Crown Ring contact resistance and temperature rise performance

INTRODUCTION

CROWN RING CONTACTS MAXIMIZE CURRENT CARRYING CAPACITY

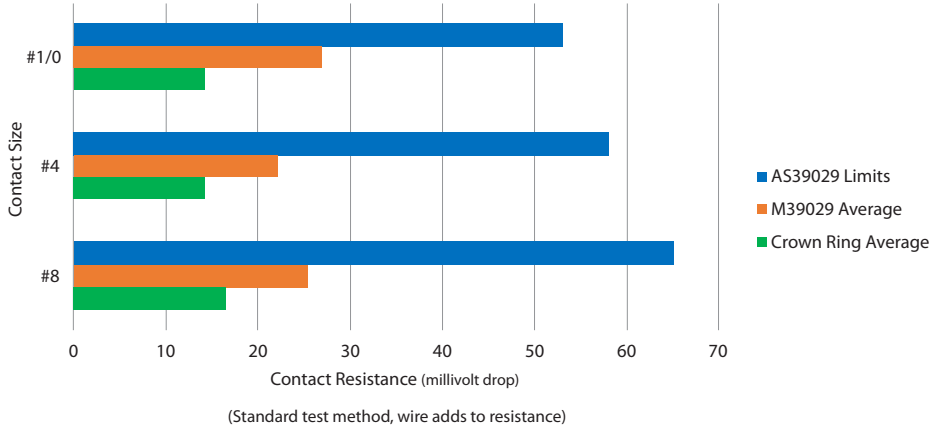
Current carrying capacity can be defined as the maximum level of current that a connector can handle, while keeping all the components of the connector at or below their temperature limits. Temperature rise is caused by the heat generated from current flowing against the resistance of the conductive 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

To keep temperature rise to a minimum, Glenair developed its signature Crown Ring contacts for use in PowerPlay connectors. Crown Ring contacts are designed to minimize contact resistance by using high conductivity copper alloy and a stainless steel ring for contact normal force. The results are contact resistance values 75% less than AS39029 required limits and as much as 60% less than average M39029 contact performance. (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.

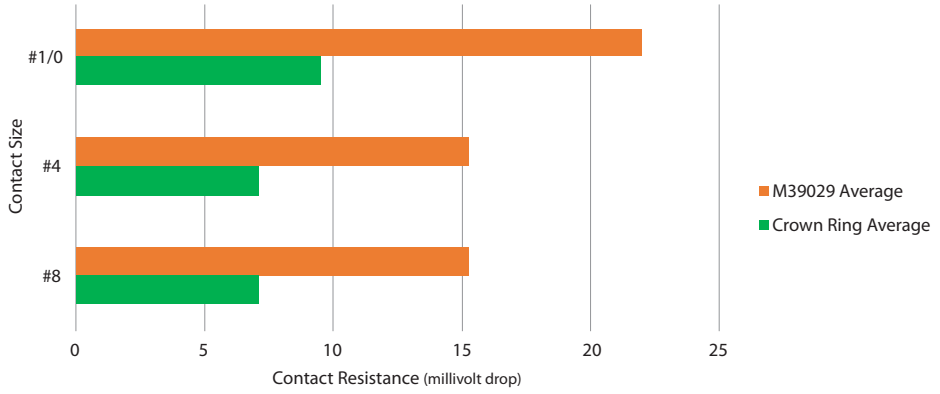
NOTE: Lower temperature rise reduces heat aging of surrounding insulation, leading to longer life and higher reliability of the connector.

STANDARD CONTACT RESISTANCE (PER AS39029 TABLE 6)



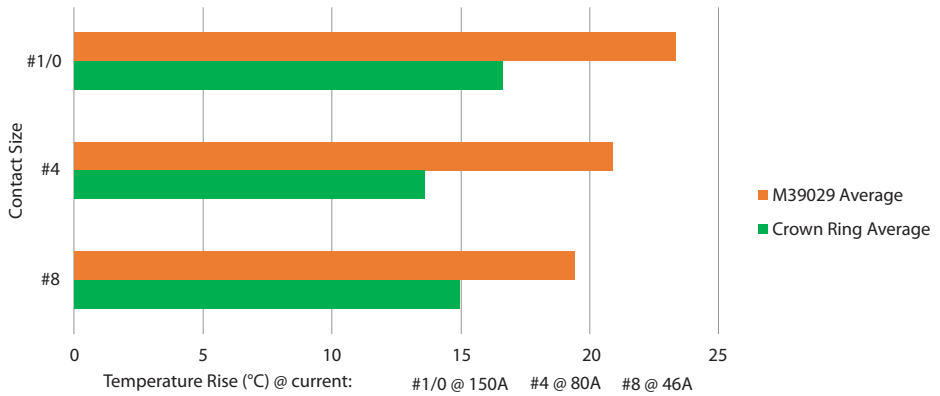
(Standard test method, wire adds to resistance)

CONTACT RESISTANCE AFTER SUBTRACTING RESISTANCE OF WIRE



(Normalized, subtracting wire resistance)

TEMPERATURE RISE



(contacts terminated to 3 feet of same gauge wire)