

OverPass™ Cable System

Amphenol's OverPass™ cable system offers a broad range of capabilities that allow our customers to efficiently transmit high speed signals from near an ASIC to anywhere in their system

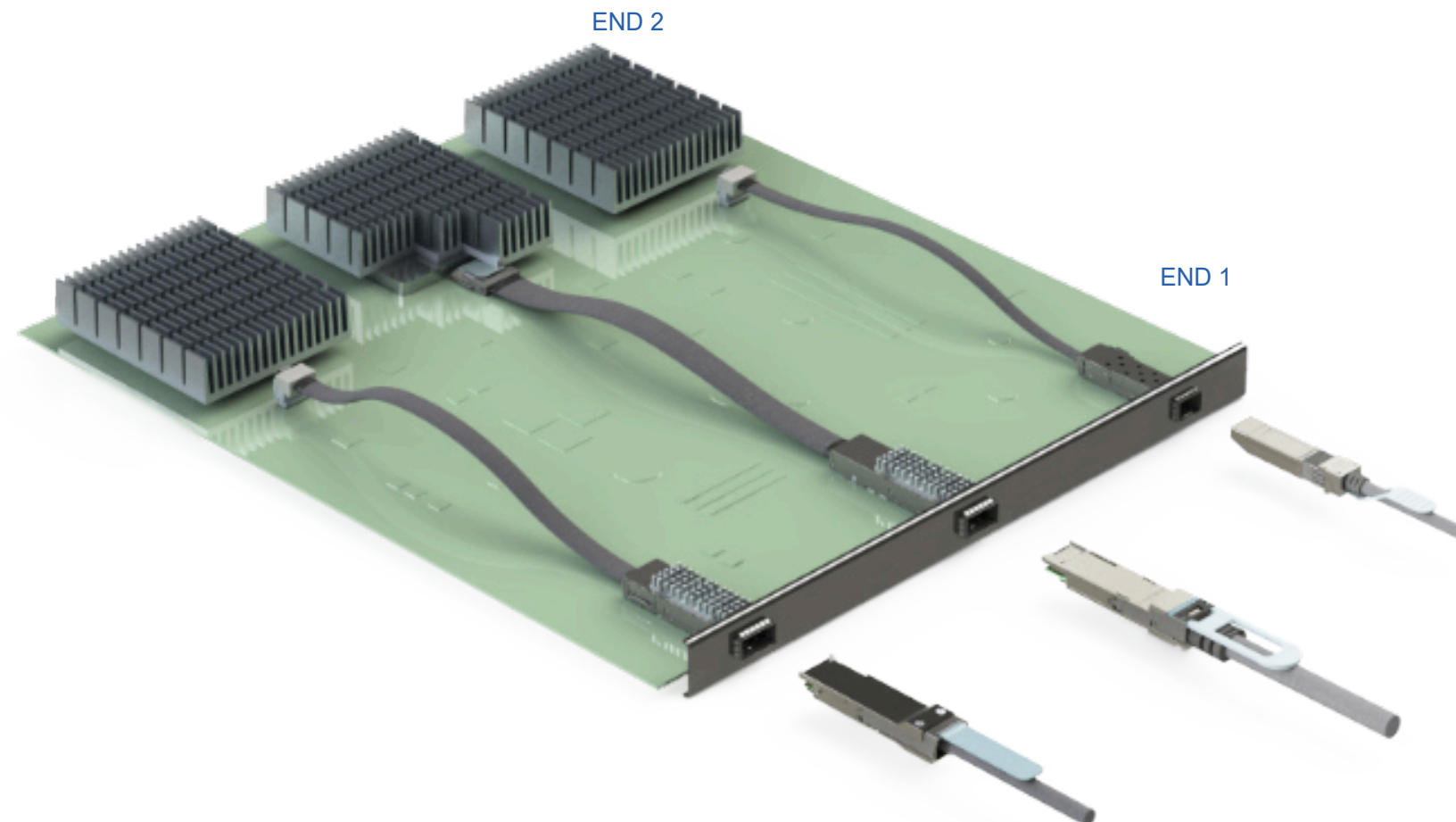


EXTERNAL IO

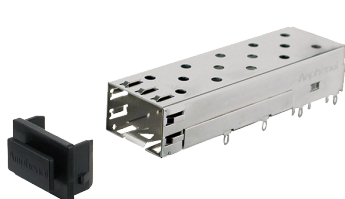
Amphenol's OverPass™ cable system offers a broad range of capabilities that allow our customers to efficiently transmit high speed signals from near an ASIC to anywhere in their system. Enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market.

- Reduces overall link signal loss
- Eliminates the need for expensive signal re-timers and avoids increased heat generation
- Reduces cost incurred from high performance laminates in PCB construction
- All OverPass™ cable assemblies are fully compliant to industry standard interfaces: SFP, QSFP, QSFP-DD, OSFP and more
- Supports signal transmission speeds of up to 224G PAM4
- Press fit or cabled sideband signal management options are available

The portfolio also includes cage configurations & layouts (stacked & ganged, belly-to-belly) that can maximize the linear board port density available to the designer. OverPass™ solutions allow for applications in elevated operating temperature environments (85C+) and all cage configurations include standard and custom heat sink offerings and light pipe options.

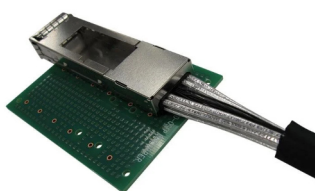


END 1



SFP OverPass™ Assemblies

- Direct chip to IO port connection; multiple near chip IO connector options
- Full support of 28G and 56G signaling speeds
- Full SFP industry standard compatibility



QSFP OverPass™ Assemblies

- Full QSFP industry standard compatibility
- Direct wire attachment to connector contact & robust shield termination
- Full support of 28G and 56G signaling speeds



QSFP - DD OverPass™ Assemblies

- Full support of 56G & 112G signaling speeds and anticipated 224G
- Superior signal integrity performance
- Lower loss interconnect from chip site to external port



OSFP OverPass™ Assemblies

- Full support of 56G & 112G signaling speeds and anticipated 224G
- Lower loss interconnect from chip site to external port
- A fully engineered and tested cabling solution

END 2



Multi-Trak™

- High-speed 56Gb/s PAM4/PCIe® Gen 5 capability
- Supports both cable and card edge connection
- Support Power solutions with DIP type for total 21A
- Meets OCP DC-MHS and SFF-TA-1033 specifications



Low Profile SlimSAS® / UltraPort SlimSAS®

- 0.60mm pitch interconnect with superior signal integrity
- Designed for unshielded, internal or external I/O connectors
- Compliant with T10/Serial Attached SCSI (SAS-4) standard



Micro-LinkOVER™

- Full support of 56G & 112G signaling speeds and anticipated 224G
- Superior signal integrity performance
- Lower loss interconnect from chip site to external port



UltraPass™ OverPass™ Assemblies

- Direct point-to-point connection; high-density two-piece IO connector and cable system
- Full support of up to 224G signaling speeds
- Lower loss interconnect from chip site to chip site
- Highest signal speed in the industry



Mini Cool Edge IO

- 0.60mm pitch, vertical and right-angle configurations
- Up to 64Gb/s PAM4, PCIe® Gen 6, over 1.0 meter transmission distance
- Supports both cable and card edge applications with one identical connector



Extreme Port™ Z-Link

- 0.60mm pitch with vertical and right-angle configurations
- Up to 56Gb/s PAM4, over 1.0 meter transmission distance
- Slim form factor for compact data center system designs
- Compliant to Gen-Z and OCP NIC specification



DirectAttached™ CEM Card Edge Connectors

- Outperform Gen 5 specification; backward mating compatible to Gen 1/2/3/4
- Provides excellent performance and additional options for extreme bandwidth applications
- Flexible mounting ears to meet different customer requirements



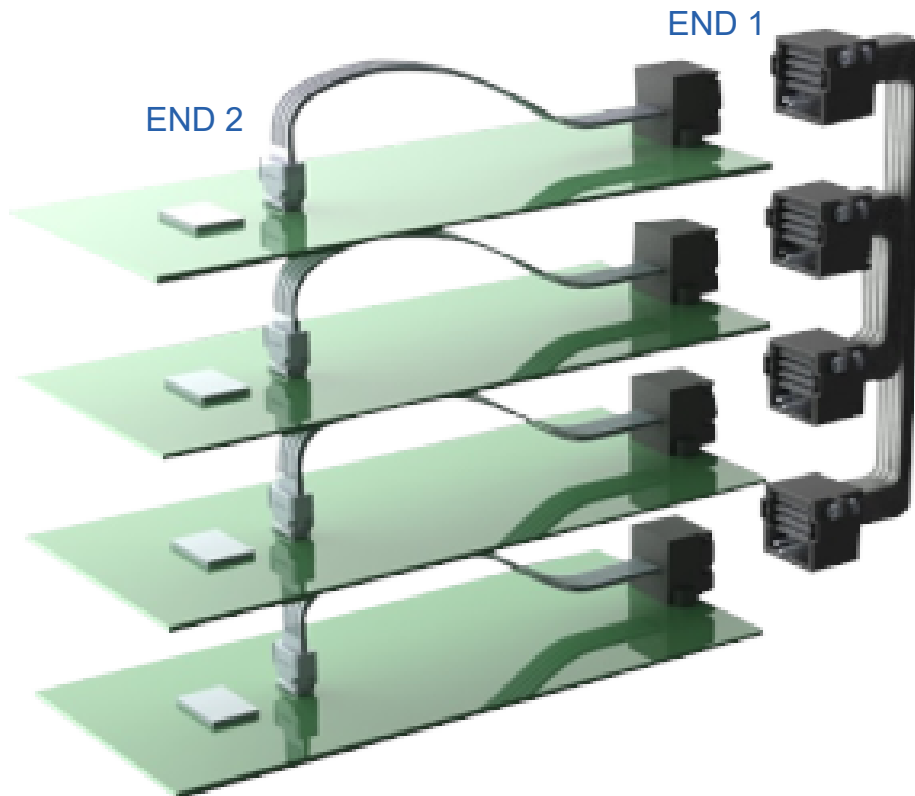
DensiLink® OverPass™ Assemblies

- Highest density (diff pair/mm²) Near-chip/on-chip interface in the market
- Full support of 56G & 112G signaling speeds and anticipated 224G16 and 24 diff pair configurations, 32 diff pair in development
- Superior signal integrity performance

CABLED BACKPLANE

OverPass™ backplane cable solutions extend the reach of passive copper for next generation system designs. Up to 224G PAM4 performance is optimized by utilizing our low loss twinax cable with Paladin® and ExaMAX® backplane connector families.

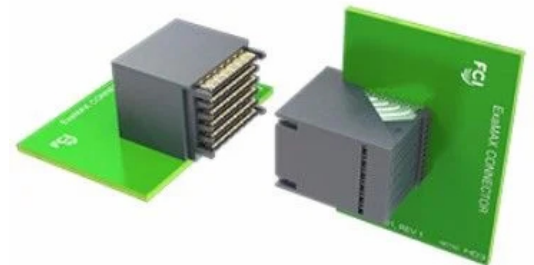
OverPass™ is complementary with traditional PCB routing and compatible with existing backplane connector systems. While providing enhanced performance, OverPass™ can lower system costs. This is done by reducing or eliminating the need for expensive active devices like re-timers, and high-performance board materials. The proven reliability of passive twinax copper, coupled with advanced wire attachment and 100% high speed test coverage provides peace of mind reliability.



ORTHOGONAL

Using OverPass™ product in Orthogonal applications allow system designers to have a direct high speed interconnect link from the chip site to the Orthogonal connector.

Hybrid applications can mix cable and board differential pairs into the same connector. Allowing select routing of low speed/low reach links through the board and high speed/high reach links cabled directly to the chip site. Multiple options for chip site connector, dependent on customer requirements.



END 1



EXAMAX2® 112Gb/s Backplane Connector

- Supports 112G PAM4 with industry leading return loss and reflection performance
- Innovative beam-on-beam mating provides improved SI performance and exceptionally low mating forces
- 100% backward mating compatible to previous ExaMAX products



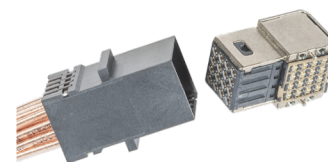
ExaMAX® 56Gb/s Backplane Connector

- Cost optimized with scalable performance beyond 56G PAM4
- Innovative design supports low insertion/extraction forces along with reduced crosstalk
- Flexible connector architecture supports all mating



Paladin® HD 112Gb/s Backplane System

- World class bandwidth and density, achieving 144 pairs orthogonal within 1RU at 112Gb/s
- Supports 4pr through 12pr wafer configurations
- Revolutionary hybrid board attachment
- Impedance control over a 1.50mm connector de-mate



Paladin® HD 224Gb/s Backplane System

- Industry leading SI performance supporting 224Gb/s data rates
- Revolutionary board technology allow unmatched performance and density
- Backwards compatible with Paladin® HD for direct upgrade path

END 2



Multi-Trak™

- High-speed 56Gb/s PAM4/PCIe® Gen 5 capability
- Supports both cable and card edge connection
- Support Power solutions with DIP type for total 21A
- Meets OCP DC-MHS and SFF-TA-1033 specifications



Low Profile SlimSAS® / UltraPort SlimSAS®

- 0.60mm pitch interconnect with superior signal integrity
- Designed for unshielded, internal or external I/O connectors
- Compliant with T10/Serial Attached SCSI (SAS-4) standard



Micro-LinkOVER™

- Full support of 56G & 112G signaling speeds and anticipated 224G
- Superior signal integrity performance
- Lower loss interconnect from chip site to external port



UltraPass™ OverPass™ Assemblies

- Direct point-to-point connection; high-density two-piece IO connector and cable system
- Full support of up to 224G signaling speeds
- Lower loss interconnect from chip site to chip site
- Highest signal speed in the industry



Mini Cool Edge IO

- 0.60mm pitch, vertical and right-angle configurations
- Up to 64Gb/s PAM4, PCIe® Gen 6, over 1.0 meter transmission distance
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Extreme Port™ Z-Link

- 0.60mm pitch with vertical and right-angle configurations
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- Slim form factor for compact data center system designs
- Compliant to Gen-Z and OCP NIC specification



DirectAttached™ CEM Card Edge Connectors

- Outperform Gen 5 specification; backward mating compatible to Gen 1/2/3/4
- Provides excellent performance and additional options for extreme bandwidth applications
- Flexible mounting ears to meet different customer requirements



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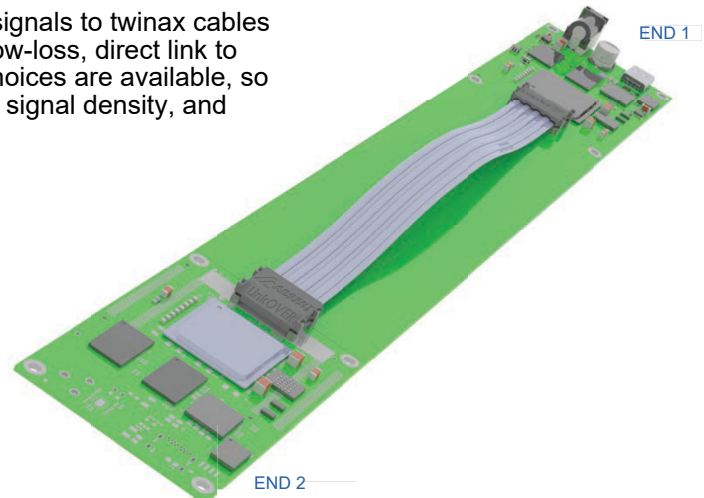
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INTERNAL

The OverPass™ cable system allows for the transfer of high-speed signals to twinax cables shortly after they are launched from the ASIC. Delivering a simple, low-loss, direct link to pluggable modules or anywhere in your system. Multiple interface choices are available, so system designers can optimize key parameters like signaling speed, signal density, and system heat management.

- Choose from multiple cable exit options like straight, right angle, or coplanar
- Solutions are available in 10G, 25G, 56G, 112G, and 224G PAM4 per lane signaling speeds

Let us help identify the ideal solution and optimized cost option from our broad range of OverPass™ connectivity products



END 2



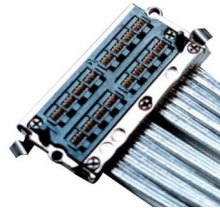
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OverPass™ HIGH SPEED BULK CABLES

The OverPass™ cable assembly portfolio is enhanced using Amphenol Spectra-Strip's high frequency SkewClear EXD cable technology and manufacturing expertise.

- Offerings include multi-pair cables: 2, 4 and 8 pair constructions in wire gages from 32 AWG to 26 AWG
- All feature FEP insulated wiring for the higher temperature environments that OverPass™ products can be exposed to while minimizing associated signal loss
- They support transmission speeds of 10G, 28G, 56G, 112G, and 224G PAM 4 per lane bandwidths
- Spectra-Strip engineers work closely with their Amphenol IO connector counterparts assuring our customers the lowest total applied interconnect link cost for their OverPass™ cable assembly applications



HIGH SPEED BULK CABLES



SkewClear® EXD™ Gen 1

Two insulated cores encapsulated in a secondary insulation, shielded longitudinally

- Closely coupled conductors reduce wire mode conversion
- Foam insulated cores possible to extend reach / density
- Longest reach links away from high heat sources (<85°C)
- Twinax geometry optimized for maximum reach and density for OSFP, Paladin HD2, and UltraPass



SkewClear® EXD™ Gen 2 (2 extrusion)

Two conductors encapsulated in a single insulation, shielded longitudinally

- Closely coupled conductors reduce wire mode conversion
- Customizable profiles possible
- High performance near chip applications
- Twinax geometry optimized for maximum reach and density for OSFP, Paladin HD2, and UltraPass



SkewClear® EXD™ Gen 2 (1 extrusion)

Two conductors encapsulated in a single insulation, shielded longitudinally

- Cu Shield improves losses ~10%
- Improved thermal stability in high temperature applications
- Closely coupled conductors reduce wire mode conversion
- Customizable profiles possible
- Designed for high performance near chip applications

COMPATIBILITY ROADMAP

- | | | | |
|-------------|--|--|--|
| 112G | <ul style="list-style-type: none">• Compatible with ExaMAX2, DensiLink, micro-LinkOver, QSFP-DD, OSFP and Paladin on longest reaches | <ul style="list-style-type: none">• Compatible with ExaMAX2, DensiLink, micro-LinkOver, QSFP-DD, OSFP and Paladin on longest reaches | <ul style="list-style-type: none">• Compatible with ExaMAX2, DensiLink, micro-LinkOver, QSFP-DD, OSFP and Paladin on longest reaches |
| 224G | <ul style="list-style-type: none">• Compatible with ExaMAX2, Paladin HD2, OSFP, and UltraPass on longest reach | <ul style="list-style-type: none">• Compatible with ExaMAX2, Paladin HD2, UltraPass, and OSFP | <ul style="list-style-type: none">• Compatible with ExaMAX2, Paladin HD2, UltraPass, and OSFP |

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