OSCILLOQUARTZ
An ADVA Optical Networking Company

OSA 5335

Modular core PTP grandmaster

Reliable and accurate delivery of frequency, phase and time over packet-based network infrastructure has become critical in many applications that use distributed intelligence and processing. Our OSA 5335 is the IEEE 1588v2 standard compliant grandmaster clock that network operators need for scalable performance and maximum availability.

Our OSA 5335 is a modular, high-performance IEEE 1588v2 Precision Time Protocol (PTP) core grandmaster, providing network operators with ultimate scalability for synchronizing their entire packet-based network infrastructure. Whether for IP/MPLS, Carrier Ethernet, packet-optical or DSL networks, the OSA 5335 delivers precise and reliable frequency, phase and time-of-day information. With its carrier-class design and wide range of redundancy options, your synchronization network can be easily designed for maximum availability.

Your benefits

- **Ultimate scalability**
  Modular system architecture for more than 3000 remote PTP slaves in 1:1 protected mode or 6000 in unprotected mode
- **Simplified synchronization hierarchy**
  Modular integrated GPS and GLONASS receiver to meet ITU-T G.811 / Stratum I performance without additional external clock sources
- **Timing application versatility**
  Compliant with ITU-T Telecom Profiles G.8265.1 for frequency and G.8275.1 for phase and time synchronization
- **Unique flexibility**
  Universal input and output modules configurable to a wide range or auxiliary signals
- **High-availability design**
  Full redundancy for every module and system function
- **Operational simplicity**
  Intuitive GUI enabling full configuration, performance, security and fault management

High-level specifications

OSA 5335 architecture

- High-quality OCXO and rubidium
- Up to two GNSS modules
- Up to 6144 unprotected or 3072 protected remote slaves
- Hot-swappable redundant PSU

Built-in GNSS receiver

- Multi-constellation GNSS (GPS and GLONASS)
- Optionally 1:1 protected (up to two modules for equipment and antenna failure protection)
- Hot swappable

Simplified management

- Universal input and universal output modules
- Remote SW upgrade
- Dynamic inventory data via management SW

IEEE 1588 2008 PTP profiles

- Up to 1024 remote slaves at 128pkt/s per card
- Telecom profiles G.8265.1 and G.8275.1
- G.8275.2 HW ready
- Optional 1:1 protection

NTP server module

- Stratum 1 NTP server. Plug-and-play installation
- Configuration by DHCP or fixed IP
- Up to three NTP server modules
- 64MD5 message-digest algorithm

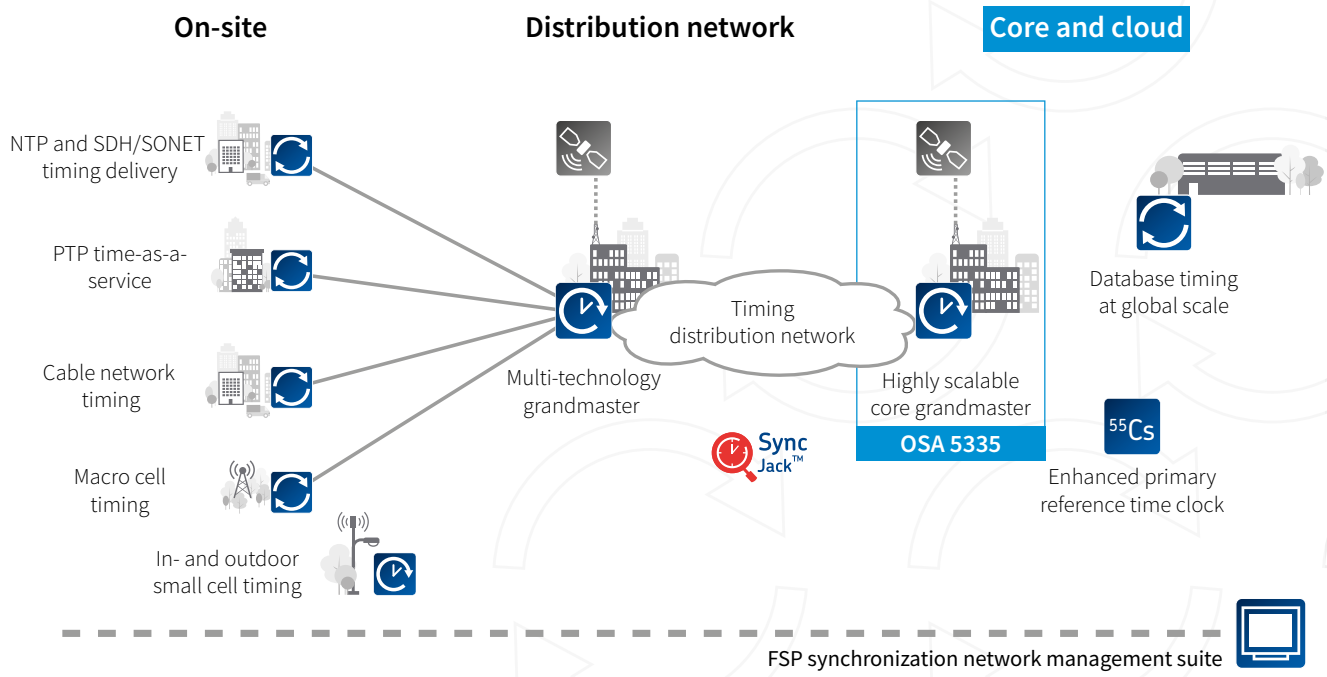
Output card (OUC)

- Optional physical clock output modules (E1/2048MHz)
- 20 outputs per physical clocks output module (two groups of ten, each group configured independently), E1/2048MHz
- Optionally 1:1 protected

Applications in your network

Packet-based network synchronization

- ITU-T G.8272 primary reference time clock for central network office locations generating ITU-T 811/Stratum frequency signals with an accuracy greater than +/-1 x 10^{-11} during its entire lifetime
- Large capacity PTP grandmaster supporting synchronous Ethernet and multiple NTP servers for timing signal outputs



For more information please visit us at www.advaoptical.com

Product specifications are subject to change without notice or obligation.

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Overall architecture
- Up to two input signal modules
- Up to two GNSS modules
- Up to six output modules
  - Max. six high capacity PTP modules for 1,024 remote clients each (TCC PTP V2)
- Maximum total capacity:
  - 6,144 remote clients in unprotected mode
  - 3,072 remote clients in 1:1 protected mode
- Optional NTP server module (TCC NTP)
- Optional output card (20 outputs per card) for E1 or 2.048 MHz signals
- Optional universal output card for 10MHz and 1PPS signals
- All input and output modules can be 1:1 protected

Inputs
- Up to four input lines, optionally 1:1 protected, four inputs per module
- Input types: E1, 2.048MHz, 5 MHz, 10 MHz individually SW selectable
- Up to two GNSS inputs (one per module), active L1 antenna
- E1 inputs can be “terminated” (75Ω) or “bridged”

Input selection
- SSM value
- Priority table
- Performance threshold mask
- Manual selection

GNSS module
- Multi-constellation GNSS (GPS and GLONASS) L1 32 channels receiver
- Optionally 1:1 protected / hot swappable – up to two GNSS modules for equipment and antenna failure protection
- Software configurable mode of operation
- GPS (1575.42 MHz)
- GLONASS (1601.5 MHz)
- Combined GPS + GLONASS
- Voltage to antenna: 5VDC / connector 50Ω BNC-F

Outputs card (OUC)
- Optional physical clock output modules (E1/2.048MHz) / protection 1:1
- 20 outputs per physical clocks output module (two groups of 10, each group configured independently), E1/2.048MHz

Universal outputs card (OUCU)
- 4x 10 MHz sine wave + 4x 1PPS square wave

Telecom high-capacity PTP module (TCC PTP V2)
- Up to 1,024 remote slave clients at 128 pkt/s per card
- SW licenses for 256, 512 and 1,024 remote slaves (128 by default per TCC-PTP v2 card)
- One- or two-step clock
- G.8265.1 telecom profile compliant over IPv4 unicast
- G.8275.1 telecom profile compliant over Ethernet multicast
- Telecom-2008 PTP profile compatible
- Unicast message negotiation
- Untagged and VLAN-tagged (IEEE 802.1Q customer-tagged)
- One combo copper Ethernet 100/1000BaseT or fiber 1000BaseX (SFP) port
- Synchronous Ethernet (SyncE)
  - Compliant to the relevant sections - ITU-T G.8261 / G.8262 / G.8264
  - Ethernet synchronization messages channels (ESMC)
- Can be inserted in any of the output slots
- Optional 1:1 card protection
- G.8275.2 HW ready

NTP server module (TCC NTP v3 (RFC 1305), SNTP v4 (RFC 4330)
- Stratum 1 NTP server / plug and play installation
- Configuration by DHCP or fixed IP
- 64 MD5 message-digest algorithm
- Can be inserted into any of the output slots
- Up to three NTP server modules optionally

Frequency, time tracking and holdover
- DDS-based tracking and holdover functionality
- Time & phase - G.8272 PRTC when locked to GNSS (+/- 100nsec from UTC)
- Frequency: G.811 PRC reference / Stratum 1 with embedded GNSS (or external cesium) source
- G.812 Type II SSU / Stratum 2 based on rubidium holdover < 5.0×10^{-11}/month (at 25°C)
- G.812 Type I & III SSU / Stratum 3E based on OCXO holdover < 1×10^{-10}/day (at 25°C)

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Holdover performance

	400nsec	1.1usec	1.5usec	5usec	10usec	16ppb
OSA 5335 OCXO	7 hours	12 hours	14 hours	24 hours	36 hours	>5 months
OSA 5335 Rubidium	15 hours	1.3 days	2 days	4 days	6 days	>5 years

Note: The above are approximated values assuming constant temperature, no initial phase and frequency error, after OSA 5335 was powered for one month and locked to GPS for 24 hours

Standards compliance

- ANSI T1.101
- Telcordia GR-2830/1244/378/253-CORE
- IETF RFC 2030 (SNTP v4), RFC 1305 (NTP)
- ITU-T G.703, G.811, G.812, G.704, G.781, G.8265.1, G.8275.1, G.8272, G.8262, G.8264
- ETSI EN 300 462-6, -4

Management

- Status LEDs on front panel / alarm contacts (2x3 N.O. or N.C. contacts)
- Electrical alarm collection inputs (10)
- Local RS232C port, TL1 protocol on front and rear panels
- Remote 10/100BaseT
- Remote management via SyncView™Plus and FSP NM and SNMPv2 & v3
- Remote software upgrade
- Synchronization network management software supporting full FCAPS capability

Performance management

- Phase measurement on all inputs incl. GPS/GLONASS @ 1ns resolution
- MTIE, TDEV, Ym curves computed locally with user-defined thresholds

Power

- Dual -48VDC power input (-40 to -60VDC)
- Power consumption: max. 115W during warmup / max. 90W in steady state

Regulatory compliance

- CE compliance
- ROHS 6 compliance
- Safety: EN 60950-1
- EMI: EN 55022 Ed. 2010 class B / EN 55024 Ed.2010 / EN 61000-4-2 / EN 61000-4-3 / EN 61000-4-4 / EN 61000-4-5 / EN 61000-4-6 /

Environmental

- Operating temperature: -5 to +45°C (or 0 to +40°C with rubidium)
- Storage temperature: -20 to +50°C
- Humidity: 5 to 95% no condensing

Simplified maintenance

- Universal input and universal output modules
- Upgrade of all modules via SW download/shelf release
- Dynamic inventory data accessible via management SW
- All module software included in the same system release

Mechanical

- Dimensions (HxWxD): 133mm x 483mm x 246mm (5.25” x 19” x 9.7”)
- Weight < 7.8Kg fully loaded with mixed Rb/Xo

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