on the card. Connect a DMX source to DMX IN. Using your source, vary the DMX level on channel 1 and confirm that the voltage output is changing. Set the DMX level to full.

Use the ▲ and ▼ buttons and ENTER to select MAX for editing. Use ▲ and ▼ while observing the output on your voltmeter. Once the voltage is at the level you desire, press ENTER to save. Repeat this process to set a MIN level. Valid MIN levels are between 0 and 254. Valid MAX levels are between 1 and 255. 255 roughly corresponds to an output of 16VDC. Customizing these values will place the card in Mode 5. MIN and MAX should be checked in Modes 6, 7 and 8, with MAX set as a value of 158 to ensure proper operation of the solid state relays.

## EFBC / LED CONTROL

Mode 6 and 8 allow unified control of up to eight circuits of LED fixtures or Mark 7-type electronic fluorescent ballasts, with a maximum of 20 fixtures/ballasts on each circuit. Two channels are used for each circuit. Channels are paired, 1 with 9, 2 with 10, and so on. The lower channel provides 0-10VDC dimming control, while the higher acts as a non-dim, when connected to a solid state relay controlling the circuit's AC supply. In mode 6, the non-dim triggers when DMX passes through 10%. In mode 8, the non-dim threshold is 1%. All blocking diodes must be shunted (by-passed) in this mode.

## NON-DIM CONTROL

Mode 7 provides non-dim control of solid state relays or LEDs. At a DMX level of 0%, each channel outputs +10VDC. The output voltage drops to zero when DMX passes 50%. All blocking diodes must be shunted (bypassed) in this mode.

## TEST MODE

Using the ▲ and ▼ buttons, each output will be toggled on and off. The output number is shown on the right hand display. DMX is ignored while in TEST mode.

## CCL PIN (PANIC INPUT)

Shorting the CCL pin to COM will drive all outputs to full. The CCL input overrides the DMX input level.

## SELF-TEST

Press the ▲ button while turning power on to enter self-test. All LEDs will flash sequentially. The display will cycle 0 through 9, then show the serial number and firmware version. Cycle power to end self-test.

## E1.20 REMOTE DEVICE MANAGEMENT

The eDIN 1004 Demultiplexer is fully compliant with ANSI E.20 Remote Device Management as a responder device.

## DIODE SHUNTS

The behavior of the diode shunts is dependent on the module's revision level. The revision number is shown on the product label, next to the part number.

The diodes prevent the control signal from back-feeding into the output and damaging the module. The diodes must be removed from the circuit to allow sinking control. The 16 dip switches are wired as shunts, allowing the diodes to be engaged or disengaged output-by-output.

**REV 4 and below:** The blocking diodes are engaged by default. With the shunt switches in the "off" position, the diodes will prevent current backflow. This is the correct arrangement for driving analog dimmers. With the shunts in the "on" position, the diodes are by-passed. This is the correct arrangement for sinking control of EFBCs and LED dimmers.

**REV 5 and higher:** The blocking diodes are by-passed by default. With the dip switches in the "off" position, current will backflow through the card. This is the correct arrangement to allow sinking control of EFBCs and LED dimmers. With the dip switches in the "on" position, the diodes will block backflow current. This is the correct arrangement for driving analog dimmers.

## SPECIFICATIONS

POWER SUPPLY:	9-30 VDC, 2.5W
INPUT SIGNAL:	ANSI E1.11 DMX512-A, ANSI E1.20 RDM
OUTPUTS:	16 analog 0-10VDC nominal, maximum 16VDC
OUTPUT RATING:	10MA current drive per channel sourcing or 30mA per channel sinking, diode isolated
EXCEEDING THESE RATINGS MAY RESULT IN DAMAGE TO THE DEVICE	
CONNECTIONS:	Two piece compression screw terminals, 16 - 24 AWG
SIZE:	3.5" x 6.25" x 1.25" (90mm x 160mm x 35mm)



TECHNICAL BULLETIN #14_09_4-1
Product: eDIN #1004 - Demultiplexer
Subject: 0-10V Dimming of Non-Isolated LED Drivers
Scope: Applies to all model revisions

## OVERVIEW

Use of the eDIN #1004 Demultiplexer with non-isolated LED fixture drivers is not recommended.

The eDIN #1004 16-channel Demultiplexer is designed to provide sinking control of LED fixture drivers that have a secondary Class 2 dimming circuit that is isolated from the mains power input. Connection of the Demultiplexer to non-isolated drivers, or drivers with Class 1 rated dimming circuits, will cause damage to the Demultiplexer.

**This damage is considered non-warranty for the purpose of repair and replacement.**

## DETAILS

Pathway has determined that one or more LED luminaire manufacturers are now providing non-isolated fixture drivers with non-Class 2, 0-10V volt dimming option. The lack of isolation between the mains power leads and the low voltage wiring in the drivers results in transient voltages on the low voltage control leads. The transient voltages may be as high as or higher than 120V.

In compliance with ANSI C82.11c Low Voltage Control Interfaces for Controllable Ballasts, the #1004 Demultiplexer will accept voltages between -15V and +15V with no damage. Application of voltages outside this range to any of the analog outputs may result in damage to all outputs on the Demultiplexer. Damage will result in reduced dimming range or loss of dimming capability altogether.

The damage caused by this misapplication of the product is readily determined when Demultiplexers are returned for repair. Repairs to Demultiplexers deemed to be damaged by connection to non-isolated LED fixture drivers will only be performed on a non-warranty basis, and all non-warranty repair fees and policies will apply.

## EXAMPLE

A popular choice for 0-10V control of dimmable LED fixtures is the Philips Xitanium product line. Care must be taken to choose the fully isolated version of these drivers. Isolated Xitanium drivers are typically identified by the letters "DO" at the end of the model number. Non-isolated Xitanium drivers are typically identified by the letters "DN" or "DL" at the end of the model number. It is the responsibility of the installer to determine the compatibility of the fixture driver and the #1004 Demultiplexer.

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