

QwikConnect

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NEW INTERCONNECT
TECHNOLOGY
FOR MODERN SOLDIER SYSTEMS

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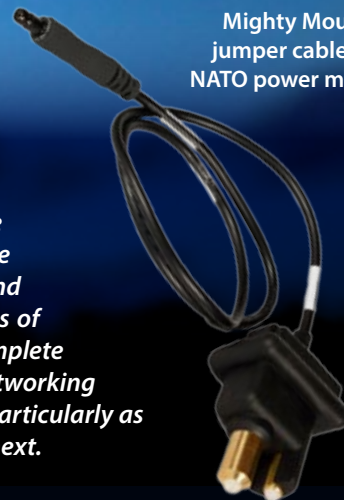
Cover: Sgt. 1st Class, Maria Young
Photo Credit: Pfc Bryan Willis

NEW INTERCONNECT TECHNOLOGY FOR MODERN SOLDIER SYSTEMS

FUTURE SOLDIER SYSTEMS

When infantry soldiers went to war during the 20th century they typically carried a rifle, helmet, ammunition, food and some spare clothes. While their 21st century counterparts might look back and appreciate the simplicity of such an outfit, few of them would be happy to lose the equipment innovations that have so measurably advanced 21st century ground soldier effectiveness. Soldier equipment modernization efforts—such as have been implemented in the US, UK, France, Singapore, Germany and elsewhere—have gone by a variety of names: Future Soldier, Future Force Warrior, Land Warrior, NETT Warrior and so on. A common theme among these modernization programs has been their “systems of systems” approach, which emphasises the blending of individual components into a complete integrated system. More recently, other models have emphasized a versatile power and networking backbone with the flexibility to accommodate a wide range of available device types—particularly as soldier operational requirements vary so significantly from one battle geography to the next.

Mighty Mouse
jumper cable for
NATO power module



With serious conflicts continuing to simmer throughout the world, governments and industry remain actively engaged in research and development in soldier systems and discrete technologies. In this special issue of *QwikConnect*, we review the equipment that currently supports the 21st century warrior as well as some innovations still in the development phase—signs of what is to come in the ongoing effort to advance soldier effectiveness, lethality, mobility and survival.

POWER MANAGEMENT AND WEIGHT SAVING

To anyone who hasn't carried a soldier's load of equipment, power management might not sound like the most important military technology topic. In fact, it is one of the most critical technology issues for future soldiers. Without efficient and sustainable electrical power, none of the electronic innovations detailed here would be possible. Simply put, soldiers do not have the luxury of mains power and are totally dependent on a mobile power sub-system to keep night vision goggles, thermal-imaging sights, electronic counter-measures, personal radios, GPS and other technologies working in the field. For many years this requirement has been served with high-performance batteries. But size and weight reduction efforts

have led to new power management systems and rechargeable cell technologies.

Throughout the history of modern soldier programs, and as the number of electronic soldier devices increased, battery power—a heavy and cumbersome resource—has had to expand. A soldier going out on a week-long patrol, for example, needs sustainable power for every device he uses. Command and control (situational awareness) capabilities are a major element of future soldier programs. But such technologies are power hungry and add significantly to pack weight and transportability. The lack of ready power can and will adversely impact soldier effectiveness across the broad range of their work: from disaster relief to counter-terrorism.

Possibly one of the biggest changes to soldier battery/power management technology has been the switch from primary batteries (non-rechargeable) to rechargeable. During the early stages of the Iraq War, most batteries in theater were still primary, which placed significant strains on military supply chains. To say soldiers have been burdened with batteries presents the problem too mildly. The Iraq and Afghanistan wars tested soldiers to their physical limits—with some carrying nearly 60% (around 50-60kg) of their body in gear and equipment. It should come as no surprise that musculoskeletal

are available. These apps can evolve to reflect a changing operational environment. Apps already in use include: blue force tracking, training manuals, mission planning, ballistics calculator for snipers and IED detection and geo-tagging.

Although there are still concerns over security and robustness, expect to see more commercial devices in the hands of soldiers in the future. In our technology-driven world—where a new phone is released every few months—it is no longer viable for armies to spend thousands of dollars on a military-grade smartphone that will be obsolete as soon as it is operational.

Communication capabilities and situational awareness on the battlefield is also being improved through enhanced networking capabilities. This means soldiers are no longer limited to traditional line of sight communications, which can have limited range in built-up areas or under cover. Take for example the Exelis SpearNet radio, it is a mobile ad-hoc networking (MANET) device, which means the signal “hops” from one radio user to the next and therefore extends the range of the network.

Radio such as SpearNet can provide voice, integrated GPS with SA reporting, and data transfer (100-1500 Kbps) across dismounted networks spanning 6 km. The Spanish Army has chosen the SpearNet for its Combatiente de Futuro (COMFUT) modernization efforts.

The backbone for future US soldier communications is the Warfighter Information Network-Tactical (WIN-T) which delivers voice and data services to soldiers without the need for fixed infrastructure. WIN-T utilizes satellite communications (SATCOM) to extend the network in maneuver Brigade Combat Teams (BCTs). WIN-T is also self-healing, which means devices can re-route bandwidth if a node breaks down.



▲ Army Signal Corps patch and HiPer 55116 radio connectors

The latest WIN-T, Increment 2, allows soldiers to use voice and data communications on the move using mobile, self-forming networks - meaning it creates its own transmission paths based on terrain and environment - a first for the US military. WIN-T systems were deployed to West Africa in 2014 as US troops tackled the Ebola outbreak in the region. The equipment improved communications between US Africa Command, troops on the ground and NGOs.

The US Army is also upgrading its battle-proven Force XXI Battle Command Brigade and Below/Blue Force Tracking (FBCB2/BFT) system to prepare for the new network. FBCB2/BFT, a system which resembles a large ruggedized tablet, is fitted to most infantry vehicles like MRAPs or Stryker vehicles.

The software upgrade means any changes inputted on a vehicle's FBCB2/BFT will be seen by a dismounted soldier on his Nett Warrior device.

The French Army is also placing a significant emphasis on networked communications and data sharing as part of its FELIN (Fantassin à Équipements et Liaisons Intégrés) soldier modernisation. French vehicles are fitted with Sagem's Spider terminal, a touch-screen display system that resembles the US Army's FBCB2/BFT. Dismounted squad leaders also have a portable terminal information system designated the SIT COMDE (Offboard Soldier Terminal Information System), which will improve blue force tracking and overall situational awareness.

◀ Air Force Capt. Bryony Veater, Space Liaison Officer and Space Weapons Officer with the 807th Expeditionary Air Support Operations Squadron, using a Defense Advanced GPS Receiver. Captain Veater trains U.S. and coalition forces how to utilize space weapons into ground warfare. (U.S. Air Force photo by Staff Sgt. David Carbajal)



SuperJack™
the new industry standard interconnect
for thermal weapons sights



The US Army is currently fielding the latest generation of thermal sights, designated the AN/PAS-13 Thermal Weapon Sight (TWS). The latest TWS uses uncooled, forward-looking infrared technology with 17 micron sensors that offer significant weight and power savings over previous models using 25 micron sensors. Many thermal sights, like the AN/PAS-13, also feature standard video output for training, image transfer or remote viewing.

Modernization programs, like the French Army's FELIN system, want to integrate the TWS with a head-mounted display (HMD) to allow observation, and firing, around corners or obstacles. The US Army's current effort is called the Family of Weapon Sights which will wirelessly link weapon-mounted thermal sights to NVGs, allowing soldiers to rapidly engage targets without switching between devices.

Yet like I2 technology, thermal sights can also have several downsides especially when it comes to seeing detail. Developers are trying to bring together both worlds with fused systems, blending I2 and thermal images into one. One of the best examples of fused technology is the AN/PSQ-20 Enhanced Night Vision Goggle - made by ITT Exelis and L-3 Warrior Systems - which is currently being fielded with the US military.

In Europe, Thales has introduced the Minie-Dir fused system, an adaptation of the Minie-D which has already been selected for modernization programs in France, Germany and Spain. The 490g Minie-D can also work as a HMD receiving video from unmanned systems, or send video to command posts.



ISTAR - TARGETING EQUIPMENT AND OPTICS

It is one of the great constants in warfare, you must know more about your enemy than they know about you. Gaining the upper hand will keep you alive. That's why advanced intelligence, surveillance, target acquisition and reconnaissance equipment is some of the most valued equipment for militaries. These are the technologies used by fire support teams or dismounted reconnaissance troops to locate, and then eliminate, enemy forces in a warzone.

Today's surveillance and reconnaissance devices are also connected to the battlefield network, meaning they can send video and data across the 21st century digital battlespace, giving greater situational awareness for commanders at all levels.

Several militaries are currently in the process of upgrading or replacing their legacy dismounted ISTAR equipment. The US Army is fielding the latest version of the Northrop Grumman-built Lightweight Laser Designator Rangefinder (LLDR-2H) system. Nicknamed the "Eye of God," LLDR-2H offers extremely accurate target designation for GPS-guided munitions like the JDAM or Excalibur.

The LLDR incorporates a thermal imager, day camera, laser designator and digital magnetic compass. A built-in GPS calculates coordinates and a Laser Designator Module (LDM) emits coded laser pulses, which are compatible with US and NATO guided munitions.

Equipped with the LLDR, soldiers are able to designate stationary targets from over 5km and identify vehicle-sized targets at more than 7km during the day. At 31.5 pounds (14.2kg) it is lighter than previous models, though certainly not lightweight. Lighter systems with embedded GPS receivers are also available including BAE Systems' TRIGR and Northrop's Mark VIIIE which both weigh just over 5 pounds.





◀ The snap-lock, trigger-release MouseBud connector is ideally suited for HUD-equipped helmet technology

their modernization programs. A soldier HMD works in a similar way to a pilot's HUD, displaying vital information without the soldier having to look down at maps or devices.

In 2009, Rockwell Collins was awarded a contract to provide 1,500 of its ProView S035A HMD systems—originally developed for tank crews—to the US military under its Land Warrior program. The S035A features a high-resolution display module with a 35-degree diagonal field of view, allowing soldiers to view C2 data and video feeds. The display is connected to a control module which is powered by three AA batteries lasting around eight hours.

In 2014, BAE Systems unveiled its own version of HMD technology for soldiers called Q-Warrior. The system has been designed and developed at its Electronic Systems business in Kent, England. Q-Warrior uses a holographic waveguide display so it resembles traditional HUD systems both in form and function. The display module clips on a standard helmet rail and doesn't require modification to existing kit.

Unlike previous HMD technology for soldiers, BAE Systems' technology allows data to blend intuitively with the soldier's view of the real world. This is popularly known as augmented reality in the commercial world and offers several advantages over previous HMD systems.

Q-Warrior overlays full-color graphical iconography—including friendly/hostile positions, navigation waypoints and close air support data—directly onto the real world. Soldiers can access live video feed from unmanned aircraft and other surveillance assets, improving situational awareness. BAE Systems says the technology will be best suited for JTACs or with Special Forces.

Much of the technology found in Q-Warrior has been developed as part of DARPA's Urban Leader Tactical Response, Awareness and Visualization (ULTRA-Vis) programme. One of the key challenges that remains for the soldier HMD is size, weight and price. Today's systems can be unwieldy and cost thousands of dollars which ultimately means widespread adoption is unlikely, but as technology advances we can expect to see much wider use.

And you don't have to look far to see what the future might look like. In 2014, San Francisco-based company Osterhout Design Group unveiled its smart glasses concept which has the potential to revolutionize wearable tech for soldiers. The innovative X-6 glasses feature a dual-core processor, 64GB storage and two see-through HD displays. A tiny 5 megapixel

camera can also enable augmented reality features such as facial recognition or, like Q-Warrior, battlefield data. Most importantly, ODG's smart glasses do not require a separate battery pack or any specialist equipment.

CONCLUSION

Soldiers at the squad level now enjoy more real-time data and situational awareness than staff officers did just one generation ago. They can communicate in the most inhospitable regions on earth utilizing communications gear super-charged with audio, visual and data networking. Enhanced vision technology enables new clarity—even in the fog of war—and new targeting technology delivers pin-point accuracy even in the dead of night. Better power management and battery technology enables multiple devices to be powered simultaneously—in ever smaller and lighter packages.

These advances have made modern militaries extremely agile, flexible and potent. "System of Systems" development models as well as R and D approaches that leverage the speed and innovation of commercial solutions, such as network-based software distribution, have both yielded important technology successes. The ongoing application of these technologies is of vital concern to the world's democracies as we pursue our shared military goals, manage civil unrest, counter terrorism, protect vulnerable populations, and deliver disaster relief—noble goals indeed for the future soldier.

The remaining pages of this special edition of *QwikConnect* outline the world's most comprehensive and innovative line of interconnect solutions for soldier applications—from small form-factor connectors to lightweight EMI cable shielding—all designed and manufactured by Glenair.

▼ Q-Warrior lightweight, full-color see-thru display for day and night applications.
Photo: BAE Systems



SuperFly® is ideally suited for the interconnection of wearable soldier equipment such as communications, situational awareness and other C4ISR technologies that depend on small size and high-speed performance.



Rear-panel mount push-pull and threaded PCB receptacles, and AlphaLink flex jumpers now available

SERIES 88 SuperFly®: the ultimate nanominiature tactical connector

Ready for the toughest, smallest, and highest-speed applications you've got

Glenair Series 88 *SuperFly*® represents a perfect storm of high-performance contacts, shells, wires, termination and mating technologies. *SuperFly*® is the only connector series in existence that combines the weight-saving and performance advantages of nanominiature, microminiature and AS39029 type (size #23) contacts in a precision package for battlefield communications, computing, and other high-performance applications. Available in factory-terminated cordsets, single-ended pigtails, and discrete PCB termination receptacles for complete flexibility in cable and box configurations. QDC and threaded *SuperFly* cordsets can ship with a variety of cabling options, including ultra-flexible GhostWire or impedance-controlled twisted pairs for high-speed applications.

SUPPORTED CONTACTS



#23 AS39029 Type
5 Amp Crimp Contact



#24 Micro
3 Amp TwistPin Contact



#30 Nano
1 Amp TwistPin Contact

PRINTED CIRCUIT BOARD PLUG AND RECEPTACLES

Quick-Disconnect						Threaded	
Right Angle, Rear Panel Mount	Right Angle, Rear Panel Mount, PCB Mounting Holes	Vertical, Rear Panel Mount	Vertical, Rear Panel Mount, PCB Mounting Holes	Vertical, Rear Panel Mount, Ground Pins	Vertical Plug, Rear Panel Mount	Vertical, Rear Panel Mount	Right Angle, Rear Panel Mount

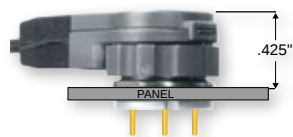


SERIES 860 MouseBud™

The snap-lock, trigger-release connector

Ultra low-profile MouseBud™ connectors are lightweight, shielded and designed for use in hostile environments. Mating is a snap—simply push to mate and lock. To release, actuate the thumb trigger on the coupling ring (small and large triggers available). Plugs feature spring-loaded gold plated contacts, stainless steel shells and self-actuating bayonet coupling rings. Cable mount versions are fully assembled, shielded, overmolded and 100% tested. MouseBud is fully protected from sand and dust, moisture ingress, electromagnetic interference and a multitude of other environmental stresses. The spring-loaded contact system is rated for 2000 mating cycles. Series 860 connectors are suitable for high-speed data, power, video and audio.

Panel mount MouseBud receptacles with “hot shoe” type contacts are suitable for hostile environments including soldier wearable electronics and tactical gear. Contacts are easy to clean and damage-resistant. These receptacle connectors meet MIL-STD-810G requirements for reliable performance in hostile environments—both mated and unmated. Connector attaches to panel with a stainless steel jam nut. A fluorosilicone O-ring provides panel sealing. Terminate to flex circuits with pc tail terminals, or choose solder cup terminals for wire attachment.



The MouseBud right angle plug features a single piece “cobra style” connector shell and a tightly fitting lid. A rubber gasket is sandwiched between the shell and lid to prevent moisture intrusion. The total height when mated to a rear panel mounted receptacle is well under 1/2 inch.

Overmolded MouseBud cordsets are available in two standard versions. Style 1 cordsets feature thermoplastic polyurethane cable jackets and polyamide overmolding. Style 2 cordsets with thermoplastic rubber (TPV) cable jackets and overmolding offer excellent cold bend performance down to -55° C.



The Series 860 MouseBud™ is designed for vest-wearable and helmet-mounted cable-to-tactical equipment interconnections. The ultra low-profile spring contact equipped MouseBud™ mated connector stack is less than 1/2 inch, making it the lowest-profile right-angle solution available today.



- Self-locking auto-coupling, trigger-release mechanism
- Spring-loaded pins for extended durability and easy cleaning
- One meter, one hour water immersion
- 2000 cycles mechanical life
- High-speed data, power, video, and audio applications
- Meets MIL-STD-810G shock, vibration, immersion
- EMI protected with integral backshell and ground spring
- Ultra low-profile and lightweight



SERIES 80 Mighty Mouse Connectors and Cables

The industry standard—used on virtually every future soldier platform

The Series 80 Mighty Mouse Connector is designed for use in high-reliability, mission-critical applications—from commercial aerospace to soldier systems—that require robust environmental and EMC performance as well as reduced size and weight. The Series 80 Mighty Mouse connector offers comparable performance to MIL-DTL-38999 interconnects with up to 71% weight and 52% size savings for similar contact layouts. The industry-standard Mighty Mouse is a mature connector series with a proven range of catalog and custom configurations.

Wearable soldier electronics—from power supplies to PDAs—depend on environmentally sealed connectors and cables that meet soldier requirements for durability, handling, and reduced size. The Series 80 Mighty Mouse has become the de facto worldwide interconnect standard for future soldier systems.

- 6 coupling styles and 67 contact arrangements from 1 – 130 contacts
- MIL-DTL-38999 caliber environmental, mechanical, and electrical performance
- Ultraminiature #23 contacts set on .076" centers
- Size #20, #20HD, #16, #12, #8 signal, power, fiber optic and shielded contacts
- Discrete connectors and turnkey cable assemblies

Series 80 Mighty Mouse Connectors: Available in Environmental, Filtered, and Hermetic Versions					
Series 800	Series 801	Series 802	Series 803	Series 804	Series 805
					
Light-Duty UNF Thread	Rugged Double-Start ACME Thread	3500 PSI AquaMouse	Fast-Mate Bayonet Coupling	Quick-Disconnect Push-Pull	Ratcheted Triple-Start

SuperJack™ is designed for small-footprint, multi-circuit blind-mate applications such as picatinny rail mounted weapons sights, night vision scopes, and laser targeting

SERIES 153

SuperJack™ Connectors

The ultra harsh-environment unipole connector system for audio, data, and power

The SuperJack connector is a rugged, lightweight, miniaturized connector featuring watertight sealing, 3 to 7 poles, EMI protection and heavy gold plating. The jack (receptacle) has spring-loaded contacts for low resistance and high durability. Plugs are available in two styles. Overmolded cordsets feature high strength lightweight jacketed cable. Blind mate chassis-mounted plugs feature solder cup or printed circuit board contacts. Jacks feature gold-plated canted springs for electrical grounding and mechanical retention of plug.

SuperJack is ideally suited for ultra harsh-environment interconnect applications such as are found on soldier communications gear, electronic weapons sights, noise-cancelling headsets, and vision systems. Panel-mounted SuperJack plugs are ideal for module-to-module connection. Chassis jacks are available with solder terminals or PC tails for easy termination to wire or flex circuits.



- 5 Amp current rating
- 5000 mating cycles
- 500 VDC
- EMI Shielded
- IP67 ingress protection
- Optional spring-loaded sealing flap in jack
- 3 – 7 circuit configurations
- Suitable for blind-mate applications
- Hardened for temperature extremes from -45° to +125° C

SOLVE THE EQUATIONS

Example: "A the W in 80 D"

Equals "Around the World in 80 Days."

The pictures might be clues!

1. 26 L of the A
2. 12 S of the Z
3. 8 S on a S S
4. 9 P in the SS
5. 88 K on the P K
6. 13 S on the A F
7. W F at 32 D F
8. 200 D for P G in M
9. 54 C in a D (with the J)
10. 90 D in a R A
11. 4 Q in a G
12. 1 W on a U
13. 5 D in a Z C
14. 29 D in F in a L Y
15. 11 P on a F T
16. 64 S on a C
17. It T 2 to T
18. 101 D
19. 57 H V
20. 24 H in a D



Field data communications and networking rely on commercial standard RJ45 Ethernet and Universal Serial Bus (USB) technologies. SuperSeal™ ruggedized field connectors ensure these networks deliver reliable environmental and electromechanical performance

RJ45/USB SuperSeal™ RJ45 and USB field connectors

Smallest form-factor high-performance solution for integration of the commercial USB interface, plus environmentally-sealed RJ45 and USB connectors in industry-standard MIL-DTL-38999 Series III packaging



Series 801 Mighty Mouse Plug and Receptacle with SuperSeal® Micro-B USB

- Superior sealing, IP67 in unmated condition compared to other available environmental circulars with RJ45 or USB
- Superior grounding for electrostatic discharge and EMC
- Superior cable shield termination with integrated banding platform
- Optional spring-loaded protective covers for environmental protection of junction boxes and switches
- Wide range of high speed Ethernet/network protocols supported, including USB 2.0

SUPERSEAL™ INNOVATIONS



Crimp contact termination
MIL-DTL-38999 Series III RJ45



PC tail and solder cup
termination



IP67 sealed and EMC grounded
RJ45 and USB inserts



Quick disconnect (push-pull) cable-to-cable and cable-to-equipment interconnects frequently require locking mechanisms to prevent accidental demating. The Series 824 is the highest performance locking push-pull connector available today for soldier applications.

SERIES 824

Locking Push-Pull

Tactical Mighty Mouse connectors

Introducing the new Mighty Mouse Series 824 Locking Push-Pull Connector: all the familiar size, weight and performance advantages of the industry-standard Mighty Mouse 804 push-pull connector with a revolutionary low-profile locking coupling mechanism. Glenair's primary design goal in the development of the locking 824 was to bring mil-spec caliber connector performance to locking push-pull applications. The Series 824 Locking Push-Pull provides superior sealing, excellent EMI protection, low-profile ergonomic mating and demating, and easy crimp-contact termination. The locking push-pull mechanism delivers tactile and audible mating confirmation under even the most extreme field conditions. Built for long-term durability and reduced size and weight, the high-density Series 824 Locking Push-Pull connector far surpasses commercial caliber push-pull connectors in environmental sealing and EMC performance.

Specifications	
Current Rating	#23 5 AMPS, #16 13 AMPS, #12 23 AMPS
Dielectric Withstanding Voltage	#23 500 VAC RMS, #12 and #16 1800 VAC RMS
Insulation Resistance	5000 megohms minimum
Operating Temperature	-65° C to +150° C
Shock / Vibration	100 g / 16 g
Shell-to-Shell Resistance, Nickel Plated	2 milliohms maximum
Durability	2000 mating cycles
Breakaway Force	50 pounds minimum

Gold plated crimp contacts for #12 to #30 AWG wire



- Fast mating, quick-release coupling mechanism
- 31 insert arrangements
- Integrated cable shield termination platform
- Plug, in-line receptacle, and front-and rear-panel jam nut configurations
- Tactile and audible mating confirmation
- Tactical black zinc-nickel plating option
- Five alternate 3-key polarizations



HiPer 55116 delivers improved mechanical, electrical, and environmental performance. Reduced size, superior materials, improved EMI shielding and better environmental sealing make HiPer 55116 the most advanced radio comm connector on the market.

SERIES 152 • MIL-DTL-55116 TYPE

HiPer 55116 Audio Frequency Connectors

Series 152 HiPer 55116 connectors offer significant performance advantages for modern soldier communication systems



- Intermateable and interoperable with standard MIL-DTL-55116 connectors
- Low contact resistance: less than 10 milliohms
- Integrated EMI ground spring provides improved 2.5 milliohm shell-to-shell conductivity performance
- IP68 rated sealing in mated and unmated condition, prevents water ingress into radio equipment
- 1,000 hour+ salt spray corrosion resistance
- Integrated cable shield termination band porch
- Superior 100 pound cable pull test rating

The incorporation of ever-larger numbers of electronic equipment sets in mounted and dismounted soldier applications requires package innovations that reduce I/O connector profiles and facilitate cable routing. Mighty Mouse Cobra is the lowest-profile right-angle I/O cable connector package available for standard Mighty Mouse series connectors.

MIGHTY MOUSE Cobra

The ultra-low profile EMI/RFI plug and backshell assembly

Innovative shielded low profile right angle connector plug and backshell assemblies reduce clearance requirements without compromising ruggedness or shielding performance. Available in Series 801 double-start, Series 804 QDC push-pull, and Series 805 triple-start, Cobra assemblies provide optimal low-profile cable routing and legendary Mighty Mouse connector performance in a single package. Each Cobra assembly is equipped with a removable rear cover and gasket for easy crimp or solder contact termination of the connector. Integrated low-profile backshell is equipped with an EMI/RFI shield termination platform and a shrink boot lip. The ultra-lightweight assembly may be clocked in eight different angle orientations for additional flexibility in cable routing. Connectors are equipped with polarization keying to prevent mis-mating. Glenair Mighty Mouse Cobra mates with available square flange and jam nut receptacles from each respective connector series. Fourteen contact arrangements are available, all with Size #23 contacts from shell size 5 to shell size 21 with 3-130 contacts respectively. Connector shells are aluminum alloy or stainless steel.

SPECIFICATIONS

- Current Rating: #23 5 Amps
- Test Voltage (DWV) #23: 500 VAC Sea Level
- Insulation Resistance: 5000 megohms minimum
- Contact Resistance: 73 millivolt drop at 5 Amp test current
- Mating Cycles Series 801 and 804: 2000; Series 805: 500
- Operating Temperature: -55° C to +150° C
- Shielding Effectiveness: 50 dB min from 100MHz to 1000MHz.
- Magnetic Permeability: 2.0μ
- Vibration: 37g / Shock: 300g
- Immersion, mated: 1 meter water immersion for 1 hour



- **Space-saving design features one-piece machined and brazed connector shell and right angle backshell for minimum height and optimal EMI performance.**
- **Master key clocking enables easy cable entry/exit routing in eight angles**
- **Removable rear cover and gasket provides easy access to end of connector for crimp or solder contact termination**

General-duty power and signal interconnection has for decades been reliably performed by MIL-DTL-24682 type connectors. Glenair IPT and IPT-SE versions of this standard bayonet and push-pull connector are widely and reliably used in military battery power cables, vehicle applications, and equipment charging systems.

SERIES IPT AND IPT-SE

Military Battery and Power Connectors

The Versatile MIL-C-26482 type connector is a medium-density power and signal connector used in a broad range of general-purpose and environmental applications. Typically supplied with bayonet mating and locking, special versions of the IPT are supplied without bayonets for fast push-pull mating. These "Q" series push-pull connectors are the industry standard configuration for M5590 and 2590 rechargeable lithium ion battery packs. Glenair supplies both discrete connectors as well as turnkey cable assemblies for battery applications, military vehicle applications, sensors, power generators, and more. Standard IPT series connectors feature resilient high-insulation synthetic neoprene inserts. IPT-SE versions utilize a hard plastic dielectric and crimp contact retention clips.



► Turnkey Glenair M2590 battery cable incorporating shrouded six-pin IPT push-pull connector with velcro strap attachment to Glenair Series 804 Mighty Mouse



- Solder cup wire termination with optional crimp contacts
- Resilient environmental inserts
- Keyed polarization
- Standard bayonet as well as push-pull
- Intermateable with all industry-standard MIL-C-26482 Series I and qualified VG95328 connectors
- Straight and right-angle environmental overmolded cable assemblies
- Wide range of standard connector accessories

The reduction of interconnect cable size and weight is a primary goal of future soldier system design. Carry weights may be significantly reduced through the selection of lightweight microfilament EMI/RFI cable shielding. Both ArmorLite (microfilament stainless steel) and AmberStrand (metal-clad composite) shielding are widely used in wearable soldier equipment.



SERIES 103

Lightweight EMI/RFI Braided Shielding



Lightweight stainless steel ArmorLite™ and composite AmberStrand® microfilament braid save pounds compared to standard QQ-B-575/A-A-59569 copper braid

ARMORLITE™

100%
ArmorLite™

103 - 051 - 024

Diameter Dash
Number



- Ultra-lightweight EMI/RFI braiding
- Microfilament stainless steel: 70% lighter than NiCu A-A-59569
- Outstanding EMI/RFI shielding and conductivity
- Reduce shielding weight up to 70% and more
- Superior flexibility and "windowing" resistance: 90 to 95% optical coverage
- 220,000 psi (min) tensile strength

A single layer of ArmorLite™ Shields from 40dB to 80dB in Frequency Ranges from 30kHz to 2.5GHz. Now available in equipment ground straps

CATALOG CORDSETS AND SPECIAL JUMPERS for soldier system power, signal, and data applications



STANDARD AND HIGH-SPEED CATALOG CORDSETS

Turnkey, fast-turnaround solutions

Catalog cordsets for soldier C4ISR applications		
		
Native Mighty Mouse to Mighty Mouse point-to-point cordsets with polyamide or high-temp rubber overmolding and shielded, jacketed cable for high-speed applications	Mighty Mouse to commercial USB point-to-point cordsets with polyamide or high-temp rubber overmolding and shielded, jacketed cable for Universal Serial Bus applications	Mighty Mouse to commercial RJ45 point-to-point cordsets with polyamide or high-temp rubber overmolding and shielded, jacketed cable for Cat 5 and Cat 6 Ethernet applications
		
Series 88 SuperFly™ catalog cordsets feature high-flexibility GhostWire cable in overmolded, shielded, and fabric braided versions	Ultra low-profile MouseBud™ cordset with customer's choice of Mighty Mouse or other small form-factor I/O connector	MIL-DTL-38999 Series III type RJ45 SuperSeal™ cordsets (shown here with commercial RJ45 plug)
Special application, point-to-point cordsets for wearable soldier applications		
		
Unique overmolding compounds, jacketing and overbraid materials available on a build-to-print basis, including flat broom-stitch designs	Power module jumper cable with industry-standard MIL-C-26482 (Glenair Series IPT) and Mighty Mouse Series 804 push-pull	Ethernet / high-speed jumpers incorporating Glenair's range of small form-factor interconnects—from Mighty Mouse to SuperFly
		
Special MIL-DTL-38999 Series III type Quadrax to rear-panel-mount RJ45 SuperSeal jumper with special flop lid protective cover	Coil-cord technology for headsets and radio communications	Catalog and build-to-print flex jumpers incorporating Glenair small form-factor I/O and board interconnects

INTEGRATED SUB-SYSTEMS AND ASSEMBLIES for soldier system power, signal, and data applications



TURNKEY ENGINEERING, FABRICATION, AND ASSEMBLY

Integrated electronic equipment assemblies—built around Glenair small form-factor connectors and wire protection technologies

Glenair ultra-small form-factor interconnects are used in hundreds of the most advanced land, sea, air and space applications. Today, our factory is positioned to meet every requirement for complex integrated systems—from cable and enclosure design to turnkey electronic system packaging. Glenair is your one-stop-shopping solution for integrated interconnect cabling and electronic equipment

Lightweight soldier system with ruggedized computing, radio communications, power supply and tactical USB/networking patchcords—all integrated with turnkey Glenair connector technology.



Ultra-flexible RF cable assembly, USB hub, and connectorized black box enclosure—tested, terminated, and ready for immediate application



Turnkey integrated cable and EUD assembly featuring Mighty Mouse, 55116 audio and USB interconnects—all fabricated, assembled and tested by Glenair's integrated systems group



Taking the Time to Salute

One of my mentors told me a sure sign of wisdom and maturity is an individual's ability to sincerely express thanks and gratitude. Over the last dozen years or so, especially since 9/11, a lot of "wise and mature" people have made it their habit to express their thanks to members of the armed forces that they come across at airports, restaurants, ball games and elsewhere. I can't think of a more correct and positive behavior. That these service men and women are heroes—in dozens of ways both big and small—doesn't just go without saying. They are our front line in a dangerous and challenging world and their service and sacrifice not only deserves our tacit recognition and respect, it deserves our vocal and personal affirmation as well; so hats off and thank you to all the men and women of the armed forces throughout the world that work so hard and sacrifice so much to make our lives safer, richer and happier.



I believe what we do at Glenair—designing, building and marketing interconnect technology—also requires dedication, commitment and sometimes even sacrifice. While the gravity of our work pales in comparison to the heavy lifting soldiers, sailors and others in uniform perform on our behalf, it still adds significant value to the world and is an integral part of what makes the defense and security of our nation possible. So doing my best to be "wise and mature" in word as well as deed, I wanted to take a moment to celebrate the hard work of our own "front line." The men and women of our sales and marketing team that live so much of their lives out on the road, knocking on doors for Glenair.

I was recently chatting with one of our senior marketing road-warriors and was pleasantly shocked to hear that in the past month he had travelled to no fewer than four continents, calling on literally dozens and dozens of customers—several of them in truly out-of-the-way places with names I admit I can't even pronounce. Talk about dedication and sacrifice! And of course he is just one of over a hundred front-line sales professionals in North America, Europe and Asia that bring equal amounts of dedication and commitment to their work. So if I don't say it as frequently and as loudly as I need to, let me make up for it now: *Thank you, thank you, thank you.* And to you and everyone on the Glenair team, best wishes for a healthy and prosperous 2015.

Chris Toomey

Publisher

Christopher J. Toomey

Executive Editor

Marcus Kaufman

Managing Editor

Carl Foote

Editor/Art Director

Mike Borgsdorf

Graphic Designer

George Ramirez

Technical Consultant

Jim Donaldson

Issue Contributors

Eran Agami
Lisa Amling
Deniz Armani
Josh Castrey
Eric Griswald
Lutz Mueller
Chris Parsons
Grant Turnbull

Distribution

Terry White

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GLENAIR, INC.

1211 AIR WAY
GLENDALE, CA 91201-2497
TEL: 818-247-6000
FAX: 818-500-9912
E-MAIL: sales@glenair.com
www.glenair.com



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