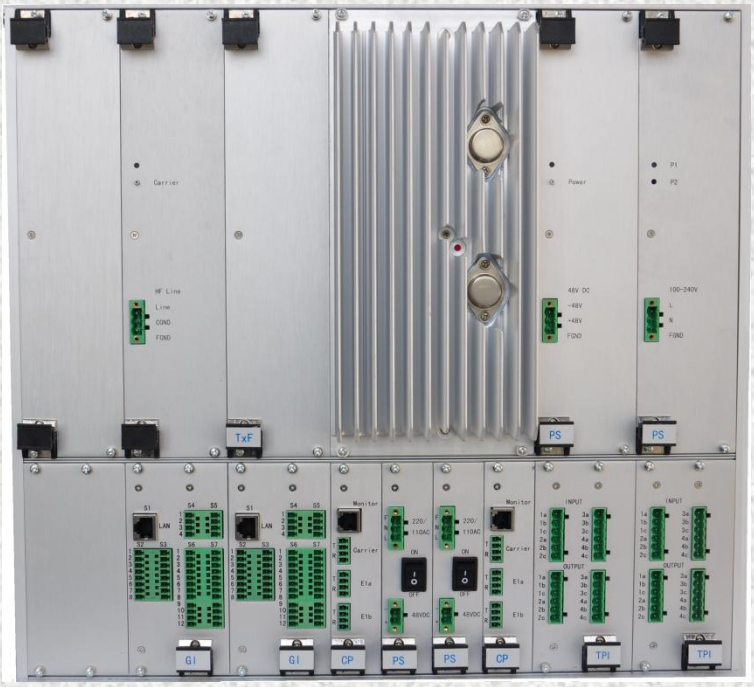
UPLC-100

Universal Power Line Carrier

5C Communications Inc.

Overview

UPLC100 uses the high-voltage line between transformer substations as a communication path for multi-service of data, tele-protection, voice and video signals. This technology, which has been tried and tested over decades and adapted to the latest standards, has two main application areas: as a communications link between substations where a fiber-optic connection does not exist or would not be economically viable, and as a backup system for transmitting protection signals parallel to an installed fiber-optic link. UPLC100 could easily link with fiber PCM system through E1 ports.



UPLC100 supports the transmission of high-speed data from 2400 bps to 384 kbps. The bandwidth is easily field programmable and does not require the exchanging of hardware components. The broadband capacity may be used by the internal digital multiplexer for the transmission of a number of synchronous or asynchronous data channels, or a LAN-interconnection. During tele-protection operation, broad band data transmission is briefly interrupted (alternate purpose). Special algorithms ensure that data transmission is resumed

immediately after the fault has been cleared, avoiding a re-synchronization that would introduce extra delay.

Key Features

- SSB and Multi-Carrier (OFDM) digital modulation with **forward codec**.
- **Wide range of transmission bandwidths** (up to **48 KHz**), programmable without exchanging hardware.
- Integrated **high-speed broadband modem** for up to 384 kbps user data rate and support video transmission.
- Universal architecture for digital and analogue operation in the same platform. The analogue (aPLC) channels (<4KHz) in bandwidth for traditional "speech plus" applications.
- Integrated adaptive multiplexing of data services with traffic flow control. The number of the voice and data channels is up to 32.
- **Dynamic Speed Adaptation** (DSA) allows to automatically adjusting the data rate according to the prevailing line condition. The adjustment doesn't make any transmission error or interruption.
- Extended **carrier frequency range up to 1000 kHz**, duplicating the useful frequency band.
- **Automatic jammer suppression** (AJS) – increases immunity to line interferences.
- **Two independent power supplies for continuous operation**

  Hot standby power supply can easily be added to UPLC100, providing safety and redundancy. If the primary power supply fails, the secondary power supply immediately takes over, ensuring continuous and unaffected operation.
- The connection between multiplexer and user voice/data interface cards is based on PCM E1 standard. Easy link with existed communications systems.

- **Management software by RS-232 or IP access by means of the SNMP protocol. Easy to learn and setting**

  Our user friendly management software is based on PC. The complete link (2 PLC) can be managed remotely via TCP / IP connection or inband service channel. The management software can supervise the PLC status and alarm signal, and set the system configurations.

The integrated Tele-Protection system

TPT100

- **Coded tripping mode for 8 independent commands via analog transmission lines**.

  Coded tripping utilizes two tones for the transmission of a protection command. This increases the transmission security anti tone interference.

- **Impulse Noise Compression technology**.

  The impulse noise is on high voltage power line. The most serious disturbance can make false command accidentally on receiver and actuate protection relays. The DSP software is developed to check such impulse noise, increase the system security

- **Synchronization with external GPS**

  IRIG-B card can be installed in UPLC100 system, which receiver GPS clock signal through IRIG-B port. Even when the external synchronization is unavailable, the clock circuit on card will offer correct time to record the synchronizing command events.

- **Up to 24K sequence-of-events recording**

  Support to record events of the teleprotection commands, system alarm and performance record per hour.

- **Front panel displaying command and device status**

  There are a LCD screen and a small key-board on the front panel of TPT100.

Voice Communications

- VF telephone user interfaces: 4/2-wire EM, FXS and FXO ports.
- Integrate a 32X32 voice switch matrix without blocking.
- Support transparent transmission of voice-frequency signals, such as band limited speech with superimposed teleoperation.
- E1 (2048kbps) interface, which be able to connect to external PBX, other UPLC100, or the chassis for the extension of user interfaces.

Data transmission

- Universal architecture for digital and analogue operation in the same platform. The alogue (aPLC) channels (<4KHz) in bandwidth can be used for any traditional modems over “voice frequency channels”
- Narrowband data transmission: The narrowband modems (M9603) support the transmission of unformatted (transparent) data with speeds up to 1200 bps.
- UART-compliant transmission of asynchronous data up to 115.2kbps with minimum delay in point-multipoint applications that is typical for polling SCADA.
- Synchronous X.21, V.11 or V.35 data transmission from 9600bps to 64 kbps.
- Ethernet/IP-forwarding for LAN interconnections and IEC60870-5-104 TCP/IP-based SCADA.