

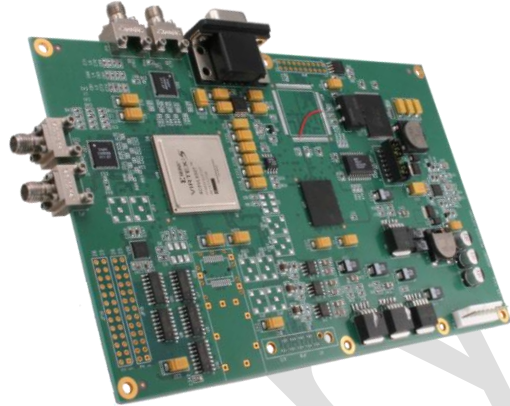


0.5 - 18 GHz Monobit Digital Receiver and IFM

PN: RXR51801-001

Features

- 50ns Pulse Capable
- ~18GHz Instantaneous Bandwidth
- -50dBm sensitivity
- Small Form Factor
- Low Weight
- Low Power Consumption
- Designed for Airborne and AUF Applications



Description

The RXR51801-001 Digital Receiver takes advantage of LNX'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 Digital Receiver with reduced size and power consumption. The RXR51801-001 directly samples the RF at very high sample rates and uses Digital Signal Processing techniques to perform the frequency measurement function. It can be used in Digital Receiver, Digital RF Memory and DIFM applications.

This technique has advantages over conventional DIFM in terms of improved sensitivity and simultaneous signal capability. The unit is also expected to provide frequency and phase modulation on pulse capability. The unit 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 RXR51801-001 yields a nominal frequency resolution of 1 MHz and an rms accuracy of (TBD) with a SNR of 3dB or better.

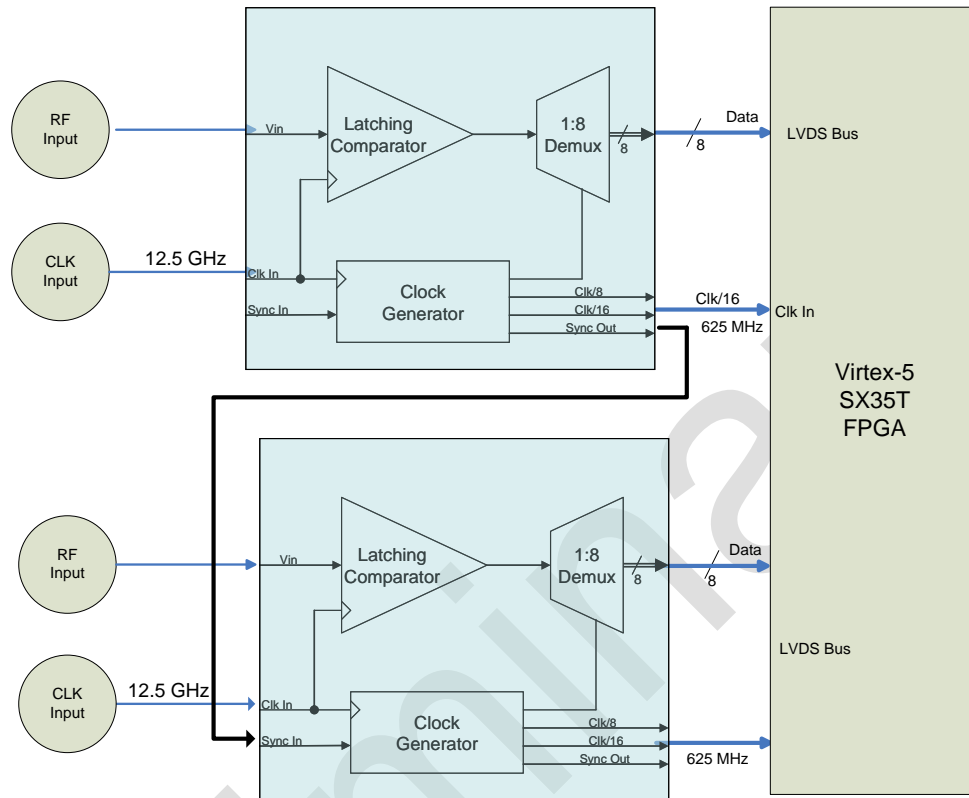
Designed for very demanding airborne and "AUF" applications, this unit will operate over a temperature range of -40°C to +85°C. Please contact the factory for other available configurations.

Typical Performance in IFM Applications

REF	PARAMETERS	UNITS	MIN	TYP	MAX	Notes
1	Operating Frequency Range	GHz	0.5		18.000	
2	Frequency Resolution	MHz		1		1
3	Digital Frequency Resolution	Bits		14		
4	Throughput Time	ns		100	TBD	2
5	RF Input Dynamic Range	dBm	-50		10	
6	RF Input Signal/Noise Ratio	dB	TBD	3		3
7	RF Input Pulse Width	ns	50		CW	4
8	Recovery time	ns			50	5
9	RF Input VSWR				2.0:1	
10	Frequency Error (RMS) 3dB SNR	MHz		4.6	TBD	6
11	Frequency Peak Error 3dB SNR	MHz		15	TBD	
12	Simultaneous Signal: Level	dBc	6			7
13	Simultaneous Signal: Frequency Separation	MHz		20	TBD	7
14	Maximum Input Power	dBm			20	8
15	Temperature Range (operating)	°C	-40		85	
16	Power Consumption	W		12.0	TBD	
17	Weight	kg			.7	



Functional Block Diagram



Notes

- 1 Nominal frequency resolution is unambiguous bandwidth divided by number of bits.
- 2 See timing diagrams.
- 3 Minimum SNR required for normal operation.
- 4 Minimum pulse width is defined by internal video bandwidth.
- 5 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.
- 6 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 3 dB.
- 7 Simultaneous signals are defined as signals which overlap by at least 30 ns 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 6 dB and b) there is at least 20 MHz frequency separation.
- 8 Maximum input power without damage.