PRESS RELEASE

From Copper to Fiber Optics: Rosenberger Sets New Standards for In-Vehicle Data Communication with GFC®

With a forward-looking fiber-optic standard supporting data rates of over 50 Gbps over transmission distances of up to 40 meters, Rosenberger is marking the next step in evolution

Fridolfing, October 1, 2026 – Automotive data communication is on the verge of a paradigm shift: Copper-based connections are reaching their physical limits—fiber optics takes over. Rosenberger is driving this technological transformation and, with GFC® (Glass Fiber Connector), presents a forward-looking fiber-optic standard for the automotive sector. The system enables data transfer rates of over 50 Gbps over distances of up to 40 meters, is fully IEEE 802.3cz-compliant, and marks the next evolutionary step for automotive applications—complementing proven coaxial and differential copper connection solutions.

The growing demand for in-vehicle data transmission is increasingly pushing established copper-based connectivity technologies to their limits. High-resolution camera and display systems, autonomous driving, and centralized vehicle architectures are driving the required bandwidth to unprecedented levels. As a result, both the volume of data and the requirements for signal integrity and electromagnetic compatibility are rising. Optical connections are ideally suited to meet these challenges. They offer virtually unlimited bandwidth even over long distances, excellent EMC performance, and low latency.

Robust and designed for high-volume production

GFC® was specifically developed for use in harsh automotive environments in accordance with ISO 24581. Furthermore, it also meets the mechanical and environmental requirements of ISO 8092 and DIN 70214, the successor standard to the former USCAR-2 and LV 214. The system has also successfully passed the Arizona dust and water tests.

The solution’s high resilience to environmental influences is achieved, in part, through the expanded-beam principle. In this process, light is transmitted across the transition between fibers via an enlarged optically effective surface. This significantly reduces the impact of dust and other contaminants, enables a wear-free connection of the optical fibers, and prevents scratches on the fiber end faces. As a result, the technology is also suitable for demanding environments.

GFC® supports OM3 and OM4 multimode fibers at 850 nm and 980 nm. A key advantage is its complete protocol independence. In addition to Ethernet, PCIe-based applications, for example, can also be implemented, enabling a high degree of flexibility for future vehicle architectures. The connector system is available as a straight cable plug, a straight cable coupler, and an angled PCB connector. At the same time, it is designed for highly automated manufacturing and high-volume assembly.

For zonal vehicle architectures and data-intensive applications

GFC® is specifically designed for future zonal vehicle architectures. Potential applications include backbone connections between central computers and zone controllers, data aggregation and forwarding for central processing, and high-resolution camera and display connections. It also

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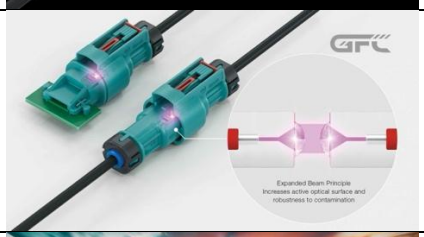
supports the implementation of data redundancy between two central processing units and applications with longer transmission distances.

In addition to automotive applications, GFC® is also suitable for heavy-duty applications—such as in mining, trucks, trailers, and agricultural machinery—due to its robustness.

“With GFC®, we are setting a fiber-optic standard that combines the performance of optical data transmission with the robustness and integration capabilities required by automotive applications. Thanks to our decades of expertise in fiber-optic technology—proven in data centers worldwide—we can adapt established network technologies into automotive-qualified solutions and support OEMs and Tier 1 suppliers from the concept phase through to series production,” says Sebastian Mysyk, Director, Product Management Automotive Data Connectors at Rosenberger.

For more information, visit:
https://www.rosenberger.com/gfc

Images (free to use with credit: “Image: Rosenberger”):

	GFC® - Fiber-optic connectors for stable data transmission at speeds exceeding 50 Gbps.
	The expanded-beam principle transmits light across an enlarged optically effective area—for maximum resistance to contamination and a wear-free connection
	GFC® is a high-performance fiber-optic connector designed for use in harsh automotive environments.
	The GFC® (Glass Fiber Connector) connector system is the forward-looking fiber-optic standard for safety-critical and mission-critical applications in vehicles.

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About Rosenberger

Rosenberger is a globally renowned manufacturer of electronic components and systems, recognized for cutting-edge technologies, engineering excellence, and uncompromising quality. Headquartered in Germany, the Rosenberger Group operates worldwide with numerous sales and production locations, offering a broad range of standardized and customized connectivity solutions in RF, high-voltage, and fiber optic technologies.

Rosenberger ensures the reliable transmission of signals, data, and power in the most demanding application areas. Leading high-tech companies across sectors such as mobile communications and telecommunications, industrial measurement technology, automotive electronics, medical and industrial electronics, data centers, and aerospace rely on Rosenberger products for their precision and outstanding reliability. The CNC machining division manufactures precision parts for a variety of industries, including the automotive and commercial vehicle sectors, shipbuilding, and conventional mechanical and plant engineering.

Since its founding in 1958, Rosenberger has been family-owned and currently employs more than 15,500 people worldwide. The company's employees are known for their dedication, innovative spirit, and commitment to quality, all firmly rooted in the values of a traditional family business.

For more information, please visit: www.rosenberger.com

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