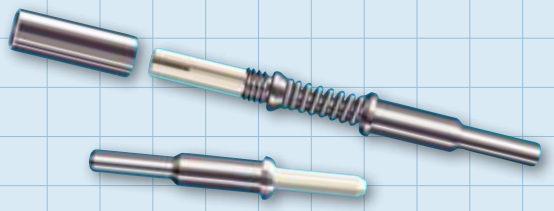
# Introduction to Crimp Contacts
# Fiber Optic Termini

## *About Fiber Optic Contacts*

Today, the use of fiber optic systems to carry digitized video, voice and data is universal. High-performance fiber optic interconnect technologies, combined with satellite and other broadcast media, enable high-speed specialized applications in avionics, robotics, weapon systems, sensors, space and other high performance environments. Highly engineered fiber optic contacts, or termini, are the key to delivering low data loss and reliable, repeatable performance in fiber optic connection systems.

## Fiber Optic Interconnect Termini

Fiber optic connectors are designed to be connected and disconnected many times without affecting the optical performance of the fiber circuit. Connectors can be thought of as transition devices which make it possible to divide fiber optic networks into interconnected subsystems and to facilitate the attachment of individual branches of the system to a transmitter, receiver or another fiber. The MIL-DTL-38999 connector is currently the most commonly specified multi-pin cylindrical interconnect in both fiber and copper conductor aerospace applications. When used to connect multiple strands of fiber simultaneously, the D38999 connector functions as a container or shell for the precision termini which perform the actual marriage of the fiber strands.



Over the past two decades there have been dramatic tolerance improvements in terminus design to ensure precise, repeatable, axial and angular alignment between pin and socket termini within the connector shell. Ferrule design, critical to the performance of the termini, has traditionally relied on a machined stainless steel ferrule incorporating a precision micro-drilled hole.

Glenair's fiber optic termini for D38999 Series III connectors are qualified to MIL-PRF-29504/4 and /5 requirements. Unique precision ceramic ferrules, with concentricity and diametric tolerances controlled within a micron (.00004 of an inch), meet the needs of high bandwidth and low allowable insertion loss applications. Glenair's ferrules are approximately 10 times more accurate than alternative designs, and have reduced insertion loss values from 1.5dB to less than .5dB. These products are ideally suited for aerospace applications.

Glenair has also manufactured and qualified fiber optic interconnection systems for other branches of the military, including those used in mission-critical ground, sea and space applications. Contact termini for these fiber optic systems incorporate many of the latest technologies, including integrated retention clips, IPC polish keying, environmental sealing and more. Our single and multichannel fiber optic termini utilize the latest materials technology and are designed for use with Glenair's family of fiber optic connectors as well as third party products. From MIL-DTL-38999 to MIL-DTL-28876, Glenair has a fiber optic terminus for virtually every high-performance fiber optic system in use today and we are on the design and standards committees creating fiber optic interconnect solutions for tomorrow's mission-critical applications.

## Fiber Optic Costs and Benefits

When evaluating the costs and benefits of moving to fiber, it is important to adopt both a short and long term view. In the short term, it is arguably less expensive to simply continue using copper cabling to meet an incremental expansion of data communication needs. This avoids the expense of adding the transmitters, converters, repeaters, connectors, termini, receivers and so on needed for integrating optical fiber into an existing electronic system. Taking the long view, investing in the conversion to fiber optics often makes good sense, especially given the performance benefits—EMI immunity, security, weight reduction, bandwidth, etc.—as well as cost of ownership factors such as reduced cable maintenance costs and ease of installation.