

Rev. A

## Phase-Locked Ultra Low Phase Noise Multioutput Frequency Reference in 19" Rack Mountable Appliance 1U Form Factor

### Product Data Sheet

#### Features

- Locks to 10 MHz reference or 1 PPS input
- Ultra-Low Phase Noise (ULPN)
- 10 MHz, and 1.2 GHz Outputs
- Excellent Holdover in the Absence of REF IN
- 10 MHz internal SC-cut OCXO

#### Applications

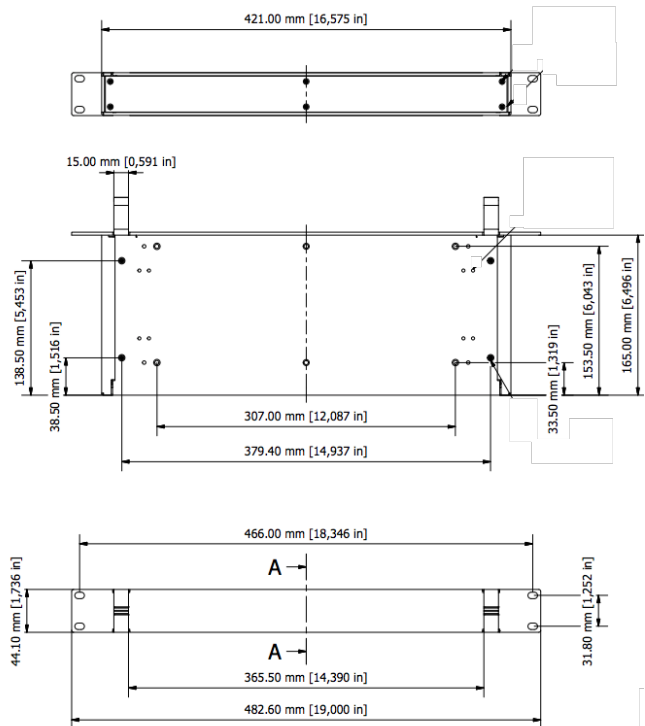
- 5G device testing
- Digital AM Radio Stations
- Significantly improves Phase Noise of incoming Reference signal
- COTS/Dual use

#### Inputs

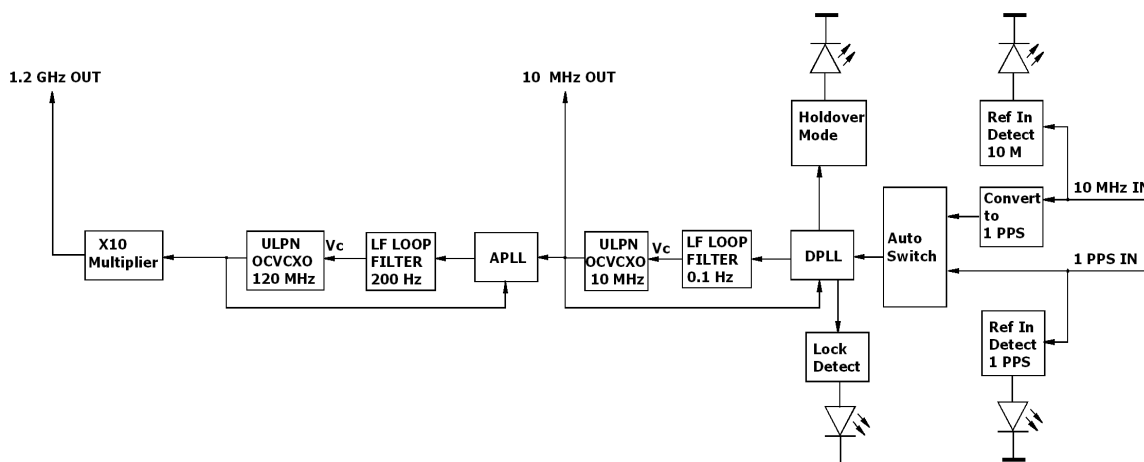
10 MHz IN SMA Female  
1 PPS IN SMA Female

#### Outputs

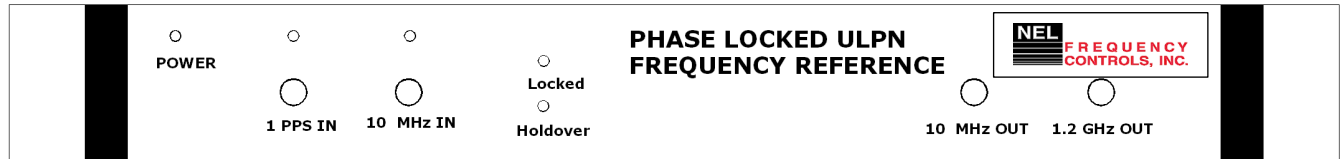
10 MHz OUT SMA Female  
1.2 GHz OUT SMA Female



Mechanical Dimensions



## Front Panel



## Specifications:

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<b>Absolute Maximum Ratings</b>							
Power supply	Vp		90		260	V AC	
Operating Temp.	To		10		45	°C	
Storage temper.	Ts		0		70	°C	
<b>Electrical</b>							
	F10	10 MHz input		10.000		MHz	
	Fpps	1 PPS input		1		Hz	
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	
Frequency Capture Range (APR)	ΔF/F	Over All	±100			ppb	Includes variation vs. temperature, load, aging 10 years
Allan Deviation		.01s to 1s		2E-12	5E-12		
Frequency stability	ΔF/F	Locked	Equal to incoming signal				
Holdover	τ	8 hours		20		us	
Recommended MAX Input SSB Phase Noise	£(Δf)	10 Hz			-96	dBc/Hz	10 MHz reference
		100 Hz			-126		
		1 KHz			-136		
		10 KHz			-146		
		100 KHz			-146		
Output SSB Phase Noise Improvement Compared to Input Phase Noise adjusted to 10 MHz	£(Δf)	10 Hz		40		dBc/Hz	Cannot improve beyond listed below Output Phase Noise
		100 Hz		50			
		1 KHz		50			
		10 KHz		50			
		100 KHz		50			
Output Frequencies	F10			10.000		MHz	SMA
	F1200			1200.0			SMA
SSB Phase Noise (achieved after 10 minutes warm-up) Noise floor	£(Δf)	0.01 Hz		-46	-42	dBc/Hz	10 MHz output, free run
		0.1 Hz		-89	-87		
		1Hz		-120	-120		
		10 Hz		-150	-150		
		100 Hz		-162	-160		
		1 KHz		-165	-164		
		10 KHz		-168	-167		
		100 KHz		-170	-169		

		0.01 Hz 0.1 Hz 1 Hz 10 Hz 100 Hz 1 KHz 10 KHz >100 KHz		-4 -47 -78 -106 -108 -140 -158 -158	-1 -45 -76 -104 -106 -137 -155 -155	dBc/Hz	1,200 MHz output, free run
<b>Power Requirements</b>	P	IEC320 on the back	100 to 250 V AC 50/60 Hz		V AC		
<b>Spectral Purity</b>		Subharmonics Spurious Harmonics		-50 -35	-40 -80 -30	dBc	At 1,200 MHz output Either output
<b>Load</b>	Internally AC-coupled 50 Ohm						All Outputs
<b>Output Waveform</b>	Sinewave						
<b>Output Power</b>			+10 +10	+13 +13	+15 +15	dBm	10 MHz 1,200 MHz
<b>Spectral Purity</b>		Subharmonics Spurious Harmonics		-70 -35	-50 -80 -30	dBc	10 MHz and multiples
<b>Load</b>	Internally AC coupled 50 Ohm (Sinewave) 10K Ohm//15pf (CMOS/TTL)						
<b>Warm-up time</b>	$\tau$	to lock on 100 ppb input		3	5	minutes	
<b>Lock Time after warm-up</b>				1		minute	
<b>Lock Detect</b>	Green LED						
<b>Input Detect (either)</b>	Green LED						
<b>Holdover Mode</b>	Yellow LED						

**Environmental and Mechanical**

<b>Operating temp. range</b>	+10°C to +45°C
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