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Isolated DMX512 Splitter

What it does:

1. Splits the DMX512 signal into four additional wire pairs (star configuration) which is otherwise not allowed with DMX512 installations.
2. Provides electrical isolation between the four outputs and the original DMX512 wire to break ground loops and protect equipment in case of accidental power line connection.
3. Buffers the DMX512 signal, each of the four outputs can drive a full-length DMX512 cable (1000 or more feet, 512 channels, 64 or more devices, depending on the installation).
4. Provides selectable termination for the DMX512 input.
5. Isolates shorts and electrical noise to the output the problem is on (shorting one output will not stop the other 3 from working). Shorted outputs do not damage the Splitter but will cause it to use more power and generate more heat.
6. Shuts down when overheated (85C inside the Splitter), automatically turns on when it cools off.

What it does not do:

1. It does not electrically isolate the four output pairs from each other, they share a common ground with the power supply for the Splitter.
2. It does not correct timing errors in the DMX512 signal.
3. It does not change or remap any of the data in the DMX512 signal.
4. It does not support the secondary DMX512 data channel (most devices do not use this).
5. It does not work without power.

Installation

This Splitter is intended for permanent installation in a protected area and will fit inside a standard single-gang electrical outlet box. The splitter does not generate much heat in normal operation, but overheating may occur if installed in a very hot location (such as directly over a luminary), a wall packed with insulation and no air flow, and/or shorts for an extended time on the outputs. In warm locations a metal box and cover plate will often provide better cooling as will having one or more open wire holes in the box. We include 3M UR Connectors for wire connections, you may also connect the wires directly to punch-down terminals or solder them (most wire nuts will not work on 24 gauge wire). Unused outputs should be taped or capped so they do not short.

Connections

DMX512 connections will normally use a 5 pin XLR connector to mate to lighting equipment using RS-485 certified cable. CAT5 cable (UTP) is allowed per the DMX512 specification, but only in permanent installations and the use of RJ-45 connectors is discouraged. Grounded metal conduit or shielded cable (STP) is recommended in electrically noisy environments. Do NOT run DMX512 in the same conduit as AC power. Follow all safety rules for low voltage and AC power wiring.

XLR Pin	RJ-45 Pin	CAT5 wire	Function
1	7	white/brown	Data Link Common (signal ground)
1	8	brown	Data Link Common (signal ground)
2	2	orange	Data 1-
3	1	white/orange	Data 1+
4	6	green	(not used by splitter, leave open)
5	3	white/green	(not used by splitter, leave open)
-	4	blue	Not assigned (sometimes used for power)
-	5	white/blue	Not assigned (sometimes used for power)

The wire colors on the splitter do not match CAT5 colors. The above is the ANSI specified connections for DMX512, not all manufacturers follow this. Always check the instructions that came with your equipment.

Align the splitter so that the front label reads correctly. On the right you will see three wires marked GND, IN+, and IN-. These are connected to the DMX512 signal wires that come from the controller. Make sure you get the +/- wires connected correctly. If the splitter is the last device on the wire, slide the TERMINATION switch to ON, otherwise make sure it is OFF (see the DMX512 Recommended Practices book for details on running wires and termination).

On the top left you will see red and green wires marked “9-30VDC” and GND. The red wire is connected to the positive side of a local DC power supply (if you are using low voltage DC luminaries, you may use the same power supply as the luminaries). The green wire is connected to the DC ground of the power supply as well as the Data Link Common for the four DMX512 output pairs. The Splitter normally uses 1 Watt or less of DC power, but may draw up to 6W if the outputs are shorted.

Below this you will see four pairs of wires marked 1+, 1-, 2+, 2-, 3+, 3-, 4+, 4-. These are the Data outputs from the splitter. Make sure you get the +/- wires connected correctly and do not mix pairs (do not use 1+ and 2- as a pair). Cap or tape any unused outputs to prevent shorts.

When you turn on the power, the red POWER LED will light on the right-hand side of the box (overheating or loss of power will cause this to go out). If the DMX512 controller is connected and turned on but the output is paused (“P 0” command for our 4201 Converter/Controller) the green ACTIVITY LED should be out. When DMX512 data is flowing, the green ACTIVITY LED should be lit or blinking. If the DMX512 controller is powered off or disconnected, the green LED will probably be off, but that is not assured since the input wires will be floating.