

Power Line Carrier Communication Equipment PL-9500 (Ver. 01) is a new generation equipment for carrier transmission and reception of Speech, Facsimile, RTU data, and tele-protection signals in frequency range of 32 KHz to 508 KHz over high voltage overhead transmission lines. The system offers a single channel expandable to two channels for full bandwidth Speech / Fax or Shared Speech-cum-superimposed data channel or one high-speed 4-wire exclusive data channel of 1200 bauds. The superimposed data channel can support upto 600-baud (2160-3700 Hz) channel as a backup for RTU/SCADA on wideband communication links. PL-9500 (Ver.01) can be used either as a terminal equipment or as Drop / Insert through a coupled repeater.



FEATURES

- Single or dual channel configurations.
- 32 KHz to 508 KHz frequency range with 1 KHz frequency allocation steps.
- 10/20 or 40W PEP power at Line output.
- On site configuration of channel frequencies and transmission levels.
- Field programmable VF upper cut off through switch selection.
- DSP based circuitry for field programmable pilot & transit band pass filters.
- Remote extension of direct EPABX lines, Hot Line, Express Channels and 2W/4W E&M modes available on same VF interface unit.
- Ease of installation and maintenance.
- Local and Remote loop-back facility.
- Can transmit trip signals from Distance Protection Scheme (Network) for the protection of high voltage transmission lines.
- Supervisory unit facilitates easy maintenance and operation.
- Extensive use of Integrated Circuits and Crystal filters ensures high quality and reliability of equipment.
- Compliance with relevant ITU-T, IEC and IS standards.
- Fully complies to the relevant EMI & EMC standards.

SPECIFICATIONS

GENERAL INFORMATION

Multiplexing	Frequency Division
Channel Capacity	Upto 2 Channels
Modulation	SSB Superimposed carrier
VF-Band	300 – 3720 Hz
Speech Bandwidth	300 – 2000 Hz, 300 – 2400 Hz 300 – 2600 Hz, 300 – 3400 Hz

HF INTERFACE

Impedance	75 / 125 Ohms (Unbalanced) or 150 Ohms (balanced)
Output Power to Line	10 / 20 / 40W PEP
Transmission Level (20W Version)	+ 37 dBm
Receiver Sensitivity	-43 dBm
Return Loss	12 dB minimum
Carrier Stability	± 2 ppm over the temperature range of 0° to 50° C
Carrier Leak Medium	Better than –45 dBm0 66/132/220/440 KV HVTs
Tapping Loss (for parallel connection of an additional PLCC equipment)	<1.5 dB at $\Delta f \geq 8$ KHz <1.5 dB at $\Delta f \geq 8$ KHz

VF INTERFACE

2W Transmit Level	-13.5 to +3.5dBm, 0dBm (Nom.)
2W Receive Level	-11.5 to +4.5dBm, -7dBm (Nom.)
2W Impedance	600 Ohms
2W Return Loss	14dB minimum
4W Transmit Level	-17.0 to 0dBm, -3.5dBm (Nom.)
4W Receive Level	-8.0 to +8.0dBm, -3.5dBm (Nom.)
4W Impedance	600 Ohms
4W Return Loss	14dB minimum
Frequency Response (Without Companders)	
300-400 Hz	-0.87 to +3.0 dB
400-600 Hz	-0.87 to +1.75 dB
600-2400 Hz	-0.87 to +0.87 dB
2400-3000 Hz	-0.87 to +1.5 dB
3000-3400 Hz	-0.87 to +3.0 dB
Linearity (-10 to –3.0 dBm0 input)	± 0.5 dBm0
Limiting	Starts above –3 dBm0 at 2W input
End to End Frequency Deviation	2 Hz maximum

GROUP DELAY

500-600 Hz	1.6 mSec. (Maximum)
600-1000 Hz	1.0 mSec. (Maximum)
1000-2600 Hz	0.3 mSec. (Maximum)
2600-2800 Hz	1.5 mSec. (Maximum)

SIGNALLING PILOT

Signaling Frequency	3825 Hz
Pilot Frequency	Programmable (2160, 2220 2580, 3360, & 3780 ±30Hz)
Level	-14 dBm0
Distortion at 10 pps, (60/40 Break / Make)	<5.0 mSec (5%)
AGC Range	
Input	-26 to 14 dB
Output	± 1.0 dB

NOISE PERFORMANCE

Idle Noise	Better than –55 dBm0p without compander Better than –65 dBm0p with compander
Cross Talk	Better than –50 dBm0p
Side Tone (HF Terminated)	Better than –40 dBm0p
Out of Band Spurious	Better than –60 dBm0p

POWER SUPPLY

Input Voltage	-48V Nom. (-40V to –60V)
Power Consumption (For 20W Version) (For 20W Version)	160W (for twin channel system) 220W (for twin channel system)

MECHANICAL

Rack Size	Height : 2090 mm Width : 545 mm Depth : 562 mm
Color of Rack	Siemens Grey Powder Coating with Marshall Grey frame & door

ENVIRONMENTAL

Meets all specs.	0° C to +50° C
Operational	-10° C to +55° C
Storage	-25° C to +65° C
Humidity	95% max. at 40° C

Specifications subjected to change without notice.

NOTE: Specifications hold for a pair of end to end terminals excluding coupling equipment and HV lines impairment.

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