



# SOURIAU

## Innovation by SOURIAU

Defense Market



# SOURIAU

## The Most Innovative Connector Supplier in Defense Market



*Decades of Know-how and Expertise allowed Souriau  
to rise to a unique position among the major worldwide  
Leaders of the Defense Industry.*

# Credentials in Innovation

## Lightweight Hermetic

- Hermetic Aluminum 38999 with Copper or Fiber Optic Contacts.
- D-Sub, Micro-D, Nano-D and *microComp*® connectors in aluminum shell, laser weldable housing on equipment box.



## Filtering/Lightning Protection

- Unique know-how in filtering (EMI-RFI and ESD), in lightning and electromagnetic pulse (EMP) protection.
- High performance composite lightweight filtered connectors.
- All major MIL-STD ranges (ARINC, 38999...) available with filtering and lightning protection.



## Quick Connect - Disconnect

- 38999 Rack and Panel low profile.
- 38999 Push - Pull / Quick Release.



# Credentials in Innovation

## High-Speed Network

- Creator of Ethernet Quadrax for harsh environments. A patented SOURIAU design widely used in aerospace and defense industries.
- ELIO® Fiber Optic contact, butt-joint technology. Leading technology in civil aviation aircrafts as A-380 and A-350 as well as military aircrafts.



## Power Transmission

- Full range of power connector for hybrid drive or electrical actuation, power supplies, generators, motors ...
- Up to 850A in 38999 Series III. VDE & VG 96918 qualified for 220 V - 380 V - 400 V. Power contact design enabling high-vibrations, high-temperature from 40 to 1,000A.



## Composite/Mass Saving/Miniaturization

- World leader in high-performance 38999 Series III with composite shells.
- In-house mastery of plating adhesion for outstanding shielding effectiveness and lightning protection.
- Smallest circular and rectangular connectors in the world.





# The SOURIAU R&D Leading Edge

From its origin SOURIAU's strategy is based on innovative interconnect solutions. The company growth is driven by innovation and consequently a high percentage of its revenues is allocated to R&D.

150 people in R&D, mastering capabilities in:

- Contacts for Signal & Power transmission
- Network protocols and physical layers
- Fiber Optic contacts and transceivers
- Shielding, crosstalk
- Standardization know how (Mil Spec.)
- Composite raw materials
- Simulation SW for Mechanics, Molding
- Radiation, High pressure
- Corrosion, sealing
- Hermeticity
- High temperature, fire resistant
- RoHS plating

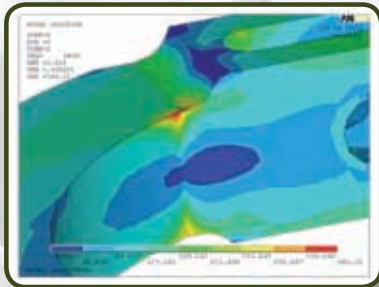
50 people in Process Engineering:

- New products, industrialization, continuous improvements, total quality

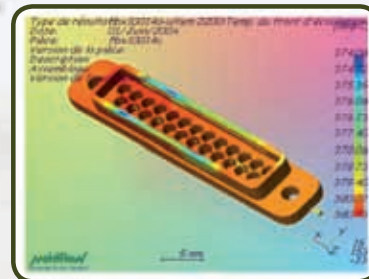
CAD and simulation tools operating in a worldwide network offer an efficient access to our Databases and unique source of know-how.

SOURIAU has over 60 years of existence in interconnect solutions and has created many original concepts such as the bayonet coupling in 1942 or the first RoHS-QPL in 2009.

SOURIAU offers more than 100.000 product configurations designed for complex, integrated aerospace and defense systems, with the ability to provide customized solutions as required.



Stress test



Thermal dissipation

## ► Examples of enhanced solutions matching technological trends:



Truly hermetic receptacle with butt joint ELIO® contacts in aluminum shell



High-power contact up to 750 Amp. in 38999 Series



Integrated electronics as TVS diodes in composite connectors for lightning protection

# Advanced Interconnection Technologies for Digital Battlefield

- ▶ **High Power Transmission**
- ▶ **High Speed Data Transmission**
- ▶ **Miniaturization**
- ▶ **Signal Protection**
- ▶ **Quick Connect-Disconnect**
- ▶ **Light Weight Hermetic**





# Advanced Interconnect Technologies for Battlefield

- ▶ Shelter
- ▶ Camp Site

- ▶ Truck & Trailer
- ▶ Distribution

## ✓ Power

Screw



38999 Power

Bayonet



847 Series

## ✓ RoHs Compliant



Black Zinc Nickel  
38999

## ✓ RJ45 Ethernet



38999 RJ45

## ✓ Full Plastic / sealed



UTS Hi Seal



# Advanced Interconnect Technologies for Manned Ground Vehicles (MGVs)

- ▶ Hybrid Drive
- ▶ Ethernet/Can Bus Network

- ▶ Weapon & Battle System
- ▶ Communications/Control/Command

## ✓ Rack & Panel Connection

### ✓ Ethernet Quadrax



38999 Quadrax



38999 Rack

### ✓ High Power



38999 Power

### ✓ RJ45 Ethernet



38999 RJ45

### ✓ EMI/RFI Connector



Filter



### ✓ Resin Sealed/Bulkhead



38999 Series

### ✓ Double Flange/Clinch Nut



38999 Series

# Advanced Interconnection Technologies for Communications/Command

- ▶ Command & Control
- ▶ Tactical Fields Network

- ▶ Radio/ID System
- ▶ Ruggedized Display

## ✓ RFI/EMI Connector



Filter

## ✓ Hi Seal



UTS Hi Seal

## ✓ Miniaturization

Circular



8LTA



8DA

Rectangular



microComp®

## ✓ Fiber Optic Connector



38999 ELIO®

## ✓ Double Flange/Clinch Nut



38999 Series

## ✓ Ethernet Quadrax



38999 Series



# Advanced Interconnection Technologies for Land Warrior

- ▶ Vest
- ▶ Helmet

- ▶ Radio/GPS-PDA
- ▶ Rifle

## ✓ Break-Away Connector



## ✓ Miniaturization

Rectangular



Circular



## ✓ Battery Pack



Circular





# Advanced Interconnection Technologies for Unmanned Vehicle

- ▶ Infrared/Laser/Optronics
- ▶ Electronic Payload

- ▶ Radar
- ▶ Sensors

## ✓ Miniaturization



## ✓ Lightweight



## ✓ RFI/EMI Connector



## ✓ Quick Connect-Disconnect



## ✓ Nano/Micro Ds Hermetic





## The First Truly Hermetic Aluminum 38999 Butt Joint ELIO® Feedthrough

Hermetic aluminum 38999 butt joint feedthrough with a leak rate less than  $10^{-9}$  atm.cm<sup>3</sup>/s. A dB loss of 0.3 dB: very superior performance compared to lens beam design.

**Truly hermetic**



Leak rate  $< 10^{-9}$  atm.cm<sup>3</sup>/s.

**Weight saving**



Aluminum shell  
Save 30 to 40 % of weight vs. Stainless Steel  
Revolution to save weight!

**Single and Multi Mode**



Unique multiway hermetic fiber optic feedthrough in the world.

**Intermateable with SOURIAU's butt joint ELIO® connectors**



Airbus A380 spec ABS1379 qualified  
Intermateable with ARINC 801 and EN4531 standards.

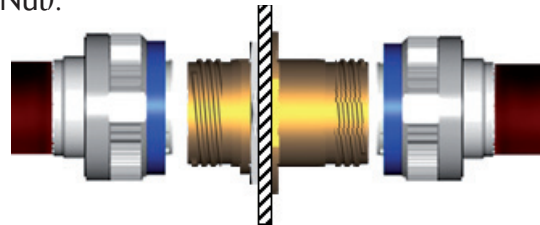


## Economic Solution for Panel Bulkhead

### Easy integration



Standard 38999 mounting interface (Square Flange, Jam Nut).



Easy modular assembly and connection. Time saving for maintenance. The ideal interconnect solution for aircraft pressurized/non pressurized panels.

### Reinforced sealing



Feedthrough sealing even when unmated ( $10^{-6}$  atm.cm<sup>3</sup>.s<sup>-1</sup>).  
Permanent sealing barrier on panel (O rings).

### Reinforced sealing



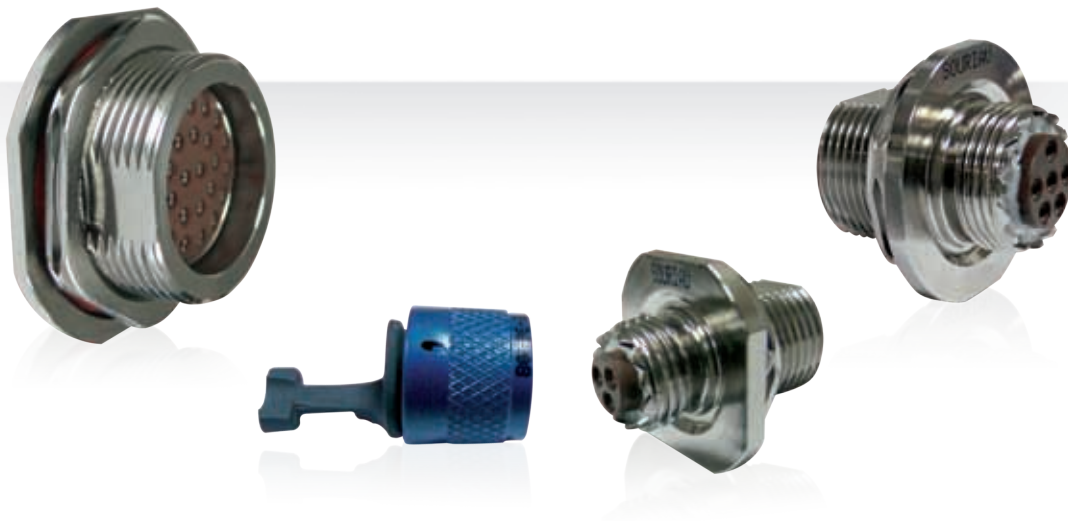
Glass fused hermetic version available ( $<10^{-8}$  atm.cm<sup>3</sup>.s<sup>-1</sup>) for fuel tanks/space systems.

### A large platform available



All 38999 Series III layouts (signal and power contacts).

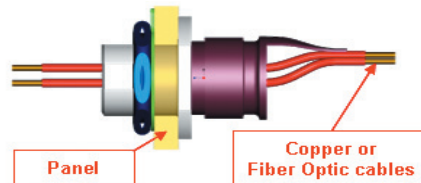




## Economic & Superior Sealed Wire Feedthrough

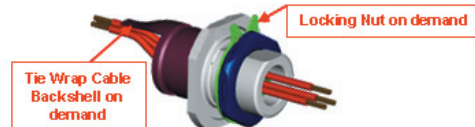
### Easy installation ✓

Allows a bundle of cables to cross through the bulkhead without any contact junction. All cables are individually sealed inside the feedthrough.



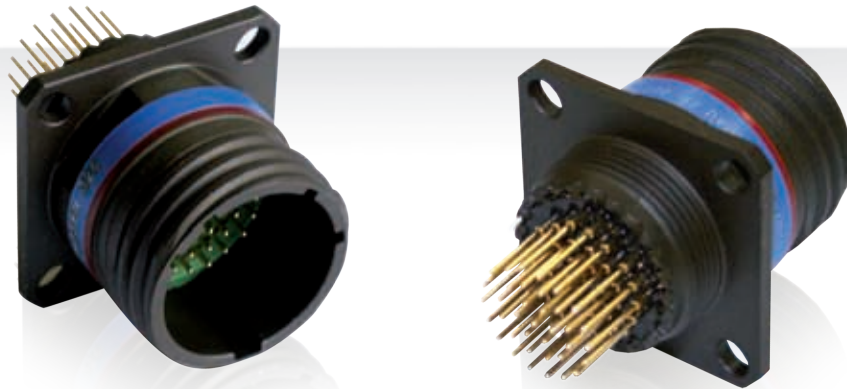
### A full range available ✓

38999 shell sizes from # 9 to 25.



### Reinforced sealing ✓

Gas environment: from  $10^{-4}$  to  $10^{-6}$  atm.cm<sup>3</sup>/s depending on cable diameter.  
Liquid environment:  $\ll 10^{-6}$  atm.cm<sup>3</sup>/s depending on cable diameter.



## Cost Effective Sealing Solution

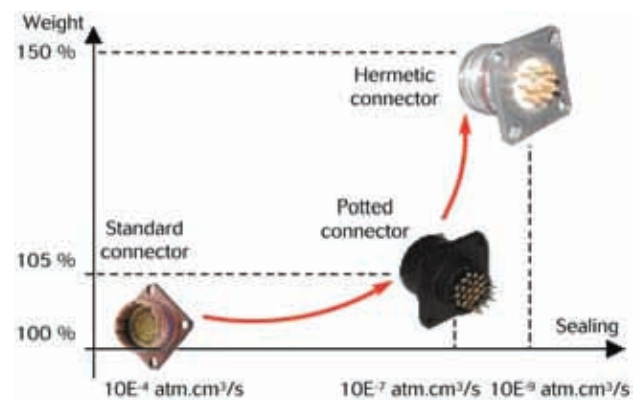
The best value for money.

Weight saving



Lightweight compared with hermetic versions.

Reinforced sealing



Excellent shock resistance



Better than hermetic glass seals.

Socket contact



Sealing with female contacts available.



## Power Supply in Harsh Environments

Designed to be used in severe environments, and resistant to fluids, high shock and vibration.

- A wide range** ✓ From composite to steel, all shell materials and platings. Hermetic version available.
- Contact performance** ✓ High current: 20% more intensity compared to standard contacts. Operating at high vibration and temperature levels.
- User friendly** ✓ Easy maintenance with removeable contacts.
- Large power offer** ✓ #4 (80A), #8 (45A) + mixed layout available.
- A wide range available** ✓ In all circular (38999, EN2997) and rectangular (ARINC ...) ranges with #8 cavities. Same cavity for power, coax, triax and ELIO® fiber optic.



# 38999 Series III

## High Power Contacts

**SOURIAU**



## 38999 High Power - Up to 850A

**Designed to meet the harshest military requirements where high power and shielding are needed.**

**3 aluminum shell sizes available**



Size 19 (450A max); size 23 (650A max); size 25 (850A max) - at 40°C  
Finishes: cadmium or zinc nickel  
Threaded coupling.

**Superior contact technology  
equipped with a silver plated braid**



No micro disconnect under vibration  
High contact endurance  
Low contact resistance.



**Modular design for easy  
installation**



Removable backshell: straight, right angle or threaded contact  
Backshell termination: shrink boot  
Possible to crimp various cables from 50 to 185 mm<sup>2</sup>

**Safety**



Pin contact is equipped with a plastic cap to prevent electrical shock  
Recessed engagement point to prevent electric arc during mating/unmating



## Quadrax for Full Duplex Ethernet Link

Quadrax contacts with robust MIL-DTL-38999 compliant screw coupling system for networks and high vibration environments.

**High speed**



One Quadrax contact replaces two Twinax contacts.  
Data rate up to 1 Gbit/sec.



**A wide range available**



In all circular (38999, EN 2997...) and rectangular (ARINC...) ranges with #8 cavities.  
Same cavity for power, coax, triax and ELIO® fiber optic.

**A flexible range**



Available in 100 and 150 ohms (grounded or not).



## ELIO® Fiber Optic Contact

Easy mounting optical link for severe applications.

**Mission proven** ✓

The only Airbus qualified fiber optic technology : ABS1379, ABS1213. ARINC 801 and EN4531 qualified.

**Robust connection** ✓

Withstanding the most severe vibrations with excellent optical performance (0.3 dB).

**User friendly contact** ✓

Easy cleaning: no part to remove.  
No tool needed for insertion/extraction of the contacts in the connector.

**A wide range available** ✓

In all planforms with # 8 cavities. Up to 24 ELIO® contacts in 38999 size 25.





## Ethernet Connectors for Harsh Environments

### Rugged RJ45 / USB-A / USB-B solutions VG 96938 Standardization (draft).

**RJ45 / USB connectors**



A & B types, connectors available on MIL-C-26482 Series I, Series II and MIL-DTL-38999 Series III.

**IP 67 sealing**



In mated conditions.

**USB data transmission**



USB - A & B types - according to the «Bus» specification, Rev 2.0.

**RJ45 data transmission**

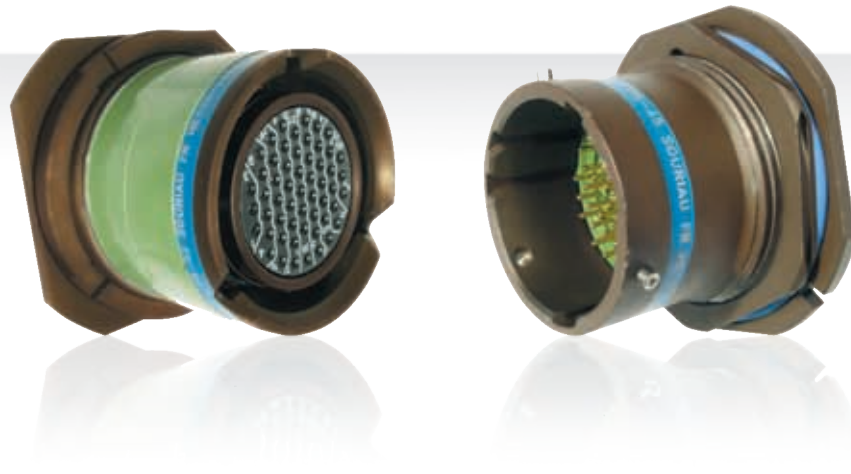


RJ45 - 10 BaseT, 100 BaseTX and 1000 BaseT networks, CAT 5E per TAI/EIA 568B and ClassD per ISO/IEC 11801.



## EMI-RFI Filters and Lightning Protection in Composite Shell

- Save weight** ✓ Composite shells are light-weight.
- Save space** ✓ Complete filter solution in standard shell. No need for filter PCBs inside equipment. Smaller equipment envelope required.
- Excellent filter performance** ✓ Excellent performance, comparable to aluminum shell EMI-RFI filter connectors.
- Highly corrosion resistant** ✓ 2000 hours salt spray in either nickel or olive drab finish.
- Wide range of layouts available** ✓ SOURIAU EMI-RFI Filter 38999 Series III connectors are available in aluminum, marine bronze, and stainless steel shells.



## Sealed Rack & Panel for Blind Connection

A quick connection in hard-to-reach areas.

**Blind connection**



Easy & fast connection without any coupling/uncoupling between a float-mounting unit & a fixed unit.

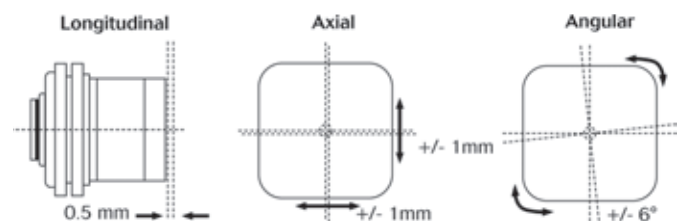
**Float-mounting unit: Rack**



Female contacts - crimp  
Angular orientation with a key



**Misalignment catching**





# 38999 Series III Push-Pull Connector 8D8

**SOURIAU**



## Push-Pull with High Vibration Performance

**Easy to connect-disconnect**



Ideal for restricted space mating

**High performance locking system**

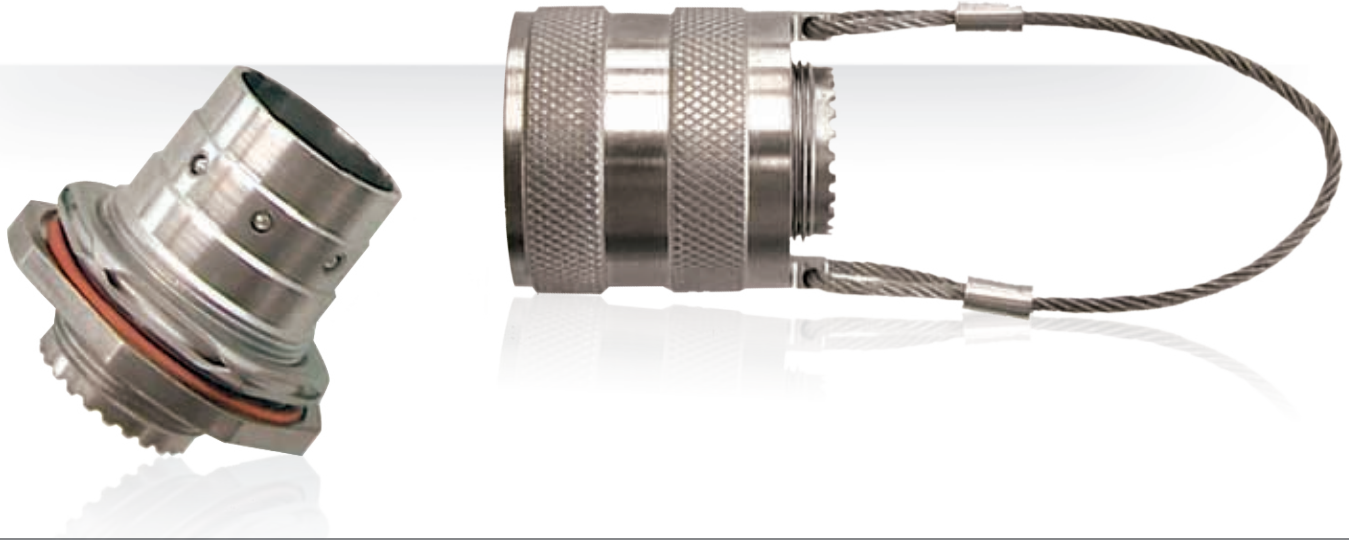


Very high performance coupling with ball locking concept, check of locking by free ring when mated.

**High vibration performance**



Up to 44g — ideal for Mil-Aero and space applications.



## High Performance 38999 Quick Release

**Easy to connect & disconnect**



Simple push to connect - pull to disconnect.



**Safe release**



With  $\pm 10^\circ$  range angle of separation.

**Mechanical locking confirmation**



When the connector is mated the coupling ring rotates providing confirmation of a secure connection.

**High performance locking system**



With ball locking device, no risk of jamming or damage of the locking mechanism.

**High vibration performance**



Up to 44g — ideal for missiles, inter-stage separation, space probes, UAVs.



## Field Repairable / MIL-STD-1760 Umbilical

**Self-alignment / blind connector mating / safe operational solution to weapon releases.**

**Safe quick disconnect at high speed**



Robust unlocking system:  $9.15\text{m/s} \pm 10\%$ .



**Field repairable**



Damaged coupling mechanism can be removed and fully replaced without need to disassemble the electric harness or cable backshell.



**High vibration performances**



Random: 44 G RMS, Sine: 60G  
with angular separation up to  $20^\circ$  (maximum)





## High Performance Battery Connectors

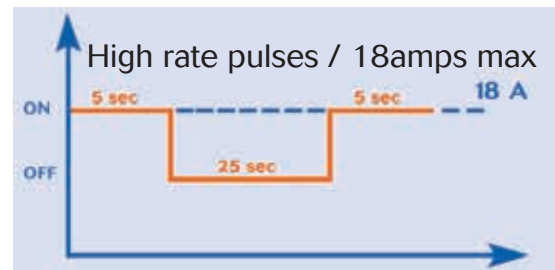
Designed for high performance rechargeable military batteries.

"Push on" in a "racking" style



Quick connecting and disconnecting  
Used on military batteries (MIL-PTF-32052)  
a global standard used by NATO countries  
around the world.

High electrical reliability



High sealing performance



IP 68/waterproof 1 meter depth

High endurance



More than 1.000 mating/unmating cycles



## Miniature / Breakaway / High Density

Exclusive breakaway feature / Up to 19 contacts.

**Easy to connect/disconnect**



Ergonomic design: easy to mate in blind condition.



**No moving parts in connectors**



No risk of jamming.

**Light & compact design**



Easy integration on soldier equipments.

**A ruggedized product solution**



2500 mating/unmating cycles,  
EMI - RFI shielding.

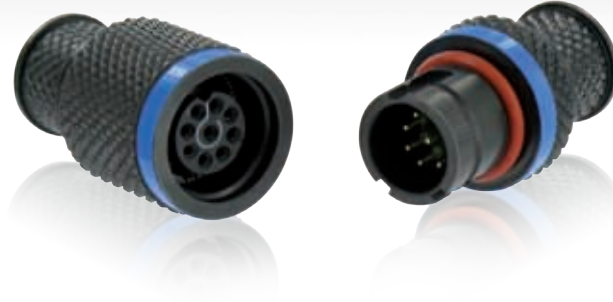


## Miniature Thread Coupling

Space saving with scoop proof connector designed for any harsh application where both size and EMI shielding are critical.

- A compact solution** ✓ Diameter up to 45% smaller than size 9 (D38999). Up to 40% shorter.
- A high density solution** ✓ With #26 contacts (according 39029). 5 layouts (size 3, 5 and 7 with #22 & #26).
- Excellent features** ✓ Designed for D38999 requirements. IP67 sealing when mated, EMI ring and ratcheting system.
- RoHS and Cadmium free** ✓ Available in zinc nickel (RoHS) plating, as well as nickel and olive drab cadmium.
- Robustness** ✓ Connector available with stainless steel (1500 matings) and aluminum shell (500 matings).
- Integrated backshell** ✓ Cost and space saving.





## Miniature Break Away Release

Connector ideally designed for quick disconnecting under harsh environment.

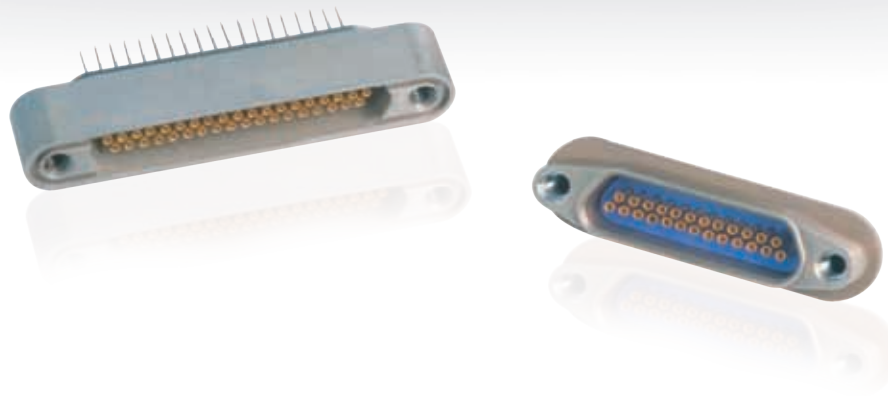
- Excellent properties** ✓ Proven design ensures a perfect shielding and is vibration resistant (30g at 125°C).
- Large range available** ✓ 3 different sizes and 6 different layouts available with #22 and #26 contacts (up to 9#26 in shell 6).
- Robustness** ✓ Stainless Steel shell available (1500 matings) together with aluminum.
- Cadmium free alternative** ✓ Zinc nickel plating available together with nickel and cadmium.
- Integrated backshell** ✓ Cost and space saving.



## Miniature Bayonet Coupling

Space saving with scoop proof connector for harsh applications.

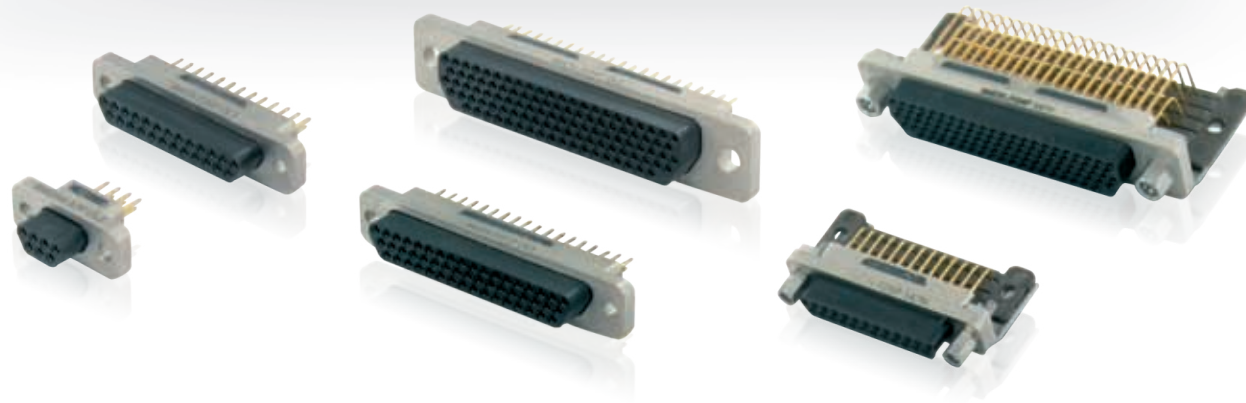
- A compact solution** ✓ Diameter up to 45% smaller than size 9 (D38999).  
Up to 50% shorter.
- A high density solution** ✓ With #26 contacts (according 39029).  
5 layouts (size 3, 5 and 7 with #22 & #26).
- Excellent features** ✓ Designed for D38999 requirements.  
IP67 sealing when mated.
- RoHS and Cadmium free** ✓ Available in zinc nickel (RoHS) plating, as well as  
nickel and olive drab cadmium.
- Robustness** ✓ Connector available with stainless steel (1500  
matings) and aluminum shell (500 matings).
- Integrated backshell** ✓ Cost and space saving.



## The Only Laser Weldable Hermetic Micro-D with Copper Contacts

Ultra rugged, compact lightweight hermetic micro-Ds with copper alloy contacts with a leak rate less than  $10^{-9}$  atm.cm<sup>3</sup>/s. These connectors are capable of performing at extreme temperature and are built to exceed the requirement of MIL-PRF-83513.

- Truly hermetic** ✓ Leak rate <  $10^{-9}$  atm.cm<sup>3</sup>/s.
- Weight saving** ✓ Aluminum shell.  
Save 30 to 50 % of weight vs. Stainless Steel  
Titanium shells also available.
- Laser weldable** ✓ No solder joint fatigue for an enhanced reliability.
- Outstanding conductivity** ✓ Built with copper alloy contacts  
Conductivity 5 times better than regular Fe/Ni contacts.



## Composite micro-Ds with Crimp Contacts

**Composite rectangular shells & inserts**



60% lighter than a high density D-Sub.



**Miniature design**



40% smaller than a high density D-Sub.

**Removable # 26 contacts**



Ensure repairability unlike current micro-D offerings. Increased prototyping flexibility in harness manufacturing.

**High vibration performance**



Vibration performance exceeds micro-D 8 hours 44g random vibration.

**A full product range available**



9 layouts, from 7 to 104 contacts.





## Sealed Unmated / Economic 26482 Solution

Protection of electronics / ideal for indoor / outdoor applications.

Fully intermateable & interchangeable



SEALED UNMATED  
MIL-DTL-26482  
COMPATIBLE

Quick connection



Rapid and secure bayonet locking system.

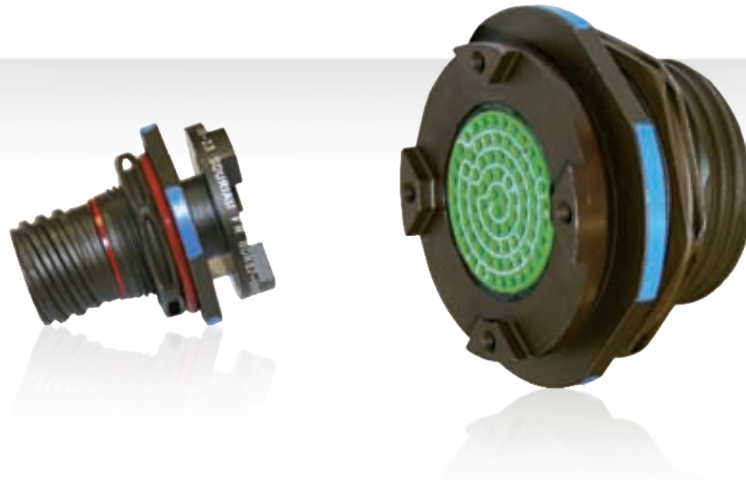
Sealed unmated



High corrosion resistant



Full plastic.



## Double Flange Solution for PCB Mount

Specially designed for PCB applications in harsh environment, decoupling vibration from the board.

**Excellent mechanical performance**



Standoffs integrated into the connector. No risk of breaking contacts and no risk of micro-cuts.

**Design flexibility**



Square flange or Jam nut versions available. Versatile contact length options.

**A wide range**



Available in aluminum from shell size 9 to 25.

**User friendly**



Easy to assemble & time saving.



## Clinch Nut Solution for Box Mount

Equivalent mounting retention of the receptacle ensured with only 4 clinch nuts. Designed for severe applications.

User friendly



Easy to install.

Less fixing parts



Elimination of nuts and washers.



**Before: 12 elements**  
(4 screws + 4 nuts + 4 washers)

**After: only 4 elements**  
(4 screws)

A wide range available



In major circular ranges (38999, 26482, EN 2997)  
and also in ARINC rectangular rack & panel.



## 38999 Series III Composite Connector

The only connector combining weight saving, high corrosion resistance and RoHS.

**Qualified by major Airframers**



Excellent lightning strike performances thanks to high shielding effectiveness.

**In-house plating**



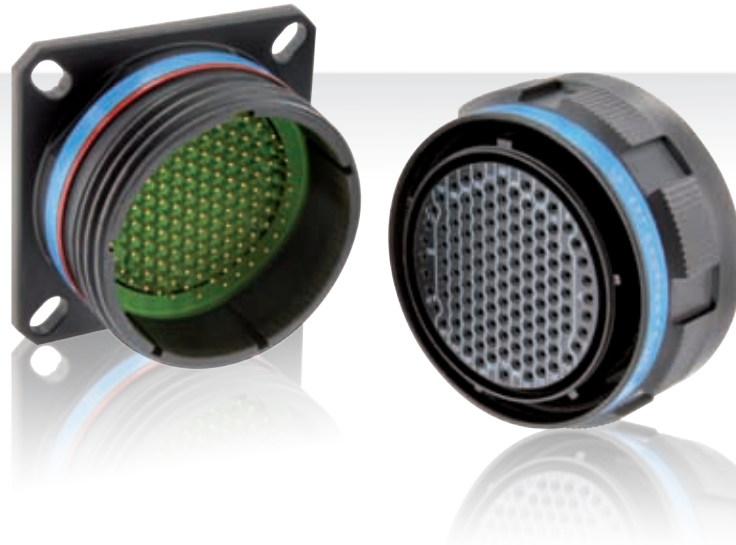
Fully automated process with large volume capacity guaranties best in class quality.

**Robust connector**



Suitable for applications with high vibration.  
High corrosion resistance: 2000 hours salt spray withstanding.





## The RoHS alternative to cadmium

**SOURIAU Zinc Nickel: the best in terms of price and performance for aerospace & defense equipment.**

**SOURIAU Zn Ni**



A unique alternative plating process to cadmium.

**RoHS compliant**



A unique SOURIAU plating process compliant with RoHS regulations for cadmium and Cr6+.



**The first QPL qualified**



SOURIAU Zn Ni is the first product which has been qualified by US Defense standards organization (DLA Land and Maritime).

**High corrosion resistance**



500 hours salt spray.

**Available in mass production**



Available for 38999 Series I, II and III aluminum range.



# SOURIAU

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**Esterline**  
Connection Technologies