

M12 ETHERNET CORDSETS FOR HIGH-SPEED COMMUNICATION IN SEMICONDUCTOR MANUFACTURING EQUIPMENT APPLICATIONS

Specialized solutions to meet the demands of Fast and Gigabit Ethernet protocols for semiconductor manufacturing equipment OEMs

Original equipment manufacturers (OEMs) who design and build semiconductor manufacturing equipment (SME) have to deliver reliable solutions to meet the demanding requirements of these critical applications. This complex machinery must operate in cleanroom environments — requiring reliable components that do not compromise on quality and that can be tailored to the specific needs of the customer.

As semiconductor manufacturing equipment becomes larger and more complex, it includes more and more connected devices that need to be able to communicate with each other. As a result, the expectations for industrial Ethernet speed and data rates for SME applications are increasing. To meet these demands, more SME OEMs are using high-speed Ethernet protocols — Gigabit EtherCAT protocol is one example. These Ethernet protocols enable 1 Gbps to 10 Gbps speeds to meet the needs for SME applications, helping to ensure fewer data package losses and offering low-latency communication for faster data transfer.

M12 Ethernet Connectors

Reliable M12 connector systems provides solution that includes connectors, IO modules, and cable assemblies that are capable of meeting requirements of up to 10 Gbps. TE Connectivity (TE) solutions work with Ethernet protocols to deliver gigabit speeds and reliability in SME applications.

Key features of the M12 connector product portfolio:

- M12 D-codes (DIN EN 61076-2-101), X-coded (IEC 61076-2-109), RJ45 and Industrial Mini IO (IEC 61076-3-122) connectors in different versions are available to serve various customer needs.
- Cordsets exceed CAT 6A performance and can therefore support up to 10 Gbps (depending on connector type).
- Traceable components provides for “copy exact” principles.
- Systems offer high variability in connectors, cables, cable lengths and labeling options.
- Clean room-ready cleaning and packaging with Class 7 clean room is available.
- End-of-line testing includes data tracing for 10 years.
- Global footprint to protect the supply chain.



D-coded



X-coded



Mixed cordset



RJ45

Extensive Design Support Offers High Level of Control and Customization

SME OEMs can count on design support utilizing TE's extensive design-to-manufacturing expertise. This allows greater product customization of M12 cable assemblies to best meet the specific requirements and needs of individual customers. Factors that can affect specification and design include the physical footprint and space available as well as data speed requirements.

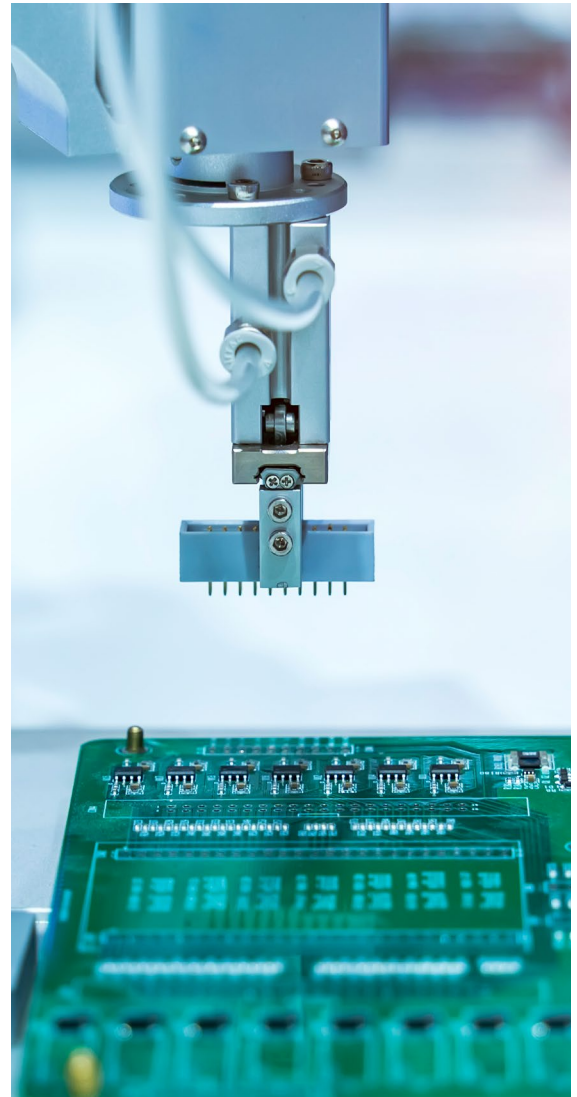
TE's engineering support includes elaborate integrity testing to help ensure quality management and repeatability in design. The end-of-line testing with data tracing for 10 years on every component produced provides a record of testing and quality, and it allows OEMs to create the same parts using those specifications.

Providing the High-Speed Connectivity and Reliability OEMs Require

TE is a reliable, trusted supplier of the specialized connectivity solutions that semiconductor equipment OEMs need. Our tailored, individualized solutions use prequalified building blocks so OEMs can help ensure an exact fit on components without compromising on quality.

Our M12 connector/cable assembly solutions can help:

- Reduce data loss and micro downtimes, thanks to design-to-manufacturing and qualification experience.
- Significantly reduce the need for additional cleaning processes at the installation site with clean room-ready cordsets — saving time and cost.
- Support higher bandwidth needs to meet the requirements of up to 10 Gbps.
- Provide analysis of field phenomena even after years in operation thanks to extensive testing during product design and engineering.
- Optimize the supply chain, enhance delivery speed, and reduce CO₂ emissions in transport with TE's wide manufacturing footprint.



Connect With Us

TE's products support reliable performance and fast data connectivity in semiconductor manufacturing equipment: helping OEMs and their foundry customers save time and money and get the specific equipment solutions they need. Visit te.com/support or explore the [semiconductor manufacturing equipment portfolio](#) to learn more.

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