



**Delivering industry-leading signal integrity and density while providing a scalable price and performance path for future data-rate enhancements, the Impel™ system of backplane connectors and customized cable assemblies offers OEMs the option for equipment to operate at today's data rates and costs**

Leading the datacom computing markets with high data-rate and high-density solutions, the Impel™ Backplane Interconnect System provides a scalable price-for-performance solution enabling customers to secure a high-speed 25 and 40 Gbps footprint.

Molex continues to lead development in the backplane and cable assembly market through innovative connector products. Customers are currently designing new high-end system architectures that will require data-rate improvements. The Impel™ Backplane Interconnect System provides the footprint and interface that will enable customers to migrate to faster data rates (40 Gbps), without completely re-designing their architecture or replacing hardware already placed in the data-center, while meeting the mechanical density requirements being driven by the industry.

## Market and Applications



High-End Servers



### Telecommunication Applications

- Hubs, switches, routers
- Central office, cellular infrastructure and multi-platform service, (DSL, Cable Data)

### Data Networking Equipment

- Servers
- Storage systems

### Industrial Equipment

### Military/Aerospace Equipment

## Impel™ Backplane Interconnect System

### Custom Cable Assemblies

**171500** 6-Pair Impel™ Orthogonal Daughtercard

**171495** 6-Pair Impel™ Orthogonal Backplane Headers

**171740** 6-Pair Impel™ Orthogonal Direct Right-Angle Male, (OD RAM)

**171335** 3-Pair 1.90mm Backplane Header Assembly

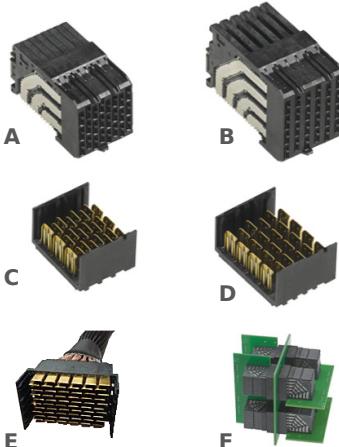
**171990** 3-Pair 1.90mm Daughtercard Receptacle

**171325** 4-Pair 3.00mm Backplane Header Quad-Route

**171329** 4-Pair 3.00mm Daughtercard Receptacle Quad-Route

**171395** 6-Pair 1.90mm Backplane Header

**171400** 6-Pair 1.90mm Daughtercard Receptacle



### Impel™ Backplane Connector System

A. 3-Pair Daughtercard Receptacle (Series 171340)

B. 4-Pair Daughtercard Receptacle (Series 171330)

C. 3-Pair Backplane Headers (Series 171335)

D. 4-Pair Backplane Headers (Series 171325)

E. Impel™ Backplane Custom Cable Assembly

F. Impel™ Orthogonal Mid-Plane Connector System

**Features and Benefits****Impel™ Backplane  
Interconnect  
System**

Designed for a direct connection of PCBs in an orthogonal orientation	Improves airflow and reduces board-space constraints compared to backplane and midplane connector systems. Simplifies component management for contract manufacturers and designers
Shorter line cards and switch-module signal paths versus typical routed backplane connections	Allows for overall robust signal channels
Two compliant-pin attach options and 18 to 72 differential pairs per orthogonal node	Provide customers ultimate flexibility to optimize their designs for superior mechanical and electrical performance
Molex patent-pending Impel™ connector technology with tightly coupled differential-pair structure	Provides optimal signal integrity and mechanical isolation through the connector system
Compact, compliant-pin backplane and daughtercard connectors with data rates scalable from 25 to 40 Gbps	Enable backward and forward compatibility with various high-end system architectures.
Multiple pitch options available: 1.90mm pitch broad-edge-coupled; 2.35mm pitch orthogonal; 3.00mm pitch quad-route	Delivers superior density and electrical performance, low cross-talk, low insertion loss and minimal performance variations across all channels and frequencies to 20 GHz. Offers printed-circuit-board designers the flexibility to quad route the signal traces (two pairs per layer) reducing the PCB layer count
92 Ohms nominal impedance	Enables customers to minimize impedance discontinuities
Optimized wafer structure	Enables connector packaging flexibility. Provides 1.90 and 3.00mm column-to-column pitch configurations allowing for PCB layer-count maximization
Enhanced 0.36mm plated-through-hole diameter	Meets manufacturing aspect ratio while providing improved electrical performance
Skew-less design	Eliminates the need for compensating connector skew on PCB routing
Staggered header-pin interface	Provides robust mechanical isolation from the signal pins. Mitigates the concern for bent pins in the field. Provides first-mate-last-break capabilities
Constructed with copper alloy and LCP	Enables repeatable and reliable part-to-part performance parity versus competitors' housings with additives, which can result in performance inconsistencies
IEEE 10GBASE-KR and Optical Internetworking Forum (OIF) Stat Eye Compliant Channel Performance	Demonstrates end-to-end channel performance compliance
Custom cable assemblies available	Provides a full channel solution for all Impel headers and receptacles; provides design flexibility per application specifications



## Specifications

### Reference Information

Packaging: Tray  
UL File No.: E28179  
Mates with: Numerous options, see pages 10 and 12 reference Ordering Information Charts  
Designed In: Millimeters  
RoHS: Yes  
Halogen Free: Yes

### Electrical

Voltage —  
Daughtercard Receptacle (max.): 150VAC RMS  
Cable Assembly (max.): 30VAC RMS  
Current (max.): 0.75A  
Contact Resistance (max.): 100mA; 20mV  
Dielectric Withstanding Voltage:  
Headers/Receptacles: 500V AC  
Cable Assembly: 300VDC  
Insulation Resistance —  
Daughtercard Receptacle: 500V

### 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

### SPECIFICATIONS

### Physical

Housing: LCP  
Contact: Copper Alloy  
Plating:  
Contact Area — 30 $\mu$   
Compliant Pin Area — select Matte Tin  
Underplating — Nickel  
PCB Thickness (min.): 1.00mm  
Operating Temperature: -40 to +105°C

## Impel™ Backplane Interconnect System

## Ordering Information

## Impel™ Backplane Interconnect System

### Cable Solutions

Order No.	Comments
Custom	All Impel™ Backplane Interconnect Cable Solutions are custom configurable; for more detailed information and pricing contact Molex customer service: 1 800-78MOLEX (1 800 786-6539)

### Backplane Header

Order No.	Pitch (mm)	Pin Length (mm)	Plated Through-Hole Diameter (mm)	Number of Columns	Number of Pairs	Guide				
<a href="#">171335-1805</a>	1.90	5.50	0.46	8	3	No				
171335-1807		4.90	0.36							
171335-1808		5.50	0.46							
<a href="#">171325-1605</a>										
<a href="#">171395-1105</a>		4.90	0.36		4					
171395-1107		5.50	0.46							
171395-1108										
171395-1605		4.90	0.36	10	6	Right				
171395-1607		5.50	0.46							
171395-5605		5.50	0.46							

### Daughtercard Receptacle

Order No.	Pitch (mm)	Number of Columns	Number of Pairs	Guide	
<a href="#">171340-1038</a>	1.90	8	3	No	
<a href="#">171330-1036</a>	3.00	6	4		
<a href="#">171400-1020</a>	1.90	10	6		
171400-1026		16			
171400-3020		10			
171400-3026		16			
171400-5020		10			
171400-5026		16			

### Orthogonal Daughtercard Assemblies

Order No.	Pitch (mm)	Pin Length (mm)	Plated Through-Hole Diameter (mm)	Guide
<a href="#">171500-1022</a>	2.35	1.30	n/a	No
171500-3022				Left
171500-5022				Right

### Orthogonal Backplane Header

Order No.	Pitch (mm)	Pin Length (mm)	Plated Through-Hole Diameter (mm)	Guide
<a href="#">171495-0227</a>	1.85/2.35	4.90	0.36	No
171495-1226		4.50		
171495-1227		4.90		
171495-3207				

### Orthogonal Direct Right-Angle Male (OD RAM)

Order No.	Pitch (mm)	Pin Length (mm)	Plated Through-Hole Diameter (mm)	Guide
<a href="#">171740-1208</a>	2.35	n/a	n/a	No

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