Amphenol
COMMUNICATIONS SOLUTIONS

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.

amphenol-cs.com

Amphenol Overview

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.

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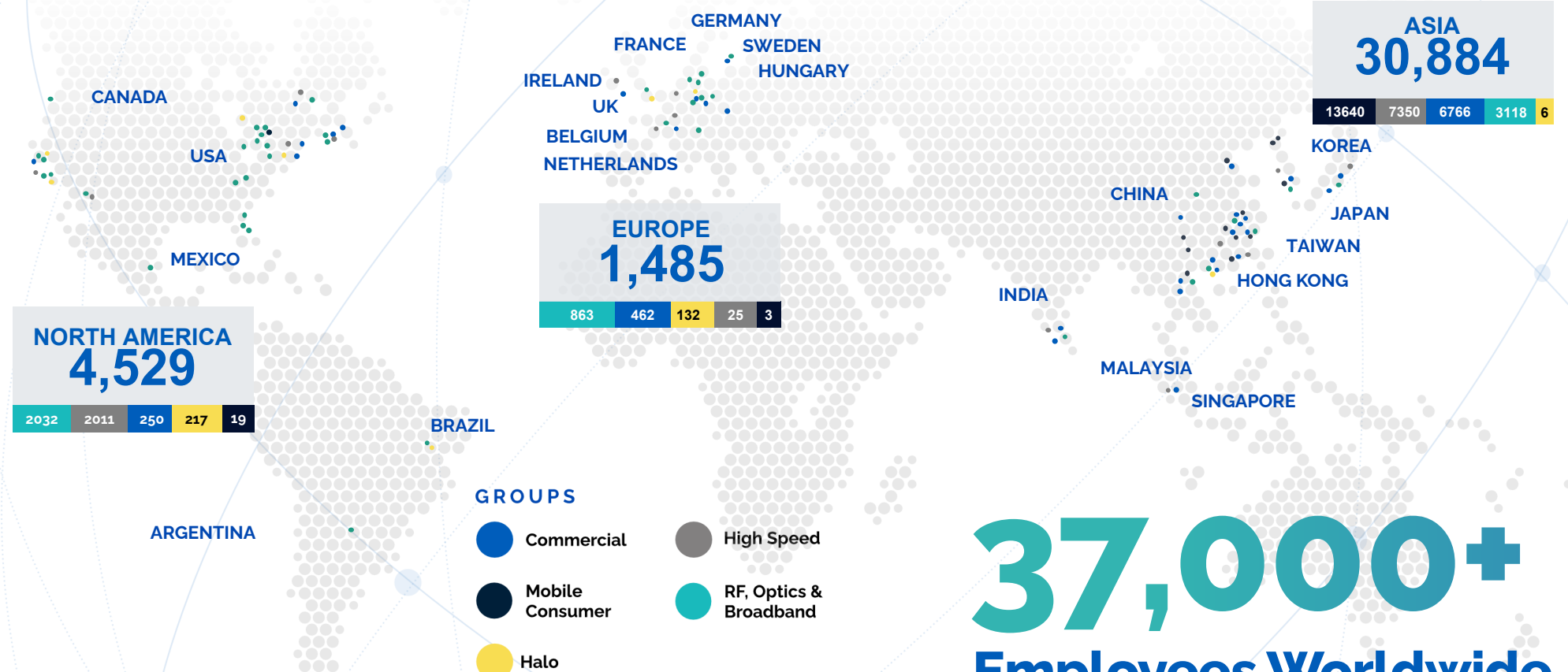
Amphenol Corporation is one of the world's largest designers and manufacturers of electrical, electronic and fiber optic connectors and interconnect systems, antennas, sensors and sensor-based products and coaxial and high-speed specialty cable.

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.

ASIA
30,884

| 13640 | 7350 | 6766 | 3118 | 6 |

KOREA
CHINA
JAPAN
TAIWAN
HONG KONG
INDIA
MALAYSIA
SINGAPORE

EUROPE
1,485

| 863 | 462 | 132 | 25 | 3 |

GERMANY
FRANCE
SWEDEN
HUNGARY
IRELAND
UK
BELGIUM
NETHERLANDS

NORTH AMERICA
4,529

| 2032 | 2011 | 250 | 217 | 19 |

CANADA
USA
MEXICO
BRAZIL
ARGENTINA

GROUPS

- Commercial
- Mobile Consumer
- Halo
- High Speed
- RF, Optics & Broadband

37,000+
Employees Worldwide

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
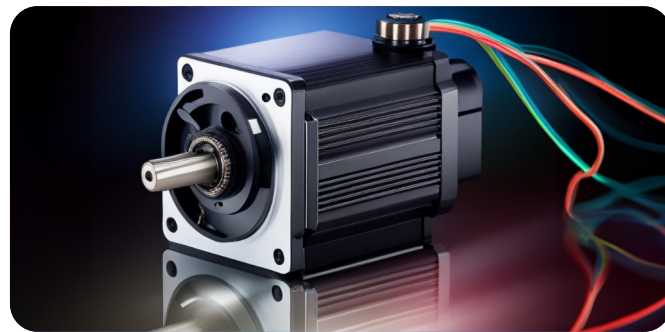
Battery and Charger

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.
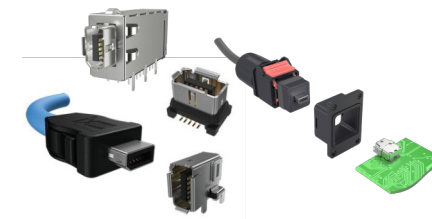
Motor drives and Controllers

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.

Vision and Sensing
Control and communication | **Motor drives and Controllers**
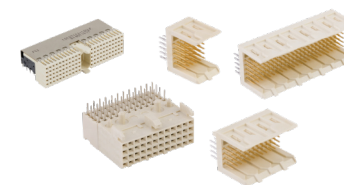
ix Industrial Ethernet

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

Vision and Sensing
Control and communication | **Motor drives and Controllers**

Single Pair Ethernet

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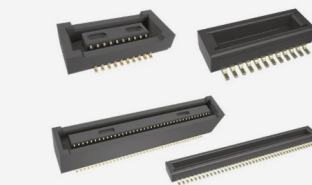- Industrial Ethernet to the sensor and actuator level

Vision and Sensing
Control and communication | **Motor drives and Controllers**

Industrial RJ Plugs

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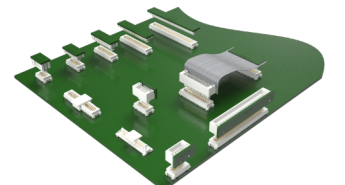- Factory and other applications

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Control and communication

Ruggedized

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

Control and communication | **Motor drives and Controllers**

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

Control and communication | **Motor drives and Controllers**

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
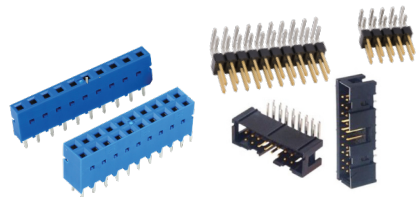

Control and communication | **Motor drives and Controllers**

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

Control and communication | **Motor drives and Controllers**

BergStak® 0.40mm Connector

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

Control and communication | **Motor drives and Controllers**

Conan® 1.00mm

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

Modular Systems 2.54mm/2.00mm

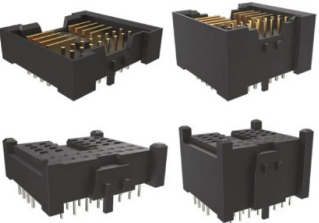- Dubox®, Quickie®, BergStik®, PV® 2.54mm, Minitek® 2.00mm
- Industry proven connector system
- Board to Board, Wire/Cable to Board

ComboLock® 1.00mm/3.00mm

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

Minitek MicroSpaceXS™ Waterproof 1.27mm

- LV214 Severity-3, USCAR-T2V2 compatible
- IP68
- 3A per contact, TPA, CPA features

FFC/FPC Connectors with Autolock Mechanism

- 0.21mm, 0.50mm and 2.00mm pitch with heights from 0.5mm to 6.25mm
- One action operation and high retention force.
- Automotive grade connectors compliant with USCAR2 and LV214
- FFC cable can be supported as a whole solution

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

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

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

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

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

BrightConnX™ Lighting Connectors

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

USB Type-C Connectors

- Performs to USB4 and Thunderbolt4 high-speed specifications, and backward compatible with USB3.2 Gen1 and Gen2
- 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 Gen3*1/ Gen4*1 lane
- Backward compatible to UHS-I/UHS-II in one socket (3-in-1 solution)
- Push push/push pull structure

PwrBlade® MiniMezz

- Up to 50A per contact (high power) and 25A per contact (low power)
- Available stack heights range from 8mm to 20mm (tooled in 1mm increments)
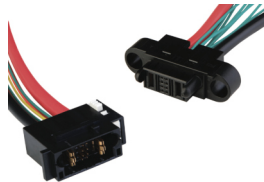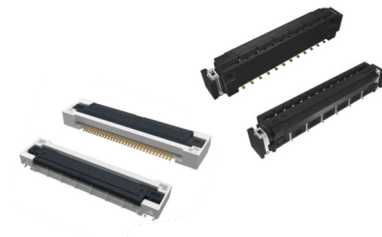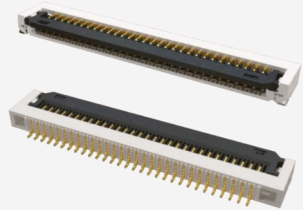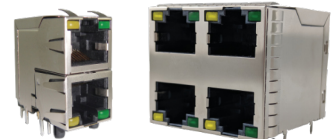- +/- 0.80mm gatherability for blind mate applications

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

EnergyEdge™ X-treme

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

HSbridge+

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

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℃ and industrial -40~85℃ & -40~105℃ .
- Meets IEEE802.3ab and supports various Ethernet PHY

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

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 20 Gbps. 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 9 GHz with secure and easy mating and unmating.
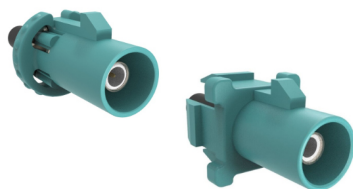
FAKRA Connectors

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 6 GHz. Commonly used in compute modules, wire harnesses and camera applications.

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 6 GHz while 75 ohm 12G versions operate up to 12 GHz.

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 are available for higher power transmission and reception. Hinge and swivel features are 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.

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.

Robotics

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

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 9 GHz (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.
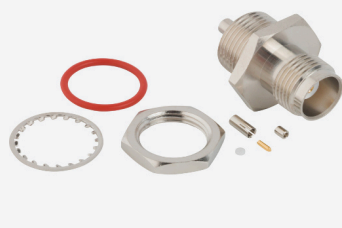
TNC

Rugged, 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.
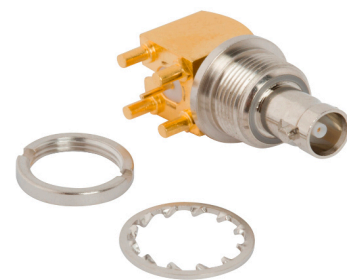
HD-BNC

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 6 GHz and 75 ohm options that provide excellent electrical performance up to an extended range of 12 GHz.

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