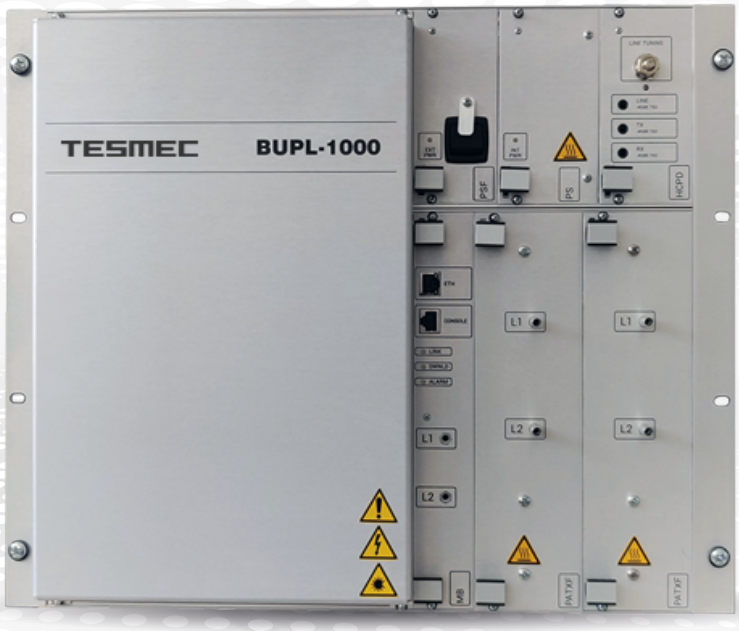
BUPL-1000

POWER LINE CARRIER



FEATURES AND APPLICATIONS

Power Line Carrier (PLC) is one of the most reliable transmission systems for service telecommunications of power utilities in order to transfer vital information for the operation and protection of the electric power grid, either as the main medium or as a backup solution.

Thanks to its flexible architecture and modular structure, BUPL-1000 supports all applications from legacy analog to most advanced digital solutions with a future-proof concept adapting the equipment configuration to customer requirements.

Traditional power line carrier systems were divided into Analogue Power Line Carrier (APLC) and Digital Power Line Carrier (DPLC). BUPL-1000 is capable to integrate simultaneously up to four analog channels and one digital channel in a single equipment.

PLC can be used to transmit:

- Asynchronous and synchronous data for RTU applications
- TCP/IP communications for network scenarios
- Teleoperations
- Voice and fax
- Embedded teleprotection signals

A key point for congested frequency plan is halving of occupied bandwidth allowed by BUPL-1000 overlapped bands feature, using echo cancellation (available only for digital channel).

Data rate adaptation according to current line condition ensure high reliability of essential services, most of all for TCP/IP communications (available only for digital channel).

BUPL-1000 design uses most advanced technologies, algorithms and operating systems.

The BUPL-1000 device is verified by CESI according to certificate no. B4004512-1

POWER LINE CARRIER FOR HIGH-VOLTAGE GRIDS

Designed to be used in harsh substations environments, BUPL-1000 is a cost effective equipment for data, voice and teleprotection transmission over high-voltage power lines in compliance with international recommendation IEC 60495.

TECHNICAL FEATURES

BUPL-1000	Features	Value
System Data	Frequency range	24 kHz ÷ 1000 kHz, 1 kHz step
	Nominal output Power (PEP)	Up to 80 W
	Nominal output impedance	75 Ω unbalanced 150 Ω balanced (as option)
	Power supply	24/48/110/220 Vdc, ±20% Redundancy as option (3U rack)
	Weight and dimensions	Up to 15 kg, 19-inch subrack, height: 9U
	Standards compliance	IEC 60495, IEC 61000-6-2, IEC 61000-6-4, IEC 60255-27
Digital Channels	Baseband modulation	QAM with TCM coding
	Nominal bandwidth	4/8/12/16/20/24/28/32 kHz (separated or overlapped)
	Maximum data rate	320 kbps @ 32 kHz
	Dynamic rate adaptation	Fallback & forward (11 selectable rates)
	Ethernet interfaces	Up to 5 electrical 10/100 BASE-T, RJ-45 Up to 1 optic 100 BASE-FX, SFP, LC
	V.11 interfaces	Up to 2, variable data rate supported
	V.24/RS-232 interfaces	Up to 16, 400 ÷ 38400 bps
	Compressed voice interfaces	Up to 16: FXS, FXO, 2/4-wire E&M
Analog Channels	Number of channels	Up to 4, 4 kHz bandwidth (300 ÷ 3720 Hz) per channel
	Voice interfaces per channel	Up to 1: FXS, FXO, 2/4-wire E&M
	Teleoperation ports per channel	Up to 4, transit mode supported
	Narrowband modems per channel	Up to 3, 50 Bd ÷ 9600 bps
Teleprotections	Number of integrated teleprotections	Up to 2, superimposed on DPLC or APLC, Up to 4 independent or 8 with priority commands per teleprotection
Miscellaneous	Time synchronization	NTP, IEEE 1588, IRIG-B (as option)
Other Features	Analog and digital functionality in the same platform	Adaptive data rate mode
	Complete compatibility with legacy analog systems	Alarms and events logging with time Synchronization
	Bandwidth programmability up to 32 kHz	SNMP agent with standard and private MIBs
	Support to adjacent and overlapped bandwidth	Secure management access
	Programmable output power up to 80 W	Human Machine Interface (HMI) with built-in functions for easy commissioning and maintenance
	Bidirectional data rate up to 320 kbps	Network Management System (NMS) availability
Applications	BUPL-1000 collects vital information for the operation and protection of the electric power grid and it acts as substation gateway for all services in order to ensure a seamless transition towards future solutions.	

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