NS8001-PTP/SyncE

Product Specification
Benchtop or Rackmount Precision Time Server



(rack-mount kit available for 1RU profile)

GNSS Locked PTP/SyncE Time server provides < 25ns time for the entire network. Independently user-selectable 3 channel timing outputs with options for 10MHz, PPS, Square Wave, or IRIG signals.

Key Features:

- **PTP/SyncE**
- **+/-25ns sync accuracy**
- **100,000 transactions/second**
- **DC powered (12 Vdc)**
- **Compatible with Novus Network timing references**
- **PPS accuracy 5ns 1 sigma**
- **GNSS locked reference**
- **Supports Unicast, Multicast or Broadcast**
- **Benchtop or Rackmount hardware**

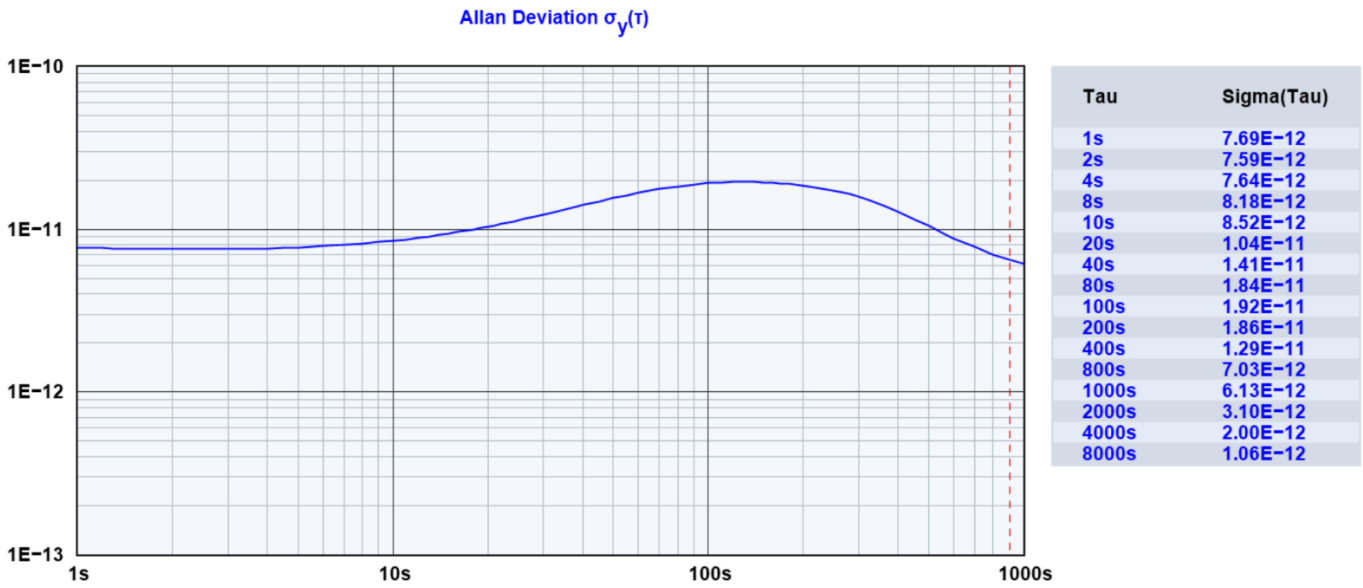
Typical Applications:

- **ITU Profiles: ITUG82651, ITUG82751, ITUG82752**
- **IEEE802.1AS-REV: including IEEE802.1CB tag handling**
- **Utility: including HSR and PRP tag handling**
- **3 channels: Independently user-selectable for 10MHz Sine, 1PPS, Square Wave (10Hz – 50MHz), or (IRIG-B DCLS, IRIG-AM, STANAG, or Have Quick)**
- **USB serial out with NMEA**

AS9100D ISO9001 MADE IN USA

Technical Specifications

Reference Frequency Output	
10.0 MHz Sine	1 Vrms ±0.2, into 50 Ohms
Locked stability	2E-11



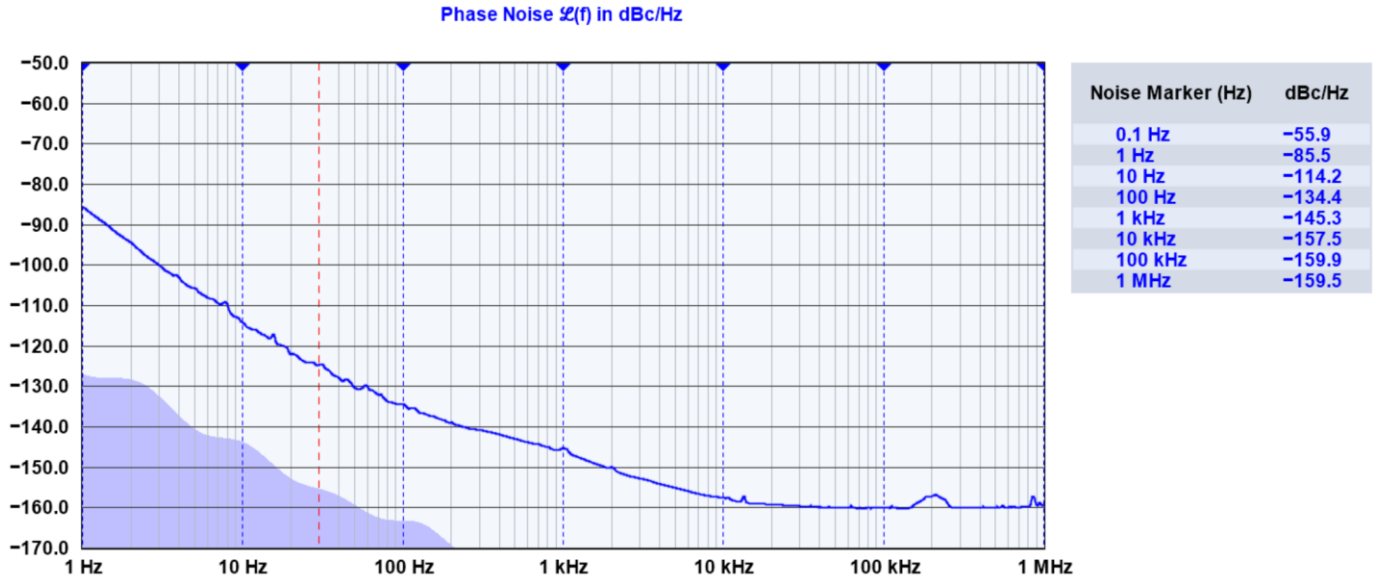
Tau	Sigma(Tau)
1s	7.69E−12
2s	7.59E−12
4s	7.64E−12
8s	8.18E−12
10s	8.52E−12
20s	1.04E−11
40s	1.41E−11
80s	1.84E−11
100s	1.92E−11
200s	1.86E−11
400s	1.29E−11
800s	7.03E−12
1000s	6.13E−12
2000s	3.10E−12
4000s	2.00E−12
8000s	1.06E−12

Trace	Notes	Input Freq	ADEV at 900s	Duration	Elapsed	Acquired	Instrument
NS8001 26308000		10.0 MHz	6.51E−12	10h	10h	3600000 pts	Microchip 53100A

Representative Allan Deviation Plot

First year frequency stability	+/-40 ppb (unlocked)
Temperature stability	+/-100 ppb (unlocked)
10.0 MHz Phase Noise	(dBc/Hz)
1 Hz	- 86
10 Hz	-116
100 Hz	-134
1 kHz	-145
10 kHz	-157
100 kHz	-159

AS9100D ISO9001 MADE IN USA



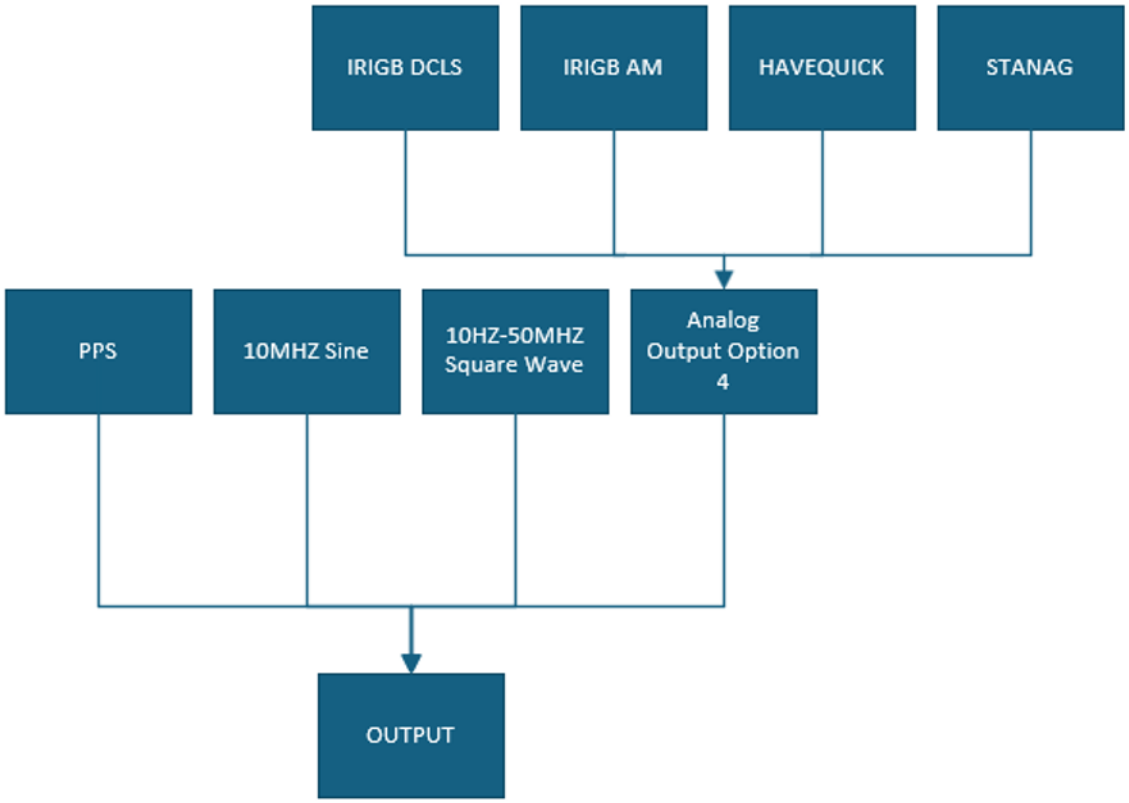
Noise Marker (Hz)	dBc/Hz
0.1 Hz	-55.9
1 Hz	-85.5
10 Hz	-114.2
100 Hz	-134.4
1 kHz	-145.3
10 kHz	-157.5
100 kHz	-159.9
1 MHz	-159.5

Trace	Notes	Input Freq	dBc/Hz at 30 Hz	Duration	Elapsed	Acquired	Instrument
NS8001 26308000		10.0 MHz	-124.5	10h	10h	3600000 pts	Microchip 53100A

Representative Phase Noise Plot

PPS Output	
Amplitude	3.3 Vdc CMOS (5 Vdc option)
Accuracy	5ns 1 sigma
Pulse width	Programmable 1 to 500ms in 1 µsec steps
Rise time	<5 ns
Load Impedance	50 Ohm
Connector	BNC

Signal Selection Options:



GNSS receiver	
Constellations	
GPS	L1C/A (1575.42 MHz), L2C (1227.60 MHz)
GLONASS	L1OF (1602 MHz + k*562.5 kHz, k = –7,..., 5, 6) L2OF (1246 MHz + k*437.5 kHz, k = –7,..., 5, 6)
Galileo	E1-B/C (1575.42 MHz), E5b (1207.140 MHz)
BeiDou	B1I (1561.098 MHz), B2I (1207.140 MHz)
Sensitivity (with Novus recommended antenna)	
Tracking	-167 dBm
Reacquisition	-160 dBm
Cold Start	-148 dBm
Hot Start	-157 dBm

Front panel Indicators and Control	
System status display	Channel status, system status - front panel display LCD color
5 button selector switches	Round momentary switch assembly, up, down, left, right, enter. Selects active display mode, system status.
Remote interface	
Rear Panel Serial Port	USB mini-B to serial interface for system status and system configuration 115200 baud default (n81, No flow control)
Network Connectivity	Ethernet: 10/100/1000mb RJ-45 Rear panel
Power	
DC input	+12VDC @ 2A AC to DC Adapter, 25W Power Supply (9 to 36V)

Environmental and Mechanical

Mechanical	
Height	1.77” (45mm) 1RU EIA 19” rack compatible
Width	7.97” (202.4mm)
Depth	8.0” (203.2mm)
Weight	3.0 lbs.
Environmental	
Operating temperature	-10 to 50°C
Storage temperature	-20 to 70°C
Humidity	0% - 90% RH non-condensing
Agency Certifications	UL / FCC Part 15
EU Compliance	RoHS, REACH, WEEE
EMC Compliance Emissions/Immunity	CISPR 32 Emissions CISPR 35 Immunity IEC 61000-4-2 ESD IEC 61000-4-3 Radiated IEC 61000-4-4 Transient/burst immunity IEC 61000-4-5 Surge immunity IEC 61000-4-6 Immunity to conducted
Safety	UL 62368-1

Network Timing Services
NTP v2 v3, v4 RFC 1305 and 5905. Unicast, Broadcast and Multicast.
SNTP v3, v4 RFC 1769, 2030, 4330, and 5905.
PTP v2 – IEEE 1588™-2019 Master Precision Time Protocol (PTP), Slave, E2E, IPv4/v6, Multicast, Unicast, Hybrid (both).
PTP profiles: PTP standard and its associated power profile specific parameters.
IEEE C37.238-2017 and IEC/IEEE 61850-9-3 2016.
SyncE ITU-T 8264

Communications – Monitoring and Configuration Management
Web based user interface HTTP(S)
SNMP v1, v2, v3
USB Mini B serial System Management
RS-232 Serial NMEA and System Status Messages

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Revision History

Date	Nature of Changes	Approved By
260609	Updated phase noise plot, signal outputs, and graphics	Daniel Longo
261106	Updated Allan Deviation plot	Daniel Longo

All information provided herein is the property of Novus Power Products LLC. The information included may be reproduced for the purpose of operating the Novus equipment. Subject to change.
This document is copyright © 2025 - 2026 Novus Power Products LLC. All rights reserved.