



White Paper 14: How Much Metal is Used in a Cinch System? Just Enough

How Much Steel is Used in a Cinch System? Very Little.

A Cinch System uses almost no steel. There are no steel conduits, pipe or MX armored cable to run a Cinch power circuit. That's because all of our circuits are class 2 low voltage. Virtually no jurisdictions require metal circuit pathways for low voltage wires.

Our systems may have a handful of metal (or plastic) junction boxes to house wiring terminations, but that's a pittance compared with a traditional AC system.

Traditional AC lighting circuits require metal conduit for every inch of wiring. That's a lot of steel and installation labor.

A typical AC lighting system uses EMC (Electrical Metal Conduit) or EMT (Electrical Metal Tubing) with numerous connectors, fittings, elbows and couplers. Without considering any of the added connectors and elbows, a typical 200' circuit using $\frac{3}{4}$ " RMC has over 100 pounds of steel. And $\frac{3}{4}$ " EMT circuit requires nearly 300 pounds of steel!

Metal conduit material costs run \$2-4 per foot. This means that the metal conduit parts cost at least \$200-400+ per circuit. The labor alone for that circuit will cost \$500-2000 each.

How Much Copper is Used in a Lighting Circuit? Just Enough

A Cinch System requires just enough metal to operate the system at 100 watts per circuit. For power runs 200 feet or shorter, the system requires a pair of 18-gauge wires. The means that the system uses just enough copper to carry electrons to the lights at the end of the run.

Let's examine a typical school classroom with 16 high power 2x4 lights. Assume each light produces 6500 lumens at 45 watts. That means we can power two lights on a branch circuit; it also means that we'll need 8 pairs of

18/2 going in to the room from the electrical closet. Using an 8 pair 18/2 cable from one of our recommended cable suppliers, the installer can pull all of these wires in a single run.

Assuming an average length of 200', this room requires 2lbs of copper per circuit. These high-power lights require 8 circuits.

Summary of Copper Required Per Room with a 200' Cable Run

- 18/2 (no ground): 1.97 pounds of copper for 200 feet. But 8 circuits=15.76 pounds of copper per room.
- 12/2 with ground: 11.86 pounds of copper for 200 feet.
- 10/2 with ground: 18.86 pounds of copper for 200 feet.
- 23 AWG Ethernet (8 conductors): 2.54 pounds of copper for 200 feet. If using PoE for this system, we also need 8 circuits=20.32 pounds of copper.
- Note that the AC system does not include the copper wire used for an overlay controls system (let's assume the system is wireless).

With Cinch, There's No Stranded Capacity

There is very little stranded copper capacity in a Cinch system—not to be confused with the label: “stranded” (multiwire) copper cables.

Cinch provides just enough circuits and copper to match the loads. In a traditional AC system, there can be massive amounts of overcapacity—sometimes referred to as stranded capacity. Stranded capacity represents excess copper that sits on the wrong circuits in the wrong places. Think about all the circuits used to power 110V AC receptacles scattered throughout a building. According to industry experts, nearly 90% of this provisioned copper sits idle with virtually no current running through it. Daytime use is anywhere from 30-50% of rated load but this figure drops to 10-20% at night. Much of that is also probably attributed to unused devices that are still plugged in but never or seldom used.

Modern office buildings are loaded with stranded copper capacity. When copper was cheap and plentiful, there was almost no penalty to add lots of large copper circuits.

Summary

A Cinch System uses virtually no steel, no metal conduit and just the right amount of copper. For customers this means there's significant cost savings for initial installation.

Are you ready to save money? Contact us today. Learn more at Cinchiot.com