



Miniature power packs for extreme applications

Soldier Modernisation talks to Simon Koehler, Product Manager Circular Connectors at ODU, about how digitization in the military is also placing ever higher demands on connectors

In the military sector and for security companies, the increasing complexity of tasks is also rapidly raising the requirements profile for the technology used. This applies in particular to the reliability of the connector systems used. Weight reduction, robustness, easy handling and fast cleaning can be just as vital as the secure transmission of high data volumes in extreme cases. Civilian rescue forces and applications, such as in mining, agriculture and forestry, also benefit from this development.

A look at ODU's development laboratories shows where the journey is currently headed. With 2,300 employees, the group of companies from Mühldorf in Bavaria is one of the leading international suppliers of connector systems. The expansion of digitally networked systems is currently leading to a sharp increase in data volumes in many sectors. In military and security technology, there are additional central requirements.

On the one hand, this applies to the flawless functioning of resistant materials in extreme and robust environments. Temperature differences, dirt, dust, water, vibrations or pressure must not affect the material used. Future Soldier systems also require heavy-duty, user-friendly, lightweight and space-saving plug-in systems, for example in field radios, portable computers, night vision devices, GPS devices, control units and navigation modules. The growing number of cyberattacks and hacker attacks highlights the importance of security in transmitting even large amounts of data as quickly as possible. In addition, there is the demand for the best possible shielding against external interference.

Robust solutions for harsh environments

In its almost 80-year company history, ODU has repeatedly distinguished itself through its high innovative strength, great flexibility for customer-specific problem solutions and the development of coherent complete solutions. About ten years ago, the Advanced Military Connector (AMC) was the first push-pull circular connector to be used to create

highly robust solutions for various applications in the military sector. They were mostly created by overcoming numerous application problems in joint research and development projects.

The ODU AMC® Easy-Clean, for example, was developed so that soldiers can easily clean their equipment or replace interfaces even during a mission. These highly robust connectors with a non-reflective ruthenium surface can be cleaned quickly and easily, even in the field, under extreme conditions and stress. When the connector is unmated, the contact is flush with the surface of the insulator.

An additional new locking kit offers the option of making the original breakaway function even more secure by means of a screw lock. This improves protection against tear-off and contamination in the extreme environment. Optical and mechanical color coding, which can also be plugged in blind and excludes operating errors, ensures maximum reliability in use.

Virtual reality and complex situation images

In defense and security technology, it is becoming increasingly important to transmit as much data as possible reliably and without interference in the shortest possible time. This applies both to the real-time transmission of video sequences and to the display of complex situation images. Stably functioning technology is also an important factor when training soldiers or highly specialized technicians via augmented or virtual reality programs. With its ODU AMC® High-Density connector series for high-speed data transmission, ODU opens up the possibility of combining many common data transmission protocols at rates of up to 10 GB and transmitting them without interference.

Miniature power packs withstand high loads

With a diameter of 10 to 15.3 mm and a pole density of up to 27 contacts in three sizes, high performance is combined with minimal space requirements. The waterproof and salt-spray resistant connector (IP6K8), which is also designed



for temperature differences from -51 °C to +125 °C, offers various inserts for signal, power and data transmission.

In addition to the lack of space, manufacturers of military equipment in vehicle use also have to deal with extremely strong vibrations time and again. In response to this, ODU has developed a connector with screw locking and locking mechanism.

The protection of data against unauthorized external access by standard devices is also becoming increasingly important. ODU has therefore developed a waterproof, durable and portable 64 GB Flash Drive data storage device with twelve poles for use in harsh environments. It can be used to securely download and upload data for defense systems, computers or other embedded devices that operate independently of a static infrastructure. In addition to the military, this also applies to heavy machinery and equipment in the fields of agriculture, forestry, waste, mining and construction. Data protocols in USB® 3.2 Gen 1x1 format can be transferred.

Big Data and complex networked systems

The advent of artificial intelligence, big data and complex networked systems calls for expertise at a very high technical level. This now combines military technology with a range of civilian applications. An in-house research department with a test center, many years of market experience with individually developed assembly solutions, and the high level of vertical integration in its own operations enable ODU to drive development on the technological front in close cooperation with customer requirements.

If required, ODU can put together the complete connector package, including plastic overmolding, bend protection and the appropriate pole pattern for your application. This means that everything is available from a single source. ■

More information: www.odu-connectors.com/odu-amc

***The author:** Simon Koehler is product manager for circular connectors at ODU. His main focus is on expanding the product portfolio and developing future-proof solutions in the field of military and security applications. Through his own experience in the military, he has seen first-hand the special demands placed on people and materials. It is precisely these that he incorporates into the development of new system solutions. For him, the trend towards cross-platform and highly networked applications that are exposed to particularly harsh environmental influences is still unbroken and will play a major role in new developments in the future.*

ODU AMC® Series T – three locking options in one connector for additional security

The latest connector series launched: the "T" stands for 3-in-1 or the "Triple". Three locking options fit on one connector or receptacle part: Push-Pull, Break-Away or Thread-Lock. Additional security is provided by the built-in trapezoidal threaded locking.

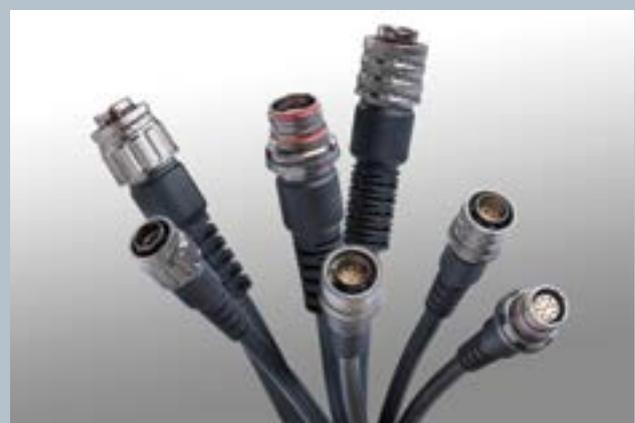
The new ODU AMC® Series T connector is even more rugged, sealed, proven reliable and offers unlimited possibilities. Following the motto everything is possible, the customer chooses locking type, cable connection, size, insert and number of contacts.

Its strengths:

- high vibration resistance
- waterproof according to MIL standard 810
- Sealed mechanical area, thus completely protected against water, dirt and dust
- Easy to handle and install
- Suitable for MIL backshell and MIL crimp contacts

The ODU AMC® Series T connectors are available in two sizes and are compatible with standard backshells.

The ODU AMC® Series T is suitable for use in military, security and communications applications. The connectors are field terminable and thus time saving. The individual contacts can be replaced or repaired in the field. In addition this connector offers protection against water, dirt and dust.



Characteristics at a glance:

- high performance under vibration
- protection class IP6K9K, immersion capability 1m
- high flexibility: 1 receptacle, 3 locking options
- test methods acc. to MIL-DTL 38999
- crimp contacts according to MIL standard
- reverse gender
- high temperature range: -65°C up to +175°C
- highly robust
- sealed locking area
- isolated mechanical area and one piece housing
- backshell opportunity
- smaller than competitive 38999 products
- optimized assembly process - quick & easy
- full mate indicator
- mechanical and coloured coding