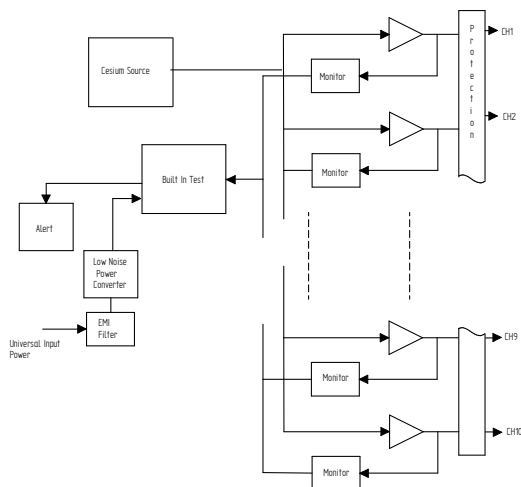


Users manual	NR2310D-ROG
Revision #:	C
Date:	2/7/18

## NR2310D-R/O/G

### 10MHz Multi Channel GNSS Locked Rubidium with Networking



### Rubidium Atomic Reference

Aging < 1ppb/year

### Phase Noise

Offset Frequency (Hz)	Typical (dBc / Hz)
10	-120
100	-145
1K	-145
10K	-150

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 locked to the GNSS. The unit has up to 10 outputs driven by the atomic source - very often eliminating the need for a distribution amplifier and reference. The unit can be configured to have fewer channels. 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. Dual time base option independently monitors the reference and alerts via the Internet.

<b>Output</b>	10 MHz, 1.0 Vrms $\pm 0.2$ , into 50 Ohms, up to 16 channels.
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	$< 2 E-12$
Harmonic Distortion	$< -30$ dBc
AC Input	90 to 250 Vac, 50/60Hz, IEC 320-C14
Alert	20Vdc/Vac, 0.2 Amp relay contacts- relay closed for normal condition, BNC
<b>Rubidium Atomic Frequency Standard:</b>	
Control Range	$> \pm 1.5E-8$
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	$< 5E-11$
Aging - yearly	$< 0.5E-9$
GPS Disciplining	GNSS receiver or external PPS
Time for valid output	$< 12$ minutes
Frequency Accuracy	$< 1E-12$
Stability: Allan Deviation	
1s	$< 1.2E-11$
10s	$< 5E-12$
100s	$< 2E-12$
SSB Phase noise for 10Mhz	
1Hz	$< 100$ dBc
10Hz	$< -130$ dBc
100Hz	$< -145$ dBc
1000Hz	$< -150$ dBc
10000Hz	$< -150$ dBc
Outputs	Total of 6 (4 sine and 2 PPS). 10 channel unit will have 4 channels removed.
Amplitude for 10Mhz frequency output	1 Vrms
Harmonic	$< 40$ dBc
Non-Harmonic	$< -80$ dBc
<b>PPS</b>	
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 $< 6$ ns Stabilized PPS $< 1$ ns,

Connector	BNC
Load Impedance	50 Ohm
Location	rear
<b>External Sync input (PPS)</b>	
Pulse width Minimum	1 ms
Amplitude	5V and 3.3V CMOS compatible Zin=1k
Location	Rear panel
Connector	SMA
<b>Remote interface &amp; control</b>	
Protocol	RS232
Connector	DB-9
Location	Rear panel
Protocol	Bit plus stop
Standard Baud Rates	Selectable 4800, 9600, 19200, 38400, 57600 or 115200 bps
<b>Internet</b>	
RJ45	Rear Panel
Connectivity	10/100M Ethernet
SNMP	V03
Optional NTP Time server	V04
Processor	(4x Cortex-A7 @ 1.2GHz); ARM Mali-400 MP2 GPU @600MHz; 256KB L1, 1MB
<b>GNSS receiver</b>	
	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
<b>Antenna with LNA</b>	
Antenna power	3.5 Vdc, < 35 ma (on center conductor) (factory configurable to 5 Vdc)
Frequency	1574-1607 MHz

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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
<b>Main Power</b>	
AC input	110 to 240 VAC
Frequency	47 to 63 Hz
Power	<20 W
DC Power Option	
Voltage	Options from ±10 to 50 Vdc, Configurable as primary or back-up
<b>SNMP</b>	
Remote monitoring & control	Internet
Parameters monitored Locally – present on remote interface for monitoring	Output amplitude, all power supplies, GNSS lock status, number of satellites, Built-In test status,
Transaction/decodable commands	English format
Single monitoring command	Updated every second
<b>Password protection</b>	option
<b>Warranty</b>	1 year

## Environmental and Mechanical

Operating Temperature	0 to 50°C non-condensing
Storage Temperature	-40 to 70°C
Height	1RU (~1.73)
Width	19 inches
Depth	13 inches
AC input	90 to 250 VAC, 50/60Hz, less than 10 watts

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