

# Interconnect Solutions for Navy & Marine

A selection of Amphenol products by Amphenol Socapex



# AMPHENOL

Amphenol Corporation is one of the world's largest interconnect manufacturers. Founded in 1932, Amphenol designs, manufactures and markets electrical, electronic and fiber optic connectors, interconnect systems and coaxial and specialty cables.

Amphenol products are engineered and manufactured in Europe, the Americas, Asia and Africa and sold by a worldwide sales and marketing organization.

Learn how Amphenol interconnect solutions will enable your organization to succeed. Our entire organization is at your service.



Amphenol is an industry leader of harsh environment electronic interconnects servicing the Naval market. Whether powering vital control systems, initiating countermeasures, or transmitting critical communication data; Amphenol's broad product offerings and high reliability ensure a safe and successful mission.

Our deep expertise in technologies (high-speed, miniaturization and high power) and materials (marine bronze, stainless steel) allows us to understand your operational needs and respond to them.

## KEY APPLICATIONS WE SUPPORT:

- ▶ Shipboard Ethernet Network
- ▶ Tactical computer
- ▶ Torpedos
- ▶ Very long range radio
- ▶ Console
- ▶ Perimeter security system
- ▶ HD video cameras
- ▶ Radars
- ▶ Missile tracking/launch systems
- ▶ Positioning systems
- ▶ Numerical periscopes

We take pride in supporting the Naval market and will continue to provide our highest level of technology, quality, and service to do so.

CUSTOM  
DESIGN

A large range of interconnect solutions for the navy & maritime market:

MIL SPEC COMPLIANT  
PRODUCTS

CUSTOM DESIGN  
PRODUCTS

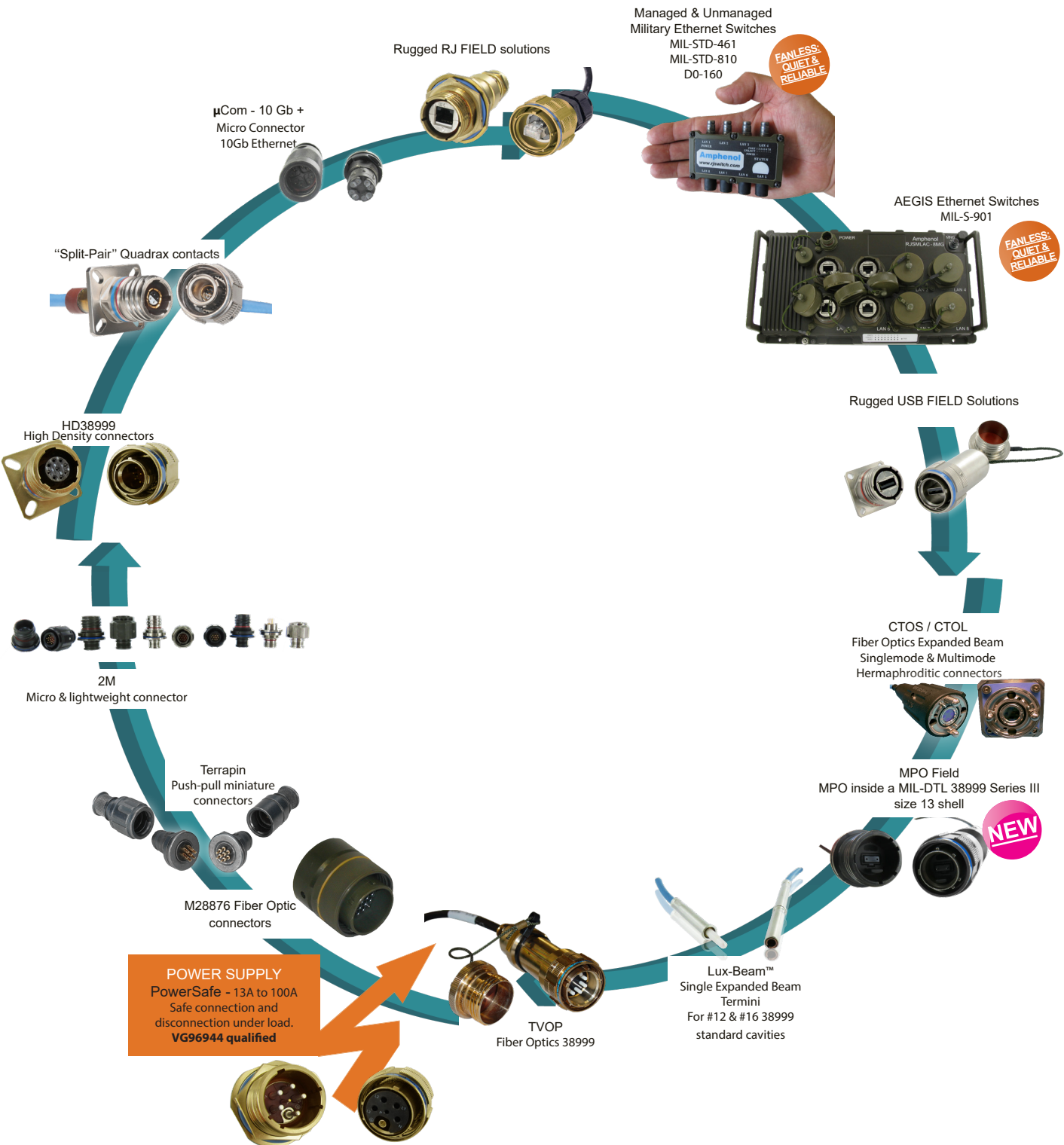
ADDED VALUE  
SOLUTIONS

**Amphenol is the interconnect technology partner of choice**

# GLOBAL NETWORK SOLUTIONS

We offer solutions for the evaluation and implementation communication networks on the battlefield. Our robust and sustainable solutions give you the assurance of continuous data transmission securely between all your communication equipments in harsh environments.

We design Ethernet networks and supply interconnection products – electrical and fiber optic connectors and cables, Ethernet switches, electrical & fiber optic converters.



## Battlefield Communication & Shipboard Ethernet Networks

# HIGH-SPEED

## Need for high-speed?

The size and the weight reduction of a system and the constant increase of data exchanges in the telecommunication networks have stimulated the need for high-speed electronics and passive components. Designing high-speed systems requires finding the right technology with the best data rate for each architecture levels (boards, contacts, connectors, cables) to increase the speed of communication and preserve the signal integrity.

Check out some of our products designed for high-speed applications.

## FIBER OPTICS



### Lux-Beam™ Expanded beam terminators

- Easy-to-clean single expanded beam terminators
- Compatibility with multisources connectors (38999, EN4165, EN3645)
- Hybrid solutions possible (mix with electrical contact)
- Size 12 and 16
- For standard 38999 Series III size 12 & 16 contact cavities



### Promi

- Fiber optic solution connection for reduced space
- Easy installation & maintenance
- In Line Miniature Optical Adaptor
- Compact removable splice



### MPO Field TV

- Uses standard MPO Patchcord
- MPO inside a MIL-DTL 38999 Series III size 13 shell
- Sealed against fluids and dust (IP68)
- Shock, vibration proof
- No cabling operation in field



### TVOP

- Optical Butt joint technology
- Fully keyed thread connectors as 38999 series III
- Aluminum or bronze version
- 1/2/4/8 channels
- Singlemode & Multimode option
- Ethernet & RF compliant



### M28876 Fiber Optic

- Precision-machined to MIL-PRF-28876, Rev. E specification
- 3 shell sizes: 13-4, 15-6, 15-8, 23-18, 23-31 channels
- Six keying options
- Inserts are interchangeable from plug to receptacle
- Fully qualified M28876 connectors
- Qualified on singlemode or multimode M29504/14 and /15 termini



### FS12H Pierside 12-Channel Fiber Optic

- Hermaphroditic connector
- Rugged design: FS12 Pierside connector handles the rigors of deployment and harsh environment conditions for navy applications
- Environmentally sealed connector: ensures environmental integrity
- Qualified MIL-PRF-29504/14 & /15 Termini : singlemode and multimode
- Removable insert cap



### TacBeam

- Supports both multimode and single mode fiber
- Meets the MIL-C-83526
- Monolithic insert design facilitates cleaning
- Hermaphroditic design
- Non-contacting interface allows thousands of mating cycles



### Media Converter

- Gigabit Ethernet fiber converter
- Fully MIL-STD-461E compliant
- CTOS or TacBeam TVOP Multimode or Singlemode



### CTOS

- Singlemode & multimode, hermaphroditic fiber optic connector
- Protection windows for contactless connection
- Large expanded beam, up to 8 channels
- Design for gloved handling and blind mating in difficult conditions
- NATO/STANAG4290



### ARINC 801

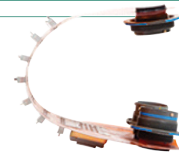
- Ferrule diameter of 1.25mm
- Genderless terminus allows for use on both sides of the connectors
- Alignment sleeves are contained in a separate carrier



### NGCON

- MIL-PRF-64266 style (QPL testing to begin late 2016)
- Rear release termini
- Genderless termini
- Wall-mount and jam-nut receptacle configurations
- High-density arrangements

## PCB FLEX



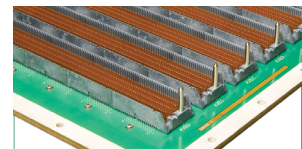
### Flex Circuits

- Cost-effective and lightweight solutions
- Amphenol's product offering includes type I through type V flex circuits Single-sided, double-sided & multi-layer options
- Military & IPC spec. qualified



### Rigid Flex Assembly

- Routing in smaller area to get more dense system
- Blind and/or Buried-via's to create more density



### Backplanes

- High performance materials for high speed digital applications
- Precisions back-drilling for high speed signal integrity
- Blind and/or Buried -via's to create more density

# HIGH-SPEED

## Confirmed expertise with a wide range of high-speed solutions

We are leading the way when it comes to providing our customers with cutting-edge high speed solutions. We demonstrate our expertise in every high-speed development including modeling, simulation and testing solutions. Our capabilities include differential impedance measurement, propagation delay simulation, insertion & return loss modeling, near-end crosstalk (next) & far-end crosstalk (fext) characterization and eye diagram realization.

**Amphenol has the right high-speed connector** for every application and signals to be transmitted (RF, ethernet, optics, single-ended, diffy pairs,...).

Check out some of our products designed for high-speed applications.

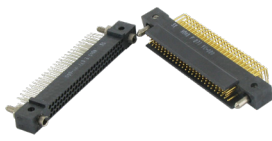
## BOARD TO BOARD



**NEW**

### R-VPX

- Fully intermountable & intermateable to existing VITA 46 connectors
- Qualified to VITA 46 for Open VPX applications, up to 25 Gbps
- Low mating force connector system
- Modular COTS lightweight connector system
- Can be combined with high power modules, RF Modules (VITA 67) and Optical modules (VITA 66)



### HDAS

- High performance & competitive board to board connector
- 12 sizes from 11 to 253 contacts, including hybrid versions
- Current rating 4.5A per signal contact, 20A for power contacts
- Improved electrical security : up to 1.2mm
- Reach MIL-DTL-55302 performances



### Viper®

- High density, modular, high vibration, ESD shielded connectors
- Meet VITA4 46 or 48 specifications in 3U and 6U configurations
- Signal integrity to 10 Gbps

## DISPLAY AND VIDEO



**NEW**

### MDP FTV

- Tri Start Thread coupling mechanism (MIL-DTL-38999 series III type) with anti-decoupling device.
- Shell size 13
- Uses standard Mini Display Port cordsets
- No cabling operation in field and no tools required
- Data Transmission:
  - Display 1.4 protocol
  - Transmission bandwidth : 32.4 Gbit/s with 8.1 Gbit/s per lane
  - Can support 8K UHD (7680 × 4320) at 60 Hz or 4K UHD (3840 × 2160) at 120 Hz



### 750hms Coaxial Contacts

- Ideal for video acquisition
- Meet the 3G-SDI
- Crimp and PC Tails
- Size 6, 8 and 12
- For 38999 series I,II,III (MIL-DTL-38999) & SIM/EN4165/2M connectors

## USB



### USB FTV

- Available in USB2.0 and USB3.0
- Sealed against fluids and dusts (IP68)
- Shock, vibration and traction resistant
- No cabling operation in field and no tools required
- Improved EMI protection based on MIL-DTL-38999 Series III



**NEW**

### TV µcom USB3.0

- Based on MIL-DTL-38999 series III – Shell size 11
- Aluminium shells
- Solder contact: max AWG24
- Crimp contact: AWG 24 to 28
- Temperature range : - 55°C / + 125°C
- IP68 sealing mated and unmated for PCB receptacles
- 1500 Vrms Dielectric Withstanding Voltage



### Rugged USB Keys

- Based on MIL-DTL-38999 series III
- USB 3.0 for capacities 16, 32, 64, 128 & 256 GB
- IP68, -40/+85°C
- MIL-STD-810G vibrations
- MLC Memory with Wear leveling providing 3000 read/write cycles
- MTBF: 1,000,000 hours
- Higher capacities: please consult us

## ETHERNET



**NEW**

### Cat.7 Cordsets & Cable

- High reliability Cat 7 Ethernet cable and cordsets
- Available in define cordset length or in complete drum for cabling operation
- VG 95218 approved.
- Halogen free, UV resistant, fungus resistance...



**NEW**

### RJFTV Reduced Flange

- Smaller: 41% footprint surface reduction
- Lighter: 15% lighter than standard RJF TV receptacles
- MIL-DTL-38999 coupling mechanism
- Mates with standard RJF TV plugs & caps
- 3 platings: Olive Drab Cadmium, Nickel, Black Zn Ni
- Cat.6 Ethernet : 1Gb up to 250 MHz



### µCom-10Gb+

- 10Gb+: exceeds 10Gb/s ethernet following IEEE 802.3an-2006: 10GBase-T
- Cat.6A connector according to TIA568C.2 and ISO/IEC11801 standard
- 15mm max external diameter Cat6A connector
- Environmental testing based on MILDTL-38999 Series III military spec (Thread version)
- Environmental testing based on MILDTL-26482 military specifications (Push Pull version)



### TV µcom

- Based on MIL-DTL-38999 series III – Shell size 11
- 10Gb+: exceeds 10Gb/s Ethernet following IEEE 802.3an-2006 : 10GBase-T
- Cat.6A connector according to TIA568C.2 and ISO/IEC11801 standard
- Aluminum, stainless steel and marine bronze shell



### Ethernet Switch RES-SCE-8MG

- Compact Ethernet switch a weight (390 grams)
- 8 gigabit managed ports
- Qualified per MIL-STD-461E military standard
- Perfect fit for most electronics embedded on the deck of the ship



### RJ Field Series

- Cat5e, Cat6, Cat6a Rugged Ethernet Connectors for harsh environments
- Sealed against fluids and dusts (IP68)
- Shock, vibration and traction resistant
- No cabling operation in field and no tools required
- Mechanical coding/polarization (4 positions)



### Octomax 1G26

- Ideal for the ethernet 1GBASE-T or AFDX network with a reduce envelop
- Fits within standard size 8 keyed cavity of D38999, EN3645 and EN4165



### Quadrax & Split-Pair Quadrax

- For use in MIL-DTL-38999 or EN4165 connectors
- Quadrax suitable for 1GBASE-T and Split Pair Quadrax suitable for 10GBASE-T
- Frequency range up to 3 GHz
- Are 100Ω, 110Ω and 150Ω matched impedance
- Crimp and PC Tails available



### RJ Switch

- Rugged ethernet switch
- From 2 to 28 different ports of various types (Fast, Gigabit, Fiber)
- Managed and unmanaged versions
- Fully MIL-STD compliant
- MIL-S-901 tested for AEGIS application

**FANLESS QUIET & RELIABLE**

# SPACE & WEIGHT SAVINGS

## Smaller, lighter, more efficient connectors

Thanks to constant evolution of technologies, every new generation of electronics systems is smaller than the previous one. That trend will continue and has an impact on the interconnect industry pushing to develop smaller, more efficient, higher density products.

## Meeting your miniaturization needs

Large investments in R&D and advanced technology have played a key role in providing light-weight solutions and composite materials to military and aircraft manufacturers' programs. Our array of competencies and technologies include thermoplastic, thermoset and silicone. All our connectors and interconnect systems are tested and measured to meet the actual light-weight demand and anticipate the need for both stronger and lighter composite solutions for all military and aerospace applications.

*Check out some of our solutions dedicated to your miniaturization needs.*

## MINIATURIZATION

NEW



### 38999 Size 7

- ▶ Derived from MIL-DTL-38999 Series III connectors
- ▶ Available versions : Coax, Twinax, Quadrax, Lux Beam
- ▶ Available in O.D.Cadmium (non RoHS compliant, 500h salt Spray), Nickel (RoHS, 48h salt spray) & Black Zinc Nickel (RoHS, 300h salt spray)

NEW



### Reduced Flange 38999 Receptacles

- ▶ Derived from MIL-DTL-38999 series III version
- ▶ For jam nut (TV07/TVS07) configurations
- ▶ 41% smaller panel footprint on average
- ▶ 20% lighter than standard 38999 stand off receptacle on average
- ▶ Matches MIL-DTL-38999 series III performance

NEW



### Micro HDAS

- ▶ 1.27mm pitch miniature board to board and board to cable connector
- ▶ More than 20% space reduction compare to standard Micro-D
- ▶ 9 sizes from 4 to 60 contacts on 2 rows
- ▶ Reach MIL-DTL-55302 & MIL-DTL-83513 performances
- ▶ Multi-sources connector

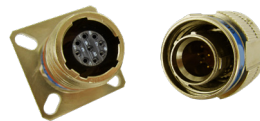
NEW



### RJF TV6 Reduced Flange

- ▶ Smaller and lighter
- ▶ MIL-DTL-38999 coupling mechanism
- ▶ Mates with standard RJF TV plugs & caps
- ▶ 3 platings: olive drab cadmium, nickel, black zinc nickel
- ▶ Cat.6 Ethernet: 1 Gb up to 250 MHz

## HIGH DENSITY



### HD38999

- ▶ 40% more contacts vs 38999
- ▶ The only high density connector which meets or exceeds MIL-DTL-38999 series III performances

## LIGHTWEIGHT



### CTV

- ▶ Composite connectors, qualified to MIL-DTL-38999 Series III standard
- ▶ Lightweight
- ▶ High corrosion resistance
- ▶ Durability



### RNJ RNJLP

- ▶ Rack & Panel solutions for harsh environment
- ▶ Very light weight vs ARINC 404 or 600
- ▶ Derived from 38999 series I & III
- ▶ Realignment on 3 axis
- ▶ 38999 level sealing with the specific membrane mounting



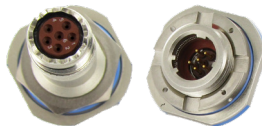
### 2M

- Small, high density, lightweight connectors for harsh environments
- 71 % in weight savings & 52 % smaller compared to MIL-DTL-38999
- Interchangeable with other source in the Market
- 7 plating including RoHS ones
- Crimp, solder cup, PC tail
- 2M801 Dual-Start Thread Coupling, 2M 804 Push to Mate & 2M 805 Triple-Start thread, high vibrations & EMI performances



### Terrapin

- ▶ Miniature footprint: Space saving compared to traditional interconnect
- ▶ Quick release breakaway
- ▶ Latched version: Allowing connectors to be locked together
- ▶ Common plug connector: Suitable for mating with both push-pull and latch style receptacles



### SC39

- ▶ Meet or exceed Mil-DTL-38999 series III requirements
- ▶ Breakway lanyard application, emergency disconnect, space constraints, quick installation

# ROHS CORROSION - RESISTANT MATERIALS

The use of Cadmium, as well as hexavalent chromium, are key issues for many Military or Navy equipment manufacturers. Several substitutes are available on the market, with variable performances. Amphenol is deeply involved in the protection of the environment and offers a large range of ROHS compliant plating on its metallic shells such as Black Zinc Nickel, Electroless nickel, Black or Green Zinc cobalt, Durmalon (Nickel PTFE), ...

Amphenol is the first connector manufacturer being QPL MIL-DTL-38999 qualified for two cadmium substitutes with the class T (Durmalon Nickel PTFE) and the class Z (Black Zinc Nickel)!

When it comes to the connectors on the printed circuit board, Amphenol can offer numerous ROHS compliant contact tails finishes (lead free) to allow perfect board level integration.

Amphenol supports you in choosing the right ROHS compliant contacts, connectors, backshells... and to help you to keep in conformance with the REACH regulation. (REACH : does not contain SVHC > 0.1% weight, or hazardous substances included in Annex XIV and Annex XVII of the regulation)

Please note that the products listed are only a sampling of our product ranges.



## MARINE BRONZE



- > Derivated MIL-DTL-38999 Series III
- > Derivated EN4165 connectors
- > CECC 75.201.002
- ▶ Salt Spray resistance: 500 hours
- ▶ Shell to shell conductivity: Resistance < 5 mΩ before tests
- ▶ Aluminum-Bronze raw material, RoHS compliant, no plating

## BLACK ZINC NICKEL



- > MIL-DTL-38999 Series I, II, III
- > 38999 Derivated Product
- > PT 451-MIL-DTL-26482 Serie I
- > 1900SIM connectors
- ▶ Up to 500hrs salt spray endurance with shell-to-shell continuity
- ▶ Aluminum shells

## DURMALON™ NI PTFE PLATING (Class Z)



- > MIL-DTL-38999 Series I, II, III
- ▶ Meets the MIL-DTL-38999 Class W requirements
- ▶ 500 hours of salt spray combined with 500 mating cycles
- ▶ Maintains less than a 2.5 millivolt drop in shell-to-shell conductivity.
- ▶ Plating approved for use on the F-35 Joint Strike Fighter
- ▶ Suitable for unmanned land, maritime, and aerial vehicles

## STAINLESS STEEL



- > MIL-DTL-38999 Series III
- > 38999 Derivated Product
- ▶ Up to 500hrs salt spray endurance with shell-to-shell continuity
- ▶ Stainless steel shells passivated or electroless nickel

## BLACK SILVER



- > Terrapin
- ▶ 1000hrs salt spray endurance
- ▶ RoHS compliant
- ▶ Cadmium Free
- ▶ Low Lustre (non -reflective)
- ▶ Gun-metal grey colour appearance

## NICKEL



- > MIL-DTL-38999 Series I, II, III
- > 38999 Derivated Product
- > PT 451-MIL-DTL-26482 Serie I
- > SIM connectors
- ▶ Electroless Nickel
- ▶ Salt spray 48hours endurance with shell to shell continuity
- ▶ Aluminum, stainless steel, and composite (38999 or EN3645)

# CONTACTS

## Small in size, high in performance

Strong knowledge in designing and manufacturing contacts including high speed contacts  
 In-house screw machining and plating ROHS available  
 100% made in France



### Signal Contacts

- ▶ Crimp, PC Tails or compliant pins
- ▶ MIL-DTL-38999 Series I, II, III / EN3645 / EN4165 / 2M
- ▶ EN3155, AS39029
- ▶ Custom Design upon request



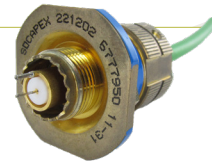
### Power Contacts

- ▶ Size 4 & 8 contacts
- ▶ MIL-DTL-38999 Series III / EN3645 / EN4165/ EN3155



### Coax Contacts

- ▶ Size 8, 12 and 16
- ▶ Crimp and PC Tails
- ▶ Multiple compliant wires available
- ▶ Availability to get impedance matched 50Ω up to 3GHz (Size 12 only)
- ▶ Custom design upon request
- ▶ MIL-DTL-38999 Series I, II, III / EN3645 / EN4165/ ARINC600 / 2M



### 75 Ohms Coaxial Contacts

- ▶ Ideal for video acquisition
- ▶ Meet the 3G-SDI
- ▶ Crimp and PC Tails
- ▶ Size 6, 8 and 12
- ▶ For 38999 series I, II, III (MIL-DTL-38999) & SIM/EN4165/2M connectors



### RF Coaxial Contacts

- ▶ Ideal coaxial contact for battlefield communication and radar application
- ▶ The highest frequency available in the market (up to 65Ghz)
- ▶ For 38999 series I, II, III (MIL-DTL-38999) & SIM/EN4165 connectors
- ▶ The largest range of contact size available on market (8, 12, 16)



### Twinax Contacts

- ▶ The right choice for MIL-STD-1553 and arinc429 protocols
- ▶ Qualified further :
  - ▶ EN3155-024 and EN3155-025
  - ▶ M39029/90/91/113/114
  - ▶ ABS1600, ABS1607, ABS2217
- ▶ Crimp and PC Tails
- ▶ Custom design upon request



### Quadrax & Split-Pair Quadrax

- ▶ For use in MIL-DTL-38999 or EN4165 connectors
- ▶ Splitpair Quadrax suitable for 10GBASE-T
- ▶ Frequency range up to 3 GHz
- ▶ Are 100Ω, 110 Ω and 150Ω matched impedance
- ▶ Crimp and PC Tails available



### Octomax 1G26

- ▶ Ideal for the ethernet 1GBASE-T or AFDX network with a reduce envelop
- ▶ Fits within standard size 8 keyed cavity of D38999, EN3645 and EN4165

Did you know ?

We are the only supplier offering  
 EN3155 Certified Quadrax &  
 Twinax Contacts





# ACCESSORIES

Our product offerings go beyond connectors with a large range of accessories designed to optimize deployment of communications systems in harsh environments.

Please note that the products listed are only a sampling of our product ranges.



## BACKSHELLS



### Metric Sealing Gland

- ▶ Backshells for MIL-DTL-38999 series III or TV connectors
- ▶ Ensure the adaptation on metric sealing gland (M16 to M63)
- ▶ Straight or 105° angled version
- ▶ Nickel plating on aluminum or bronze marine version
- ▶ Adjustable on size 9 to 25 connectors for straight version and size 11 to 25 connectors for 105° angled version
- ▶ Cabling chamber from 30 mm to 80 mm (5 lengths in straight version, 6 lengths in 105° angled version)
- ▶ These backshells are NGD certified

## PROTECTIVE CAPS



### Silicone Standard Caps (For D38999 Series I, II, III & PT/451 (MIL-DTL-26482))

- ▶ Comptatible with line, jam nut and square flange receptacles
- ▶ Silicone 200°C
- ▶ Nylon cord
- ▶ Protection against dust and water
- ▶ IP67 (1m, 1 hour sealing)



### AS85049/38 or /39 RANGE

- ▶ Compliant to AS85049 standard
- ▶ Strain relief backshell improving mechanical behaviour
- ▶ Straight or 105° angled version
- ▶ Nickel plating on aluminum (RoHS compliant)
- ▶ Tightening ring option with anti decoupling device for 38S or 39S version
- ▶ Easy maintenance and reparation process



### Composite Self-Closing Caps (for 26482)

- ▶ PT/451 Series (MIL-DTL-26482), RJ Field, Amphenol Sine RT360
- ▶ Square Flange receptacles only
- ▶ Composite 125°C
- ▶ Protection against dust and water
- ▶ IP54 (splash proof)



### TV NSA RANGE

- ▶ Backshells for MIL-DTL-38999 series III or TV connectors
- ▶ EMI protection thanks to conical rings system
- ▶ Electrical continuity between the braid, the backshell and the connector
- ▶ Free inner ring avoids twisting of the braid during screwing
- ▶ Nickel plating on aluminum (RoHS compliant)
- ▶ Sealing is ensured by a heat shrink molded piece (straight or right angled)



### Metallic Self-Closing Caps (For PT/451, RJ & USB Field, Amphenol Sine RT360)

- ▶ 38999 Series III (MIL-DTL-38999/EN3645), RJ Field & USB Field
- ▶ All receptacles
- ▶ Aluminum. Plating: Electroless Nickel, O.D Cadmium, Black Zinc Nickel, Black Painted
- ▶ Protection against dust, water, moisture and EMI function
- ▶ IP67 (1m, 1 hour sealing)



### Metallic Standard Caps (for 26482 & 38999)

- ▶ Compatible with plugs, jam nut and square flange receptacles
- ▶ Nylon cord, stainless steel rope or metallic chain
- ▶ Protection again dust, water and moisture EMI function
- ▶ IP68 (permanent sealing)

# POWER

## High-current power interconnect solutions for every military application

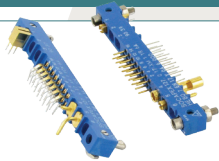
The electrical integration of embedded equipments in military devices keeps increasing. This requires an important amount of upstream power. The multiplication of voltages and current levels in the systems requires a tremendous amount of upstream power.

When it comes to accessing electrical supply, wherever it can be, we are here to support the most demanding needs under the most stringent conditions. We enjoy a long experience in the field of electrical power, and thus benefits from a large array of competencies and technologies.

With high current rate contacts, high-voltage connectors, overmolding, but also technologies that tackle the side effects of increased power, like Thermal Clamps and so on, Amphenol provides a comprehensive range of capabilities which meet the next generation of electrical power challenges.

*Check out some of our products designed for high-power applications.*

## AT THE BOARD LEVEL



### 127/HE8 series

- ▶ 2.54 [.100] staggered grid (1.27 [.050] offset), 2.54 [.100] between rows
- ▶ Proven, reliable and robust rectangular PCB connectors
- ▶ Numerous contact terminations and fittings
- ▶ Hybrid patterns with power or coax contacts



### HDAS Hybrid

- ▶ HDAS hybrid to mix signal, coax or power
- ▶ Power contacts up to 20A per contacts
- ▶ Reach MIL-DTL-55302 performances
- ▶ High performance & competitive board to board connector



### 38999 Power

- ▶ Derived from the MIL-DTL-38999 series
- ▶ Equipped with ruggedized power inserts
- ▶ Available in different shell types
- ▶ Available in aluminum, olive drab cadmium, electroless nickel, black zinc nickel plated or in marine bronze



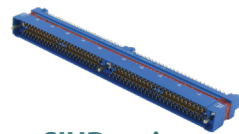
### PowerSafe

- ▶ **NEW : Available in reduced flange version for space & weight saving !**
- ▶ Transmit high-power with voltages over 500V (EN61984, EN60664)
- ▶ Meet the most stringent requirements of the market regarding user safety
- ▶ The first to be qualified VG96944 in Cadmium over Aluminum and Bronze
- ▶ Available in aluminum, olive drab cadmium, electroless nickel, black zinc nickel plating, passivated stainless steel or marine bronze.



### Thermal clamps

- ▶ Chassis devices, which both help to dissipate components heating and block the daughter cards into the box slots grooves



### SIHD series

- ▶ 2.54 [.100] staggered grid (1.27 [.050] offset), 1.905 [.075] between rows
- ▶ Lateral displacement capability allowing the use of thermal clamps:  $\pm 0.25$  [  $\pm .010$  ]
- ▶ Possibility to have a central ground strip
- ▶ Designed for severe mechanical environments
- ▶ Low weight



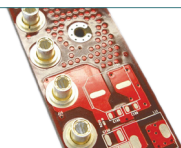
### RHINO 38999 Up to 1000A power

- ▶ Derived from MIL-DTL-38999 Series III
- ▶ Low resistance Hyperbolic RADSOK contacts
- ▶ IP2X finger protection on plugs and receptacles
- ▶ EMP filtered option



### GCB-B

- ▶ Reverse Bayonet Circular Connectors, up to 61 pole
- ▶ High reliability, waterproof, wear- and vibration resistant
- ▶ Especially suitable for external applications
- ▶ VG Approval for Marine Bronze : VG95234 Version B



### Radsok®

- ▶ Solutions for high-current single-point connections to PCB
- ▶ Up to 120 Amps to the board
- ▶ Preserve surface area and provide more flexibility in board design



### Smash

- ▶ High-density advanced SEM E modular connector
- ▶ Provide superior modules to backplane interconnects
- ▶ Flexible circuit terminations for a higher density



### PT

- ▶ Circular connector PT, with bayonet locking, up to 61 pole, for crimp and PCB contacts
- ▶ 2 different contact sizes AWG20 and AWG16
- ▶ VG Approval for Marine Bronze : VG95328 Version B



### SJT

- ▶ SJT circular connector with bayonet lock, for crimp and PCB contacts up to 128 pole
- ▶ The connectors in this series feature 100% contact protection
- ▶ Scoop-Proof / High contact density
- ▶ VG Approval for Marine Bronze : VG95234 Version B

# OTHER SOLUTIONS

Amphenol provides also other interconnect systems for military harsh environment applications.

From military specification connectors to specific products, that are custom designed to perfectly match our customer expectations, we provide an unequalled array of competencies to serve our customers with Stereolithography modelling for rapid prototypes, we are able to provide fast initial feasibility study with technical evaluation and space modelling.

WET  
MATEABLE



## Submariner

- ▶ For diving equipment, ROV's, submersible pumps, and underwater cameras
- ▶ Depth: > 6,000 meters (600 bar)
- ▶ Operating Temperature: -5°C to 65°C
- ▶ Max Operating Voltage: 600V
- ▶ Machine-molded Neoprene insulation material
- ▶ Options for 316 Stainless, Titanium, and Aluminum bulkhead material



## Deep immersion connectors

- ▶ Connectors for dry mate applications. Provides a high reliability with dry a mate sealing down to 200 meters immersion
- ▶ Screw coupling connector
- ▶ Marine brass material
- ▶ Signal, Coax contact



## Eco Mate

- ▶ Cable screw connection with clamping ring
- ▶ Strain relief and mounted gasket all in one component
- ▶ Ergonomically shaped handle for a better grip and safer handling
- ▶ Fastening for the protective caps on the receptacle housing
- ▶ One cable housing for all cable diameters (6 mm - 12,5 mm)



## NMEA 2000

- ▶ Compact and rugged design available in IP67/IP68 unmated waterproof to withstand harsh marine environments



## Rugged USB 3.0 Memory Stick

- ▶ Based on MIL-DTL-38999 Series III
- ▶ Capacities from 16, 32, 64 & 128 GB
- ▶ Vibrations : MIL-STD-810G
- ▶ Industrial electronic
- ▶ MLC memory type (3000 read/write)
- ▶ MTBF : 1 000 000 hours
- ▶ Extended temperature : -40°C / + 85°C
- ▶ Wear leveling function



## Cable Clamp ABS 1339 series

- ▶ Lightweight composite, perfect protection from shocks & vibrations
- ▶ For cable harnesses fixing on structure
- ▶ 8 sizes for cable harnesses diameter from 3 to 48 mm
- ▶ For general use or fuel zone environment, temperature up to 150°C



## Pipe Clamp ABS 1410 series

- ▶ For hydraulic pipes fixing on structure
- ▶ Available in 1 to 5 holes, various & mixed diameters (from 6.3 to 19 mm)
- ▶ Lightweight composite, perfect protection from shocks & vibrations
- ▶ For general use or fuel zone environment
- ▶ Temperature up to 170°C



## PT/451/HE301B VG95328

- ▶ MIL-DTL-26482 Series I subminiature cylindrical connectors
- ▶ Crimp, solder, & PCB contact versions
- ▶ Wide range of backshells and inserts arrangements
- ▶ Available with plastic self closing cap option



## System Attachments, Standoffs

- ▶ High performance attachments to organize cable harnesses throughout a vehicle
- ▶ Accommodate wide range of cable diameters
- ▶ Non-corrosive, non conductive
- ▶ Ease of installation & maintenance



## Cable Clamp CC5516 series

- ▶ Composite clamps (weight saving up to 50% vs metallic NSA5516 clamps)
- ▶ For cable harnesses fixing on structure
- ▶ 37 sizes for cable harnesses diameter from 3 to 60 mm
- ▶ Perfect protection from shocks & vibrations
- ▶ Use in high temperature environment (225°C)



## 164 Series Audio Connectors

- ▶ QPL under MIL-C-55116
- ▶ Water resistant, five & six pin
- ▶ Contact electrical connectors for use in low voltage audio frequency circuits & applications
- ▶ Extensively used in military communication



## Heavy Mate

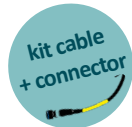
- ▶ Modular metal connectors for applications indoor & outdoor
- ▶ Inserts for signal and power transmission
- ▶ Pole sizes from 3 up to 280 poles per connector
- ▶ Current ratings up to 250A per contacts and voltages up to 1000V
- ▶ Modular connector system to configure customized solution

# MILITARY HARNESSSES

We offer electrical and optical harnessing tailored to your technical specifications.

Our experience in connectors for harsh environments has given us a real expertise in assembling Ethernet network Harnesses, power supply/ power cords and point to point harnesses. We have different activities dedicated to electrical harnesses manufacturing for military land and industrial applications.

Tell us about your wiring needs, our experts are at your disposal.



## Electrical Harness

- ▶ Kitting preparation for on-site installation
- ▶ Heat-shrinking for harsh environment



## Overmolded cable assembly

- ▶ Overmolded harsh environment cable assembly
- ▶ For both high and low-temperature applications
- ▶ Impervious to high-vibration, high-abrasion, moisture, oil & corrosive elements



NEW

## 38999 Overmolded Cordsets

- ▶ Overmolded cordsets according to NGVA STANAG 4754 standard (NATO Generic Vehicle Architecture).
- ▶ Allows you to connect any NGVA compliant equipments onto any NGVA military vehicle networks.
- ▶ 3 signal possibilities with 2 different length :
  - Two USB 2.0 ports with standard 9-35 layout
  - One 1Gb Cat6 Ethernet port with standard 11-35 layout
  - Two 1Gb Cat6 Ethernet ports with standard 13-35 layout



NEW

## Micro HDAS

- ▶ Micro HDAS with crimp contacts
- ▶ Full solution from panel to the board
- ▶ More than 20% space reduction compare to standard Micro-D
- ▶ Reach MIL-DTL-55302 & MIL-DTL-83513 performances



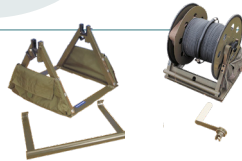
## Military Headset Cables

- ▶ Specific to various OEM radio platforms
- ▶ Utilizes overmold technology
- ▶ Shielded solutions to accommodate various length and connectors



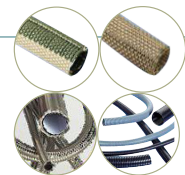
## 2M Overmold Cables

- ▶ Overmold to withstand harsh environments (IP67 environmental survivability)
- ▶ Dedicated routing for specific installation on navy ship
- ▶ Low profile designs to save space
- ▶ Bi-directional strain reliefs with robust encapsulations of transition areas
- ▶ 360° EMI shielding



## Fiber Optics Cables

- ▶ Wide range of tactical cables for deployable harsh environment optical links
- ▶ Available in a variety of applications, sizes, materials, accessories
- ▶ For various diameters and cable lengths



## All types of protection

- ▶ Open textile sleeves
- ▶ Conduits
- ▶ Overbraiding
- ▶ Heat-shrinkable sleeves



## ESATA Cable Assembly

- ▶ For military communications, video, and computer storage
- ▶ Designed for harsh environments



## Deep immersion Harnesses

- ▶ Overmold to withstand deep immersion (up to 200m)
- ▶ Custom molding shape further customer request
- ▶ 360° EMI SHIELDING



## Signal/Power C/A

- ▶ Single way, multiway until 500 A
- ▶ 500 V connectors
- ▶ Copper big section C/A



## Ethernet C/A

- ▶ USB & RJ Field cords
- ▶ Quadrax Mil/Aero connectors
- ▶ µCom connectors

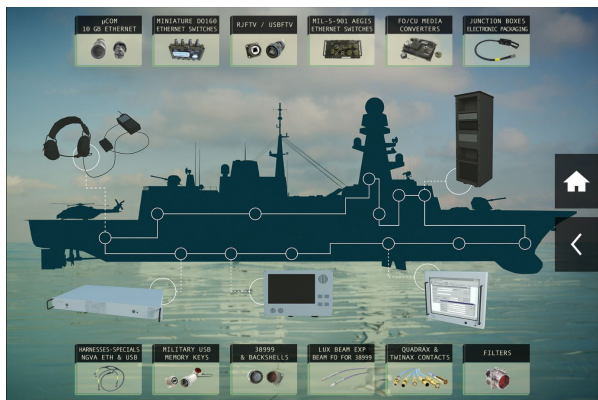
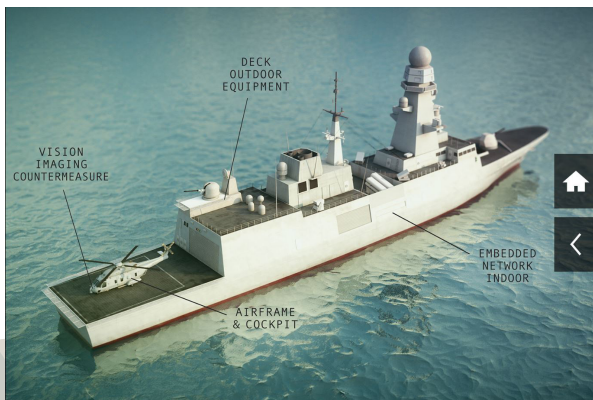
(Global solutions with Amphenol Socapex switches & media converters)



# MILITARY INTERCONNECTIONS APP

**NEW**

Discover our new INTERACTIVE APP featuring Amphenol Socapex products for Military applications. Find the right product for your Soldiers Equipment, Ground Vehicles, Military Aircraft, Navy, Helicopters, Missiles and UAVs. Available on our website <https://www.amphenol-socapex.com/en/military>





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