NR300-Rb/O

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.

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Typical Phase Noise - 10MHz Sine-with Optional Clean up Oscillator

Offset Frequency (Hz)	Typical (dBc / Hz)
10	-115
100	-140
1K	-155

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	
Temperature stability	0.4 ppb over the operating range	
Aging	±1 ppb/year	
Holdover accuracy	<±0.5 ppb/4 hours unlocked after discipling	
Frequency accuracy	<1E-10 (locked)	
Stability: Allan Deviation		
1s	<3E-10	
10s	<1E-10	
100s	<3E-11	
SSB phase noise for 10MHz		
	Standard Low Noise	
10Hz	<-85dBc < -115	
100Hz	<-110dBc < -140	
1000Hz	<-130dBc <-155	
10000Hz	<-140dBc <-155	
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.