

NR300-ROG

Portable 10 MHz/PPS Reference



GNSS-locked 10 MHz handheld frequency reference with Rubidium holdover. Locked to a 26 channel multi-satellite system receiver – provides fast lock under weak signal conditions.

Unit produces 10 MHz, PPS, NMEA and IRIGB. Optionally a secondary frequency can be synthesized that can range from sub 1 Hz to 10 MHz Auto-calibration maintains output stability in an intermittent GNSS environment. Battery provides for more than four hours of use.

Product Highlights

Rubidium stability provides < 1 ppb stability for 4 hours.

Internal Frequency Monitor

Reports current frequency relative to GNSS and/or Rubidium in holdover.

Multi-Satellite System Receiver

The 26 channel, high-sensitivity, high-accuracy timing multi-GNSS receiver supports TRAIM and various position modes, allowing it to output accurate and robust 1PPS synchronized to UTC time. Supports GPS, GLONASS, QZSS, SBAS.

Excellent Temperature Stability

0.5 ppb- 0 to 50C unlocked

Synthesized PPS

PPS is stabilized to Rubidium source.

Internal/external antenna

Use the internal patch antenna or connect an external antenna when available.

Vibration isolation

Internal vibration isolation of critical elements

Technical Specifications

Output	3- 10 MHz, 0.5 Vrms ± 0.2 , into 50 Ohms BNC (sine or square)
Rubidium	
Warm-up time	<15 minutes
Time of lock	<5 minutes -130 dBm
Time to achieve accuracy	<2E-9<15 minutes, (12 minutes)
GPS disciplining	GNSS receiver
Time for valid output	<12 minutes
Retrace	< $\pm 1E-10$ after 1 hour
Temperature stability	0.4 ppb over the operating range
Aging	0.05 ppb/day
Holdover accuracy	<0.2 ppb/4 hours unlocked after disciplining
Frequency accuracy	<1E-10 (locked)
Stability: Allan Deviation	
1s	<3E-10
10s	<1E-10
100s	<3E-11

Representative Phase Noise Plot

Phase Noise		
Offset Hz	Limit	Measured
1	-85	-88.8
10	-115	-116.2
100	-125	-130.8
1kHz	-140	-145.7
10kHz	-150	-154.9
100kHz	-150	-156.2

Amplitude for 10MHz frequency output	0.5 Vrms
G sensitivity	<0.2 ppb/g
Temperature Stability	<0.5 ppb -10 to 60C
PPS	
Amplitude for 1PPS	3.3 Vdc CMOS
Pulse width for 1PPS	Programmable 1 to 500ms in 1 ms steps
Rise time for 1PPS	<5 ns (faster edge available)
Unlocked drift	< 20 usec/day
Connector	BNC
Load Impedance	50 Ohm
Location	rear

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	
USB port	NMEA plus status and control	
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.	
Antenna with LNA	Internal patch antenna or external antenna with LNA	
Antenna power	3.5 Vdc, < 35 mA (on center conductor)	
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	
Battery Life	> 4 hours, battery charger included- Lithium ion, Time to charge	
Environmental		
Operating temperature	-10 to 50°C	
Height	3.2 inches	
Depth	8.25 inches exclusive of connectors	
Width	3.2 inches exclusive of connectors	
Weight	~1 lbs.	



PRECISION TIMING PRODUCTS

DATA SHEET

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DATE

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