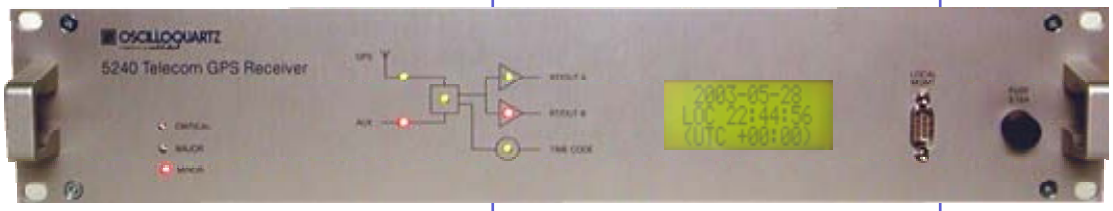
OSA 5240 GPS Receiver

The compact, flexible, manageable synchronisation solution for Mobile and SDH/SONET Networks

Overview

The *OSA 5240 GPS* is specifically designed for the synchronisation of 2G, 2.5G and 3G mobile networks and SDH/SONET transport networks. DAB and DVB-T broadcasting networks and mobile location services such as E911 can also take advantage of this compact and economical synchronisation solution that provides advanced features at a fraction of the cost of other currently available solutions.



Versatility

The *OSA 5240 GPS* is versatile: besides supplying GPS-based frequency references, it can also re-time E1/DS1 traffic channels whose timing has been impaired by SDH/SONET pointer adjustments; moreover, the *OSA 5240 GPS* can optionally provide NTP/IRIG-B time distribution. It is therefore possible to supply frequency outputs, re-timing and time distribution information without having to install separate boxes, each with its GPS antenna, cabling, management connection, etc.

Reliability

The *OSA 5240 GPS* is reliable. In case of loss of the GPS signal, the system can lock onto its auxiliary input and still provide PRC-traceable synchronisation outputs.

Holdover

The *OSA 5240 GPS* features the same high quality internal double-oven oscillator already used in the renowned 5581C GPS and can thus provide the same excellent holdover quality. As an option, the *OSA 5240 GPS* can also be equipped with a Rubidium oscillator for superior holdover performances.

Output Configurations

The *OSA 5240 GPS* can be configured in a number of ways. For example, it can provide 8 or 16 output signals, whose type can be individually selected via management software by the user among the following:

- 2.048/1.544 Mbit/s (E1/DS1)
- 64 kbit/s CC (max 8 signals)
- 2.048 MHz
- 1 PPS
- 10 MHz

Alternatively, it is possible to configure 8 or 16 E1/DS1 re-timing channels or a combination of output and re-timing (8 outputs + 8 re-timing channels).
Moreover, the *OSA 5240 GPS* can host a time distribution module providing either an embedded NTP server with separate 10 BaseT network connection or 4 IRIG-B output signals.
A unique feature of the 5240 GPS consists in providing CC outputs in phase with the UTC-derived PPS; this allows to ensure phase alignment between CC outputs from different 5240 sub-racks.

Manageability

The *OSA 5240 GPS* is manageable locally via Local Manager software and remotely via the renowned Oscilloquartz' SyncView™ synchronisation network management system. This allows to combine, in the same network, the *OSA 5240 GPS* with other Oscilloquartz synchronisation equipment while maintaining a complete view of the whole network via a single management system. The equipment view is identical under LM and SyncView™, allowing operators to easily switch from one platform to the other.
Finally, the *OSA 5240 GPS* can include an SNMP agent that allows the unit to be managed by any SNMP-compliant management software.

Highlights:

- Compact, economic, fully manageable GPS receiver with auxiliary E1/DS1/MHz line input
- High stability holdover with choice between OCXO or Rubidium oscillator
- Up to 16 outputs individually configurable by management software
- Up to 16 E1 or DS1 re-timing channels
- Full SSM support
- CC phase alignment between different sub-racks ensured by UTC absolute reference
- Optional NTP server or IRIG-B outputs
- Manageable locally via Local Manager and remotely via SyncView™

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Technical Data 5240 GPS

Typical Applications

- Synchronisation of cellular networks at BSC or MSC level
- Re-timing of traffic signals affected by SDH/SONET pointer adjustments
- Time and frequency reference for power utilities and public services
- Synchronisation of DVB-T transmitters in SFN (Single Frequency Networks)
- UTC-traceable call billing thanks to NTP (or IRIG-B) time reference

Possible Configurations:

- Minimal 4-output configuration:
  1x2.048 MHz, 1xPPS, 1x10 MHz, 1xE1/DS1
- 8 outputs (up to 4 can be configured as CC)
- 8 re-timing
- 8 outputs (up to 4 can be configured as CC) + 8 re-timing
- 16 outputs (up to 8 can be configured as CC)
- 16 re-timing

Optional NTP or IRIG-B time outputs on all above configurations

Input References

- GPS with simultaneous tracking of 8 satellites
- 0.064, 1, 1.544, 2.048, 5, 10 MHz or 1.544/2.048 Mbit/s (DS1/E1) auxiliary input with SSM detection.

Performance when locked to GPS

- Timing accuracy:
  < 100ns pp (at constant temperature)
  < 150ns pp (at variable temperature, -5 °C to +55 °C)
- ADEV < 10^{-12} (10'000 seconds)

Holdover performance

OCXO:

- Long term stability: $1x10^{-10}$ / day typical
- Frequency stability: $6x10^{-10}$ pp (-5 °C to +55 °C)

Rubidium:

- Long term stability: $5x10^{-11}$ / month
- Frequency stability: $2x10^{-10}$ pp (-5 °C to +55 °C)

Output Signals

- 8 or 16 outputs individually selectable by SW among:
  - 2.048 MHz compliant to G.703-13
  - 2.048 Mbit/s (E1) compliant to G.703-9 (incl. SSM)
  - 1.544 Mbit/s (DS1) compliant to GR-499-CORE (incl. SSM)
  - 64 kbit/s (CC) compliant to GR-378-CORE
  - 10 MHz, 1 Vrms sine, 50Ω
  - 1 PPS, 200 ms width, rise time < 20ns, 2.5 Vpp / 50Ω

Re-timing

8 or 16 re-timed signals, either:

- 1.544 Mbit/s (DS1) compliant to GR-499-CORE or
- 2.048 Mbit/s (E1) compliant to G.703-9

Configurable alarm thresholds in terms of slips per hour, per day, per week, on an individual channel basis.

Time Distribution

NTP:

- 10 BaseT/Ethernet, RJ-45 connector (dedicated connector)
- NTP version 3 (RFC-1305)
- SNTP version 4 (RFC-2030)

IRIG-B:

- 2 x IRIG-B 122 (AM 1 kHz, 3Vpp nominal)
- 2 x IRIG-B 012 (ACMOS, pulse width coded, 10ms res.)

Antenna

- Roof antenna
- Window/wall antenna
- 10/20/60/120/300m cables with connectors

Management

Local management:

- Local Manager for OSA 5240 GPS, running on MS Windows 98/NT/2000/XP, RS-232C port
- 3 relay contacts (Major/Minor/Critical Alarms)

Remote management:

- SyncView™ synchronisation management software, 10BaseT Ethernet, RJ-45 connector

Physical, Power Supply

- Sub-rack 19", 2U high
- 22-40 VDC or 40-60 VDC power supply
- Dual power connection
- Consumption: varying from 40W to 75W (depending on configuration)

Connector Panels

- BNC and Sub-D 9p for
  - 2.048 MHz (75Ω)
  - E1 asymmetrical (75Ω) or symmetrical (120Ω)
  - 10 MHz (50Ω)
  - 1 PPS (50Ω)
- BNC for RTU-E1 (75Ω)
- Sub-D for RTU-E1 (120Ω symmetrical)
- Wire-wrap for
  - 2.048 MHz (75Ω)
  - DS1 (100Ω symmetrical)
  - 10 MHz (50Ω)
  - 1 PPS (50Ω)
- Sub-D for RTU-T1 (100Ω symmetrical)
- Wire-wrap for RTU-T1 (100Ω symmetrical)

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