Product Overview

The OSA 5548C Timing Signal Generator (TSG) is a scalable synchronization solution ranging anywhere from 20 unprotected outputs up to a thousand protected outputs by adding up to four expansion shelves to the core unit. Its ultra-compact footprint makes it ideal for telecom operators to provide scalable network synchronization in over-crowded exchanges. The distributed intelligence message passing system of the OSA 5548C TSG eliminates single points of failure and guarantees reliable uptime. Core unit and expansion shelves share the same modules, minimizing overall administrative complexity and enabling reduced homologation activity.

Versatile In- and Output Interface Modules

The OSA 5548C TSG comes with universal input modules accepting a wide range of input signals and is designed to reduce the amount of spares. Each input module can accept up to four signals, optionally protected by an identical, adjacent module. The architecture supports configurations ranging from four unprotected inputs up to eight protected inputs. The unique output module design of the OSA 5548C TSG provides 20 auto-configurable output interfaces. Ten universal output groups can be configured flexibly to support configurations ranging from 20 unprotected outputs up to 200 protected outputs on one shelf. Mixing of protected and unprotected outputs is supported. The OSA 5548 TSG also supports input and output modules capable of terminating and generating T1 and E1 signals. In addition, the OSA 5548C TSG can be equipped with an NTP Stratum 1 server and IEEE 1588-2008 Version 2 PTP Grandmaster modules for timing distribution over packet networks.

Flexible Input Selection

Optional GPS modules are available to meet Stratum 1 requirements without the need to install and manage external receivers or Cesium Primary Reference Clock sources. The synchronization distribution hierarchy can therefore be flattened, resulting in reduced overall provisioning, operations and maintenance costs. The active reference input can be selected based on SSM value, a priority table or performance threshold masks. Jitter and wander on the reference input is filtered by a high-quality oscillator and DDS technology utilizing Rubidium or Double Oven Quartz (OCXO) technology.

Management and Performance Assurance

The SyncView™Plus management software provides powerful fault, configuration, inventory, performance and security management of the OSA 5548C TSG through an intuitive graphical user interface either locally or from a remote location. Active inputs are constantly measured against the current output reference with 1ns resolution. MTIE, TDEV and Ym curves are compiled and used for input selection. Results can be compared to standard masks and trigger alarms when limits are exceeded. All results are forwarded to SyncView™Plus for display, user validation and storage. Local alarm indication is provided by means of an internal buzzer, electrical relay contacts and status LEDs on the front panel.

Features & Benefits

- Unique design of master, expansion and remote shelves

- Intuitive and modular architecture adapted to all telecom node sizes

- Expandable system to provide up to 1000 protected outputs

- Stratum 1 Primary Reference Source with optional GPS modules

- Universal output and input module design

- Fully manageable by TL1 and intuitive Graphical User Interface

- Optional NTP and PTP modules

- 1:1 protection for every module and function

Technical Information

Overall Architecture
- 5548C TSG 3U: 4 inputs + 2 GPS receivers, 60 outputs
- 5548C TSG 6U: 8 inputs + 2 GPS receivers, 200 outputs
- Up to 4 Expansion Shelves per main shelf, 200 outputs each for 1000 outputs total
- Remote shelves can be connected using CC or DS1 to propagate byte alignment (CC signal) or SSM (DS1 signal). This allows virtually unlimited output capacity
- All modules can be protected 1:1

Inputs
- Up to 8 line inputs in OSA 5548C TSG 6U (4 with TSG 3U), optionally 1:1 protected, 4 inputs per module
- Input types: DS1, CC, 5 MHz, 10 MHz individually SW-selectable
- Up to 2 GNSS inputs, active L1 antenna, 1575.42 MHz
- DS1 inputs can be "terminated" (75Ω), "DSX-Monitor Level" or "bridged" (high impedance, kΩ)

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

Tracking and Holdover
- DDS-based tracking and holdover functionality
- Stratum 1 reference with embedded GPS or external Cesium source
- Stratum 2-based on Rubidium holdover < 2e-12/day (at 25°C)
- Stratum 3E-based on OCXO SC-P3 holdover < 1e-10/day (at 25°C)

Outputs
- 20 outputs per module (2 groups of 10)
- Up to 60, optionally 1:1 protected on 5548C TSG 3U
- Up to 200, optionally 1:1 protected on 5548C TSG 6U
- Output type configurable by group of 10 outputs

Time Code Outputs
- Up to 10 TCC-NTP or 20 TCC-PTP modules in 5548C TSG 6U
- NTP, SNTP v4 (RFC 2030)
- IEEE 1588 V2 PTP Grandmaster
- Each TCC module takes place of one output module

Standards Compliance
- ANSI T1.101 and T1.403
- Telcordia GR-2830/1244/378/253-CORE
- GR-1089 and GR-63 NEBS3, CE
- IETF RFC 2030 (SNTP v4), RFC 1305 (NTP)
- ITU-T G.703, G.811, G.812, G.704, G.781
- ETSI EN 300 462-6, -4

Re-Timing
- Re-timing modules take same slots as main output modules
- 8 DS1 traffic-carrying signals per module
- Up to 80 re-timed DS1 signals on TSG 6U
- Configurable alarm thresholds in slips per hour/day/week
- Traffic protection with by-pass relay

Management
- Status LEDs on front panel
- Contact relay alarm closures (2x3 N.O. or N.C. contacts)
- Electrical alarm collection inputs (10)
- Specific user-definable alarm messages
- Local RS232C port, TL1 protocol on front and rear panels
- Remote 10/100BaseT
- Remote management via SyncView™Plus
- Synchronization network management software supporting full FCAPS capability

Performance Measurement
- Phase measurement on all inputs, GPS included
- 1ns resolution
- MTIE, TDEV, Ym curves computed locally
- User settable alarm thresholds

Expansion Shelves
- Up to 200 outputs per shelf, optional 1:1 protection
- Up to 4 Expansion Shelves for a total of 1000 outputs
- Dedicated redundant communication bus between master and expansion shelves

Power
- Dual -48VDC power input (-40 to -60VDC)
- Power consumption: max. 6A (master shelf)

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
- OSA 5548C TSG 3U: 5.25" x 19" x 9.7" (H x W x D)
- OSA 5548C TSG 6U: 10.5" x 19" x 9.7" (H x W x D)

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