



# **PLT-M1501-C One Phase SmartMeter Powerline Tester With Current Measurement Capability**

## **Datasheet**

## ***Main features***

- measurement and testing of physical level of PLC communication and currents with a special 1MHz range Rogowski coil
- designed for G3-PLC, CELENEC-S-FSK or PRIME communication technology (within Cenelec A-band) and FCC band performing spectral analysis in either 20kHz-110kHz, 20kHz-500kHz (option) frequency bands
  - a web browser used for data monitoring and data logging operations on a PC or mobile device
- time based roll-oscilloscope analysis (option) available for much easier immediate transmit/receive PLC signal recognition
- data logging made inside the device through a triggering mechanism either on-demand or based on a timer
- data logs done in csv or animated gif format at configurable time intervals either on-board as data logger (no supervision required) or as in-browser downloading
- remote operation via LTE modem enabling operation from the office
- used for specific outdoor and high voltage environment
- solid construction and design with ABS plastic enclosure in robust rubber or textile casing
- power related issues:
  - 230V AC LINE input voltage, power supply included
  - Embedded rechargeable Li-Ion battery
  - Up to 4h standalone battery operation
- communication capabilities:
  - WiFi operating in access point mode
  - LTE USB modem option enabling remote device access from the office via a self-established VPN connection (modem can be provided)

## ***Device Application***

The One Phase PowerLine Tester PLT-M1501-C with current measurement capability represents the diagnostic instrumental equipment in the form of a spectrum analyzer and/or oscilloscope enabling the observation of communication signal levels through measuring PLC signal communication directly on-site where the problem has been detected. PLT-M1501-C is a key part of the comprehensive power line solution solving concept which enables a 100% successful daily energy meter readout rate. The PLT-M1501-C is predominately intended to be used by utility companies dealing with PLC smart meter deployments. It is a well-known fact at utility companies that PLC communication which is used for transferring predominately energy readout data once per month (but also other power quality related data if necessary) is many times subject to either interference or impedance related disturbances in the 20-100kHz or 10-500kHz frequency ranges.

The unique advantage of the PLT-M1501-C device is that it can also give an insight into the magnitude of currents (and hence power) in the line on neutral wires in the 20kHz-110kHz, 20kHz-500kHz frequency bands where the disturbance might be taking place. The current feature therefore allows an easier determination of the direction of the disturbance source in the network.

Through the OpenVPN server one or multiple PLT devices can be directly managed remotely via LTE or ethernet connection. Through an automatic VPN connection, the PLT-M1501-C can be accessed directly via web browser on any mobile or static device.

It is therefore crucial for the utility company to have an effective system in place which can remove these disturbances. The PLT-M1501-C offers all the necessary means to any utility company dealing with PLC meter rollouts to observe the communication issues at the physical level by performing voltage and current spectral analysis as well as time based oscilloscope monitoring in the 20kHz-110kHz/500kHz frequency bands. This enables the utility specialists to find out the reason which is causing the undesired disturbances in a very economic manner.

## ***Device full functionality***

- measurement and testing of physical level of PLC communication and currents with a special 1MHz range Rogowski coil
- designed for G3-PLC, CELENEC-S-FSK or PRIME communication technology (within Cenelec A-band) and FCC band performing spectral analysis in either 20kHz-110kHz or 20kHz-500kHz (option) frequency bands
- A web browser used for data monitoring and data logging operations on a PC or any iOS or Android mobile device
- Online viewing of recorded data files through an integrated slider-based viewer and online browsing, deleting, and downloading of recorded data
- PC-based "Offline PLT Viewer" SW for analyzing recorded data is included with the device enabling 3D heatmap analysis and animated gif creation of multiple records at the same time
- Time based roll-oscilloscope signal analysis available for much easier immediate transmit/receive PLC signal recognition
- Remote operation via LTE modem (option) enabling operation from the office through a secure VPN tunnel
- Data recorder logging is implemented either on-board the device or at the server side either on-demand, amplitude/frequency trigger-based or timer based
- Data recording is done on an 8GB or (optionally) 32GB flash memory which is enough for over 400 thousand (8GB) or 1.5 million (32GB) stored spectrum frames
- used for specific outdoor and high voltage (up to 250VAC) environment
- solid construction and design with ABS plastic enclosure in robust rubber
- Simple (button-less) on-site usage (connect & go)
- Solid manufacturing and safe use in all demanding environments (CAT IV compliance for TS measurements)
- dimensions: 29cm x 20cm x 6cm
- power related issues:
  - 230V AC LINE input voltage, power supply included
  - Embedded rechargeable Li-Ion battery
  - Up to 4h standalone battery operation
- communication capabilities:
  - WiFi operating in access point mode
  - LTE USB modem option enabling remote device access from the office - via a self-established VPN connection (modem can be provided)
- Interface
  - USB-A port (USB OTG)
  - Ethernet 1Gb/s

### **System components:**

- FPGA signal processor-based processing unit with the following accessible interfaces:
  - 1 USB port (USB OTG) which is used for either WiFi dongle or LTE modem

- Ethernet 1Gb/s – RJ-45 connector
- Galvanic decoupling and 10kHz-110kHz/500kHz bandpass filter unit (inside the device)
- Li-Po battery pack with 10Ah capacity (allows up to 4-hour operation)
- Measurement connection slots at front of device
- 2m Measurement cables
- Connection probes type FLUKE TP175E – CATIV or CAT III compatible
- Insulated BNC female input for Rogowski coil attachment
- Rogowski coil with 1MHz frequency range Type GMC- PROSYS ACP-2015 with 1,5m cable coax cable
- ON/OFF switch with LED indicator
- 4 LED battery charge indicator with button

## Compliance with standards

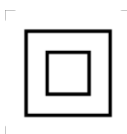
The PLT-M1501-C unit complies with the following international standards:

Standard EN	Description
EN 61010-1:2010	<i>Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements</i>
CAT IV 300 compatible	<i>Device is suitable for origin of installation or utility level measurements on primary over-current protection devices and on ripple control units</i>

### List of applicable standards

MEASUREMENT INPUT
Input: CAT IV 300V
(V) Input impedance: > 5k Ohm
(I) Input impedance: > 400k Ohm
Frequency: 50, 60 Hz
(measured 10 – 500kHz)
Connection type: phase-to-neutral

MAINS POWER SUPPLY
Input: 100-240VAC, 50-60Hz
Output: 3.6-6.5VDC, min. 1.2A
Maximum rated power: 20W



## Ordering information

To order this product please quote code [C] in the product ordering code as:

PLT M1501-[freq]-[ <u>  X  </u> ]
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[freq] Frequency range: 110 or 500

**[C] Current measurement option**

[O] Roll Oscilloscope for time domain

[L] LTE USB modem with prepaid SIM

[M] 32GB Memory card (8GB is included)

[PS] External Power Supply