



## Solving the low-loss, high-speed data-transfer challenge between commercial backplanes or servers to COTS and equivalent MIL-SPEC connectors, Ruggedized Backplane Cable Assemblies increase communication capabilities for defense and aerospace contractors

Expanding communication capabilities and data-processing speeds through state-of-the-art technology are fundamental goals of and challenges for the U.S. Department of Defense (DoD) and aerospace contractors; Molex provides state-of-the-art backplane connectors cabled to virtually any I/O requirement. Solutions include backplane connectors, commercial-off-the-shelf (COTS) connectors or full military-qualified interfaces — all terminated to custom cable assemblies. Data throughput for these products ranges from 2 to 25 Gbps, depending on configurations. The backplane cables reduce high transmission losses caused by long trace lengths on traditional PCBs. These assemblies allow for low-loss, high-speed data transfer from commercially available backplane connectors to the panel or server board interface.

### Features and Benefits

Adaptable backplane interfaces (Impact™, Impel™, VHDM® and others upon request) cabled to ruggedized connectors such as commercial-off-the-shelf (COTS) connectors or full military-qualified connectors (D38999, Micro-D, etc.)

Allow for data signal transmissions from commercial servers to rugged input/output connectors. Reduce high transmission losses caused by long trace lengths on traditional PCBs

Extensive engineering design and testing expertise

Ensures the assembly will meet respective application-specified data rates and performance requirements

Metal backshells optional

Provide 360° Electro Magnetic Interference (EMI) shielding. Reduce crosstalk at the mating interface for improved system performance

Positive latch option

Ensures a solid connection in shock and vibration environments. Provides an intuitive squeeze-and-pull latching mechanism for ease of use

Designed to meet VITA standards and data rates up to 25 Gbps

Meets industry standards and a variety of data rate requirements

Blindmate capable

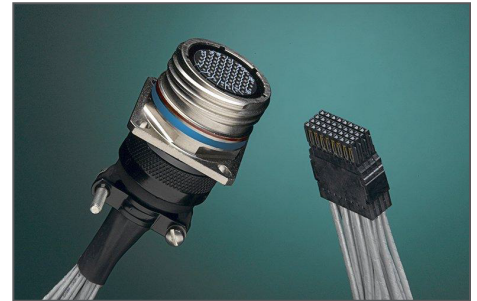
Allows misalignment and provides “float” between mating surfaces for easy blind-mate connections

## Ruggedized Backplane Cable Assemblies

**Custom** Ruggedized VHDM® Backplane Cable Assemblies

**Custom** Ruggedized Impact™ Backplane Cable Assemblies

**Custom** Ruggedized Impel™ Backplane Cable Assemblies



Ruggedized Backplane Cable Assembly — VHDM® Connector (right) to MIL-SPEC D38999 Receptacle (left)

## Specifications

### Impact™ 100 Ohm Backplane Connector

#### Reference Information

Packaging: Trays  
UL File No.: E28179  
Designed In: Millimeters  
RoHS: Yes  
Halogen Free: Yes

#### Signal

##### Electrical

Voltage (max.): 30V AC (RMS)/DC

Current (max.): 0.75A

Contact Resistance (max.):

mated, 100mA, 20mV

Dielectric Withstanding Voltage:

unmated, 500V AC

Insulation Resistance: 1000 Megohms

Impedance: 100 Ohms

##### Mechanical

Contact Retention to PCB: 3.56N

Insertion Force to PCB:

Backplane: 26.70N

Daughtercard: 17.80N

Mating Force: 35g max.

Unmating Force: 15g min.

Durability: 200 (mating cycles max.)

##### Physical

Housing:

Liquid Crystal Polymer, UL 94V-0

Contact:

High-Performance Copper (Cu) Alloy

Plating:

Contact Area — 0.76µm (30µ")

Gold (Au) min.

Solder Tail Area — Tin (Sn)

Underplating — Nickel (Ni)

Operating Temperature: -55 to +85°C

### VHDM® H-Series Backplane Connector System

#### Reference Information

Packaging: Trays  
UL File No.: E29179  
CSA File No: 152514 (LR19980)  
Designed In: Millimeters

#### Electrical

Signal Contact: 1.0A

Shield Contact (6 Row): 2.0A

Shield Contact (8 Row): 3.0A

Power Blade: 10.0A

Impedance: 100 Ohms

#### Mechanical

Mating Force:

Signal: 40g per signal pin

Shield: 25g per shield chevron

Power: 150g per blade

Durability: 200 cycles

Normal Force:

Signal: 50g min.

Power: 100g min.

#### Physical

Housing:

Liquid Crystal Polymer, UL 94V-0

Contact: Copper (Cu) Alloy

Plating:

Contact Area — 0.76µm (30µ")

Gold (Au) min.

Solder Tail Area — Tin (Sn) or

Tin/Lead (Sn/Pb)

Underplating — Nickel (Ni)

PCB Thickness:

1.60mm (.063") typical

Operating Temperature: -55 to +85°C

## Ruggedized Backplane Cable Assemblies

### Impel™ Backplane Connector System

#### Reference Information

Packaging: Tray  
UL File No.: E28179  
Designed In: Millimeters  
RoHS: Yes  
Halogen Free: Yes

#### Electrical

Voltage —

Daughtercard Receptacle (max.):

150V AC RMS

Current (max.): 0.75A

Contact Resistance (max.): 100mA;

20mV

Dielectric Withstanding Voltage:

500V AC

Insulation Resistance — Daughtercard

Receptacle: 500V

Impedance: 92 Ohms

#### Mechanical

Insertion Force to PCB:

Backplane Header — 26.69N

Daughtercard Receptacle — 17.80N

Mating Force:

60g per signal; 80g per shield

Unmating Force (min.): 15g

Durability (min.): 200 cycles

#### Physical

Housing: LCP

Contact: Copper Alloy

Plating:

Contact Area — 30µ

Compliant Pin Area —

select Matte Tin

Underplating — Nickel

PCB Thickness (min.): 1.00mm

Operating Temperature:

-40 to +105°C



Impact™ 90 ° Backplane Cable



VHDM® H-Series Backplane Cable



Impel™ Cabled Connector



## Applications

### Aerospace and Defense

- Aircraft
- Ships
- Land-based data centers
- Rugged vehicle-deployed services

### Industrial

- Outdoor shelters and facilities
- Harsh environments

### Data/Computing and Telecommunications/Networking

- Land-based processing centers

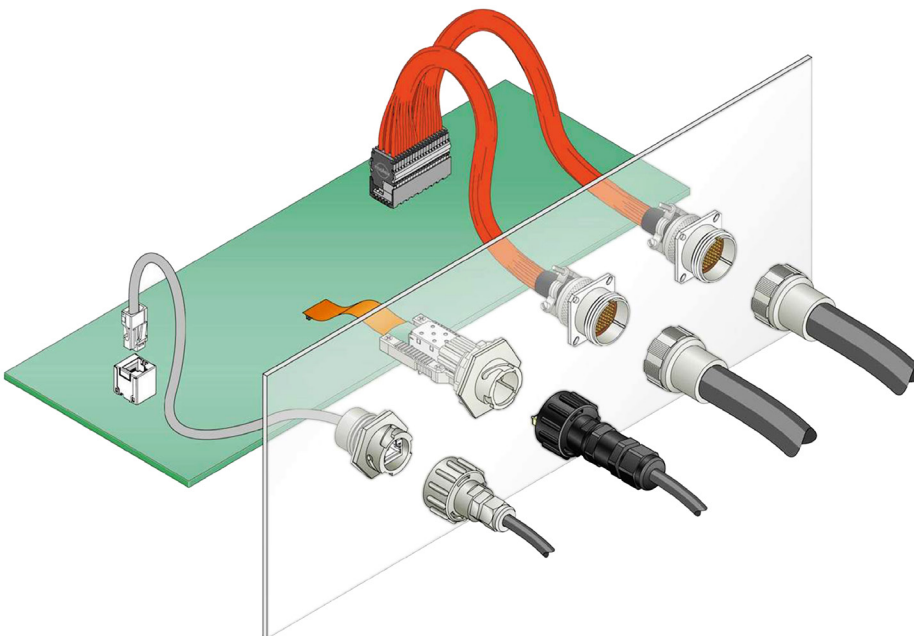


Military Communications

## Ruggedized Backplane Cable Assemblies



Servers at a Land-Based Military Communications Processing Center



Ruggedized Backplane Cable Assembly Impact™ Backplane Connector (top) to D38999 connector (right) customized cable

## Ordering Information

### Contact

Contact [amerinfo@molex.com](mailto:amerinfo@molex.com) for a custom design solution

[www.molex.com/link/ruggedcables/html](http://www.molex.com/link/ruggedcables/html)