

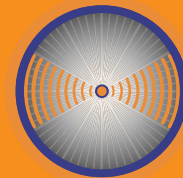
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Time & Frequency Synchronization



www.spectracomcorp.com



orolia Group

Spectracom is a unit of the Orolia Group.

 **spectracom**

Precisely What You're Looking For

Spectracom's time and frequency synchronization products meet the needs of many industries. We enable and improve the reliability of communications, networks, electronic systems and application-specific devices by synchronizing critical operations. Our broad portfolio allows us to offer you an optimal configuration from commercial-off-the-shelf, configure-to-order, or custom engineered solutions at the lowest cost of ownership. And our personal customer service sets us apart from other suppliers. We'll work with you with installation, integration and changes in deployment. Quite simply, our job is to make sure you have the right tools for the job with support that is second to none.

Capabilities

- GPS synchronization (Secure SAASM GPS P(Y) L1/L2)
- Supports a wide variety of synchronization signals and protocols
- Network management, next-generation standards (IPv6)
- The latest encryption, security and authentication protocols
- Rack-mount, bus-level, board/module/OEM, redundancy
- Synchronization software and drivers
- System integration, services, specials and custom-engineered solutions

Typical Synchronization Applications

- Time-stamping critical events
- Global networks/cloud computing
- Synchronizing distributed business processes
- High performance/low latency computing and simulation
- Security, video, access control systems
- Records management/regulatory compliance
- Test range/telemetry synchronization
- Satellite communications
- Land mobile radio, broadcast/simulcast

Typical Industries



Aerospace and Defense: Nowhere is precise timing more significant than in synchronizing military operations. Defense forces and airborne operations require synchronization for high-reliability and highly secure networks and communications systems.



Broadcast and Telecom: Digital broadcast and other wireless networks need system-wide synchronization so every transmission station is sending the same data at the same exact frequency and same exact time.



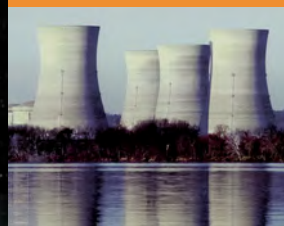
Enterprise Networks: Synchronization across enterprise networks improves accuracy, security, interoperability, and troubleshooting especially in distributed computing environments found in civilian government agencies, healthcare information systems, global networks and more.



Financial Services: Precise timing supports the distributed-nature of financial transactions today. From optimizing low-latency applications to regulatory compliance, synchronization is critical for managing the dynamic data of global operations.



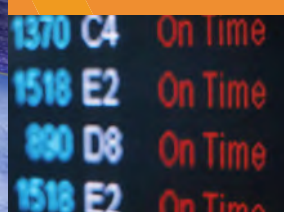
Industrial Automation and Process Control: Timing is a core service in many distributed control systems (DCS) and for SCADA. Many synchronization formats are required throughout highly secure environments.



Power, Energy & Utilities: The distribution of power and energy requires precise synchronization for maximum efficiency. Electric power grids and pipelines are vast automated systems of interconnections highly dependent on precise timing for fault-proof operations.



Public Safety & Security: Synchronization of emergency call center operations improves response times, enhances interoperability and establishes events as legally traceable.



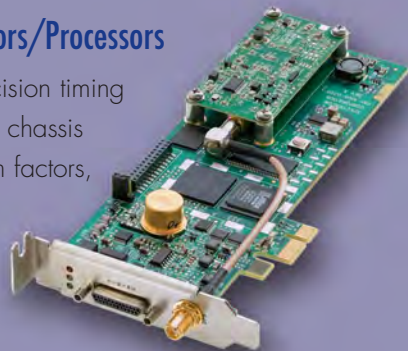
Transportation: Accurate timing is important for transportation centers and is vital for many applications such as dispatch and air traffic control.

Bus-Level Timing

Timecode Readers/Generators/Processors

Plug-in slot cards provide precision timing in PCs, servers and instrument chassis utilizing industry standard form factors, communications buses, and operating systems.

- On-board precision clock keeps internal time
- Low latency time-stamping to +/- 4 nanoseconds
- Synchronization to IRIG, GPS, PTP
- Time-tag external events
- Programmable alarm "match-time"
- Programmable pulse, wave output
- External and programmable alarm/output can generate interrupts for application programming
- Generate timecodes (IRIG, PTP, etc.) for other devices



TSync-PCIe PCI Express card with internal GPS receiver

Form Factors

- PCI Express (low-profile x1)
- PCI (3.3v universal signaling, up to 66 MHz)
- cPCI
- PC104
- PMC
- IP



TPRO-PCI-66U PCI card synchronizes to IRIG timecode (optional GPS antenna/receiver)

Software drivers

Spectracom offers device drivers for all popular operating systems including Windows, Linux and Solaris. Our Windows-based drivers are designed with a user-friendly GUI that allows the operator to access all of the board functions.

Supported Operating Systems	PCIe	PCI	cPCI/PMC	PC104
Windows Vista (64-bit)	X	X		
Windows Vista (32-bit)	X	X	X	X
Windows 2000/XP	X	X	X	X
Windows NT	X	X	X	X
Linux (64-bit) ¹	X	X		
Linux (32-bit)	X	X	X ²	X
LynxOS		X ³		
VxWorks			≈	
Solaris ¹	X	X		
SunOS		X ³		
LabVIEW		X ³	X	

¹ Supports multi-threaded applications on multiprocessor machines

² 2.4 Kernel only

³ PCI-U2 versions only

Time & Frequency Synchronization Instruments

Time & Frequency Synchronization System



SecureSync® combines Spectracom's precision master clock technology and secure network-centric approach with a compact modular hardware design. Standard master clock features are enhanced by a large number of input/output features via option cards; up to 6 cards per unit. New cards are continually added, or can be developed for your specific needs.

Lowest cost of ownership

- Configure-to-order: order only what you need
- Add features as your system configuration changes and grows
- Add-on products for systems requiring wide T&F distribution or redundancy

Highest reliability

- Multiple prioritized references with internal time-keeping: TCXO, OCXO or Rubidium oscillator
- Shock and vibration tested
- Industry-leading product support backed by a 5-year warranty

Security-hardened network appliance

- Network and communications protocols make authorization, authentication, and accounting easy
- Vulnerability tested and approved
- Disable or enable protocols and ports depending on your needs and security policies
- Isolate management functions to a private network separate from NTP client networks (optional)

SecureSync Features

External Reference GPS, Secure GPS (SAASM), 1PPS, IRIG, ASCII timecode, NTP peering/stratum-2, PTPv2 (IEEE-1588) slave, Frequency

Internal Reference TCXO, OCXO, low-phase noise OCXO, Rubidium

Outputs 1 MHz, 5 MHz, 10 MHz, 1PPS, IRIG, ASCII timecode, NTP server, PTPv2 (IEEE-1588) grandmaster, T1/E1, STANAG, HaveQuick, Alarm relays, Programmable TTL, Event broadcast

Epsilon GPS Clocks

Epsilon GPS Clocks are precision time and frequency references well-suited for the requirements of single-frequency wireless network synchronization. 1PPS and 10 MHz outputs are perfectly synchronized and highly accurate due to the EpsiTime™ smart predictive algorithm. Several form factors are available including an OEM board, a compact module, a 1RU rack-mount and a fully redundant 2RU unit with hot-swappable GPS clock modules.

EC22S Redundant GPS Clock

- Fully redundant dual GPS clock
- 8x each 1PPS and 10 MHz
- Remote management by SNMP/HTTP via Ethernet



EC20S GPS Clock

- Up to 10x 1PPS and 10 MHz
- NMEA timecode output and other signals as required
- Remote management by SNMP/HTTP via Ethernet



EB03 Epsilon OEM Board

- 1x 1PPS, 10 MHz, and NMEA timecode
- Optional evaluation kit speeds development



EC1S GPS Clock Module

- 1x 1PPS, 10 MHz, and NMEA timecode
- Additional output options available



Frequency Standards for Calibration and Metrology

Spectracom's Pendulum test and measurement product line includes several precise reference clocks with near-cesium stability. Portable, battery-powered, and stand-alone models are available. Contact us for more information.



Synchronization Add-ons and Accessories

Spectracom offers an even-wider range of products and services so you can make the most of your synchronization deployment. Synchronization software, display clocks, time & frequency measurement, and synchronization testing, backed by integrated logistic services and support are more ways you can count on Spectracom to synchronize your critical operations.

Time and Frequency Distribution



SAS-17E

Effective use of time and frequency references could require a distribution system to ensure synchronization of many devices in several locations. While many of our time and frequency references include multiple outputs for flexibility, we offer a variety of distribution amplifiers each capable of automatic switching of redundant master reference-signal sources. Many applications can benefit from the simultaneous 10 MHz and 1PPS distribution capability of the Epsilon Switch and Amplifier System, models SAS-17E and SAS-36E, with remote management over Ethernet.

Model	Signals	Outputs	Coax	Fiber	Form Factor
SAS-17E	10 MHz and 1 PPS (timecode also available)	8 each	X		1 RU
SAS-36E	10 MHz and 1 PPS (timecode also available)	16 each	X		2 RU
900-Series	10 MHz, 1 PPS and Timecodes	Up to 30	X		3 RU
DA-35	10 MHz	Up to 40	X	X	3 RU
DA-36	10 MHz	4	X	X	Bench-top
8143/8143	10 MHz or 1PPS or T1/E1 Clock	10	X		2 RU

Network Time Server

NetClock® 9400 Series



NetClock® 9483

The latest generation of the industry-leading NetClock Time Server is available in two models. The NENA-compliant 9483 includes a modular design for greater versatility, multi-network port card for separate, isolated networks, and optional PTP master/slave card. The 9489 includes the NetClock standard GPS NTP server functionality with TCXO internal oscillator. Both versions have a shock and vibration-tested chassis (MIL-STD-810F) and support the latest network time protocol for secure, reliable network synchronization.

NetClock Model 9400	Model 9483	Model 9489
External Reference	GPS, IRIG, NTP peering/stratum-2, PTPv2 (IEEE-1588)	GPS, NTP
Internal Reference	TCXO, OCXO, Rubidium	TCXO
Outputs	10 MHz, 1PPS, ASCII timecode, IRIG, NTP server, PTPv2 (IEEE-1588), T1/E1, Alarm relays	1 PPS, ASCII, timecode, NTP
Other	DC power back-up, Multiport Ethernet	