

# RG21xx - GPS REFERENCED FREQUENCY GENERATORS



## Precision GPS based Dual Redundant Reference Frequency Generators with Optional NTP Network Connectivity



AS9100D Certificate Number : C0210021-AS3



# RG21xx - GPS REFERENCED FREQUENCY GENERATORS

## Product Overview



The RG-21xx is a range of dual redundant reference frequency generators that use the Global Positioning System (GPS) to steer two internal low phase noise oven controlled crystal oscillators OCXO's. Once these oscillators become locked to the GPS timing signal, their inherent stability characteristics ensure precise timing and accuracy is maintained, even in the event of temporary GPS signal loss.

Each GPS Disciplined Module provides a set of 3 low phase noise 10 MHz sine waves, 1PPS and status/control signals to the user interface output rear panel.

If a failure or signal loss is sensed in one of the dual redundant modules, the unit will automatically switch outputs to the other GPS Disciplined Module to provide continuous service.

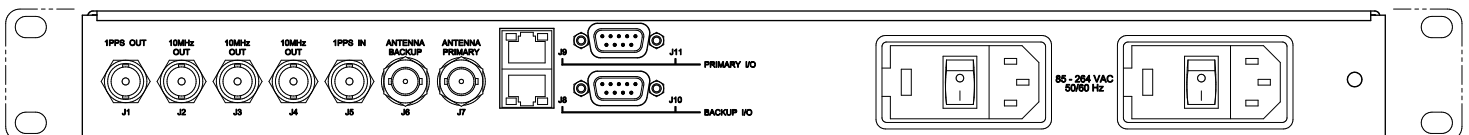
These outputs are accurate daily to  $1 \times 10^{-12}$  when slaved to an internal GPS tracking receiver's time.

In addition to the dual GPS receivers and disciplined OCXOs, dual redundant hot swappable power supplies make the RG-21xx a sensible choice for high integrity installations such as military communications, telecommunications and satcom telecommunications, where accurate reference signal availability is essential.

RG-21xx units are also able to slave to an external 1PPS signal to steer, lock and hold an internal oscillator and clock system precisely in time.

All units incorporate a serial data port to monitor time, date, position, GPS satellite health and signal strength information..

The RG-2111 unit is provided with secure dual network ports supporting NTP time server functionality whereas the RG-2110 is provided without NTP.



## Key Feature Summary

### Options & Features

- Dual redundant GPS Receivers with dual disciplined OCXOs
- Optional dual NTP ports
- Serial port timing data output
- Automatic "hitless" source switchover under fault or signal loss conditions
- 10 BaseT : TCP/IP, UDP, NTYPv3, HTTP, SNMP V1
- 1U 19" rack mount
- Dual Redundant Hot Swap Power Supplies

### Signals

- 3 x 10MHz low phase noise
- 1 PPS output plus 1PPS input reference
- RS-232 time status data and terminal

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## Specifications

Specifications - RG21xx	
<b>Reference Signal Inputs - 1PPS</b>	<b>Details</b>
Connectors	2 x Rear panel BNC - Modules A & B
Amplitude - Input Impedance	0V to 5V - 50 Ohms
<b>Reference Signal Inputs - GPS</b>	
Connectors	2 x Rear panel BNC - Modules A & B - Active sourcing current to 80mA @ 3.3V
Receiver Type	Satellite Signal : GPS L1 1575.42 Mhz / Satellite Code : C/A code 1.023 MHz
Accuracy	Position Accuracy : <5 m, 1-sigma, <10 m, 2 sigma
Sensitivity	Sensitivity: -173dBw Acquisition, -185dBw Tracking
Time To First Fix (TTFF)	Hot (w/ current almanac, position, time and ephemeris) : <30 Sec Warm (w/ current almanac, position, time): <80 sec Cold (No stored information): <120 sec
<b>Network Interfaces</b>	
Interface	2 x RJ45 - 10 BaseT
Protocols	10 BaseT : TCP/IP, UDP, NTYPv3, HTTP, SNMP V1
<b>Console Port</b>	
Interface	9 Way D type socket 115K Baud - 115200, N, 8, 1
<b>Environmental</b>	
Temperature	Instrument : -10°C + 50°C / Antenna -40°C to + 85°C. <i>Temperature shock during operation without causing permanent damage: -20C to +70C at +/-3C / min per MIL-STD-810F - Method 503.4</i>
Humidity	95 % non condensing
Power	85VAC - 265VAC 50/60Hz or DC with hot swap dual redundancy < 25W
Altitude	Operational to 10,000 ft - transit not operational to 50,000 ft
<b>Physical</b>	19" Rack 1U 1.75" (H) x 8" (D) x 17" (W) [ 4.4 cm(H) x 20.3 cm (D) x 43.2 cm (W) ] Weight : 11 lb (5.0 Kg)
<b>Compliance</b>	CE Approved - EMC Emissions to EN55022 as EN55024 - FCC Part 15B, Class A EMC Immunity to EN50082-1 as EN61000-4-2 ESD, IEC801-3 HF Field & IEC 801-4

Parameter	Specification			Units	Conditions : T=0~+50°C Ambient, V supply = 115VAc unless otherwise specified
	Min	Typical	Max		
Nominal Frequency		10MHz			
Output Power (J2)			17	dBm	T=25°C, Load = 50 ohms
Output Power (J3, J4)			12	dBm	T=25°C, Load = 50 ohms
Harmonics			-30	dBc	Load = 50 ohms
Spurious			-70	dB	Load = 50 ohms
Frequency Accuracy	-1		1	E-12	24 hour average when locked to GPS
Short-term stability A				E-12	@ Tau = 1 sec, after 24 hours
Short-term stability B				E-12	@ Tau = 10 sec, after 24 hours
Holdover Capability			40	usec	24 hours, 30°C change, after 3 days of power-on time
Phase Noise @ 10Hz			-108	dBc/Hz	T=25°C, Load = 50 ohms
Phase Noise @ 100Hz			-138	dBc/Hz	T=25°C, Load = 50 ohms
Phase Noise @ 1kHz			-151	dBc/Hz	T=25°C, Load = 50 ohms
Phase Noise @ 10kHz			-153	dBc/Hz	T=25°C, Load = 50 ohms
Phase Noise @ 100kHz			-155	dBc/Hz	T=25°C, Load = 50 ohms
Accuracy to UTC (1 sigma)	-50		50	ns	When locked to GPS
1 PPS Pulse width		10		usec	Rising Edge On Time
High-Level Input Voltage (VIH)	2.4		5	V	

# Satisfied customers include..

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