

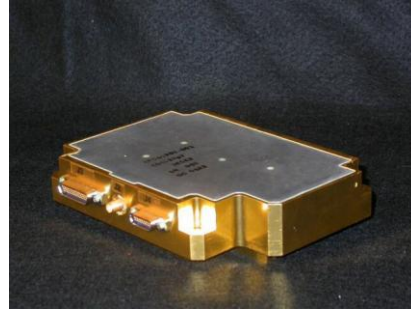
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6 to 12 GHz Digital Instantaneous Frequency Measurement Unit

P/N: SP061201-002

Features

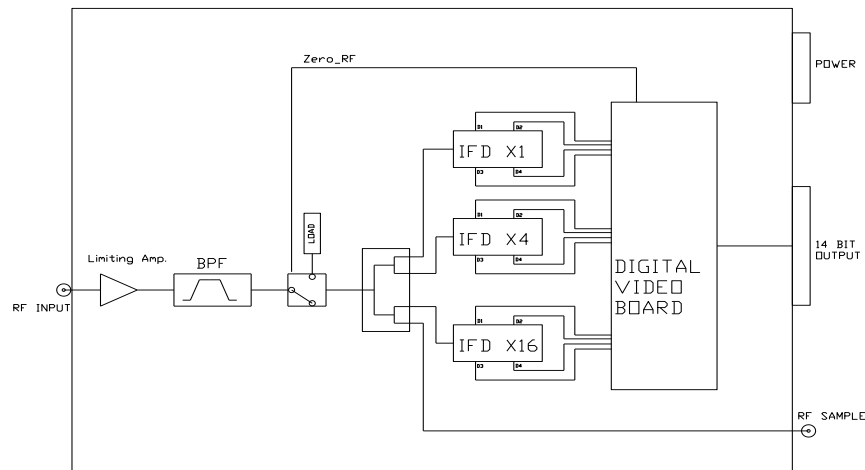
- 14 Bit Resolution
- External Trigger
- 50ns Pulse Capable
- 6GHz Instantaneous Bandwidth
- -55dBm sensitivity
- Small Form Factor 6.0"x4.5"x1.2"
- Low Weight
- Low Power Consumption
- Designed for Airborne and AUF Applications



Description

The SP061201-002 DIFM takes advantage of LNIX's unique expertise in microwave technology and digital signal processing. By transferring functionality from RF to Digital, we can yield a high performance, low cost DIFM with reduced size and power consumption. The SP061201-002 DIFM can be externally triggered or operated in free running mode and provides a 14-bit digitally compensated output word of the RF input frequency at sampling rates up to 80 MHz. The unit is capable of handling pulses as short as 50 nS up to CW. With a resolution of 14 bits, the SP061201-002 yields a nominal frequency resolution of 0.36612 MHz and an rms accuracy of <2.5MHz with a SNR of 3dB or better.

Designed for very demanding airborne and "AUF" applications, this unit will operate over a temperature range of -40°C to +95°C. Please contact the factory for other available configurations.



* Number of correlators is dependent on specific application.



Electrical Specification

REF	PARAMETERS	UNITS	MIN	Value	MAX	Notes
1	Operating Frequency Range	GHz	6.000		12.000	
2	Unambiguous Bandwidth	GHz		6.000		
3	Frequency Resolution	MHz		0.36621		1
4	Digital Frequency Resolution	Bits		14		
5	Throughput Time	ns			100	2
6	RF Input Dynamic Range	dBm	-55		10	
7	RF Input Signal/Noise Ratio	dB	3			3
8	RF Input Pulse Width	ns	50		CW	4
9	Recovery time	ns			50	5
10	RF Input VSWR				2.0:1	
11	Frequency Error (RMS) 3dB SNR	MHz			2.5	6
12	Frequency Peak Error 3dB SNR	MHz		+/-5		
13	Simultaneous Signal: Level	dBc	10			7
14	Simultaneous Signal: Frequency Separation	MHz		100		7
15	Maximum Input Power	dBm			20	8
16	Temperature Range (operating)	°C	-40		95	
17	Power Consumption	W			12.0	
18	Power Supply Current: -5V Rail	mA			300	
19	Power Supply Current: +5V Rail	mA			1800	
20	Weight	kg			.7	

Notes

- Nominal frequency resolution is unambiguous bandwidth divided by number of bits.
- See timing diagrams.
- Minimum SNR required for normal operation.
- Minimum pulse width is defined by internal video bandwidth.
- Given as the maximum time required between the removal of a pulse of RF at any power within the operating dynamic range and the arrival of the next pulse to ensure correct measurement of the second pulse.
- The actual resolution, i.e., the change of frequency required to change 1 bit of the output word varies with frequency. The RMS accuracy is calculated as the standard deviation of the frequency distribution. The RMS accuracy is specified for 3dB.
- Simultaneous signals are defined as signals which overlap by at least 30ns during a measurement cycle. A valid measurement will be made on the larger of two signals provided that a) the amplitude difference between them is 10dB and b) there is at least 100MHz frequency separation.
- Maximum input power without damage.

Standard Environmental Screening

100% of units subjected to: burn in 8 hours operational at 71°C, random vibration (as below), 5min per axis, thermal shock (as below), random vibration (as below), 5min per axis.

Environmental Data

Compliance can be shown by similarity to the following environmental conditions

Sinusoidal Vibration: MIL-STD-202F, Method 204 – 5g profile between 5 and 104Hz for 90 min per axis.

Random Vibration: MIL-STD-810D, Method 514.3 – specified profile (below) with max of 0.2g²/Hz for 60 min per axis, 20 to 2000Hz.

Mechanical Shock: MIL-STD-202F, Method 213B – 15g / 11ms, 3 shocks in each axis in each direction (18 total)

Acceleration: MIL-STD-202F, Method 212A, condition B, 6 to 14g

High temperature storage: MIL-STD-810D, Method 501.2 – 95°C for 8 hours

High temperature operational: MIL-STD-810D, Method 501.2 – 71°C / 30min, 60°C / 60min, 55°C / 4hr.

Thermal Shock: 10 Cycles of -40°C to 71°C, 5 min ramp, 2hr dwell.

Low Temperature Storage: MIL-STD-810D, Method 502.2 - -54°C for 8 hours.

High temperature operational: MIL-STD-810D, Method 502.2 - -40°C / 60min.

Combined temperature, altitude & humidity: MIL-STD-810D, Method 520 – temperature -40°C to 70°C, storage condition sea level to 17000m (87.6mb), operating condition sea level to 11000m (228mb), relative humidity at sea level 75%. 10 Cycles.

Humidity: MIL-STD-810D, Method 507.2, procedure 2 – RH 85% to 95%, temperature 30°C to 60°C, 24 hour cycle, 10 cycles.

EMUEMC: Generally in accordance with MIL-STD-461E. Please note that system precautions must be taken to prevent interfering signals entering the high gain RF front end.

Specifications subject to change