



## PTP80 GrandMaster Clock

The PTP80 GrandMaster Clock generates and distributes precisely synchronised time across packet networks.



### Key Features

- Uses Precision Time Protocol (PTP) to IEEE-1588 v2
- Distributes time to remote PTP clients and slaves over a network
- Multiple PTP80's can be utilised for load sharing resilience and increased support
- Advanced hardware-generated timestamps
- GPS input source with multiple alternative inputs available
- Internal disciplined oscillator continues to provide stability if input source interrupted
- Rubidium or Quartz Oscillators
- Choice of auxiliary outputs include 1PPS & 10MHz, E1/T1 and IRIG-B
- Platforms: 19 inch 1U high rack mountable chassis
- OEM Board design also available providing Equipment Manufacturers with a fast track PTP implementation.

The PTP80 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:

- Telecommunications
  - LTE
  - Ethernet / IP Backhaul (Synchronisation of Base Stations)
- WiMAX
- Broadcasting (Synchronisation of DVB / DAB Transmitters)
- Power Utilities (Applications requiring Time of Day)
- Applications requiring Precise Timing delivered over a Packet Network

### System 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 Slave Network Time Client
- Interoperability with 3<sup>rd</sup> Party PTP Clients
- Front panel has a large alphanumeric LCD, status indicator and 5-segment button for visual status and minimal configuration.

# PTP80 GRANDMASTER CLOCK SPECIFICATIONS

## GENERAL

Internal oscillator: Rubidium or OCXO  
Network timing client: PTP (IEEE1588v2)  
Communications : RS-232 (RJ45)  
Ethernet 10/100Base-T (RJ45)  
Unicast / Multicast Operation  
Best Master Algorithm (BMC) according to IEEE1588v2  
ITU-T G.8261 compliant

## PTP80 INPUTS

**GPS Antenna**  
1575MHz L1  
50 Ohm BNC Socket  
The PTP80 is supplied with our Weatherproof High Performance GPS Antenna which includes a 35db preamplifier and dual band pass filters.

### Alternative Inputs

GLONASS Option  
BEIDOU Option  
2048kHz  
10MHz  
1PPS Input  
Time of Day Serial Message RS232  
Customer Special Requests / Options – consult factory

## PTP80 PTP OUTPUTS

PTP: IEEE 1588v2  
Provides  $\pm 100$  nanosecond timing accuracy (locked to GPS)  
Connector: RJ45 10/100Base-T

## PTP80 AUXILIARY OUTPUTS

Number of Auxiliary Outputs: 4  
**E1/T1 Frequency Output**  
Number of E1 outputs: 1  
Transmit bit rate: 2.048KHz  
Line encoding: HDB3  
Connector: BNC 75 ohm Unbalanced RJ48, 120 ohm option  
T1 option available

### Frequency Output

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

### 1PPS Output

Number of 1PPS outputs: 1  
-2.5Vpp +/- 0.1Vpp into a 50ohm load  
0.1Vpp into a 50 ohm load  
Connector: BNC socket grounded 50 ohm

### Time of Day Serial Message RS232

Number of Serial outputs: 1  
NMEA GPRMC message format.  
9600 baud, 1 stop bit and no parity

### NTP(V3rfc1305)

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

### IRIG-B

Range of selectable outputs including IEEE1344 extension

## FREQUENCY / TIMING ACCURACY

**Frequency/timing accuracy (Locked to GPS)**  
Frequency: Better than 10ppb possible (Network Dependent)  
Timing: Better than 100ns possible (Network Dependent)

### Holdover accuracy Rubidium

Holdover Frequency  $1 \cdot 10^{-11}$  per °C  
Time Holdover 10 $\mu$ s over 5 days at 25°C

### Holdover accuracy OCXO

Holdover Frequency  $1 \cdot 10^{-10}$  per °C  
Time Holdover 10 $\mu$ s over 1 day at 25°C

### Oscillator Options

Please consult factory with requirement, options include ITU-T G.812 / 813

## PERFORMANCE

Support up to 50 PTP Clients @ 64 packets/s  
80 PTP Clients @ 32 packets/s  
128 PTP Clients @ 16 packets/s  
Configure according Acceptable Master Table for multiple units providing increased levels of Client support and load sharing resilience.

## PHYSICAL

19" x 1U x 200mm  
ETSI Rack Fixings  
Weight 3kg typical depending on configuration  
Options – OEM Board Designed to Customer's Specification

## POWER

AC: 60 – 240V AC 47 to 63Hz  
DC: Optional Dual DC Input

## ENVIRONMENTAL SPECIFICATIONS

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)

## MANAGEMENT

40 x 2 Character LCD Display  
5 Button Keypad  
Local management: RS-232, RJ-45 port  
Remote management: HTML Browser, RJ-45 port (10/100Base-T)  
SNMPv1 (RFC 1157)  
SNMPv3 (RFC 2271) next release  
TL1 (GR-831-CORE)  
NMS: Time and Frequency NMS  
OSS Integration

## ALARMS

40 x 2 Character LCD Display  
Web Browser  
Dry Contact Single Pole Changeover

## SECURITY

System Administrator Password Protection  
4 Users Configurable Next Release  
4 Sessions (across all management ports)  
Lock to incoming IP Address

## COMPLIANCE

CE  
RoHS  
Consult factory with requirement for your country / application

## EMISSIONS / IMMUNITY

EN6100  
Consult factory with requirement for your country / application

## PROTOCOLS

ANSI T1.101  
DHCP  
GR-1244  
HTTP (RFC 2616)  
IEEE 802.3  
IPv4  
ITU G.812, G.813, G.823, G.824, G.703, G.704  
PTPv2 (IEEE 1588)  
SNMP v1 (RFC 1157)  
SNMP v3 (RFC 2271)  
TL1 (GR-831-CORE)  
Telnet (RFC 854)  
FTP (RFC 959)  
VLAN Next Release

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