

# Amphenol®



## Mining Solutions

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The modern mining industry has enormous electrical challenges. Electronics used in today's mines and mining equipment must be able to manage more power, handle higher voltages, move data and communication transmissions faster, and operate without interruption in some of the world's harshest environments. With over eighty years of experience in the interconnect industry, Amphenol Industrial Global Operations (AIGO) brings its design, manufacturing, and innovation to the mining market. As an undisputed global leader of interconnect solutions for harsh environments, AIGO has solutions to solve any technical challenge. Whether it's a new connector design or one of our existing products, an over molded or mechanically terminated cable assembly, complex harness, or complete electrical packaging solution, AIGO has the expertise to satisfy all of the mining industry's needs.



## Where you find our products



## Power Solutions

### RADSOK® Contact Technology



RADSOK® is a technology based upon a stamp and formed flat grid, uniquely twisted into a hyperbolic geometry to provide robust, high density contact to the mating pin contact. This patented capability allows up to 50% more current to flow through the same size terminal.

#### Features and Benefits

- High reliability
- Low contact engagement/separation forces
- Low contact resistance
- High mating cycle durability
- Low voltage drop
- High power in a smaller footprint
- Package in any desired configuration

### Starline-EX



Designed to meet the most severe environment, Amphenol's Starline EX series connectors are heavy duty, explosion proof, and are made up of environmentally sealed plugs and receptacles certified for use in Zone 1 hazardous locations. The connector series provides outstanding performance in harsh environments such as petrochemical refineries, geophysical, land/offshore drilling systems, and mining applications. The Starline EX is certified to the latest IECEEx, including Group I Mining Applications in Australia, and ATEX EN60079 standards. Additional certifications are in process and include MSHA for N.A. and MA for China.

#### Features and Benefits

- Solder, crimp and pressure terminations
- VFD arrangements available
- Multiple 3rd party approvals
- Anodic coating for corrosion resistance
- Variety of backend hardware
- Certified for use in Zone 1-IIC hazardous locations
- Explosion proof
- Reversible inserts to suit specific needs
- Easily accessible wire terminals

### Neptune



The NEPTUNE® connector family uses the RADSOK® technology to offer a power connector family that ranges from 30 to 200 amps in a machined aluminum circular interconnect package. With Anodic plating and high performance plastic inserts this series will perform in the most rugged of environments.

#### Features and Benefits

- 3 Key design
- Low insertion force
- Ruggedized backend fittings
- Long life and mating cycles
- VFD rated inserts
- Double-lead acme thread
- Lightweight small packaging with high power
- High vibration

### ePower



The ePower series of connectors are designed for the demanding requirement of hybrid, electric vehicle, mining, and heavy equipment markets. These connectors operate at 800V to 1000V with an amperage rating from 200A to 500A. Using the RADSOK® technology, ePower is able to offer up to a 40% smaller footprint than 3 EMI shielded cable glands used in the same end application.

#### Features and Benefits

- Crimp, lug or bus bar termination
- Strain relief for jacketed cable
- Excellent vibration resistance
- RADSOK® contact technology
- IP2X on pin and socket
- Integrated EMI shielding
- 2 and 3 pin power configurations
- Low insertion force
- 2 HVIL circuits

## Rig-Power™



Rig-Power is a single pole power connector ranging from 925A to 1500A. The single RADSOK® contact accepts up to a 777 MCM cable, which can be sealed either with a mechanical cable clamp or cable gland. The receptacle is available with both an inline and flange mounted versions.

### Features and Benefits

- Lower insertion and removal forces
- Field repairable
- Available in Starline and EX Starline
- Contact available from 313 MCM to 777 MCM
- Higher amperage and voltage
- Smallest hardware footprint in the industry

## TMPC Power Mount



The TMPC Power Mount series is an addition to our time tested TMPC Single Pin power connector line. The TMPC Power Mount incorporates our existing TMPC connectors with RADSOK® contacts into our new thermoplastic molded receptacle flange. Available in color codes per the NEC AC/DC Electrical requirements, the TMPC Power Mount series is designed to work with current IEEE Type P drilling cables (sizes range from 313 MCM through 777 MCM).

### Features and Benefits

- Uses RADSOK® technology
- Molded flange base
- Low insertion forces
- High mating cycles
- Color coded per NEC AC/DC electrical requirements
- Cable side boots available for pin side
- Rugged thermoplastic flange
- Connector comes complete with Hypalon caps

## Rig-Lok



The Rig-Lok is a reverse bayonet connector which incorporates our patented RADSOK® technology. It is designed to deliver high power from source to load. The plug contains an 18mm RADSOK socket and the receptacle contains an 18mm pin with the option of crimp, 2 hole busbar, or threaded busbar termination. When unmated, personal safety is maintained through touchproof, dead-front contact design. The RADSOK's strongest benefit is its very low milli-volt drop and minimized temperature rise when transmitting high current.

### Features and Benefits

- 1/4 Turn reverse bayonet -quick positive coupling
- Crimp or busbar termination
- Current: 800Amp
- Operating temperature: -40°C to +125°C
- 300 day salt spray rating
- Audible, tactile and visual indication of full coupling
- Allows conductor size change
- Silver plated contacts
- Finger proof
- Voltage: DC 2500V
- 2000 mating cycles
- Vibration resistant
- Better conductivity where needed

## AC Series (MIL-DTL-5015)



Rugged, versatile and environmental resistant connector with proven electrical capability for a less expensive solution, the 5015 series connectors are medium to heavy weight cylindrical connectors with 5 shell styles, 19 shell sizes and 5 service classes. Available in solder or crimp contacts, environmentally resistant options, threaded couplings, coaxial and thermocouple contacts, and RoHS compliant versions.

### Features and Benefits

- Environmental sealing
- Optional filtered plug connectors
- Combined power and signal all in one connector
- The RADSOK® advantage provides contacts that handle up to 150% higher amperages than standard contacts
- More than 300 insert patterns available
- Numerous plating options

## GT series



Built IAW the MIL-DTL-5015 and VG95234 military specifications, this reverse bayonet style connector series offers more than 20+ years of proven performance in the most rugged of environments found in the military, rail mass transit, geophysical, and alternative energy markets. This cylindrical connector family includes a vast variety of shell styles, plating types, backend hardware and more than 300 layout patterns giving the end user thousands of solutions to meet their application needs.

### Features and Benefits

- Rugged aluminum or stainless steel shell styles
- Variety of additional shell platings available
- Crimp and solder contacts available with silver or gold plating
- Inserts with Neoprene or optional low smoke material or Viton material
- Operating temperature: Neoprene/low smoke -55°C to +125°C; Viton -50°C to +200°C
- Audible, tactile, and visual indication of positive coupling
- High shock and vibration resistance
- IP67 protection      ▪ 2000+ mating cycles      ▪ No lockwiring necessary

## Blind Mate Solutions



Amphenol Industrial Global Operations offers a broad range of blind mate solutions utilizing the RADSOK® contact technology. With an amperage rating of up to 1250A, these solutions can vary in pattern and packaging depending on the application requirement.

### Features and Benefits

- High power up to 1250A
- Optional cavities for signal circuits
- Multiple connector body materials based on end use specifications
- Multiple contact termination types, bussbar, solder, crimp
- Operating temperature: -40°C~125°C

## Signal/Communication

### Amphe-EX



The Amphe-EX is a miniature, explosion-proof threaded connector specially designed to allow a signal to pass through Zone 1 rated areas using coax, fiber optic cables, or standard copper. Designed to meet the most severe environments, the Amphe-EX® is complimentary to Amphenol's industry-proven Star-Line-Ex. It is ATEX, IECEx, including Group I Mining Applications in Australia, GOST-R approved for the most harsh environment applications. Fiber optic custom cable assemblies available up request.

### Features and Benefits

- ATEX certified for Zone 1-IIc hazardous environment
- IECEx and AEX Certified
- IECEx Group I Mining Applications in Australia
- Plugs and receptacles listed under EEx de IIc T6
- IP68 rated for environmental sealing
- Hard anodic coating provides dielectric strength with heat and corrosion resistance

### PT Series (Mil-DTL-26482)



Offering twice the number of contacts in half the size of a standard connector, these miniature bayonet connectors are available in several series, each with varying design characteristics and customer options to meet cost considerations and provide maximum design flexibility. There are two styles within the family that are MS approved and qualified to Mil-C-26482 series 1, as well as several proprietary styles.

### Features and Benefits

- Quick positive coupling
- Resilient neoprene insert
- Variety of shell styles
- Variety of finishes available
- Versatility for power and signal
- 500+ mating cycles
- Gold plated contacts
- Available with solder, crimp, pcb, coax, thermocouple, or hermetic

## AT series



Amphenol AT, ATM and ATP Series™ connectors were designed as a high-performance, cost-effective solution to be used in a variety of markets.

### Features and Benefits

- The connector design incorporates an integral latching system that ensures a definitive electrical and mechanical connection
- Connector housings are manufactured with a thermoplastic material that is not only durable, but has excellent UV resistance, dielectric/mechanical properties and environmentally RoHS compliant
- The sealing system is comprised of a front and rear silicone, multi-sealing, perimeter against environmental ingress
- Contacts are derived from quality copper alloy to ensure an electrically-reliable connection.
- UL approved ( UL2441, file E322585 )

## Fiber Optic Connectors -TFOCA II/III Series



The TFOCA-II®/III® fiber optic connector is ideal for environmentally harsh conditions. The TFOCA-II® connector is designed for minimal maintenance in the field; however, if field level repair and cleaning are required, all TFOCA-II® connectors can be fully field repaired reusing all components with the exception of the termini. It has a removable end cap allowing direct access to the alignment sleeve and termini.

The TFOCA-III® design utilizes the latest technology in fiber optic connectivity by incorporating industry standard physical contact ceramic ferrules and alignment sleeves.

### Features and Benefits

- Hermaphroditic design for versatility - enables multiple TFOCA-III® plug assemblies to be daisy-chained
- 6 & 24-channel connector design - ideal for high density harsh environment applications
- Zn-Ni plating - provides substantial longevity to corrosive environments. Meets new mandate set by Environmental Protection Agency for elimination of heavy metal plating
- Commercial ceramic ferrule technology - enables TFOCA-III® connector to provision multimode and single mode interconnect with a variety of polishes including SPC and UPC
- Field repairable using existing parts - additional connector components (other than termini) are not required to perform field repair
- Also available in stainless steel - allows the connector to be used in a variety of applications

## Max-M12



The Max-M12 is a ruggedized M12 high speed data connector. Based on the IEC 61076-2-101 and SAE J 2839 standards the Max-M12 connection system is the perfect solution for ultra rugged applications.

### Features and Benefits

- Available in straight or 90° angle connector
- 4 way and 5 way circuit patterns available for each version
  - B, D & P polarity codes-based on IEC 61087-2-101
- Available as stand-alone connectors & cable assemblies (standard and overmolded)
- Terminals capable of being terminated to: - 0.8 mm<sup>2</sup> (18 AWG) or 0.5 mm<sup>2</sup> (20 AWG) conductors as defined by SAE J1128 and 0.75 mm<sup>2</sup> and 0.50 mm<sup>2</sup> conductors as defined by ISO 6722
- Backward compatible with IEC 61076-2-101 (M12) with higher environmental rating
- More resistant to terminal damage
- Extreme environmental testing based on J 2030 requirements
  - High pressure wash down

## Medium Voltage Solutions

The MVC series offers interconnect solutions from 600V to 15KV. With the use of the patented RADSOK® contact technology, these medium voltage couplers can offer the most amperage and lowest insertion force in the industry.

### MVC8 (8KV) and MVC15 (15KV)



#### Features and Benefits

- Solder cup contacts to accept multiple wire gauge sizes
- Contacts are silver plated
- RADSOK® contacts offering higher amperage and low insertion forces
- Extended ground plane
- Fire retardant insulators
- Individual phase and ground check insulators
- MVC 8 current carrying up to 500 amps, MVC15 up to 600 amps
- Replacement components available for fast, easy repair

### MVC600 (600V)

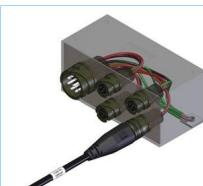


#### Features and Benefits

- Heat treated cast housings
- Compression terminated contacts
- RADSOK® contacts offering higher amperage and low insertion force
- Stainless steel quick flip coupling eye bolts
- 3 phase power, 2 ground with multiple pilot circuit feature
- Complete seal between coupler front and cable termination compartment
- Rated up to 300 amps
- Replacement components available for fast, easy repair
- Combined entrance fitting and strain relief

## Value Added Solutions

Amphenol Industrial Group Operations offers a number of value added capabilities to solve your most challenging application needs. We have global locations to support mechanically terminated and over molded cable assemblies, junction boxes, complex harnessing, flex assembly, electronic box builds, and more.



## Accessories

In addition to your interconnect and value added electronic requirements, Amphenol Industrial Global Operations offers a number of cable gland, cord grip and medium voltage connector accessory solutions to fit your needs.

### Cable Glands



#### Features and Benefits

- ATEX & IECEx certified product ratings to Exd/Exe (Class I, Div. I)
- Operating temperature range of -40°F to over 180°F (-40°C to 82°C)
- CSA approved; IP66/68; Deluge; NEMA rated available
- Full range of UL approved metal and plastic glands

## Cord Grip



### Features and Benefits

- UL Listed and CSA certified
- Tapered rubber grommet and seat
- Variety of styles: straight, 45°, 90°, and flexible
- Various strain relief options including compression nuts, mechanical clamps or basketweave grips
- Tapered conduit threads to provide secure mating and sealing
- Machined aluminum components for a rugged, long lasting cable sealing option

## MVC and cable handling accessories

### Coupler Skid



The galvanized aluminum skid allows the coupler to sit off the ground where areas of heavy mud and water occur. Skid mounted couplers are a proven cost effective method used to extend the life of the MVC product series.

### Cable Horse



This Cable Horse support system protects the mine site electrical cables and provides a clearly defined path for the cable run. As an added feature, there is an optional solar powered locating light.

### Strain Relief Clamp



The addition of the clamp to the terminated MVC assembly eliminates the stress added by the weight of the cable on the back end of the assembly. The polyurethane material prevents damage to the cable and is available in a number of different sizes to support any cable diameter.

### Cable Mover



This cable handling tool is made with a strong fiberglass core and offers the user a 28 inch shaft to help manage the movement of the heavy trailing cables without awkward bending or lifting on the mine site.

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