



General Information

The Bandit® Model 8111 provides a series of high-performance, stand-alone analog RF slot downconverter modules. Packaged in a small, shielded enclosure with connectors for easy integration into RF systems, the modules offer programmable gain, high dynamic range and a low noise figure. With input options to cover specific frequency bands of the RF spectrum, and an IF output optimized for A/D converters, the 8111 is an ideal solution for amplifying and down-converting antenna signals for communications, radar and signal intelligence systems.

Programmable Input Level

The 8111 accepts RF signals on a front panel SMA connector. An LNA (Low Noise-figure Amplifier) is provided along with two programmable attenuators allowing downconversion of input signals ranging from -60 dBm to -20 dBm in steps of 0.5 dB. Higher level signals can be attenuated prior to input.

Preselector Options

Seven different input-frequency band options are offered, each tunable across a 400 MHz band, with an overlap of 100 MHz between adjacent bands. As a group, these seven options accommodate RF input signals from 800 MHz to 3.000 GHz as follows:

Option	Frequency Band
001	800-1200 MHz
002	1100-1500 MHz
003	1400-1800 MHz
004	1700-2100 MHz
005	2000-2400 MHz
006	2300-2700 MHz
007	2600-3000 MHz

Tuning Accuracy

The 8111 uses a low-noise, on-board frequency synthesizer as the LO (Local Oscillator). Locked to an external input reference for accuracy, its frequency is programmable across the 400 MHz band with a tuning resolution of 1 MHz. Alternatively, for applications demanding custom local oscillator characteristics, an external LO input signal can be accepted on a front panel connector and used instead of the on-board frequency synthesizer.

On-board Reference Clock

In addition to accepting a reference signal on the front panel, the 8111 includes an on-board 10 MHz crystal oscillator which can be used as the reference to lock the internal LO frequency synthesizer.

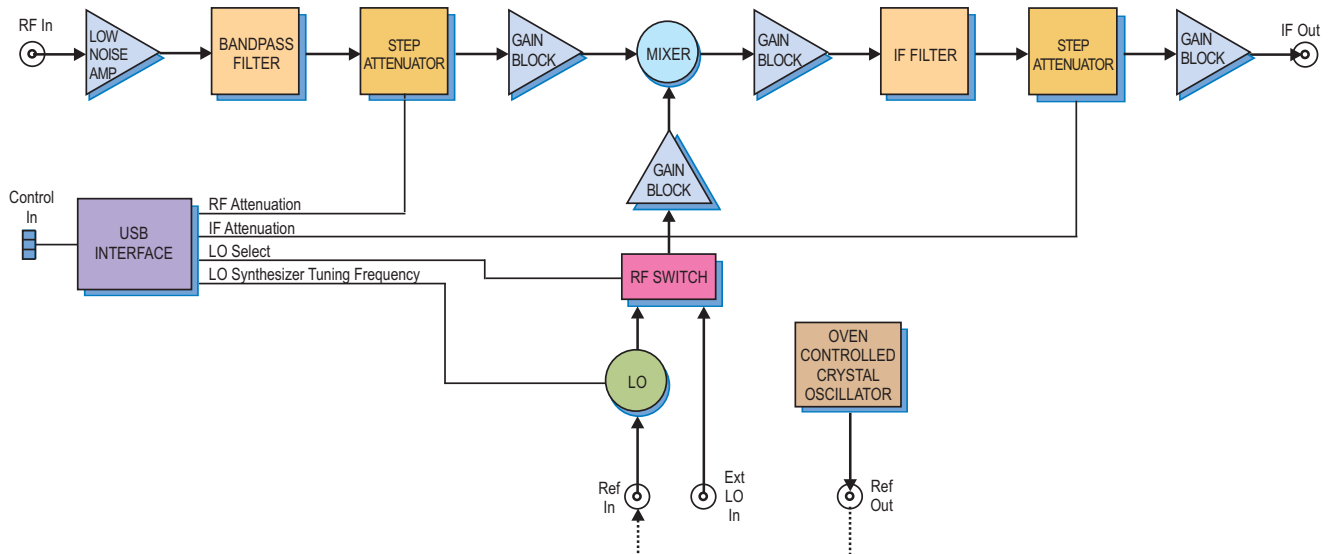
This reference is an OCXO (Oven Controlled Crystal Oscillator), which provides an exceptionally precise frequency standard with excellent phase noise characteristics.

IF Output

An 80 MHz-wide IF output is provided at a 225 MHz center frequency. This output is suitable for A/D conversion using Pentek high-performance signal acquisition products, such as those in the Cobalt and Onyx families. ➤

Features

- Accepts RF signals from 800 MHz to 3.000 GHz in seven different models
- Accepts RF input levels from -60 to -20 dBm
- 225 MHz IF output with 80 MHz output bandwidth
- Internal OCXO or external 10 MHz frequency reference



Specifications**RF Input**

Connector Type: SMA

Input Impedance: 50 ohms

Input Level Range: -60 dBm to -20 dBm

Flatness: ± 1 dB typical over each 400 MHz range

RF Attenuator: Programmable from 0 to 31.5 dB in 0.5 dB steps

LO Synthesizer Tuning

Frequency range: 800-3000 MHz, across seven different options

Resolution: 1 MHz

Tuning Speed: $< 500 \mu\text{sec}$

PLL Loop Bandwidth: 100 kHz

Phase Noise

1 kHz: -90 dBc/Hz

100 kHz: -110 dBc/Hz

1 MHz: -130 dBc/Hz

Noise Figure (referred to input)

60 dB gain: 2.6 dB

Inband Output IP3

20 dB gain: +10 dBm

60 dB gain: +42 dBm

Reference / External LO Input

Connector Type: SMA

Input Impedance: 50 ohms

Reference Input Signal

Frequency: 10 MHz

Level: 0 dBm to +20 dBm, sinewave

External LO Input SignalFrequency: $f_{\text{IN}} + 225$ MHz, where f_{IN} = RF input signal frequencyLevel: 0 dBm ± 2 dBm**OCXO Reference Output**

Connector Type: SMA

Center Frequency: 10 MHz

Output Impedance: 50 ohms

Output Level: +10 dBm, nominal, sine wave

Frequency Stability vs. Change inTemperature: ± 50.0 ppbFrequency Calibration: ± 1.0 ppm**Aging**Daily: ± 10 ppb/dayFirst Year: ± 300 ppb**Total Frequency Tolerance**(20 years): ± 4.60 ppm**Phase Noise**

1 Hz Offset: -67 dBc/Hz

10 Hz Offset: -100 dBc/Hz

100 Hz Offset: -130 dBc/Hz

1 KHz Offset: -148 dBc/Hz

10 KHz Offset: -154 dBc/Hz

100 KHz Offset: -155 dBc/Hz

IF Attenuator: Programmable from 0 to 31.5 dB in 0.5 dB steps

IF Output

Connector Type: SMA

Output Impedance: 50 ohms

Center Frequency: 225 MHz

Output Level: 0 dBm, nominal

Programming

Functions: RF Atten, IF Atten, Int/Ext LO Select, LO Synthesizer Frequency

Interface: USB

Connector Type: MicroUSB

Power

Voltage: +12VDC

Current: 1.5 A

Connector Type: Micro DB-9, female

Size: Module, 3.75 in x 7.5 in x 0.7 in

Ordering Information

Model	Description
8111	Bandit Modular Analog RF Slot Downconverter

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-001	800-1200 MHz
-002	1100-1500 MHz
-003	1400-1800 MHz
-004	1700-2100 MHz
-005	2000-2400 MHz
-006	2300-2700 MHz
-007	2600-3000 MHz