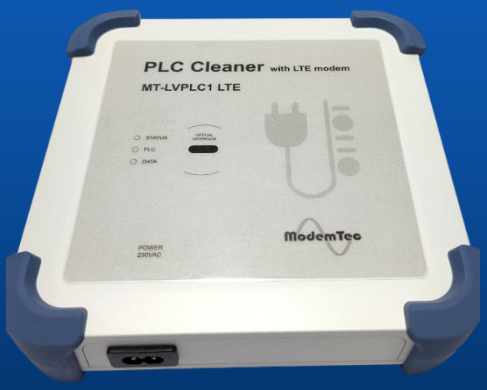
MT-LVPLC1-LTE

PLC Cleaner for Smart Grids

Unique diagnostic tool designed to increase communication reliability readings between smart grid PLC devices in both, high and low-density areas.



Applications

The MT-LVPLC1-LTE modem, as part of the PLC Cleaner solution, is used for communication in low-voltage distribution systems, is able to detect communication channel bottlenecks and then recommend how to remove them. The great advantage of this solution is its independence from the PLC standard used at the site. The MT-LVPLC1-LTE modem is deployed in areas characterized by low or no readings. It is equipped with a 3G/4G/5G mobile communication channel for collecting PLC network diagnostic data.

Key features

- Data Transmission Monitoring and Diagnostics
- Suitable for any PLC standard (G3-PLC, PRIME, OSGP, Meters and More, IDIS...)
- Identification of “bottlenecks” that decrease reliability of power-line communication.
- No need to uninstall smart meters deployed
- GDPR friendly solution

Hardware

- Own PLC modem running on the G3-PLC standard
- Sniffer, whose implementation makes it possible to read at least the unencrypted headers of all intercepted packets
- Spectrum analyzer, which enables long-term monitoring of both, noise and interference in the vicinity of the modem, and PLC traffic (its physical level)
- Packet generator for monitoring network load at the HW level

Software

- Back-end: Capture of measurement results at individual points of the monitored energy network with metrics of diagnostic signals and its archiving.
- Front-end: Visualization of results linked to already installed equipment, data on newly measured locations.

Technical data

Power supply

Voltage	85 – 305 V_{AC} 120 – 430 V_{DC}
Frequency	47 – 440 Hz
Power consumption	max. 10 W

PLC communication

Frequency band	FCC (On request CENELEC A, B)
Modulation scheme	OFDM
Modulation	DBPSK, DQPSK, D8PSK
PLC standard	G3-PLC
Theoretical data rates	FCC to 280 kbps CENELEC to 44 kbps
Output amplitude	128 dB/µV (R_L = 12 Ω)
Output current	Max. 0,7 A_{PP}
Input sensitivity	1 mV
Amplitude adjustment	Yes, manual
Minimal SNR	> 3 dB (PER 10^{-4})
Protections	Over-current, short-circuit, thermal
Encryption	AES-128
PLC coupler	Built-in internal

Optical interfaces

Type	Serial bidirectional interface
Protocol	Transparent/command
To use	For configuration

LTE modem

SIM slot	Mini SIM
Antenna	Internal, external on request

Safety

Electrical appliance class II – double insulated	
Comply with	EN 61000 EN 61010 EN 50065 EN 60870 EN 60529

Environment

Operating temperature	-40 to +60 °C
Storage temperature	-40 to +70 °C
Relative humidity*	0 – 80 %

**No water condensation*

Mounting

Enclosure	Plastic
Protection class	IP67
Manufacturer	Takachi

Dimensions and Weight

Dimensions	206 x 206 x 51 mm (W x H x D)
Weight	850 g