

PTP80 Elite-S

GrandMaster & Boundary Clock

The PTP80 Elite-S GrandMaster & Boundary Clock generates and distributes precisely synchronised time across packet networks. It uses Precision Time Protocol (PTP) to IEEE-1588 v2 to distribute time to remote PTP clients and slaves over a network. Multiple PTP80 Elite-S units can be utilised for load sharing resilience and increased support. It is also capable of synchronising to PTP offering further timing resilience.



PTP80 Elite-S offers the capability of a PTP Grandmaster which can be synchronised from both a GNSS source and another PTP Grandmaster Clock, thereby providing a highly resilient source of packets.

Features

- Advanced hardware-generated timestamps
- Internal disciplined oscillator provides continued stability if synchronisation source interrupted
- One PTP Grandmaster element enabling synchronisation of a large range of PTP clients
- One PTP client element for synchronisation from another Grandmaster clock
- Rubidium or Quartz Oscillators
- Multiple outputs include 1PPS & 10MHz, E1/T1 and IRIG-B
- OEM Board design also available providing Equipment Manufacturers with a fast track PTP implementation.

Input Synchronisation Options

- GPS, GPS/GLONASS, GPS/BEIDOU (all via Active or Long Distance Antenna)
- IEEE1588V2 (PTP)
- Multiple alternative inputs available

The PTP80 Elite-S GrandMaster Clock incorporates hardware based time stamping, providing the highest level of timing and frequency over a broad range of wireline and wireless applications using Precision Time Protocol (PTP), described in the IEEE 1588-2008 version 2 standard.

Typical Applications Include:

- WiMAX
- Broadcasting (Synchronisation of DVB / DAB Transmitters)
- Power Utilities (Applications requiring Time of Day)
- Military Communications
- High Frequency Trading (HFT) in Financial Services
- Telecommunications
 - LTE
 - Ethernet / IP Backhaul (Synchronisation of Base Stations)

Key Benefits

- Precise timing and synchronisation over packet-based Networks
- Rapid migration to Ethernet / IP Backhaul in Mobile Networks
- Complete End to End PTP Solution with PTP8 Network Time Client
- Interoperability with 3rd Party PTP Clients
- Front panel has a large alphanumeric LCD, status indicator and 5-segment button for configuration.
- Comprehensive web browser for remote configuration and control.



PTP80 Elite-S Specifications

PTP Function

IEEE 1588 v2 compliant
Ethernet 10/100/1000Base-T (1 x RJ45)
Ethernet 1000Base-X (1 x SFP)

PTP Grandmaster Performance

Supports up to 50 PTP Clients @ 64 packets/s
80 PTP Clients @ 32 packets/s
128 PTP Clients @ 16 packets/s

Unicast / Multicast Operation

One step /two step operation

Configurable to Acceptable Master Table for multiple units providing increased levels of Client support and load sharing resilience.

Synchronisation Source

GPS

C/A Code GPS Receiver (L1-1575MHz)
High Performance Antenna with 15m cable (50Ω BNC)
Tracking: 12 parallel channels with TRAIM
Acquisition time: Cold start <5 min. (typical)

IEEE 1588v2 (PTP)

Capable of precision synchronisation to received PTP packets.
Unicast / Multicast Operation
One step /two step operation

Alternative Synchronisation Sources:

GPS/GLONASS or GPS/BEIDOU
IRIG-B (BNC 50Ω)
E1/T1 (BNC 75Ω unbalanced)
10MHz / 1PPS input (BNC 50Ω)
Time of Day Serial Message RS232/RS422 (RJ45)

Timing / Frequency / Holdover Accuracy

1PPS accuracy:	±50ns peak to peak when locked to GPS, 30ns RMS ±1µs peak to peak when synchronised to PTP (network dependent)
Timing accuracy using PTP:	better than 1µs possible (network dependent)
Frequency accuracy using PTP:	better than 10ppb possible (network dependent)
Holdover accuracy:	see table below

PTP80 Elite-S Outputs

1PPS Output

2.5Vpp +/- 0.1Vpp into a 50Ω load
Connector: BNC 50Ω

10MHz Output

10MHz sinusoidal phase aligned +/- 100ns of 1PPS output
1Vrms into a 50Ω load
Connector: BNC 50Ω

E1/T1 Frequency Output

Transmit bit rate: 2.048Mbps
Line encoding: HDB3
Connector: BNC 75 Ω unbalanced / RJ48,120Ω option
T1 option available

Time of Day Serial Message RS232/RS422

NMEA GPRMC message format
Baud rate and communication attributes user selectable
Connector: RJ45

NTP(V3rfc1305)

RJ45 10/100Base-T (via DCN port)
Client system accuracy up to 1 millisecond

IRIG-B

Range of selectable outputs including IEEE1344 extension
Connector: 50Ω BNC

Please consult factory for other available options

Oscillator		Stability Per °C	Performance while disciplined						Holdover Accuracy at constant temperature after loss of reference		
			Averaging Time						Time	Frequency	
Option	Description		1s	10s	100s	1000s	10000s	1day	1day	1day	3days
1	OCXO	1x10 ⁻¹¹	5x10 ⁻¹²	3x10 ⁻¹²	1x10 ⁻¹¹	1x10 ⁻¹¹	3x10 ⁻¹²	1x10 ⁻¹²	<8 µs	2x10 ⁻⁹	<4x10 ⁻⁹
2	Rubidium	7x10 ⁻¹²	3x10 ⁻¹¹	8x10 ⁻¹²	3x10 ⁻¹²	3x10 ⁻¹²	2x10 ⁻¹²	8x10 ⁻¹³	<1 µs	<1.0x10 ⁻¹¹	<1.5x10 ⁻¹¹



PTP80 Elite-S Specifications

continued

Management

Configurable via front panel display used with 5 Button Keypad

Remote management:

Web browser, accessible via 10/100Base-T, DCN port (RJ45)
SNMPv1 (RFC 1157)
SNMPv3 (RFC 2271) next release
Time & Frequency Solutions' Universal Clock Management System

Alarms

Alarms are notified via the following:

1. SNMP
2. Web Browser
3. Front panel display
4. Voltage Free Single Pole Changeover Relay

Security

Protection from unauthorised access available via System Administrator Password Protection

Protocols

ANSI T1.101
DHCP
GR-1244
HTTP (RFC 2616)
IEEE 802.3
IPv4/IPv6 next release
ITU-T G.703, G.704, G.812, G.813, G.823, G.824, G8261
PTPv2 (IEEE 1588)
SNMP v1 (RFC 1157)
SNMP v3 (RFC 2271) next release
Telnet (RFC 854)
FTP (RFC 959)
VLAN
NTP (RFC 1305)
SNMP (RFC 1769)

Product Standards/Compliance

Conforms to relevant sections of:

CE
RoHS
WEEE
EN61000

Please consult factory with requirement for your country/application

Physical

Dimensions: 19" x 1U high x 200mm deep rack mount

Weight: 3kg typical, ETSI rack fixings

Option - OEM board designed to customer specification

Power

AC: 95- 264VAC 47 to 63Hz
DC: optional dual -48VDC input (-40 to -72VDC range)

Environmental

Operating Temperature: 0°C to +50°C (please contact factory for advice outside this range)

Storage Temperature: -5°C to +60°C

Humidity: up to 95% RH (non-condensing)

As we are always seeking to improve our products, the information in this document only provides general indications of product capability, suitability and performance, none of which shall form any part of any contract.