

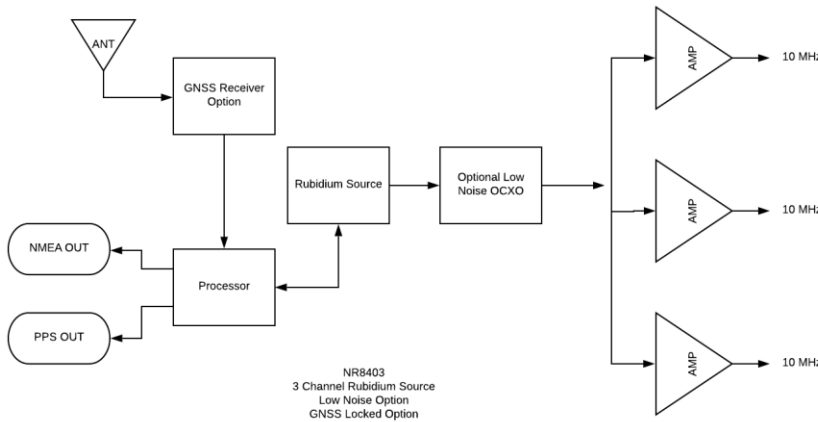
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REVISION	D
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NR8403-R

Three Channel Rubidium Reference



Low Noise and GNSS Lock Options



Rubidium Atomic Reference

Aging < 3E-10/month

Phase Noise

Offset Frequency (Hz)	Typical (dBc / Hz)
10	-125
100	-155
1K	-160
10K	-160

This atomic reference brings exceptional stability in an economical package. It also offers low phase noise and GNSS locking options. There are three 10 MHz outputs plus a PPS.

This atomic reference affords exceptional holdover stability of less than 0.3 ppb/month. Temperature stability of 0.5ppb. To further enhance stability, the Rubidium source is available with a GNSS locking option, . All channels are monitored for a fault condition and built-in test monitors critical circuits which drives panel indicators as well as alarm relay that can be wired into an alarm panel.

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Output	10 MHz, 0.5 Vrms \pm 0.2, into 50 Ohms	
Accuracy at Shipment	< \pm 1E-9	
Monthly Aging	< \pm 2E-11 after 3 months of operation	
Yearly Aging	< \pm 1E-9 after 3 months operation (unlocked)	
Locked	<5 E-12	
Harmonic Distortion	< -30 dBc	
Power	DC options and AC power adapter available- < 10 W start, < 6 W steady state	
Alert	20Vdc/Vac, 0.2 Amp relay contacts- relay closed for normal condition, BNC	
Rubidium Atomic Frequency Standard:		
Accuracy at shipment	+/-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	
Aging - yearly	<1.0E-9	
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	< -95	<-125dBc
100Hz	<-125	<155dBc
1000Hz	<-135	<-160dBc
10000Hz	<-135	<-160dBc
Amplitude for 10Mhz frequency output	0.5 Vrms	
Harmonic	<40dBc	
Non-Harmonic	<-80dBc	
PPS		

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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	<20 ns (faster edge available)
Jitter	Two PPS modes- GNSS-PPS and stabilized PPS- GNSS-PPS < 6ns Stabilized PPS < 1 ns,
Connector	BNC
Load Impedance	50 Ohm
Location	rear
Remote interface & control	
Protocol	RS232
Connector	DB-9
Location	Rear panel
Protocol	Bit plus stop
Standard Baud Rates	Selectable 4800, 9600, 19200, 38400, 57600 or 115200 bps
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)
Sensitivity	
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	
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
Main Power	
DC input	-60 to +60 in three ranges
Power	<10 W (steady state < 6 W)



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Warranty	1 year plus 3 year optional extended warranty from date of shipment
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Environmental and Mechanical

Operating Temperature	0 to 50°C non-condensing
Storage Temperature	-40 to 70°C
Height	1.58"
Width	6"
Depth	6" exclusive of connectors
Weight	1.5 lbs

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