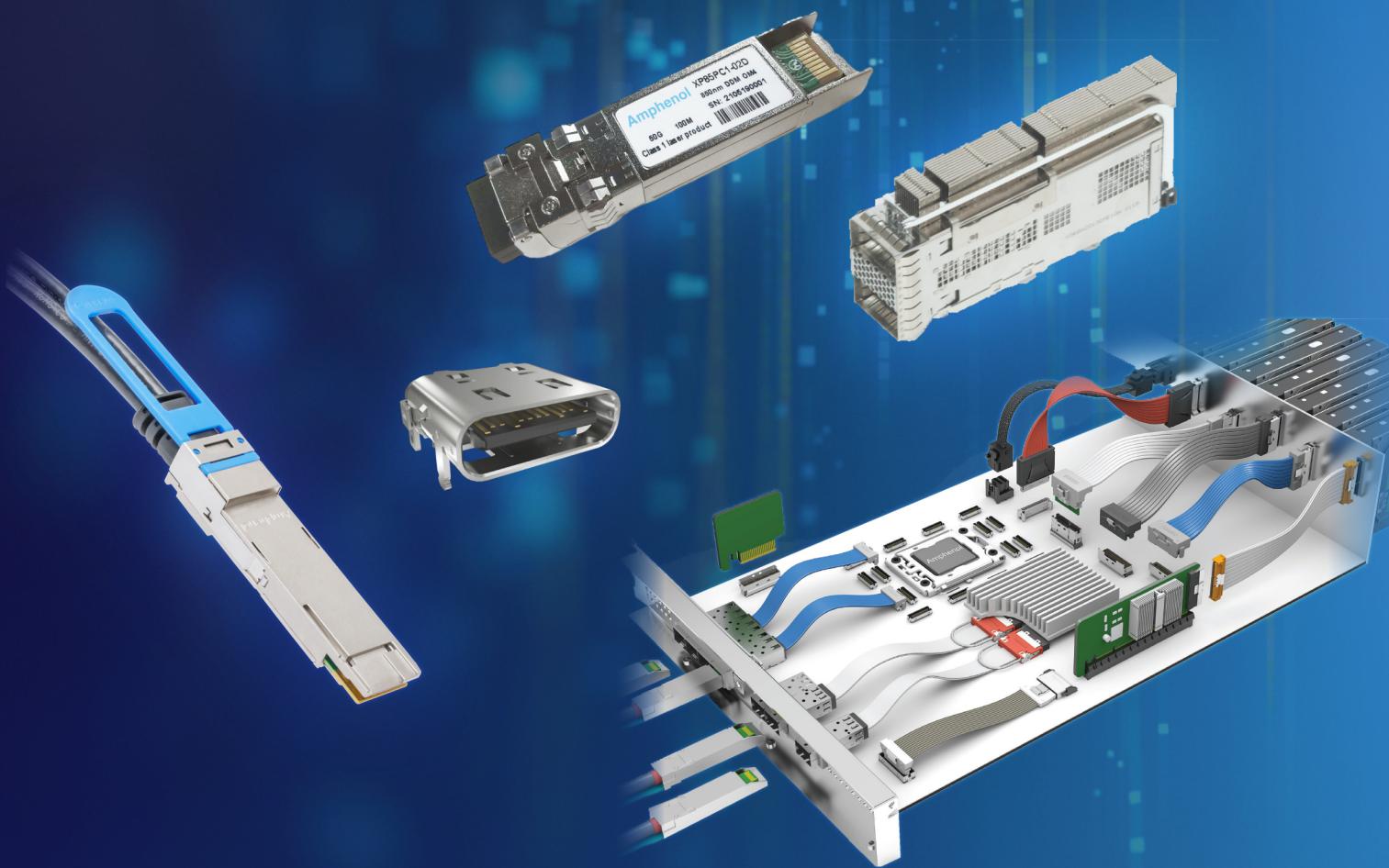


# Amphenol

Enabling The  
Electronics Revolution



[www.amphenol-icc.com](http://www.amphenol-icc.com)

# Amphenol

Amphenol ICC, a division of Amphenol Corporation, is a world leader in interconnect solutions for the Information, Communications 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.

Amphenol ICC 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 and optical transceivers for diverse applications including server, storage, data center, networking, industrial, business equipment and automotive.

## Strong Global Presence

AICC Employees  
~16049

### Americas

- ▲ Valley Green, PA
- ▲ Nashua, NH
- Raleigh, NC
- Austin, TX
- San Jose, CA
- Seattle, WA
- Ontario, Canada
- Mexicali, Mexico

### Europe

- Houten, Netherlands
- Stockholm, Sweden

### Asia

- Beijing, China
- Shanghai, China
- Shenzhen, China
- Changzhou, China
- Dongguan, China
- Taoyuan City, Taiwan
- Tokyo, Japan
- Suwon, Korea
- Asean, Singapore
- Penang, Malaysia

• R&D & Manufacturing Sites ■ Sales ▲ Both

## Application and Market Solutions

### Industrial



Network and Communications

### Automotive

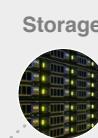


Server

### Mobile



### Storage



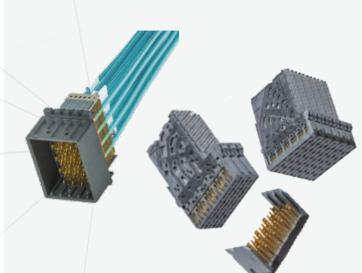
## Custom Capabilities

Our engineering teams collaborate with our customers on thousands of projects every year, so no matter what technical, operational and even commercial challenges you face, Amphenol ICC can develop a solution for you!

# Product Overview



[www.amphenol-icc.com/high-speed-backplane](http://www.amphenol-icc.com/high-speed-backplane)



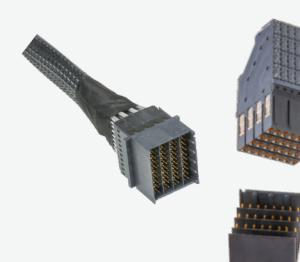
## Xcede®

- Supports designs from 8G to 56G PAM4
- Scalable and flexible design supports all your system requirements
- Supports Embedded Capacitors



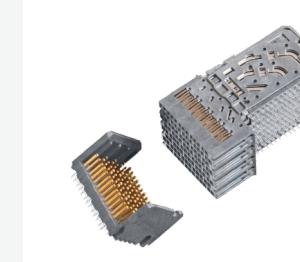
## ExaMAX®

- Cost optimized with scalable performance to 112G PAM4
- Innovative design supports low insertion/extraction forces along with reduced crosstalk and low insertion loss
- Flexible architecture supports direct orthogonal, traditional backplane, coplanar and cable requirements



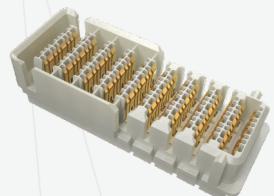
## Paladin®

- Supports data rates beyond 112G PAM4; industry leading signal to noise performance
- Consistent signal integrity performance over the entire mating range
- Flexible architecture supports direct orthogonal, traditional backplane, mezzanine, coplanar and cable requirements



## Xcede® HD

- Supports designs from 8G to 56G PAM4
- The de facto standard for high performance backplane designs with industry leading density
- Supports Embedded Capacitors



## ExaMEZZ®

- Cost optimized with scalable performance up to 56G PAM4
- Innovative design supports low insertion/extraction forces along with reduced crosstalk and low insertion loss
- Stacked height range from 15 to 45mm in 2 and 4 pair configurations



## AirMax®

- Cost optimized with scalable performance beyond 25G PAM4
- Traditional backplane offering including standard and inverse gender
- Standard is 3-, 4- and 5-pair



## Elite®

- Scalable performance beyond 56G PAM4
- Connector design is optimized for reduced PCB layer count
- Same mating interface for direct orthogonal, cable and traditional architectures



## 28G / 56G SFP

- High performance, cost effective solution for D/C applications
- Passive & active cables; 30AWG to 26AWG cable sizes
- Stacked, ganged and belly-to-belly board connector and cage configurations with heat sinks and light pipes
- 112G/lane coming in 2021
- 112G solutions in development



## 100G / 200G QSFP

- 4 lanes per cable – 28G & 56G per lane capability
- Passive & active cables; 26AWG to 32 AWG cable
- Stacked, ganged and belly-to-belly connector and cage configurations
- Backwards plug compatibility with QSFP

- 112G/lane coming in 2021



## 200G / 400G / 800G QSFP DD

- 8 lanes per cable – 28G & 56G per lane capability
- New 112G solution available
- Double the bandwidth per port vs. QSFP
- Backwards plug compatibility with QSFP



## 200G / 400G / 800G OSFP

- 8 lanes per cable – 28G & 56G per lane capability
- New 112G solution available
- Thermal management engineered into cabled solution
- PAM4 modulation providing solutions up to 400G aggregate bandwidth



## mSAS HD Active Optical Cables

- Capable of speeds up to 16Gb/s per channel (4 lanes)
- Supports SAS 2.0/3.0 and PCIe Gen 3.0/4.0
- Transmission distance up to 100m (MMF)



## 300G CXP2 Active Optical Cables

- Capable of speeds up to 25.78125Gb/s or 28.056Gb/s per channel (4 lanes)
- Supports SAS 2.0/3.0 and PCIe Gen 3.0/4.0
- Transmission distance up to 100m (MMF)
- Supports 100G Ethernet and Infiniband 4xEDR and 4x32 FC protocols
- Transmission distance up to 100m (MMF)



## 200G QSFP DD Active Optical Cables

- Capable of speeds up to 25.78125Gb/s or 28.056Gb/S per channel (8 lanes)
- Supports 200G Ethernet NRZ
- Maximization of linear port density



## 400G QSFP DD Active Optical Cables

- Capable of speeds up to 56Gb/s per channel (8 lanes)
- Supports Ethernet PAM4
- Maximization of linear port density



## Leap® On-Board Transceiver

- 300Gb/s aggregate 12TRx at distances up to 70m
- Low power consumption: 5.4W
- Small form factor: 1sq inch



## SCFF On-Board Transceiver

- 1TRx at up to 28Gb/s at distances up to 70m
- Duplex LC optical port
- SMT solder and 2-screw PCB fixation

## OverPass™ Solutions

Cable system offering a broad range of capabilities that efficiently take high speed signal from near the ASIC to anywhere in the system.

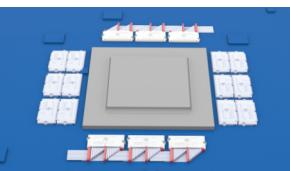
[www.amphenol-icc.com/overpass](http://www.amphenol-icc.com/overpass)



### External High Speed IO

Near or on ASIC to external IO receptacles

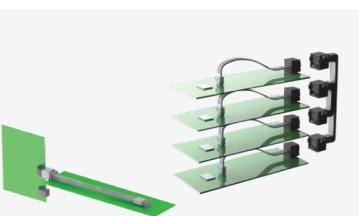
- High speed interconnect link from the chip site directly to the external IO port
- HSIO OverPass product portfolio fully compliant to established industry standard interfaces: SFP, QSFP, QSFP DD, OSFP and others
- Supports signal transmission speeds of 10G, 28G, 56G PAM4 and 112G per lane bandwidths
- Press fit or cabled sideband signal management; engineered wire management
- Stacked, ganged, and belly-to-belly HSIO connector and cage configurations with high density (DP/mm<sup>2</sup>) near chip / on chip solutions (micro-LinkOVER™ and DensiLink™)



### Internal

Near ASIC to cards or board location in system

- Delivering a simple, low-loss, direct link to pluggable modules or anywhere in your system
- Optimization with our high speed, low loss twinax cable with high speed connectors such as: Mini-SAS HD, OCulink, SlimSAS™, Mini Cool Edge IO, ExtremePort™ Z-Link, Flash & Swift, and micro-LinkOVER™
- Solutions are available in 10G, 25G, 56G & 112G PAM4 per lane signaling speeds
- Multiple cable exit options like straight, right angle, and coplanar
- Construction options including double ended, Y, and breakout cables.
- Single, ganged and stacked cage configurations



### Cabled Backplane

Near ASIC to system backplane or coplanar cards

- Cable Backplane System portfolio products extend the reach of passive copper for next generation system designs
- 56G and 112G PAM4 performance
- Optimization with our high speed, low loss twinax cable with Paladin® and ExaMAX® backplane connector families
- Flexible connector architecture supports cable blind mating with a backplane cable, press fit headers, right angle and orthogonal configurations



### High Speed Bulk Cables

High frequency SkewClear EXD cable technology

- Offerings include multi-pair cables: 2, 4 and 8 pair constructions in wire gages from 32 AWG to 26 AWG (34 AWG in development)
- Supports transmission speeds of 10G, 28G, 56G, and 112G PAM4 per lane bandwidths
- Impedance tuned designs support: Paladin®, ExaMAX®, ExaMAX+®, micro-LinkOVER™, Swift, Flash, GenZ, OverPass™ HSIO
- FEP insulated wiring for higher temperature environments

## X Amphenol XGIGA

[www.amphenol-icc.com/amphenol-transceivers](http://www.amphenol-icc.com/amphenol-transceivers)



### 1G-10G Transceivers

- LR, ER, BIDI, CWDM, LWDM, DWM, etc
- SFP, SFP+, CFP, XFP
- C-TEMP, I-TEMP
- Tunable



### 25G Transceivers

- AOC, BIDI, SR, LR, ER
- DWDM, MWDM, BIDI LR, BIDI ER, CWDM
- C-TEMP, I-TEMP



### 40G Transceivers

- SR, LR, ER, CWDM, AOC
- QSFP+
- C-TEMP, I-TEMP



### 16G / 32G / 64G Fibre Channel Transceivers

- EWRAP and OWRAP loopback designs
- C Temp and I Temp on some models
- Ask about availability



### 100G Transceivers

- QSFP28, CFP, CFP2, CFP4
- AOC, SR4, LR4, ER4 LITE, CWDM4
- C-TEMP, I-TEMP



### 200G Transceivers

- QSFP DD
- ER4
- Ask about availability



### 400G Transceivers

- QSFP DD
- FR4, DR4, SR8
- Ask about availability

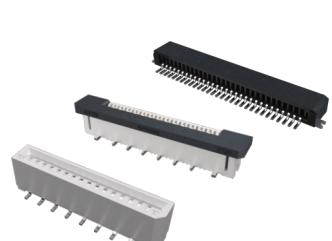
## Amphenol AORORA

[www.amphenol-icc.com/aorora](http://www.amphenol-icc.com/aorora)



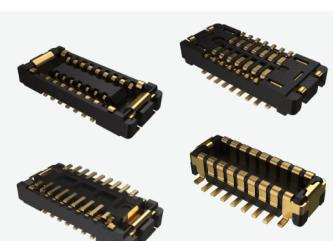
### 0.50mm FFC/FPC

- Easy to operate and vibration-proof
- Wide height range from 1.25mm to 5.80mm with 4 to 80 contact positions in both vertical and right angle orientations
- Front/back/vertical flip and slider mechanisms with ZIF or Non-ZIF cable terminations



### 1.00mm FFC/FPC

- Low profile and fine pitch for high density applications
- Wide height range from 2.00mm to 5.04mm with 3 to 34 contact positions in both vertical and right angle orientations
- Front flip and slider mechanisms with ZIF or Non-ZIF cable terminations



### Micro Board-to-Board

- Floating range of ±0.50mm in the X, Y and Z directions
- High current rating (Up to 3A)
- Chamfer connector design prevents mismatching
- Double contact points for enhanced contact reliability



### Floating Board-to-Board

- Floating range of ±0.50mm in the X, Y and Z directions
- High speed performance (Up to 2.5Gb/s)
- Double contact points for enhanced contact reliability

## Mezzanine Products

[www.amphenol-icc.com/mezzanine](http://www.amphenol-icc.com/mezzanine)



### cLGA® & cStack™

- Mechanically robust dual compression technology with pin counts up to 10,000+
- High performance sBGA configurations are readily available with speeds to 56G+



### cStack™ & Custom Flex

- Designed for applications where flexibility, space, weight and performance are critical
- Available with BGA, LGA, SMT, press-fit or thru-hole connector terminations



### Lynx™ QD

- Designed in multiple form factors: right angle, coplanar and vertical stacker
- Optimized for differential pair signaling to support PCIe Gen5 and 56G performance



### M-Series™ 56

- Designed to support high technology products in board-to-board or flex assembly architectures from 4-15mm
- Next-generation differential pair contact design for 56G NRZ, 112G PAM4 performance

## Storage & Server IO

[www.amphenol-icc.com/storage-server-io](http://www.amphenol-icc.com/storage-server-io)



### Double Density Cool Edge for Ultra Compact Design

- Designed to accommodate both high speed signal and power in a space-saving format using two rows of contacts



### Slim Cool Edge for High Speed Hybrid Design

- Designed for high speed up to 32GT/s (or 56GT/s PAM4) capability



### Mini Cool Edge for GENZ/EDSFF/OCP

- Designed to meet SFF TA1002, Gen Z, EDSFF, OCP



### DDR4 and DDR5

- Designed to meet JEDEC SO-016, SO-017, SO-019 and SO-023 spec
- Vertical, right-angle orientations and SO-DIMM version available.

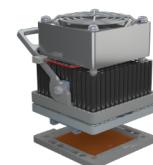
## ARDENT CONCEPTS An Amphenol Company

[www.ardentconcepts.com](http://www.ardentconcepts.com)



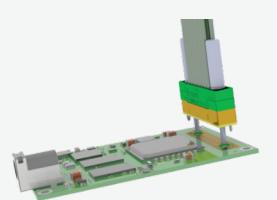
### QSPF DD / OSFP Host Compliance Test Fixtures (HCTF)

- Full 16 differential pair access
- 1.85 mm test points meet both IEEE 802.3 and CEI 112G/lane requirements
- Each lane carefully matched through coax and PCB structures to ensure that the insertion loss and skew are constant for the entire unit



### SK Series Family of Sockets

- Socket can be easily mounted and de-mounted with a few screws encouraging re-use across board revisions
- Durable 40 GHz+ socket solutions offer low loss connection for high performing devices



### TR Multicoax Series

- Superior signal integrity up to 70 GHz
- Solderless system eliminates signal distortion for clean signal integrity
- Multiple form factors and channel counts available



### CA Series Connectors and Interposers

- Bandwidth and performance beyond 32 Gb/s
- Pure vertical interface, no offset required

## Power Solutions

[www.amphenol-icc.com/power-solutions](http://www.amphenol-icc.com/power-solutions)



### EnergyEdge™ X-treme

- Available in straddle mount, right angle, right angle coplanar, and vertical configurations
- 3000W at 12V
- 25% increase in current linear density
- 23% size reduction compared to traditional card edge connectors



### BarKlip® IO

- Up to 200A per contact, AGT® plating technology for ultra low resistance, ultrasonic welding provides lower voltage drop and greater overall efficiency



### PwrMAX® G2

- Next generation PwrMAX® - highest density blind-mate Power and Signal connector series
- 130A per contact and 18% size reduction
- Orthogonal, mezzanine, coplanar and right angle configurations available for both PCB and busbar applications



### PwrBlade+® IO

- Up to 60A per contact (high power) & 25A per contact (low power), power & signal contacts are highly configurable wide range of wire sizes available



### CoolPower® SDM

- Up to 35A per pin, high current Coolband or RADSOKE® contact technology available, backplane coplanar and orthogonal configurations



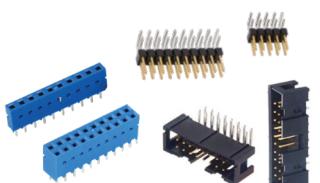
### PwrBlade Ultra®

- Up to 75A per contact, ultra low resistance (0.4mΩ at end-of-life conditions), low profile height of 9.6mm for optimized airflow



## WireLock®

- 1.80mm pitch, robust, low mating force
- USCAR-2 V2 compatible
- 3A per contact, TPA, CPA features



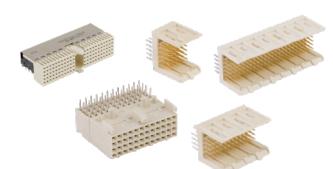
## Modular Systems

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



## OCTIS™ Outdoor IO

- Robust I/O for high reliability and performance



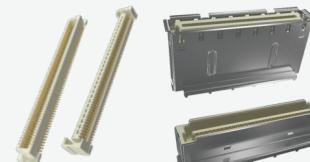
## Industrial Backplane Connectors

- 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



## Minitek MicroSpace™

- 1.27/1.50mm pitch, compact, robust and versatile
- LV214 severity-2 compatible
- 4A per contact, TPA, CPA features



## BergStak®

- 0.80mm pitch, high density family
- Wide range of positions and stack heights
- Speed up to 16Gb/s



## Minitek® Pwr Family

- Full range solution for power application with a high current rating up to 23A per contact



## High Temperature Backplane Connectors

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



## MicroSpeed®

- 1.00mm pitch, industrial grade reliability
- Speed up to 25Gb/s
- Superior EMI, EMC performance



## BergStak® Secure Connector

- 1.00mm pitch, high security, high density
- Speed up to 32Gb/s
- EMI Shielding, support BMI



## Custom Battery Connectors for EVs

- Robust customized battery/charger connectors and terminal solutions for E-bikes.
- Available in various pin configurations and connector sizes with current ratings up to 100A. IP67 sealed when mated



## D-Sub Slimline

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



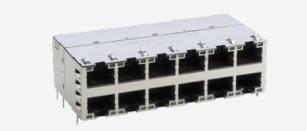
## USB

- USB4 Gen 3 Type C connectors newly launched. Multi-protocol, high-speed USB solutions for next generation designs.
- Waterproof USB Type C with IPX4 to IPX8 rating



## High Speed Interconnect

- Proven, high speed, low profile 0.60mm pitch connectors in 4X, 8X, 12X, 16X, 20X, 24X configurations. Meets PAM4 56G and PCIe 5.0 standards.
- SlimSAS™, SlimSAS™ Low Profile, Z-Link, Mini Cool Edge IO, Swift, Flash



## RJMG

- Modular Jacks with integrated magnetics in stacked, ganged, multi-port, single port and RJ45-USB combinations
- Up to 10Gb/s and PoE 150W



## 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
- Micro Power / Plus / Super 3.0, Mini Power / Plus / Super 4.2



## High Speed Automotive

- Connectors for Automotive Electronics: HSD, HSC, HSBridge+, Netbridge



## Fan Connectors

- Unique modular fan interconnect solutions for Servers, Storage and Data Center applications



## Lighting Connectors

- Zhaga Book and NEMA/ANSI compliant lighting connectors for indoor, outdoor and street lighting applications



## ix Industrial Ethernet Connectors and Cables

- ix Industrial IP20 and IP67 interfaces for next generation, high speed, ruggedized Industrial Ethernet applications per IEC 61076-3-124



## RJ / Modular Jacks

- Modular Jacks in stacked, ganged, multi-port and single port combinations.
- Meets Cat5e, Cat6, Cat6A specification performance levels



## Single Pair Ethernet Connectors and Cables

- Single Pair Ethernet (SPE) IP20 and IP67 interfaces for next gen high speed, ruggedized Industrial Ethernet applications per IEC 63171-6



## Industrial RJ Plugs and Cable Assemblies

- Ruggedized Industrial RJ plugs with IDC termination, metal latching and cable entry options
- Meets Cat5e, Cat6, Cat6A specification performance levels

# **Amphenol ICC**

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**[www.amphenol-icc.com](http://www.amphenol-icc.com)**