



Hardware Specificaiton for DMX application:

A DMX output connector is always female, and a DMX input connector is always male. Some manufacturers use 3-pin XLR connectors, eliminating Pins 4 and 5. The DMX512 signal is transmitted via the industry standard interface EIA485, more familiarly known as RS485. RS485 is a balanced connection. The standard wiring is a twisted-pair, shielded, low-capacitance data cable designed for RS-485 -- never use standard microphone cable. Recommended cables are [Belden 8227](#), Belden 9156, Belden 43906 (European DMX Cable Version) or can be used OVERLED DMX cable this is compliant with the standard.

Data is transmitted in serial format asynchronously with the transmission speed of 250 Kbps. Voltage on both pins ("+" and "-") should be between +5 volts and 0 volts (measured to ground). EIA485 defines that the signal voltage between the two wires should be at least 200 millivolts. Higher voltage on the "+" pin and lower voltage on the "-" pin results in a digital "1". Higher voltage on the "-" pin and lower voltage on the "+" pin results in a digital "0". The ground wire is only a reference point and can be used as shielding.

DMX devices such as lights are connected in a daisy-chain MODE: from the controller to light #1, to light #2, to light #3 and so forth. According to the standard, a DMX512 controller can only drive up to 32 loads (e.g., one light = one load) and cable length must be less than 100m.

To control additional loads (lights), a RDM/DMX splitter(DDS378) needed. The device in the daisy-chain must be terminated by Terminating plugs containing a 120 ohm resistor soldered across pins 2 and 3. The terminator functions is for attenuating signal noise which would otherwise be reflected back into the cable and degrade the data.

What is DMX512?

DMX512 is a standard that describes a method of digital data transmission between controllers and lighting equipment and accessories. It covers electrical characteristics (based on the EIA/TIA-485 standard), data format, data protocol, and connector type. This standard is intended to provide for interoperability at both communication and mechanical levels with controllers made by different manufacturers. The 1986 and 1990 versions also addressed cable requirements and premises wiring. A series of ANSI standards are being developed to address these cable issues not appearing in the ANSI version. DMX512 comes from Digital Multiplex with 512 individual pieces of information.

What is RDM?

Remote Device Management is an open standard in development. This is an enhancement to USITT DMX512 for configuration, status monitoring, and management of DMX512-based systems. This standard (ANSI/ESTA 1.20, Entertainment Technology - Remote Device Management over USITT DMX512) was developed by the ESTA Technical Standards Program and is designed for interoperability between many manufacturers. Compliant DMX512 and DMX512-A devices are completely functional when RDM is present.