# Amphenol
### INDUSTRIAL PRODUCTS GROUP

## INDUSTRIAL@AMPHENOL
### TRUSTED GLOBALLY



# Automation & Robotics

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# Automation & Robotics market

At Amphenol we understand the Automation & Robotics industry has unique interconnect needs. We know manufacturing plants can run 24/7 year-round and cannot afford downtime. Modern industrial facilities rely heavily on automation and robotic systems to produce products effectively and efficiently. These technologies use many interconnects to provide power and/or signal to the equipment. By connectorizing robots and factory automation apparatuses, troubleshooting and maintenance times can be dramatically reduced. Amphenol offers the widest selection of robust interconnect products that can hold up in some of the harshest industrial environments.

Amphenol's products withstand:

• Vibration
• Salt Spray
• Humidity
• Dust
• EMI/EMC
• Temperature Extremes

Whether you need power connectors, signal connectors, backplane connectors, rugged data cables and switches, complete cable assemblies, fiber optic connectors and assemblies, or system attachments, we have the right solution for your Automation & Robotics application.

We also know you need a partner with a global footprint of service and support. Amphenol has over 85 facilities in 30 countries and, due to our culture of cost control and operating discipline, we are able to prosper in all economic climates. Amphenol's background in producing high reliability connectors for the harshest environments on Earth and in Space gives us the unique experience needed to produce extremely reliable, cost effective, industry standard products for the wind energy industry.

If you have the need for a customized solution, our engineers will work with yours to produce the right customized interconnects for your application. Amphenol connectors are approved by UL/CSA, VDE and other international standards.

# Amphenol

Since 1932 Amphenol has been the interconnect technology provider of choice to industry leading companies throughout the world. With a broad and diverse product portfolio, Amphenol is able to develop the right solutions for our customers across the diverse segments of the rapidly expanding electronics market.

With dedicated employees working at 85+ facilities in more than 30 countries, Amphenol has the unique advantage of having both diversified global reach while still being a focused organization. Our focus comes from our

entrepreneurial management team dedicated to specific markets and regions.

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# Power Solutions

## DL Series

Amphenol's DL Series are highly reliable circular connectors (wire soldering type). They are ideal for use in machine tools, robots and other industrial equipment. They are also intermateable with 5015 connectors.

### Features and Benefits
- First mate, last break (Pre-earth)
- UL and CSA approved
- CE approved for Europe by TUV

**ADS**

## 5015

Amphenol's 5015 Series is a rugged, versatile and environmental resistant connector with proven electrical capability in a cost effective package. 5015 series connectors are medium to heavy weight cylindrical connectors with 5 shell styles, 19 shell sizes and 5 service classes. The 5015 offers 305 contact arrangements from 1 to 104 circuits. It is available in solder or crimp contacts, environmentally resistant options, threaded coupling (fine thread), coaxial and thermocouple contacts, and ROHS compliant versions. This helps make Amphenol's 5015 series an industry leading product.

### Features and Benefits
- Environmental sealing
- Optional filtering capabilities for receptacle connectors (Amphe-dB series)
- Combined power and signal all in one connector
- The RADSOK advantage provides contacts that handle up to 150% higher amperages than standard contacts.(Amphe-Power series)
- Over 300 insert patterns allows for easy customization
- Threaded coupling (fine thread)
- Single key/keyway polarization
- Coaxial and thermocouple contact options
- RoHS plating and contact options available (AC Threaded series)
- Low Smoke and Fluid Resistant inserts available (AC Threaded series)

**AIO**

## Amphe-PD™

Amphenol's Amphe-PD™ series of "RADSOK® enabled" power connectors is a cost effective, versatile solution for your high current interconnect requirements. Available in the compact 3.6mm, 70A rated option and a larger 5.7mm, 120A connector. The Amphe-PD™ is reintroduced with a new black PBT housing that is more robust and aesthetically pleasing. The Amphe-PD™ series meets RoHS requirements and is UL and IEC finger touch safe. Available in several configurations for high flex cable, PCB, and busbar mounting. Custom cable assemblies are available.

### Features and Benefits
- RADSOK® sizes 5.7mm and 3.6mm
- 120A and 70A rated 2 position connector
- Low profile right angle exit less than ½ inch mated height
- 12 AWG to 4 AWG crimp contact with insulated latching housings
- RADSOK® Socket and pin / silver over nickel plating
- High Temp LCP housing for SMT processing of PCB mount receptacles

**AIO**

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# Power Solutions

## RoboLok™

**ATPI**

RoboLok™ is a 3 position, high current primary circuit connector. Featuring Amphenol® RADSOK® technology, it delivers superior performance over a broad range of wire gauges. RoboLok™ preforms well in harsh environments, and can hit up to 240A (continuous) with a 60K T-Rise. RoboLok™ is ideal for industrial robots and other harsh industrial applications.

### Features and Benefits
- 2+PE configuration with FMLB
- 1000V AC or DC; 50Hz – 3kHz
- Lightweight composite housings
- Compact, modular design with highest current ratings from RADSOK®
- 240A Current Rating (60K T-Rise)
- Quick disconnect solutions for minimized downtime
- Tool-less assembly and easy maintenance

## Xcel Power Mate

**APCD SZ**

Auto-latch mating mechanism provides fast and reliable connection with audible and tactile feedback to confirm that the connector pairs are fully engaged. Compared to normal push pull connectors, Xcel power | mate ®'s sliding ring is sprung automatically into the locked position. Disconnection is also fast, with holding the sliding ring to pull. Xcel power | mate ® is a low cost plastic connector without shielding.

### Features and Benefits
- Rated voltage up to 800V
- Contact size: AWG 8 and AWG 12
- Shell: size 18# and 28#, other shell sizes coming soon
- Insert: retardant thermo-plastic
- Contact: copper alloy with gold plating
- Some arrangements with breaking capacity

## PowerBOSSlite™ M35

**SINE**

PowerBOSSlite™ M35 (1-3/8") Cable Assemblies are available with 3 & 4 position inserts in a variety of standard lengths. The easy plug and play installation is scalable and easy to repeat. Applications include: heavy equipment, industrial, automation, conveyors, packaging machinery, motion control, servo motors, distributed power, mining.

### Features and Benefits
- 30A Max Current; 600V; 10AWG
- Operating temperature range -20°C to +105°C
- High-performance, cost-effective
- UL 2237 Approved single and dual-rated cable options
- Comparable with existing standard products industry-wide
- Select parts available in Black and Red options

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# Power Solutions

## M22 PowerBOSSlite™

PowerBOSSlite™ M22 (7/8") Cable Assemblies are available with 3 & 4 position inserts and in a variety of standard lengths. The easy plug and play installation is scalable and easy to repeat. Applications include: heavy equipment, industrial, automation, conveyors, packaging machinery, motion control, servo motors, distributed power, mining.

### Features and Benefits
- 15A Max Current; 600V; 14AWG
- Operating temperature range -20°C to +105°C
- High-performance, cost-effective
- UL 2237 Approved single and dual-rated cable options
- Comparable with existing standard products industry-wide
- Select parts available in Black and Red options

SINE

# Signal Solutions

## Micro-B™

Amphenol's new Micro-Bayonet series provides the solution that meets your budget and performance goals. Micro-B meets the requirements of today's electrical equipment for a connector with a small footprint, light in weight, high density insert patterns, exceptional shell-to-shell electrical EMI shielding, and high reliability.

### Features and Benefits
- Aluminum shell construction provides high strength while being light in weight
- Stamped and formed crimp contacts, easy for cable assembly
- ¼ turn positive bayonet coupling, quick coupling
- Multiple shell plating options (up to 500H salt spray protection)
- Excellent shell-to-shell EMI shielding
- High shock and high vibration resistance

AIO

## M12 X-Code

The M12 X-Code connector is designed to enhance data transmission rates up to 10 Gbps. Specially made for preventing interference while withstanding harsh environments. Ensure signal completion between end-devices and the reliability of high-speed data transmission.

### Features and Benefits
- IPX7 Waterproof in mated condition
- UL 94V-0 flammability rating
- High data transmission
- Able to withstand harsh environment, corrosion resistant, and fully shielded
- IEC 61076-2-109 compliant

ALTW

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# Signal Solutions

## M12 X-Code to RJ45 Adapter

M12 X-Code to RJ 45 Cat.6A Adapter is a feed-through design product which is available in a straight and angled version. The adapter provides high-performance data transmission rate up to 10 Gbps and is waterproof in an unmated condition. It is designed to create a reliable linkage of data transmission across Ethernet including commands, monitoring and status through a single platform to your electronic devices.

### Features and Benefits
- Waterproof capacity: IPX7 Waterproof in unmated condition (M12 side)
- High data transmission rate up to 10 Gbps
- UL 94V-0. f1

**ALTW**

## C091 Connectors

C091 connectors are used in the markets of automation, test measurement & control, medical, sensors and telecommunications. Their proven design and performance make these connectors a recognized industry standard. They are available with screw or bayonet locking system. Receptacles are available for front or back panel mounting and offer a variety of connection possibilities

### Features and Benefits
- Signal connector with 2-14 poles
- UL recognized
- Up to 300V and 7A
- Shielded and unshielded versions available
- IP40 up to IP69K
- Solder and crimp termination

**ATI**

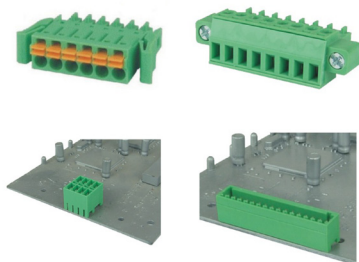# Power & Signal Solutions

## LPT Connectors

The new LPT Series from Amphenol Industrial Operations (AIO) is based on the MIL-C-26482 Series I and Amphenol's original PT Series. A cost effective metal structure connector for all major global signal application markets. The LPT Series is an evolution of AIO's well-known PT connector. Intermateable with 26482 Series I connectors, has the ability to accept wire gauges from 22AWG/0.25mm² to 12 AWG/4.0mm², and an IP67 rating.

### Features and Benefits
- Aluminum shell, light and reliable
- Multiple shell plating options, 500 hours salt spray with Gray ZnNi
- Standard PT shell and coupling nut, intermateable with PT Series
- 3 tines Stamped & Formed crimp contacts
- Accepts wire gauges from 22AWG/0.25mm² to 12 AWG/ 4.0mm²
- Quick positive coupling and 5 key/keyway mating
- High Shock and Vibration resistance
- IP67 Rating (mated condition)
- 500 mating cycles

**AIO**

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# Power & Signal Solutions

## Euro Type Pluggable Series

**ANYTEK**

This series includes pluggable terminal blocks with varying types, which can be made into different combinations and offers two main advantages that make for simple maintenance (can be pluggable) and reliable connections. The plugs have two options: spring type and screw type, and can connect all kinds of conducting wires whose cross-sections range from 0.08mm² to 16mm². The Euro Type Pluggable Series applies to industrial electronic equipment, electric power, medical equipment, etc. These terminal blocks are designed in accordance with international standards, such as IEC60998, IEC61984, IEC60947, UL1059, UL486E, CSA C22.2 No.158, etc.

**Features and Benefits**
- Pluggable Terminal Blocks
- Control Board Linking, Share Power & Signal
- Spring or Screw Type Plugs
- Cross-Sections 0.08mm² to 16mm²
- Pitches 2.5mm ~ 10.16mm
- Can match the design of single layer, cross/parallel dual layers, and different bending angles
- Qualified to UL, VDE, TUV

## M8/M12 SMT

**ALTW**

M8/M12 SMT are two-piece connectors specifically designed for PCB usage. They can be equipped on both sides and do not have through holes for the connection pins. These connectors can help to reduce assembly cost and time issues. By reducing the printed circuit board surface area, M8/M12 SMT are able to provide a cost effective solution in the market. Moreover, an overall improved production process can be achieved through SMT process implementation.

**Features and Benefits**
- Waterproof capacity: IP68 (mated, 1M/24Hrs) / IP65 (unmated)
- SMT process for easy and stable mass production
- UL 94V-0 flammability rating
- Designed with shield spring for further shielding function
- Tape & reel packing for automated assembly
- IEC Compliant:
  - M12: IEC 61076-2-101
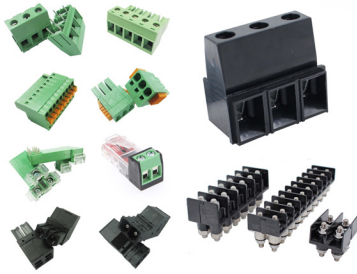  - M8: IEC 61076-2-104

## USB 3.1 Type C

**ALTW**

ALTW's USB 3.1 Type C is a small and compact reversible plug that supports data transfers up to 5 gigabits per second (Gbps) as well as power at 5A max. Designed with an ingress protection of IP67 and assembly type design O-ring to ensure a smooth mating process. The USB 3.1 Type C is applicable for a wide variety of I/O applications and supports hundreds of protocols to enable your device to work in various network connections.

**Features and Benefits**
- Assembly type O-ring
- UL 94V0-Molding Type
- Waterproof capacity: IPx7 (unmated)
- TID compliant
- Gen 2 spec
- USB 3.1 is backward compatible with USB 3.0 and USB 2.0
- Faster data transfer rate

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# Power & Signal Solutions

## Terminal Blocks

**APCD SZ**

Terminal Blocks include a broad range of fixed-mount and pluggable European cage clamp, U.S.-style screw clamp and spring clamp style wire-to-board and wire-to-wire blocks and related headers in .098" to .591" centers. This range of blocks, combined with engineering responsiveness, serve as the basic elements with which a broad series of creative application solutions ranging from interface modules to new I/O block developments are created. Interface modules are industrial interconnect devices which expand traditional Terminal Block I/O functions by incorporating the blocks, high density connectors and additional components into a rail-mounted printed board assembly.

### Features and Benefits
- Standard and custom range of PC board terminal blocks
- Discrete wire solutions
- Din rail

## eco | mate™ C16

**ATI**

ecolmate™ C16 Circular Composite Connectors are designed for easy operation using reduced dimensions while withstanding harsh conditions. Features include quick and easy assembly, vibration safe with non-sensitive screw locking, and an ergonomic coupling system for better grip and safer handling.  Applications include: agriculture, construction, transportation, off-road recreation, mining, industrial, railway, conveyors, packaging, entertainment lighting, hybrid electric, marine, renewable energy, UV market, lighting and traffic control, wireless infrastructure.

### Features and Benefits
- Circular Connectors with 3 to 20 contacts
- Voltage up to 900V/50A
- Operating temperature range -40°C to +125°C
- Thermoplastic UL94 V-0 housing components
- Cable housing options: straight or angled
- IP65/67 in mated condition (in accordance with DIN EN 60526)

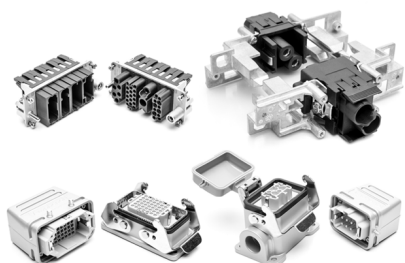## ecolmate™ RM and ecolmate™ Aquarius™

**SINE**

ecolmate™ RM Rugged Metal Connectors and ecolmate™ Aquarius™ Circular Plastic Waterproof Connectors are designed for easy operation using reduced dimensions while withstanding harsh conditions. Features include: quick and easy assembly, vibration safe with non-sensitive screw locking, and an ergonomic coupling sleeve for better grip and safer handling.  Applications include: industrial, railway, hybrid electric, harsh environments, renewable energy, wireless infrastructure. **Note**: ecomate® RM and ecomate® Aquarius™ product lines are designed to share the same inserts, contact options and required tooling.

### Features and Benefits
- Available in 6 shell sizes with 25 insert arrangements
- Voltage up to 600V/45A
- Operating temperature range -40°C to +125°C
- Housing Components: ecomate® Aquarius™ - Thermoplastic UL94 V-0; ecomate® RM - Zinc Alloy/Nickel Aluminum
- IP67/69K (in mated condition)
- Bayonet Coupling System (one-third turn with audible/tactile click)
- Design based on MIL-DTL-26482

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# Power & Signal Solutions

## Heavy | mate

**ATI**

heavy | mate® heavy duty connectors are a modular connector line consisting of hoods & housings, inserts and contacts. A customizable solution ideally suited for harsh environments where a robust design is necessary. Can be used for creating power and signal connections outdoors. heavy| mate® offers 3 to 280 poles per connector, current ratings up to 250A per contact and voltage up to 1000V.

**Features and Benefits**
- Hybrid Interconnections
- Cost Effective
- VDE, UL, CSA Approvals
- IP65 - IP68
- Vibration Proof
- Excellent EMC Protection Required
- Voltage up to 1000V
- High Current
- Signal Transmission
- Corrosion Resistant

## MotionGrade M23 Elite Series

**SINE**

MotionGrade M23 Elite Series connectors are designed to excel in performance and reliability for most demanding environments. All M23 products are IP67 rated. Applications include: advanced servo drive encoder feedback applications, packaging, robotic, printing, machine tool, medical and automation environments where control signal transmission or power are required in a robust and compact delivery system.

**Features and Benefits**
- Faster Assembly, Less Components
- Compact Design
- Loose-Piece Insert for Hand-Held Assembly
- Top-Loading Design (for Receptacles)
- Clamshell Insert for Contact Insertion (Opens for easy contact placement)
- Alignment Keys for Guided Assembly
- Grounding Rings (for Plugs)
- No Extractions Tools Required (for Power inserts)

## MiniBOSS™ M22

**ALTW**

MiniBOSS™ M22 (7/8") cordsets allow for cost-effective power and signal distribution, utilizing UL STOOW/CSA Type ST cable. Applications include: robotics, conveyors, sorting, automated storage and retrieval, packaging, overhead transport, palletizing and most other material handling systems.

**Features and Benefits**
- Available in 2, 3, 4, 5 and 6 position
- 13A Max Current; 600V Max Voltage; 16AWG
- Operating temperature range -20°C to +105°C
- Cable Jacket: PVC, Yellow
- High-performance, cost-effective
- Comparable with existing standard products industry-wide

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# Accessories

## Cable Protection System



GEC

As a world technology leader in the manufacture and design of cable assemblies, Amphenol GEC realizes there is a need for a quality cable protection system. Amphenol's Cable Protection System includes various conduit series and cable glands that are ideal for, but not limited to Factory Automation, Heavy Equipment, Rail Mass Transit, Renewable Energy, and Telecom. Our products have passed CE Certification, RoHS Environmental Testing, and UL/CUL Certificates.

**Features and Benefits**
- Conduit (Polyethylene, Polypropylene, Polyamide)
- Cable Glands (Plastic and Metal)
- Accessories
- CE Certification
- UL/CUL
- ATEX
- IECEX
- RoHS Compliant

# Additional Products

**Max-M12**
AIO

**AmpheLite**
AIO

**UPT**
AIO

**Power-to-Board**
AIO

**GT / ACA-B**
AIO

**Wallbushing with ground | mate**
ATI

# Business Units

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