ODU ROB cylindrical connectors for use with robots in accordance with flammability class UL 94-Vo

Connectors for robotic systems: Compact multimedia connectors are the trend

The number of robotic applications with changing application profiles for robots and attachments is growing steadily. More and more frequently, the robots are required to change the tool a number of times during a processing step - ROBOTWORLD consequently spoke with Günter Rohr, Director Strategic Markets at ODU, about the requirements, materials and future trends.

ROW: **You offer various connection systems for robotics. What is currently possible here with standard solutions, and what are you planning for the future?**
G.R.: We manufacture a multitude of connector systems that are used in robotics. We see two basic distinguishing features here: automatic insertion and manual insertion. Both have their place in the world of robotics.
Our ODU ROB, ODU DOCK, ODU-MAC and ODU MINI-SNAP product lines, each in the appropriate construction, are available for the "automatic insertion" application area. The design of these connectors has to be adapted to the conditions found in automation. A high number of mating cycles is very often found in the requirement profile in this area. We also carry connectors with single contacts and diverse cylindrical connector series for "manual insertion". The number of mating cycles here is usually far below the requirements of automated systems.

ROW: **Do you also offer connection systems that allow various media to be coupled and consequently combined in one connector? What are the advantages for the users?**
G.R.: ODU-MAC and ODU MAC LC have been designed as modular connection systems. But at the same time, these connection systems are not restricted to just the transmission of electrical signals and power. In addition to data transmission using coaxial lines, optical fibers and shielded, multipolar leadthroughs, it is also possible to integrate compressed air or other media couplings. The advantages for the users are obvious: one modularly designed connector handles the job of many individual connectors, saving space, time and money. Developers can configure "their" interfaces without having to accept compromises.

ROW: **Just what role do multimedia connection systems play on the market?**
G.R.: The complexity of the systems is resulting in additional and stricter requirements that the interfaces must satisfy. The "modular" system here should likewise continue to expand, and it should offer a multitude of options. We are able to make a contribution here, and there is also basically no problem with having a number of media in one connector. We do, however, have to continue to comply with the regulations and standards. Our developers have a great deal of experience and are able to satisfy many of the customers' requirements through skillful combinations in the connection system.

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ROW: **Can the connectors also be expanded modularly, in order to allow more/less media to be used under changing applications?**
G.R.: ODU-MAC und ODU MAC LC offer the greatest flexibility in this regard. The configuration can be constructed in various housings, according to the customers' choices, and the contacts can be assembled and removed in just seconds. The individual modules can be freely strung together, combined and even converted after the fact.

ROW: **Which special features distinguish a connector designed for robotic applications from others, such as for automotive or military technology use?**
G.R.: With manual insertion, there are not very many differences, but automatic insertion requires certain general conditions. Automatic testing equipment with integrated robotic system often calls for an extremely high number of mating cycles, perhaps many 100,000 cycles/year. In this case, a quick-change head system is advisable, because this makes it possible to replace the insertion side within 1 minute without any recabling being necessary.

ROW: **Does the customer choose from a standard program or do you also develop customized connectors? And, if you do, could you give us a few examples?**
G.R.: We are a specialist for customized connectors. Made-to-measure is the better choice in many cases. For example, wherever possible, we use our standard combinations as the basic structure for our design, so that we can then offer the optimal solution for the individual customer requirements with special models. In special machine construction, for example, pick-and-place PCB assembly machines, the guide system must satisfy special requirements. In medical technology there are requirements regarding the materials, such as non-magnetic contacts, and regarding the housing construction. Design and function have to be adapted to the end device. Complete docking plates have already been equipped with various connection systems using the possible combinations offered by the various connector technologies from ODU.

ROW: **What challenges in robotics do you see connector manufacturers confronting in the future? And how will your company be reacting to them?**
G.R.: Faster, smaller, lighter, more flexible, and naturally more economical – these are the challenges of the future. And so ODU will be increasing its involvement with developments in robotics with a separate business unit for strategic markets. The goal is to work with the customer at the earliest possible time to develop the right products for the future and bring them on to the market. It is important to listen carefully and understand where the problems are for the developers and also for the people in production.

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Figures: ODU

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The main plant in Mühldorf a. Inn (Germany)

- Founded by Otto Dunkel in 1942
- Sole-supplier to over 100 companies around the world
- Each year ODU receives around 30 development orders from all around the world
- More than 600 employees, including 65 trainees, in Mühldorf am Inn
- In Mühldorf - all technologies under one roof: Design and development, tool manufacture, stamping, turning, injection, finishing, assembly automation and cable assembly
- More than 300 employees in seven subsidiaries in France, Scandinavia, the UK and the USA and two subsidiaries in China and Romania
- Investments of more than 30 million euros in the last 5 years
- The business is privately owned and works without borrowing
- Capital stock: 5 million euros
- Continuous growth during recent years
- Quality assurance: Certification to ISO 9001, QS 13485:2003 + AC:2007, furthermore VDE, UL, CSA, VG, Mil.
- ODU Automotive GmbH certified to ISO/TS 16949

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Short CV for Günter Rohr

1982 – 1986 Training as a toolmaker at the company Kaspareth in Schwindegg
1991 – 1993 GBS technician school in Munich, mechanical engineering
1993 – 2004 Design & development, product management, cylindrical connectors, ODU Mühldorf
2004 – 2010 Director Sales
since 2010 Director Strategic Markets

ODU-MAC - connector for robots for very high numbers of mating cycles

ODU DOCK - rugged cylindrical docking connector

ODU Mini-SNAP-miniature cylindrical connector with push-pull locking