

KEY CONSIDERATIONS

FOR DESIGNING SPACE WORTHY ELECTRICAL CONNECTORS



From extreme temperatures, hot and cold, to pressure bordering on a vacuum, equipment used in space has a lot to deal with.

Furthermore, the majority of equipment used in space is completely inaccessible for maintenance, so, if something breaks or disconnects, it can put the entire mission at risk.

Therefore, all electrical connectors used in space must be robust and reliable, designed specifically to withstand the unique challenges of operating in space.

OUTGASSING

Outgassing is a major concern for space grade connectors. Materials like elastomers and plastics can slowly release volatile organic compounds (VOCs), resulting in contamination that can negatively impact system performance. Furthermore, it can cause condensation to build up on surfaces such as sensors and camera lenses, harming results obtained.

To avoid this, VOCs must be extracted prior to launch. This involves baking connectors at an elevated temperature in a vacuum-sealed oven. After this process is complete, the connectors are tested to verify that they meet the strict requirements of space applications.

RESIDUAL MAGNETISM

Residual magnetism can interfere with the equipment performance and cause false readings, which can potentially be catastrophic. Therefore, space grade connectors must meet requirements involving residual magnetism.

Metallic connectors constructed specifically with low residual magnetism include the Positronic Space D-Subs. These conform to contact specifications outlined by NASA, as well as MIL-DTL-24308 class M specifications for D-Subs, and NASA-RP-1124 outgassing standard tests.

WHEN DESIGN MATTERS, PEI-GENESIS DELIVERS

Space grade connectors and cables must meet some of the most stringent requirements for critical characteristics such as connector outgassing, residual magnetism, EMI-RFI shielding, ability to seal out the environment, compact size and, most of all, reliable performance. Here, Positronic, Cinch Trompeter, SV Microwave and Times Microwave are excellent options.

PEI-Genesis provides solutions to meet space qualified connector design needs. Its manufacturing facilities have state-of-the-art equipment, allowing it to successfully outgas a connector in a matter of hours, rather than weeks. The requirements for space grade connectors are critical, along with having a trusted partner so performance is always guaranteed.

