# OSA 5320 PTP Slave

## Stand-alone PTP - IEEE 1588-2008 Slave clock supplying highly stable Frequency, Phase and Time-of-Day synchronization signals

### Introduction

The Precision Time Protocol (PTP) is a solution for the distribution of synchronization over IP-based packet networks such as IP, IP/MPLS, Ethernet, IP/xPON and IP/xDSL networks. PTP is also known by the name of the corresponding standard IEEE 1588-2008.

Oscilloquartz offers a comprehensive range of PTP products covering all synchronization needs in the domains of telecommunications, broadcasting and power utilities. The OSA 5320 PTP Slave is designed to operate with PTP Grandmaster clocks from Oscilloquartz or from other vendors.

The OSA 5320 consists of a PTP protocol engine which connects to one or several distant PTP Grandmaster clocks over an IP or Ethernet network.

The PTP Slave is a high performance synchronization clock solution delivering frequency, phase and time-of-day over a set of output ports featuring a variety of output formats using Precision Time Protocol (PTP) over an Ethernet network.


### Typical Applications

- Typical applications are the synchronization of 2G, 3G, LTE, cdma2000 and WiMAX base stations, RNC or Node B, of xPON optical line terminals, of DAB, DVB and DTV transmitters, etc.
- PTP allows the distribution of accurate frequency, phase and time-of-day to these applications even in cases where the transport network is asynchronous.

### Highlights

- Delivers highly economic end-to-end frequency synchronization
- Up to 16 ppb frequency accuracy using Gigabit switches
- Precision timing circuits ensure stability in the event of synchronisation signal interruption.
- Slave system time accuracy better than 1 microsecond using Gigabit switches
- Configuration and alarm reporting capabilities using HTML and SyncView *Plus*
- Time-of-day (TOD) is provided using IRIG-B and NMEA 0183

### Benefits

- Powerful network delay analysis delivers full time alignment over hostile networks (including Layer 2 and Layer 3 routing).
- Acceptable Master Table or Best Master Clock Algorithm selection
- No need to install GPS antennas
- 2.048 Mbit/s, 1.544 Mbit/s and 2.048 MHz synchronization clock signal for legacy equipments
- Time-of-day and Phase clock for Power & Utilities and Broadcast applications
- Multicast & Unicast operation ideal for use in Telecom environment

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## Typical Characteristics

### Three OSA 5320 PTP Slave versions:

- Telecommunication (synchronization of BTS/NodeB/RNC)
- Broadcasting (synchronization of DVB/DAB transmitters)
- Power utilities (applications requiring time-of-day)

### Synchronization Outputs

**Frequency**

| | Outputs | Telecom | Broadcast* | Power utilities |
|---|---|---|---|---|
| | Output quantity | **5** | **5** | **5** |
| A. | E1/T1/2.048 MHz | 2 | - | - |
| B. | 10 MHz sine wave | 1* | 2 | - |
| C. | 1PPS | 1 | 2 | 2 |
| D. | IRIG-B DCLS | - | - | 1 |
| E. | IRIG-B AM | - | - | 1 |
| F. | TOD - NMEA 0183 | 1 | 1 | 1 |

- A. Telecom output, BNC 75 Ω, configurable by software:
  - 2.048 MHz, ITU-T G.703-13
  - 2.048 Mbit/s, ITU-T G.703-9, G.781
  - 1.544 Mbit/s, ITU-T G.703-5, G.781
- B. 10 MHz sinewave*, 1Vrms, BNC 50 Ω, ±10 ns phase aligned to 1PPS

**Phase**

- C. 1PPS: 1.8Vpp, BNC 50 Ω

**Time-of-Day**

- D. IRIG-B DCLS: IEEE 1344, 1.5 Vpp @ 50Ω, BNC 50 Ω
- E. IRIG-B AM: IEEE 1344, 1.5 Vpp @ 50Ω, BNC 50 Ω
- F. NMEA 0183: RS-232/RS-422, RJ-45

### PTP Network Connections

| | |
|---|---|
| **Protocol:** | IEEE 1588-2008 (Version 2) |
| **Electrical port:** | 10/100 BaseT, RJ-45 |
| **PTP profile:** | User configurable |
| **IP Configuration:** | DHCP or fixed IP address |
| **Communication:** | Unicast, Multicast or Mixed |
| **TWTT method:** | 1-step or 2-step mode |
| **Switching Method:** | Acceptable Master Table (AMT), Best Master Clock Algorithm (BMCA) |
| **Performance:** | ITU-T G.8261 compliant |

### Holdover performances

**Version OCXO Double oven**

- Ageing: $1x10^{-10}$/day
- Temp. sensitivity: $6x10^{-10}$ over temperature range

**Version OCXO Single oven**

- Ageing: $1x10^{-9}$/day
- Temp. sensitivity: $1x10^{-8}$ over temperature range

**Version TCXO**

- Ageing: $1x10^{-8}$/day
- Temp. sensitivity: $2x10^{-6}$ over temperature range

### Management and User Interface

- 3 status LEDs on front panel
- Local management:
  - RS-232, RJ-45 port
- Remote management:
  - HTML, RJ-45 port
  - Manageable via SyncView Plus NMS

### Power Supply

| | |
|---|---|
| **DC Power Supply:** | -40 to -60 VDC, -48 VDC nominal |
| **Power Consumption:** | Warm-up : < 20W |
| | Steady state : < 15 W |

### Mechanical

| | |
|---|---|
| **Size (W x H x D):** | 19" or ETSI x 1U x 250 mm |
| | 465.5 mm x 44.45 mm x 250 mm |

### Environmental Conditions

| | |
|---|---|
| **Operation temp.:** | -20°C to +55°C (Consult factory out side this range) |
| **Humidity:** | up to 95% non-condensing |
| **Safety:** | EN 60950-1 |
| **EMC & ESD:** | EN 61000-6-3, EN 61000-6-1 |
| **In use:** | EN 300 019-1-3 Class 3.2 with extended operat. temp. range of -20 to +55°C |


*: contact Oscilloquartz for availability



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Ed.10 Oct.11/BIGR

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