



**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

**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.

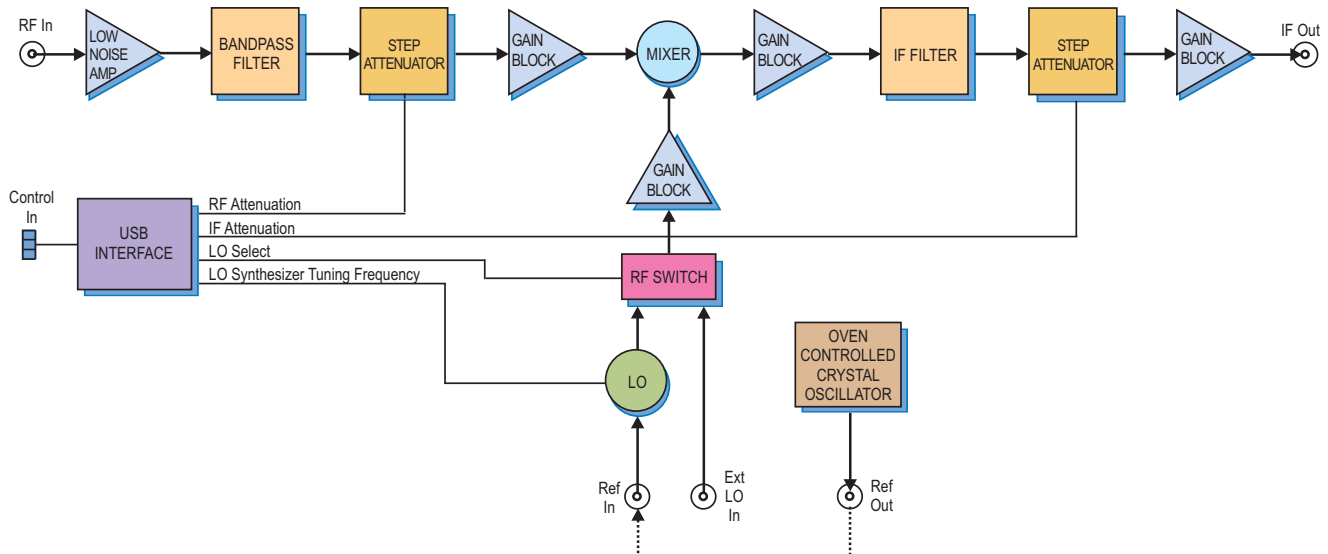
**On-board Reference Clock**

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. ➤



**Specifications****RF Input****Connector Type:** SMA**Input Impedance:** 50 ohms**Input Level Range:** -60 dBm to -20 dBm**Flatness:**  $\pm 1$  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  $\mu$ 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 Signal****Frequency:**  $f_{IN} + 225$  MHz, where  $f_{IN}$  = RF input signal frequency**Level:** 0 dBm  $\pm 2$  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 in****Temperature:**  $\pm 50.0$  ppb**Frequency Calibration:**  $\pm 1.0$  ppm**Aging****Daily:**  $\pm 10$  ppb/day**First Year:**  $\pm 300$  ppb**Total Frequency Tolerance****(20 years):**  $\pm 4.60$  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

Option	Input 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