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## **What pin material should I use for my power supply connector pins?**

Open frame power supply manufacturers typically use a supplier like Molex or JST for their input and output connectors. These connectors are low cost, readily available, reliable and easy to use. In addition, it makes it easier for the customer to second source a power supply, if required, when some standardization exists.

Many power supply manufacturers will specify the mating connector series name in their product documentation, but will often leave it up to the user to determine the actual part numbers. This usually provokes a call to TDK-Lambda's Technical Support for a recommendation.

Why do we do this? Let's take the industry standard low power 2x4" single output power supply. The Molex KK® 09-50-3041 housing is widely specified as the output mating connector. Made of nylon, it has a friction lock and 4 circuits; two for the + output & two for the – output.

When looking for the mating pin, one has to be a little more careful. The suggested pin for the connector is available in 2 materials; brass and phosphor bronze.

Brass is a common material for contacts and pins. It is low cost, has good conductivity and generally dependable in a benign, low temperature environment like an office.

Phosphor bronze should be considered for more challenging environments. At higher temperatures, brass contacts can lose their spring properties unlike phosphor bronze. If there is some vibration, this can cause reliability problems. Brass does have better conductivity, so check current rating capability.

Phosphor bronze is more expensive, 13c compared to 5c for brass (1000 piece pricing from a distributor). For a 2x4" power supply that could add \$0.56 to the bill of material cost. The user will have to consider the environment and desired field life.

As a note, on higher power 2x4" open frame power supplies (~100W), there are alternatives to the single point of contact KK style pins like those used with Molex's 09-50-1041 housing (SPOX™ series). These have multiple points of contact for lower resistance.

As Molex advised "Different terminals have different performance and different characteristics".

Power guy