

Ethernet in the Automotive World



Driving the Automotive Industry

Ethernet systems are an increasingly common feature of today's generations of vehicles, making it possible to network control devices and sensors – one of the keys to advancing innovations in the areas of driver assistance systems such as LiDAR, high-resolution displays, autonomous driving, 4K cameras, and infotainment. The development of automotive Ethernet has resulted in two official IEEE standards: 100BASE-T1 (100 Mbit/s, based on BroadR-Reach technology) and 1000BASE-T1 (1 Gbit/s). One of the fundamental tasks relating to these has involved determining limit values for connector and cable components, plus the measurement processes associated with them, working on the basis of the requirements for the channel defined as a whole in the IEEE standard. Rosenberger played a leading role in the standardization process on both committees, contributing its expertise in automotive connector design, signal integrity, and EMC.

From a Single Contact to a System Solution

Industrial sectors largely agree that systems based on individual contacts combined with twisted-pair cables are not enough to satisfy the quality requirements of transmission systems operating at up to 600 MHz. To create an alternative solution, Rosenberger developed the MTD® (Modular Twisted-Pair Data) and H-MTD® (High Speed MTD®) contact system for shielded and unshielded Ethernet transmission. Currently suitable for use at up to 20 Gbit/s, it covers the transmission channel, connectors, cable, and transition to the circuit board.

Mechanical Properties

The MTD® and H-MTD® innovation has made it possible to create a space-saving, lightweight, and sturdy automotive connection system that lives up to both mechanical and environmental requirements. As well as this, it features a scalable number of slots that can be not only mechanically coded, but also color-coded.

Electrical Properties

The electrical design process optimized the fit, symmetry, insertion loss, and crosstalk with a view to achieving the best possible electrical features within a small space.

Assembly for Varying Automation Levels

Assembly is another key factor in this connection system alongside its electrical and mechanical attributes. The MTD® and H-MTD® system is able to cope with a range of automation levels in order to meet customers' exact needs.

Contact

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