

DMX for Electricians

"I don't use it. I just need to hook it up."

"**DMX**" or "**DMX512**" stands for "Digital MultipleX" is officially known as **ANSI/ESTA E1.11** and **USITT DMX512-A**. It is a digital communication standard for theatrical lighting equipment and is based on **ANSI/TIA/EIA/RS-485** networking. It has been rare outside of theaters so few installers have ever heard of it. It is becoming very popular for controlling LED lights so you may well see it again soon.

DMX is not complicated, just don't get creative.

- **NO "T" or "Y" JOINTS.** DMX is "daisy chain" wiring from one device to the next. A signal source (controller/processor of some type) starts the chain and it flows from there to each of the devices to be controlled.
- **DO NOT LEAVE LONG ENDS.** Maintain the shielding and twists in the wire as close as possible to the terminations. (about 1" is ideal)
- **SPLICES ARE BAD, WIRE NUTS ARE WORSE.** If required solder them, but best to avoid them completely.
- Wire must be rated for **RS-485**. Belden 9729, 9829, 9842, Cat 5/6 or equivalents.
- **Solid vs Stranded** is a key factor. If the equipment has screw terminals use stranded.
- **SHEILDING** is required. **UTP** cable is OK inside metal conduit. When in doubt use **STP!**
- **RJ45** connectors may be used with Cat5 cable, for permanent wiring only. Note that Phillips Color Kinetics uses a different wiring pattern than is listed here.
- **XLR** connectors both 3 & 5 pins are used to connect to portable cabling. Male jacks are inputs, Female are outputs. 3 pin connectors just don't use the second data pair.
- **TERMINATION** resistors are standard; check for switches on the last piece of equipment.
- **SHIELD / COMMON IS NOT GROUND.** Connect commons together but isolate from ground. This goes along with doing tight terminations; long bare shielding can contact ground and pick up noise.

PIN OUTS

Terminal #	RS-485 (Belden 9729)	ICEA color code	Wire #	CAT5/6 (TIA/EIA-568B)	CAT5 Pair	DMX Function
Pin 1	shield	Shield	7	white/brown	Pair 4	Data1 Common
			8	brown	Pair 4	Data2 Common
Pin 2	black	black	2	orange	Pair 2	Data1 -
Pin 3	red	white	1	white/orange	Pair 2	Data1 +
Pin 4	black	red	6	green	Pair 3	Data2 – (optional)
Pin 5	white	green	3	white/green	Pair 3	Data2 + (optional)
			4	Blue	Pair 1	unused cap off
			5	white/blue	Pair 1	

- Prevent the accidental connection to non-DMX equipment.
- The CAT5/6 pin-outs above are for DMX cabling. **Do not connect to ethernet!**