



COMMUNICATION
NETWORKS

HITACHI
Inspire the Next



ETL600 R4

Universal Digital Power Line Carrier

Communications solution for reliable operation and enhanced protection of the grid.

Power Line Carrier (PLC) systems have been used for decades by electric power utilities to transfer vital information for the operation and protection of the electric power grid. Despite the widespread deployment of optical fibers in recent years, PLC systems continued to be used as a cost-efficient and reliable solution for mission-critical services, either as a main communications medium where installation of optical fibers is too expensive, or as a backup solution for the most important services that are normally conveyed over broadband media.

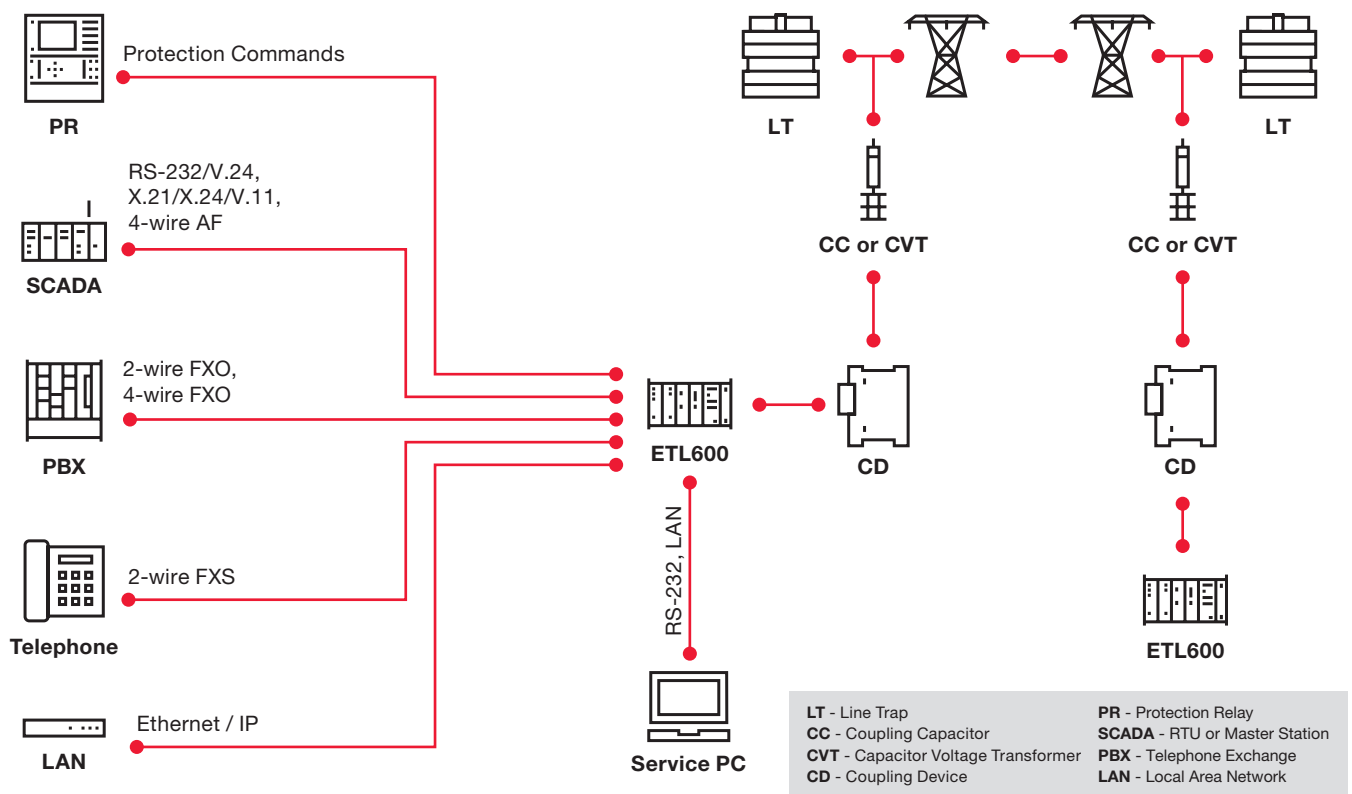
In recent years, technology advances have brought new PLC applications, in particular those that provide higher bandwidth provisioning and integration into digital networks. Functional enhancements have also been made, as well as improvements in flexibility and ease of use. These new capabilities – together with PLCs economic and reliability advantages – have led to a revival of PLC systems worldwide.

With the ETL600, Hitachi Energy continues its successful line of PLC products, supporting all applications from legacy analog to the most advanced digital solutions, based on a future-proof hardware platform that will stand the test of time.

ETL600 release 4 (R4) preserves all of the proven functionality of previous releases – there are thousands of units in operation worldwide – and offers a new range of features, making ETL600 the perfect solution for demanding communications infrastructure.

ETL600 incorporates the latest advancements in PLC technology and has been designed to protect the customers' investments by ensuring a seamless transition from today's to tomorrow's PLC solutions with a smooth migration concept. No matter whether your focus is analog or digital applications, ETL600 with its universal and flexible system architecture provides the solution to your communications needs.

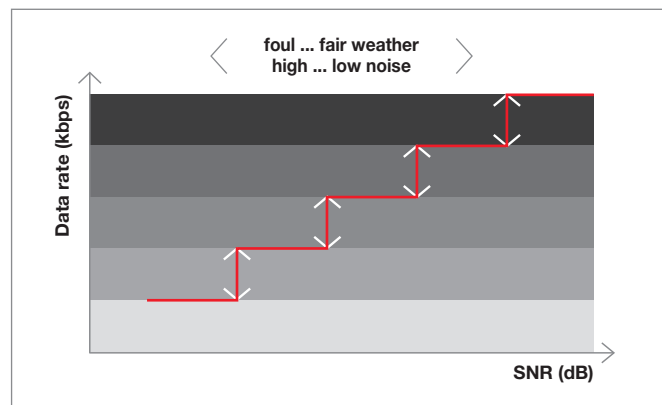
ETL600 system overview.



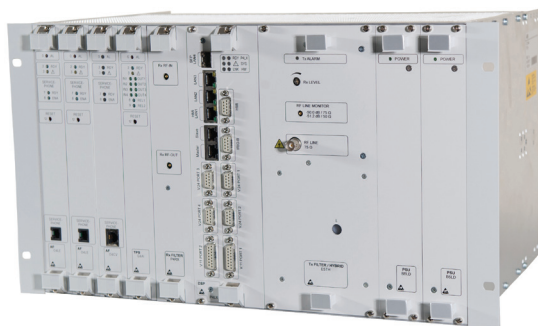
Features at a glance.

- **Analog and digital operation in the same platform,** software configurable (up to three traditional analog channels of 4 kHz and/or 1 digital channel, covering a maximum bandwidth of 32 kHz)
- **Maximum transmission speed and bandwidth flexibility,** data rate of up to 320 kbps, nominal bandwidth from 2 to 32 kHz, carrier frequency range from 24 to 1000 kHz
- **Automatic transmission speed adaptation,** for maximum data throughput and link availability (five userdefined steps, data rate depending on the prevailing line condition)
- **Integrated adaptive multiplexer,** up to 10 channels for serial data and Ethernet/IP traffic, up to 16 channels for compressed voice communications
- **One or two internal teleprotection units,** each with four independent commands (with adaptive signal evaluation to ensure the shortest possible transmission times)
- **Integrated programmable modems,** for narrowband to wideband operation (with adaptive equalizer and automatic jammer suppression, for optimum long-term performance)
- **Up to four integrated LAN ports,** for equipment configuration and to forward Ethernet/IP traffic over the PLC link (internal switch or IP router, VLAN support, IP header compression)
- **Digital transit of compressed voice channels,** interconnection of up to five ETL600 terminals in a substation, i.e, channels can be forwarded in one out of four possible directions (lower delay, unchanged speech quality)
- **Point-point and point-multipoint operation,** with port and channel sharing for most efficient use of scarce bandwidth resources

Dynamic Speed Adaption (DSA) – the key to high link availability.



- **Windows-based user interface,** for easy commissioning and network management (integrated SNMP agent and secure management access, supporting the latest cyber security measures)
- **50 W or 100 W transmit power,** to bridge distances of up to 1000 km without repeaters
- **Compact equipment versions,** with single or redundant power supply:
 - 50 W single rack version for most used equipment configurations
 - 50 W or 100 W dual rack versions for ultimate configuration flexibility



ETL600-050: Compact single rack version, 50 Watts output power.



ETL600-100: Two racks version, 100 Watts output power

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