

## 4802 Installation Repeater

6-way opto-isolated DMX splitter



## 4802 Installation Repeater

6-way opto-isolated DMX splitter

### Cable Test Feature cont.

#### INPUT TEST INDICATIONS

D - ON	Data present on incoming DMX line
D + ON	
D - OFF	D- signal missing or shorted to common
D + ON	
D - ON	D+ signal missing or shorted to common
D + OFF	
D - OFF	No data present on incoming DMX line
D + OFF	

via the input connection, as per the previous instructions. Once that is verified, disconnect the cable to the suspect output channel and depress the corresponding ISO OUT TEST button. If both the corresponding D- and D+ LEDs illuminate, this shows that the isolated output circuitry inside the repeater is working properly and is transmitting both DMX512 signals. If not, there is likely a problem with the output circuitry for that channel. Try using the spare transceiver chip to remedy the problem. Now reconnect the cable to the suspect output and perform the same test. If both of the D- and D+ LEDs illuminate, this shows that there are no shorts in the output cabling or connected receiving devices. If one or both of the LEDs is off or dim, a cable or device problem is indicated. NOTE: if an output TEST button is pushed when a proper input signal is not being received by the Installation Repeater, the outputs will be in their normal "idle" state (i.e. D- low level, D+ high level), therefore the D+ LED will illuminate and the D- LED will not.

### DMX512-A Compliance

The Pathway Installation repeater is compliant with DMX512-A under the non-compatible connector (NCC) provision. All ports are DMX512-A protected to 250V with self-healing circuitry.

### Indicators

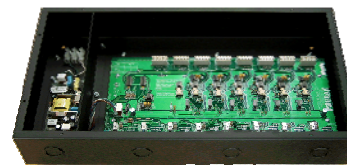
The two PWR LEDs on the Installation Repeater will illuminate when AC power is connected to the unit. There is no on/off switch.

The two DATA LEDs will illuminate and flicker rapidly to indicate that DMX data is being received.

Two TEST indicators are associated with the DMX input and each of the six outputs. Refer to the *Cable Test Feature* instructions.

### Specifications

<b>Power Supply:</b>	Universal input (90-250V, 50/60Hz), 0.2A
<b>Isolation:</b>	2500V Opto-isolation on DMX lines 4000V Mains isolation
<b>Protection:</b>	Up to 250VAC/DC on all port pins
<b>Protocols:</b>	DMX512, DMX512-A, or any EIA422 or 485 based simplex protocol
<b>Size:</b>	19 x 10 x 3in. (483 x 254 x 76 mm)



**An essential component of any DMX512 distribution system, the Installation Repeater permits star wiring installations while isolating and protecting connected equipment from harmful electrical faults. Pathway Installation Repeaters feature self-healing protection devices on all ports to prevent internal damage when severe faults of up to 250V are accidentally applied to the connected DMX cabling. To help you resolve any cable, signal or component issues fast, there are useful test functions built right into the product.**

### Operational Philosophy

To ensure trouble free operation, DMX512 standards require that DMX devices be installed in a daisy chain, with no tees, wyes or stars in the DMX wiring. However, site conditions may make star wiring desirable or even mandatory. A Pathway DMX Repeater permits star wiring by making each branch of the star function electrically as its own entity, unaffected by the other branches of the star. Additionally, opto-isolation circuitry isolates each branch to prevent ground loops or accidental damage from fault voltages on DMX lines.

# INSTALLER'S GUIDE

### DMX Wiring

- All cabling must be in a continuous run, daisy-chained, no "Tees" allowed
- "Stars" are permitted only in conjunction with a repeater
- Cable shield may be earth-grounded at one end only, preferably at the control console
- Maximum length of one cable segment is 1,800 ft. (550m)
- Receiving devices have male connectors, transmitters have female
- The last DMX device on the line must be terminated with a termination switch or resistor with a value of 100 to 120 ohms between pins 2 and 3.
- 5 pin XLR type DMX connectors are standard:
  - Pin 1: Common
  - Pin 2: Data (-)
  - Pin 3: Data (+)
  - Pin 4: Optional Data (-)
  - Pin 5: Optional Data (+)
- Cable must be Belden 9842 (120Ω), 9829, 9729 (100Ω), ISO/IEC 11801 (Cat5) or equivalent
- A maximum of 32 DMX receiving devices can be present on a single DMX line

### Mounting

Installation Repeaters are designed for indoor use, in a dry location. Mount the Installation Repeater with appropriate fasteners to the wall. Run conduit into the box through the knockouts provided, ensuring that line voltage wiring is kept inside the barriered power supply section.

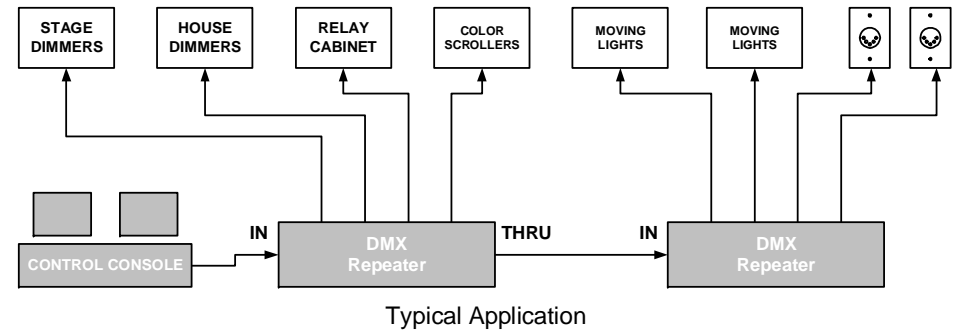
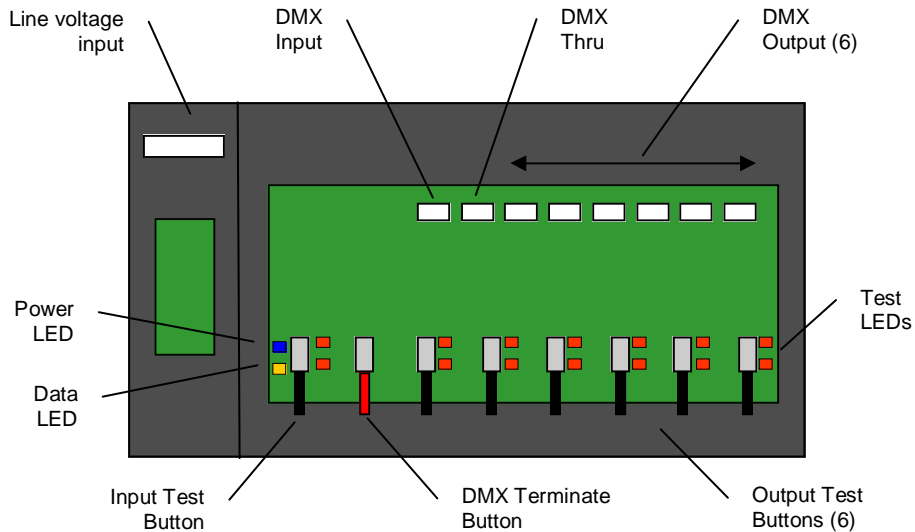


The Only Sure Thing In Show Business  
www.pathwayconnect.com



## 4802 Installation Repeater

6-way opto-isolated DMX splitter



### WARNING!



**All DMX input/output ports must only be connected to low-voltage data lines. Do not connect high voltage sources to these connectors.**

### Connections

Typically, Pathway Installation Repeaters are wired in the following configuration:

- **DMX Input** is connected to the control console DMX output
- **DMX Outputs** (ISO Out A,B,C,D,E, & F) are connected to the remote DMX devices or receptacles for the equipment receiving the console signal. These may be dimmers, scrollers or moving lights, for example.
- **DMX Thru** passes the console signal to additional DMX Repeaters or other similar devices, and would in turn be connected to DMX Input on the next unit in line.
- **Power.** With the power off, make the appropriate connections to Line, Neutral and Ground.

### Recommended Wiring Practice

Keep all DMX cabling away from high voltage/power cables to maintain data integrity. Cable must be Belden 9842 (120  $\Omega$ ), 9829, 9729 (100 $\Omega$ ), ISO/IEC 11801 (Cat5) or equivalent

### Screw Terminal Connections

2-piece screw terminal connectors are provided. The pin arrangement of these connectors is the same as that of 5 pin XLR connectors.

### CAUTION!



**Always disconnect power before removing the cover. Installation Repeaters are designed to work on voltages from 90-250 volts AC. They will automatically sense the incoming voltage and adjust accordingly.**



### DMX Termination

If only one Installation Repeater is used, and nothing is connected to the DMX THRU terminal block, the red termination switch must be set to the 'in' position (ON) to terminate the incoming DMX signal from the console. If several Installation Repeaters are connected together using the DMX THRU connector on each unit, only the last Installation Repeater in the chain is terminated, all the others are not terminated (switch in the 'out' position).

### Cable Test Feature

Pathway 4802 Installation Repeaters provide installers with the unique ability to test the integrity of the incoming and outgoing DMX signal and cabling. This feature makes troubleshooting most DMX communication problems easy and can be accomplished right at the repeater, without any additional test gear. "TEST" pushbuttons are provided for the DMX input and each of the six outputs.

The DMX signal runs on two separate data lines: D- (XLR pin 2) and D+ (XLR pin 3). Both are referenced to signal common (XLR pin 1). For DMX512 to work reliably, the D- and D+ signals and common must be present and properly connected at both ends of the cable. Often, a system will seem to work fine most of the time with one of the three connections missing or with two wires shorted – this simply shows how fault tolerant DMX can be! But intermittent problems will usually appear at random, often at the worst possible time.

### INPUT TROUBLESHOOTING

Normally when troubleshooting a com-

### Cable Test Feature cont.

munications problem it is common practice to start with the DMX512 source (console signal). The amber DATA indicators may or may not be illuminated at this point. If they are not, first make sure that the console is on and sending a DMX signal. Then, depress the DMX INPUT test button on the repeater; this will disconnect the incoming signal from the receiver circuitry and apply it to the red D- and green D+ LEDs. Both of them should illuminate (the DATA indicators will go out). This shows that the console's DMX transmitter is capable of sending a strong enough signal to drive the two test LEDs, and that all three pins are connected. If the DATA indicators are always off and both of the D- and D+ LEDs work with the TEST button depressed, the Installation Repeater's receiver may be defective (a spare transceiver chip is located on the main circuit board, inside the unit). If either or both of the D- and D+ LEDs stay off when the TEST button is pushed, there is a problem with the console's output or the DMX cable.

**NOTE:** the TEST LEDs can also detect whether the D-/D+ wires are swapped. With a DMX signal present, set all console channel levels to zero and depress the Input TEST button. The D- LED should be brighter than D+. When all channels are set to full, D+ should be the brightest.

### OUTPUT TROUBLESHOOTING

Installation Repeater outputs should be tested in stages to determine if a problem exists in the repeater output circuitry or in a cable or device connected to that repeater channel. First, ensure that the repeater is correctly receiving DMX512 data