



UPT Series 12 Pin

BACKGROUND

Industrial equipment requires dependable electrical connections that can withstand demanding operating environments while helping reduce system weight and simplify installation and service. Applications such as industrial machinery, factory automation, material handling equipment, heavy equipment, HVAC, commercial equipment and electrified systems can benefit from a compact, ruggedized connector solution designed for reliable field performance.

PROBLEM

Equipment operating in industrial environments may be exposed to vibration, moisture, repeated mating and changing temperatures. Designers need an interconnect solution that provides secure electrical performance while maintaining a lightweight, cost-effective design suitable for a variety of industrial applications. For 12-position applications, the connector must also provide the required current and voltage capability while maintaining environmental protection and durability throughout the service life of the equipment.

AIO SOLUTION

Amphenol Industrial's UPT 14-12 configuration provides a lightweight, ruggedized interconnect solution using a plastic shell, metal coupling and crimp contacts. The specific connector pair covered by this application note consists of the UPT06PG-14-12P(LC) plug and UPT00SE-14-12S(SR)(LC) receptacle, each configured with 12 size 16 contacts.



UPT Connector Series

BACKGROUND

Producing a metal based, Mil-Spec, connector can be complex and cost prohibitive for many modern industrial applications. The 26482 Series I (PT Series) product line has been around for over fifty years and is used in, not only, military markets but has seen a lot of cross-over to industrial markets. Two of the most common insert arrangement patterns within industrial markets have been the 24-32 and 24-48. With this in mind Amphenol Industrial developed a new connector based on the 26482 Series I with an initial focus on these two arrangements. Known as the UPT Series, this is an expansion of the PT product line, using a plastic body and backshell. Widely used in industrial diagnostics, automobile, telecommunications, medical and military markets.

PROBLEM

When manufacturing Amphenol's PT series, the shell material calls for an aluminum alloy and is produced by machining or die-casting. This results in a higher cost, machined contacts are also the norm which is more expensive than a stamped and formed equivalent. The assembly of the connector requires the insert to be pressed into the shell. In doing so a lot of force must be used, along with the assistance of lubricating oil, all of which takes more time and adds to the cost of production.

AIO SOLUTION

Amphenol Industrial's UPT Series was designed to produce the most cost sensitive, rugged connector possible. Starting with a shell / backshell material of Thermoplastic PA66 to eliminate any need for metals or machining. Next was the issue of a machined contact which has been addressed with a stamped and formed alternative using phosphor bronze, C5191. To bring everything together a clip retention type insert was created to eliminate the lubrication and press fitting of the insert assembly into the shell. This insert assembly also features a three tine system to retain the contacts which can easily be inserted by hand and released by an extraction tool making repair work a breeze. All of these features drive out cost and still leave a connector that can survive and thrive in harsh environments.

