

# Land Based Defence Vehicles

---

## Connectors

AB Connectors Limited



# Contents

03 TT electronics Connectors Business Unit

04 Land Based Vehicle Family

05 Application Areas

06-07 Case Studies

08-09 Vehicle Cutaway

10-12 Technical Details





# Company Profile

TT Electronics' brand AB Connectors specialises in the design, test and manufacture of high performance electronic connectors and interconnect solutions, supplying a range of global customers in aerospace, defence, rail and industrial markets.

Our broad product portfolio which includes miniature connectors, high power connectors, soldier systems, harness assemblies and box systems typically serve within key applications such as signalling, communication and power distribution.



Operating from the principle site in Abercynon, South Wales, our research and development teams have an excellent track record for developing innovative industry solutions and our engineers have extensive experience in designing a range of product configurations to meet customer specific requirements for the most demanding environments.

From plant layout to production line set-up and quick changeover processes, we offer the ideal service, with a flexible manufacturing environment and accredited facilities.

Quality systems and approvals include ISO9001 along with various product and market sector approvals including the military Mil-std 790 and mass transit IRIS certifications and environmental approval to ISO14001. As a result of these qualifications AB Connectors has been awarded several major customer approvals and accreditations.

AB Connectors total commitment to providing customers with high levels of service, cost effectiveness, quality and innovative solutions in interconnection products make it the ideal first choice supply partner.



# Land Based Vehicles Family

TT electronics' components division has multiple facilities for the design and manufacture of interconnection systems with engineering teams providing custom solutions.

## Wheeled

TT electronics has worked with the major defence contractors involved in the design and supply of wheeled military vehicle platforms for many years. The team has provided design, engineering and manufacturing expertise for the electrical solutions required on the most advanced wheeled vehicles. The agility of the Connectors team in providing quick responses and solutions has meant it has been involved in many of the UOR (Urgent Operational Requirements) seen recently. We have the ability to provide high reliability connectors designed and manufactured to mil-specifications, in the harshest of environments. In recent years the Connectors Business Unit has focused on providing solutions from connector design to complete vehicle electrical systems.



## Tracked

TT electronics has supplied integration kits under UOR to provide for added tracked vehicle protection from IED's. The increased power demand of the tracked vehicle fleets has enabled the Connectors team to design enhanced on-board power distribution systems. The design team has also worked with OEM's to provide everything from unique connector designs for bulkheads all the way through to complex box designs which provide the crew with control over vehicle systems. We have supported many of our customers requiring fleet modernisation and role fit change programs.



## Support

TT electronics has supplied many of the logistical and support vehicles from the FMTV and HMETT families in the USA, to the UK MoD's Wolfhound. The remit has extended to camera power & signal systems and providing power solutions for air conditioning of kennels. Many of these vehicles have been equipped with inverter systems to provide power management for soldier application requirements. TT electronics is also the prime supplier to NATO for inter-vehicle power systems.



# Application Areas

TT electronics products can be found in all areas of military land systems: in power, control and communications systems.



- Generator sets in exposed Arctic conditions
- Engine compartments of fighting vehicles
- Heavy interconnections for vehicle slave starting
- Miniature, rugged, high-density, sealed connectors for soldier harnessing
- simple low-voltage power harnesses
- Multi-branched and overmoulded data & communications harnesses
- Basic military junction boxes to complex systems
- Electronic controls and alarm units.

TT design and manufacture the connectors, harnesses, distribution boxes and control units.





# Case Studies

## Thales

In 2010 TT electronics was awarded a £2M contract to supply cabling and harnessing systems, as well as racking systems to house communications equipment for over 100 Warthog vehicles destined for the Afghanistan theatre of operations.

TT electronics' reputation as market leaders in design, test and manufacture of harsh environment interconnection systems, bespoke harness assemblies and connectors was a key factor in securing the contract.

TT electronics utilised its vertically integrated manufacturing facilities to provide mil-spec connectors including D38999 and backshells. In addition the team provided design and applications expertise for vehicle

fit and routing and supplied all 100 plus systems to Thales. Following this award TT electronics has gone on to support Thales on further vehicle projects including Foxhound. Alex Cresswell, head of Thales UK's land defence business, says, in a BBC news article "We look forward to working with TT electronics, and other highly capable companies based in the area, to deliver this valuable capability to the UK Armed Forces. The Warthog vehicle, with its installed electronic systems, represents a very significant military capability."



## PDM Solution for Textron ASV

**Background-Increased on-board power demands:** The power demands present within today's military ground vehicles are nearly 10 times that of vehicles fielded only 15 years ago.

The 50 and 60 amp alternators of the early 1990s have been upgraded to a minimum of 470 amps, and in some situations vehicles are now sporting 680 amp alternators in order to supply power to an ever increasing array of on-board equipment.

**Customer-Specific Problem:** U.S. Army Tank-automotive and Armaments Command (TACOM) required Textron Marine and Land Systems to add an additional 160 amps of on-board power into their US Army ASV (Armoured Security Vehicle) in order to operate additional C4 and IED counter measure equipment. The additional power was to be generated by a higher amperage alternator, however, the additional equipment being operated had to be protected from electrical overload conditions, and thus the demand for a separate power distribution module (PDM) was recognized during the project.

**Design Demands:** The PDM had to meet the environmental demands of every possible battle condition from arctic desert to tropical jungle, along with the ability to remain operational during extreme vibration and shock conditions. Space within any military armoured vehicle is always at a premium, and added to the geometric restraints in this situation was a high ambient operational temperature along with resistance to diesel fuel and other chemicals.

**TT electronics solution:** The TT electronics team met the design challenges head on, and was able to put a working prototype of the PDM into the customer hands within 3 weeks. As a follow on, TT performed stringent vibration and shock testing to the design in order to assist and solidify Textron's initial technical presentation to DOD engineers. The preliminary design met government approval, and during the DOD trials that ensued, additional requirements were identified such as circuit status indication and an additional protective cover

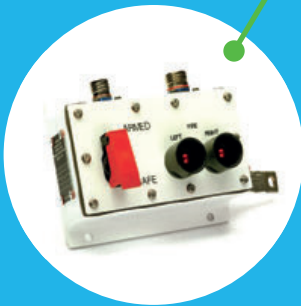
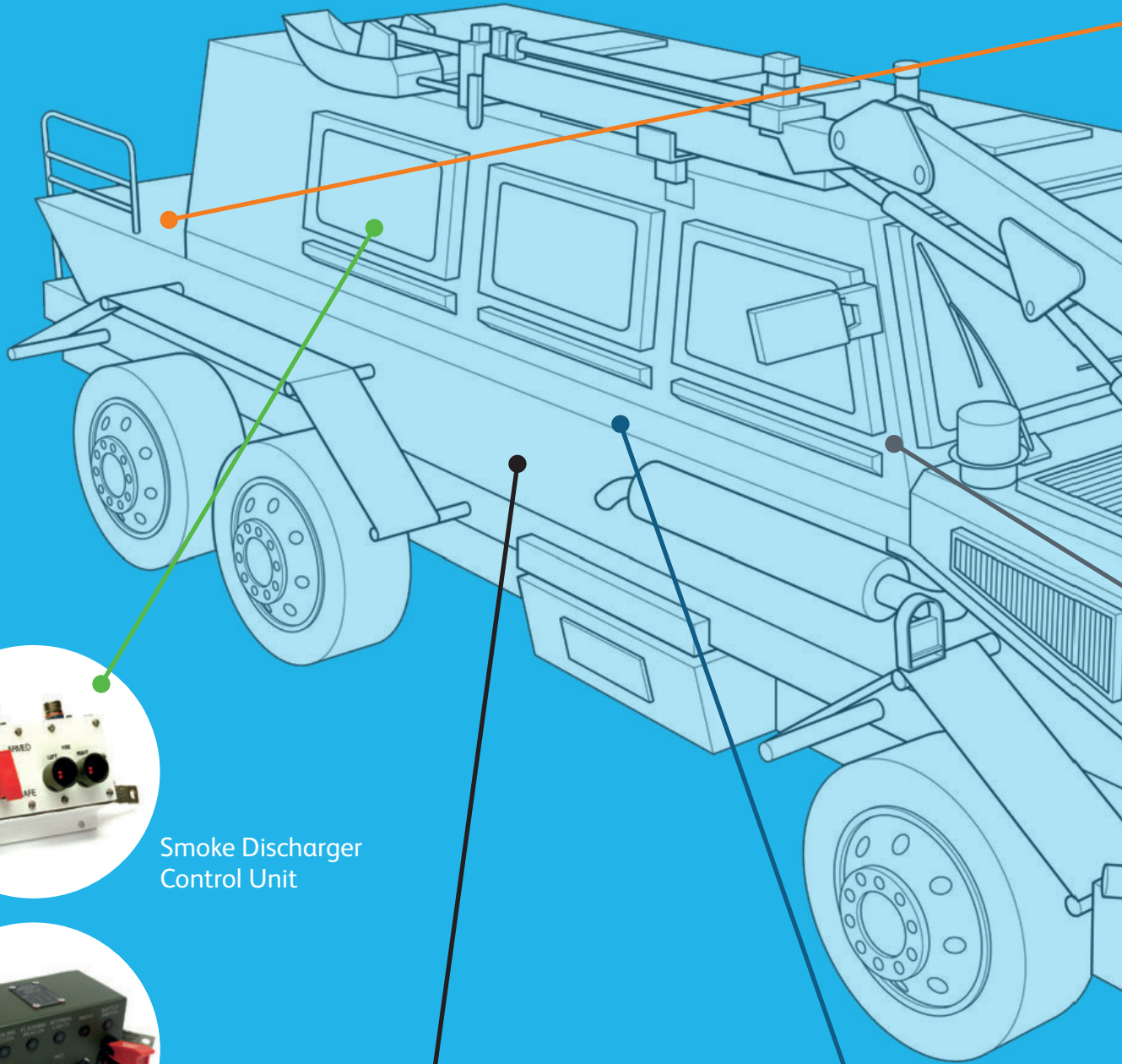
and added to the original design. TT responded immediately with refinements each step of the way and eventually full TACOM approval was granted. Today the TT designed PDM and related cables are a part of every production Textron ASV.

**Benefits:** TT's design team reacted quickly to the customer's problem and did so with an emphasis on providing a rugged design that went above and beyond the stringent design demands, while at the same time meeting the customer's critical timeline and budget constraints. An understanding of the government processes our customers must go through in order to present new technology into an existing platform was key to the success of this project. TT's design team is always ready to quickly develop and implement product changes during the field trials process. As a result, the crew of the ASV in Afghanistan does not have to think twice about reliable circuit protection, regardless of the environment or harsh operational parameters around them.





# Vehicle Cutaway



Smoke Discharger  
Control Unit



Drivers  
Switch Panel



PDM Box



Harnessing



## Land Based Defence Vehicles



ABORD102C

Trailer Harness  
assembly setAB-ORD 954  
Front & rearSB-ORD133  
and 'RatTrap'ABSP  
Single-pole

Pola Power™



ABBMS



AB05 Comms



D38999



D38999



MABAC Connector

Generic Vehicle  
ArchitectureHigh Speed  
Data ConnectorMIL-PP Soldier  
Connector

# Technical Details



## ControlConnectors

### SBMS

- The original threaded MIL-C-5015 connector.
- Rugged aluminum alloy shells & accessories, available in a range of plating finishes including RoHS-compliant and cadmium (for US market).

### ABBMS

- Reverse bayonet connector in wide use for cost-effective power & control interconnection in land systems.
- Mil-C-5015 style, approved to VG 95234, conform to BS9522-F0032, Reverse Bayonet Connector.

## PowerConnectors

### ABORD102C/ABORD954 / SBORD277 / SBORD759 / SBORD1000 etc.

- A range of NATO standard inter-vehicle connectors and accessories for slave starting and high power transfer applications.
- These connectors are ruggedized to withstand severe battlefield environments, carrying currents of up to 500 amps at 28 Vdc continuously in temperatures down to -55°C (1000 Amps for 6 minutes).
- Free connectors are available in pre-assembled harness sets at standard in-service lengths. conform to BS9522-F0032, Reverse Bayonet Connector.

### SBORD130 / SBORD133 / "RatTrap"cover (TrailerConnectors)

- NATO-standard connectors for trailer junctions, available in 7 plan forms from 5 to 37 contacts and current ratings up to 92 Amps.
- Ruggedized for harsh environments down to -55°C, the range includes a "Rat Trap" spring-loaded cover for the fixed connectors.
- Free connectors are available in pre-assembled harness sets using curly extending cable in standard lengths.

### ABSP

- Mono pin connection with insulators made of high-impact plastic. Compatible with legacy Quick Release Terminals (QRTs).
- Capable of carrying high current at high temperature.
- Rated at 300A continuous, 1200A for 1 minute at 28Vdc.

### Pola Power™ Single Pole Power

- Whether it's for power distribution for electric drive vehicles or air conditioning units, TT Electronics makes the connection.
- With a finger proof design and quick disconnection, Pola Power™ provides solutions for engineers who require a small, light connector which has the capability of delivering big power (upto 1,000 amps) to applications. Temperature rating from -55°C to +150°C.



## Land Based Defence Vehicles



## Radio/Communications / SoldierConnectors

### ABO5

- ABO5 connectors offer economical lightweight solutions for interconnection needs in commercial and industrial applications.
- These connectors feature 3 pin bayonet coupling or an alternative "push-pull" version in shell sizes 10 and 12 for quick release applications.
- Mil-C-26482 Series 1 style, conforms to BS 9522 F 00017, CECC 75201003, Miniature 3 Pin Bayonet Lock (also Push pull types), Polychloroprene Inserts, -55°C to + 125°C, 1 to 61 contacts, 7.5 to 13amps.

### ABAC

- The ABAC range of connectors are designed around the MIL-DTL-38999 series III range of connectors and are designed to meet the most stringent requirements of the military and aerospace industries.
- The rugged design of these connectors offers a high performance when subjected to vibration, shock and EMI/RFI environments.
- Covers all vehicle signal and data interconnection requirements and conforms to latest General Vehicle Architecture (GVA) interface standards.

### MABAC

The MABAC series is a complete range of miniature products with a MIL DTL-38999 design in order to be compliant with the harshest specification (Vibration, operating temperature, durability, corrosion resistance and EMI shielding).

- The smallest connector available (shell size 3)
- Miniaturization of MIL-DTL-38999 Series I
- Quick bayonet locking
- Integrated backshell:
- Easy to wire and handle
- Compatible with heat shrink boot and braid retention band
- Compliant with overmolding

### MIL-PP

- The MIL-PP push-pull soldier connectors combine lightness with extreme ruggedness and durability.
- Provides easier orientation alignment, improved sealing when mated or un-mated, variable un-mating force and simplified assembly for screened cables.
- Ultra-light weight, compact construction, high density push-pull connector family. Extremely robust for the most challenging field conditions; water tight, excellent EMC properties, and non-reflective finish, make it ideal for all soldier-borne and man-portable defence applications such as.
- The ideal solution for Headsets, Radio communications, Head up displays, PDAs and many more.
- Designed for ease of manufacture to a cable as well as ease of use for the soldier.

### mag-Net®

- Unlike circular barrel connectors, **mag-Net®** is a robust, flush-flat rectangular solution with a self-aligning, automatic magnetic latching system, enabling the easiest one-handed blind mating.
- Specifically designed for (but not limited to) garment mounting; to protective vests or load carriage systems.
- Ultra-light-weight, no-bulk design to maximise mobility.
- Mechanical latching with no moving parts, gives most reliable jam-free connection.

# Global Presence

The world's demand for electronics is increasing as new technologies, with a higher dependence on complex components, are being adopted by a broader customer base. This growth provides TT electronics an assured future as we focus on efforts to deliver excellence in customer service and quality products to these markets. From our strong UK base, the company has achieved truly global reach. We have established technical and manufacturing facilities in strategic countries maintaining the successful formula of close liaison with our customers in all major overseas markets.

In addition, through strategic relationships with Original Equipment Manufacturers around the world, we are now in the enviable position where we gain double benefit - from growth in their markets and from the increase in the electronic content of end products.

Information on TT electronics companies can be found by contacting:-

Head Office:

TT Electronics plc  
Fourth Floor, St Andrews House  
West Street  
Woking  
Surrey  
GU21 6EB  
UK

Tel: +44 (0) 1932 825300

Fax: +44 (0) 1932 836450

Email: [info@ttelelectronics.com](mailto:info@ttelelectronics.com)

Web: [www.ttelelectronics.com](http://www.ttelelectronics.com)



## AB Connectors

AB Connectors Limited  
Abercynon,  
Mountain Ash  
Rhondda Cynon Taff  
CF45 4SF, UK.  
Tel: +44(0)1443 740331  
Fax: +44(0)1443 741676  
Internet:  
<http://www.ttelectronics.com/ab-connectors>  
[connectors@ttelectronics.com](mailto:connectors@ttelectronics.com)

**General Note** TT Electronics reserves the right to make changes in product specification without notice or liability.  
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.