

# Integrated Electronic Packaging



## Integrated Aluminum Hermetic Electronic Packaging

PA&E specializes in the design, manufacture and integration of ultra-rugged, light-weight hermetic electronic packaging for use in extreme environments. Our laser-weld construction eliminates a key point of failure: solder joint fatigue.

**Turn-Key Solutions** ■ DC/RF microwave connector integration

**Reliable** ■ Laser weld construction

**Flexible Solutions** ■ Specialists in custom configurations



# Integrated Electronic Packaging

## Waveguide Windows

- Laser Weldable to Aluminum, Titanium & Iron/Nickel Alloys
- Remains Hermetic Through Extreme Thermal and Mechanical Shock
- Low-Temperature Sealing Allows for A Variety of Optical Glasses
- Antireflective Coatings Can Be Applied After Sealing
- Metallization Not Required



## RF/Microwave Flange

- Weldable to Al, Ti & Iron/Nickel Alloys
- Insulator: 7070 Corning Glass
- Finish: Nickel/Gold Plated
- Interface: IAW MIL-STD-348
- Performance: IAW MIL-PRF-3
- Impedance: 50 Ohms

## Precision Machining & Metal Finishing

- World-Class CNC Machining Capabilities
- Close Tolerance Milling, Turning & Engraving
- Wire EDM/Precision Water Jetting
- Aluminum, Titanium and Iron/Nickel Alloys
- Plating, & Painting Facilities



## Low- and Standard-Profile Nano-D

- Rectangular Connectors
- Laser Weldable to Aluminum, Titanium & Iron/Nickel Alloys
- MIL-DTL-32139 compliant
- Pin Material: Beryllium Copper 172/173
- Pin Finish: Nickel/Gold Plated
- Available with Ceramic or Glass Seals
- Dual or Single Row Configurations



## Explosively Bonded Metals

- Ferrous to Non-Ferrous Transitions
- Layers Bonded at the Atomic Level
- Eliminates Inter-Layer Galvanic Corrosion

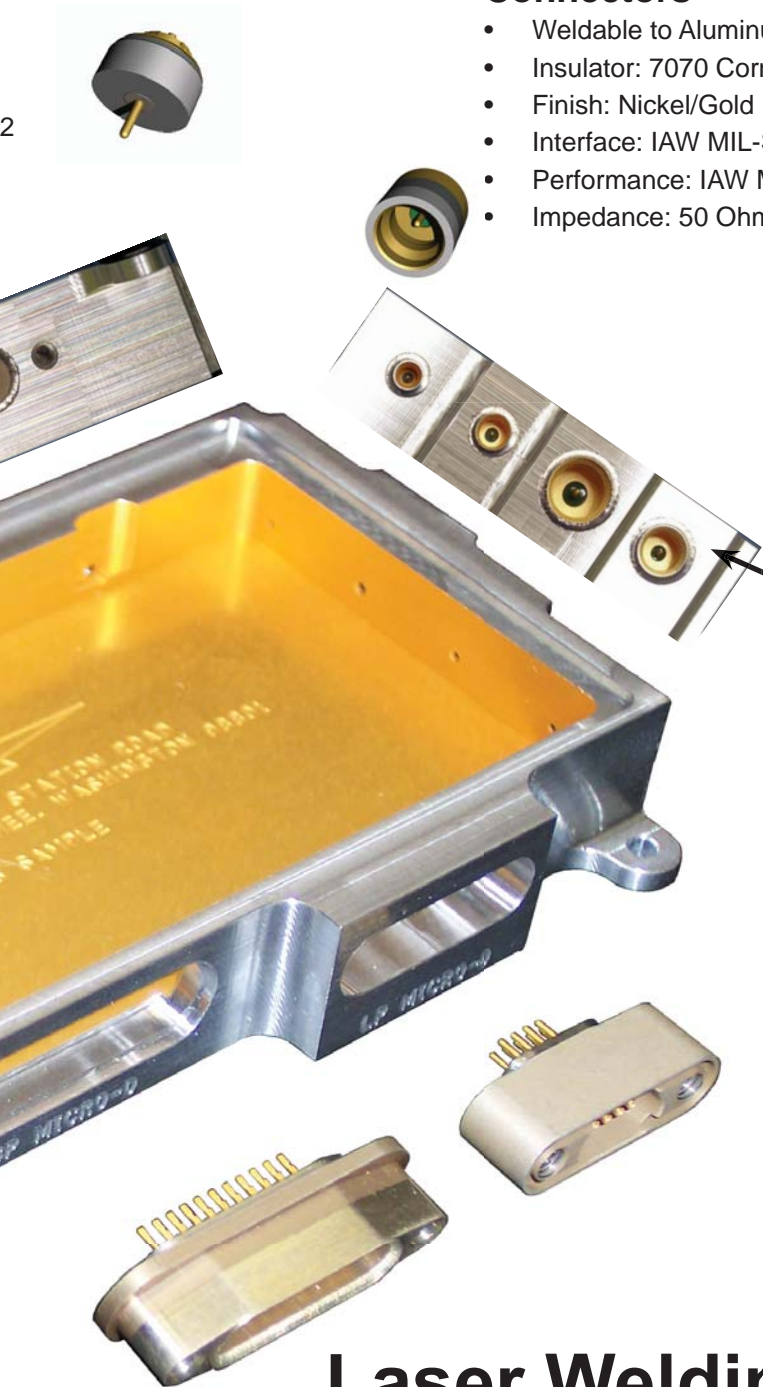
## Low Profile Micro-D Connector

- Compatible with Lightweight Materials Such as Aluminum, Titanium & Iron/Nickel Alloys
- Gold Plated Beryllium Copper Contacts
- Ø.018" contacts on a 0.050" pitch
- Manufactured to Exceed MIL-PRF 83513 Requirements

## unt Connectors

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## LWP® /LLWP® RF/Microwave Push-On Connectors

- Weldable to Aluminum, Titanium & Iron/Nickel Alloys
- Insulator: 7070 Corning Glass
- Finish: Nickel/Gold Plated
- Interface: IAW MIL-STD-348
- Performance: IAW MIL-PRF-39012
- Impedance: 50 Ohms

## SMA/SSMA RF/Microwave Thread-In Connectors

- Weldable to Aluminum, Titanium & Iron/Nickel Alloys
- Insulator: 7070 Corning Glass
- Finish: Nickel/Gold Plated
- Interface: IAW MIL-STD-348
- Performance: IAW MIL-PRF-39012
- Impedance: 50 Ohms

# Laser Welding Eliminates Solder Joint Fatigue ... Forever!



# Hermetic Solutions for Extreme Environments

## Ceramic EMI Filters



PA&E's military-qualified Filter Products Group specializes in the design and manufacture of high-reliability low-pass EMI filters. Utilizing multi-layer ceramic discoidal capacitors and ferrite inductors, PA&E's engineering staff are experts at designing EMI filtering solutions for electronic circuits operating in hostile EMI environments. In-house manufacture and testing, in accordance with MIL-PRF-28861, Class B (QPL) and PA&E class H, are standard practice.

## DC Connectors



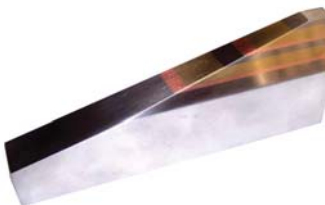
PA&E's hermetically-sealed rectangular DC connectors exceed most mil-spec requirements and are designed for use in military and commercial applications, where environmental conditions require an extremely rugged and reliable hermetic seal. The uniquely-controlled CTE characteristics, chemical bonding properties and polycrystalline structure of Kryoflex allows PA&E to manufacture these hermetic connectors with 304L stainless steel shells and gold-plated beryllium-copper contacts to maintain excellent electrical performance and environmental characteristics.

## RF/Microwave Connectors



PA&E's 50 Ohm hermetic RF/Microwave connectors are designed for use in military and commercial applications where environmental conditions require an extremely rugged and reliable hermetic seal. Low-loss Corning 7070 glass is used for dependable electrical performance. PA&E manufactures these hermetic RF connectors from a variety of compatible shell and contact materials, in both laser weld and solder-in styles, which provide excellent electrical and environmental performance characteristics.

## Bonded Metals



PA&E has been the innovative leader in the explosive metal working field for over 30 years. Our customers have access to some of the world's most exciting metal working technologies, such as: Explosive Metal Bonding, Explosive Metal Forming, Explosive Shock Hardening and Dynamic Powder Metal Compaction. These high-strain rate technologies offer unique metal working advantages that can help our customers achieve the impossible.

For further information contact us at [sales@pacaero.com](mailto:sales@pacaero.com)  
or visit our web site [www.pacaero.com](http://www.pacaero.com)

