

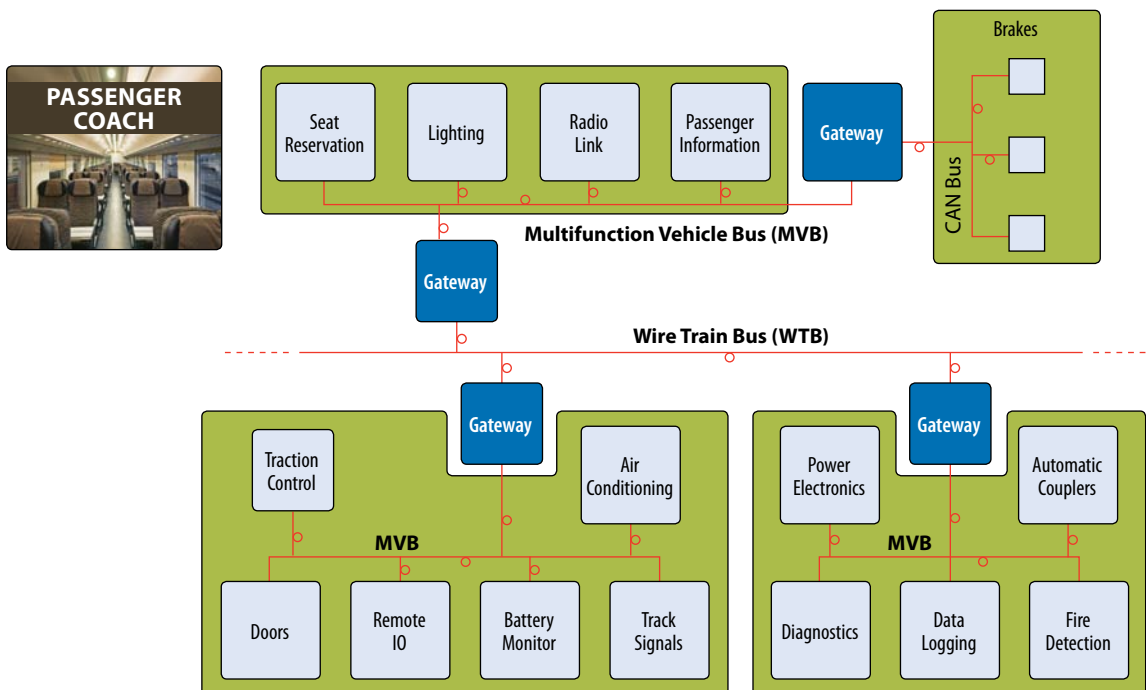
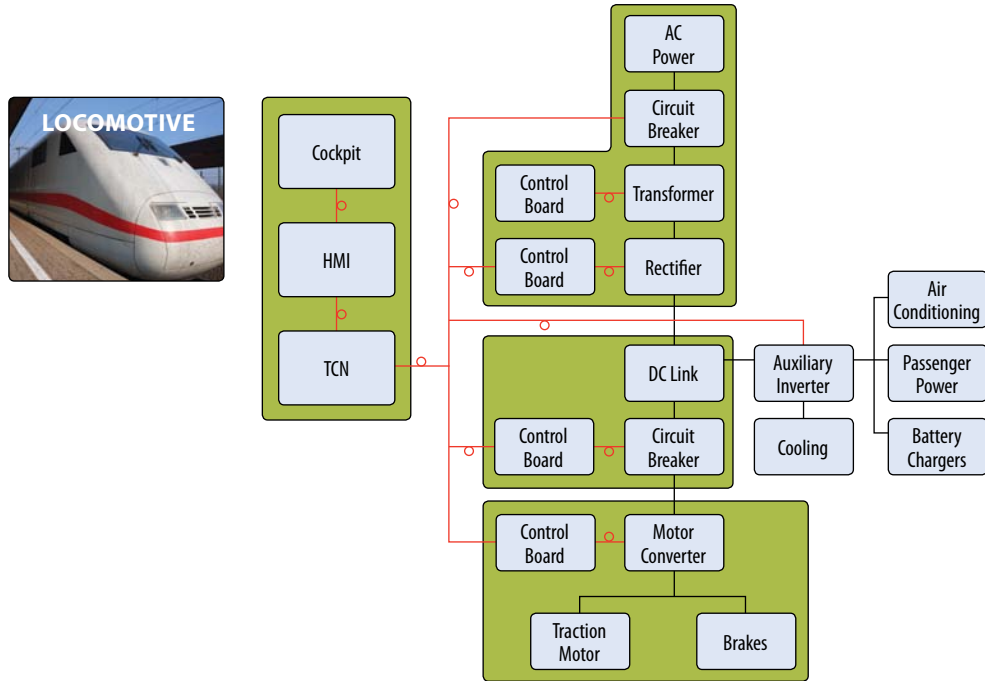
SOLUTIONS .

for **ELECTRIC** and
DIESEL TRAINS



Optical Solutions for Electric and Diesel Trains

Firecomms fiber optic solutions deliver on the harsh demands of the electric and diesel train industry, ensuring the integrity of control, signalling and passenger data not be compromised by the harsh environment in which these applications operate. Firecomms has developed our light sources and communications ICs with the deep understanding of the stresses and strains placed on equipment in electric and diesel trains. Our light sources use Resonant Cavity LED (RCLED) technology to ensure the strongest optical output at the lowest currents while preserving stability after decades of operation. Our robust receiver topologies guarantee error-free transmissions every time.



Power, Control, Communicate

Power for electric trains, which comprise the main locomotive responsible for power and propulsion systems, and passenger coaches, is typically provided from the main grid or the on-board diesel engines. The propulsion systems are based on highly efficient power converters to deliver power suitable for various motors, brakes and other on-board electrical systems. Due to the extremely high voltages and electrical noise generated in these areas of the train, fiber optic links are widely used to ensure reliable, safe operation of the power generation unit.

To withstand the stresses of operation in these challenging environments, Firecomms offers a range of robust inter-connect solutions for use on Plastic Optical Fibers (POF) or Plastic/Polymer Clad Silica (PCS) fibers for extended distances.

Firecomms DC-1 MBd and DC-5 MBd transmitters and receivers overcome the significant electromagnetic interference (EMI) challenges within the locomotive area to guarantee error-free control of rectifiers, VARs, and high power transformers. Equally, to ensure galvanically-isolated equipment control, Firecomms DC-10 MBd

components transmit clean, noise-free switching signals to fire high power IGBT/IGCT semiconductors used in auxiliary inverters or motor converters for traction and brake control systems.

Whether in the locomotive or within passenger coaches, data is typically transported over the Multifunctional Vehicle Bus (MVB). Governed by the IEC-61735 standard, this bus operates at 1.5 Mbps and transmits all passenger information, and control and diagnostics systems over various protocols such as RS485 or CAN. Fiber optic communications is used in applications where protection is needed from EMI or high potential circuits. In these applications, Firecomms DC-10 MBd transceivers are ideal for implementations where POF or large core glass fibers are utilized for extended distances.

In the transition to IP-based communication standards, equipment and network designers are increasingly implementing Ethernet based connectivity solutions. For this purpose Firecomms offers industrial-grade Fast and Gigabit Ethernet fiber optic transceivers in popular LC and OptoLock® form factors.

Flexible Solutions from Firecomms

To ensure compatibility and versatility, Firecomms offers the widest choice of fiber optic solutions with our range of transmitter, receiver and transceiver products in three different connector configurations: OptoLock®, LC and RedLink (compatible with the Versatile Link product range from Avago Technologies):

- Industrial Ethernet Transceivers (100 Mbps-1 Gbps)
- Analog Transmitters & Receivers
- Industrial RedLink Transmitters & Receivers (DC-1/5/10/50 MBd)



OptoLock®



LC Connector



RedLink Connector



Fiber Optic Communications for High Speed and Urban Transport Applications

Firecomms products with Plastic Optical or Plastic Clad Fiber (POF/PCS) links offer many advantages in high speed, electric and diesel locomotive applications:

EMI/RFI immunity ideal for harsh and noisy environments, such as high voltage converter and traction control or MV bus communications

Galvanic isolation between transmitter and receiver, ideal for complying with, or extending creepage and clearance distance requirements

Visible spectrum operation enables eye-safe, fast troubleshooting

Low power consumption, transmitters capable of operation at 3-4mA

Durable, flexible and lightweight

Resilient to bending and vibrations

High reliability for extended machine uptime

Industrial temperature in range of -40 to +85° C

Reduced maintenance cycle time provides up to a 20-year lifecycle on transceivers and cables

Simplified field installation for easy termination of large core optical fibers in custom distances

GLOBAL TECHNOLOGY.

Firecomms is a global leader in the provision of fiber optic solutions and optical transceivers, skillfully combining state-of-the-art compound and silicon semiconductor technology with inventive small-scale integration. A global multinational company, Firecomms is jointly headquartered in Cork, Ireland and Tongxiang, China with additional facilities in the USA, Japan and Southeast Asia. Together with a far reaching network of representatives and distribution channels, Firecomms serves its global clients across a range of power and energy, industrial, transportation, medical and consumer markets.

Firecomms leverages its deep knowledge across our multi-disciplinary teams in developing the broadest range of fiber optic transmitters and receivers specifically suited to our target markets. With an emphasis on world class performance in reliability, Firecomms utilizes internally developed market leading Resonant

Cavity LED (RCLED) photonics with ultra low power CMOS drivers in our transmitters. Together with robust receiver IC architectures, Firecomms products enable ultra low power fiber optic links, from DC up to Gigabit data rates, to ensure extended lifetimes in the harshest of environments.

Ease of connectivity and installation in the field while maintaining robust, reliable interconnects across the industrial temperature range is at the forefront of Firecomms connectivity solutions. Our most popular product families are the patented OptoLock® for the quickest of terminations with bare Plastic Optical Fiber, the well recognized LC connector ratified by the IEC for use with POF and PCS cable assemblies, and our RedLink range of products, which are compatible with the universally known Versatile Link products from Avago Technologies.

Firecomms maximizes design freedom and production flexibility for customers through our Ireland based R&D Center of Excellence, with assembly at our world class production facility in Tongxiang, China. By maximizing the internal sources of ICs and photonics, coupled with internal production facilities, Firecomms maintains a highly competitive yet flexible supply chain to meet our customers' demanding needs.

With our long history in the fiber optic industry, Firecomms continues to meet and exceed the needs of our customers through our worldwide team of field application engineers who consistently provide local service and novel, innovative and price-conscious fiber optic solutions.

For details on Firecomms and our products, please visit our website at www.firecomms.com or contact us through any of our worldwide locations.



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