NS8004-NTP

Product Specification
GNSS Locked NTP Server and Timing Reference



Small 123mm x 98mm x 27mm form factor GNSS locked reference provides accurate timing over direct and network connections.
Network Time Protocol (NTP) server.
Two digital outputs are user selectable between IRIG-B and PPS.
Two analog output is user selectable between PPS, or low phase noise 10MHz sine.

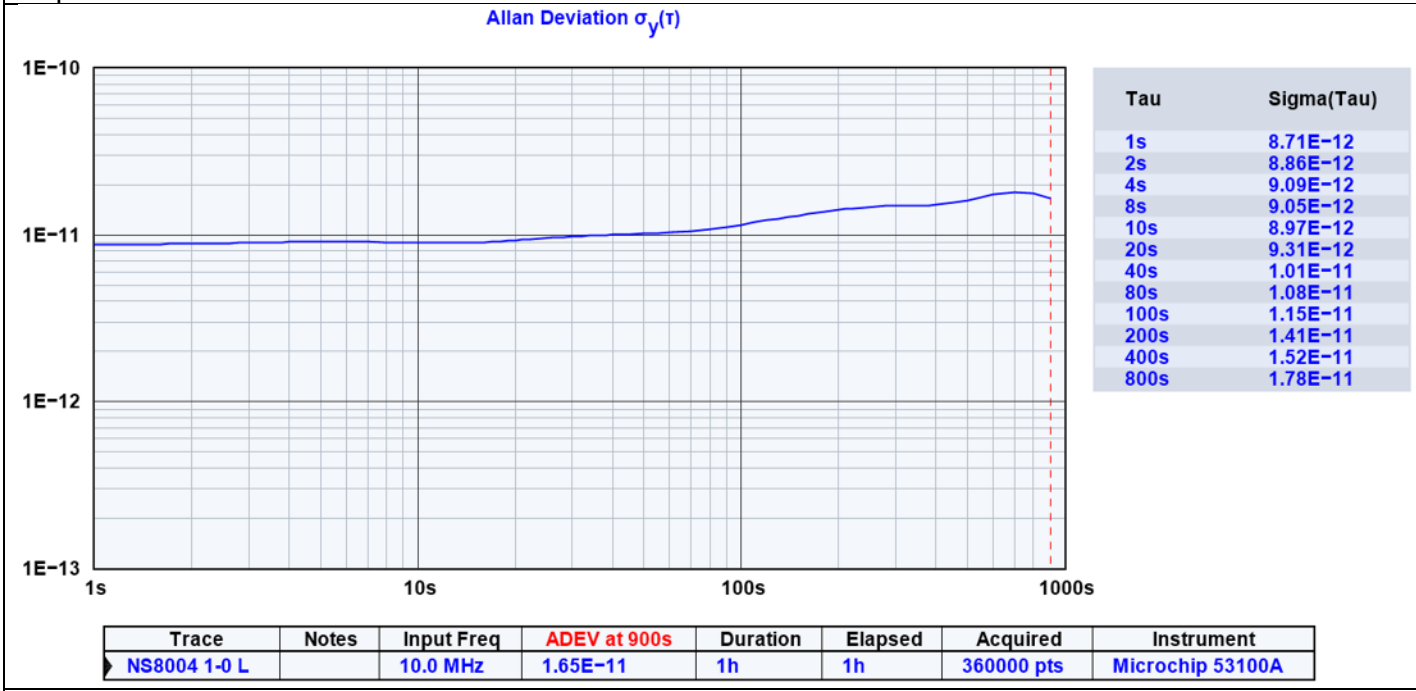
Key Features:

- **NTP Server or Client**
- **Small 123mm x 98mm x 27mm form factor**
- **+/-150ns sync accuracy to UTC**
- **IRIG-B DCLS**
- **IRIG AM**
- **Have Quick**
- **NMEA**
- **10MHz sine**
- **PPS**
- **LVTTL**
- **LVDS**
- **DC powered (9-48 VDC)**

Technical Specifications

Analog Signal	
Number of Outputs	2
Signal Options	10MHz (Low Phase Noise), PPS, IRIG AM, Have Quick
Load Impedance	50 Ohms
Connector	SMA
10MHz Output	
Amplitude	1 VRMS ±0.2
Locked stability	2E-11
First year frequency stability	+/-40 ppb (unlocked)
Temperature stability	+/-100 ppb (unlocked)

Representative Allan Deviation Plot

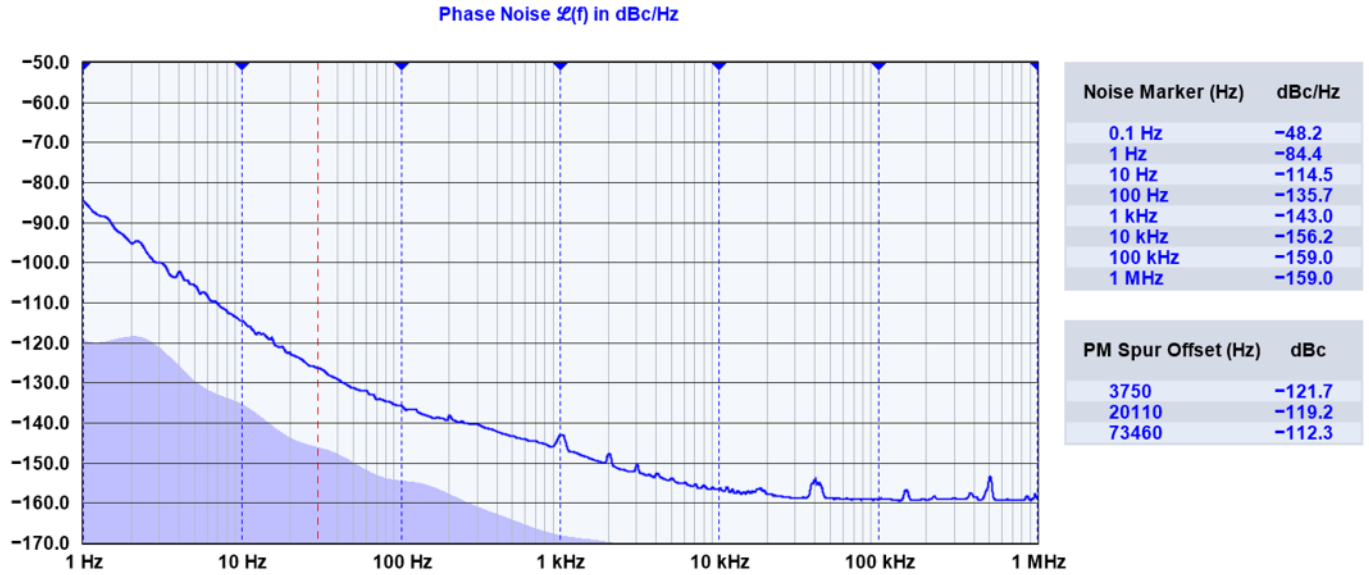


Tau	Sigma(Tau)
1s	8.71E-12
2s	8.86E-12
4s	9.09E-12
8s	9.05E-12
10s	8.97E-12
20s	9.31E-12
40s	1.01E-11
80s	1.08E-11
100s	1.15E-11
200s	1.41E-11
400s	1.52E-11
800s	1.78E-11

Trace	Notes	Input Freq	ADEV at 900s	Duration	Elapsed	Acquired	Instrument
NS8004 1-0 L		10.0 MHz	1.65E-11	1h	1h	360000 pts	Microchip 53100A

10.0 MHz Phase Noise (dBc/Hz)	
1 Hz	-80
10 Hz	-114
100 Hz	-135
1 kHz	-145
10 kHz	-156
100 kHz	-157

Representative Phase Noise Plot



Noise Marker (Hz)	dBc/Hz
0.1 Hz	−48.2
1 Hz	−84.4
10 Hz	−114.5
100 Hz	−135.7
1 kHz	−143.0
10 kHz	−156.2
100 kHz	−159.0
1 MHz	−159.0

PM Spur Offset (Hz)	dBc
3750	−121.7
20110	−119.2
73460	−112.3

Trace	Notes	Input Freq	dBc/Hz at 30 Hz	Duration	Elapsed	Acquired	Instrument
NS8004 1-1 L		10.0 MHz	−126.3	10m 0s	10m 0s	60000 pts	Microchip 53100A

PPS Output	
Amplitude	3.3 VDC CMOS
Accuracy	50ns RMS
Pulse width	Programmable 1 to 500ms in 1 µsec steps
Rise time	<5 ns

Digital Signals	
Number of Outputs	2
Signal Options	PPS, IRIG-B DCLS, LVTTL, LVDS
Load Impedance	1k Ohm
Connector	Keyed 6 pin connector
PPS	
Amplitude	3.3 VDC CMOS
Accuracy	50ns RMS
IRIG-B	
Output	3.3V DCLS
Format	Enabled/Disable: Year, SBS, or IEEE1344 bits

NTP/SNTP	
Version	NTPv4
Accuracy	+/- 150 ns

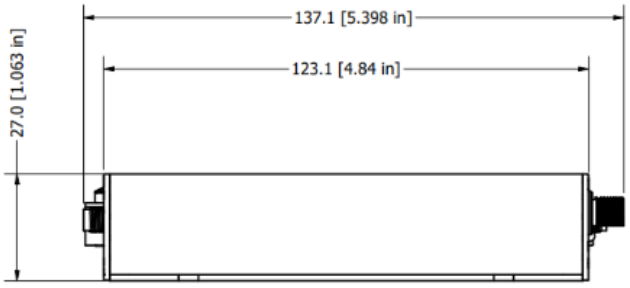
GNSS Receiver	
Number of Channels	72
Cold Start Acquisition	<30 seconds
Receiver Sensitives(dBm)	
Tracking	-167
Reacquisition	-160
Cold Start	-148
Hot Start	-157
Supported Signals	
GPS	L1C/A
GLONASS	L1OF
Galileo	E1-B/C
BeiDou	B1I

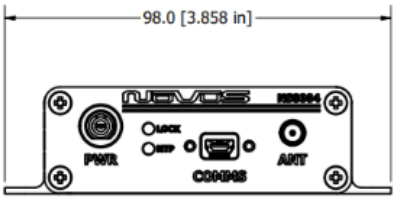
Antenna	
Supply Voltage	3V

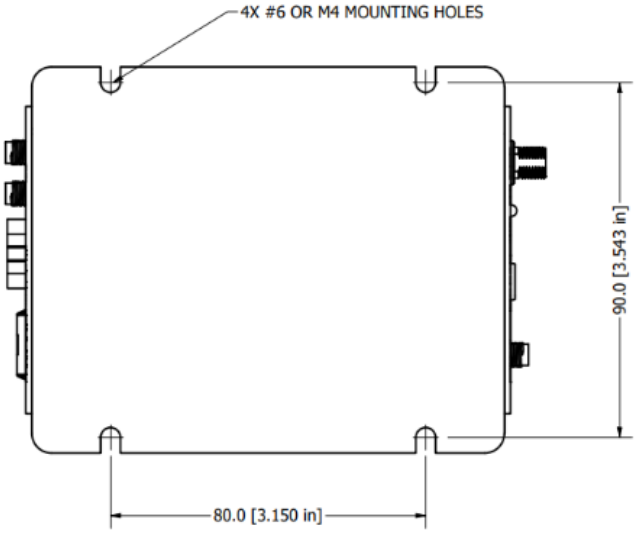
Front panel Indicators and Control	
Status Indicator LEDs	LEDs indicate GNSS lock and NTP operation
Remote interface	
Rear Panel Serial Port	USB mini-B to serial interface for system status and system configuration 115200 baud default with NMEA out
Standard Serial Baud Rates	Selectable baud rate 19200, 38400, 57600 or 115200 (default), 8 data bits, 1 stop bit, no parity, no flow control
Network Connectivity	Ethernet: 10/100MB RJ-45 Rear panel
Power	
DC input	+/- 9-48VDC 10W

Environmental and Mechanical

Mechanical	
Height	1.063” (27.0mm)
Width	3.858” (98mm)
Depth	4.84” (123.1mm)
Weight	1.0 lb.
Environmental	
Operating temperature	-10 to 65°C
Storage temperature	-40 to 70°C
Humidity	0% - 90% RH non-condensing
Agency Certifications	FCC Part 15 Class A
EU compliance	RoHS, REACH, WEEE
EMC Compliance Emissions/Immunity	CISPR 32 Emissions 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







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
260210	Initial release.	Ethan Bozarth
260506	Added outputs, signals, block diagram, copy	Daniel Longo
260611	Updated models and dimensions	Daniel Longo
260806	Updated models and dimensions	Daniel Longo
261106	Added representative plots and updated tables for phase noise and Allan Deviation	Daniel Longo

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