



NETSYNC^{PLUS}® CESIUM PRS-50



AUTONOMOUS PRIMARY REFERENCE SOURCE

Stratum 1 Network Synchronization Solutions
For Advanced Network/Transit/Central Offices

- ✓ **Source:** Autonomous & Alternative Solution to GPS
- ✓ **AntennaLess™:** No Rooftop/Wall Mounted GPS Antenna/Installation Needed
- ✓ **Operation:** Maintenance-Free (12-year warranty on Cesium tube)
- ✓ **Setup:** Plug & Play in < 45 Minutes
- ✓ **Outputs:** 2x DS1, 1x 1/5/10 MHz, 2x E1 (optional)
- ✓ **Communications:** 1x EIA-232 (2x optional)
- ✓ **Management:** TL1 (optional)



The Best Investment Today
for Delivering Superior Telecom Services!





BEST AUTONOMOUS NETWORK SYNCHRONIZATION

NETSYNC^{PLUS} CESIUM SOURCE

The PRS-50 is a standalone Primary Reference Source based on cesium beam technology. It's designed for telecom network operators to generate superior and highly reliable Stratum 1 synchronization signals for advanced network services.

The PRS-50's architecture uses the latest digital technology for superior performance and maintenance-free operation. The intelligent architecture of the PRS-50 provides the critical robustness to protect the customer's investment while complying with the latest industry standards.

Solution

- ✓ Cost-effective solution
- ✓ Full long-term investment protection

Architecture

- ✓ Intelligent & robust
- ✓ Low maintenance cost
- ✓ Easy installation

Output

- ✓ Two DS1/E1 outputs
- ✓ Sync Status Messaging (SSM) on DS1/E1 for self-healing networks
- ✓ One 1, 5, or 10 MHz (TTL)

Warranty

- ✓ Standard 12-year warranty on cesium tube
- ✓ Standard 2-year warranty on electronics

Communication/Management

- ✓ EIA-232 connection (single or dual)
- ✓ Embedded TL1 interface
- ✓ PC-based Q3/CMIP interface for powerful TMN management
- ✓ PC-based SNMP interface

Standards

- ✓ Compliance with the latest and new industry standards is guaranteed
- ✓ Compliance with critical AS/CE standards for interference protection

INDUSTRY STANDARDS COMPLIANCE

The PRS-50 is designed to meet the latest and evolving industry standards, including ITU-T, ETSI, EIA, ANSI, Bellcore, and AS/CE (EMC).

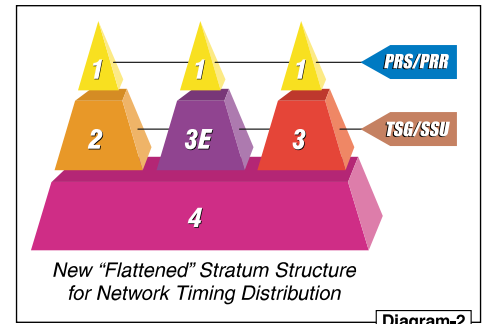
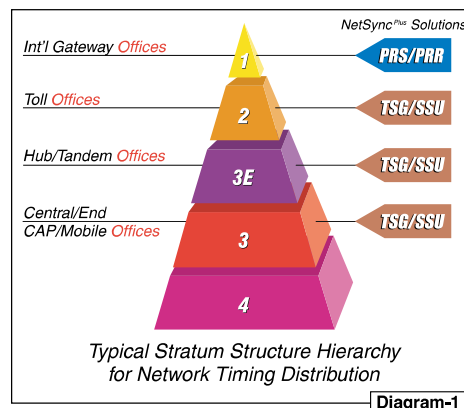
ECONOMICAL STRATUM 1 SOURCE

Unlike GPS or LORAN-C receivers, the PRS-50 requires no antenna. Thus, it offers an economical solution for sites where roof access is denied, costly or difficult. The PRS-50 is extremely easy to install and provides highly reliable operation over the lifetime of the system.

PRS-50 NETSYNC^{PLUS} APPLICATIONS

The PRS-50 is used to generate network-independent Stratum 1 timing signals within large and medium-sized network office sites. These sites are often strategic for telecommunications providers as they are traffic and equipment intensive.

As shown in **Diagram 1**, today's network timing distribution is typically structured in a hierarchical order with a Stratum 1 source (PRS) feeding lower Stratum level clocks (TSGs/SSUs).



The newest approach is to flatten the timing hierarchy without violating current standards and without causing timing loops (see **Diagram 2**). The purpose is to:

- Move all network clocks as close as possible to a Stratum 1 source
- Minimize the number of tandem clocks

This new approach can be easily implemented by feeding the TSGs/SSUs with PRS-50s. (see **Diagram 3**).

Today's network-carried timing signals are becoming less reliable sources and more difficult to manage as advanced networks are increasing in complexity and size.

The PRS-50 provides a simple and complete solution to these issues.

STRATUM 1 DEPLOYMENT BENEFITS

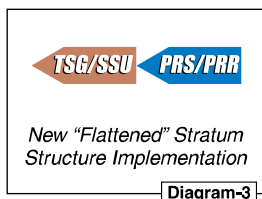
The deployment of PRS-50 systems across the network provides the following benefits:

- Lowers the operating and maintenance costs by reducing the Sync distribution, administration, and troubleshooting requirements.
- Reduces the number of network recovery clocks operating in tandem.
- Minimizes the pointer adjustments caused by "frequency errors" in the input clock rates fed to PDH/SONET/SDH/DWDM SS7/ATM network elements.

WORK/TRANSIT/CENTRAL OFFICE SOLUTIONS



- ❑ No up-stream clock errors can propagate down-stream through the network.
- ❑ Enhances overall network performance as TSG's/SSU's clock rearrangements are minimized through the use of Sync status messaging.



SPACE-QUALIFIED CESIUM RELIABILITY

Today, cesium technology is the world-wide standard reference for the measurements of time and frequency and the definition of the second. The PRS-50 uses DATUM's experience in space-qualified cesium technology to provide superior, yet critical NetSync reliability at competitive prices.

With more than 30 years of experience, DATUM's space-qualified cesium technology is utilized today in GPS satellites for the dissemination of navigation and synchronization signals.

INTELLIGENT ARCHITECTURE

The PRS-50's architecture uses the latest digital technology to provide superior performance and maintenance-free operation. Intelligent integrated software enhances overall performance and automatically manages and reports fault status.

NETSYNC^{PLUS} COMMUNICATIONS

The PRS-50 can be equipped with up to two EIA-232 ports.

Coupled with the optional NetSync^{plus}TM Manager software, the comm submodule

provides powerful fault, configuration, accounting, inventory, performance, security, and other optional management functionalities. It supports the following communication interfaces:

- ❑ Embedded TL1 (optional)
- ❑ PC-based Q3/CMIP interface for powerful TMN management (optional)
- ❑ PC-based SNMP interface (optional)

NETSYNC^{PLUS} SERVICE FAMILY

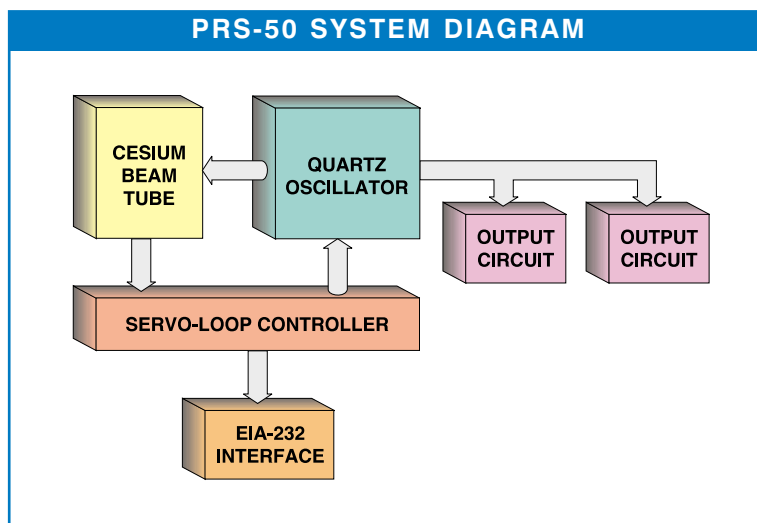
Extended NetSync services are provided to ensure our customer's success. Service programs include:

- ❑ Local 24-hour/day, 7-day/week-support (phone, fax, email, web, and technician)
- ❑ Local inventory support
- ❑ NetSync design & planning
- ❑ NetSync installation
- ❑ NetSync commissioning & testing until acceptance
- ❑ NetSync maintenance

ONLINE DATA SUPPORT

Visit our web site today at www.datum.com for the latest information, including:

- ❑ NetSync application notes
- ❑ NetSync training
- ❑ NetSync seminar
- ❑ NetSync resources
- ❑ Q&A support
- ❑ Local and international Net-Sync experts





PRS-50 TECHNICAL DATA

STANDARD FEATURES		
Accuracy		$< \pm 2 \times 10^{-12}$
Frequency Stability	Over temperature	$< 3 \times 10^{-12}$ over 0 to 50° C
	Under AC/DC magnetic field	$< 1 \times 10^{-12}$ for 2 Gauss change
	Short-term stability compliance	■ ANSI T1.101 Stratum 1 wander MTIE mask limits ■ Bellcore GR-2830-CORE wander TDEV and jitter limits ■ ITU-T fig.3/G.811
Outputs	2 x DS1	■ Balanced telecom outputs ■ Wire-wrap pin connectors ■ SF and ESF ■ SSM support per ANSI/T1 TR-33 on ESF signals
	1 x TTL	1, 5, or 10 MHz (user settable through EIA-232)
Warm-up Time		30 to 45 minutes
Communication	Port	1 x EIA-232 (9-pin male D-connector or DA9P)
	Speed	Up to 19.2 Kbps
Power Supply	Voltage DC range	-38 to -59 V (-48 V nominal), dual power
	Consumption	< 50 W (75 W during warm-up)
Size	H x W x D	10.5" x 19" x 10.1" (26.67 cm x 48.26 cm x 25.65 cm)
	Mounting	19" or 23" rack mounting
Weight		< 36.5 lbs (15.56 kg)
Ease of Maintenance		All circuitry resides on 1 easy-to-change module
Interference Compliance		FCC part 15 Class A & AS/CE
Telecom Configuration		NEBS tested & compliance
Warranty		■ 12 years on cesium tube ■ 2 years on electronics

OPTIONS — Alternatives to standard features listed above (Check all that apply)

E1 Telecom Output Signals

2 x E1	☐	■ CAS/CCS, CRC4, HDB3/AMI ■ SSM support per G.704-1995 on E1 signals ■ Wire-wrap pin
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Communications

Port & Language	☐	■ 2 EIA-232 (9-pin male D-connector or DA9P) ■ TL1
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