Ultra Low Phase Noise Phase-Locked Frequency Reference

Data Sheet 2138A

Rev. -

Phase-Locked Ultra Low Phase Noise 100 MHz Frequency Reference in 19” Rack Mountable Appliance 1U Form Factor

Product Data Sheet

Features

- **Locks to either 10 MHz reference or, PPS input, or Built-in Internal GNSS receiver**
- **Ultra-Low Phase Noise (ULPN)**
- **Excellent Holdover in the Absence of REF IN**
- **SC-cut OCXOs Based Internal REF Module**

Applications

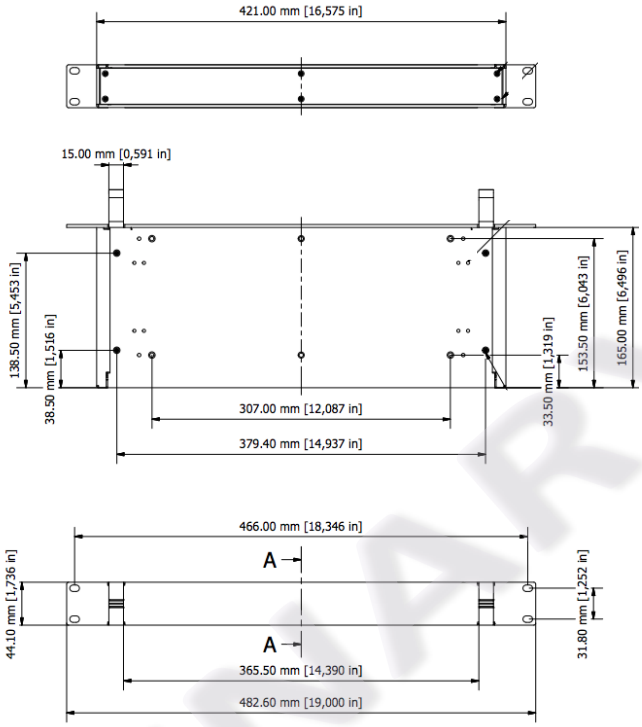
- **Radar**
- **Significantly improves Phase Noise of incoming Reference signal**
- **COTS/Dual use**

Inputs

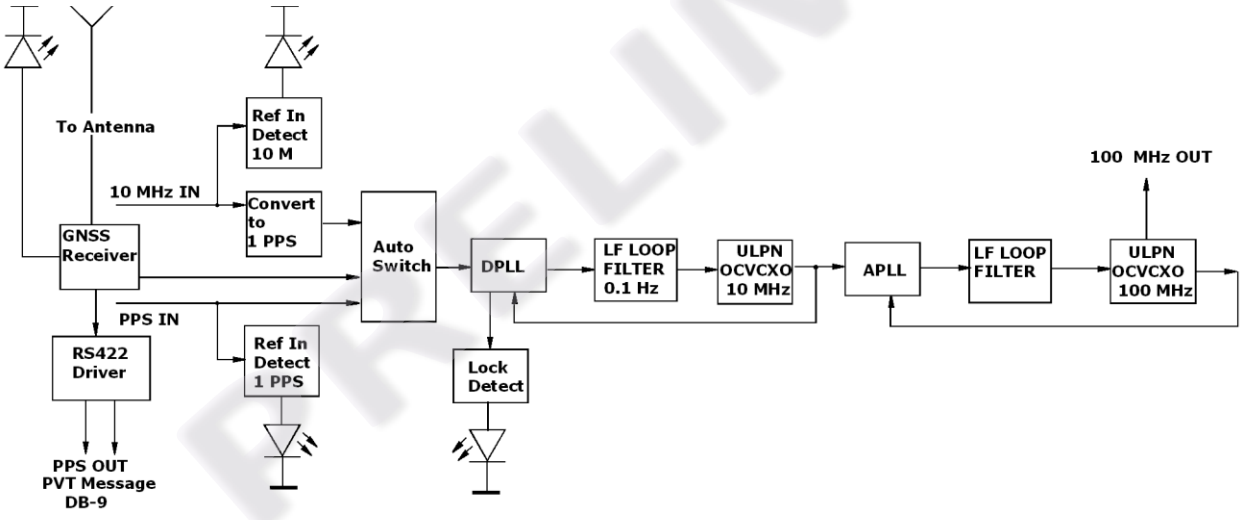
10 MHz IN SMA Female front panel
1 PPS IN SMA Female front panel
GNSS antenna TNC back panel

Outputs

100 MHz OUT SMA Female front panel
PPS RS422 and PVT message on DB-9 connector female, front panel



Mechanical Dimensions, inches

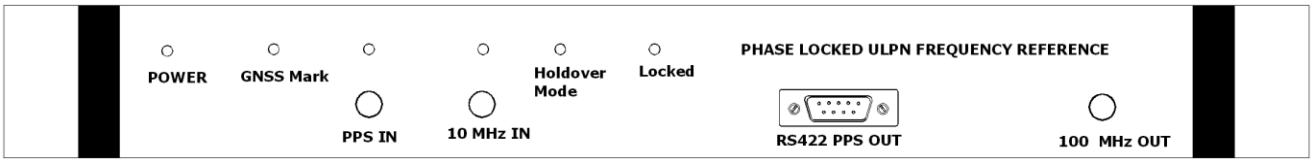


NEL FREQUENCY CONTROLS, INC.
357 Beloit St. Burlington, WI 53105 U.S.A. Phone 262/763/3591 FAX 262/763-2881 Email: nelsales@nelfc.com www.nelfc.com

Ultra Low Phase Noise Phase-Locked Frequency Reference

Data Sheet 2138A

Front Panel



Specifications:

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Absolute Maximum Ratings							
Power supply	Vp		90		260	V AC	
Operating Temp.	To		10		45	°C	
Storage temper.	Ts		0		70	°C	
Electrical							
Input	F10	10 MHz input		10.000		MHz	Automatically detects input, Priority – Front Panel Input
	Fpps	1 PPS input		1		Hz	
	GNSS	PPS		1			
10 MHz in	F10	CMOS	2			V pk-pk	Green LED
		Sine Wave	0		15	dBm	
1PPS in	PPS	TTL		2.5		V pk-pk	Green LED, priority if both present
		Pulse Width		1		us	
GNSS antenna			Internal receiver				
Frequency Capture Range (APR)	ΔF/F	Over All	±100			ppb	Includes variation vs. temperature, load, aging 10 years
Allan Deviation		.01s to 1s		3E-13			
Frequency stability	ΔF/F	Locked	Equal to incoming signal				
Holdover	τ	8 hours		20		us	
Recommended MAX Input SSB Phase Noise with 10 MHz input	£(Δf)	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-90 -120 -130 -140 -140	dBc/Hz	10 MHz reference
Output Frequency	F100 PPS	Only when PPS IN present		100.00 1		MHz Hz	SMA RS422, DB-9
PVT Message		Generated by UBLOX default to be specified in a separate document					RS422, DB-9
SSB Phase Noise (achieved after 10 minutes warm-up) Noise floor	£(Δf) **100 MHz output**	10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-125 -135 -160 -180 -185		dBc/Hz	2*
Power Requirements	P	IEC320 on the back	100 to 250 V AC 50/60 Hz			V AC	
Load	Internally AC-coupled 50 Ohm						
Output Waveform		Sinewave					
Output Power			+17	+19		dBm	
Spectral Purity		Subharmonics Spurious Harmonics		-70 -35	 -80 -30	dBc	

NEL FREQUENCY CONTROLS, INC.

357 Beloit St. Burlington, WI 53105 U.S.A. Phone 262/763/3591 FAX 262/763-2881 Email: nelsales@nelfc.com www.nelfc.com

Load	Internally AC coupled 50 Ohm (Sinewave)						
Warm-up time	τ	to lock on 100 ppb input		5	8	minutes	
Lock Time after warm-up				10		minutes	
Lock Detect			Green LED				
Input Detect (either)			Green LED				
GNSS detect			Green LED				
Holdover Mode			Yellow LED				

Environmental and Mechanical

Operating temp. range	+10°C to +45°C

Notes:

NEL FREQUENCY CONTROLS, INC.

357 Beloit St. Burlington, WI 53105 U.S.A. Phone 262/763/3591 FAX 262/763-2881 Email: nelsales@nelfc.com www.nelfc.com