OPL-1T
Analog Power Line Carrier Terminal

With built-in teleprotection

- 2 or 4 command built-in analog teleprotection system
- Single 5U chassis for 20 W and 40 W and two 5U chassis for 80 W models
- IRIG-B port for GPS time synchronization
### Description

#### OPL-1T technology

The OPL-1T system is the result of the combination of the well-proven OPL-1 terminal together with ZIV COMMUNICATIONS' wide experience in analog teleprotection systems.

#### Product overview

The OPL-1T architecture is fully modular and provides different services by installing the appropriate modules into the unit.

The OPL-1T offers an optional built-in analog teleprotection system using single tone and up to four physical slots for optional submodules (speech circuit, FSK modem and baseband input/output circuit intended for audiofrequency transit, external modems or external analog teleprotection terminals type TPU-1).

The OPL-1T can have an output power of 20 W, 40 W and 80 W measured at the coaxial-connector output.

The OPL-1T allows one or two standard 4 kHz channels to be transmitted over high-voltage lines. The effectively transmitted frequency band of each channel extends between 300 Hz and 3850 Hz.

The OPL-1T terminals chronologically register all the alarms and events produced in a link. This chronological register of alarms and events of the OPL-1T terminals is carried out based on its internal real time clock, being able to synchronize it with the GPS system by means of an IRIG-B interface.

The elements necessary for external connection are included in the equipment itself.

OPL-1T terminals comply with Recommendation IEC 495, regarding PLC equipment, with Recommendation IEC 61000-6-5, and with Recommendation IEC60834-1, which concerns to the optional built-in analog teleprotection system.

#### Management system

The OPL-1T terminal has a local management system based on a Web interface.

OPL-1T terminals can be fully programmed, monitored and managed from a PC connected to the terminal via USB. The user interface is based on Web technology and the required PC software is supplied with the terminals.

An internal data channel allows the remote terminal to be programmed and supervised from the terminal connected to the management system.

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#### Key features:

- Single 5U chassis for 20 W and 40 W and two 5U chassis for 80 W models
- Single-channel and twin-channel
- IRIG-B port for GPS time synchronization
- Fully programmable (full coverage of the transmission frequency range thanks to the set of capacitors)
- Internal channel for end-to-end supervision
- Local management system based on a Web interface
- 2 or 4 command built-in analog teleprotection system
- Up to four physical slots for optional submodules

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**AMPT.00**

**PTPL**

**FAPT**

**AFPL.00**

20-40 W model
### Technical specifications

#### General characteristics
- **Modulation**: Single side-band (SSB) with suppressed carrier
- **Number of channels**: 1 or 2
- **Basic bandwidth**: 4 kHz per channel
- **Options available**: A built-in analog teleprotection system (PTPL.0#), and up to four physical slots for optional submodules (KCPT: Baseband I/O; KTPT: Speech; KFPT: FSK modem)

#### High-frequency characteristics
- **Frequency range**: From 40 kHz to 500 kHz
- **Virtual carrier frequency**: Programmable in 1 Hz steps
- **Tx and Rx bands**: Erect or inverted, adjacent or non-adjacent
- **Nominal impedance**: Selectable among 50, 75, 125 and 150 Ω
- **Return loss**: 10 dB, in accordance with IEC 495, cls. 5.2.2
- **Tapping loss**: In accordance with IEC 495, figure 5

#### Transmitter
- **PEP**: 20 W, 40 W and 80 W
- **Spurious emission**: In accordance with IEC 495 cfs. 5.2.4 and figures 7 and A.2

#### Receiver
- **Sensitivity**: -30 dBm minimum pilot level for AGC threshold
- **Selectivity**: Higher than 65 dB at 300 Hz, and higher than 75 dB starting from 4 kHz; in accordance with IEC 495 cls. 5.3.1.5
- **Automatic Gain Control Dynamics**: Better than 55 dB with 10% pilot modulation
- **Efficiency**: ±20 dB input level variations result in variations of less than ±0.2 dB at the output

#### Built-in(1) TP (PTPL.0#)
- **Capacity**: From 1 to 4 commands
- **Security and dependability**: In accordance with IEC 60834-1 standard

#### Base band I/O (KCPT)
- **Available band**
- **Interfaces**: Two 4-wire whole-band audio interfaces per submodule
- **Nominal impedance**: 600 Ω, balanced
- **Return loss**: Better than 14 dB
- **Nominal level**: Programmable between –20 dBm and +6 dBm
- **External(1) TP input**: Any whole-band input can be used for the transmission of a teleprotection signal, and can be programmed with a modulation percentage of between 10% and 100% in the command signal
- **Boosting control**: By means of optocoupler. Input voltage between 30V and 150V
- **AF transit**: Four programmable band-pass filters. Others filters upon request

#### Speech (KTPT)
- **Speech cut-off frequency**: Programmable between 2000 Hz and 3400 Hz (5 Hz steps)
- **Interfaces**: 4-wire and 2-wire exchange-side, and 2-wire subscriber-side
- **Nominal impedance**: 600Ω, balanced
- **Return loss**: Better than 14 dB
- **Nominal level**: Programmable between –20 dBm and +6dBm

#### FSK modem (KFPT)
- **Transmission speed**: Programmable from the Management System between 50, 100, 200, 600 or 1200 Bd

#### Alarms
- **3 relays plus 9 relays (built-in teleprotection) that can be programmed by the user. All of them with one voltage-free changeover contact.**
- **Contact rating**: 2A / 250 VAC

#### Power supply
- **48 VDC ± 20%**

#### Maximum consumption
- **OPL-1T20**: 110 W (single channel) and 90 W (twin channel)
- **OPL-1T40**: 130 W (single channel) and 100 W (twin channel)
- **OPL-1T80**: 240 W (single channel)

#### Dimensions
- **483 x 221 x 351 mm (one 19"/5U chassis for 20 W and 40 W)**
- **483 x 443 x 351 mm (two 19"/5U chassis for 80 W)**

#### Weight
- **~17 kg (20 W and 40 W); ~27 kg (80 W)**

#### Connections
- **Built-in terminal blocks (cabinet mounting upon request)**

#### Operating conditions
- **Temperature and humidity**: From –5ºC to +45ºC and relative humidity not greater than 95%, in accordance with IEC 721-3-3 class 3K5 (climatogram 3K5)

#### Management computer
- **Pentium III 550 MHz processor or higher. Microsoft Windows XP Service Pack 2 version, Microsoft Windows 7 or Microsoft Windows 10, Microsoft Internet Explorer v 6.0 or higher. Sun Microsystems version 1.7 or higher**

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(1) The OPL-1T system admits one teleprotection system per channel
7 Manufacturing facilities & 14 Customer support centers

Chicago (USA)  
Mexico (MEX)  
Niteroi (BRA)  

Dublin (IRL)  
Newcastle (GBR)  

Paris (FRA)  

Zamudio (ESP)  
Madrid (ESP)  
Barcelona (ESP)  

Dubai (ARE)  
Ryhad (SAU)  
Bangalore (IND)  
Singapore (SGP)  
Yakarta (IDN)  

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