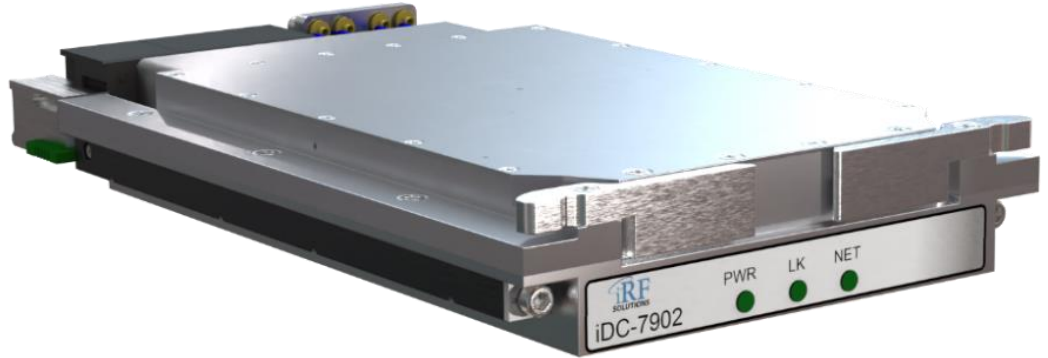


iDC-7902 3U VPX Full Range, Wideband RF Down-Converter

Key Features

- RF Coverage of full 2.0 to 18.0GHz Band
- Full Input frequency range divided into eight overlapping Bands
- Eight RF bands are frequency translated and made available on eight individual IF outputs
- Additional IF Output provides selection from the eight converter RF bands or low-frequency bypass path
- Low frequency “Bypass” mode (100MHz to 2.25GHz)
- IF Outputs centered at 4.0GHz
- Integrated Anti-alias filtering provides “Digitizer-ready” IF outputs
- Single RF Input
- 3U VPX format, SOSA-aligned



Description

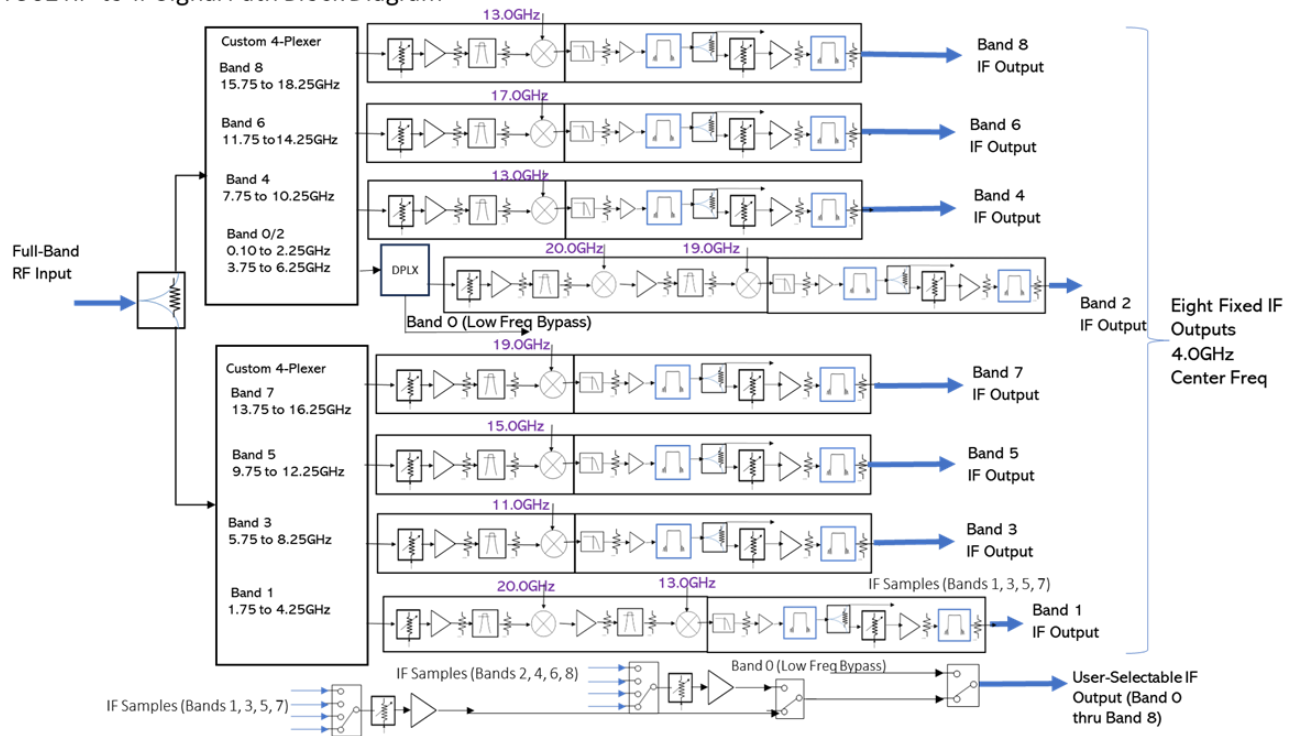
The iDC-7902 is a member of the IDC-7900 family of next-generation full band RF down-converter products offered by Intelligent RF Solutions. Building on the iDC-6800 family of 2 to 18GHz down-converters, the iDC-7900 series offers compact size (3U VPX), improved spurious performance, high dynamic range and “digitizer-ready” IF outputs placed in the second Nyquist ready for integration with a suitable digitizer card. Combined with a suitable digitizer, the iDC-7902 converter facilitates monitoring, detection, and processing of the full 2 to 18GHz spectrum simultaneously. Low SWaP allows iDC-7902 down-converter to support a broad range of applications including wideband stare, High probability of intercept (HPOI), wideband digitization and RFSoc processing solutions on even the smallest platforms.

The iDC-7902 separates the full 2 to 18GHz spectrum into eight overlapping bands, and provides simultaneous frequency-conversion to eight, 2.5GHz-wide IF signals each centered at 4.0GHz. An overlap of 500MHz provides the ability to process signals of 500MHz BW centered anywhere in the 2 to 18GHz band. Dual-stage frequency conversion is employed on the lowest two bands to achieve excellent spurious performance. Integrated low phase noise PLL synthesizers generate all necessary LO signals which are locked to an external reference of 10 or 100MHz which can be provided as a sinewave signal or differential clock signal. Feeding multiple down-converters with a common Band reference provides coherency between multiple channels of iDC-7900 units.

IF Signals are centered at 4.0 GHz and are suitably filtered to allow second-Nyquist sampling at a rate of 5.333GSPS. Integrated anti-alias filters on each IF output provide 60dB alias-free dynamic range over a minimum 2.2GHz BW, allowing direct interface to a multi-channel digitizer. High single tone spur-free dynamic range is achieved by use of state-of-the-art MMIC mixers permitting better than 60dB of SFDR with input signals of -5dBm.

All RF connections (1 RF Input, 9 IF Output and 1 Frequency Reference) are available via the black-plane VITA-67.3 14-port SMPM RF connector. A compact 3U VPX, SOSA-aligned package supports deployment of extended EW/SIGINT capabilities on low SWaP platforms.

IDC-7902 RF-to-IF Signal Path Block Diagram

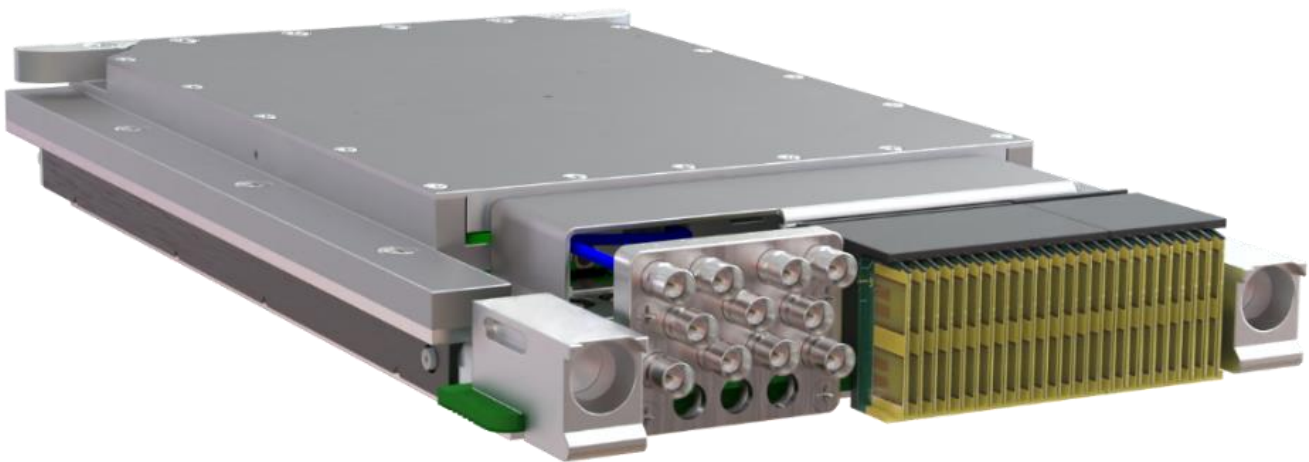


Detailed Specifications

Frequency Coverage	2.0 to 18.0GHz; 1.75 to 18.25GHz total 100MHz to 2.25GHz low frequency ‘bypass’
Number of RF Inputs	Single input covering the full RF band
Dedicated IF Outputs	Eight, each representing a 2.5 GHz section of the input spectrum
User-Selectable IF Output	Provides the ability to select from any of the eight dedicated IF outputs, or the low-frequency bypass mode
IF Output Frequency Range	2.75 to 5.25 GHz, nom.
IF 3dB Bandwidth	2.90 to 5.10 GHz, min.
60dB alias-free IF BW	2.90 to 5.10 GHz, min.
RF to IF Gain	+5dB, at 0dB RF Attenuation
RF Attenuators	0 to 15.5dB user-controlled digital attenuators on each of eight converted bands; located ahead of first amplifier stage
Gain Flatness	+/- 1 dB, max.
Gain Temperature Stability	+/-1dB, max.
Noise Figure	18dB, max.
Output IP3	+10dBm, min.
Output P1dB	+7dBm, min.
Single Tone SFDR	60dB, min. at 0dBm output signal level
Image Rejection	70dB, min.
Internally Generated Spurious	-90dBm, typ. input equivalent
Low-Freq Bypass Gain	-14dB, nom. (pass-thru contains no amplifiers)
Low-Freq Bypass Freq	100MHz to 2.25GHz; +/-2dB, typ.; >60dB alias rejection for 5.333GSPS digitizer operating in 1 st Nyquist
Input Return Loss	2.0:1, max.
Output Return Loss	1.5:1, max.
Output Harmonic and non-harmonic spurious	-60dBc at 0dBm output signal level
LO Leakage at RF Input	-90dBm, max.
LO Leakage at IF Output	-80dBm, max.
External Reference	Sinewave 10/100MHz -5dBm to +10dBm, or differential clock signal
Indicator LEDs	Three green LEDs: Power, Phase-lock Status, Network Connection
Size	3U VPX
RF Connectors	14 SMPM contacts
OpenVPX Payload Profile	SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-4
Platform Management	VITA-46.11/SOSA IPMC Support
Power	<50 watts
Weight	1.5 lbs.
Operating temperature	-40 to +85°C
Storage temperature	-54 to +90°C

RF Band Frequencies

Band 0	100MHz to 2.25 GHz (no frequency conversion)
Band 1	1.75 to 4.25 GHz (inverted spectrum)
Band 2	3.75 to 6.25 GHz (upright spectrum)
Band 3	5.75 to 8.25 GHz (inverted spectrum)
Band 4	7.75 to 10.25 GHz (inverted spectrum)
Band 5	9.75 to 12.25 GHz (inverted spectrum)
Band 6	11.75 to 14.25 GHz (inverted spectrum)
Band 7	13.75 to 16.25 GHz (inverted spectrum)
Band 8	15.75 to 18.25 GHz (upright spectrum)

**Optional Configurations**

The iDC-7900 product family is designed for systems requiring high fidelity, full RF band down-conversion in a small package. The IDC-7902 provides a single RF input which minimizes front end losses and helps achieve a slightly better NF than the iDC-7901. It provides RF-to-IF gain of +5dB and an output compression point of +7dBm, making it an ideal interface with digitizer cards based on the Xilinx RFSoc. Other applications may require different RF gain, a multiple RF input switch, or multiple RF inputs (e.g., separate L-, S-, C-, X-, and Ku-bands). The flexible design approach makes it possible to accommodate different performance requirements to suit the particular system needs.

Please contact Intelligent RF Solutions for more details on available configurations or tailoring the design to meet your specific system requirements.