

# AirMax VS® BACKPLANE/MIDPLANE CONNECTORS

## OVERVIEW

The AirMax VS® connectors use innovative edge-coupling and air dielectric between adjacent conductors to deliver insertion loss and crosstalk. This technology, invented by FCI, enabled low cost, high performance connectors that are a leading backplane interconnect solution for telecom, networking, server, and storage applications.

The shieldless Open Pin Field Design with no pre-assigned ground pins provides the ultimate flexibility in board layout. The AirMax VS® connectors address a broad range of system architectures, including backplane, midplane, coplanar, midplane orthogonal, cabled backplane, and mezzanine applications.

This is a broad, high volume product family that system continues to earn business when competing with the many more expensive and complex shielded connector systems. This is due in part because of its high density, simple modular construction and low cost.

Further enhancements of the AirMax® product family are seeing speeds increase up to 25Gb/s, enabling customers to design electronic systems that are highly functional and cost effective. This enables backward compatibility with legacy systems and forward compatibility with the most advanced designs.



## FEATURES

- Innovative shieldless design and air dielectric between adjacent conductors
- Open Pin Field Design
- Connector available in modules with 3, 4, or 5 pairs per column and 6, 8, or 10 columns per module. 85 ohm versions also available
- Backward mating-compatible interface
- AirMax signal, power, and guidance modules in stock at most distributors
- Available with headers or receptacles on the backplane
- Adopted by multiple industry standard architectures, including Storage Bridge Bay and Serial CPCI
- Innovative shieldless edge couple technology and air dielectric between adjacent conductors

## BENEFITS

- Reduces cost, improves flexibility and delivers low insertion loss and crosstalk
- Allows mixing of differential pair signals, single ended signals, power and control lines within a standard connector module
- Enables system configuration using common, off-the-shelf modules
- Simplifies design, supply chain management, inventory, and scheduling
- Allows designers to choose the right combination for any specific system using common components, reducing cost and lead times
- Assurance of supply, short lead times, and competitive pricing all reduce risk to the OEM and contract manufacturers
- Reduces connector cost, weight, and PCB routing complexity
- Standard configuration and part numbers accelerate your design and reduce risk
- 3mm pitch between columns enables two different pairs to route between columns, reducing board layer count, complexity, and system cost



## TECHNICAL INFORMATION

### MATERIALS

- Contacts: Copper Alloy
- Contact Finish:
  - Performance-based plating over nickel at separable interface
  - Tin over nickel on press-fit tails on standard lead-free products. Tin-lead option available upon request
- Housings: High Performance Thermoplastic, UL94V-0

### ELECTRICAL PERFORMANCES

- Contact Resistance:  $\leq 35\text{m}\Omega$  initial,  $\leq 10\text{m}\Omega$  increase after environmental test
- Current Rating ( $\leq 30^\circ\text{C}$  rise above ambient in still air): 0.5A/contact with all contacts powered

### 100 $\Omega$ CONNECTORS

- Differential impedance:  $100 \pm 8\Omega$  @ 50 ps (10-90%) rise time
- Differential insertion loss:  $< 1\text{dB}$  through 6.25Gb/s  
 $< 1.5\text{ dB}$  through 12.5Gb/s
- Near-end crosstalk (multi-active):  $< -38\text{ dB}$  through 6.25Gb/s;  $< -28\text{ dB}$  through 12.5Gb/s
- Far-end crosstalk (multi-active):  $< -41\text{ dB}$  through 6.25Gb/s;  $< -28\text{ dB}$  through 12.5Gb/s

### 80 $\Omega$ CONNECTORS

- Differential impedance:  $85 \pm 5\Omega$  @ 50 ps (10-90%) rise time
- Differential insertion loss:  $< 1.5\text{ dB}$  through 8Gb/s
- Near-end crosstalk (multi-active):  $< -30\text{ dB}$  through 8Gb/s
- Far-end crosstalk (multi-active):  $< -30\text{ dB}$  through 8Gb/s

### MECHANICAL PERFORMANCE

- Durability: 200 cycles
- Mating Force: 0.45N max./contact
- Unmating Force: 0.15N min./contact
- Compliant pin insertion force:
  - Vertical headers, right-angle headers or right-angle receptacles: 40 N max.
  - Vertical receptacles: 25 N max.

### SPECIFICATIONS

- Product: GS-12-239
- Application: GS-20-035

### APPROVALS AND CERTIFICATIONS

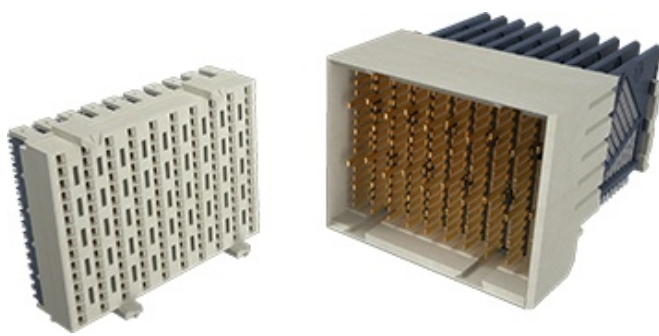
- Telcordia GR-1217-CORE Central Office

### PACKAGING

- Tubes
- Trays (vertical receptacle only)

### TARGET MARKETS/APPLICATIONS

- Communications
  - Switches
  - Routers
  - Access
  - Optical Transmission
  - Wireless Base Stations
- Data
  - Servers
  - Switches
  - Storage
- Industrial & Instrumentation
  - Test & Measurement
- Medical



Vertical Receptacle

Right Angle Header (4 Wall)

## PART NUMBERS

### AirMax VS® SIGNAL MODULES WITH VERTICAL BACKPLANE RECEPTACLES 0.5mm PTH PRESS-FIT\*

Product Variation				Mating Connector System			Differential Impedance
Pairs	Columns	Differential Pairs	Column Pitch	Vertical Receptacle	Right Angle Header	Header Version	
3	6	18	2mm	10043546-101LF	10040862-101LF	2 Wall	100 OHMS
	6	18	2mm	10043546-101LF	10039851-101LF	4 Wall	
	8	24	2mm	10045271-101LF	10045266-101LF	2 Wall	
	8	24	2mm	10045271-101LF	10045267-101LF	4 Wall	
	10	30	2mm	10034251-101LF	10034264-101LF	2 Wall	
	10	30	2mm	10034251-101LF	10034249-101LF	4 Wall	
4	6	24	2mm	10052829-101LF	10052825-101LF	4 Wall	
	6	24	2mm	10052829-101LF	10052824-101LF	2 Wall	
	8	32	2mm	10052842-101LF	10052837-101LF	2 Wall	
	8	32	2mm	10052842-101LF	10052838-101LF	4 Wall	
	8	32	3mm	10064493-101LF	10064488-101LF	2 Wall	
	8	32	3mm	10064493-101LF	10064489-101LF	4 Wall	
	10	40	2mm	10028264-101LF	10029391-101LF	2 Wall	
	10	40	2mm	10028264-101LF	10028436-101LF	4 Wall	
	10	40	3mm	10035465-101LF	10035514-101LF	2 Wall	
5	8	40	2mm	10040993-101LF	10041746-101LF	2 Wall	
	8	40	2mm	10040993-101LF	10041460-101LF	4 Wall	
	10	50	2mm	10016537-101LF	10016527-101LF	2 Wall	
	10	50	2mm	10016537-101LF	10025613-101LF	4 Wall	
	10	50	3mm	10035146-101LF	10037323-101LF	2 Wall	
	10	50	3mm	10035146-101LF	10037324-101LF	4 Wall	

Product Variation				Mating Connector System			Differential Impedance
Pairs	Columns	Differential Pairs	Column Pitch	Vertical Receptacle	Right Angle Header	Header Version	
3	6	18	2mm	10096461-101LF	10097256-101LF	4 Wall	85 OHMS
5	10	50	2mm	10099763-101LF	10097311-101LF	4 Wall	
	10	50	3mm	10096461-101LF	10087771-101LF	2 Wall	

\*0.5mm standard press-fit pin is the same as the standard AirMax VS® connectors