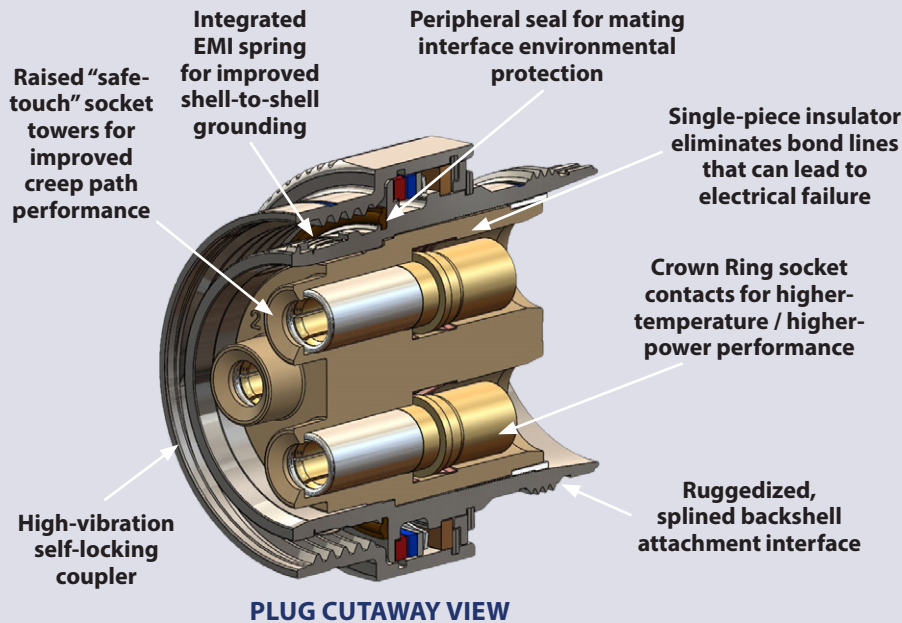


Key performance attributes for Glenair Signature PowerLoad™ connectors, Crown Ring contacts, and TurboFlex® cable

INTRODUCTION

POWERLOAD™: KEY CONNECTOR AND CONTACT DESIGN FEATURES



GLENAIR SIGNATURE CROWN RING CONTACTS



- Crimp, bus bar, and lug wire termination
- Precision-machined high conductivity copper alloy
- Up to 60% lower contact resistance than equivalent AS39029 contacts
- Higher operating temperature resistance compared to other specialized high-power contacts
- Gold-plated for enhanced high-vibration durability

TURBOFLEX® ULTRA FLEXIBLE / RUGGED POWER CABLES WITH DURALECTRIC OR FEP JACKETING

TurboFlex, Glenair high-flexibility power cabling has been optimized for use with PowerLoad connectors, and is supplied with either industry-standard FEP or Glenair signature Duralectric jacketing material, which is optimized for fluid immersion, caustic chemical exposure, temperature extremes, and UV radiation. Both materials are available in a broad range of colors including safety orange.



Available with cable gauge selections from 8 AWG to 4/0, to provide suitable margins for DWV, frequency derating, and peak-load performance.

Abrasion Resistance	Good
Wear Resistance	Good
Flame Resistance	Excellent
Sunlight Resistance	Excellent
Flex Resistance	Excellent

TURBOFLEX® WITH DURALECTRIC™ JACKETING: ENVIRONMENTAL PERFORMANCE

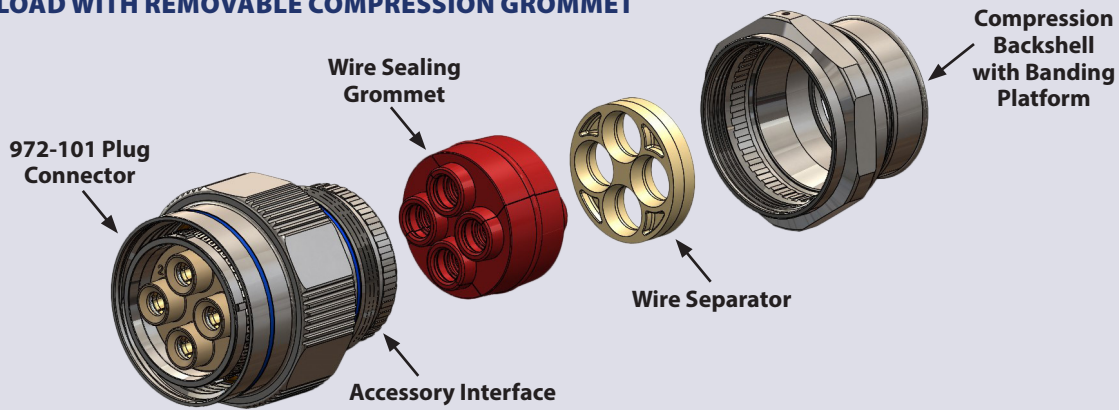
Temperature rating: -60°C to 260°C
 Halogen free per IEC 60614-1
 Accelerated weathering and simulated solar radiation at ground level per IEC 60068-2-5; 56 Days exposure, suitable for greater than 50 years of service in direct sunlight
 Flame resistant per IEC 60614-1
 Flame resistant per UL 1685, section 12 (FT4/IEEE120), vertical-tray fire-propagation and smoke release test
 Flame resistant per FAR 25.853 (A) amendment 25-116, appendix Fpart I (A) (1) (i), 60 second vertical burn test
 Limiting oxygen index of 45 per ISO 4589-2:1999
 Low smoke per NES 711, smoke density of 11.75
 Smoke density class F1 per NF F 16-101 IAW DIN EN 60695-2-11:2011

Low smoke toxicity per NES 713, tested value of 1.9
 Fungus rating of 0 per MIL-STD-810g method 508.5, Does not support fungal growth
 ASTM D624, die B tear strength, 150 pounds per inch minimum on jacket material
 Low outgassing per ASTM e595 after post curing, TML .06%, CVCM .006%, WVR .02%
 Resistant to fluids per MIL-STD-810F, method 504 JP-8 per MIL-DTL-83133 (NATO type 34)
 MIL-H-5606 hydraulic fluid
 MIL-PRF-23699 lubricating oil
 MIL-C-85570 cleaner
 TT-I-735 Isopropyl alcohol
 AMS 1432 potassium acetate deicing/anti-icing fluid
 MIL-C-87252 coolant
 Amerex AFF fire extinguishing foam

Connector and contact exploded views and performance overview

INTRODUCTION

POWERLOAD WITH REMOVABLE COMPRESSION GROMMET



High power capability

- Superior current carrying capacity
- 100% DWV tested at 5,000 VAC (all arrangements)
- Single-piece insulator eliminates internal bond-lines
- Extended creepage distances with tower/recess interface design

230°C max. operating temperature (stainless steel)

- High-temperature PEEK thermoplastic insulators
- High-temperature silicone rubber for all seals
- Stainless Steel EMI spring provides excellent EMI shielding and shell-to-shell grounding at elevated temperatures

High-temperature Crown Ring contact technology

- Body is precision-machined from high conductivity copper alloy
- Up to 60% lower contact resistance than equivalent AS39029 contacts (normalized, less wire)
- Outstanding conductivity up to 260°C
- Gold plated for enhanced durability in high-vibration applications

Patented, removable wire sealing grommet (US Patent 9356387)

- Provides superior sealing on all wire, including tape-wrapped wire
- Allows for easy contact installation and removal
- Can also be used with extrusion insulated wire
- Connector fully sealed from moisture in submersed condition (altitude immersion)

Heavy-duty accessory interface

- Spline design ensures proper alignment of backshell during assembly
- Robust interface handles weight of large-gauge heavy wire

HIGH-TEMPERATURE TOLERANT CROWN RING CONTACTS



Glenair Signature Crown Ring contact series

provides reduced contact resistance, superior conductivity, and higher temperature-tolerance than conventional AS39029 contacts and specialized high-power contacts from other manufacturers

- Maximum operating temperature 260°C
- Superior conductivity performance compared to beryllium copper contacts, across full temperature range
- Up to 60% lower contact resistance than equivalent AS39029 contacts (normalized, less wire)
- Contact bodies made from high conductivity copper alloy (approximately 95% IACS)
- Stainless steel Crown Ring
 - Provides socket forces without stress relaxation at high temperatures
 - Moves socket spring function from socket body to ring, allowing use of high-conductivity copper
- Gold over nickel plating
 - Thicker plating than industry standards for reduced contact fretting and higher temperature endurance
 - Gold over nickel is “gold standard” for high-reliability aerospace contacts
- Crimp versions use standard industry tooling, including crimp die/locator and insertion/extraction tools (2AWG Crown Ring contacts require custom tooling)

PowerLoad™ Connectors

Crown Ring high-voltage, high-current, and high-frequency contact resistance and temperature rise

INTRODUCTION

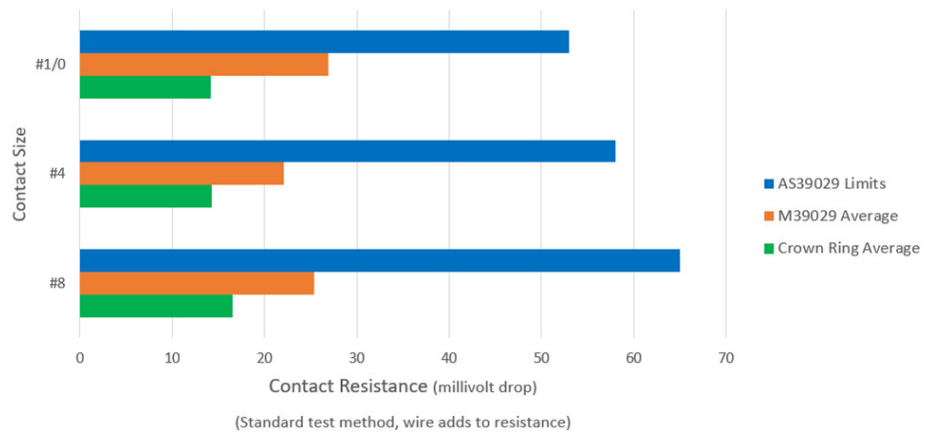
CROWN RING CONTACTS MAXIMIZE CURRENT CARRYING CAPACITY

Current carrying capacity can be defined as the maximum level of current that a connector can handle, while keeping all the components of the connector at or below their maximum operating temperatures. Temperature rise is caused by the heat generated from current flowing against the resistance of the conductive path. The two main sources of resistance in a cable system are the bulk resistance of the wire and the contact junction within a pair of connectors.

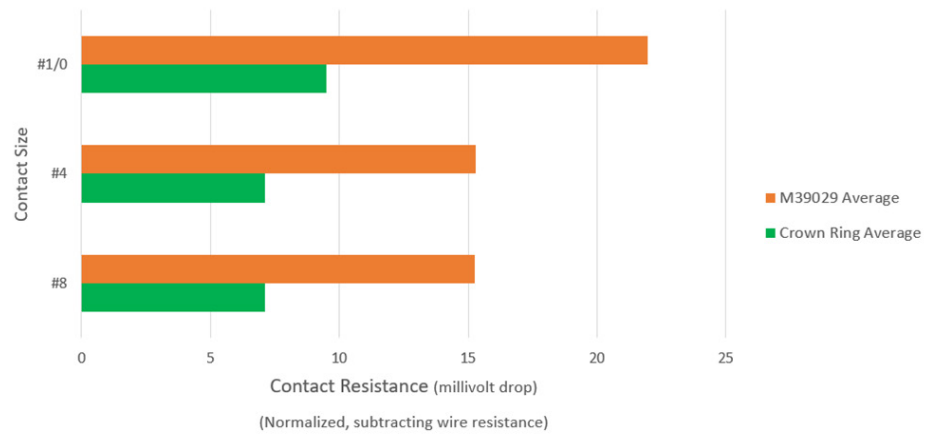
CROWN RING CONTACTS MINIMIZE CONTACT RESISTANCE

In order to keep the temperature rise to a minimum, Glenair has developed its signature Crown Ring contacts for use in PowerLoad connectors and other Glenair power products. Crown Ring contacts are designed to minimize contact resistance, with the use of high conductivity copper. The results are contact resistance values that are 1/4 of the maximum limits of AS39029 and as much as 60% less than average M39029 contacts (see graphs here). Crown Ring contacts, with extremely low contact resistance, also exhibit lower temperature rise, when compared to standard M39029 contacts and specialized high-power contacts from other manufacturers.

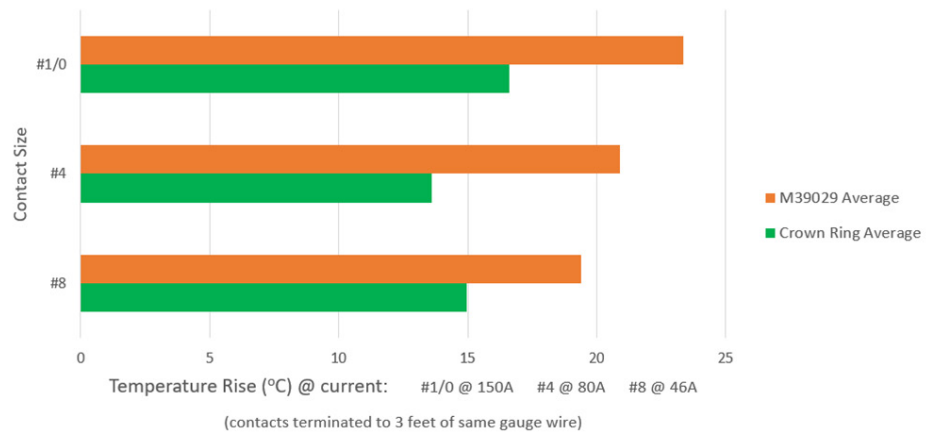
STANDARD CONTACT RESISTANCE (PER AS39029 TABLE 6)



CONTACT RESISTANCE AFTER SUBTRACTING RESISTANCE OF WIRE



TEMPERATURE RISE



High-voltage, high-current, and high-frequency current-carrying capacity: contacts and connectors

INTRODUCTION

POWERLOAD CONNECTOR MATERIALS AND DESIGN MAXIMIZE CURRENT CARRYING CAPACITY

PowerLoad connectors employ high performance, high-temperature materials throughout. This means that the interconnect system can withstand higher temperature rise than the typical Mil-Aero connector. In the case where the application can allow wire and connector temperatures to run at or near their rated temperatures (up to 230°C), PowerLoad connectors can handle even higher current levels than already afforded by the low-resistance Crown Ring contacts.

Current carrying capacity is an application-specific rating, requiring many system level inputs. Some of these inputs are: maximum ambient temperature(s), operating altitudes, physical environment (operating in enclosure or open air), cable construction/insulation and others.

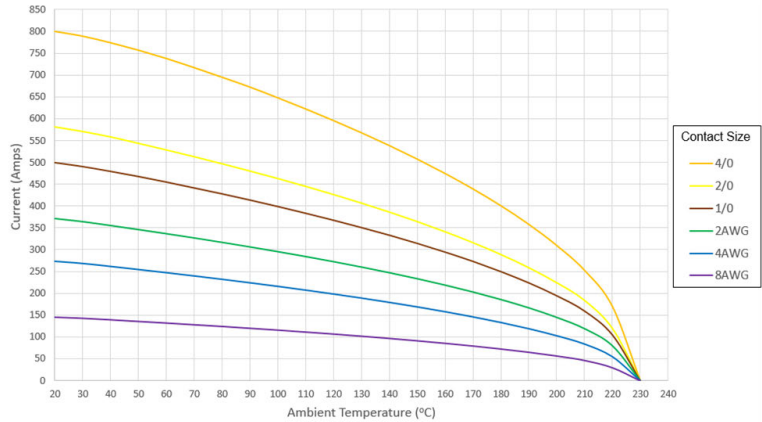
For most aerospace applications, Glenair suggests using SAE-AS50881 as a baseline for current carrying capacity for PowerLoad connectors. These baseline current levels are shown in the graphs here for single pin connectors. Glenair welcomes the opportunity to work with your team, to maximize the power delivered by PowerLoad connectors, for your specific application.

HIGH CURRENT-CARRYING CONTACTS: PARTIAL DISCHARGE, HOT-SIDE CONNECTORS, AND “SAFE-TOUCH” DESIGN

Glenair Series 972 PowerLoad connectors may be specified with pin or socket contact genders in plugs and receptacles. The raised socket contact towers serve to prevent partial discharge and arcing events. The design has the additional benefit of functioning as a “safe-touch” system on hot-side components, protecting the user when connectors are separated under load.

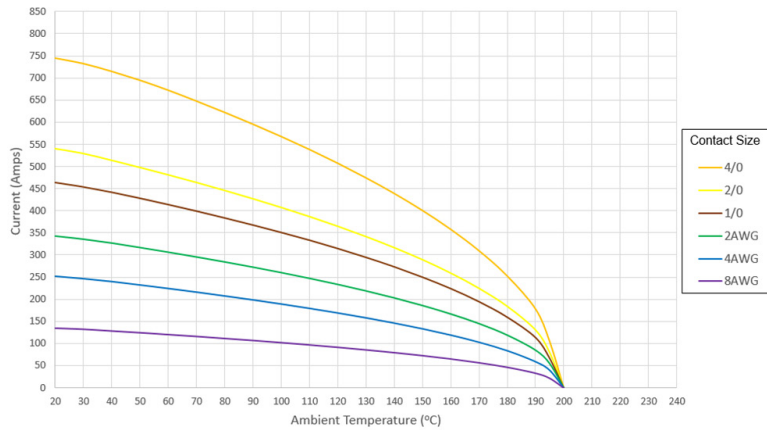


MAX CURRENT CARRYING CAPACITY VS. AMBIENT TEMPERATURE: CROWN RING CONTACTS IN 230°C RATED SST POWERLOAD CONNECTORS



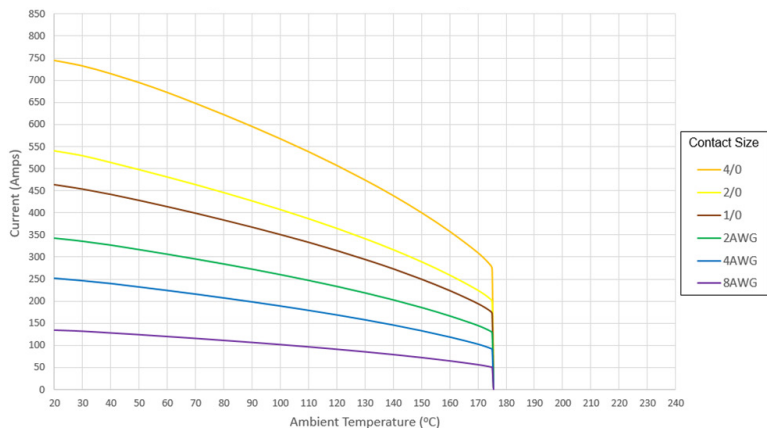
Data shown is for single contact at sea-level, in free air (ref AS50881)

MAX CURRENT CARRYING CAPACITY VS. AMBIENT TEMPERATURE: CROWN RING CONTACTS IN 200°C RATED AL POWERLOAD CONNECTORS



Data shown is for single contact at sea-level, in free air (ref AS50881)

MAX CURRENT CARRYING CAPACITY VS. AMBIENT TEMPERATURE: CROWN RING CONTACTS IN 175°C RATED AL POWERLOAD CONNECTORS



Data shown is for single contact at sea-level, in free air (ref AS50881)