What is DMX? DMX Basics and Notes

DMX is a communication protocol (set of rules) for lighting devices. DMX (Digital Multiplex) can remotely control lighting dimmers, lighting fixtures, fog machines, and any other device that can accept DMX control. A DMX signal only travels in one direction. This means the signal is "unidirectional." In the DMX world, there are 512 individual channels (addresses). The DMX protocol is also referred to as DMX512. These 512 channels are known as a "Universe" and have data values from 0-255. Each channel can be programmed to control different functions such as brightness, on and off, strobing effects, light rotation, and colors. Once the addresses are programmed, the DMX controller can transmit the information to trigger the "Fixtures or Devices."

DMX uses a balanced three-wire cable that must be shielded to guard against EMI (Electromagnetic Interference) and RFI (Radio Frequency Interference). Two of the wires carry data signals, and the third wire is used as a common. A DMX cable can use either 3 or 5-pin XLR connections. Current manufacturers are using a 3-pin XLR, but the older DMX units and devices used 5-pin XLRs (so you may come across older 5-pin units still in use). There are adapters and splitters to change from 3-pin to 5-pin or 5-pin to 3-pin. DMX transmitting devices (outputs) should be "Female" XLR connections and DMX inputs should be "Male" XLR connections.

HOSA #XLR3M – XLR3F
DMX XLR Cable

HOSA #XLR5M – XLR5F
DMX XLR Cable

HOSA #XLR3M – XLR5F
Adapter

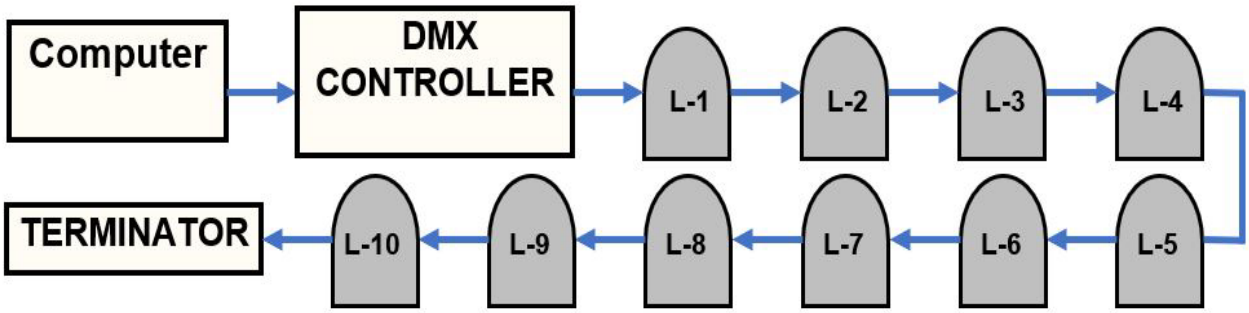
HOSA #XLR5M – XLR3F
Adapter

Wiring of a 3 Pin DMX – XLR cable:
Pin 1 – Common / Ground / Shield
Pin 2 – Data (Negative Signal)
Pin 3 – Data (Positive Signal)

Wiring of a 5 Pin DMX – XLR cable:
Pin 1 – Common / Ground / Shield
Pin 2 – Data (Negative Signal)
Pin 3 – Data (Positive Signal)

Pin 4 and 5 – Not used. The plan was to have these pins available for future upgrades, but this never materialized.

Typical DMX Lighting Set Up – Basic Example



This typical DMX Lighting example shows a Computer, DMX Controller, 10 Lighting Fixtures, and an "End of the Line Terminator." A Computer (and sometimes the DMX controller) can be used for programming. The computer has DMX software installed and is commonly used as a DMX / Lighting Controller. Ten lighting fixtures will need to be appropriately addressed via their "dip switches." Each lighting fixture will have an Input and Output DMX connection. The lighting fixtures are "daisy chained," as shown in the diagram above. The DMX Terminator is connected to the output of the last lighting fixture (especially if the cable is over 600 feet long).

DMX cables can be run up to 4900 feet (1500 meters). Once all of the lighting fixtures/devices are addressed, programmed, and connected, a termination device must be used if the cable is over 600 feet long. A good recommended practice would be to use DMX terminators on every lighting setup – not just with longer cable runs. The DMX "terminator" will plug into the final device and is needed to avoid reflections and ringing that can interfere with DMX signals.

HOSA #XLR3M

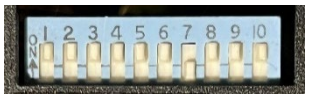
DMX Terminator

How to Make your own DMX Terminator - Video Clip!

Setting up DMX Addresses – Basic Notes

As stated previously, there are 512 channels within a single DMX Universe. Start by setting your first lighting fixture address to "001," then the second lighting fixture on the next available DMX channel (002), and so on (until you get to the last lighting fixture/device you are using). Addresses are programmed using "Dip Switches" or "Digitally" using the LED panel located on the fixture. LED panels are easy to program, but dip switches use "Binary" code (not so easy to program). Both will require you to read the device's manual.

Ex: Dip Switches, mainly on older Fixtures (Varies w/ Vendor)



Typical LED display on the back of a Lighting Fixture (very common).

The subject of DMX and Lighting control can get a lot deeper than what we have presented in this booklet! We encourage the reader to do further research if interested in pursuing additional knowledge of this subject matter.

DMX Tester Model DMX35T

The Whirlwind DMX tester will check both 3-Pin and 5-Pin cables (and a combination of the two) and tests the "presence" of a DMX Data signal when it's connected to an active DMX control line. The 3-Pin XLR jacks can also test microphone cables for opens, shorts, and reversed connections—a must-have tester for lighting and audio technicians.

Whirlwind DMX35T

[Video Clip!]

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