

Meeting the increasingly stringent synchronization requirements of today's and future applications requires the implementation of a primary reference clock (PRC) source at central network office locations that generates ITU-T G.811/Stratum 1 frequency signals with accuracy greater than 1×10^{-11} at all times. Our OSA 3230B can do even more.

Next-generation telecommunication networks such as radio access networks for mobile communication require precise synchronization for active interference management, effective transmission of voice, video and data services and must guarantee a superior user experience. Also legacy networks depend on an accurate frequency signal to minimize pointer adjustments originating from frequency misalignment in the SONET/SDH payload. Our OSA 3230B provides a frequency source with accuracy better than $\pm 1 \times 10^{-12}$ during its entire lifetime and is ideal for enhancing overall network performance and preventing up-stream network clock errors from propagating across the entire network.



Your Benefits

✓ **Superior Accuracy and Stability**

Accuracy better than $\pm 1 \times 10^{-12}$ during its entire lifetime, exceeding ITU-T 811/Stratum 1 PRC specifications

✓ **Extremely Compact Size**

4HU front access and 3HU rear access variants for space-efficient 19" and 23" rack deployment

✓ **Unique Flexibility**

Optional digital and analog signal expansion providing up to five additional low-noise outputs

✓ **Extended Performance**

10-year long-life cesium beam tube

✓ **Standards Compliant**

Designed according to all relevant industry standards including ITU-T, ETSI, ANSI, Telcordia, NEBS and CE

✓ **Operational Simplicity**

Multiple local and remote management options for easy integration into industrial, professional time and frequency host systems

High-Level Specifications

Cesium Performance

- Freq. accuracy: $\pm 1 \times 10^{-12}$
- Reproducibility: $\pm 1 \times 10^{-12}$
- Adjustability:
 - Resolution $< 1 \times 10^{-15}$
 - Range $\pm 1 \times 10^{-9}$

Sync Input

- 1PPS TTL ($\geq 3V$) at 50 Ω
- BNC connector
- One on rear side plus one on front side for 19" version

Outputs

- Two direct frequency interfaces 1x5MHz+1x10MHz
- One analogue interface programmable from 0.1 to 50MHz sine
- Three digital outputs 1PPS /1.5 and 10MHz

Optional Output Expansion

- Five additional outputs:
- Four digital output interfaces configurable to 2048MHz/E1/T1/1PPS/10MHz
- One analogue output interface configurable from 0.1 to 50MHz sine

Management

- Control and monitoring via:
- Three alarm contacts and
- RS232 communication: one connector on rear side plus one connector on front side for 19" version

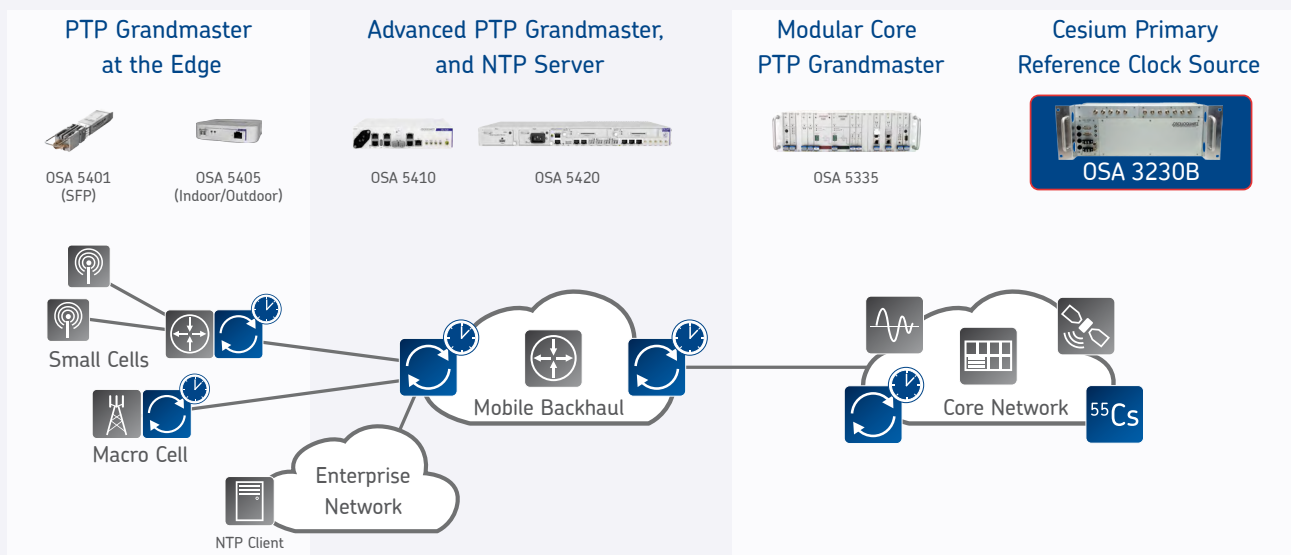
Mechanical

- ETSI (4HU shelf) and 19" (3HU shelf) variants
- Redundant 48VDC or mixed 110-240VAC/48DC power supply
- Power consumption: 50W at 25°C

Applications in Your Network

Precise Cesium PRC for Synchronization of Telecommunication Networks

- Precise synchronization of next generation communication networks such as radio access networks for mobile communications and also legacy networks such as SONET/SDH
- Extremely accurate reference signal in a minimum size



For more information please visit us at www.oscilloquartz.com
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OSCILLOQUARTZ
An ADVA Optical Networking Company

Cesium Performance

- Frequency Accuracy: $\pm 1 \times 10^{-12}$
- Reproducibility: $\pm 1 \times 10^{-12}$
- Adjustability:
 - Resolution $< 1 \times 10^{-15}$
 - Range $\pm 1 \times 10^{-9}$

Wander Generation

- Conforming to ITU-T G.811 and GR-2830 - PRS
- 45 minutes warm-up time at 25°C
- MTIE

• $0.05s \leq \tau < 33s$	10ns
• $33s \leq \tau < 1,000s$	$3 \times 10^{-10}\tau$
• $1,000s \leq \tau < 30,000s$	300ns
• $30,000s \leq \tau$	$1 \times 10^{-11}\tau$
- TDEV

• $0.1s \leq \tau < 1s$	3ns
• $1s \leq \tau < 2.5s$	$3.2 \times 10^{-9}\tau - 0.5$
• $2.5s \leq \tau < 44s$	2ns
• $44s \leq \tau < 10,000s$	$3 \times 10^{-10}\tau + 0.5$

Outputs

- Direct Frequency Output
 - Interfaces: 2
 - Frequency: $1 \times 5\text{MHz} + 1 \times 10\text{MHz}$
 - Level and connector: 13dBm at 50Ω (BNC)
 - Phase noise: not applicable (refer to OSA 3235B for phase noise specifications)
- Analog Output
 - Interfaces: 1
 - Frequency: programmable from 0.1 to 50MHz sine
 - Shape: wave output at 50Ω (BNC)
 - Level:
 - 500mVrms (typical)
 - 250mVrms (minimal)
- Digital Output
 - Interfaces: 3
 - Frequency: 1PPS / 1, 5 and 10MHz
 - Level: $\geq 3V$ at 50Ω
 - Shape: square
 - Connector: BNC

Synchronization Input

- Type: 1PPS TTL ($\geq 3V$)
- Connector: BNC
- Location: 1 on rear side plus 1 on front side for 19" version

Power Supply

- Voltage: 48VDC nominal floating (24V to 60V)
- Power feeds: dual
- Power consumption: 50W at 25°C (max. 60W during warm-up)

- Optional configuration: 1xAC plus 1xDC with OSA 3230B 19" version (110-240VAC 50-60Hz)

Management Interface

- Interface: RS232C on DB-9 for local and/or remote management using SyncView™ Plus
- Locations: 1 connector on rear side plus 1 connector on front side for 19" version
- Alarms: 3 relay contacts
- LED Monitoring: 3 LEDs for monitoring power supply status, operation and alarms
- LED Location: 3 LEDs on front side plus 3 LEDs on rear side for 19" version

Mechanical

- ETSI: 4U 176 x 436 x 240mm (H x W x D) with front access connectors, adapter for 19" rack standard
- 19": 3U 132 x 436 x 400mm (H x W x D) with rear access connectors, adapter for 23" rack standard
- Weight: $< 15\text{kg}$ (excluding packaging)

Telecom Signal Expansion (Optional)

- Digital Output
 - Interfaces: 4
 - Frequency: configurable to 2.048MHz/E1/T1/1PPS/10MHz
 - Level: according to G.703
 - Connector: BNC 75Ω or DB9 120Ω (T1:DB-9 100Ω)
- Analog Output
 - Interfaces: 1
 - Frequency: configurable from 0.1 to 50MHz
 - Format: Sine wave output
 - Connector: BNC 50Ω
 - Level: 500mVrms (typical) / 250mVrms (minimal)

Environmental

- Operating conditions: EN 300 019-1-3, class 3.2. Extended range from -5°C to $+55^{\circ}\text{C}$
- Transportation: EN 300 019-1-2, class 2.2
- Storage: EN 300 019-1-1, class 1.1
- Humidity: Up to 95%
- Altitude (operating): 0 to 15,000m
- DC Magnetic Field: ± 2 Gauss (maximum)
- Safety: EN 60950-1:2005
- EMC Emission:
 - EN 55032: 2012, 2015
 - EN 61000-6-2: 2005
 - EN 61326-1: 2013
- EMC Immunity:
 - EN 55024: 2010
 - EN 61000-6-2: 2005
 - EN 61326-1: 2013
- CE compliant