Ultra Low Phase Noise Phase-Locked Frequency Reference

Data Sheet 1947A

Rev. A

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 1 PPS input**
- **Built-in Internal GNSS receiver is optional**
- **Ultra-Low Phase Noise (ULPN)**
- **Excellent Holdover in the Absence of REF IN**
- **10 MHz and 100 MHz internal SC-cut OCXOs**

Applications

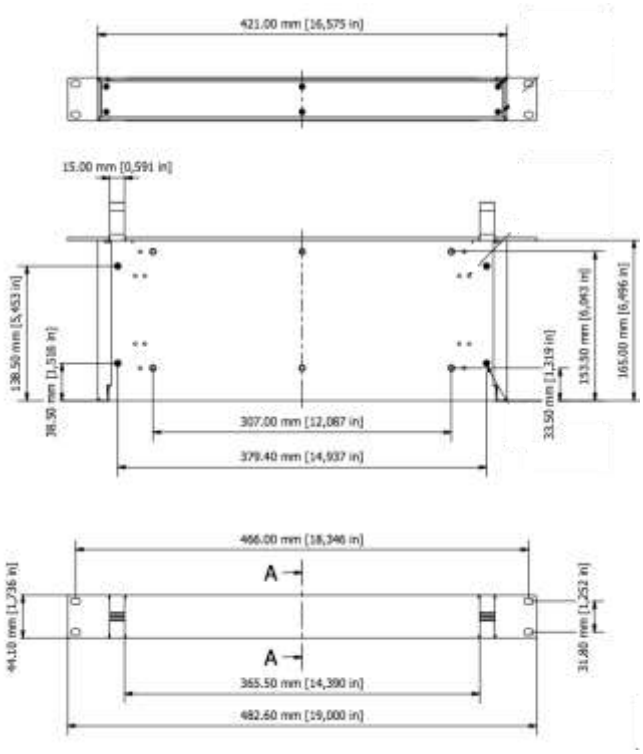
- **Radar**
- **Significantly improves Phase Noise of incoming Reference signal**
- **COTS/Dual use**

Inputs

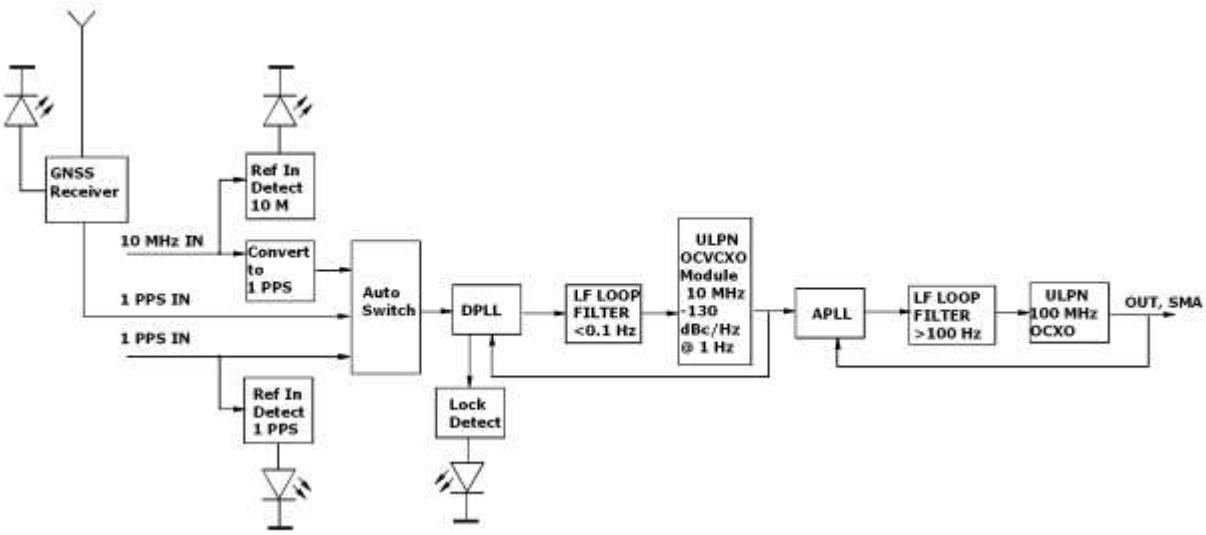
10 MHz IN SMA Female front panel
1 PPS IN SMA Female front panel
GNSS antenna TNC back panel

Outputs

100 MHz OUT SMA Female front panel



Mechanical Dimensions



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

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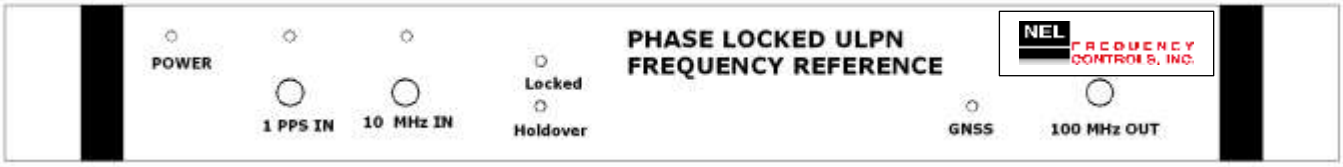
Front Panel



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 - TBD
	Fpps	1 PPS input		1		Hz	
	GNSS	1 PPS		1			
10 MHz in	F10	CMOS	2			V pk-pk	Green LED
		Sine Wave	0		15	dBm	
1PPS in	1 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			100.00		MHz	SMA
SSB Phase Noise (achieved after 10 minutes warm-up) Noise floor	£(Δf) **100 MHz output**	1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-110 -138 -145 -158 -170 -172		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		none	 -80	dBc	

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		Harmonics		-35	-30		
Load	Internally AC coupled 50 Ohm (Sinewave)						
Warm-up time	τ	to lock on 100 ppb input		3	5	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:

1* It may require 2u height – TBD on the first article
2* The values are the goal, to be finalized upon first article completion.

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