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***New!* SecureSync 2400 is now available with multiband GNSS variant, and improved holdover oscillator variants – while preserving its best-in-class modularity and network timing scalability.**

SECURESYNC 2400

Resilient Time and Frequency Synchronization Platform

Resilient Timing for Evolving Requirements

Resilient Timing depends on securing the precise time keeping, when exposed to GNSS interferences. Government recommendations, like the Executive Order in the US or the Cybersecurity Act in European Union, pave the way for future regulations in this domain.

The SecureSync product ecosystem offers a number of solutions to address GNSS threats. With a layered-defense approach, each protective layer increases the sophistication required to compromise, minimizing chances for successful attack.

SecureSync relies on the proven Interference Detection Suite, allowing jamming and spoofing detection. Threats are mitigated by high-performance internal oscillators, or through strong modularity and choice of input interfaces, building redundancy into the timing system architecture.

Whatever your industry, there is a cost-effective SecureSync configuration that keeps your time distribution accurate and available.

- Highly modular architecture delivering exceptional flexibility for integrating diverse network and legacy timing interfaces.
- Multi-band, multi-constellation GNSS reception (GPS, Galileo, QZSS, NavIC, BeiDou) for superior accuracy and availability, with GNSS interference detection and mitigation.
- Multiple internal oscillator options to ensure strong resilience during GNSS interruptions.
- Broad support for external reference inputs—network and legacy—to enable robust, fault-tolerant timing architectures.
- Scalable network timing with high-speed, high-throughput connectivity.
- Comprehensive protocol support, including NTP, PTP, White Rabbit, and GPSd.
- Engineered to uphold industry best practices for cybersecurity and secure operations.
- Advanced monitoring and integration via REST API and SNMP.
- Flexible user experience with an intuitive web interface and an expert mode for advanced configuration.
- Industry-leading five-year limited warranty for long-term confidence.
- Rugged, reliable design engineered for demanding environmental conditions.

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Security

SecureSync 2400 is designed with security in mind, combining cybersecurity best practices, including VLAN support account/access management, authentication, encryption, security event logs, network features disabling, as well as regular, secured firmware updates to keep pace with the latest vulnerabilities and protocol improvements. SecureSync is the only time server which includes a FIPS 140-3 certified cryptomodule, at the heart of all authentication and cryptographic functions.

Networking that Scales

SecureSync 2400 provides leading and scalable networking capability, thanks to:
- Two Gigabit Ethernet ports (one RJ-45, one SFP) on base unit.
- Optional network timing option cards, supporting NTP, PTP and White Rabbit protocols.

SecureSync supports up to 12 x 1 GbE ports and up to 8 x 10 GbE ports. As a PTP Grand-Master (with 1204-32 option cards), SecureSync 2400 supports up to 2 million PTP requests per second.

SecureSync network ports can be configured as master/server or as slave/client, enabling building robust, redundant network timing distribution architectures.

Thanks to the WROX card, SecureSync provides nano-second level time transfer accuracy thanks to White Rabbit protocol, on 1 GbE or 10 GbE interfaces. SecureSync transfered time through White Rabbit networks is comparably as accurate as through GNSS reception.

Refer to SecureSync option card datasheets for detailed features associated with option cards. Refer to the WROX option card datasheet for specific WROX features.

Modularity

For applications that use “physical” timing signals and require multiple interface types, SecureSync 2400 offers unmatched modularity and a choice of more than 40 option cards.

The base unit provides configurable Input/Output timing interfaces (TTL pulse, RS-232/RS-485, IRIG AM /DCLS), on top of 10 MHz and 1 PPS outputs. If more interfaces are needed, the base unit supports either 2 (2402) or 6 (2406) option card slots, enabling whatever combination of frequency, phase, NMEA or Have Quick time codes, and network synchronization is needed.

Reliability

At the appliance level, SecureSync includes an optional, dual (redundant), hot swappable power supply combined with AC, 12 VDC or 24/48 VDC power modules. Modularity enables multiple time reference management as well as redundant time distribution architectures, which is instrumental to system- level reliability. Any failure is identified and reported in real time, reducing periods of unavailability.

Monitoring

SecureSync 2400 embeds local and remote monitoring tools, including detailed event logs, real-time access to health and operation status, timing performance graphs, and alerts. Integration into automated monitoring systems is supported with legacy protocols like SNMP as well as the more recent REST API. Quick, local diagnostics are accelerated thanks to the front panel indicators and OLED display.



Technical Specifications

See option card descriptions for additional performance specifications.

10 MHz Frequency Output:

Internal Oscillator	TCXO	MSO (6)	OCXO	HSO (7)	LPN OCXO	Rubidium	LPN Rub
Accuracy (average over 24 hours with GNSS lock)	$5x10^{-12}$	$5x10^{-12}$	$4x10^{-12}$	$3x10^{-12}$	$3x10^{-12}$	$1x10^{-12}$	$1x10^{-12}$
Medium Term Stability (In free run, after two weeks of operation)	$1x10^{-8}$ /day	$1x10^{-9}$ /day	$5x10^{-10}$ /day	$2x10^{-10}$ /day	$2x10^{-10}$ /day	$5x10^{-11}$ /month ($3x10^{-11}$ /month typ)	
Short Term Stability (Allan Deviation)							
1 sec	$2.5x10^{-9}$	$1x10^{-10}$	$1x10^{-11}$	$3x10^{-11}$	$1x10^{-11}$	$1x10^{-11}$	$1x10^{-11}$
10 sec	$1x10^{-9}$	$3x10^{-11}$	$9x10^{-12}$	$9x10^{-12}$	$9x10^{-12}$	$9x10^{-12}$	$1x10^{-11}$
100 sec	$5x10^{-10}$	$1x10^{-11}$	$9x10^{-12}$	$8x10^{-12}$	$8x10^{-12}$	$4x10^{-12}$	$5x10^{-12}$
Temperature Stability (peak-to-peak)	$\pm1x10^{-6}$	$\pm1x10^{-7}$	$\pm5x10^{-9}$	$\pm1x10^{-9}$	$\pm2x10^{-9}$	$\pm1x10^{-10}$	$\pm1x10^{-10}$
Phase Noise (dBc/Hz)							
@1 Hz	-	-73	-95	-90	-100	-80	-100
@10 Hz	-	-115	-123	-117	-128	-98	-128
@100 Hz	-110	-135	-140	-135	-148	-120	-148
@1 kHz	-135	-140	-145	-145	-150	-140	-150
@10 kHz	-140	-153	-150	-155	-150	-140	-150
Signal Waveform & Levels: +13 dBm Sine into 50 ohm, BNC							

1 PPS Timing Output

	TCXO	MSO (6)	OCXO	HSO (7)	LPN OCXO	Rubidium	LPN Rub
Accuracy to UTC (locked to GNSS, @ 1 sigma)	±50 ns	±15 ns	±25 ns	±10 ns	±15 ns	±15 ns	±15 ns
Holdover (maximum time error, at constant temperature, after 2 weeks of GPS lock)							
After 4 hours	12 µs	4 µs	1 µs	0.8 µs	0.5 µs	0.2 µs	0.2 µs
After 24 hours	450 µs	87 µs	25 µs	8 µs	10 µs	1 µs	1 µs
Signal Waveform & Levels: TTL (5 V_{P-P}), into 50 ohm, BNC							

Timing Signals

10 MHz Sine Output, BNC

SW Configurable Timing Output, BNC

- TTL Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK)

SW Configurable Timing Input/Output, HD-15

- TTL Input/Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK)
- RS-232 Input/Output (NMEA, ASCII ToD)
- RS-485 Input/Output (1 PPS, xPPS [output only], IRIG DCLS, HAVE QUICK, NMEA, ASCII ToD)
- IRIG AM Output

Network Timing

- NTP v2, v3, v4: Conforms with RFC 1305 and 5905. Supports Unicast, Broadcast, Multicast, Symmetric Key Encryption, Peering, Stratum 2.
- SNTP v3, v4: Conforms with RFC 1769, 2030, 4330, and 5905.
- NTP Anycast.
- PTP v2: Conforms with IEEE 1588:2019. Supports Master, Slave, E2E, IPv4/v6, Multicast, Unicast, Hybrid modes.
- PTP supported profiles: default, power (IEEE 61850-9-3, IEEE C37.238-2011/2017), telecom (ITU-T G.8265.1, G.8275.2 master only), Enterprise, 802.1as profiles.

Management & Communications

- IPv4/IPv6: Dual stack
- VLAN support
- DHCPv4/DHCPv6 (AUTOCONF)/SLAAC: Automatic IP address assignment
- Syslog compliant format RFC 5424
- HTTP(S): Browser-based configuration and monitoring
- Command Line Interface (expert mode)
- REST API configuration and monitoring
- (S)FTP Server: Access to files (logs, etc.)
- SNMP: Supports v1, v2c, and v3 (no auth/auth/priv) with Enterprise MIB
- SMTP: Email

Security Features

- Support for DNSSEC configuration
- Configurable Password Policy
- Authentication: LDAP, RADIUS, TACACS+
- Enable/Block protocols
- Access Control Lists
- HTTP Strict Transport Security (HSTS) support
- SSL/SSH
- FIPS 140-3 certified cryptomodule
- SFTP/SCP: Securely transfers files to and from the time server over an SSH session
- SNMP v3: Remotely configure and manage over an encrypted connection
- Alert notifications via SNMP traps and email
- Signed software updates

GNSS Receiver

	L1 Receiver (option 3)	L1/L5 Receiver (option 4)
GNSS RF input	SMA connector (a N-SMA cable adapter is included)	
Reception bands & constellations	L1 (GPS, QZSS), E1 (Galileo), B1 (BeiDou)	L1, L5 (GPS, QZSS), E1 + E5a (Galileo), BeiDou (B2a), NavIC (SPS-L5)
Antenna powering	+5 VDC to power an active antenna	
Reception mode	Configurable receiver dynamics (Standard, Single satellite, Mobile)	
Receiver time offset	Configurable time offset to compensate for RF downlink delay	
T-RAIM	Yes	
Narrowband RF jamming filtering	No	Yes
GNSS interference (jamming / spoofing detection)	Optional - GPS	Optional – multiband / multiconstellation

Communications

Network Port
- Dual GbE (one RJ-45, one SFP)

Serial Set-up Interface
- CLI console port on front panel (micro USB) and rear panel (RJ-45)

Front Panel
- LED segments for time display
- OLED menu display and keypad for status and basic configuration
- LED status buttons with one-click menu access

Power
- Fixed 100-240 VAC, 50/60 Hz, ±10% from IEC60320 (option 0) connector; power cord included
- Fixed 12 VDC (option 3) or 24/48 VDC (option 4); mating connector and cable clamp included
- Optional dual hot-swap power with load-sharing and failover

Power Draw
- TCXO/OCXO/MSO/HSO : 40 W normal (50 W start-up)
- Rubidium: 50 W normal (80 W start-up)

Environmental

	Operating	Storage
Temp	-20 to +65°C (+55°C for Rb)	-40 to +85°C
Humidity	0%-95% RH non-condensing @ 40°C	
Altitude	100-240 VAC up to 13,123 ft (4,000 m)	45,000 ft (13,700 m)
Shock	MIL-STD-810H, 516.8 15g, 11 ms halfsine	
Vibration	MIL-STD-810H, 514.8C-2 cat 4 and 514.8D-11, cat 21 1.1 g rms vertical and 0.8 g rms longitudinal	

Regulatory Approvals
- CE, UKCA, TUV, cTUV, FCC part 15 class A, RoHS, REACH, WEEE

Size/Weight
- Designed for EIA 19" rack. 17.1" W x 1.74" H (1U) x 15.17" D (434 mm W x 44 mm H x 385 mm D)
- Weight : 6.0 lbs (2.72 kg) for base unit with AC power supply
- Front rack mount hardware included (assembly required)

Warranty
Five Year Limited Warranty[1]
- Oscillator for rubidium option is warrantied for two years
- Extended warranty is available

[1] *The warranty period may be dependent on country.*

Ordering Information

Base Units
240w-xyz
Select expansion capability, power, internal oscillator and GNSS options:

w = Expansion	x = Power	y = Internal Oscillator	z = GNSS Reference
2 = 2 Option Slots 6 = 6 Option Slots	0 = AC 3 = 12 VDC 4 = 24/48 VDC 6 = Dual Hot-Swap support[2]	0 = TCXO 1 = OCXO 2 = Low Phase Noise OCXO 3 = Rubidium 5 = Low Phase Noise Rubidium 6 = Medium Stability Oscillator (MSO) 7 = High Stability Oscillator (HSO)	3 = Multi GNSS 4 = Multi-band GNSS

[2] *Dual Hot-Swap requires ordering at least one power module (see power module options below), on top of power option 6 for the base unit .*

Example
A SecureSync with 6 slots base unit, with fixed AC power supply, HSO internal oscillator and multi-band GNSS as the primary reference is Model Number 2406-074.

A SecureSync with 2 slots base unit, with Dual Hot Swap AC power supplies, rubidium internal oscillator and multi-band GNSS as the primary reference is Model Number 2402-634 and requires the addition of 2 power supply modules 2400-HS-A1.

Optional Upgrade
SS-OPT-BSH: GPS Jamming and Spoofing Detection

SS-OPT-AGP: RINEX server (generates GPS and GALILEO almanac and ephemeris file)

Option Modules
Up to 6 option modules can be accommodated per unit.
See Option Module Card datasheet for details.

Power Modules
Up to 2 power modules, from below list, shall be ordered with the Dual Hot-Swap power option 6:
- 2400-HS-A1: 100-240 VAC.
- 2400-HS-D1: 12 VDC.
- 2400-HS-D2: 24/48 VDC.

Accessories

- I/O timing signals breakout cable enables conversion from single HD-15 connector to individual BNC and Sub-D connectors
- SFP (copper, FO Single Mode, FO Multi-Mode)
- Ancillary kit, strain relief.

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