

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

### Product Data Sheet

### Features

- Locks to either 10 MHz reference or 1 PPS input
- Ultra-Low Phase Noise (ULPN) on all Outputs
- 10 MHz, 100 MHz, and 1 PPS Outputs
- 1 PPS Output is Phase Aligned with 100 MHz Output
- Excellent holdover In the Absence of REF IN
- 10 MHz and 100 MHz internal SC-cut OCXO

### Applications

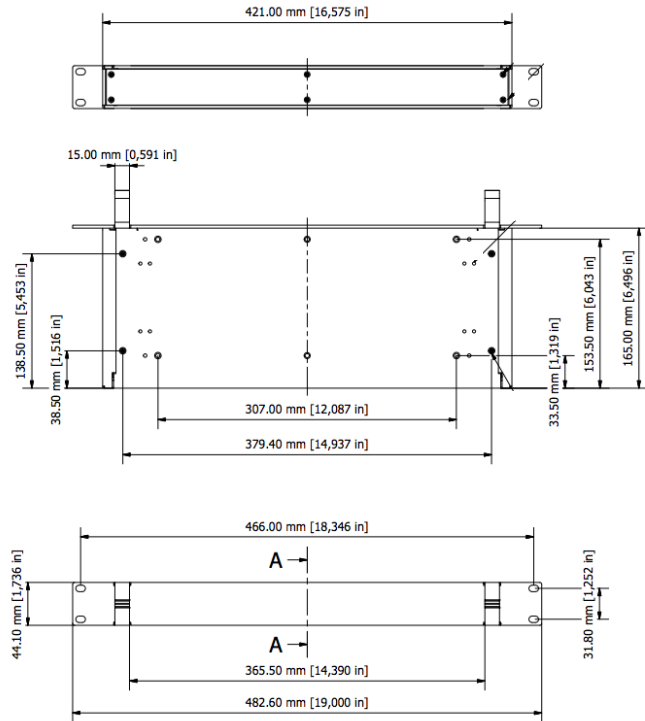
- 5G device testing
- Significantly improves Phase Noise of incoming Reference signal
- COTS/Dual use

### Inputs

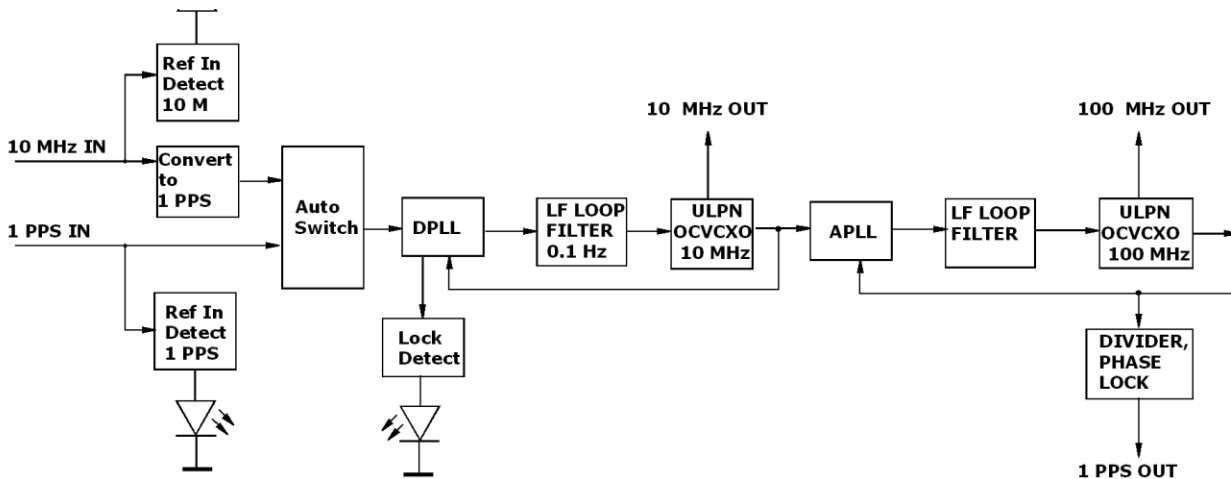
10 MHz IN SMA Female  
1 PPS IN SMA Female

### Outputs

10 MHz OUT SMA Female  
100 MHz OUT SMA Female  
1 PPS OUT SMA Female



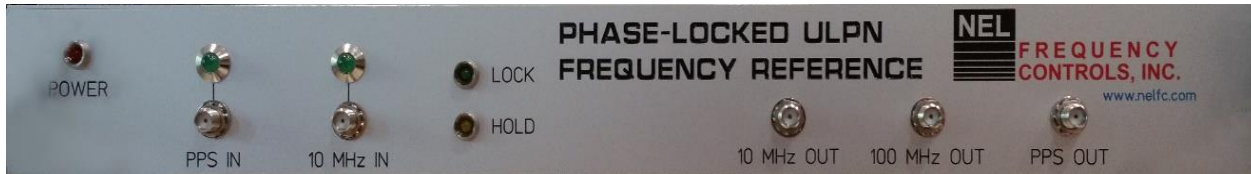
Mechanical Dimensions



# Ultra Low Phase Noise Phase-Locked Frequency Reference

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## 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>							
Input	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)	$\Delta F/F$	Over All	$\pm 100$			ppb	Includes variation vs. temperature, load, aging 10 years
Allan Deviation		.01s to 1s		5E-12			
Frequency stability	$\Delta F/F$	Locked	Equal to incoming signal				
Holdover	$\tau$	8 hours		20		us	
Recommended MAX Input SSB Phase Noise	$\mathcal{L}(\Delta f)$	10 Hz			-90	dBc/Hz	10 MHz reference
		100 Hz			-120		
		1 KHz			-130		
		10 KHz			-140		
		100 KHz			-140		
Output SSB Phase Noise Improvement Compared to Input Phase Noise adjusted to 10 MHz	$\mathcal{L}(\Delta f)$	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
	F100			100.00			SMA
	1 PPS			1		Hz	SMA
SSB Phase Noise (achieved after 10 minutes warm-up) Noise floor	$\mathcal{L}(\Delta f)$	10 Hz		-145		dBc/Hz	10 MHz output
		100 Hz		-157			
		1 KHz		-162			
		10 KHz		-170			

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		100 KHz		-172				
		10 Hz		-125		dBc/Hz	100 MHz output	
		100 Hz		-132				
		1 KHz		-163				
		10 KHz		-177				
		100 KHz		-180				
<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		-80 -35	-70 -80 -30	dBc	At 100 MHz output Either output	
<b>Load</b>	Internally AC-coupled 50 Ohm						Required on 10 MHz and 100 MHz Outputs 1 PPS	
<b>Output Waveform</b>		Sinewave TTL, 1 us pulse width						10 MHz, 100 MHz 1 PPS
<b>Output Power</b>			+10 +12	+13 +15		dBm	10 MHz 100 MHz	
<b>Phase Misalignment</b>		1 PPS Out edge to 100 MHz edge			2	ns		
<b>Warm-up time</b>	$\tau$	to lock on 100 ppb input		3	5	minutes		
<b>Lock Time after warm-up</b>					20	minutes		
<b>Lock Detect</b>			Green LED					
<b>Input Detect (either)</b>			Green LED					
<b>Holdover Mode</b>			Green LED					

**Environmental and Mechanical**

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