DATA SHEET

POWERCOMM SOLUTIONS

PLC-7500 POWER LINE CARRIER SET

THE FUTURE OF CARRIER

PowerComm Solutions has leveraged 25 years of expertise in measuring, aligning, and monitoring power line carrier systems to develop the most advanced carrier set. The PLC-7500 combines all the standard functionality of legacy transmitters/receivers with a comprehensive set of enhanced features and capabilities not available on any other carrier set.

Built-In Legacy Features

- Support for all PLC applications: DTT, POTT, DCUB, DCB, and Phase Comparison
- Optional redundant power supply and power amp
- Programmable inputs and outputs (solid state, standard relays, and trip-duty relays)
- On-Off and FSK Checkback auto-tests
- Front and rear panel ethernet ports
- Standard industry protocols: DNP3 included, IEC 61850

Advanced Features for Today's Utility Needs

- Large front panel display with comprehensive onboard user interface.
- One-touch access to critical information
- Event driven and on-demand spectral analysis
- Industry leading SOE capacity 32,768
- Record & compare "as-left" snapshots for extended maintenance cycles
- User definable virtual LEDs for all inputs, outputs & alarms
- Trending level, reflected power, impedance & phase angle
- Continuous Tx/Rx status monitoring (frequency, shift, alarms)
- On demand impedance, reflected power, and phase angle measurements
- Four programmable front panel LEDs. Eliminate need for external indicator panels
- Seemless integration with PowerComm Activity Center software

All advanced features are included standard, ensuring the PLC-7500 delivers maximum value at a competitive price.

Unmatched Visibility into Channel Events

Record up to 32,000 time-stamped events triggered by changes in frequency, level, reflected power, impedance, and phase. Legacy devices typically store only 3,500–5,000 events before critical data is overwritten.

In legacy units, Checkback tests only report pass or fail. The PLC-7500 adds depth by recording level, reflected power, impedance, and phase during these events, providing a clear view of on-off carrier channel health without requiring an outage.

Trending and Snapshots for System Insight

Track level, reflected power, impedance, and phase with programmable sampling intervals as often as hourly. This trending record establishes a baseline that helps extend maintenance cycles and provides valuable data for system integrity analysis and troubleshooting. In addition, snapshots ("as-lefts") capture system conditions at a specific point in time. Comparing snapshots before and after maintenance, or across different periods, offers deeper visibility into system changes and long-term health.

Reflected Power w/ Polar Coordindates

The PLC-7500 is the only Power Line Carrier set that reports reflected power not only as traditional percent reflected power, but also in its polar components of impedance and phase. Percent reflected power provides only a simple magnitude, with no directional context about what is happening on the communication path. By contrast, knowing both impedance and phase delivers a new level of visibility and diagnostic clarity. First introduced on the PCA-4125, these values simplify alignment during commissioning and maintenance and provide critical insight into changes on the communication path during mis-operations and troubleshooting.

Event-Driven or Real-Time Spectral Analysis

Capture event driven or real-time spectral data on the communication path. Real-time front panel captures provide immediate visibility during commissioning and mis-operation analysis, allowing quick identification of stray or unexpected signals that could affect critical protection channels. Event-driven captures are stored and can be retrieved directly on the PLC-7500 front panel display for later review.

SPECIFICATIONS

TRANSMITTER/RECEIVER	
Frequency Range	30 kHz to 600 kHz
Frequency Resolution	10 Hz
Frequency Stability	±1.5 Hz
Frequency Accuracy	± 2 ppm, Aging: 1 ppm per year
Frequency Temperature Stability	±1.0 ppm
Modulation	ON/OFF or FSK
FSK Frequency Shifts	±100, ±250 or ±500 Hz
Transmitter	
Output Impedance	50 Ω or 75 Ω Unbalanced (Load Impedance: +100% to -50%)
Output Power	10 W Max, 1 W Min
Harmonic & Spurious Output	55 dB Below TX Frequency at Rated Full Power.
Output Accuracy	±1 dB Level, 1% SWR

Recevier	
4-Wire Receiver Input Impedance	> 600 Ω
Receiver Sensitivity (15 dB Margin)	70.7 Vrms to 28.1 mVrms (50 dBm to -18.01 dBm)
Receiver Sensitivity (Absolute)	70.7 Vrms to 5.0 mVrms (50 dBm to -33.01 dBm)
Minimum In-Band SNR for Good Channel Operation	13 dB for FSK, 20 dB for ON/OFF

POWER SUPPLY	
Input Voltage (Range)	24 Vdc (18 to 16 Vdc) 48 Vdc (36 to 75 Vdc) 125 Vdc (100 to 200 Vdc) 250 Vdc (200 to 400 Vdc)
Power Requirements	23W (Power Amp OFF) 34W (Power Amp 1W) 63W (Power Amp 10W)
Redundancy	Optional (Amp/PS)

INPUTS	
5 Inputs - Optically Isolated	
Voltages	Jumper Configurable 24, 48, 125, or 250 Vdc

OUTPUTS & ALARMS	
Relays	7 Solid State 1A 4 Standard 1A Form A/B Programmable 4 Trip Duty 10A Form A/B Programmable
Power Fail	2 Standard 1A Form C
LEDs	4 Programmable 1 Alarm

IRIG-B TIMECODE INPUT	
Connector	1 REAR, BNC
Signal Type	Programmable Modulated (10Vpp max) or Unmodulated (5V TTL)

COMMUNICATION PORTS	
Ethernet	1 FRONT, 1 REAR, RJ-45 10BASE-T / 100BASE-TX
RS-422/485	1 REAR, Terminal Block 9600 - 115200 baud
RS-232	1 REAR, 9 Pin D-sub 9600 - 115200 baud

ENVIRONMENTAL	
Temperature Range	-20 °C to +55 °C (IEEE C93.5) -30 °C to +70 °C (IEEE C37.90) -30 °C to +65 °C (IEEE C37.90)
Relative Humidity	Up to 95% (non-condensing) at 40 C (for 96 hrs cumulative) (IEEE C93.5)
Coax, center conductor to ground	3000 V impulse level, 1.2 x 50 µs impulse, per IEEE C93.5
Dielectric (1 Minute withstand)	Per IEEE C93.5: 2,500 Vdc dielectric withstand
Surge Withstand Capability	Per IEEE C37.90.1
Radiated Electromagnetic Interference	Per IEEE C37.90.2
Electrostatic Discharge (ESD)	Per IEEE C37.90.3, IEC 61000-4-2

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