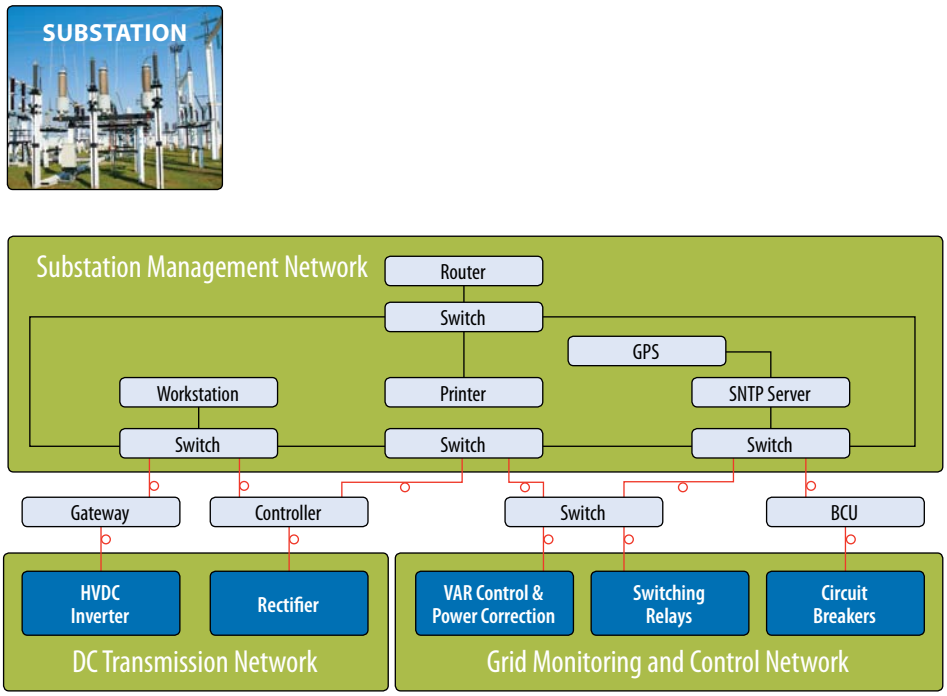
SOLUTIONS for SMART GRID AUTOMATION

Firecomms

Optimized Smart Grid Solutions

Firecomms fiber optic solutions deliver on the communication needs in the modern smart grid environment, meeting the needs of both utility managers and equipment designers. As utility managers employ the latest techniques to measure and optimize grid load factors to economically manage electricity demand and supply, equipment designers must ensure that the reliability of control and protection information within the modern transmission and substation network 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 needs of smart grid transmission and distribution networks. 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 transmission every time.



Protect, Control, Sense

Today's transmission networks require intelligent monitoring and control of the substation environment. Due to its immunity to the significant electrical and electromagnetic interference within these environments, fiber optic communications can effectively ensure reliable data transfer from and within the substation network.

Firecomms DC-10 MBd fiber optic transmitters and receivers transfer control and feedback data to IGBT/IGCT semiconductors within the HVDC inverters.
To provide isolation within the rectifier voltage monitoring circuits, designers can take advantage of Firecomms DC-5 MBd transceivers over Plastic Optical Fiber (POF) for the short distances required.

Modern day substation automation requires control of various elements within the network—examples of which include control of circuit breakers and switching relays. Due to the very high voltages and currents involved, together with significant EMI, POF or Plastic/Polymer Clad Silica (PCS) fibers are used to transfer information to and from the control center. Over these fibers, various proprietary and standardized bus protocols such as CAN, RS485 or LON are employed at data rates in the order of a few MBd. Firecomms DC-10 MBd and DC-50 MBd transceivers are designed to operate with these fibers.

In order to maximize the efficiency of the grid network for utilities and substation operators several data points are measured throughout the grid on line-mounted sensors or from users' homes and factories using smart meter feedback. These measurements are used to optimize substation VARs and power correction circuits. At several points throughout the substation Intelligent Electronic Devices (IEDs) conforming to IEC-61850 communication standards monitor and control the VARs and circuits. In this application, it is becoming increasingly common to utilize IP communications protocols for which Firecomms' Fast Ethernet range of 125 Mbps or Gigabit transceivers make an ideal fit.

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 Smart Grid Automation Applications

Firecomms products with Plastic Optical or Plastic Clad Fiber (POF/PCS) links offer many advantages in smart grid and substation automation applications:

EMI/RFI immunity ideal for harsh and noisy environments, such as high voltage rectifier control and HV DC inverters and power supplies

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

Firecomms

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.

info@firecomms.com
www.firecomms.com

Firecomms

Europe
Cork, Ireland
+353 (21) 454 7100
saleseu@firecomms.com

China
Tongxiang, Zhejiang
+86 573 88989916
salescn@firecomms.com

Americas
Austin, TX
+1 (512) 328-0300
salesam@firecomms.com

Japan/Korea
Yokohama, Japan
+81 45 514 9139
salesjpkr@firecomms.com

RoW
Cork, Ireland
+353 (21) 454 7100
saleseu@firecomms.com