MuLOGIC

PLM-501D

Power line modem for Cenelec band operation

Introduction

The MuLogic PLM-501D is a modem for reliable power line communication at line data rates up to 16 kbit/s and serial port rates up to 115.2 kbit/s. The modem operates in the Cenelec A-band. Other operating bands are available on request.

The PLM-501 was designed for industrial applications: it can be powered from any 18 to 60 Vdc or 15 to 42 Vac power source and is suitable for panel or DIN Rail mounting.

The modem operates in half duplex mode and can be used for point-to-point and multipoint communication. The PLM-501 supports various SCADA and AMR communication protocols. Both RS232 and RS485/422 interface ports are provided. No external interface converter is needed for connecting RS485 devices. Data packets received via the RS232 or RS485/422 interface are automatically forwarded. No RTS carrier control is needed.

Applications

- RTU and SCADA communication in power distribution networks
- SCADA communication over power lines
- Automatic Meter Reading (AMR)
- Load monitoring on MV and LV cables
- Alternative for modems on pilot cables or leased lines
- Long distance modem for "non-telecom" cables

Features

- Operates in CENELEC EN 50065-1 A-band.
- Modulation: OFDM with 60 sub carriers (Cenelec A-band)
- Designed to comply with FCC, MPT and CENELEC regulations.
- Effective data rate up to 16 kbit/s (depending on band used).
- RS232 and RS485/RS422 serial data interface.
- Serial port interface speed up to 115.2 kbit/s.
- Optically Isolated serial ports.
- Direct connection to LV lines.
- Connection to MV cables via inductive or capacitive coupler.
- Connection to MV or HV lines via capacitive coupler.
- Direct connection to couplers.
- Half-duplex operation, point-to-point and multipoint.
- Switched line impedance: 3Ω Tx, 235Ω Rx.
- Repeater function.
- Packet size: up to 300 characters.
- Supports Modbus RTU, Modbus ASCII, Modbus TCP, DNP3, IEC 60870.5-10/102.
- Supports various AMR protocols such as IEC 66107 and IEC 62056.
- Power supply input: 18 to 60Vdc or 15..42Vac.

Technical specifications

Modulation (Cenelec A-band)

- 60 subcarrier OFDM.
- Modulation: Differential QPSK, 2 bit/symbol.
- Used bandwidth: 30-88 kHz.
- Carrier spacing: 966 Hz.
- Effective Line rate: 16 kbit/s.

Operating mode

- Half-duplex.
- Point-to-point.
- Multidrop/Multipoint.

Transmitter

- Output impedance: < 3Ω (when transmitting).
- Output level: 7V(p-p) in [50 µH + 5Ω // 50Ω] load.

Receiver

- Sensitivity: < 400µV(p-p).
- Dynamic range: > 80dB.
- Impedance: 235Ω .

Serial interface

- RS-232 at DB9 connector.
- Supported signals: TxD, RxD, RTS, CTS, DSR and DCD.
- RS-422/RS-485 at screw terminal connector.

Supported serial data rates

- Asynchronous: 300, 600, 1200, 2400, 4800, 7200, 9600, 19k2, 38k4, 57k6, 115k2 bps
  Data formats: 10 and 11 bits.
- Packet size: Up to 300 characters.
- Data rate and format set by means of DIP switches.

Line connection

- 2-wire screw terminal connector for direct connection to LV lines (Up to 240Vac).
- External coupler for 3-phase (400Vac) lines.
- External inductive coupler for shielded MV cable.
- Capacitive couplers for MV and HV lines available on request.

Housing

- Compact plastic housing suitable for panel or DINrail mounting.

Dimensions and weight

- PLM-501D: 95x145x30 mm LxWxH, Weight: 280 gr.

Power Supply and Environment

- Power supply input: 18-60Vdc (15-42Vac) (20 Watts max.) .
- Temperature range: -25°C to +70°C, Humidity: 5..95%

Safety

- Isolation between Serial ports and Power supply: 3000Vac.
- Isolation between Line/coupler and Power supply: 4000Vac.
- Isolation between Serial ports and Line/coupler: 7000Vac.

Compliances

- CE mark: 2004/108/EC, 2006/95/EC, EN55022, EN50082-2, EN55024, EN60950.
- Line operation : CENELEC EN 50065-1, FCC or MPT.

Ordering

Cenelec A-band operation: PLM-501D-A.
(Other operating bands available on request)

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