

# Applications & Markets

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**5G Networks**

Automotive

Consumer

Data Centers

e-Mobility

**Energy Storage Systems**

IoT

Industry 4.0

Lighting

Robotics

**Server & Storage**

Test & Measurement

Artificial Intelligence &  
Machine Learning



# Solving Your Electronic Design Challenges

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# Amphenol Overview

Amphenol Communications Solutions (ACS), a division of Amphenol Corporation, is a world leader in interconnect solutions for Communications, Mobile Consumer Products, RF, Optics, Broadband and Commercial electronics markets.

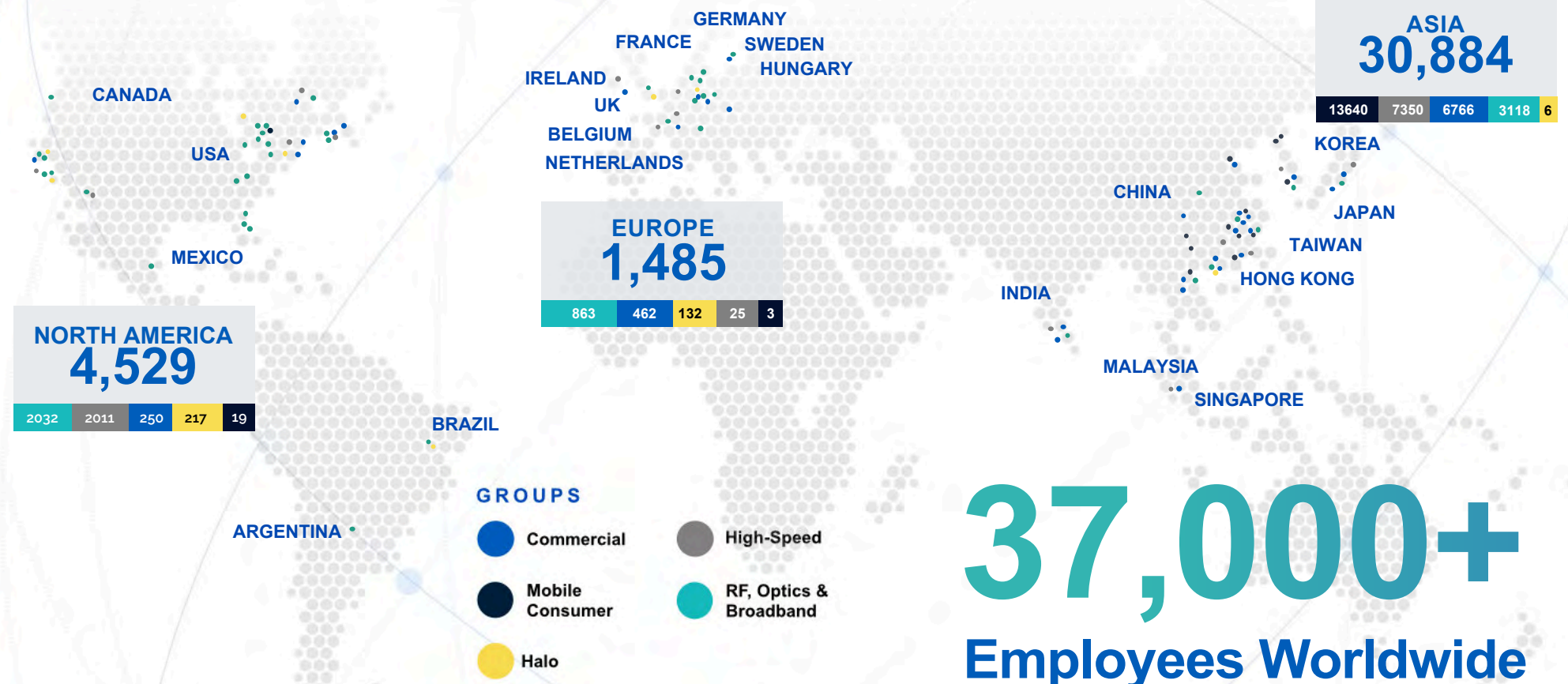
Amphenol Corporation is one of the world's largest designers and manufacturers of electrical, electronic and fiber optic connectors and interconnect systems, antennas, sensors and sensor-based products and coaxial and high-speed specialty cable.

ACS has an expansive global presence in research and development, manufacturing, and sales. We design and manufacture a wide range of innovative connectors as well as cable assemblies for diverse applications including server, storage, data center, mobile, RF, networking, industrial, business equipment, and automotive.

## Strong Global Presence

We place heavy emphasis on R&D for both new product and technology development, focusing on the advancement of the next generation of high-speed interconnects and power distribution solutions as well as innovative manufacturing solutions.

- Our R&D centers worldwide have registered thousands of patents and licensing agreements, developing some of the world's first innovations in connectors such as Shield-less High-Speed Connectors, Ball-Grid-Array Attachments, economical Stamped High-Power Contacts and cost effective yet reliable plating processes.
- We relentlessly seek improvements of our products, increasing our solutions' overall cost effectiveness, precision and reliability. This ensures that we meet or even surpass the ever changing needs and expectations of market trends.



# 37,000+ Employees Worldwide

APPLICATION SCOPE

# 5G Networks

The future of speed is at our fingertips with the advent of 5G — changing the way the world connects and communicates.



## Baseband Unit

Amphenol offers interconnect solutions ranging from high-speed I/O connectors and cable assemblies, harsh environment connectors to power connectors and more for designing efficient functioning baseband units.



## Remote Radio Units (RRU)/Antennas

From high-speed rugged outdoor I/O connectors to Ethernet connectors and transceivers, Amphenol has the best solutions to offer for RRUs and Antennas.



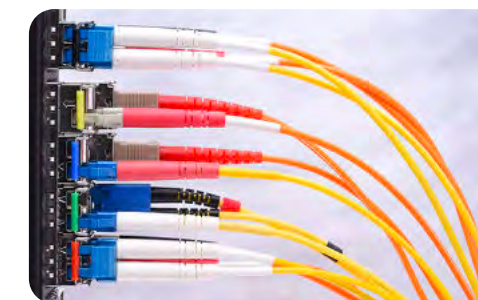
## Edge Servers / Edge Data Center

Edge servers can be simply described as high power computers or servers which are placed near or at the 'edge' of the 5G network. Our connector portfolio can address very edge server application.



## Network Switch & Gateway

Network gateways, switches and servers are an integrated part of the 5G network, especially inside the 5G core where all the post processing of the signal is carried out before being sent to the data centers.



## Transport / Fronthaul / Backhaul / Transponder

Transponders are interconnected units associated with the RRU or the BBU and play a large part in the transport of the 5G signal. Amphenol provides connectors that go inside the transponders and routers that assure a smooth run of the 5G transport.



**Mini Cool Edge IO**

- Up to 64Gb/s PAM4, PCIe® Gen 4, PCIe® Gen 5, PCIe® Gen 6, over 1.0 meter transmission distance
- 0.60mm pitch connectors support both cable and card edge connections
- Options for 92Ω, 85Ω and 95Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/SFP(+)/QSFP specifications



**Mini and Hyper Cool Edge for EDSFF/ SFF-TA-1002 /SFF-TA-1037/ OCP/ GEN Z**

- 0.60mm pitch connector, supports high-speed from 32GT/s, PCIe® Gen 6 64GT/s, up to 112G PAM4
- Designed to meet SFF TA 1002, SFF TA 1037, EDSFF E1/E3, OCP NIC 3.0 and Gen Z specifications
- Vertical, right angle, straddle mount and orthogonal options are available



**PCIe® M.2 Gen 5 and Gen 4**

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



**Multi-Trak™**

- Combines original PCIe® and Mini Cool Edge IO in one connector to provide both power (21A) and high/low-speed signal
- Up to 56Gb/s PAM4, PCIe® Gen 5, and target PCIe® Gen 6
- Options for 85Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/OCP DC-MHS/ SFF-TA-1033 specifications



**Double Density Cool Edge for Ultra Compact Design**

- 0.80mm pitch, power and signal hybrid connector
- Highly configurable wafer design for differential, single-ended and power options
- Supports high-speed of up to 32GT/s(or 56GT/s PAM4) capability



**PCIe® Gen 4/5/6**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



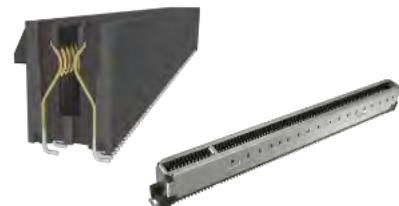
**ExtremePort™ Z-Link**

- Compliant with Gen-Z and OCP NIC specifications. SFF-TA-1002/1020 solution
- High-speed of up to 56Gb/s PAM4
- Supports both cable and card edge applications



**Standard Cool Edge 0.8mm for Automotive and 5G Antenna**

- Robust design with EMI shielding for Automotive Ethernet and Power applications
- Hybrid option for small cell active antenna BTB application
- One-piece small form factor to save space



**PCIe® Flip CEM, Slim CEM, Metal Cage CEM**

- Flip CEM with "JJ" contact or "LL" contact provides better support for card edge to save keep out area for routing as compared to standard PCIe® CEM contact of "JL".
- Standard PCIe® CEM footprint is 8.2mm, Slim CEM is 7.45mm, Flip CEM is 5.9mm
- Metal cage CEM provides enhanced housing support



**DDR5 SMT and SO-DIMM Memory module Connectors**

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch, JEDEC SO-016, SO-017, SO-019 compliant Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



**BergStak® Secure**

- High security, high density
- EMI Shielding
- Speed up to 32Gb/s.



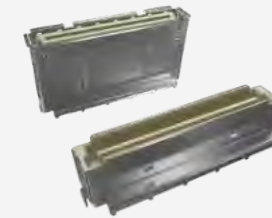
**Conan® Lite 1.00mm**

- Secure, Reliable connector.
- Audible "click" to ensure perfect mating.
- Speed up to 8Gb/s



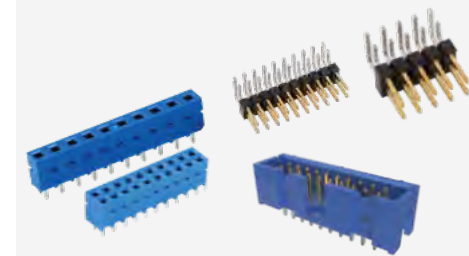
**PSAS, SAS and SATA Connectors**

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



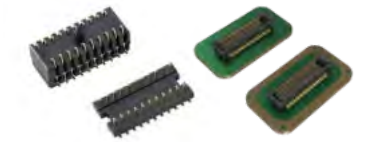
**BergStak® 0.80mm**

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



**Modular Systems 2.54mm/2.00mm**

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.



**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**ComboStak® 0.80mm / 0.50mm**

- Hybrid and medium Power solution.
- 0.8A / 0.5A signal, 20A / 25A power.
- Signal speed up to 12Gb/s / 20Gb/s



**Power Connectors**

- Wire to Board connectors in 3.0 mm and 4.2mm pitch with current ratings from 6.5A to 20A per pin
- Designed for IT and Datacom applications



**PwrBlade® MiniMezz**

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



**OCTIS™ Outdoor IO**

- Robust I/O solution for high reliability and performance
- Multiple versions: Optical, RJ45, Power, Signal, Hybrid
- Field-terminable connector series



**SheerPwr®**

- Available in 3.6mm, 6.0mm, and 8.0mm pin diameter options
- Large beam deflection range handles up to ±0.40mm of permanent misalignment
- Low 6.80mm connector height



**PwrBlade® Mini Cable-to-Board**

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



**PwrBlade+® I/O**

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



**CoolPower® SDM**

- Up to 35A per pin, high current Coolband contact technology
- Backplane, coplanar, and orthogonal configurations available
- 2 position or 4 position available



**PwrBlade® Mini Board-to-Board**

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



**Minitek® Pwr Connector and Cable Assembly**

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3.00mm, 4.20mm, and 5.70mm



**EnergyEdge™ X-treme**

- 3000W at 12V
- Available in straddle mount, right angle, right angle coplanar, and vertical configurations
- 25% increase in current linear density



**D-Sub Connectors & Cables**

- SMT Standard Connectors
- Slimline SMT Connectors
- High Current Connectors & Cables
- Accessories (Hoods, Backshells)
- Customized Connectors & Cables



**Ruggedized**

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



**SD/Micro SD Express Series Connectors**

- PCIe® Gen 3\*1/ Gen 4\*1 lane
- Backward compatible to UHS-I/UHS-II in one socket (3-in-1 solution)
- Push push/push pull structure



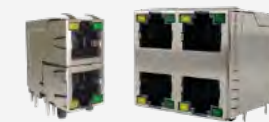
**High Temperature Backplane Connectors**

- Feature-packed connectors designed for use in higher operating temperature applications. Compliant to EN45545



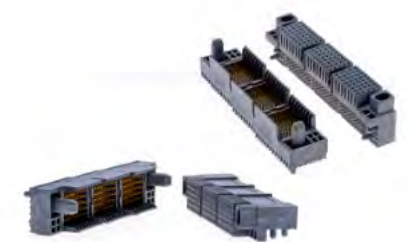
**Single Pair Ethernet**

- Next gen ruggedized interface
- IEC 63171-6, PoDL
- IP20 & IP67 connectors & cables
- Industrial Ethernet to the sensor and actuator level
- Multidrop Solutions



**RJ / Modular Jacks**

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications
- Cable Assemblies



**Millipacs® Plus**

- Configurable meeting designers' choice of signal data rates from 3Gb/s to 25Gb/s and power up to 40A and with multiple guiding options
- Compliant to Hardmetric equipment practice and complementary to 2mm Millipacs standard
- Options for Hotswapping, EMI shielding and high temperature



**ix Industrial™ Ethernet**

- Next gen ruggedized interface
- IEC 61076-3-124, Cat6A, PoE++
- IP20 & IP67 connectors & cables
- ix-Mag with integrated magnetics
- Factories, Robotics applications



**RJMG**

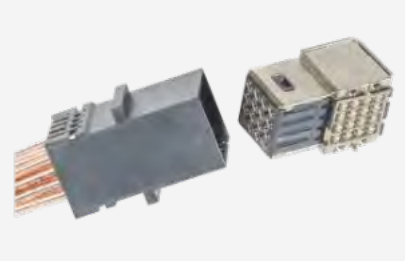
- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W), integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C.
- Meets IEEE802.3ab and supports various Ethernet PHY

5G Networks  
**High-Speed**



**ExaMAX2®**

SUPPORTING 112G PAM4 PERFORMANCE  
 Maintains mating interface compatibility with previous ExaMAX® products to allow cost/performance flexibility. The mating interface and connector design is optimized to support the demanding electrical and mechanical requirements of 112G systems.



**Paladin HD2®**

INDUSTRY-LEADING DENSITY & PERFORMANCE - YOUR PATH TO 224Gb/s  
 Paladin® HD2 leverages the same board attach, twin-ax cable attach, and mating interface as Paladin® HD for backward compatibility, offering a direct upgrade path to 224Gb/s PAM4.



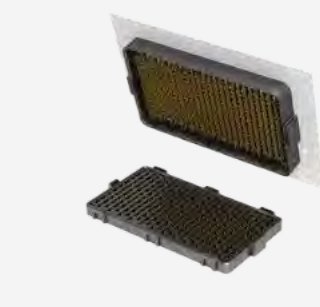
**Paladin® HD**

PROVIDES WORLD CLASS BANDWIDTH AND INDUSTRY-LEADING DENSITY AT 112Gb/s PERFORMANCE  
 Utilizes a balanced pair structure; built with individually assembled and discretely shielded differential pairs which have a revolutionary hybrid board attachment for maximized density. Backwards mate compatible with Paladin® HD2 family for a seamless upgrade path to 224Gb/s



**TR Multicoax Connector**

THE HIGHEST DENSITY, HIGH-SPEED COAX CONNECTOR  
 TR Multicoax connectors deliver superior signal integrity from multiple high-speed analog or digital channels. With a choice of 20GHz, 40GHz, 70GHz, and 90GHz configurations, users can upgrade their connectors according to bandwidth requirements of their application



**M-Series Mezzanine Connectors**

56GB/S HIGH-SPEED MEZZANINE BGA CONNECTOR SYSTEM  
 Leveraging proven technologies, including an industry leading BGA design, offering superior self-aligning and self-leveling. With a next generation differential pair contact design for up to 56Gb/s NRZ and 112Gb/s PAM4 performance.



**800G OSFP 2xDR4+ Transceivers**

ELECTRICALLY HOT-PLUGGABLE AND SUPPORTS 106.25Gb/s DATA RATE PER CHANNEL  
 Designed for use in 800G Ethernet links on up to 2km of single mode fiber. These transceivers are compliant with the OSFP MSA, IEEE802.3cu, OIFCMI and feature a single 3.3V power supply with an integrated Silicon photonics modular chip.



**UltraPass™ OverPass™ Cable Assemblies**

224G CONNECTION DIRECTLY FROM CHIP SITE TO EXTERNAL PORTS  
 UltraPass™ enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market. Up to 10X reduction in signal loss; addresses system thermal and mechanical needs.



**ExtremePort™ QSFP-DD 224G Connectors**

ENABLES 400G, 800G & 1.6Tb AGGREGATE BANDWIDTH PER PORT  
 A 76 position, 0.8mm pitch connector built for use in high-speed serial applications. Each port supports up to 1.6Tb/s in aggregate over an 8 x 224Gb/s electrical interface. The cage and connector design provides backwards compatibility to all QSFP modules.



**ExtremePort™ OSFP 224G Connectors**

ENABLES 400G, 800G & 1.6T AGGREGATE BANDWIDTH PER PORT  
 Amphenol's ExtremePort™ OSFP 224G interconnect system is comprised of a 60 position, 0.6mm pitch connector built for use in high-speed serial applications. Allows for use of either 56G, 112G or 224G OSFP products in any port and supports passive & active copper and optical solutions



# RF



### 2.2-5

Compact, lightweight connector series engineered to accommodate various cable types. Excellent low PIM performance. Robust design makes these connectors ideal for indoor and outdoor applications.



### HD-EFI

Micro-miniature RF interface designed to allow large board tolerance stack ups, blind mating and multiple RF lines. 50 ohm connector system with excellent electrical performance up to 6GHz, ideal for high-performance applications with a small package size.



### N-Type

Durable, weatherproof medium-size RF connector with configurations that support applications up to 18GHz. This threaded interface provide excellent RF and mechanical performance in a broad range of products.



### 2.92 mm

The 2.92 mm interfaces offers low VSWR and excellent return and insertion loss, along with high power handing capabilities. This connector has the ability to mate with SMA, 3.5 mm and other K or 2.92 mm interconnects for additional versatility.



### MCX

PCB and cable-mount 50 and 75 ohm options with quick connect/disconnect snap-on mating which reduces installation time. 50 ohm configurations support applications up to 6GHz while 75 ohm 12G versions operate up to 12GHz.



### SMA

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



### 4.3-10

Robust, low PIM interface designed to offer waterproof IP67-rated protection against temporary submergence and dust ingress. Excellent VSWR performance up to 6GHz.



### NEX10 Adapters

Between-series NEX10 adapters offer superior low PIM performance up to 6GHz. This lightweight threaded interface features a compact design with a small footprint ideal for small cells, distributed antenna systems (DAS) and MIMO applications.



### SMP

Versatile subminiature RF interface available in both push-on and snap-on mating styles that is commonly used in high frequency coaxial modules. Available in full, limited and smooth bore detent systems for board-to-board applications which utilize a floating bullet adapter which compensates for radial and axial misalignment. Cable-to-board mated pairs are designed to accommodate a variety of smaller diameter cable types.



### SMPM

Similar to the SMP interface, the SMPM connector series is a high-frequency RF interconnect designed to support applications up to 65GHz. The product series is available as a board-to-board and cable-to-board solution in a variety of straight and right-angle configurations with surface, through-hole and end launch mounting options.



### Internal Antennas

FPC and PCB RF antennas designed for use inside of a connected device. These antennas are commonly terminated to wireless modules featuring AMC or compatible ultraminiature connectors.



### External Antennas

Mounted to the outside of a device by means of an RF connector, external antennas are engineered for indoor and outdoor use with robust designs available for harsher environments.



# APPLICATION SCOPE

# Automotive

Amphenol has a successful history providing interconnect solutions that adhere to industry standards like USCAR and meeting LV214 severity levels.



## EV Charging

With a wide portfolio of power products supporting 15A-1000A ratings, low contact resistance, high thermal support and component modularity, Amphenol offers the most efficient solutions for the modern EV charging station.



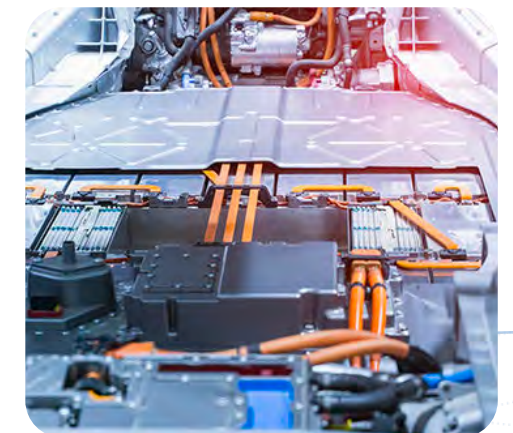
## Automotive Lighting

Modern automobiles are rich with ADAS features like smart LED lighting for adaptive headlights, and superior interior lighting. Amphenol provides a range of advanced USCAR2 compliant connectors like Microspace™, which are compact and meet LV214 standards.



## Advanced Electronics Systems

Amphenol brings a broad array of innovative technology and solutions to support the growth in the automotive industry, particularly in plating, signal integrity performance, and power management.



## Battery Management Systems

The battery is considered as the strategic component of any electric vehicle. Amphenol offers a range of compact, flexible high performing automotive grade connectors for these power circuit designs.

## Automotive



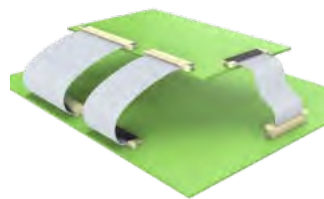
### Ve-NET™

- Developed according to USCAR-2 & LV214
- Using shielded twisted pair cables to support MULTI-GIG high data transmission rate.
- Supports Automotive Ethernet, LVDS, APIX3, and FPD-Link IV



### HSC Connector System

USCAR-2 COMPLIANT COMPACT HIGH-SPEED INTERCONNECT SYSTEM HSC connector system is a fully shielded interconnect system that supports data rates up to 1Gb/s and more. With 0.50mm square terminals, it allows a lighter and smaller connector design.



### FFC Jumper

- Easy to operate
- Available in numerous circuit sizes (4 to 60)
- Both Type S (same-side) and Type O (opposite-side) available
- PET Insulation



### Mini HSbridge+ /HSbridge+

- Compliant with USCAR-30 USB and USCAR-2
- High data rate up to 10Gb/s, current rating up to 5 amps of power output
- Multiple volume and colour coding requirements



### HSD (High-Speed Data) Connector System

COMPLIANT WITH USCAR-2 SPECS HSD connector system is a fully shielded interconnect system that can be used with shielded twisted quad cables. It has a high performance digital system for low-voltage differential signals which prevents interference from crosstalk and external sources.



### 2.00mm FFC/FPC Connectors with Autolock Mechanism

NON-ZIF FLEX CONNECTOR WITH AUTOLOCK LV214 S1 qualified non-ZIF flex connector with an autolock mechanism and surface mount termination.



### NETBridge+™ Automotive Ethernet Connector System

USCAR-2 COMPLIANT AUTOMOTIVE ETHERNET CONNECTORS NETBridge+™ Automotive Ethernet Connector System is designed for automotive applications and can transmit up to 100Mb/s and 1Gb/s according to IEEE 100BASE-T1 and 1000BASE-T1 and will be upgraded to 10Gb/s.



### FloatCombo™ Floating Board-to-Board Connector System with Power Pin

- 0.50mm pitch connector with 4 independent power pins
- Supports 5A current per power pin and high-speed data rates up to 16Gb/s
- Various stacking heights from 8mm to 30mm with large floating allowance
- USCAR-2 T3V2 qualified



### 0.50mm FFC/FPC Connectors with Autolock Mechanism - F308/F332 Series

RIGHT ANGLE NON-ZIF FLEX AUTOLOCK CONNECTORS USCAR-2 T3V2 qualified 0.50mm pitch right angle non-ZIF flex connector with an autolock mechanism and surface mount termination.

## Automotive



### Automotive Grade PCI Express® Gen 5 Card Edge Connectors

PCIe® Gen 5 straddle mount connectors outperform the industry standards with higher speed along with complying to USCAR. The optimized series supports backwards mating and is footprint compatible with PCIe® 4/3/2/1



### FlexLock™ 3.20mm / 2.54mm

- Easier assembly, less weight, lower cost
- USCAR-T2V2 LV-214 S3 specifications
- 3A per contact, TPA and CPA



### MicroSpaceXS™ 1.27mm

- Crimp to Wire and Wire to Wire solutions
- LV214 Severity-3 and USCAR-T2V2 compatible
- 4A per contact, TPA and CPA



### Automotive Grade PCIe® M.2 Gen 4 Card Edge Connectors

HIGH DENSITY HIGH PERFORMANCE CONNECTOR Amphenol's PCIe® M.2 Gen 4 connectors provide 67 contacts on 0.50mm pitch and signal transmission speed of 16Gb/s. It is designed for PCIe® 4.0, USB 3.0/3.1 and SATA 3.0 applications, and USCAR compliant, making it suitable for automotive applications.



### WireLock® 1.80mm

- Highly vibration resistant, low mating force
- USCAR-T2V2, LV 214 S2 compliant
- 2A per contact, TPA and CPA



### MicroSpaceXS™ Waterproof

- Crimp to Wire and Wire to Wire solutions
- USCAR-T2V2 and LV214 Severity 2 specifications
- 3A per contact, TPA and CPA, IP68



### FlexFast™ Flex to Board Connector Solution

- Small size and low height flex to board connection solution.
- 0.45mm/0.75mm/0.9mm/1.5mm/1.8mm pitch. Pin counts from 12-100pin
- Automotive grade compliant to USCAR2 and LV214
- Designed for BMS, battery pack, Inverter+DCDC applications



### MicroSpace™ High Voltage Selective Loaded Crimp-to-Wire Connector Platform

- Compact, robust and versatile
- LV214 S2 compatible
- 3.81 / 6.35 / 8.89mm pitch; 400V, 800V and 1200V.



### Minitek® Pwr Connector and Cable Assembly

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3.00mm, 4.20mm, and 5.70mm



### BarKlip® XP Series

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



### BarKlip® BK200 I/O for EV Charging

DIRECT PLUGGABLE CLIP THAT CONNECTS TO BUSBARS IN EV CHARGING STATIONS  
Amphenol's BarKlip® BK200 I/O provides a convenient method of distributing up to 200A between busbars, cables and circuit boards. It features 14 fully independent cantilevered beams, providing a true compliant spring to adjust for variations in busbar alignment and surface finish.



### PwrBlade+® I/O

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



### EnergyKlip™ EK160

- Rated up to 160A per contact
- IP67 seal available
- Robust latching system



### EnergyKlip™ EK350

- Rated up to 350A per contact
- IP67 seal
- Robust latching system



### IPC-M50 Connector

- Rated up to 50A per 6AWG contact (UL rated currents up to 120A)
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



### IPC-M350 Connector

- Rated up to 500A per 350MCM (185mm<sup>2</sup>) contact
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



### DuraEV™

- Provides continuous current of 70A and withstands 10,000 mating cycles
- IP67 rated portable and fixed battery connectors for charging and discharging electric vehicles
- Robust and durable solution



### DuraSWAP™ Swappable Battery Connectors

- IP67 rated swappable battery connector
- Provides continuous current of 100A and withstands 10,000 mating cycles
- Connector mates in four different orientations



# Automotive High-Speed



## MEG-Array®

### INDUSTRY-PROVEN BGA ARRAY CONNECTOR

The MEG-Array® Mezzanine Connector system provides the high density and high-speed benefits of a large array supported by the reliability and low costs of standard surface mount PCB assembly.



## MEG-Array® R+

### 56GB/S HIGH-SPEED MEZZANINE BGA CONNECTOR SYSTEM

Leveraging proven technologies, including an industry leading BGA design, offering superior self-aligning and self-leveling.



## Lynx™

HIGH-SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR  
Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, telecommunication, industrial.

# Automotive RF



## AUTOMATE® Mini-FAKRA Connectors

The AUTOMATE® Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions available.



## AUTOMATE® Mini-FAKRA Cable Assemblies

AUTOMATE® Mini-FAKRA cables assemblies are designed with a compact, modular housing and available in multi-port configurations for camera and other high-bandwidth automotive applications. High-performance up to 9GHz with secure and easy mating and unmating.



## FAKRA Connectors

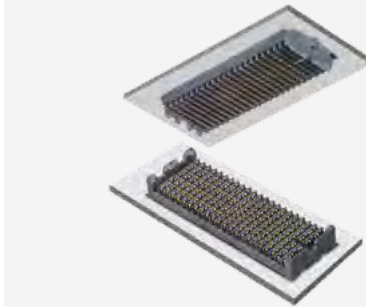
Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



## TR Multicoax Connector

### THE HIGHEST DENSITY, HIGH-SPEED COAX CONNECTOR

TR Multicoax connectors deliver superior signal integrity from multiple high-speed analog or digital channels. With a choice of 20GHz, 40GHz, 70GHz, and 90GHz configurations, users can upgrade their connectors according to bandwidth requirements of their application



## Chameleon®

### ADAPT AND ADVANCE TO THE NEXT GENERATION

With performance speeds up to 25Gb/s+, Chameleon meets the demand for faster, smaller and more compact connector solutions. Chameleon delivers a new level of performance unlike any other platform connector on the market today.



## InfinX®

### OPTIMIZED FOR PERFORMANCE AND DIFFERENTIAL PAIR SIGNALING

The InfinX® high-speed mezzanine connector solution is designed to meet the needs of 25+Gb/s applications. Available in 4- and 6-Pair configurations, InfinX® is your best choice for high-speed board-to-board applications.



## Smart Antenna Interconnect

Consolidates wireless functions into a single module that utilizes custom RF products to enable the mounting of these modules directly to external vehicle antennas. Ruggedized for use in automotive environments against mechanical and environmental stresses.



## Camera Module Interconnect

Custom camera backs and high-float blindmateable internal interconnect connect high bandwidth camera modules used for ADAS, 360 surround view and safety applications. External connectivity options include FAKRA, Mini-FAKRA and pre-terminated cable with an overmolded strain relief.



## FAKRA to AMC/AMC4 Cable Assemblies

FAKRA to AMC and AMC4 assemblies combine the automotive industry-standard FAKRA connector with the ultraminiature AMC or AMC4 connectors on micro-coax cable. Ideal for tight spaces, these configurations are commonly used to connect cameras, antennas, sensors or other devices in the cab of a vehicle. Custom solutions are available.



## cStack™

### CUSTOMIZABLE SOLDERLESS INTERPOSER-BASED ONE-PIECE STACKER

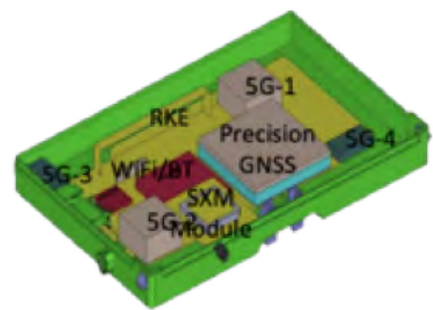
The Amphenol cStack™ high speed solderless interconnect solution provides limitless flexibility for board-to-board mezzanine applications and board-to-board stackable and coplanar applications.



## FAKRA to FAKRA Cable Assemblies

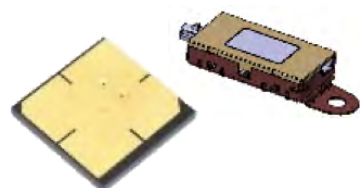
FAKRA to FAKRA assemblies are used to connect cameras, antennas, sensors and other devices to a vehicles ECU or compute modules. Standard configurations feature straight and right-angle FAKRA plugs and jacks terminated to RG-174 or RG-58 low loss cable. Custom FAKRA cable assemblies and harnesses are available in any configuration utilizing a wide array of automotive cable types.

# Automotive SAA Automotive Antennas



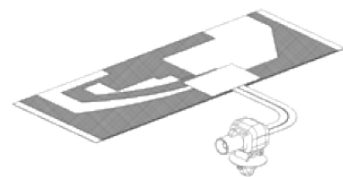
## Smart Antenna Modules

- Receiver / Tuner next to Antenna
- MIMO Antenna
- Digital communication HSD /
- Ethernet



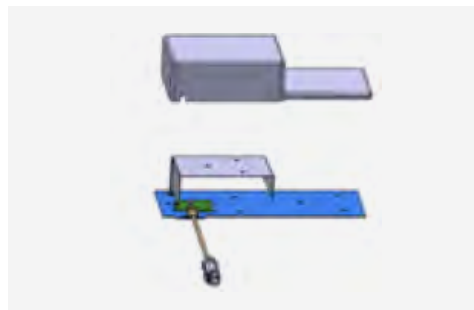
## Passive and Active Antenna components

- Amplifier LNA
- Switches / Gateways
- Multiplexer / Splitter



## Antenna Wiring Solutions

- FAKRA / Coax
- HSD
- Ethernet



## Data Communication

- GSM to LTE / Future 5G
- Telematic Data



## Comfort and Safety: Low Frequency – Short Range

- Bluetooth / WIFI
- Wireless Charging
- Keyless Entry
- TPMS



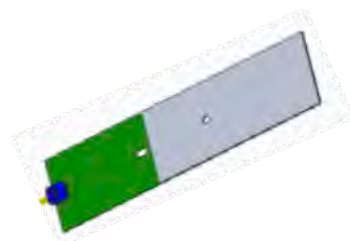
## Broadcast / Infotainment

- Satellite Radio SDARS
- Television UHF/VHF
- Glass Antennas
- FM / AM Radio
- DAB Radio
- DTV



## Autonomous Driving

- GPS / Glonass / Galileo
- Precision GNSS Recognition
- Car 2 X communication
- Traffic data broadcasting



## Remote Controlled Functions

- Keyless Entry
- Remote HVAC Control
- Vehicle Pre Condition



## Hidden 5G



## Transparent Antenna



## V2X



## LTE/WIFI



## Spoiler Ant AM/FM/DAB

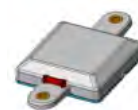


## AM/FM LNA



## Battery Coil

## AM/FM/DAB Printed on Glass



## Battery Coil



## GPS



## V2X Compensator



## NFC/Reader



## V2X Antenna



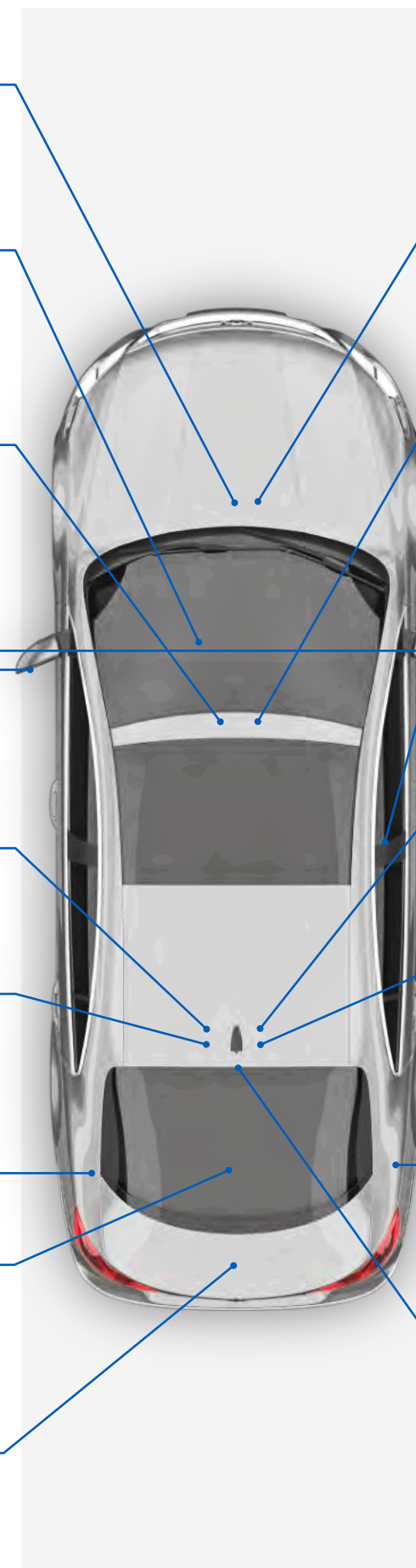
## Sharkfin Antenna 5G, GNSS, V2X, WIFI



## Battery Coil



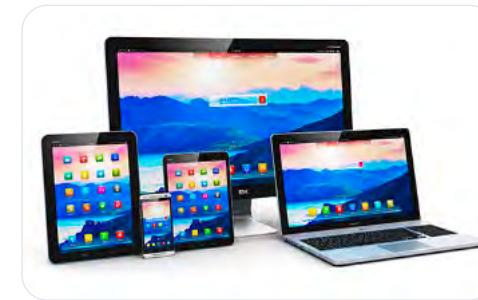
## BT/UWB Module



## APPLICATION SCOPE

# Consumers

Amphenol is ready with excellent interconnect solutions that are capable of operating precisely and efficiently to meet the new levels of connectivity and convenience over a wide range of consumer applications.



## Desktop / Notebook Computers

Amphenol has a track record in supplying the right choice of connectors addressing various components of a desktop computer including Motherboards, power supply units, storage. Also provides a range of connectors suiting the battery management, trackpad, high definition cameras, USB4 connectors and storage drives of powerful Notebooks.



## Power Tools

Amphenol provides a choice of connectors to charge up battery-operated cordless power tools like drills, jackhammers, saws, and sanders.



## Personal Care Products

Amphenol has an array of compact, high performance Input Output, Board-to-Board and Wire-To-Board solutions that service the PCBs, power supply units, and motors of these devices so that they keep us satisfied with the highest quality, precision, and perfection.



## Home Appliances

To meet next generation smart home requirements, Amphenol connectors are designed to support increasingly sophisticated home appliances requiring integrated features like wireless connectivity and sensing capabilities.



## Wearables

Amphenol's focus on innovation enables us to provide our customers an array of miniature, high performance interconnect solutions for next generation wearable devices.



## E-Bikes

E-bikes set standards for the next generation light-mobility, with safer, greener, and comfortable rides. Amphenol provides high power and reliable battery support that ensures uninterrupted performance for longer durations.



### PCIe® M.2 Gen 5 and Gen 4

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



### PSAS, SAS and SATA Connectors

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



### DisplayPort 2.1 Connectors

- DP2.1, UHBR20, 80Gb/s/4 Lanes, 85ohm, for DP80 cable
- Backward compatible to DP1.4 footprint.
- Optional for flange and plastic post.



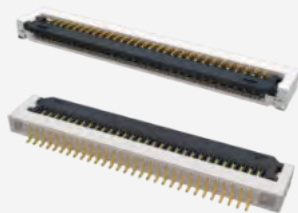
### DDR5 SO-DIMM Connectors

- 262 positions connector in high-density design of 0.50mm pitch
- 4.00mm, 8.00mm, 5.20mm and 9.20mm height
- Right angle and vertical orientation with SMT mechanical hold-downs



### USB Type C Connectors

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen 1 and Gen 2
- Waterproof versions featuring unique O-ring technology (LIM) perform up to IPX8
- Supports up to 240W (5A/48V) power supply



### FFC/FPC Connectors

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



### Compression, Board-to-Board Connectors and Interposer

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



### SD/Micro SD Express Series Connectors

- PCIe® Gen 3\*1/ Gen 4\*1 lane
- Backward compatible to UHS-I/UHS-II in one socket (3-in-1 solution)
- Push push/push pull structure



### Power Connectors

- Wire to Board connectors in 3.0 mm and 4.2mm pitch with current ratings from 6.5A to 20A per pin
- Designed for IT and Datacom applications



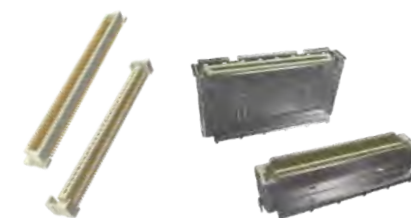
### Minitek® Pwr Connector and Cable Assemblies

- Complete interconnect solutions for wire-to-wire and wire-to-board
- Available in pitch sizes of 3.00mm, 4.20mm and 5.70mm
- Current ratings from 5A to 28A



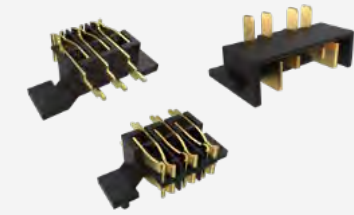
### ComboStak® 0.80mm / 2.00mm

- Hybrid and medium power solution
- 0.8A signal, 20A power
- Signal speed up to 12Gb/s



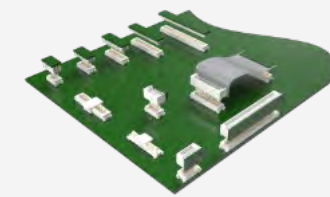
### BergStak® 0.80mm

- Ideal for use in high density applications
- Wide range of positions and stack heights
- Speed up to 16Gb/s



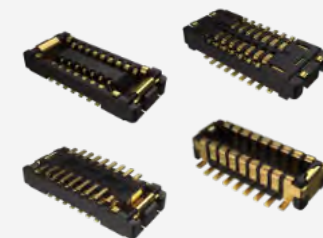
### Battery Pack Connectors for Cordless Power Tools

- Robust battery pack charger connector for cordless power tools, lawnmowers, cordless vacuum cleaner, and personal care devices
- Ratings up to 45A per contact
- IP67 rated both mated and un-mated



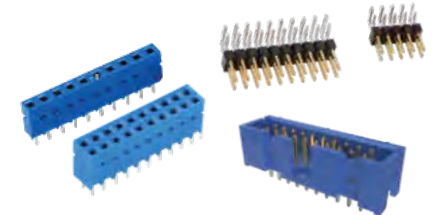
### Conan® 1.00mm

- Secure, reliable connector
- Audible "click" to ensure perfect mating
- Speed up to 8Gb/s



### Micro Board-to-Board

- Low profile and fine pitch for high density applications
- High current rating (Up to 5A)
- Chamfer connector design prevents mismatching



### Modular Systems 2.54mm/2.00mm

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.



### ComboLock® 1.00mm/3.00mm

- Compact, hybrid wire-to-board connector.
- Active Positive Latching
- 1.5A signal, 10A power



### Customized Solutions for Automotive and Consumer Applications

- Supports custom connector requirements with value-added solutions, minimal turnaround time, and competitive pricing

## Consumer



### Lynx™

**HIGH-SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR**  
Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, industrial, medical and more.



### TR Multicoax Connector

**THE HIGHEST DENSITY, HIGH-SPEED COAX CONNECTOR**  
TR Multicoax connectors deliver superior signal integrity from multiple high-speed analog or digital channels. With a choice of 20GHz, 40GHz, 70GHz, and 90GHz configurations, users can upgrade their connectors according to bandwidth requirements of their application



### Lynx™ QD

**THE QUAD DIFFERENTIAL SOLUTION**  
Optimized for differential pair signaling, Lynx™ QD sets a new standard for density and flexibility that offers an innovative, high performance interconnect with PCIe® Gen 5 support. Lynx™ QD supports data rates of 56Gb/s PAM4.



### cStack™

**CUSTOMIZABLE SOLDERLESS INTERPOSER-BASED ONE-PIECE STACKER**  
The Amphenol cStack™ high-speed solderless interconnect solution provides limitless flexibility for board-to-board mezzanine applications and board-to-board stackable and coplanar applications when terminated to a flex circuit.





### Standalone LDS Antenna

- LDS technology can be used for all types of antennas in consumer devices
- Antenna trace efficiently used on 3D surfaces to optimize the antenna performance
- 4G/LTE/5G
- Wi-Fi / BT / BLE / UWB
- GNSS / LoRa



### LDS with cable assembly

- In laptops/tablets or other devices where the antenna is located away from the radio – with LDS the cable can be soldered on antenna trace pad and connected to radio



### LDS on white resin

- Complex trace design on earbud
- White resin
- Via's
- Wi-Fi / BT / BLE



### LDS on small form factor

- When space matters
- Trace design with great antenna performance
- Wi-Fi / BT / BLE



### Transparent LDS

- LDS covered by transparent resin
- 2- shot molding
- High precision
- Connected on inside



### LDS inside the housing

- Efficient use of space
- Multiple-antennas in one process
- Easy connection via pogo-pins or c- clips
- Cost savings



LDS Process on Outer Surface



Paint Over LDS Trace Pattern



Polish Paint Surface



Final Paint Layers + UV Coat

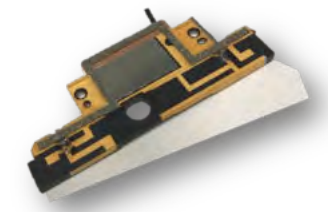
### LDS outside the housing

- Further improve the antenna performance by have the antenna trace on outside of the housing
- Hide the coating process



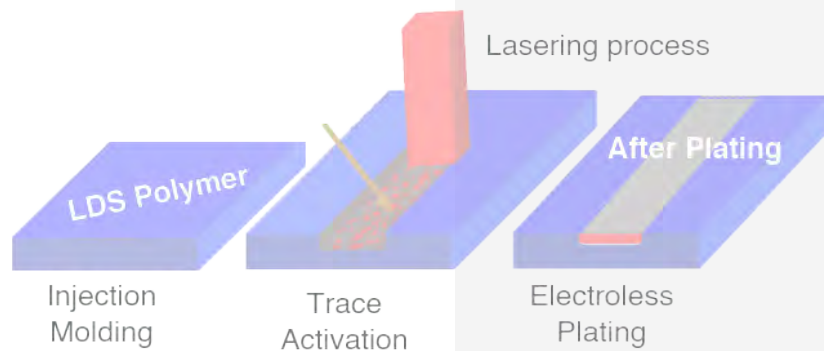
### LDS with hinge solution

- Excellent solution to combine antenna + hinge



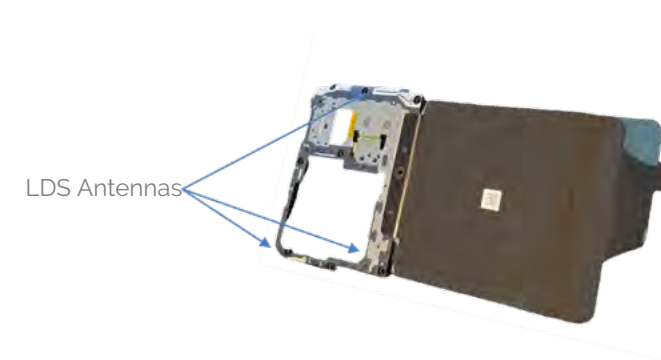
### LDS with integrated P -Sensor

- LDS antenna integrated with a P-sensor
- One-part assembly



### LDS Process in a snap-shot

- Antenna trace on 3D surface
- LEP, non LDS polymer resin alternative
- Excellent trace tolerances
- Less parts, fewer assembly steps and reduced weight
- High volume in-house capacity



### Insert mold LDS

- Maximize the integration
- Multiple LDS antennas + insert mold
- Combine with other NFC/WPC
- One-part assembly



### LDS with SMT components

- Solder SMT components directly on LDS trace
- Matching of antenna directly on LDS part
- Cable soldering

APPLICATION SCOPE

# Data Centers

Amphenol provides a wide range of high-speed, high-performance interconnects engineered for next-generation systems



## Storage

Amphenol has a robust portfolio of high performance, reliable connectors that are ideal for Data Center storage systems. Amphenol provides a wide range of the most advanced interconnect solutions for modern Data Centers and all their components.

## Rack Connectivity

Check out Amphenol's connector and cable solutions including Transceivers, Active Optical Cables, and high-speed External I/O Cable Assemblies that are perfect for consistent high-speed rack connectivity.



## Server / Switch Router

Amphenol offers many interconnect solutions like high-speed I/O Connectors, Board-to-Board and Wire-to-Board Connectors, Memory, Media, and Peripheral Connectors, Modular Jack and USB solutions, and SATA and SAS Storage Connectors, which help in the flawless performance of these systems.

## Power Distribution

Amphenol's high density power connectors, bus-bar interconnects, and cabled solutions effectively enable these power distribution units to help power up the entire Data Center.



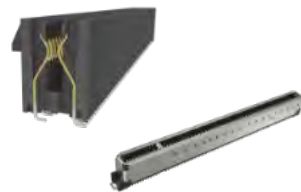
**EDSFF, OCP, Power Shelf and PCIe® DirectAttached® Cable Assemblies**

- PCIe® DirectAttached® cable riser solution supports up to PCIe®5.0 32Gb/s, eliminates PCB trace and Vias, improves insertion loss by 0.75db @16GHz at 0.5m cable length
- EDSFF cable assemblies for E1 / E3 specifications
- OCP cable assemblies for OCP NIC 3.0
- Power Shelf cable assemblies for ORv3



**Standard Cool Edge 0.8mm for Automotive and 5G Antenna**

- Robust design with EMI shielding for Automotive Ethernet and Power applications
- Hybrid option for small cell active antenna BTB application
- One-piece small form factor to save space



**PCIe® Flip CEM, Slim CEM, Metal Cage CEM**

- Flip CEM with "JJ" contact or "LL" contact provides better support for card edge to save keep out area for routing as compared to standard PCIe® CEM contact of "JL"
- Standard PCIe® CEM footprint is 8.2mm, Slim CEM is 7.45mm, Flip CEM is 5.9mm
- Metal cage CEM provides enhanced housing support



**Mini and Hyper Cool Edge for EDSFF/ SFF-TA-1002 /SFF-TA-1037/ OCP/ GEN Z**

- 0.60mm pitch connector, supports high-speed from 32GT/s, PCIe® Gen 6 64GT/s, up to 112G PAM4
- Designed to meet SFF TA 1002, SFF TA 1037, EDSFF E1/E3, OCP NIC 3.0 and Gen Z specifications
- Vertical, right angle, straddle mount and orthogonal options are available



**PCIe® M.2 Gen 5 and Gen 4**

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



**DDR5 SMT and SO-DIMM Memory module Connectors**

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch. JEDEC SO-016, SO-017, SO-019 compliant Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



**Double Density Cool Edge for Ultra Compact Design**

- 0.80mm pitch, power and signal hybrid connector
- Highly configurable wafer design for differential, single-ended and power options
- Supports high-speed of up to 32GT/s (or 56GT/s PAM4) capability



**PCIe® Gen 4/5/6**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**PSAS, SAS and SATA Connectors**

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



**ExtremePort™ Z-Link**

- Compliant with Gen-Z and OCP NIC specifications. SFF-TA-1002/1020 solution
- High-speed of up to 56Gb/s PAM4
- Supports both cable and card edge applications



**Fan Connectors**

- Blind-Mate Interface Wire to Board connectors from 1.25mm to 2.54mm pitch with max current rating 5.5A/pin. Designed for Server and Storage applications
- Card to Wire connectors in 2.44mm and 2.54mm pitch with current rating 4A/pin. Designed for Switch application



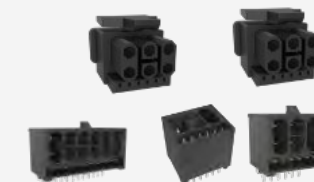
**Mini Cool Edge IO**

- Up to 64Gb/s PAM4, PCIe® Gen 4, PCIe® Gen 5, PCIe® Gen 6, over 1.0 meter transmission distance
- 0.60mm pitch connectors support both cable and card edge connections
- Options for 92Ω, 85Ω and 95Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/SFP+/QSFP specifications



**ExtremePort™ Swift**

- Ultra-low profile, 0.60mm pitch connector in 8X, 16X configurations. Mating height 8.38mm
- Designed for unshielded, internal I/O connectors
- With 85Ω impedance and meets PCIe®Gen 5 NRZ 32G specifications



**Minitek® PICPwr OCP Connector Solutions**

- Newly launched 12V connector solution supports Open Compute Project Power Distribution and Management architecture requirements
- Operating power and voltage is 864W at 12VDC



**Multi-Trak™**

- Combines original PCIe® and Mini Cool Edge IO in one connector to provide both power (21A) and high/low-speed signal
- Up to 56Gb/s PAM4, PCIe® Gen 5, and target PCIe® Gen 6
- Options for 85Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/OCN DC-MHS/ SFF-TA-1033 specifications



**RJMG**

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W), integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C.
- Meets IEEE802.3ab and supports various Ethernet PHY



**Minitek® Pwr CEM-5 PCIe® Connector System**

- Rated current up to 9.5A per contact with all 12 power contacts and 4 Signal contacts
- New introduction CEM 5.0 PCI Express® 12VHPWR auxiliary hybrid connector and cable assembly support the 600W GPU cards
- Positive locking on housing with low thumb latch operation



#### PwrBlade® ULTRA HD+

- Rated up to 100A per contact
- Next-generation PwrBlade® Connector
- Optimized guide design to reduce connector width



#### PwrBlade® Mini Board-to-Board

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



#### BarKlip® BK450

- Currents rated up to 450A per contact
- 36 independent points of contact for high current carrying capability
- ±3.5mm of gatherability for blind mate applications



#### PwrBlade® MiniMezz

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



#### 48V BarKlip® BK300 IO

- Distributes up to 300A per contact
- Fully compliant with ORv3 IT Gear Power Input Specification
- New sense contact (Mate last- Break First)



#### BarKlip® XP Series

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



#### PwrBlade® Mini Cable-to-Board

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



#### ORv3 AC Input Connectors and Cable Assemblies

- 7-Pin connector designed for Star, Delta, and single-phase connections
- Fully compliant with OCP ORv3 Power Shelf Universal Input Connector Specification
- Rated up to 32A per pin



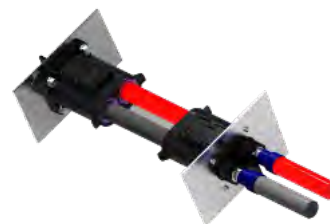
#### PwrBlade+® I/O

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



#### OCP ORv3 BarKlip® BK500 IO

- Distributes up to 500A per contact between busbars, cables, and circuit boards
- Simple configurable plug-and-play solution
- Fully compliant with ORv3 Power Output Specifications



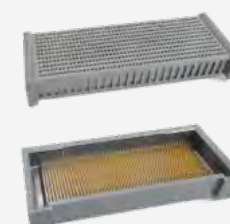
#### CoolPower® HD

- Rated up to 350A per pin (10.3mm pin diameter)
- Flexible housing form-factor
- Straight-exit and 90-degree cable solution



#### OCP ORv3 BarKlip® BK150 IO

- Distributes up to 150A per contact between busbars, cables, and circuit boards
- New sense contact (Mate last- Break First)
- Fully compliant with ORv3 IT Gear Power Input Specification



#### DensiStak™

- High density Board-to-Board.
- EMI Shielding, Blind-mating feature.
- Speed up to 16Gb/s



#### 48V BarKlip® BK600 IO

- Distributes up to 700A per contact
- Fully compliant with ORv3 Power Output Specification
- Mates with OCP ORv3 laminated busbar (6mm thick)

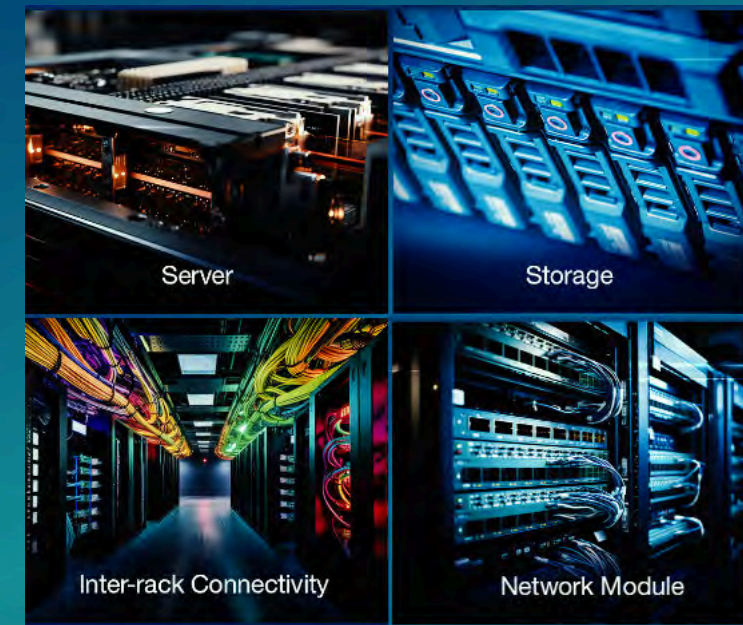


#### BergStak® 0.80mm

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s

## High Speed Backplane Cables

Amphenol is the leader in high-speed, high-density cable connection solutions, designing and manufacturing the industry's leading cable backplane systems.



Server

Storage

Inter-rack Connectivity

Network Module

Data Centers  
**High Speed**



**ExaMAX2®**

SUPPORTING 112G PAM4 PERFORMANCE  
Maintains mating interface compatibility with previous ExaMAX® products to allow cost/performance flexibility. The mating interface and connector design is optimized to support the demanding electrical and mechanical requirements of 112G systems.



**InfinX® Mezzanine Connectors**

OPTIMIZED FOR PERFORMANCE AND DIFFERENTIAL PAIR SIGNALING  
The InfinX® high-speed mezzanine connector solution is designed to meet the needs of 25+Gb/s applications. Available in 4- and 6-Pair configurations, InfinX® is your best choice for high-speed board-to-board applications.



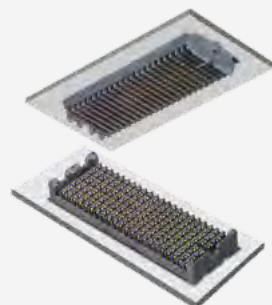
**QSFP28 Active Optical Cable**

HIGH PERFORMANCE, PLUG AND PLAY INTERCONNECT SOLUTIONS  
Amphenol's 100G QSFP28 to QSFP28 Active Optical Cable assemblies are a reliable, cost and power efficient, integrated solution which is ideal for high density signal transmission.



**Lynx™**

HIGH-SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR  
Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, telecommunication, industrial.



**Chameleon®**

ADAPT AND ADVANCE TO THE NEXT GENERATION  
With performance speeds up to 25Gb/s+, Chameleon meets the demand for faster, smaller and more compact connector solutions. Chameleon delivers a new level of performance unlike any other platform connector on the market today.



**Mini-SAS HD Active Optical Cable**

RELIABLE HIGH PERFORMANCE INTERCONNECT SOLUTION FOR MSAS APPLICATIONS  
Amphenol's Mini-SAS HD Active Optical Cable is fully compliant to SAS 2.1 and SAS 3.0 industry standards as well as the SFF-8636 interface standard. Used primarily for external Enterprise storage applications.



**Lynx™ QD**

THE QUAD DIFFERENTIAL SOLUTION  
Optimized for differential pair signaling, Lynx™ QD sets a new standard for density and flexibility that offers an innovative, high performance interconnect with PCIe® Gen 5 support. Lynx™ QD supports data rates of 56 Gb/s PAM4.



**Paladin® HD**

PROVIDES WORLD CLASS BANDWIDTH AND INDUSTRY-LEADING DENSITY AT 112Gb/s PERFORMANCE  
Utilizes a balanced pair structure; built with individually assembled and discretely shielded differential pairs which have a revolutionary hybrid board attachment for maximized density Backwards mate compatible with Paladin® HD2 family for a seamless upgrade path to 224Gb/s.



**Paladin® HD2**

INDUSTRY-LEADING DENSITY & PERFORMANCE – YOUR PATH TO 224Gb/s  
Paladin® HD2 leverages the same board attach, twin-ax cable attach, and mating interface as Paladin® HD for backward compatibility, offering a direct upgrade path to 224Gb/s PAM4.



**SFP28 25G Transceivers**

LOW POWER CONSUMPTION, HIGH SPEED, HIGH RELIABILITY  
Amphenol 25G SFP28 optical transceiver includes SR, LR Lite, LR, ER, etc. adopt LC interface and compatible with IEEE802.3by, Mainly applied in 25G Ethernet, CPRI10 and other environments.



**UltraPass™ OverPass™ Cable Assemblies**

224G CONNECTION DIRECTLY FROM CHIP SITE TO EXTERNAL PORTS  
UltraPass™ enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market. Up to 10X reduction in signal loss; addresses system thermal and mechanical needs.



**SFP Connectors & Cable Assemblies**

SUPPORTS DESIGNS FROM 28G, 56G PAM4 Passive & active cables; 26AWG to 32AWG cable. Stacked, ganged and belly-to-belly board connector and cage configurations with heat sinks and light pipes. Available in all 4x form factors.



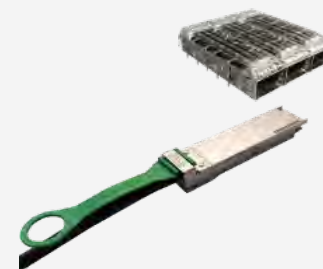
**QSFP28 100G Transceivers**

LOW POWER CONSUMPTION, DUAL RATE SUPPORT, HIGH SPEED AND HIGH RELIABILITY  
Amphenol 100G QSFP28 transceivers include SR4, CWDM4, LR4 and ER4 lite, adopt MPO or LC interface and compatible with IEEE802.3bm, SFF-8636 and other standards.



**OSFP Loopback 200G/400G**

200G / 400G SYSTEM CONFIGURATION SOLUTION  
Amphenol's OSFP (Octal SFP) Loopback Modules are part of our OSFP I/O system product family that includes copper cables, connectors and AOC's. These OSFP loopback cable assemblies are offered in four configurations.



**QSFP28/56/112G Connectors & Cable Assemblies**

SUPPORTS PER PORT DESIGNS FROM 100G, 200G AND 400G PAM4  
4 lanes per cable – 28G, 56G and 112G per lane capability. Passive & active cables; 26AWG to 32AWG cable. Stacked, ganged and belly-to-belly connector and cage configurations. Available in all 4x form factors.



**ExtremePort™ OSFP 112G Connectors & Cable Assemblies**

SUPPORTS PER PORT DESIGNS FROM 200G, 400G AND 800G PAM4  
8 lanes per cable – 28G, 56G & 112G per lane capability. Double the bandwidth per port vs. QSFP. Backwards plug compatible with QSFP28/56 optical transceivers. Available in all 4x form factors.



**QSFP DD Loopback 200G/400G**

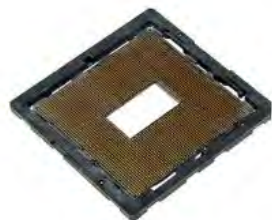
200G / 400G SYSTEM CONFIGURATION SOLUTION  
Amphenol's QSFP DD (Double-Density) Loopback Modules are part of our comprehensive QSFP DD product family offering - cables, connectors and AOC's. These QSFP DD loopback cable assemblies are offered in four configurations.



**TR Multicoax Connector**

THE HIGHEST DENSITY, HIGH-SPEED COAX CONNECTOR  
TR Multicoax connectors deliver superior signal integrity from multiple high-speed analog or digital channels. With a choice of 20GHz, 40GHz, 70GHz, and 90GHz configurations, users can upgrade their connectors according to bandwidth requirements of their application

Data Centers  
**High-Speed**



**cLGA® Land Grid Array Socket System**

HIGH PERFORMANCE, LOW COST CHIP-TO-BOARD APPLICATION  
 Designed to bring conventional connector material construction to high performance, low cost chip-to-board applications. Used in applications ranging from handheld computer products to supercomputer systems.



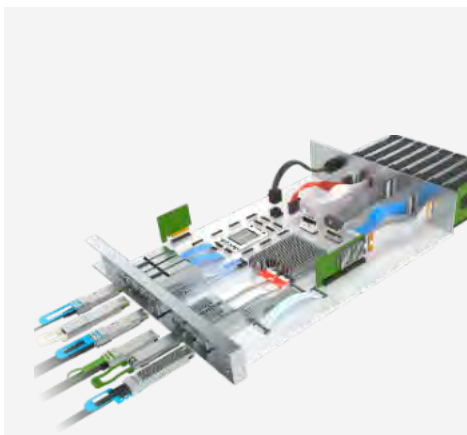
**OSFP Interconnect System**

OPTIMIZED FOR SIGNAL INTEGRITY IN HIGH-SPEED SERIAL APPLICATIONS  
 Operates at 56Gb/s PAM-4 for up to 400Gb/s aggregated bandwidth with 60 contacts per port. Supports 16 high-speed pairs and 10 power/control pins with advanced internal ground features providing improved crosstalk performance



**High-Speed Bulk Cables**

SUPPORTS TRANSMISSION SPEEDS OF 10G, 28G, 56G, 112G, and 224G  
 High frequency SkewClear EXD cable technology offerings include multi-pair cables: 2, 4 and 8 pair construction in wire gages from 32 AWG to 26 AWG (34 AWG in development)



**OverPass™ Cable System**

INDUSTRY-LEADING DIRECT HIGH-SPEED INTERCONNECT  
 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.



**ExtremePort™ QSFP-DD 224G Connectors**

ENABLES 400G, 800G & 1.6Tb AGGREGATE BANDWIDTH PER PORT  
 A 76 position, 0.8mm pitch connector built for use in high-speed serial applications. Each port supports up to 1.6Tb/s in aggregate over an 8 x 224Gb/s electrical interface. The cage and connector design provides backwards compatibility to all OSFP modules.



**800G OSFP 2xDR4+ Transceivers**

ELECTRICALLY HOT-PLUGGABLE AND SUPPORTS 106.25Gb/s DATA RATE PER CHANNEL  
 Designed for use in 800G Ethernet links on up to 2km of single mode fiber. These transceivers are compliant with the OSFP MSA, IEEE802.3cu, OIFCMI and feature a single 3.3V power supply with an integrated Silicon photonics modular chip.



**M-Series Mezzanine Connectors**

56GB/S HIGH-SPEED MEZZANINE BGA CONNECTOR SYSTEM  
 Leveraging proven technologies, including an industry leading BGA design, offering superior self-aligning and self-leveling. With a next generation differential pair contact design for up to 56Gb/s NRZ and 112Gb/s PAM4 performance.



**ExtremePort™ OSFP 224G Connectors**

ENABLES 400G, 800G & 1.6T AGGREGATE BANDWIDTH PER PORT  
 Amphenol's ExtremePort™ OSFP 224G interconnect system is comprised of a 60 position, 0.6mm pitch connector built for use in high-speed serial applications. Allows for use of either 56G, 112G or 224G OSFP products in any port and supports passive & active copper and optical solutions



**OSFP Copper Cable Assemblies**

A COMPREHENSIVE INTERCONNECT SYSTEM FOR COPPER OR OPTICAL BASED CABLE SOLUTIONS  
 Compatible with 25G/lane channel NRZ up to 112G/lane channel PAM4 signaling protocols that allow the cables to deliver aggregate bandwidths of 200G, 400G, and 800G per cable assembly. Available in both Passive and Active variants.



# APPLICATION SCOPE

# e-Mobility

Compact, robust, leading-edge interconnect solutions for EV charging stations, electric, hybrid vehicles, and powertrain applications.



## Battery Management Systems

The battery is considered as the strategic component of any electric vehicle. All electric vehicles (EVs) are equipped with a Battery Management System (BMS) that intelligently controls the battery charge and protects it from operations beyond the safe limits.



## On-Board Charger

On-Board Chargers are an integral and built-in part of Electric Vehicles for interfacing with AC-based charging systems. The Alternating Current (AC) supplied by the charger passes through the cable to reach the OBC, which then converts it to DC to charge the EV battery under the supervision of the Battery Management System (BMS).



## Power Inverter and Converter

The power inverter/converter unit within an electric vehicle converts the high voltage DC energy from the battery to a multiphase AC current that helps to drive the traction motor. The EV power management system also comes with a converter that does the reverse function at times of regenerative braking.



## Cell Connection System

A Cell Connection System (CCS) is integrated into the top battery cover of the EV battery module to bring high-voltage connectivity as well as channel signals like temperature and pressure sensing information to the BMS.



## Vehicle Control Unit

Vehicle Control Units (VCU) are considered the powertrain management system within an electric vehicle. They help with various functionalities of a vehicle from torque coordination, to gearshift operations, voltage management, and charging control.



## EV Charging

With a wide portfolio of power products supporting 15A-1000A ratings, low contact resistance, high thermal support and component modularity, Amphenol offers the most efficient solutions for the modern EV charging station.



**Ve-NET™**

- Developed according to USCAR-2 & LV214
- Using shielded twisted pair cables to support MULTI-GIG high data transmission rate.
- Supports Automotive Ethernet, LVDS, APIX3, and FPD-Link IV



**FlexFast™ Flex to Board Connector Solution**

- Small size and low height flex to board connection solution.
- 0.45mm/0.75mm/0.9mm/1.5mm/1.8mm pitch. Pin counts from 12-100pin
- Automotive grade compliant to USCAR2 and LV214
- Designed for BMS, battery pack, Inverter+DCDC applications



**MicroSpace™ High Voltage selective loaded Crimp-to-Wire Connector Platform**

- COMPACT, ROBUST AND VERSATILE CONNECTOR SYSTEM  
MicroSpace™ High Voltage selective loaded Crimp-to-Wire connector platform's unique design enables LV214 Severity-2 and performs at 3.81mm, 6.35mm, and 8.89mm pitch with 400V, 800V and 1200V.



**HSD (High-Speed Data) Connector System**

COMPLIANT WITH USCAR-2 SPECS  
HSD connector system is a fully shielded interconnect system that can be used with shielded twisted quad cables. It has a high performance digital system for low-voltage differential signals which prevents interference from crosstalk and external sources.



**FlexLock™ 3.20mm / 2.54mm**

- FPC system for easy assembly
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features.



**MicroSpace™ / MicroSpaceXS™ 1.27mm**

- Compact, robust and versatile.
- LV214 severity-2 / 3, USCAR-T2V2 compatible.
- 4A per contact, TPA, CPA features.



**Mini HSbridge+ /HSbridge+**

- Compliant with USCAR-30 USB and USCAR-2
- High data rate up to 10Gb/s, current rating up to 5 amps of power output
- Multiple volume and colour coding effectiveness complaint with automotive requirements



**WireLock® 1.80mm**

- Robust, low mating force.
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features



**DensiStak™**

- High density Board-to-Board.
- EMI Shielding, Blind-mating feature.
- Speed up to 16Gb/s



**2.00mm FFC/FPC connectors with Autolock Mechanism**

NON-ZIF FLEX CONNECTOR WITH AUTOLOCK  
LV214 S1 qualified non-ZIF flex connector with an autolock mechanism and surface mount termination.



**FloatCombo™ Floating Board-to-Board Connector System with Power Pin**

- 0.50mm pitch connector with 4 independent power pins
- Supports 5A current per power pin and high-speed data rates up to 16Gb/s
- Various stacking heights from 8mm to 30mm with large floating allowance
- USCAR-2 T3V2 qualified



**Flexible Printed Circuit**

- Design flexibility
- Wide range of pitch sizes, positions and stack heights
- Speed up to 16Gb/s



**FFC/FPC Connectors**

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm



**0.80mm Floating Board-to-Board Connectors - B406/B407/B410 Series**

HIGH-SPEED BOARD-TO-BOARD WITH FLOATING MECHANISM  
Amphenol's B406/B407/B410 series are 0.80mm pitch floating board-to-board connectors which support stack height up to 23mm and positions from 30 to 120.



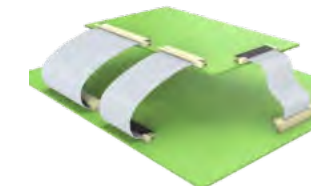
**BergStak® 0.40mm**

- Fine pitch, vibration-proof.
- Wide range of positions.
- Speed up to 16Gb/s



**0.50mm FFC/FPC Connectors with Autolock Mechanism - F33M/F332/F323 Series**

NON-ZIF FLEX AUTOLOCK CONNECTORS  
F33M/F332/F323 series is a 0.50mm pitch Non-ZIF flex connector with an Autolock mechanism and surface mount termination. It comes with 6 to 68 contact positions in both right angle and vertical orientations.



**FFC Jumper**

- Easy to operate
- Available in numerous circuit sizes (4 to 60)
- Both Type S (same-side) and Type O (opposite-side) available
- PET Insulation



**ComboStak® 0.80mm / 0.50mm**

- Hybrid and medium Power solution.
- 0.8A / 0.5A signal, 20A / 25A power.
- Signal speed up to 12Gb/s / 20Gb/s.



**DuraSWAP™ Swappable Battery Connectors**

- IP67 rated swappable battery connector
- Provides continuous current of 100A and withstands 10,000 mating cycles
- Connector mates in four different orientations



**IPC-M350 Connector**

- Rated up to 500A per 350MCM (185mm<sup>2</sup>) contact
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



**BarKlip® XP Series**

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



**DuraEV™**

- Provides continuous current of 70A and withstands 10,000 mating cycles
- IP67 rated portable and fixed battery connectors for charging and discharging electric vehicles
- Robust and durable solution



**EnergyKlip™ EK160**

- Rated up to 160A per contact
- IP67 seal available
- Robust latching system



**PwrBlade+® I/O**

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



**IPC-M50 Connector**

- Rated up to 50A per 6AWG contact (UL rated currents up to 120A)
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



**EnergyKlip™ EK350**

- Rated up to 350A per contact
- IP67 seal
- Robust latching system



**cStack™ Flex Cables**

- Enables unique packaging solutions not available with other technologies
- Can be routed over and around obstacles to conserve space and maximize airflow
- Made of highly flexible Polyimide material
- Low mated height at 1.22mm offering superior performance



**TR Multicoax Connector**

- The highest density, high-speed coax connector
- Features superior signal integrity from multiple high-speed analog or digital channels
- Choose from 20GHz, 40GHz, 70GHz, or 90GHz configurations



**MEG-Array® 32Gb/s High Density BGA Connector**

- A market-proven and trusted solution
- Flexible ground distribution
- Optimized for high-speed signal integrity
- 32Gb/s differential pair performance for 4mm and 6mm stack height



**Chameleon®**

- Meets the demand for faster, smaller, and more compact connector solutions
- Performance speeds up to 25Gb/s+
- Delivers a new level of performance unlike any other connector in the marketplace



**Lynx™ QD 56Gb/s PCIe® Gen 5 Differential Signaling Connector**

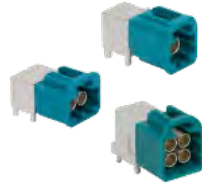
- Delivers superior performance and an upgrade path to future system designs
- Optimized for differential pair signaling
- High density, compact footprint that is also configurable for open pin field applications
- 12 to 80 differential pair modules; 36 to 240 conductors



**InfinX®**

- Optimized for performance and differential pair signaling
- Designed to meet the needs of 25Gb/s+ applications
- Available in 4- and 6-Pair configurations
- An ideal choice for high-speed board-to-board applications

# RF



## AUTOMATE Mini-FAKRA Connectors

The AUTOMATE Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions available.



## AUTOMATE Mini-FAKRA Cable Assemblies

AUTOMATE Mini-FAKRA cable assemblies are designed with a compact, modular housing and available in multi-port configurations for camera and other high-bandwidth applications. High-performance up to 9GHz with secure and easy mating and unmating



## FAKRA

Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



## FAKRA to FAKRA Cable Assemblies

FAKRA to FAKRA assemblies are used to connect cameras, antennas, sensors and other devices to an ECU or compute module. Standard configurations feature straight and right-angle FAKRA plugs and jacks terminated to RG-174 or RG-58 low loss cable. Custom FAKRA cable assemblies and harnesses can be designed in any configuration utilizing a wide array of automotive cable type.



## FAKRA to AMC/ AMC4 Cable Assemblies

FAKRA to AMC and AMC4 assemblies combines the traditional automotive industry-standard FAKRA with the ultraminiature AMC or AMC4 connectors on micro-coax cable. Ideal for tight spaces, these configurations are commonly used to connect cameras, antennas, sensors or other devices in the chassis of a robot. Custom solutions available.



## Smart Antenna Interconnect

Consolidates wireless functions into a single module that utilizes custom RF products to enable the mounting of these modules directly to external vehicle antennas. Ruggedized for use in automotive environments against mechanical and environmental stresses.



## Camera Module Interconnect

Custom camera backs and high-float blindmateable internal interconnect connect high-bandwidth camera modules used for ADAS, 360 surround view and safety applications. External connectivity options include FAKRA, Mini-FAKRA and pre-terminated cable with an over molded strain relief.



## APPLICATION SCOPE

# Energy Storage System

From Residential to Commercial energy storage systems, Amphenol provides a wide variety of interconnect solutions for energy storage systems.



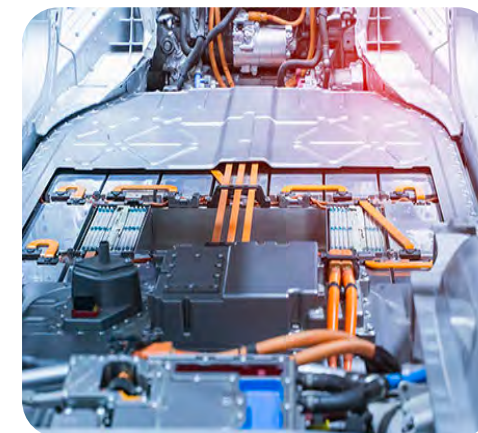
## AC-DC Inverters

The AC/DC Inverters or PCS (Power Conditioning Systems) work in conjunction with battery units for the smooth functioning of the Energy Storage System. Amphenol's enhanced power connectors and cable solutions are ideal for use in these systems.



## Battery Storage System

Amphenol offers compact, flexible high performing connectors that support Battery Storage systems within an Energy Storage System (ESS.)



## Battery Management System

Battery Storage, the key component of an Energy Storage System (ESS), is often equipped with a Battery Management System (BMS). From medium power wire-to-board connectors to board-to-board and card edge connectors, Amphenol has an extensive array of compact, reliable solutions that support BMS operation inside an ESS.



## ESS Controllers

An ESS Controller is used for efficient management of the battery modules in an Energy Storage System and manages charging, discharging of battery modules in addition to monitoring and controlling the environment temperature inside the ESS. It works alongside the BMS to collect and process data like voltage, current and fuse status. Through a CAN bus, these units maintain communication between battery racks and power conversion units of the ESS. Check out Amphenol's innovative connector solutions supporting ESS Controllers.



**EnergyKlip™ EK160**

- Rated up to 160A per contact
- IP67 seal available
- Robust latching system



**EnergyKlip™ EK350**

- Rated up to 350A per contact
- IP67 seal
- Robust latching system



**IPC-M50 Connector**

- Rated up to 50A per 6AWG contact (UL rated currents up to 120A)
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



**BarKlip® XP Series**

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



**MicroSpace™ / MicroSpaceXS™ 1.27mm**

- Compact, robust and versatile.
- LV214 severity-2 / 3, USCAR-T2V2 compatible.
- 4A per contact, TPA, CPA features.



**FlexLock™ 3.20mm / 2.54mm**

- FPC system for easy assembly
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features.



**IPC-M350 Connector**

- Rated up to 500A per 350MCM (185mm<sup>2</sup>) contact
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



**PwrBlade® MiniMezz**

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



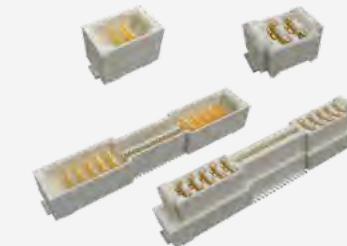
**PwrBlade® Mini Cable-to-Board**

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



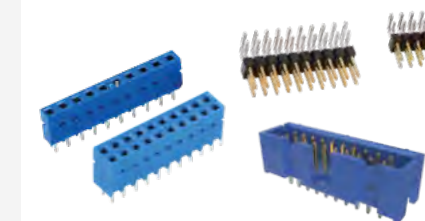
**WireLock® 1.80mm**

- Robust, low mating force.
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features



**ComboStak® 0.80mm / 0.50mm**

- Hybrid and medium Power solution.
- 0.8A / 0.5A signal, 20A / 25A power.
- Signal speed up to 12Gb/s / 20Gb/s



**Modular Systems 2.54mm/2.00mm**

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.



**PwrBlade® Mini Board-to-Board**

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



**PwrBlade+® I/O**

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



**Minitek® Pwr Connector and Cable Assembly**

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3.00mm, 4.20mm, and 5.70mm



**Conan® Lite 1.00mm**

- Secure, Reliable connector.
- Audible "click" to ensure perfect mating.
- Speed up to 8Gb/s



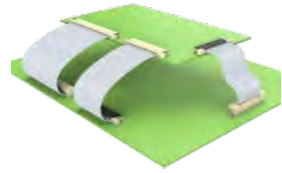
**ComboLock® 1.00mm / 3.00mm**

- Compact, hybrid wire-to-board connector.
- Active Positive Latching.
- 1.5A signal, 10A power.



**BergStak® 0.80mm**

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



### FFC Jumper

- Easy to operate
- Available in numerous circuit sizes (4 to 60)
- Both Type S (same-side) and Type O (opposite-side) available
- PET Insulation



### FFC/FPC Connectors

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



### FlexFast™ Flex to Board Connector Solution

- Small size and low height flex to board connection solution.
- 0.45mm/0.75mm/0.9mm/1.5mm/1.8mm pitch. Pin counts from 12-100pin
- Automotive grade compliant to USCAR2 and LV214
- Designed for BMS, battery pack, Inverter+DCDC applications

## RF



### AUTOMATE Mini-FAKRA

The AUTOMATE Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions and various cable assembly configurations available.



### FAKRA

Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



### SMA

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



### FloatCombo™ Floating Board-to-Board Connector System with Power Pin

- 0.50mm pitch connector with 4 independent power pins
- Supports 5A current per power pin and high-speed data rates up to 16Gb/s
- Various stacking heights from 8mm to 30mm with large floating allowance
- USCAR-2 T3V2 qualified



### Single Pair Ethernet

- Next gen ruggedized interface
- IEC 63171-6, PoDL
- IP20 & IP67 connectors & cables
- Industrial Ethernet to the sensor and actuator level
- Multidrop Solutions



### Ruggedized

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



### TNC

Weatherproof threaded 50 ohm interface ensures connector will not de-couple in vibration-intense applications. Expansive product line includes designs for most industry-standard coaxial cable types. Durable construction for harsh environments.



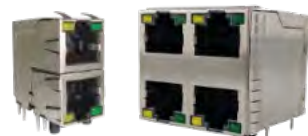
### Internal Antennas

FPC and PCB RF antennas designed for use inside of a connected device. These antennas are commonly terminated to wireless modules featuring AMC or compatible ultraminiautre connectors.



### External Antennas

Mounted to the outside of a device by means of an RF connector, external antennas are engineered for indoor and outdoor use with robust designs available for harsher environments.



### RJ / Modular Jacks

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications
- Cable Assemblies



### RJMG

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W) , integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C .
- Meets IEEE802.3ab and supports various Ethernet PHY



### D-Sub Connectors & Cables

- SMT Standard Connectors
- Slimline SMT Connectors
- High Current Connectors & Cables
- Accessories (Hoods, Backshells)
- Customized Connectors & Cables

Amphenol provides a range of high power connectors and many more advanced interconnects for ESS.



High Power Density with Small Footprint

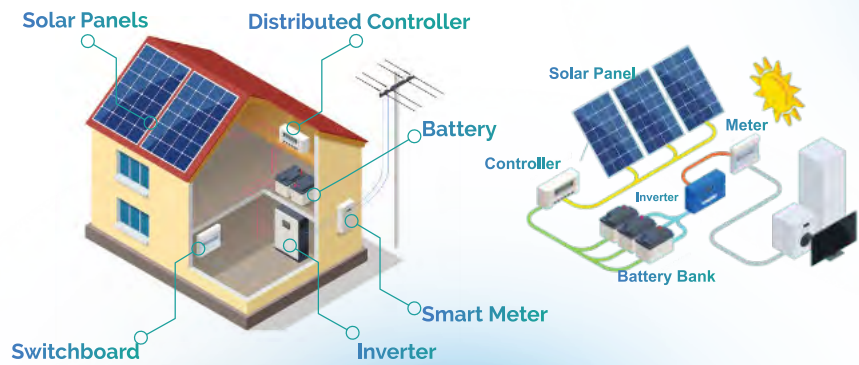


Hassle-free design for Field installation

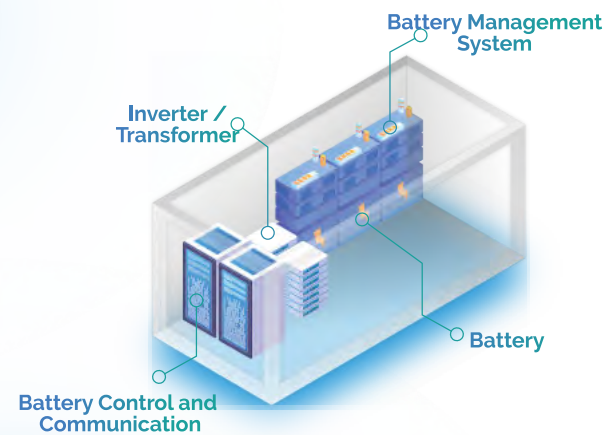


High Reliability in rugged and harsh conditions

### Residential ESS



### Commercial ESS



### EV charging



24 by 5 online technical support, chat now at [www.amphenol-cs.com](http://www.amphenol-cs.com)

# APPLICATION SCOPE

# IoT

Check out Amphenol's wide range of high-speed, power efficient, rugged connectors supporting IoT technologies.



## Smart Home Automation

With smart home automation, you can interact through your mobile device with any device or appliance in your home from anywhere. Control lighting and entertainment systems, manage security, surveillance, and more. Check out Amphenol's interconnect solutions today.



## Building Automation

Building automation is a concept that targets centralized automatic control of all systems within a building from HVAC, lighting, security, elevators, AV communications, parking meters, and vending machines, to energy and water management, landscaping/ irrigation, and digital signage.



## Smart City

Sensors, surveillance cameras, street and outdoor lighting, utility meters and various other smart devices connected to the Internet accumulate data, which is processed in data analyzing centers, and is further used to optimize the communication between citizens and utilities, leading to a smooth functioning of an efficient city.



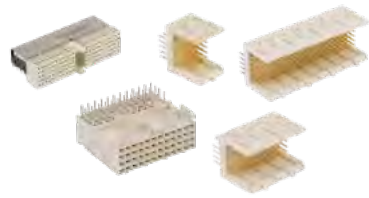
## Smart Grid

The success of a Smart Grid lies in setting up efficient and reliable networks consisting of computers, sensors, and automation technologies. These are more secure, greener, and enable seamless integration of renewable technologies like wind and solar power.



## Industry 4.0

Amphenol, as a leader in technological advancements, is equipped with a range of connector and cable solutions to support various equipment-enabling Industry 4.0 applications. These interconnect components are tough, durable, and feature the most advanced sealing, ingress protections, and electromagnetic shielding demanded by the harsh factory environments.



### Industrial Backplane Connectors

- 2.00 mm Millipacs® series hard metric connector, 2mm Metral® series future bus connector & 2.54mm DIN 41612 connector for robust applications in the Industrial segment
- Features 2-beam twisted tulip contact which provides an equalized signal path



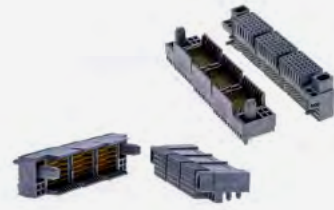
### High Temperature Backplane Connectors

- Feature-packed connectors designed for use in higher operating temperature applications. Compliant to EN45545



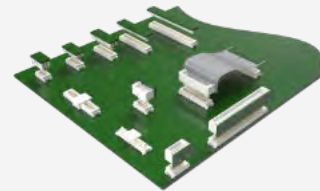
### ComboStak® 0.80mm / 2.00mm

- Hybrid and medium power solution
- 0.8A signal, 20A power
- Signal speed up to 12Gb/s



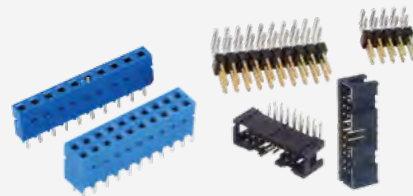
### Millipacs® Plus

- Configurable meeting designers' choice of signal data rates from 3Gb/s to 25Gb/s and power up to 40A and with multiple guiding options
- Compliant to Hardmetric equipment practice and complimentary to 2mm Millipacs standard
- Options for Hotswapping, EMI shielding and high temperature



### Conan® 1.00mm

- Secure, reliable connector
- Audible "click" to ensure perfect mating
- Speed up to 8Gb/s



### Modular Systems 2.54mm/ 2.00mm

- Dubox®, Quickie®, BergStik®, PV®2.54mm, Minitek® 2.00mm
- Industry proven connector system
- Board-to-Board, Wire/Cable-to-Board



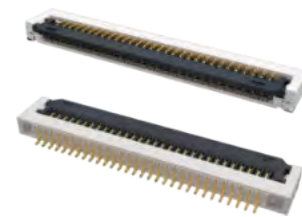
### Minitek® Pwr Connector and Cable Assemblies

- Complete interconnect solutions for wire-to-wire and wire-to-board
- Available in pitch sizes of 3.00mm, 4.20mm and 5.70mm
- Current ratings from 5A to 28A



### ComboLock® 1.00mm/3.00mm

- Compact, hybrid wire-to-board connector.
- Active Positive Latching
- 15A signal, 10A power



### FFC/FPC Connectors

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution



### D-Sub Slimline

- Ultra slim body with contact
- alignment in a single row for significant saving in board space and with mating compatibility



### ix Industrial™ Ethernet

- Next gen ruggedized interface
- IEC 61076-3-124, Cat6A, PoE++
- IP20 & IP67 connectors & cables
- ix-Mag with integrated magnetics
- Factories, Robotics applications



### OCTIS™ Outdoor IO

- Robust I/O for high reliability and performance



### Lighting Connectors

- Lighting connectors & cables
- NEMA/ANSI C136.41
- Zhaga Book 18 and Book 20
- LED indoor, outdoor, street lighting applications



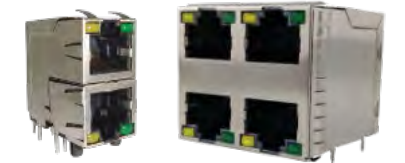
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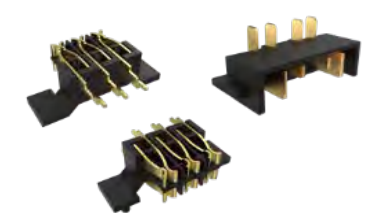
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- Ruggedized, IP67 sealed
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- FLH rectangular latching
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### RJ / Modular Jacks

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications



### Custom Battery Pack Connectors

- Robust battery pack charger connectors and terminal solutions for cordless power tools, lawnmowers, cordless vacuum cleaners, and personal care devices
- Available in various pin configurations and connector sizes with current ratings up to 45A.
- IP67 rated in both mated and unmated condition

# IoT High-Speed



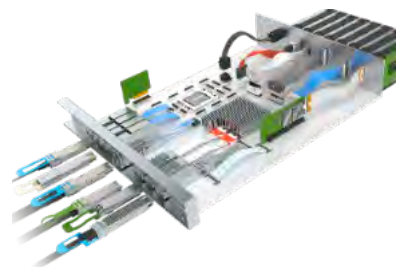
## DisplayPort 2.1 Connectors

- DP2.1, UHBR20, 80Gb/s/4 Lanes, 85ohm, for DP80 cable
- Backward compatible to DP1.4 footprint.
- Optional for flange and plastic post.



## PCIe® M.2 Gen 5 and Gen 4

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



## OverPass™ Cable System

INDUSTRY-LEADING DIRECT HIGH-SPEED INTERCONNECT  
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.



## SD/Micro SD Express Series Connectors

- PCIe® Gen 3\*1/ Gen 4\*1 lane
- Backward compatible to UHS-I/UHS-II in one socket (3-in-1 solution)
- Push push/push pull structure



## Slim Cool Edge for High-Speed Hybrid Design

- 0.65mm pitch one-piece support high-speed, sideband and power hybrid solution
- Supports high-speed up to 32GT/s (or 56GT/s PAM4) capability
- Supports up to 330pin maximum



## SFP Product Family

SUPPORTS APPLICATIONS FOR UP TO 6Gb/s PER CHANNEL.  
The connector accepts multiple transceivers per INF-8074i and combines, transmits, and receives functions in a low cost, compact format.



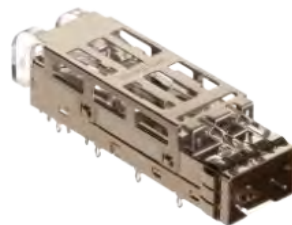
## USB Type C Connectors

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen 1 and Gen 2
- Waterproof versions featuring unique O-ring technology (LIM) perform up to IPX8
- Supports up to 240W (5A/48V) power supply



## PCIe® Gen 4 and Gen 5

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



## ExpressPort® SFP+

Minimizes impedance discontinuities and reflections at high data rates and provides a 10 to 20 dB improvement in Near-End Crosstalk

# IoT RF



## 2.92 mm

The 2.92 mm interfaces offers low VSWR and excellent return and insertion loss, along with high power handling capabilities. This connector has the ability to mate with SMA, 3.5 mm and other K or 2.92 mm interconnects for additional versatility.



## AUTOMATE Mini-FAKRA

The AUTOMATE Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions and various cable assembly configurations available.



## HD-BNC

Engineered to enhance electrical and mechanical performance, the HD-BNC connector series features the trusted bayonet coupling mechanism which provides tactile feedback and a positive lock for quick and guaranteed mating. Available in 50 ohm configurations that operate up to 6GHz and 75 ohm options that provide excellent electrical performance up to an extended range of 12GHz.



## AMC

The AMC (Amphenol Micro Coaxial) connector series is a low profile (2.5 mm height off the board) option with extremely small board footprint (3 mm x 3 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



## AMC4

The AMC4 (Amphenol Micro Coaxial, 4th Generation) connector series is a low profile (0.6 mm height off the board) option with extremely small board footprint (2 mm x 2 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



## FAKRA

Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.

## BNC

BNC connectors are miniature, lightweight and reliable RF interconnect that feature a bayonet style coupling mechanism. This interface is available in a variety of 50 and 75 ohm PCB and cable-mount options to support a broad array of commercial and military-grade applications.



## MCX

PCB and cable-mount 50 and 75 ohm options with quick connect/disconnect snap-on mating which reduces installation time. 50 ohm configurations support applications up to 6GHz while 75 ohm 12G versions operate up to 12GHz.



## N-Type

Durable, weatherproof medium-size RF connector with configurations that support applications up to 18GHz. This threaded interface provide excellent RF and mechanical performance in a broad range of products.



**SMA**

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



**SMA to AMC/AMC4 Cable Assemblies**

SMA to AMC ultraminiature cable assemblies feature a small footprint and low profile with reliable electrical performance up to 9GHz (supports Wi-Fi 6E). Available in IP67 configurations for additional protection from external elements. Vibration resistance design to accommodate a variety of cable types and panel thicknesses. More secure locking version available.



**Internal Antennas**

FPC and PCB RF antennas designed for use inside of a connected device. These antennas are commonly terminated to wireless modules featuring AMC or compatible ultraminiature connectors.



**SMB**

The SMB interface features a snap-on coupling mechanism and offers broadband performance with low reflection up to 4GHz (extended performance up to 10GHz). These RF interconnect are available in 50 ohm configurations designed with various materials including options for die cast components on non-critical areas to provide a low-cost solution.



**FAKRA to AMC/AMC4 Cable Assemblies**

FAKRA to AMC and AMC4 assemblies combines the traditional automotive industry-standard FAKRA with the ultraminiature AMC or AMC4 connectors on micro-coax cable. Ideal for tight spaces, these configurations are commonly used to connect cameras, antennas, sensors or other devices in the cab of a vehicle. Custom solutions are available.



**External Antennas**

Mounted to the outside of a device by means of an RF connector, external antennas are engineered for indoor and outdoor use with robust designs available for harsher environments.



**TNC**

Weatherproof threaded 50 ohm interface ensures connector will not de-couple in vibration-intense applications. Expansive product line includes designs for most industry-standard coaxial cable types. Durable construction for harsh environments.



**TNC to AMC/AMC4 Cable Assemblies**

TNC to AMC and AMC4 cable assemblies are designed on micro-coax cable types. These 50 ohm assemblies are ideal for applications such as IoT infrastructure and consumer devices that have space constraints.



**Embedded LTE / 5G -FR1**

- LTE and 5G-FR1 applications
- 600-7200MHz
- Tuning and design support
- Ceramic and FR4 antennas options



**Internal LTE / 5G-FR1**

- LTE and 5G - FR1 applications
- 600 - 7200MHz
- FPC / PCB
- Cable length & connector options



**External LTE / 5G -FR1**

- LTE and 5G -FR1 applications
- 600-7200MHz
- High performance
- Indoor / Outdoor (IP65 - IP68)
- Connector options: SMA / N-Type / Fakra / Cable + Connector



**Embedded Wi-Fi / BT / BLE**

- Wi-Fi 6/6E/7, BT / BLE / Zigbee
- 2400 -7200MHz
- Small form factor, high efficiency
- Easy implementation



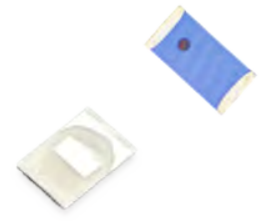
**Internal Wi-Fi / BT / BLE**

- Wi-Fi 6/6E/7, BT / BLE / Zigbee
- 2400 - 7200MHz
- FPC / PCB
- Cable length & connector options



**External WFi / BT / BLE**

- Wi-Fi 6/6E/7, BT / BLE / Zigbee
- 2400 -7200MHz
- High performance
- Indoor / Outdoor (IP65 - IP68)
- Connector options: SMA / N-Type / Fakra / Cable + Connector



**Embedded UWB**

- Ultra Wide Band
- 3500 -8500MHz
- RTLS – Real Time Location System
- Indoor Navigation



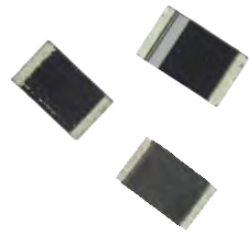
**Internal UWB**

- Ultra Wide Band
- 3500-8500MHz
- FPC / PCB
- Cable length & connector options



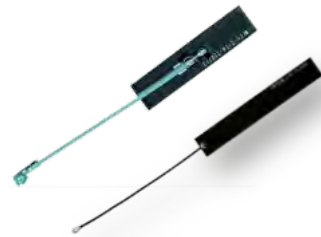
**External UWB**

- Ultra Wide Band
- 3500 -8500MHz
- RTLS – Real Time Location System
- Small form factor
- Connector options



**Embedded LoRa**

- Long Range
- 433/868/915Mhz
- Communicate over longer distance
- Small form factor, high efficiency



**Internal LoRa**

- Long Range
- 433/868/915Mhz
- Communicate over longer distance
- Small form factor, high efficiency



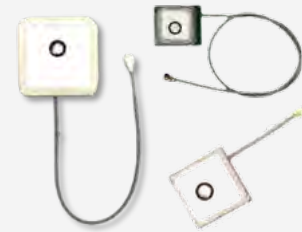
**External LoRa**

- Long Range
- 433/868/915Mhz
- High performance
- Indoor / Outdoor (IP65 - IP68)
- Connector options: SMA / N - Type / Fakra / Cable + Connector



**Embedded GNSS**

- GPS / Glonass / Beidou / Galileo
- Dual -band (L1 & L5)
- Chip and patch antennas
- Passive antenna



**Internal GNSS**

- GPS / Glonass / Beidou / Galileo
- Dual -band (L1 & L5)
- Active antennas
- Custom cable options
- Connector options



**External GNSS**

- GPS / Glonass / Beidou / Galileo
- Dual -band (L1 & L5)
- Passive and active antenna selection
- Mounting: Direct / Adhesive / Magnetic



**Wireless Charging – Qi2**

- Transfer Efficiency: >80% @ 15W
- Compact size
- Integrated with magnet
- Solution based on the chip from NXP



**Internal NFC Antenna**

- Near Field Communication
- 13.56MHz
- Cable & Connector
- FPC / Ferrite / Adhesive



**NFC Forum**

- Near Field Communication
- 13.56MHz
- NFC Forum
- FPC / Ferrite / Adhesive



## APPLICATION SCOPE

# Industry 4.0

Amphenol as a leader in technological advancements, is equipped with a range of connector and cable solutions to support various equipment enabling Industry 4.0.



### Programmable Logic Controller

Amphenol provides innovative interconnect solutions that meet the challenges of implementing communication standards like Profinet, DeviceNet, and Modbus into PLC systems for efficient sensor and device control.



### Uninterruptible Power Supply (UPS)

From high power drawer and busbar connectors to smart communication interfaces like RJ45 and USBs, Amphenol provides interconnect solutions that add to the reliability of UPS.



### Robotic Arm

Amphenol offers a range of rugged, high current connectors with EMI shielding as well as high data rate industrial Ethernet connectors which ensures a safe and reliable operation of the Robotic Arm.



### Servo Drive & Control Cabinet

Amphenol's advanced power connectors and data interconnect solutions establish enhanced connectivity and flawless communication in these systems.



### Human Machine Interface & Computerized Numerical Control

Amphenol provides reliable connector solutions in these devices, ranging from memory and media connectors to data interconnects and FPC board connectors.



### Robot Control

Amphenol offers a varied range of high-performance and cost-effective PCB and I/O signal and power solutions that maximizes the efficiency of robotic controls.



### Industrial Ethernet Switch

Amphenol offers robust connector solutions that support industry grade dependability, network redundancy and includes support for Power over Ethernet (PoE) and Power over Data Line (PoDL) that enhance the connectivity of the switches.



### Power Supplies

Amphenol offers high power, high current connectors that enhance the performance and durability of various power supply units from electronic devices that convert AC to DC, to benchtop equipment used for precision testing.



### Test and Measurement

From advanced USB connectors to high-power interconnects, industrial Ethernet, and PCIe<sup>®</sup> connectors, Amphenol offers high performing interconnect solutions for benchtop testing devices, handheld test equipment and test and measurement modules.



### Industrial PC

Amphenol provides advanced and rugged industrial I/O and PCB connectors that go inside industrial PC compliant with IEC-61850-3 and IEEE 1613 standards.



### Industrial Embedded Computing

Amphenol offers advanced, industrial I/O and PCB solutions that are built into Industrial Embedded Computers typically designed to work in harsh environments, are rugged enough to withstand wide temperature ranges and meet standards like IEC 68-2-27



### Single board computing

Amphenol provides various connector solutions to augment the value of your SBC designs.



### Single Pair Ethernet

- Next gen ruggedized interface
- IEC 63171-6, PoDL
- IP20 & IP67 connectors & cables
- Industrial Ethernet to the sensor and actuator level
- Multidrop Solutions



### Industrial RJ Plugs

- Ruggedized RJ plugs & cables
- IDC termination, field installable
- Metal latching, full metal construction
- Cat6A, fully shielded
- Multiple cable entry angle options
- Factory and other applications



### RJMG

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W), integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C.
- Meets IEEE802.3ab and supports various Ethernet PHY



### ix Industrial™ Ethernet

- Next gen ruggedized interface
- IEC 61076-3-124, Cat6A, PoE++
- IP20 & IP67 connectors & cables
- ix-Mag with integrated magnetics
- Factories, Robotics applications



### D-Sub Connectors & Cables

- SMT Standard Connectors
- Slimline SMT Connectors
- High Current Connectors & Cables
- Accessories (Hoods, Backshells)
- Customized Connectors & Cables



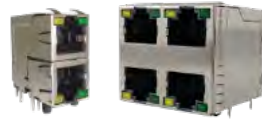
### USB Type C Connectors

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen 1 and Gen 2
- Waterproof versions featuring unique O-ring technology (LIM) perform up to IPX8
- Supports up to 240W (5A/48V) power supply



### Ruggedized

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



### RJ / Modular Jacks

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications
- Cable Assemblies



### DuraSWAP™ Swappable Battery Connectors

- IP67 rated swappable battery connector
- Provides continuous current of 100A and withstands 10,000 mating cycles
- Connector mates in four different orientations



### IPC-M50 Connector

- Rated up to 50A per 6AWG contact (UL rated currents up to 120A)
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



### EnergyKlip™ EK350

- Rated up to 350A per contact
- IP67 seal
- Robust latching system



### PwrBlade® Mini Cable-to-Board

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



### IPC-M350 Connector

- Rated up to 500A per 350MCM (185mm<sup>2</sup>) contact
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



### Battery Pack Connectors for Cordless Power Tools

- Robust battery pack charger connector for cordless power tools, lawnmowers, cordless vacuum cleaner, and personal care devices
- Ratings up to 45A per contact
- IP67 rated both mated and un-mated



### PwrBlade® Mini Board-to-Board

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



### EnergyKlip™ EK160

- Rated up to 160A per contact
- IP67 seal available
- Robust latching system



### PwrBlade® MiniMezz

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



### Minitek® Pwr Connector and Cable Assembly

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3.00mm, 4.20mm, and 5.70mm



**MicroSpace™ / MicroSpaceXS™ 1.27mm**

- Compact, robust and versatile.
- LV214 severity-2 / 3, USCAR-T2V2 compatible.
- 4A per contact, TPA, CPA features.



**FlexLock™ 3.20mm / 2.54mm**

- FPC system for easy assembly
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features.



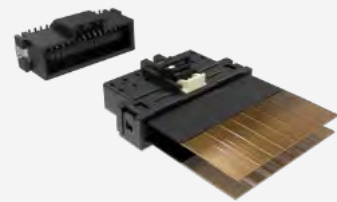
**ComboStak® 0.80mm / 0.50mm**

- Hybrid and medium Power solution.
- 0.8A / 0.5A signal, 20A / 25A power.
- Signal speed up to 12Gb/s / 20Gb/s



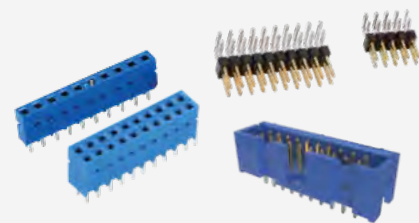
**ComboLock® 1.00mm /3.00mm**

- Compact, hybrid wire-to-board connector.
- Active Positive Latching.
- 1.5A signal, 10A power.



**FlexFast™ Flex to Board Connector Solution**

- Small size and low height flex to board connection solution.
- 0.45mm/0.75mm/0.9mm/1.5mm/1.8mm pitch. Pin counts from 12-100pin
- Automotive grade compliant to USCAR2 and LV214
- Designed for BMS, battery pack, Inverter+DCDC applications



**Modular Systems 2.54mm/2.00mm**

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.



**WireLock® 1.80mm**

- Robust, low mating force.
- USCAR-T2V2, LV-214 S3 compliant.
- 2A per contact, TPA, CPA features



**Minitek® MicroSpeed 1.00mm**

- Industrial grade reliability.
- Superior EMI, EMC performance.
- Speed up to 25Gb/s



**Conan® Lite 1.00mm**

- Secure, Reliable connector.
- Audible "click" to ensure perfect mating.
- Speed up to 8Gb/s



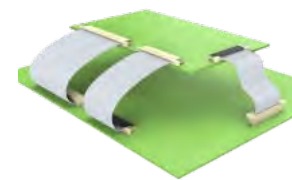
**DensiStak™**

- High density Board-to-Board.
- EMI Shielding, Blind-mating feature.
- Speed up to 16Gb/s



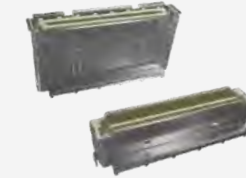
**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**FFC Jumper**

- Easy to operate
- Available in numerous circuit sizes (4 to 60)
- Both Type S (same-side) and Type O (opposite-side) available
- PET Insulation



**BergStak® 0.80mm**

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



**FloatCombo™ Floating Board-to-Board Connector System with Power Pin**

- 0.50mm pitch connector with 4 independent power pins
- Supports 5A current per power pin and high-speed data rates up to 16Gb/s
- Various stacking heights from 8mm to 30mm with large floating allowance
- USCAR-2 T3V2 qualified



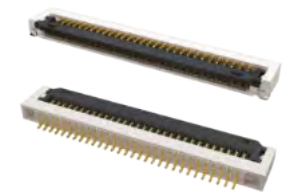
**Flexible Printed Circuit**

- Design flexibility
- Wide range of pitch sizes, positions and stack heights
- Speed up to 16Gb/s



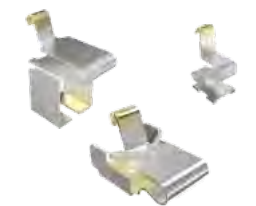
**COM-HPC**

- 400pos 0.635mm COM-HPC supporting stack heights of 5mm and 10mm
- Up to PCIe® Gen 5 32Gbs per channel
- Gives CPU power support at 150W
- Supports up to 8 full DIMMs



**FFC/FPC Connectors**

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



**Spring Contacts**

- Wide variety of heights ranging from 1.00mm to 20.0mm are offered as standard products
- Space saving design, suitable for compact devices
- Formed by one-step stamping, easy to be assembled



### High Mating Cycle Connectors for Test And Measurement Equipment

- Supports 100k cycle mating/unmating – Ideal solution for test and measurement equipment.
- Non-soldering type allows replacement of connector without damaging the main PCB after 100,000 cycles
- Supports DDR5 data rate



### PCIe® M.2 Gen 5 and Gen 4

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



### Compression, Board-to-Board Connectors and Interposer

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



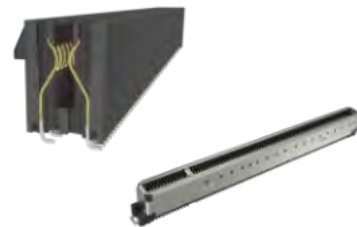
### DDR5 SMT and SO-DIMM Memory Module Connectors

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch. JEDEC SO-016, SO-017, SO-019 compliant Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



### PSAS, SAS and SATA Connectors

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



### PCIe® Gen 4 and Gen 5

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered

### PCIe® Flip CEM, Slim CEM, Metal Cage CEM

- Flip CEM with "JJ" contact or "LL" contact provides better support for card edge to save keep out area for routing as compared to standard PCIe® CEM contact of "JL".
- Standard PCIe® CEM footprint is 8.2mm, Slim CEM is 7.45mm, Flip CEM is 5.9mm
- Metal cage CEM provides enhanced housing support

## Industry High-Speed



### ExtremePort™ QSFP-DD 224G Connectors

ENABLES 400G, 800G & 1.6Tb AGGREGATE BANDWIDTH PER PORT  
A 76 position, 0.8mm pitch connector built for use in high-speed serial applications. Each port supports up to 1.6Tb/s in aggregate over an 8 x 224Gb/s electrical interface. The cage and connector design provides backwards compatibility to all QSFP modules.



### Chameleon®

ADAPT AND ADVANCE TO THE NEXT GENERATION  
With performance speeds up to 25Gb/s+, Chameleon meets the demand for faster, smaller and more compact connector solutions. Chameleon delivers a new level of performance unlike any other platform connector on the market today.



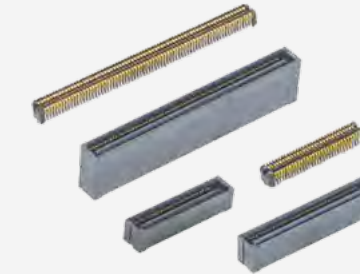
### cStack™

CUSTOMIZABLE SOLDERLESS INTERPOSER-BASED ONE-PIECE STACKER  
The Amphenol cStack™ high-speed solderless interconnect solution provides limitless flexibility for board-to-board mezzanine applications and board-to-board stackable and coplanar applications when terminated to a flex circuit.



### ExtremePort™ OSFP 224G Connectors

ENABLES 400G, 800G & 1.6T AGGREGATE BANDWIDTH PER PORT  
Amphenol's ExtremePort™ OSFP 224G interconnect system is comprised of a 60 position, 0.6mm pitch connector built for use in high-speed serial applications. Allows for use of either 56G, 112G or 224G OSFP products in any port and supports passive & active copper and optical solutions



### Lynx™

HIGH-SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR  
Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, industrial, medical and more.



### InfinX® Mezzanine Connectors

OPTIMIZED FOR PERFORMANCE AND DIFFERENTIAL PAIR SIGNALING  
The InfinX® high-speed mezzanine connector solution is designed to meet the needs of 25+Gb/s applications. Available in 4- and 6-Pair configurations, InfinX® is your best choice for high-speed board-to-board applications.



### UltraPass™ OverPass™ Cable Assemblies

224G CONNECTION DIRECTLY FROM CHIP SITE TO EXTERNAL PORTS  
UltraPass™ enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market. Up to 10X reduction in signal loss; addresses system thermal and mechanical needs.



### Lynx™ QD

THE QUAD DIFFERENTIAL SOLUTION  
Optimized for differential pair signaling, Lynx™ QD sets a new standard for density and flexibility that offers an innovative, high performance interconnect with PCIe® Gen 5 support. Lynx™ QD supports data rates of 56Gb/s PAM4.



### Leap® On-Board Transceiver

SMALL, FAST AND POWER EFFICIENT.  
Amphenol's 300Gb/s Leap®High-Speed Optical Module is faster, smaller, and more cost and power efficient than most conventional datacenter interconnects.



**ExtremePort™ QSFP DD 112G Connectors**

ENABLES 400G and 800G AGGREGATE INPUT PER PORT  
A 76-position, 0.8mm pitch connector built for use in high-speed serial applications. One of the industry's leading multi-lane pluggable form factors used across Ethernet, Fibre Channel and InfiniBand.



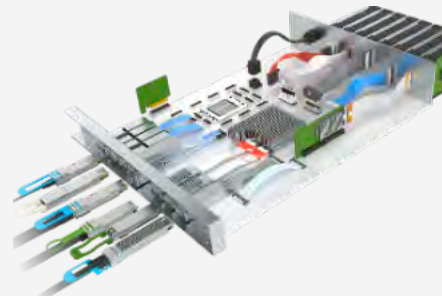
**SK Series - Sockets**

HIGH PERFORMANCE COMPRESSION MOUNT SOCKETS  
Amphenol's patented compression mount contact technology utilizes industry leading alloys to make cost effective and electrically robust socket solutions that offer high performance. With designs supporting pitches down to 0.4mm and speeds up to 40GHz.



**ExtremePort™ OSFP 112G Connectors**

112GB/S PAM-4 WITH UP TO 800GB/S AGGREGATED BANDWIDTH  
Amphenol's ExtremePort™ OSFP 112G interconnect system is comprised of a 60 position, 0.60mm pitch connector designed for high-speed serial applications.



**OverPass™ Cable System**

INDUSTRY-LEADING DIRECT HIGH-SPEED INTERCONNECT  
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.



**UltraPass™ OverPass™ Cable Assemblies**

224G CONNECTION DIRECTLY FROM CHIP SITE TO EXTERNAL PORTS  
UltraPass™ enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market. Up to 10X reduction in signal loss; addresses system thermal and mechanical needs.



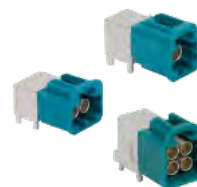
**VHDM, VHDM-HSD**

SCALABLE DESIGN SUPPORTING UP TO 25Gb/s  
Scale systems to next generation speeds without costly re-designs. Single ended and differential design; supports embedded capacitors. 5, 6, and 8 row available.



**2.92 mm**

The 2.92 mm interfaces offers low VSWR and excellent return and insertion loss, along with high power handling capabilities. This connector has the ability to mate with SMA, 3.5 mm and other K or 2.92 mm interconnects for additional versatility.



**AUTOMATE Mini-FAKRA Connectors**

The AUTOMATE Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions available.



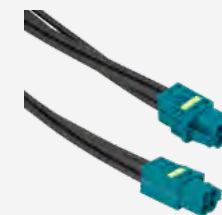
**FAKRA Connectors**

Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



**AMC**

The AMC (Amphenol Micro Coaxial) connector series is a low profile (2.5 mm height off the board) option with extremely small board footprint (3 mm x 3 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



**AUTOMATE Mini-FAKRA Cable Assemblies**

AUTOMATE Mini-FAKRA cable assemblies are designed with a compact, modular housing and available in multi-port configurations for camera and other high-bandwidth applications. High-performance up to 9GHz with secure and easy mating and unmating solutions available.



**FAKRA to FAKRA Cable Assemblies**

FAKRA to FAKRA assemblies are used to connect cameras, antennas, sensors and other devices to an ECU or compute module. Standard configurations feature straight and right-angle FAKRA plugs and jacks terminated to RG-174 or RG-58 low loss cable. Custom FAKRA cable assemblies and harnesses can be designed in any configuration utilizing a wide array of automotive cable type.



**AMC4**

The AMC4 (Amphenol Micro Coaxial, 4th Generation) connector series is a low profile (0.6 mm height off the board) option with extremely small board footprint (2 mm x 2 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



**BNC**

BNC connectors are miniature, lightweight and reliable RF interconnect that feature a bayonet style coupling mechanism. This interface is available in a variety of 50 and 75 ohm PCB and cable-mount options to support a broad array of commercial and military-grade applications.



**HD-BNC**

Engineered to enhance electrical and mechanical performance, the HD-BNC connector series features the trusted bayonet coupling mechanism which provides tactile feedback and a positive lock for quick and guaranteed mating. Available in 50 ohm configurations that operate up to 6GHz and 75 ohm options that provide excellent electrical performance up to an extended range of 12GHz.



**MCX**

PCB and cable-mount 50 and 75 ohm options with quick connect/disconnect snap-on mating which reduces installation time. 50 ohm configurations support applications up to 6GHz while 75 ohm 12G versions operate up to 12GHz.



**SMB**

The SMB interface features a snap-on coupling mechanism and offers broadband performance with low reflection up to 4GHz (extended performance up to 10GHz). These RF interconnect are available in 50 ohm configurations designed with various materials including options for die cast components on non-critical areas to provide a low-cost solution.



**External Antennas**

Mounted to the outside of a device by means of an RF connector, external antennas are engineered for indoor and outdoor use with robust designs available for harsher environments.



**N-Type**

Durable, weatherproof medium-size RF connector with configurations that support applications up to 18GHz. This threaded interface provide excellent RF and mechanical performance in a broad range of products.



**TNC**

Weatherproof threaded 50 ohm interface ensures connector will not de-couple in vibration-intense applications. Expansive product line includes designs for most industry-standard coaxial cable types. Durable construction for harsh environments.



**SMA**

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



**Internal Antennas**

FPC and PCB RF antennas designed for use inside of a connected device. These antennas are commonly terminated to wireless modules featuring AMC or compatible ultraminiautre connectors.



# APPLICATION SCOPE

# Lighting

Amphenol is a leader in the Commercial and Industrial markets with an expanding range of lighting interconnect products.



## Street Lighting

As a member of the Zhaga Consortium, Amphenol offers standardized lighting connectors for photocells with dimming and sensor capabilities to equip remote-controlled IoT based street lighting.



## Interior Lighting

Amphenol offers LED lighting solutions for interiors that are compliant to Zhaga standards.



## Outdoor Lighting

Amphenol offers outdoor Ethernet solutions that are Power over Ethernet (PoE) capable with Cat5E performance, as well as IP67 outdoor locking connectors for harsh environments.



## Automotive

Modern automobiles are rich with ADAS features like smart LED lighting for adaptive headlights, and superior interior lighting. Amphenol provides a range of advanced USCAR2 compliant connectors like Microspace™, which are compact and meet LV214 standards.

## Lighting



### ANSI C136.10/41 FLA Series Receptacles & Caps

FLA Series ANSI C136.10/41 receptacles are available in 3, 5 and 7 position fixed and rotatable variants, providing power and dimming/control signal connections between the luminaire and a mated photocell in commercial street and utility lighting applications. Caps are available for use when a photocell is not mounted to the receptacle.



### FLK Series Knife Switch

KNIFE SWITCH PROVIDES A SAFETY DISCONNECT FOR STREET LIGHT LUMINAIRES

Knife Switch connectors are designed to automatically disconnect the internal wiring from the main supply inside the street lighting fixture when it is opened for servicing. This will help the technicians to safely repair, clean and maintain luminaire. Knife switches consist mating Plugs and Receptacles and are available in 3 position, single wire entry style..



### FLH Series Mini Sealed 2.50mm Pitch Connectors

IP67 SEALED WATERPROOF WIRE-TO-WIRE CONNECTOR

FLH Series Mini Sealed 2.50mm pitch connectors provide a wire-to-wire IP67 sealing in mated conditions. Its waterproof characteristics make it ideal for applications in harsh environments. These connectors can generally be used in industrial, lighting appliances, HVAC and smart home. The compact design of FLH series is suitable for space-saving applications.



### ANSI C136.10/41 FLB Series Bases & Domes

FLB Series ANSI C136.10/41 bases and domes form the foundational interconnect platform for manufacturers of photocells, sensors and communication modules used in commercial street lighting and utility applications.



### Zhaga Book 20 FLM Series DALI connectors

Zhaga Book 20 specifies the 2 position DALI-2 (Digital Addressable Lighting Interface) connector interface between interior LED lighting control modules and easily replaceable, interchangeable sensors used for presence detection, temperature and air quality sensing and other applications.



### Rugged MRD Series Circular Locking Connectors and Cables

MRD Series IP67 latching cable-to-cable and cable-to-panel circular connectors are available in 2 shell sizes with 2 to 9 positions, providing a tough mating interface for the harshest applications. All plastic, or plastic and metal housings feature metal thumb release latching for positive mating with an audible click for latching assurance.



### Zhaga Book 18 FLS Series Products

Zhaga Book 18 specifies the street light mounted luminaire receptacles, and the mating bases and domes used for the corresponding photocells and sensor modules needed for Smart City applications. The 4 contacts provide DALI protocol signal, Power and digital I/O connections between the receptacle and the mated sensor.



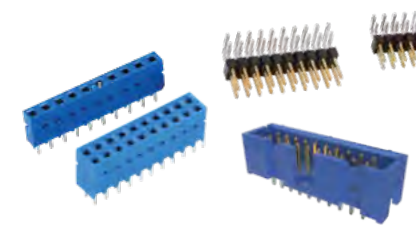
### FLT Series SMD Terminal Block

FLT TERMINAL BLOCKS PROVIDE DISCRETE WIRE CONNECTION TO A PCB  
Amphenol's FLT Terminal Block is a surface mount device for discrete wire connection to a PCB for LED Modules and other applications. They provide easy, secure push-in connections compatible with a range of wire gauges.



### MicrospaceXS™ Waterproof 1.27mm Crimp-to-Wire Connector Platform

COMPACT, ROBUST AND VERSATILE CONNECTOR SYSTEM  
MicrospaceXS™ Waterproof Crimp-to-Wire connector platform's unique design is compatible to LV214 Severity-3 and USCAR-T2V2 specifications. These 1.27mm pitch connectors come with a current rating up to 3A per contact making ideal for higher power applications. MicrospaceXS™ connectors are available in staggered vertical and horizontal configuration with, PIP soldering, and tin or gold plating.



### Modular Systems 2.54mm/2.00mm

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.

## Lighting High-Speed



### Chameleon®

ADAPT AND ADVANCE TO THE NEXT GENERATION  
With performance speeds up to 25Gb/s+, Chameleon meets the demand for faster, smaller and more compact connector solutions. Chameleon delivers a new level of performance unlike any other platform connector on the market today.



### FFC/FPC Connectors

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



### Lynx™

HIGH-SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR  
Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, industrial, medical and more.



### Lynx™ QD

THE QUAD DIFFERENTIAL SOLUTION  
Optimized for differential pair signaling, Lynx™ QD sets a new standard for density and flexibility that offers an innovative, high performance interconnect with PCIe® Gen 5 support. Lynx™ QD supports data rates of 56Gb/s PAM4.

Lighting  
**RF**



**AMC**

The AMC (Amphenol Micro Coaxial) connector series is a low profile (2.5 mm height off the board) option with extremely small board footprint (3 mm x 3 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



**FAKRA**

Color-coded and mechanically keyed for easy installation and to prevent mismating, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



**N-Type**

Durable, weatherproof medium-size RF connector with configurations that support applications up to 18GHz. This threaded interface provide excellent RF and mechanical performance in a broad range of products.



**AMMC**

The AMMC (Amphenol Micro-Miniature Coaxial) connector series is a low profile (1.4 mm height off the board) option with extremely small board footprint (2 mm x 2 mm). These 50 ohm connectors offer reliable electrical performance up to 6GHz with secure and easy snap-on mating.



**MCX**

PCB and cable-mount 50 and 75 ohm options with quick connect/disconnect snap-on mating which reduces installation time. 50 ohm configurations support applications up to 6GHz while 75 ohm 12G versions operate up to 12GHz.



**SMA**

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



**BNC**

BNC connectors are miniature, lightweight and reliable RF interconnect that feature a bayonet style coupling mechanism. This interface is available in a variety of 50 and 75 ohm PCB and cable-mount options to support a broad array of commercial and military-grade applications.



**MMCX**

50 ohm micro-miniature RF interface with broadband capabilities of DC to 6GHz. This compact connector features easy snap-on and snap-off coupling for secure mating while offering a smaller footprint than the MCX interface.



**SMB**

The SMB interface features a snap-on coupling mechanism and offers broadband performance with low reflection up to 4GHz (extended performance up to 10GHz). These RF interconnect are available in 50 ohm configurations designed with various materials including options for die cast components on non-critical areas to provide a low-cost solution.



**TNC**

Weatherproof threaded 50 ohm interface ensures connector will not de-couple in vibration-intense applications. Expansive product line includes designs for most industry-standard coaxial cable types. Durable construction for harsh environments.



**Internal Antennas**

FPC and PCB RF antennas designed for use inside of a connected device. These antennas are commonly terminated to wireless modules featuring AMC or compatible ultraminiature connectors.



**External Antennas**

Mounted to the outside of a device by means of an RF connector, external antennas are engineered for indoor and outdoor use with robust designs available for harsher environments.



## APPLICATION SCOPE

# Robotics

The future of technology aims to create intelligent machines that can assist humans in increasing productivity and efficiency significantly. The scope of robotics lies in applications such as drones, warehouse robots, and robotic arms, for which Amphenol offers some of the best connectivity solutions.



## APPLICATION SCOPE



### Control and communication

Amphenol's robust connectors and cable assembly solutions are suitable for a wide range of robotics applications, including industrial robotic arms, collaborative robots (cobots), drones, autonomous robots, and more - whether it's for precision control, real-time communication, or data-intensive tasks



### Battery and Charger

Battery and chargers are required for robots to function, and choosing the right power solution is crucial to achieving ideal performance. Since robots should be constantly plugged into power, they demand durability. The battery, the connectors, and the electric source used to power robots ensure the longevity and optimum current supply of these machines.



### Motor drives and Controllers

Motion controllers serve as a critical component in the field of robotics, enabling precise and coordinated movements of robotic systems. Robotic controllers are also systems responsible to control the movements of components such as robotic arms. Motor drives play a crucial role in the operation and control of motors within robotic systems.



### Battery Management Systems

In robotics, the battery holds significant strategic importance as a core component. Just as in electric vehicles (EVs), robotics systems are equipped with a Battery Management System (BMS) that plays a crucial role in regulating battery charge and safeguarding it against operations that exceed safe limits.



### Vision and Sensing

A robotic vision sensor is a compact and self-contained unit that incorporates an integrated camera, lights, and a controller (and sometimes a laser) into a single device. Computer vision and sensor technologies are integral components of drone AI as they enable object detection, classification, tracking, and other crucial functions during the drone's flight.



**EnergyKlip™ EK160**

- Rated up to 160A per contact
- IP67 seal available
- Robust latching system



**EnergyKlip™ EK350**

- Rated up to 350A per contact
- IP67 seal
- Robust latching system



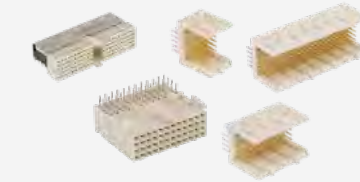
**IPC-M50 Connector**

- Rated up to 50A per 6AWG contact (UL rated currents up to 120A)
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



**PCIe® Gen 4/5/6 Card Edge Connectors**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



**Industrial Backplane Connectors**

- 2.00 mm Millipacs® series hard metric connector, 2mm Metral® series future bus connector & 2.54mm DIN 41612 connector for robust applications in the Industrial segment
- Features 2-beam twisted tulip contact which provides an equalized signal path



**BergStak® 0.40mm Connector**

- Fine pitch, vibration-proof.
- Wide range of positions.
- Signal speed up to 16Gb/s



**IPC-M350 Connector**

- Rated up to 500A per 350MCM (185mm<sup>2</sup>) contact
- Rated up to 10,000 mating cycles
- UL tested and approved when cross-mated with competitive connectors



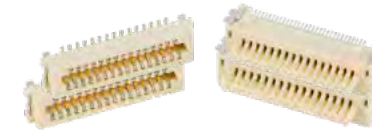
**ix Industrial™ Ethernet**

- Next gen ruggedized interface
- IEC 61076-3-124, Cat6A, PoE++
- IP20 & IP67 connectors & cables
- ix-Mag with integrated magnetics
- Factories, Robotics applications



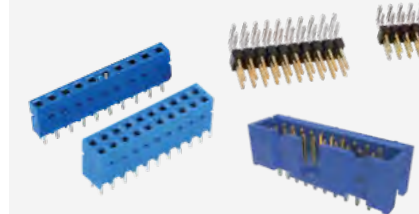
**Single Pair Ethernet**

- Next gen ruggedized interface
- IEC 63171-6, PoDL
- IP20 & IP67 connectors & cables
- Industrial Ethernet to the sensor and actuator level
- Multidrop Solutions



**Conan® Lite 1.00mm**

- Secure, Reliable connector.
- Audible "click" to ensure perfect mating.
- Speed up to 8Gb/s



**Modular Systems 2.54mm/2.00mm**

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm.
- Industry proven connector system.
- Board-to-Board, Wire/Cable-to-Board.



**ComboLock® 1.00mm /3.00mm**

- Compact, hybrid wire-to-board connector.
- Active Positive Latching.
- 1.5A signal, 10A power.



**Industrial RJ Plugs**

- Ruggedized RJ plugs & cables
- IDC termination, field installable
- Metal latching, full metal construction
- Cat6A, fully shielded
- Multiple cable entry angle options
- Factory and other applications



**Ruggedized**

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



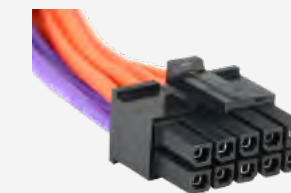
**DDR5 SO-DIMM Connectors**

- 262 positions connector in high-density design of 0.50mm pitch
- 4.00mm, 8.00mm, 5.20mm and 9.20mm height
- Right angle and vertical orientation with SMT mechanical hold-downs



**MicroSpace™ / MicroSpaceXS™ 1.27mm**

- Compact, robust and versatile.
- LV214 severity-2 / 3, USCAR-T2V2 compatible.
- 4A per contact, TPA, CPA features.



**Minitek® Pwr Connector and Cable Assembly**

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3.00mm, 4.20mm, and 5.70mm



**DuraSWAP™ Swappable battery connectors**

- IP67 rated swappable battery docking connectors
- Contact system provides continuous current of 100A and withstands 10,000 Mating cycles
- Connector mates in four different orientations



**DuraSWAP™ Swappable Battery Connectors**

- IP67 rated swappable battery connector
- Provides continuous current of 100A and withstands 10,000 mating cycles
- Connector mates in four different orientations



**EnergyEdge™ X-treme**

- 3000W at 12V
- Available in straddle mount, right angle, right angle coplanar, and vertical configurations
- 25% increase in current linear density



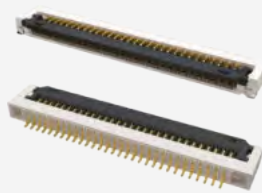
**BrightConnX™ Lighting Connectors**

- Lighting connectors & cables
- NEMA/ANSI C136.41
- Zhaga Book 18 and Book 20
- LED indoor, outdoor, street lighting applications



**PwrBlade® MiniMezz**

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



**FFC/FCP Connectors**

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



**Ruggedized**

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



**PwrMAX® G2**

- Highest density blind-mate Power and Signal connector series
- Up to 130A per contact and 18% size reduction
- Orthogonal, mezzanine, coplanar and right-angle configurations available for both PCB and busbar applications



**FloatCombo™ Floating Board-to-Board Connector System with Power Pin**

- 0.50mm pitch connector with 4 independent power pins
- Supports 5A current per power pin and high-speed data rates up to 16Gb/s
- Various stacking heights from 8mm to 30mm with large floating allowance
- USCAR-2 T3V2 qualified



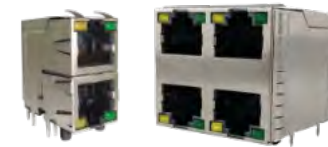
**USB Type C Connectors**

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen 1 and Gen 2
- Waterproof versions featuring unique O-ring technology (LIM) perform up to IPX8
- Supports up to 240W (5A/48V) power supply



**SD/Micro SD Express Series Connectors**

- PCIe Gen 3\*1/ Gen 4\*1 lane
- Backward compatible to UHS-I/UHS-II in one socket (3-in-1 solution)
- Push push/push pull structure



**RJ / Modular Jacks**

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications
- Cable Assemblies



**FAKRA Connectors**

Color-coded and mechanically keyed for easy installation and to prevent mismatching, the FAKRA interface is available in IP67 and non-IP67 PCB and cable-mount configurations designed to perform up to 6GHz. Commonly used in compute modules, wire harnesses and camera applications.



**Mini HSbridge+ /HSbridge+**

- Compliant with USCAR-30 USB and USCAR-2
- High data rate up to 10Gb/s, current rating up to 5 amps of power output
- Multiple volume and colour coding effectiveness compliant with automotive requirements



**AUTOMATE® Mini-FAKRA Connectors**

The AUTOMATE® Mini-FAKRA connector series is a space-conscious, high-performance interface capable of supporting data transfer rates up to 20Gb/s. Ideal for compute modules, wire harnesses and camera applications. Custom sealed solutions available.



**FAKRA to FAKRA Cable Assemblies**

FAKRA to FAKRA assemblies are used to connect cameras, antennas, sensors and other devices to a vehicle's ECU or compute modules. Standard configurations feature straight and right-angle FAKRA plugs and jacks terminated to RG-174 or RG-58 low loss cable. Custom FAKRA cable assemblies and harnesses are available in any configuration utilizing a wide array of automotive cable types.



**RJMG / Magnetic Modular Jacks**

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W), integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C.
- Meets IEEE802.3ab and supports various Ethernet PHY



**AUTOMATE® Mini-FAKRA Cable Assemblies**

AUTOMATE® Mini-FAKRA cables assemblies are designed with a compact, modular housing and available in multi-port configurations for camera and other high-bandwidth automotive applications. High-performance up to 9GHz with secure and easy mating and unmating.



**FAKRA to AMC/AMC4 Cable Assemblies**

FAKRA to AMC and AMC4 assemblies combine the automotive industry-standard FAKRA connector with remove ultraminiature AMC or AMC4 connectors on micro-coax cable. Ideal for tight spaces, these configurations are commonly used to connect cameras, antennas, sensors or other devices in the cab of a vehicle. Custom solutions are available.



**SMA**

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration-proof design option. High-strength designs are ideal for harsh environments.



**HD-BNC**

Engineered to enhance electrical and mechanical performance, the HD-BNC connector series features the trusted bayonet coupling mechanism which provides tactile feedback and a positive lock for quick and guaranteed mating. Available in 50 ohm configurations that operate up to 6GHz and 75 ohm options that provide excellent electrical performance up to an extended range of 12GHz.



**SMA to AMC/AMC4 Cable Assemblies**

SMA to AMC or AMC4 ultraminiature cable assemblies feature a small footprint and low profile with reliable electrical performance up to 9GHz (supports Wi-Fi 6E). Available in IP67 configurations for additional protection from external elements. Vibration resistant designs to accommodate a variety of cable types and panel thicknesses. More secure locking versions available.



**MCX**

PCB and cable-mount 50 and 75 ohm options feature quick connect/disconnect snap-on mating which reduces installation time. 50 ohm configurations support applications up to 6GHz while 75 ohm 12G versions operate up to 12GHz.



**TNC**

Rugged, threaded 50 ohm interface ensures connector will not de-couple in vibration-intensive applications. Expansive product line includes designs for most industry-standard coaxial cable types. Durable construction for harsh environments.

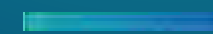


**External Antennas**

External antennas are mounted on the outside of a device by means of an RF connector interface. They are engineered for indoor or outdoor use with robust designs available for harsher environments. Monopole or dipole designs are available for higher power transmission and reception. Hinge and swivel features are available.



# Robotics



Amphenol provides rugged, miniature, high-performance interconnect solutions for drones, warehouse robots, and robotic arms.



## APPLICATION SCOPE

# Server & Storage

Amphenol is a leader in providing industry proven solutions used across server and storage equipment, and next-generation enterprise applications.

## Applications

Amphenol provides high-density, high-performance interconnect solutions for server and storage equipment used in multiple applications and markets.

AI Servers

Server Storage

Networking /  
Telecommunications

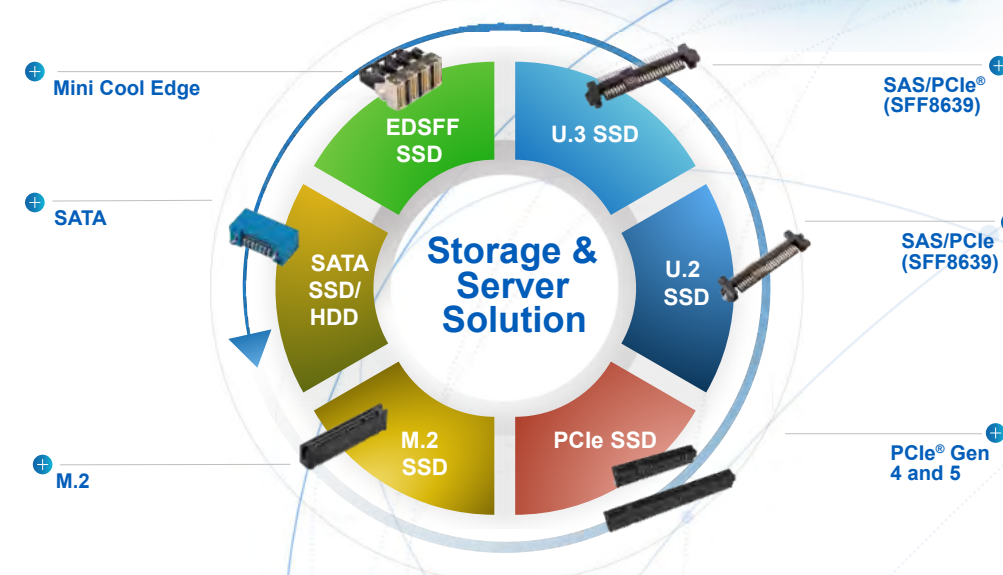
Automotive

Consumer

Industry 4.0

## Enterprise storage

Amphenol offers a wide range of high-performance enterprise SSD connector solutions for M.2, EDSFF, SAS, U.2, U.3, SATA and PCIe applications.





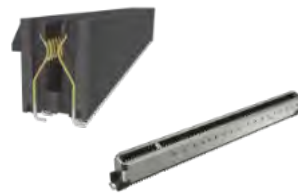
**EDSFF, OCP, Power Shelf and PCIe DirectAttached Cable Assemblies**

- PCIe DirectAttached® cable riser solution supports up to PCIe5.0 32Gb/s, eliminates PCB trace and Vias, improves insertion loss by 0.75db @16GHz at 0.5m cable length
- EDSFF cable assemblies for E1 / E3 specifications
- OCP cable assemblies for OCP NIC 3.0
- Power Shelf cable assemblies for ORv3



**Standard Cool Edge 0.8mm for Automotive and 5G Antenna**

- Robust design with EMI shielding for Automotive Ethernet and Power applications
- Hybrid option for small cell active antenna BTB application
- One-piece small form factor to save space



**PCIe Flip CEM, Slim CEM, Metal Cage CEM**

- Flip CEM with "JJ" contact or "LL" contact provides better support for card edge to save keep out area for routing as compared to standard PCIe® CEM contact of "JL".
- Standard PCIe® CEM footprint is 8.2mm, Slim CEM is 7.45mm, Flip CEM is 5.9mm
- Metal cage CEM provides enhanced housing support



**Mini and Hyper Cool Edge for EDSFF/ SFF-TA-1002 /SFF-TA-1037/ OCP/ GEN Z**

- 0.60mm pitch connector, supports high-speed from 32GT/s, PCIe® Gen 6 64GT/s, up to 112G PAM4
- Designed to meet SFF TA 1002, SFF TA 1037, EDSFF E1/E3, OCP NIC 3.0 and Gen Z specifications
- Vertical, right angle, straddle mount and orthogonal options are available



**PCIe® M.2 Gen 5 and Gen 4**

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



**DDR5 SMT and SO-DIMM Memory module Connectors**

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch. JEDEC SO-016, SO-017, SO-019 compliant. Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



**Double Density Cool Edge for Ultra Compact Design**

- 0.80mm pitch, power and signal hybrid connector
- Highly configurable wafer design for differential, single-ended and power options
- Supports HIGH-SPEED of up to 32GT/s (or 56GT/s PAM4) capability



**PCIe® Gen 4/5/6**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



**High Mating Cycle Connectors for Test And Measurement Equipment**

- Supports 100k cycle mating/unmating – Ideal solution for test and measurement equipment.
- Non-soldering type allows replacement of connector without damaging the main PCB after 100,000 cycles
- Supports DDR5 data rate



**PSAS, SAS and SATA Connectors**

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



**ExtremePort™ Z-Link**

- Compliant with Gen-Z and OCP NIC specifications. SFF-TA-1002/1020 solution
- high-speed of up to 56Gb/s PAM4
- Supports both cable and card edge applications



**COM-HPC**

- 400pos 0.635mm COM-HPC supporting stack heights of 5mm and 10mm
- Up to PCIe® Gen 5 32Gbps per channel
- Gives CPU power support at 150W
- Supports up to 8 full DIMMs



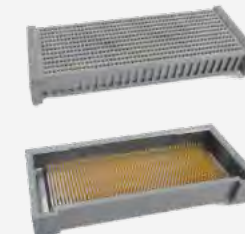
**Mini Cool Edge IO**

- Up to 64Gb/s PAM4, PCIe® Gen 4, PCIe® Gen 5, PCIe® Gen 6, over 1.0 meter transmission distance
- 0.60mm pitch connectors support both cable and card edge connections
- Options for 92Ω, 85Ω and 95Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/SFP(+)/QSFP specifications



**ExtremePort™ Swift**

- Ultra-low profile, 0.60mm pitch connector in 8X, 16X configurations. Mating height 8.38mm
- Designed for unshielded, internal I/O connectors
- With 85Ω impedance and meets PCIe® Gen 5 NRZ 32G specifications



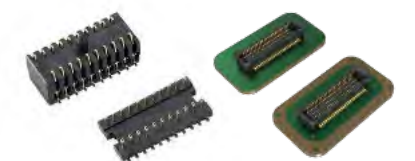
**DensiStak™**

- High density Board-to-Board.
- EMI Shielding, Blind-mating feature.
- Speed up to 16Gb/s



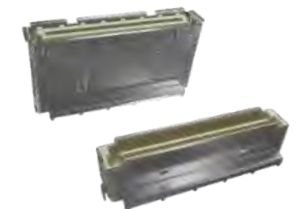
**Multi-Trak™**

- Combines original PCIe® and Mini Cool Edge IO in one connector to provide both power (21A) and high/low-speed signal
- Up to 56Gb/s PAM4, PCIe® Gen 5, and target PCIe® Gen 6
- Options for 85Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/OCP DC-MHS/ SFF-TA-1033 specifications



**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**BergStak® 0.80mm**

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



**PwrBlade® ULTRA HD+**

- Rated up to 100A per contact
- Next-generation PwrBlade® Connector
- Optimized guide design to reduce connector width



**PwrBlade® Mini Board-to-Board**

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



**Minitex® Pwr Connector and Cable Assembly**

- Wire-to-wire and wire-to-board solutions
- Current rating from 5A to 25A
- Available in pitch sizes of 3,00mm, 4,20mm, and 5,70mm



**PwrBlade® MiniMezz**

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



**PwrBlade+® I/O**

- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available



**Minitex® Pwr CEM-5 PCIe® Connector System**

- Rated current up to 9,5A per contact with all 12 power contacts and 4 Signal contacts
- New introduction CEM 5.0 PCI Express® 12VHPWR auxiliary hybrid connector and cable assembly support the 600W GPU cards
- Positive locking on housing with low thumb latch operation



**PwrBlade® Mini Cable-to-Board**

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



**Power Connectors**

- Wire to Board connectors in 3.0 mm and 4.2mm pitch with current ratings from 6.5A to 20A per pin
- Designed for IT and Datacom applications



**Minitex® Pwr PICPwr OCP Connector Solutions**

- 12V connector solution support Open Compute Project Power Distribution and Management architecture requirements
- Operating power and voltage 864W at 12VDC



**48V BarKlip® BK600 IO**

- Distributes up to 700A per contact
- Fully compliant with ORv3 Power Output Specification
- Mates with OCP ORv3 laminated busbar (6mm thick)



**48V BarKlip® BK300 IO**

- Distributes up to 300A per contact
- Fully compliant with ORv3 IT Gear Power Input Specification
- New sense contact (Mate last- Break First)



**BarKlip® XP Series**

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



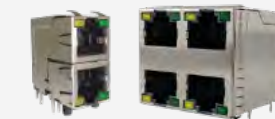
**OCP ORv3 BarKlip® BK150 IO**

- Distributes up to 150A per contact between busbars, cables, and circuit boards
- New sense contact (Mate last- Break First)
- Fully compliant with ORv3 IT Gear Power Input Specification



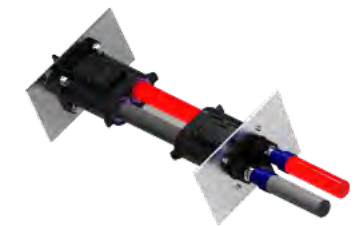
**ORv3 AC Input Connectors and Cable Assemblies**

- 7-Pin connector designed for Star, Delta, and single-phase connections
- Fully compliant with OCP ORv3 Power Shelf Universal Input Connector Specification
- Rated up to 32A per pin



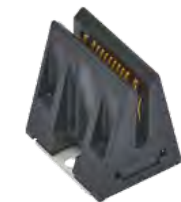
**RJ / Modular Jacks**

- Cat5, Cat5e, Cat6, Cat6A
- Single port, ganged, stacked multi-port, LEDs, shielded
- Vertical, right angle
- PoE++ capability
- Industrial, commercial, medical, consumer, military applications
- Cable Assemblies



**CoolPower® HD**

- Rated up to 350A per pin (10.3mm pin diameter)
- Flexible housing form-factor
- Straight-exit and 90-degree cable solution



**BarKlip® BK450**

- Currents rated up to 450A per contact
- 36 independent points of contact for high current carrying capability
- ±3,5mm of gatherability for blind mate applications



**RJMG**

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W), integrated with surge protection.
- Commercial 0-70°C and industrial -40-85°C & -40-105°C.
- Meets IEEE802.3ab and supports various Ethernet PHY

Server & Storage  
**High-Speed**



**ExtremePort™ OSFP 224G Connectors**

ENABLES 400G, 800G & 16T AGGREGATE BANDWIDTH PER PORT  
 Amphenol's ExtremePort™ OSFP 224G interconnect system is comprised of a 60 position, 0.6mm pitch connector built for use in high-speed serial applications. Allows for use of either 56G, 112G or 224G OSFP products in any port and supports passive & active copper and optical solutions



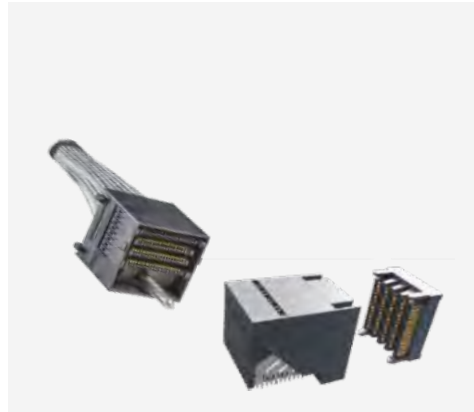
**M-Series Mezzanine Connectors**

56GB/S HIGH-SPEED MEZZANINE BGA CONNECTOR SYSTEM  
 Leveraging proven technologies, including an industry leading BGA design, offering superior self-aligning and self-leveling. With a next generation differential pair contact design for up to 56Gb/s NRZ and 112Gb/s PAM4 performance.



**Mini-SAS HD Active Optical Cable Assemblies**

FULL SAS 3.0 & SAS 4.0 COMPATIBILITY ENSURES PLUG AND PLAY OPERATION  
 Used primarily for external Enterprise storage applications (box-to-box, server-to-storage, server-to-switch), this cable is part of Amphenol's comprehensive Mini-SAS HD product offerings that address all board connector and cabling applications, from 1 to 100 meters.



**ExaMAX2®**

SUPPORTING 112G PAM4 PERFORMANCE  
 Maintains mating interface compatibility with previous ExaMAX® products to allow cost/performance flexibility. The mating interface and connector design is optimized to support the demanding electrical and mechanical requirements of 112G systems.



**OSFP Copper Cable Assemblies**

A COMPREHENSIVE INTERCONNECT SYSTEM FOR COPPER OR OPTICAL BASED CABLE SOLUTIONS  
 Compatible with 25G/lane channel NRZ up to 112G/lane channel PAM4 signaling protocols that allow the cables to deliver aggregate bandwidths of 200G, 400G, and 800G per cable assembly. Available in both Passive and Active variants that addresses current and future bandwidth port capability requirements.



**Paladin HD2®**

INDUSTRY-LEADING DENSITY & PERFORMANCE - YOUR PATH TO 224Gb/s  
 Paladin® HD2 leverages the same board attach, twin-ax cable attach, and mating interface as Paladin® HD for backward compatibility, offering a direct upgrade path to 224Gb/s PAM4.



**QSFP-DD Cable Assemblies**

200G / 400G / 800G CONNECTIVITY SOLUTIONS  
 Amphenol's Double Density copper cable assemblies double the number of channels from 4 to 8 lanes when compared to the existing QSFP cabling systems, enabling more bandwidth within the same mechanical envelope



## APPLICATION SCOPE

# Test & Measurement

From benchtop test equipment to mobile, handheld, and miniaturized versions with increased precision; Amphenol offers robust, high performance connector solutions that help measure these critical parameters.



## Handheld Test Devices

Today digital multimeters provide higher density testing, lower test times and higher accuracy that add to convenience and cost reduction. From handheld devices such as Voltmeters, Ohmmeters, Ammeters, and Multimeters, to test equipment for the electrical, mechanical, and environmental testing of DUTs in various fields, including medical, and commercial. Amphenol has an array of next generation interconnect solutions ideal for sleek, handheld test equipment.

## Test and Measurement Modules

With increased test speed and reduced latency, test modules are especially beneficial for data-intensive and augmented test applications. From advanced USB connectors, to industrial Ethernet and PCIe® connectors, Amphenol offers high performing interconnect solutions for test and measurement modules.



## Benchtop Test Equipment

From oscilloscopes for testing consumer devices like smartphones, cameras, AV systems, PC peripherals, and related ICs, to Spectrum Analyzers used for all kinds of radio-frequency (RF) circuits to measure characteristics like the frequency response, noise and distortion - Amphenol provides high performing I/O, board-to-board and modular jacks along with industrial Ethernet solutions and high-power interconnects for various benchtop testing devices. Learn more at [amphenol-cs.com](http://amphenol-cs.com).



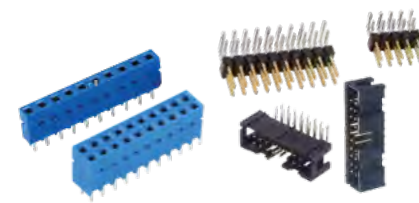
**ComboStak®  
0.80mm / 2.00mm**

- Hybrid and medium power solution
- 0.8A signal, 20A power
- Signal speed up to 12Gb/s



**ComboLock® 1.00mm/3.00mm**

- Compact, hybrid wire-to-board connector.
- Active Positive Latching
- 1.5A signal, 10A power



**Modular Systems 2.54mm/2.00mm**

- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm
- Industry proven connector system
- Board-to-Board, Wire/Cable-to-Board



**High mating cycle connectors for Test and Measurement Equipment**

- Supports 100k cycle mating/unmating – Ideal solution for test and measurement equipment.
- Non-soldering type allows replacement of connector without damaging the main PCB after 100,000 cycles
- Supports DDR5 data rate



**DDR5 SMT and SO-DIMM Memory module Connectors**

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch. JEDEC SO-016, SO-017, SO-019 compliant Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**Conan® Lite 1.00mm**

- Secure, Reliable connector.
- Audible "click" to ensure perfect mating.
- Speed up to 8Gb/s



**BergStak® 0.80mm**

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



**High Temperature Backplane Connectors**

- Feature-packed connectors designed for use in higher operating temperature applications. Compliant to EN45545



**PCIe® M.2 Gen 5 and Gen 4**

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



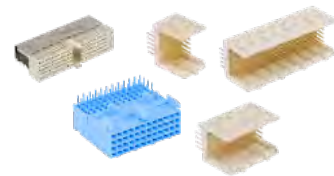
**PCIe® Gen 4/5/6**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



**DisplayPort 2.1 Connectors**

- DP2.1, UHBR20, 80Gb/s/4 Lanes, 85ohm, for DP80 cable
- Backward compatible to DP1.4 footprint.
- Optional for flange and plastic post.



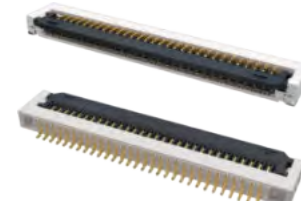
**Industrial Backplane Connectors**

- 2.00 mm Millipacs® series hard metric connector, 2mm Metral® series future bus connector & 2.54mm DIN 41612 connector for robust applications in the Industrial segment
- Features 2-beam twisted tulip contact which provides an equalized signal path



**Micro Board-to-Board**

- Low profile and fine pitch for high density applications
- High current rating (Up to 5A)
- Chamfer connector design prevents mismatching



**FFC/FPC Connectors**

- From 0.21mm to 2.0mm pitch with various heights ranging from 0.5mm to 6.25mm.
- Easy to operate and high vibration-proof performance
- Automotive grade versions compliant with USCAR2 and LV214 are available
- FFC cable can be supported as a whole solution
- Autolock option available



**USB Type C Connectors**

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen 1 and Gen 2
- Waterproof versions featuring unique O-ring technology (LIM) perform up to IPX8
- Supports up to 240W (5A/48V) power supply



**Ruggedized**

- Ruggedized, IP67 sealed
- Connectors & cables
- RJ, USB, USB-C, D-Sub, HDMI
- MRD Circular latching
- FLH rectangular latching
- Industrial, commercial, lighting



**D-Sub Slimline**

- Ultra slim body with contact alignment in a single row for significant saving in board space and with mating compatibility

# RF



## 2.92 mm

The 2.92 mm interfaces offers low VSWR and excellent return and insertion loss, along with high power handling capabilities. This connector has the ability to mate with SMA, 3.5 mm and other K or 2.92 mm interconnects for additional versatility.



## SMA

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



## RF Adapters

Full range of in-series, between-series and tee coaxial adapters for all standard connector interfaces. RF adapters are available in 50 and 75 ohm designs and serve as connector savers in precision test and measurement applications.



## BNC

BNC connectors are miniature, lightweight and reliable RF interconnect that feature a bayonet style coupling mechanism. This interface is available in a variety of 50 and 75 ohm PCB and cable-mount options to support a broad array of commercial and military-grade applications.



## SMA Quick-Connect Adapters

SMA quick-connect adapters feature precision machined 50 ohm adapters in straight and right-angle configurations that provide reliable performance up to 18GHz. These adapters dramatically reduce the time necessary for mating and un-mating by elimination the need to fully thread the interface.



## HD-BNC

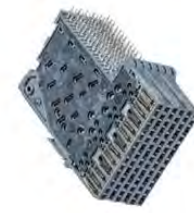
Engineered to enhance electrical and mechanical performance, the HD-BNC connector series features the trusted bayonet coupling mechanism which provides tactile feedback and a positive lock for quick and guaranteed mating. Available in 50 ohm configurations that operate up to 6GHz and 75 ohm options that provide excellent electrical performance up to an extended range of 12GHz.



## Precision Test Cables

Amplitude and phase stable test cables feature high performance stainless steel SMA and N-Type connectors terminated to triple shielded, ultra low loss cable. Ideal for test and measurement applications up to 20GHz.

# High Speed



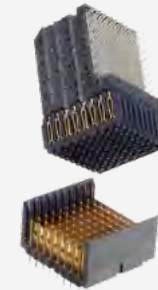
## XCode® Backplane Connector

ENABLING FUTURE DATA RATES. While maintaining the same mating interfaces, this connector design provides designers with readily available 85Ω and 100Ω solutions to meet a wide variety of application needs, including Ethernet and PCI.



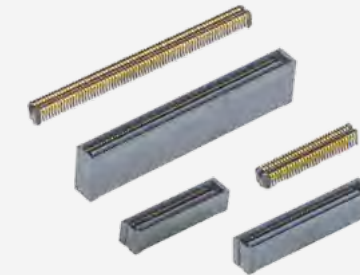
## Chameleon®

ADAPT AND ADVANCE TO THE NEXT GENERATION. With performance speeds up to 25 Gbps+, Chameleon meets the demand for faster, smaller and more compact connector solutions. Chameleon delivers a new level of performance unlike any other platform connector on the market today.



## VHDM®

OPTIMIZED FOR SINGLE-ENDED APPLICATIONS. Amphenol's VHDM® connector's modular format and breadth of components provides unmatched design flexibility. VHDM's support differential signaling within the same connector.



## Lynx™

HIGH SPEED AND DOUBLE DENSITY LOW-PROFILE BOARD-TO-BOARD CONNECTOR. Amphenol's Lynx™ is a 4-row product offering doubling the density in a 2-row footprint that is suitable for a wide variety of applications in datacom, enterprise server, industrial, medical and more.



## ExaMAX® 56Gb/s High-Speed Backplane Connector 85Ohm

SUPPORTS INTEL QPI/UPI AND OTHER INDUSTRY STANDARD SPECIFICATIONS. The ExaMAX® 85Ohms backplane connector system is designed for higher bandwidth applications from 25Gb/s to 56Gb/s. Delivers superior signal integrity performance.



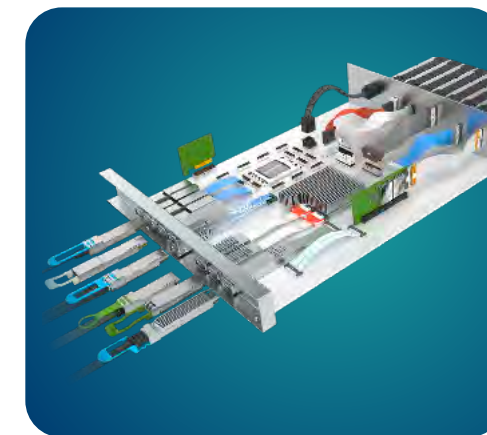
## cStack™

CUSTOMIZABLE SOLDERLESS INTERPOSER-BASED ONE-PIECE STACKER. The Amphenol cStack™ high speed solderless interconnect solution provides limitless flexibility for board-to-board mezzanine applications and board-to-board stackable and coplanar applications when terminated to a flex circuit.

## APPLICATION SCOPE

# AI / Machine Learning

Amphenol enables high-speed connectivity solutions with density, high performance and engineering expertise for every AI/ML application.

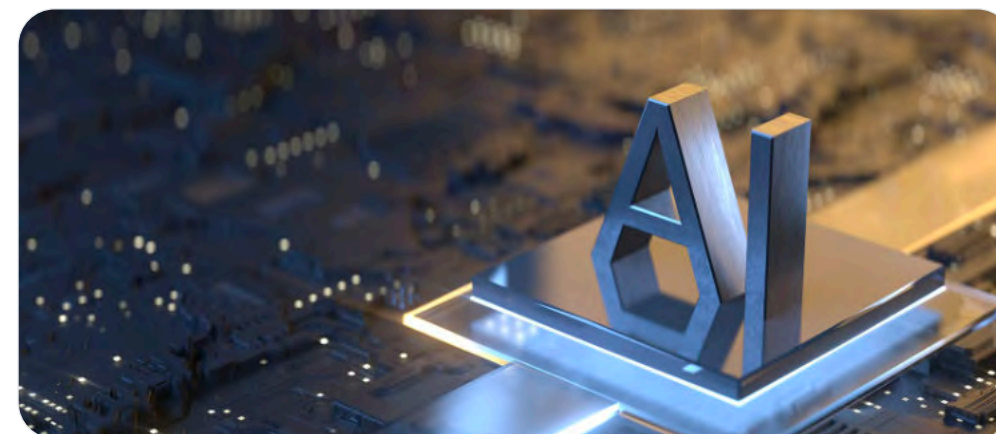


## Integrated Signal Integrity Solutions

Amphenol provides reliable integrated signal integrity solutions across High-Speed IO, Backplane, and Mezzanine Connectors and Cables to meet the expansive goals of AI/ML. Adhering to PCIe and DDR standards, high performance storage and memory connectors along with high-speed magnetic modular jacks and wire to board power connectors, are available for all your AI/ML applications.

## 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. Reduce overall link signal loss and eliminate the need for expensive signal re-timers.



## 112G & 224G High-Speed Connectivity Solutions

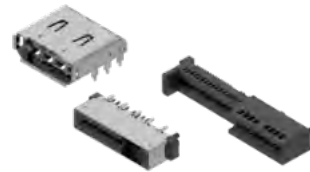
Amphenol understands how to provide connector solutions to enable the higher speeds of today. We have the tools and expertise to help our customers get there, electrically and mechanically – and every type of connector needed for 112G integration, with a seamless path to 224G.

Amphenol has connectivity solutions for every application that requires a connector. Paladin® HD and ExaMAX2® are used for mezzanine and traditional, cabled, and orthogonal backplane. Amphenol SFP, SFP DD, QSFP, QSFP DD, and OSFP connectors and cable are available for a wide range of applications. Our engineering teams collaborate with customers on 1000's of projects every year, so no matter what technical, operational, or commercial challenges you face, Amphenol can develop a solution for you.



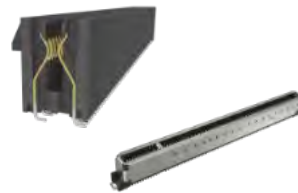
**EDSFF, OCP, Power Shelf and PCIe® DirectAttached® Cable Assemblies**

- PCIe® DirectAttached® cable riser solution supports up to PCIe®5.0 32Gb/s, eliminates PCB trace and Vias, improves insertion loss by 0.75db @16GHz at 0.5m cable length
- EDSFF cable assemblies for E1 / E3 specifications
- OCP cable assemblies for OCP NIC 3.0
- Power Shelf cable assemblies for ORv3



**Standard Cool Edge**

- Rated up to 350A per pin (10.3mm pin diameter)
- Flexible housing form-factor
- Straight-exit and 90-degree cable solution



**PCIe® Flip CEM, Slim CEM, Metal Cage CEM**

- Flip CEM with "JJ" contact or "LL" contact provides better support for card edge to save keep out area for routing as compared to standard PCIe® CEM contact of "JL".
- Standard PCIe® CEM footprint is 8.2mm, Slim CEM is 7.45mm, Flip CEM is 5.9mm
- Metal cage CEM provides enhanced housing support



**Mini and Hyper Cool Edge for EDSFF/ SFF-TA-1002 /SFF-TA-1037/ OCP/ GEN Z**

- 0.60mm pitch connector, supports high-speed from 32GT/s, PCIe® Gen 6 64GT/s, up to 112G PAM4
- Designed to meet SFF TA 1002, SFF TA 1037, EDSFF E1/E3, OCP NIC 3.0 and Gen Z specifications
- Vertical, right angle, straddle mount and orthogonal options are available



**PCIe® M.2 Gen 5 and Gen 4**

- 67 contacts on 0.50mm pitch fully compliant with PCI-SIG PCIe® M.2 specification
- Dual Stacked, Shielded versions are available
- Right angle, vertical and various connector heights and keying options offered



**DDR5 SMT and SO-DIMM Memory module Connectors**

- 287-terminal and 288-terminal SMT connectors designed to meet JEDEC SO-023, and the new SO-023D specification. U DIMM/R/LR Socket, Metal tab, Standard/ Narrow/ latch available.
- SO-DIMM: 262-position connectors in high-density design of 0.50mm pitch. JEDEC SO-016, SO-017, SO-019 compliant. Available in 4.00mm, 8.00mm, 5.20mm and 9.20mm height, right angle and vertical orientation with SMT mechanical hold-downs.



**Double Density Cool Edge for Ultra Compact Design**

- 0.80mm pitch, power and signal hybrid connector
- Highly configurable wafer design for differential, single-ended and power options
- Supports high-speed of up to 32GT/s (or 56GT/s PAM4) capability



**PCIe® Gen 4/5/6**

- X1, X4, X8, X16, X24, X32 standard links
- 1.00mm pitch, vertical and right angle with options for ridge, locked latch, side latch, blade hold down, open wall
- Extensive range include options for surface mount, through-hole solder, press-fit and straddle mount terminations and keying options offered



**Compression, Board-to-Board Connectors and Interposer**

- Provides a connection between either two PCB modules or one PCB and an electrical module
- Single-piece compression-type or two-piece board-to-board surface mount connectors



**PSAS, SAS and SATA Connectors**

- SAS connectors (29-pins) support hot plugging and blind mating of HDDs/SSDs. 2 signal lanes support up to 24Gb data rate (SAS 4.0).
- PSAS connectors (68pins) support SAS HDD and NVME SSDs with 2 SAS lanes supporting up to 24G data rate and 4 PCIe® lanes supporting up to 32G (PSAS 5.0) data rates.



**ExtremePort™ Z-Link**

- Compliant with Gen-Z and OCP NIC specifications. SFF-TA-1002/1020 solution
- high-speed of up to 56Gb/s PAM4
- Supports both cable and card edge applications



**Fan Connectors**

- Blind-Mate Interface Wire to Board connectors from 1.25mm to 2.54mm pitch with max current rating 5.5A/pin. Designed for Server and Storage applications
- Card to Wire connectors in 2.44mm and 2.54mm pitch with current rating 4A/pin. Designed for Switch application



**Mini Cool Edge IO**

- Up to 64Gb/s PAM4, PCIe® Gen 4, PCIe® Gen 5, PCIe® Gen 6, over 1.0 meter transmission distance
- 0.60mm pitch connectors support both cable and card edge connections
- Options for 92Ω, 85Ω and 95Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/SFP+/QSFP specifications



**ExtremePort™ Swift**

- Ultra-low profile, 0.60mm pitch connector in 8X, 16X configurations. Mating height 8.38mm
- Designed for unshielded, internal I/O connectors
- With 85Ω impedance and meets PCIe® Gen 5 NRZ 32G specifications



**Minitek® PICPwr OCP Connector Solutions**

- 12V connector solution support Open Compute Project Power Distribution and Management architecture requirements
- Operating power and voltage 864W at 12VDC



**Multi-Trak™**

- Combines original PCIe® and Mini Cool Edge IO in one connector to provide both power (21A) and high/low-speed signal
- Up to 56Gb/s PAM4, PCIe® Gen 5, and target PCIe® Gen 6
- Options for 85Ω impedance and various pin number options - meeting PCIe®/NVMe/SAS/OCP DC-MHS/ SFF-TA-1033 specifications



**RJMG**

- 10/100T, 1GBT (10/100/1000-BT), 2.5G, 5G, 10G, Power Over Ethernet (PoE, 15W-150W) , integrated with surge protection.
- Commercial: 0-70°C and industrial -40-85°C & -40-105°C
- Meets IEEE802.3ab and supports various Ethernet PHY



**Minitek® Pwr CEM-5 PCIe® Connector System**

- Rated current up to 9.5A per contact with all 12 power contacts and 4 Signal contacts
- New introduction CEM 5.0 PCI Express® 12VHPWR auxiliary hybrid connector and cable assembly support 600W GPU cards
- Positive locking on housing with low thumb latch operation



### PwrBlade® ULTRA HD+

- Rated up to 100A per contact
- Next-generation PwrBlade® Connector
- Optimized guide design to reduce connector width



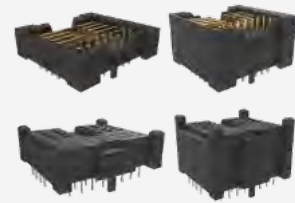
### PwrBlade® Mini Board-to-Board

- Rated up to 45A per power contact
- Lowest-profile PwrBlade® connector (8.10mm height above board)
- No PCB overhang



### BarKlip® BK450

- Currents rated up to 450A per contact
- 36 independent points of contact for high current carrying capability
- ±3.5mm of gatherability for blind mate applications



### PwrBlade® MiniMezz

- Rated up to 50A per high power contact, 25A per low power contact
- Available in stack heights from 8mm to 20mm (tooled in 1mm increments)
- ± 0.80mm of gatherability for blind-mate applications



### 48V BarKlip® BK300 IO

- Distributes up to 300A per contact
- Fully compliant with ORv3 IT Gear Power Input Specification
- New sense contact (Mate last- Break First)



### BarKlip® XP Series

- Connectors Rated from 200A-1000A
- No housings to maximize power-density
- Mounts directly to PCB or busbar



### PwrBlade® Mini Cable-to-Board

- Rated up to 25A per contact (50A per column)
- Built-in squeeze-to-release latches
- Latching CPA (connector position assurance) features



### ORv3 AC Input Connectors and Cable Assemblies

- 7-Pin connector designed for Star, Delta, and single-phase connections
- Fully compliant with OCP ORv3 Power Shelf Universal Input Connector Specification
- Rated up to 32A per pin



### PwrBlade+® I/O

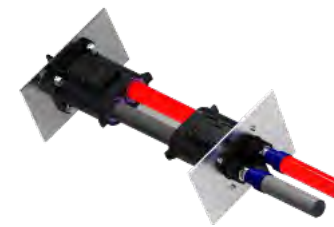
- Rated up to 50A per contact
- Power and signal contacts are highly configurable
- Wide wire size range available

## AI / Machine Learning



### OCP ORv3 BarKlip® BK500 IO

- Distributes up to 500A per contact between busbars, cables, and circuit boards
- Simple configurable plug-and-play solution
- Fully compliant with ORv3 Power Output Specifications



### CoolPower® HD

- Rated up to 350A per pin (10.3mm pin diameter)
- Flexible housing form-factor
- Straight-exit and 90-degree cable solution

## RF



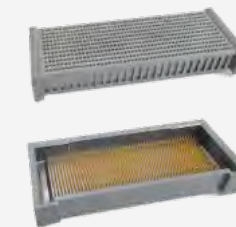
### 2.92 mm

The 2.92 mm interfaces offers low VSWR and excellent return and insertion loss, along with high power handling capabilities. This connector has the ability to mate with SMA, 3.5 mm and other K or 2.92 mm interconnects for additional versatility.



### OCP ORv3 BarKlip® BK150 IO

- Distributes up to 150A per contact between busbars, cables, and circuit boards
- New sense contact (Mate last- Break First)
- Fully compliant with ORv3 IT Gear Power Input Specification



### DensiStak™

- High density Board-to-Board.
- EMI Shielding, Blind-mating feature.
- Speed up to 16Gb/s



### SMA

Versatile 50 ohm threaded connector series available in various PCB and cable-mount configurations provide lightweight, compact and vibration proof option. High-strength designs are ideal for harsh environments.



### 48V BarKlip® BK600 IO

- Distributes up to 700A per contact
- Fully compliant with ORv3 Power Output Specification
- Mates with OCP ORv3 laminated busbar (6mm thick)



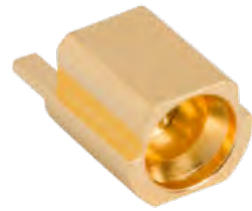
### BergStak® 0.80mm

- High density applications.
- Wide range of positions and stack heights.
- Speed up to 16Gb/s



### SMP

Versatile subminiature RF interface available in both push-on and snap-on mating styles that is commonly used in high frequency coaxial modules. Available in full, limited and smooth bore detent systems for board-to-board applications which utilize a floating bullet adapter which compensates for radial and axial misalignment. Cable-to-board mated pairs are designed to accommodate a variety of smaller diameter cable types.



### SMPM

Similar to the SMP interface, the SMPM connector series is a high-frequency RF interconnect designed to support applications up to 65GHz. The product series is available as a board-to-board and cable-to-board solution in a variety of straight and right-angle configurations with surface, through-hole and end launch mounting options.



### Conformable Cable Assemblies

Amphenol RF offers a broad variety of pre-configured cable assemblies on conformable cable types. These flexible cables feature all industry-standard RF connector interfaces in in-series and between-series options.



### 800G OSFP 2xDR4+ Transceivers

ELECTRICALLY HOT-PLUGGABLE AND SUPPORTS 106.25Gb/s DATA RATE PER CHANNEL. Designed for use in 800G Ethernet links on up to 2km of single mode fiber. These transceivers are compliant with the OSFP MSA, IEEE802.3cu, OIFCFM1 and feature a single 3.3V power supply with an integrated Silicon photonics modular chip.



### Mini-SAS HD Active Optical Cable Assemblies

FULL SAS 3.0 & SAS 4.0 COMPATIBILITY ENSURES PLUG AND PLAY OPERATION. Used primarily for external Enterprise storage applications (box-to-box, server-to-storage, server-to-switch), this cable is part of Amphenol's comprehensive Mini-SAS HD product offerings that address all board connector and cabling applications, from 1 to 100 meters.



### OSFP Copper Cable Assemblies

A COMPREHENSIVE INTERCONNECT SYSTEM FOR COPPER OR OPTICAL BASED CABLE SOLUTIONS. Compatible with 25G/lane channel NRZ up to 112G/lane channel PAM4 signaling protocols that allow the cables to deliver aggregate bandwidths of 200G, 400G, and 800G per cable assembly. Available in both Passive and Active variants that addresses current and future bandwidth port capability requirements.

AI / Machine Learning

## High-Speed



### EXAMAX2®

SUPPORTING 112G PAM4 PERFORMANCE. Maintains mating interface compatibility with previous ExaMAX® products to allow cost/performance flexibility. The mating interface and connector design is optimized to support the demanding electrical and mechanical requirements of 112G systems.



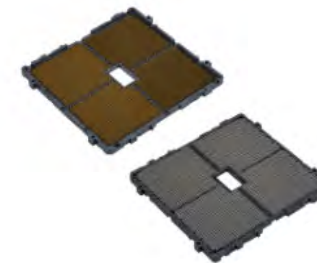
### Paladin® HD2

INDUSTRY-LEADING DENSITY & PERFORMANCE – YOUR PATH TO 224Gb/s. Paladin® HD2 leverages the same board attach, twin-ax cable attach, and mating interface as Paladin® HD for backward compatibility, offering a direct upgrade path to 224Gb/s PAM4.



### Paladin® HD

PROVIDES WORLD CLASS BANDWIDTH AND INDUSTRY-LEADING DENSITY AT 112Gb/s PERFORMANCE. Utilizes a balanced pair structure; built with individually assembled and discretely shielded differential pairs which have a revolutionary hybrid board attachment for maximized density. Backwards mate compatible with Paladin® HD2 family for a seamless upgrade path to 224Gb/s.



### AMD SP5 (LGA6096) LGA CPU Socket

AN AMPHENOL PROPRIETARY SHUNTED CONTACT DESIGN. Provides superior impedance matching and signal integrity performance enhancing system performance at a lower overall cost.



### OSFP-XD Copper Cable Assemblies

AN INTEGRATED INTERCONNECT DESIGN FOR COPPER OR OPTICALBASED CABLE SOLUTIONS. Compatible with PCIe® Gen 5 and in the future 112G/lane and 224G/lane channel signaling protocols that allow the cables to deliver aggregate bandwidths of 400G, 800G, and 1.6T per cable assembly.



### High-Speed Bulk Cables

SUPPORTS TRANSMISSION SPEEDS OF 10G, 28G, 56G, 112G, and 224G. High frequency SkewClear EXD cable technology offerings include multi-pair cables: 2, 4 and 8 pair construction in wire gages from 32 AWG to 26 AWG (34 AWG in development).



### ExtremePort™ QSFP-DD 224G Connectors

ENABLES 400G, 800G & 1.6Tb AGGREGATE BANDWIDTH PER PORT. A 76 position, 0.8mm pitch connector built for use in high-speed serial applications. Each port supports up to 1.6Tb/s in aggregate over an 8 x 224Gb/s electrical interface. The cage and connector design provides backwards compatibility to all QSFP modules.



### ExtremePort™ OSFP-DD 224G Connectors

ENABLES 400G, 800G & 1.6T AGGREGATE BANDWIDTH PER PORT. Amphenol's ExtremePort™ OSFP 224G interconnect system is comprised of a 60 position, 0.6mm pitch connector built for use in high-speed serial applications. Allows for use of either 56G, 112G or 224G OSFP products in any port and supports passive & active copper and optical solutions.



### UltraPass™ OverPass™ Cable Assemblies

224G CONNECTION DIRECTLY FROM CHIP SITE TO EXTERNAL PORTS. UltraPass™ enables arrayed connector layouts for near-chip and on-package IO solutions, providing the highest differential pair count interconnect offering in the market. Up to 10X reduction in signal loss; addresses system thermal and mechanical needs.



# Amphenol

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