

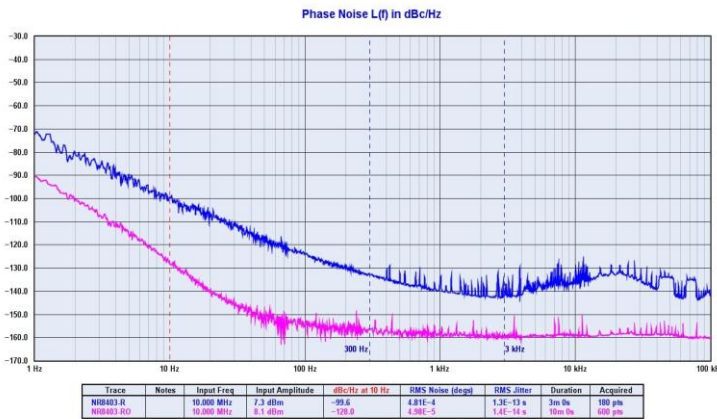
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|-------------------|----------|
| DATA SHEET NUMBER | NR8403-R |
| REVISION | D |
| DATE | 2-4-20 |

NR8403-ROG

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.

| | |
|----------------------|--|
| Output | 10 MHz, 0.5 Vrms ±0.2, into 50 Ohms |
| Accuracy at Shipment | <±1E-9 |
| Monthly Aging | <±2E-11 after 3 months of operation |
| Yearly Aging | <±1E-9 after 3 months operation (unlocked) |
| Locked | <5 E-12 |

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| Harmonic Distortion | < -30 dBc | |
| Power | DC options and AC power adapter available- < 15 W start, < 10 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 | | |
| 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) | |
| Drift | Options to 1 usec/day | |
| Connector | BNC | |
| Load Impedance | 50 Ohm | |
| Location | rear | |
| Remote interface & control | | |
| Protocol | RS232 | |
| Connector | DB-9 | |
| Location | Rear panel | |
| Protocol | Bit plus stop | |

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| Standard Baud Rates | Selectable 4800, 9600, 19200, 38400, 57600 or 115200 bps |
| GNSS receiver (Option) | 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 | <15 W (steady state < 10 W) |
| Warranty | 1 year plus 3 year optional extended warranty from date of shipment |

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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