

Company Datasheet #	NT9400-O-G
Revision #:	C
Date:	5-4-20

NT9400-R-O-G

GNSS Locked Frequency Reference- with OCXO or Rubidium Holdover

KEY FEATURES

GNSS and Rubidium technology allows you to bring advanced timing where you need it. NTP, IRIG as well as NEMA and PPS designed into a rugged chassis.

Battery powered reference allows you to bring an OCXO where you need it. Built-in GPS receiver disciplines a OCXO.

Typical Phase Noise - 10 MHz Sine

Offset Frequency (Hz)	Typical (dBc / Hz)
10	- 85
100	-115
1k	-135

Time Stamp

Dual stamp triggers allow 100 ns differential measurements.

NTP Time Server Option

NTP time code generator with Rubidium holdover.

Position

CMOS input triggers a storing of the current time and position and can be programmed to send an e-mail with the information.

Product Highlights



Seismic Master Timing

Precision timing source for GPS denied and unreliable environments.

GNSS Locked

PPS accuracy to 20ns RMS

Atomic Holdover-Option

Rb holdover 1 usec/day options

Technical specifications

Output	10 MHz, 1 Vrms ± 0.2 , into 50 Ohms	
Accuracy at Shipment	$< \pm 5E-9$	
Daily Aging (unlocked)	$< \pm 5$ ppb/day after 3 months of operation (OCXO)	
Yearly Aging	$< +50$ ppb after 3 months operation (unlocked) (OCXO)	
Locked	$< 1E-9$	
Harmonic Distortion	< -30 dBc	
Power	DC options and AC power adapter available- < 15 W start, < 10 W steady state	
Alert	20Vdc/Vac, 0.1 Amp relay contacts- relay closed for normal condition, BNC	
Warm-up time	< 15 minutes	
Time of lock	< 5 min -130 dBm	
Time to achieve accuracy	$< 2E-9$ < 15 minutes, (12 minutes)	
GPS Disciplining	GNSS receiver	
Time for valid output	< 12 minutes	
Frequency Accuracy	$< 1E-11$	
Stability: Allan Deviation		
1s	$< 3E-10$	
10s	$< 1E-10$	
100s	$< 3E-11$	
SSB Phase noise for 10Mhz		
	Standard	Low Noise Option
10Hz	< -85	< -110 dBc
100Hz	< -115	< -150 dBc
1000Hz	< -145	< -155 dBc
10000Hz	$\leftarrow -145$	< -160 dBc
Amplitude for 10MHz frequency output	1 Vrms	
Harmonic	< 40 dBc	
Non-Harmonic	< -80 dBc	
Rubidium Atomic Frequency Standard Option-R		
Accuracy at shipment	$\pm 5.0E-11$	
Warm-up time	< 15 minutes	
Time of lock	< 5 min -130 dBm	
Time to achieve accuracy	$< 1E-9$ < 15 minutes, (12 minutes)	
Aging - monthly	$< 5E-11$	

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Aging - yearly	<1.0E-9
Time for valid output	<12 minutes
Stability: Allan Deviation	
1s	<3E-10
10s	<1E-10
100s	<3E-11
SSB Phase noise for 10Mhz	
	Standard Low Noise Option
10Hz	< -95 <-125dBc
100Hz	<-125 <155dBc
1000Hz	<-135 <-160dBc
10000Hz	←135 <-160dBc
PPS	
Amplitude for 1PPS	3.3 Vdc CMOS (5 Vdc option)
Pulse width for 1PPS	Programmable 1 to 500ms in 1 ms steps
Rise time for 1PPS	<10 ns (faster edge available)
Connector	BNC
Load Impedance	50 Ohm
Location	rear
PPS drift Rb	< 20 usec/day
PPS Drift OCXO	< 1 ms/day
Remote interface & control	
Protocol	RS232 NMEA-0183
Connector	DB-9
Location	Rear panel
Protocol	Bit plus stop
Standard Baud Rates	Selectable 4800, 9600, 19200, 38400, 57600 or 115200 bps
IRIG-B-0,2	DCLF or 1 kHz Sine
GNSS receiver	GPS L1 C/A, GLONASS L1OF, QZSS L1 C/A, SBAS L1 C/A (Ready): Galileo E1B/E1C, QZSS L1S
Channels	26 channels (GPS, GLONASS, QZSS, SBAS)
GPS	Tracking: -161 dBm
	Hot Start: -161 dBm
	Warm Start: -147 dBm
	Cold Start: -147 dBm
	Reacquisition: -161 dBm
GLONASS	
	Tracking: -157 dBm
	Hot Start: -157 dBm
	Warm Start: -143 dBm
	Cold Start: -143 dBm
	Reacquisition: -157 dBm
	With Novus recommended antenna

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Antenna with LNA		
Antenna power	3.5 Vdc, < 35 ma (on center conductor) (factory configurable to 5 Vdc)	
Frequency	1574-1607 MHz	
Nominal Gain	2 dBic	
Amplifier gain	26 dB	
Noise Figure	< 2.0 dB	
Out of Band rejection	Fo±50MHz=60 dBc, Fo±60 MHz	
DC current	<25 ma@3.5 Vdc	
Height	~ 5 inches	
Width	~12 inches	
Depth	~9 Inches	
Weight	~ 3 lbs	

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