

# PTP Translator

## Compact GNSS Time Server



### Features

- Multilevel password protection
- DIN rail mounted
- High-power line drivers
- Low-noise characteristics due to balanced pair distribution
- Independently isolated outputs
- Isolated, singular power supply
- UTC and Local Standard Time (LST) with user-defined Daylight Savings Time (DST)
- Network Time Protocol (NTP) v1, v2, v3, v4 server support
- Simple Network Time Protocol (SNTP) client support
- IEEE® 1588 v2 Precision Time Protocol (PTP)\*
- DC IRIG-B (unmodulated DCLS)
- Simple Network Management Protocol (SNMP) v1, v2c and v3
- Enhanced security and encryption that exceeds the requirements of NERC CIP 007-01
- Remote configuration and firmware upgrades

### Applications

- Translation of IEEE 1588v2-2008: PTP into legacy time codes
- Isolation between informational and legacy operational networks

### Compact Form Factor

A compact and rugged design allows for easy installation in space-constrained environments such as control cabinets or panels. Flexible mounting options simplify integration into existing infrastructure, even in challenging industrial settings. This versatility allows for precise time synchronization to be implemented wherever it is needed.

### Security

Security is a critical consideration in the substation when selecting equipment. Our power utility timing system products allow you to have full control over the security of the device, including being able to customize user access permission and custom log in settings such as password complexity. Each device also comes with encrypted logins and a comprehensive network firewall.

### Time Accuracy Output Suppression

It is critical that the time provided to end devices in the substation can be trusted to be the extremely accurate. We have included time accuracy output suppression in the PTP Translator, so if the clock's output deviates past your configured threshold, it will suppress the output and prevent the device from outputting inaccurate time and triggering a false trip.

### Configuration Tool

Configure the PTP Translator with our power utility timing systems configuration tool. This is a common executable tool that is used to configure all current generation power utility timing system products. It provides an easy-to-use, secure interface to allow the configuration of all available output options and status displays for performance monitoring.

### Digital-to-Analog Conversion

Translating between digital and analog timing is necessary in many industries with many critical infrastructure systems relying on legacy equipment that cannot process modern network protocols like PTP. The PTP Translator addresses this by converting digital PTP and NTP into analog outputs such as IRIG-B or 1 PPS, which enables precise synchronization across new and existing infrastructure without replacing analogue devices.

### Industry Standard Protocols

The power industry uses several standardized timing protocols. The PTP Translator has the flexibility to support all relevant timing needs.

Key protocols supported include:

- PTP
- NTP
- IRIG-B (B004–B007)
- Programmable pulses such as PPS, PPM and PPH
- DCF77

## Front Panel

Specification	Details
<b>LEDs</b>	One green sync LED One red alarm LED

## Top Panel

Specification	Details
<b>Ethernet</b>	RJ45, admin port, 10/100 Mbps, auto negotiate or ST fiber, Ethernet, multimode, 62.5/125 $\mu\text{m}$ , $\lambda$ 820 nm

## Standard Outputs

Specification	Details
<b>TTL</b>	DC IRIG-B, DCF77 or pulse, 0–5V, 150 mA, 2-pin screw
<b>ST Fiber</b>	Multimode, 62.5/125 $\mu\text{m}$ , $\lambda$ 820 nm, 17.5 dB power budget typical

## Optional Outputs

Specification	Details
<b>TTL</b>	DC IRIG-B, DCF77 or pulse, 0–5V, 150 mA, 2-pin screw
<b>AM IRIG-B</b>	$\pm 8$ VDC, 120 $\Omega$ output impedance, 2-pin screw
<b>RS232 Serial String</b>	$\pm 8$ V, 15 mA, Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 2-pin screw

## Holdover Accuracy (One Day)

Oscillator	Holdover Drift (First 24 Hours)
<b>TCXO</b>	< 550 $\mu\text{s}$

## Output Accuracy to UTC

Output	Accuracy
<b>TTL/Fiber</b>	< 100 ns
<b>AM IRIG-B</b>	< 2 $\mu\text{s}$
<b>1 PPS</b>	< 100 ns
<b>PTP Time Stamp</b>	< 100 ns
<b>NTP Time Stamp</b>	< 50 $\mu\text{s}$

## Mechanical/Environmental



Specification	Details
<b>Size</b>	(W) 72 mm $\times$ (D) 60 mm $\times$ (H) 90 mm
<b>2-Pin, Low-Voltage Power Supply</b>	14–36 VDC
<b>2-Pin, Medium-Voltage Power Supply</b>	20–75 VDC
<b>2-Pin, High-Voltage (DC) Power Supply</b>	90–250 VDC
<b>Power Drain</b>	4W
<b>Operating Temperature</b>	–10°C–+65°C
<b>Storage Temperature</b>	–10°C–85°C
<b>Operational Humidity</b>	$\leq$ 95%, non-condensing
<b>Certifications</b>	CE, FCC, CSA, RCM EN: 55 032:2015
<b>Weight</b>	0.2 kg
<b>Ingress Protection</b>	IP40

## Specifications

### IRIG-B

- DCLS IRIG-B (B00x\*) with configurable C37.118.1-2011 and AFNOR S87-500 extensions
- AM IRIG-B (B12x\*)
- Modified Manchester (B22x\*)
- Up to two simultaneous formats supported on different output ports

\*Where x is 4, 5, 6 or 7

### Programmable Pulse

- User-defined pulse duration, offset and interval
- 1 PPS, 1 PPM, 1 PPH and 1 PPD

### DCF77

- DCF77 time code
- 1 kHz square wave
- Serial String
- NMEA-0183 ZDA
- NMEA-0183 RMC
- IRIG J-17
- String A-H

### Port Isolation

- Outputs to base unit: 2.5 kV
- Power supply to I/O: 3.5 kV

### Network Protocols (General)

- Dynamic Host Configuration Protocol (DHCP) auto-configuration with fallback to Address Resolution Protocol (ARP)-tested link-local address
- Virtual LAN (VLAN) packet tagging
- Auto-MDIX
- Auto-negotiation
- IPv4

### NTP \*

- Supports NTP v1, v2, v3 and v4
- Optional MD5 authentication
- Multicast and broadcast server capability
- Stratum 1 NTP and SNTP time server

### PTP\*

- One- or two-step operation
- End-to-end, peer-to-peer or manual delay calculations
- Layer 2 (Ethernet) or Layer 3 (UDP) transport
- Server and client-only mode
- Default profile support
- Support for IEEE C37.238-2011 and IEEE C37.238-2017 power profiles
- Support for ITU- T G.8265.1 telecom profile (client only)
- Support for ITU- T G.8275.1 telecom profile (server and client)
- Support for IEC 61850-9-3 power utility profile
- Supports C37.238 -2011 Type, Length, Value (TLV)
- Supports C37.238 -2017 Type, Length, Value (TLV)
- Supports alternate time offset TLV with automatic or manual offset
- Supports C37.238-2011 Simple Network Management Protocol (SNMP) Management Information Base (MIB)

### SNMP and Syslog

- v1, v2c and v3 support can be independently enabled
- Configurable v1, v2c community names and security groups
- Fully configurable via SNMP
- v3 User-based Security Module (USM) support
- USM authentication methods: MD5 and SHA
- USM privacy methods: DES and AES
- USM MIB support
- SNMP trap generation v1, v2c and v3
- SNMP v3 traps can be authenticated and privatized via USM
- Syslog (RFC-3164 and 5424) support

\* Some optional features may incur extra costs