

NETSYNC^{PLUS}® SSU-2000e



INTELLIGENT ETSI-COMPLIANT SYNC SUPPLY UNIT

Cost-Effective ITU-T G.811/G.812 Network Synchronization Solutions
For Advanced Network/Transit/Access/Local Offices

- ✓ **Technology:** RealTime^{Plus}TM Monitoring, SmartTime^{Plus}TM Switchover, SmartHoldover^{Plus}TM
- ✓ **Performance:** Meeting G.811 for 2 Weeks during Holdover with Rubidium^{Plus}TM Clock
- ✓ **Primary Reference Source:** 2x GPS^{Plus}TM
- ✓ **Input:** 9x 2048 kbit/s G.703/9 (SSM), 2048 kHz G.703/13, 1/1.544/5/10 MHz, Monitoring
- ✓ **SynClock^{Plus}TM:** 2x G.812 Type I-VI Rubidium^{Plus}TM and/or Quartz^{Plus}TM
- ✓ **Output:** 20-460x 2048 kbit/s G.703/9 (SSM), 2048 kHz G.703/13, NTP
- ✓ **Communications:** 1x Ethernet (10 Base-T), 3x EIA-232 Ports
- ✓ **Management:** AutoReconfig^{Plus}TM, SNMP, TMN, Interactive ASCII, TL1, Local Windows Manager
- ✓ **EMC:** Class B -6dB, exceeds CE/AS



*The Best Investment Today
for Delivering Superior Telecom Services!*





INTELLIGENT NETWORK/TRANSMISSION SYNCHRONIZATION

INTELLIGENT NETSYNC^{PLUS} SUPPLY UNIT

The SSU-2000e is an intelligent, fully manageable Synchronization Supply Unit. Designed in an ETSI-compliant package, it utilizes the latest hardware and software integration technologies. It's used for telecom network operators to generate and distribute superior synchronization signals for advanced network services.

Solution

- ✓ Cost-effective solution
- ✓ Full long-term investment protection
- ✓ Fully Scaleable
- ✓ Fully manageable

Architecture

- ✓ Intelligent architecture
- ✓ Configurable as a Sync Distributor Unit when no clock is used
- ✓ RealTime^{Plus}™ performance-monitoring technology
- ✓ SmartTime^{Plus}™ switchover technology
- ✓ SmartHoldover^{Plus}™ technology when GPS and input references are lost
- ✓ AutoReconfig^{Plus}™ to-previous-settings technology
- ✓ Reference pass-through capability if clocks fail
- ✓ Software downloadable
- ✓ No transient on redundant input switchover
- ✓ Seamless integration of future requirements
- ✓ 2048 kbit/s G.703/9 & 2048 kHz G.703/13

Input

- ✓ DS1
- ✓ 1/1.544/5/10 MHz (user settable)
- ✓ Up to 9 inputs for monitoring or references
- ✓ Embedded Sync Status Messaging (SSM) for self-healing networks
- ✓ Integrated performance measurements (MTIE, TDEV, error rates) on all inputs

GPS

- ✓ Integrated single or dual GPS^{Plus}™ references

SynClock

- ✓ Integrated Rubidium^{Plus}™ and/or Quartz^{Plus}™ Clocks

Output

- ✓ 2048 kbit/s G.703/9 & 2048 kHz G.703/13
- ✓ DS1
- ✓ Up to 60 1:1 protected (main unit)
- ✓ Up to 400 1:1 protected add-ons (4 expansion units)
- ✓ Embedded Sync Status Messaging (SSM) for self-healing networks
- ✓ TOD through NTP
- ✓ NTP through the Ethernet port
- ✓ 3x EIA-232 ports

Communications/Management

- ✓ 1x Ethernet (10 base-T) port
- ✓ Embedded interactive ASCII interface
- ✓ Embedded TL1 interface
- ✓ Embedded SNMP interface
- ✓ External Q3/CMIP interface for powerful TMN management

Standards

- ✓ Compliance with the latest and evolving industry standards
- ✓ Compliance with the latest EMC standards

KEY SSU-2000 BENEFITS INDUSTRY STANDARDS COMPLIANCE

The SSU-2000e is designed to meet the latest and evolving industry standards, including ITU-T, ETSI, EIA, ANSI, Telcordia/Bellcore, and CE/AS.

POWERFUL NETSYNC^{PLUS} ARCHITECTURE

The SSU-2000e architecture is designed to accept intelligent functional modules in a flexible, fully redundant approach to seamlessly satisfy future requirements.

Up to 60 1:1 protected outputs are available in the main unit.



Up to 400 1:1 protected additional outputs are available through 4 expansion shelves, providing a capacity of 100 1:1 protected outputs per shelf.

Expansion shelves are designed with redundant connections for reliable uptime.

Input signals are passed through in case of multiple internal failures, including clock.

INTELLIGENT NETSYNC^{PLUS} MODULES

Each SSU module has an integrated CPU with software for superior reliability, flexibility, and functionality. Modules can be removed or inserted while the unit is operating without any degradation of the output signals. Each module supports the management of critical, major, and minor alarms. Powerful management can be performed to and within each module through the communication module.

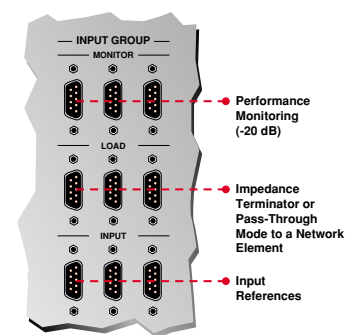


Input^{Plus} Module

The SSU accepts up to 3 input modules. Each input module is available with 1 or 3 ports. Input modules are fully user configurable through software to support the following signals:

- 2048 kbit/s G.703/9 & 2048 kHz G.703/13
- DS1
- SSM quality status
- 1 MHz (sine or square)
- 1.544 MHz (sine or square)
- 5 MHz (sine or square)
- 10 MHz (sine or square)

Each input module provides 3 or 9 active connectors for performance monitoring, impedance termination or traffic pass-through to a network element, and input references.



(cut-away view of the panel section)



GPS^{Plus}™ Module

The SSU accepts single or dual GPS primary reference modules to meet Primary Reference Clock requirements, which provides the following key benefits:

- ✓ Flattens the number of levels in the sync distribution hierarchy
- ✓ Improves the overall performance of the network
- ✓ Lowers the overall OAM&P costs (Operation, Administration, Maintenance, and Provisioning).
- ✓ Single unit Primary Reference Source (PRS)
- ✓ Time Of Day (TOD) through the Network Time Protocol (NTP)

SynClock^{Plus}™ Module

The SSU accepts single or dual clocks. A selection of mixed SynClock^{Plus}™ technologies is available to meet specific G.812 Type I-VI holdover requirements:

- Enhanced Rubidium^{Plus}™
- Enhanced Quartz^{Plus}™

SmartHoldover^{Plus}™

In case of loss of GPS and input references, the SSU uses intelligent software to provide enhanced output performance beyond the SyncClock's holdover stability.

Output^{Plus}™ Module

The SSU's main unit accepts up to 6 output modules, providing 60 1:1 protected outputs. Up to 4 expansion shelves can be added, providing up to 400 1:1 protected outputs. Various output modules are available to meet specific signal and interconnection requirements. The activation of the output ports are fully user controllable.

Comm^{Plus}™ Module

The SSU accepts a single communication module. Coupled with the GUI-based NetSync Manager or Local Management Terminal software, the communication module provides powerful fault, configuration, accounting/inventory, performance, security, and other optional management functions.

The communication module supports the following embedded management interfaces over EIA-232 and/or Ethernet ports:

- Interactive ASCII
- TL1
- SNMP (optional)
- Q3/CMIP through an external workstation (optional)

NETSYNC^{PLUS} SERVICE FAMILY

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

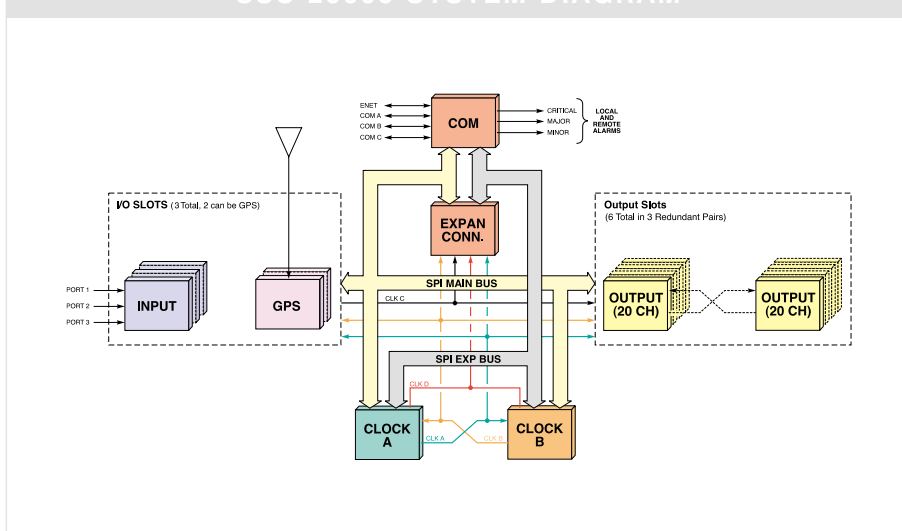
- ☐ Local 24-hour/day, 7-day/week support (phone, fax, email, web, and technician)
- ☐ Local inventory support
- ☐ NetSync design & planning
- ☐ NetSync installation
- ☐ NetSync commissioning & testing until acceptance
- ☐ NetSync maintenance

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 NetSync experts

SSU-2000e SYSTEM DIAGRAM





SSU-2000e TECHNICAL DATA

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KEY SYSTEM SPECIFICATIONS	
Architecture Capability	■ Main unit modules: 2 clock, 1 comm, 3 input, 3 single or redundant output ■ Output expansion shelves: Up to 4, 100 outputs/shelf, 5 single or redundant modules/shelf
GPS Performance	Compliant with PRS (Primary Reference Source) per ITU-T G.811, ETS 300 462-6, ANSI T1.101-1994 and Bellcore GR-283/1244-CORE
Clock Performance	Compliant with ITU-T G.812 type I-VI, ETS 300 462-4, ANSI T1.101-1994 & 1997 draft and Bellcore GR-378/1244-CORE
Sync Status Messaging (SSM)	Compliant with SSM specification per ITU-T G.704, T1X1.3 TR33, ANSI T1.101-1997 draft, and Bellcore GR -253-CORE
Network Time Protocol (NTP)	Compliant with RFC 1305 (V3); only available with GPS module(s)
Communications & Management	3x EIA-232 and 1x Ethernet ports, supporting interactive ASCII, TL1, SNMP and Q3/CMIP
Redundancy	User configurable
Event Log	Stores up to 500 events from any system faults, user interventions, and system actions. Events are time & date stamped to less than 1 msec.
INPUT	
Slot	3
Port	1 or 3 ports/module, reference or monitoring capability
Type	2048 kbit/s G.703/9, 2048 kHz G.703/13, DS1, 1/1.544/5/10 MHz (sine or square, user settable)
GPS	Up to 2, occupies 1 input slot per GPS
Sync Status Messaging (SSM)	Fully supported per above-listed standards
Selection Mode	Priority, SSM, Performance Mask
RealTime^{Plus}™ CPU	Intelligent software for real-time MTIE, TDEV and TIE performance monitoring
PERFORMANCE MEASUREMENT	
Resolution	1 ns
Sampling Rate	40 Hz
MTIE	Exceeds the latest ITU-T, ANSI and Telcordia/Bellcore standards
TDEV	Exceeds the latest ITU-T, ANSI and Telcordia/Bellcore standards
CLOCK	
Holdover Type	■ Enhanced Rubidium^{Plus}™ ■ Enhanced Quartz^{Plus}™
Control	DDS (Direct Digital Synthesis) technology for cost-effective calibration-free operation
OUTPUT	
Slot	Main unit: 3 single or redundant Expansion shelf: 5 single or redundant
Port	20 ports/module
Type	2048 kbit/s G.703/9, 2048 kHz G.703/13, DS1, TOD through NTP, NTP through the Ethernet port
Sync Status Messaging (SSM)	Fully supported per above-listed standards
Main Unit Port	Up to 60 1:1 protected outputs
Max. Capacity	Up to 400 1:1 protected outputs, 4 expansion shelves, 100 ports/shelf
COMMUNICATION & MANAGEMENT	
Communication Port	■ 3x EIA-232 ■ 1x Ethernet, 10 Base-T, TCP/IP
Management Interface	■ Simple fault, visual & contact closures ■ Embedded Interactive ASCII ■ Embedded TL1 ■ Embedded SNMP (optional) ■ Q3/CMIP through an external workstation (optional)
Local Management	Windows GUI-based Local Management Terminal
ENVIRONMENTAL	
Power (Vdc)	-40.5 to -75
Size (HxWxD)	500x480x229mm (19.7"x18.9"x9") or 500x530x229mm with rack ears (19.7"x20.9"x9")
Weight (max.)	12.1kg (26.7lbs) main unit, 10.1kg (22.3lbs) for each expansion unit