

STX M12x1

Application Note

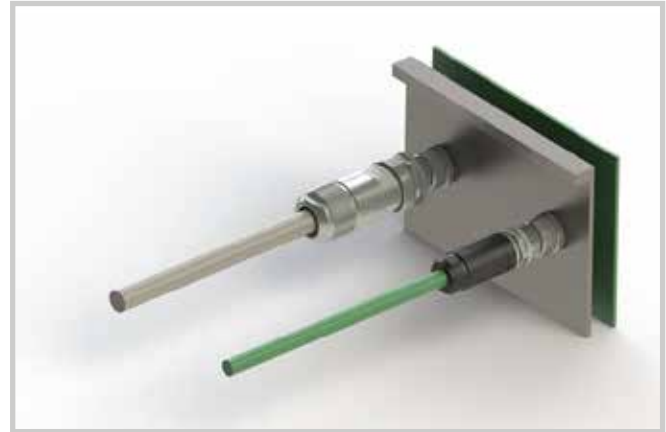
Robust connector for Ethernet applications



The M12 has long proven itself to be a robust and compact connector with screw lock, becoming a dominant connector for applications in the industrial environment. Originally designed for connecting sensors to factory automation devices, it has become the universal connector for applications in harsh environments due to its various styles and coding options.



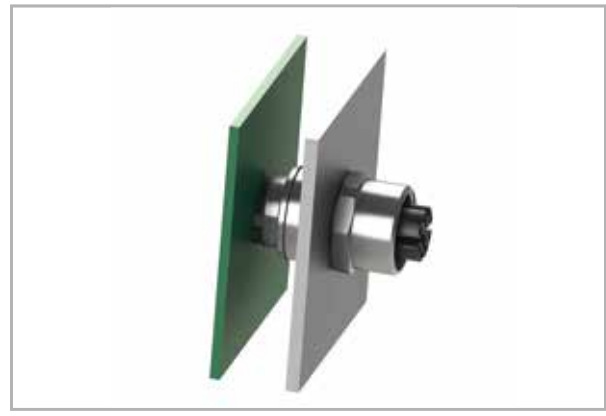
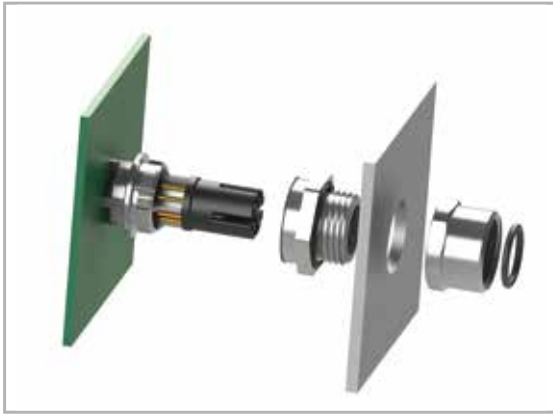
STX M12x1 cable plug X-coded



The M12's evolution is similar to the RJ45's which started as a connector for telephony and became the dominant connector for office cabling and IP security devices. Of course, the RJ45 can be found in industrial applications as well, but it's not always the best choice in harsh environments. The design of the RJ45 offers no protection against dust and moisture. In such cases, an additional dustproof and watertight housing like Telegärtner's TOC is needed.

But not everywhere is sufficient space available for an additional housing, a fact exacerbated even more by the current trend towards miniaturisation in factory automation appliances. With the STX M12x1 Telegärtner offers a robust, compact connector for the use in harsh environments for applications requiring data rates up to 10 Gbps.

The STX M12x1 is the optimal choice for industrial communication networks according to IEC 61918 Ed 3.0, for machine building and plant construction, in industrial manufacturing, in automotive and in food processing. It can be found on cameras in manufacturing and surveillance applications as well as in passenger information systems.



STX M12x1 bulkhead socket X-coded back mounting

There are two different types of M12 connectors used in Ethernet applications today:

D-coded M12 connectors according to IEC 61076-2-101 have four pins and can be used for data rates up to 100 Mbps like in PROFINET applications.

X-coded M12 connectors according to IIEC 61076-2-109:2014 have eight pins and can be used for higher data rates up to 10 Gbps. They meet the requirements of Category 6A according to ISO/IEC 11801.

Both M12 types are UL listed giving significant benefits where international projects are concerned. With the wide temperature range from -40 °C to +85 °C they can be used in a huge variety of applications.

Both types can be used with Power-over-Ethernet+ according to IEEE 802.3at using the horizontal cabling to power devices with up to 30 W.

Telegärtner offers an extensive range of M12 product solutions for a huge variety of applications like one- and two-piece bulkhead sockets for front or back mounting, couplers, pre-assembled cables M12 to M12 (plug to plug as well as plug to socket), cable assemblies terminated at one end only, and hybrid patch cords with M12 to RJ45.



Connecting cable STX M12x1 male to female



Connecting cable M12x1 to RJ45 plug (MFP8)

Field assembly connectors are also available. Their integrated wire management at X-coded type ensures quick and easy installation without any need for special tools.



STX M12x1 by Telegärtner: robust and compact

Benefits

- dustproof and watertight, IP67 rated
- robust die-cast housing
- 360° shield contacting
- vibration protection
- full metal shield between pairs of wires
- anti-twist protection with coding
- X-coded: suitable for solid and stranded wires
- easy to install without the need for special tools