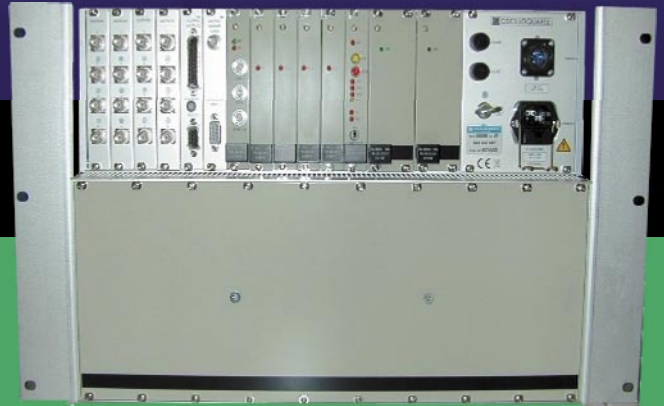


NEW VERSION

OSA 5585B PRS

Cesium Primary Reference Source



- G.811/Stratum I compliant PRS for SDH/SONET synchronisation
- 5 MHz, 10 MHz and 1 PPS Low Noise outputs
- Up to 16 supplementary outputs for stand-alone applications, including 2.048 MHz, 2.048 Mbit/s, 1.544 Mbit/s, 5, 10 MHz
- Unprotected or 1:1 protected outputs
- Ten year warranty tube as standard
- Easy to maintain thanks to its modular architecture
- Remote control and monitoring via RS232
- Manageable by SyncView™ within the OSA 6500B PRC system
- Digital Cesium oscillator technology with automatic microprocessor control
- Continuous monitoring of system parameters
- Microwave power level continuously optimised
- Automatic compensation for Cesium tube signal level changes

Introduction

Telecommunication networks require highly accurate clocks for the effective transmission of digital signals. One of the primary objectives of telecommunication networks is to guarantee, at the connection between different networks, a slip rate of less than one slip in 72 days.

Meeting these stringent specifications requires the implementation of a Primary Reference Clock (PRC) that must generate signals with an accuracy better than 1×10^{-11} , at all times. Generally, this is achieved using Cesium clock technology, often combined with GPS receivers as backup sources. Unlike off-air receivers, Cesium clocks are autonomous, self-contained primary references immune from external influences.



Overview

The Oscilloquartz OSA 5585B PRS Primary Reference Source (PRS) offers highly accurate, stable and spectrally pure frequencies to meet the most stringent requirements for precise Telecom synchronisation as well as other time and frequency applications.

Its intrinsic accuracy makes it an essential tool for timing of digital telecommunications networks in accordance with industry standards.

The OSA 5585B PRS is ideal for nodes requiring ITU-T G.811 compliant references and for other mission critical applications in satellite communications and navigation systems. It provides Cesium based references within the OSA 6500B Primary Reference Clock (PRC) systems. To ensure maximum reliability needed to achieve the high availability required in a PRC environment, two or three OSA 5585B PRS units can be used in the configuration.

When used within the OSA 6500 PRC system, the OSA 5585B PRS is remotely manageable by SyncView™, the Oscilloquartz synchronisation network management system.

The OSA 5585B PRS is based on the Oscilloquartz modular equipment architecture. Its core unit is a digital Cesium oscillator that generates a frequency reference with an accuracy better than 5×10^{-12} (5×10^{-13} with the high accuracy option).

The OSA 5585B PRS is also ideally suited for stand-alone applications. Its output stage has four interface slots providing up to 16 outputs. Interface cards include 2.048Mbit/s (E1), 2.048MHz, 1.544Mbit/s (T1), 64/8kbit/s (CC), 1, 5 and 10MHz. The choice of output connectors includes D type for 100, 120 or 133 ohms impedances and BNC, 1.0/2.3 or type 43 for 75 ohms

ports. The Cesium oscillator element is mounted on telescopic slides in the lower part of the equipment and can be removed without decommissioning the PRS itself, thus simplifying maintenance procedures. The digital Cesium assembly can therefore be replaced on site without returning the complete PRS to factory for tube exchange.

The OSA 5585B PRS comes with a full two year warranty as standard. Its long-life Cesium beam tube is guaranteed for ten years, thus ensuring longer life and reducing overall cost of ownership.



Sub-racks and power supplies

The unit is available in ETSI or 19" rack mount versions with front facing connectors and features redundant power supply modules. These can either be DC, AC or a combination of the two. As with all our solutions, the units have been certified to European EMC and Safety standards and thus carry the CE mark.

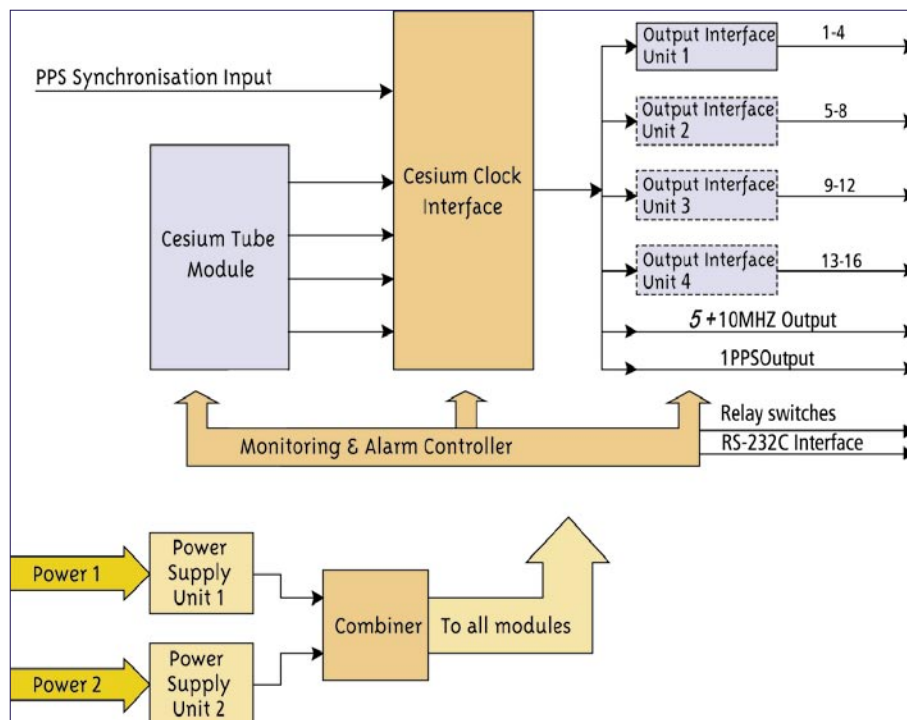


Figure 2 shows the generic block diagram of the OSA 5585B PRS. With the exception of the (power) Combiner, all blocks shown correspond to plug-in modules. The Combiner is part of the wiring backplane.

Design features

Microprocessor circuits in the OSA 5585B PRS constantly check 24 key parameters. A unique automatic routine assures lock to the correct Cesium resonance. Following turn-on, the system continues to monitor and control system parameters to insure optimum performance. Excellent accuracy coupled with high reliability make the OSA 5585B PRS a vital element in applications ranging from Primary Reference Clocks to frequency and time generation systems for Satellite Ground Stations.

Alarms and monitoring

The OSA 5585B PRS provides comprehensive alarm reporting and remote monitoring capabilities. A Monitoring and Alarms Controller (MAC) concentrates shelf alarms and provides visual indicators as well as relay contacts for in-station monitoring. Remote monitoring and control capabilities via RS-232 allow the user to configure the system as well as to receive spontaneous events and alarms.

Technical Specifications

OSA 5585B PRS

Cesium Primary Reference Source

Frequency accuracy: Over full environmental conditions (0°C to 50°C): ➤ 5E-12 (standard long life Cesium tube) ➤ 5E-13 (High performance Cesium tube) Short Term Stability: <table><thead><tr><th>(ADEV)</th><th>Standard version</th><th>High performance</th></tr></thead><tbody><tr><td>1s</td><td>3x10⁻¹¹</td><td>5x10⁻¹²</td></tr><tr><td>10s</td><td>1x10⁻¹¹</td><td>2.7x10⁻¹²</td></tr><tr><td>100s</td><td>3x10⁻¹²</td><td>8.5x10⁻¹³</td></tr><tr><td>1'000s ⁽¹⁾</td><td>1x10⁻¹²</td><td>2.7x10⁻¹³</td></tr><tr><td>10'000s ⁽¹⁾</td><td>3x10⁻¹³</td><td>8.5x10⁻¹⁴</td></tr><tr><td>100'000s ⁽¹⁾</td><td>-</td><td>2.7x10⁻¹⁴</td></tr><tr><td>Stability floor</td><td>-</td><td>2x10⁻¹⁴</td></tr></tbody></table>	(ADEV)	Standard version	High performance	1s	3x10 ⁻¹¹	5x10 ⁻¹²	10s	1x10 ⁻¹¹	2.7x10 ⁻¹²	100s	3x10 ⁻¹²	8.5x10 ⁻¹³	1'000s ⁽¹⁾	1x10 ⁻¹²	2.7x10 ⁻¹³	10'000s ⁽¹⁾	3x10 ⁻¹³	8.5x10 ⁻¹⁴	100'000s ⁽¹⁾	-	2.7x10 ⁻¹⁴	Stability floor	-	2x10 ⁻¹⁴	Standard outputs: Four output slots for a total of 16 output signals (each module provides 4 outputs). Available output modules: ➤ 64 kbit/s Composite Clock (CC) ➤ 1.544 Mbit/s (Ti) ➤ 2.048 Mbit/s (Ei) ➤ 2.048 MHz ➤ 5 MHz ➤ 10 MHz Connectors: ➤ Unbalanced: BNC, BT43, CEI 1.0/2.3 ➤ Balanced: 9 pin Sub-D or BNO
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Stability floor	-	2x10 ⁻¹⁴																							
Mechanical: Physical dimensions (H x W x D): ➤ ETSI 7U: 310 x 535 x 280 mm (12.2"x 21.8"x 11.02") ➤ 19" 7U: 310 x 483 x 280 mm (12.2"x 19"x 11.02") Connector access: ETSI: Front Access 19": Front access																									
Power: Up to two power supplies in any combination of: ➤ 36-72 VDC ➤ 115 15% VAC ➤ 230 15% VAC																									
Low Noise Outputs: 5 MHz and 10 MHz direct output ➤ Amplitude: 1 VRMS 20% ➤ Impedance: 50 ohms ➤ Harmonic distortion -40 dB 1 Pulse-Per-Second (PPS) signal (can be synchronised with an external pulse) ➤ Amplitude: 3 Vpp ➤ Impedance: 50 ohms ➤ Pulse width: 20 us ➤ Max rise time: 5 ns	Management: Equipment management: ➤ Overall equipment status on MAC's LED indicators and on individual modules ➤ Dry relay contacts ➤ Local management via LM for OSA 5585B PRS through RS-232C connection ➤ Remote management through any IP network via the OSA SyncView™ Synchronisation Management System (only as part of OSA 6500B PRC) Cesium clock module management: ➤ Via RS-232C expansion port																								
SSB Phase Noise 5 MHz : <table><tbody><tr><td>1Hz</td><td>- 95dBc</td></tr><tr><td>10 Hz</td><td>- 130dBc</td></tr><tr><td>100Hz</td><td>- 145dBc</td></tr><tr><td>1'000Hz</td><td>- 155dBc</td></tr></tbody></table>	1Hz	- 95dBc	10 Hz	- 130dBc	100Hz	- 145dBc	1'000Hz	- 155dBc	SSB Phase Noise 10 MHz : <table><tbody><tr><td>1Hz</td><td>- 90dBc</td></tr><tr><td>10 Hz</td><td>- 125dBc</td></tr><tr><td>100Hz</td><td>- 135dBc</td></tr><tr><td>1'000Hz</td><td>- 145dBc</td></tr></tbody></table>	1Hz	- 90dBc	10 Hz	- 125dBc	100Hz	- 135dBc	1'000Hz	- 145dBc								
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