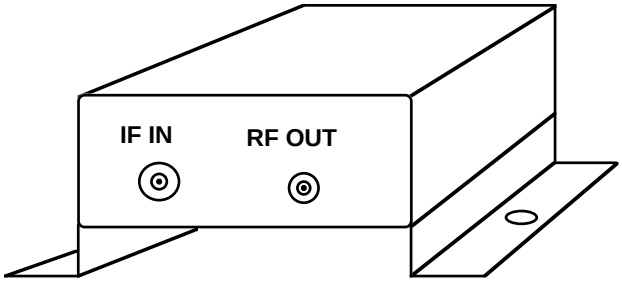
Instruction Manual

Model 2006-103
2006-103P
Downconverter

November 2013, Rev. B



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INSTRUCTION MANUAL

2006-103 DOWNCONVERTER

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1.0 General

1.1 Equipment Description

The 2006-103 Downconverter, for loop-back applications, converts an L-Band signal to 70 or 140 MHz using an 1130 MHz local oscillator (LO).

The L-band signal goes to an amplifier and is then mixed to 70 or 140 MHz with an LO of 1130 MHz. The mixer output goes to an attenuator providing a gain of -5dB. A green LED indicates the presence of DC power. Power is provided by a voltage on the L-band signal input and connectors are BNC female for the IF, and F female for the L-band RF. Wall power supply **option -P** is for 115 VAC, 60Hz and **option -P4** covers 100-240 ±10% VAC, 47-63 Hz. Specify US, EUR, AUS or UK plug for the -P4 option.

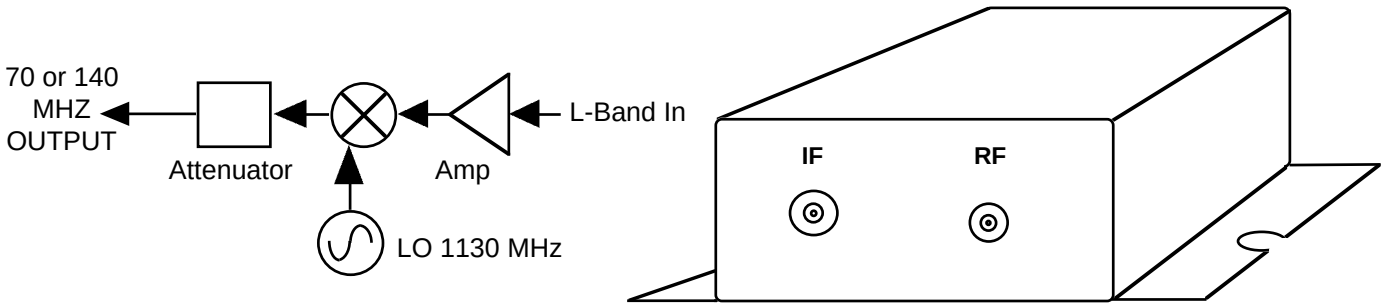

FIGURE 1.1 2006-103 Downconverter Block Diagram and Chassis

1.2 Technical Characteristics

TABLE 1.0 2006-103 Downconverter Specifications*

Input Characteristics	
Input Impedance/RL	75 Ω /12 dB
Frequency, LO	1130 MHz
Frequency, High (MHz)	1200 (70M IF), 1270 (140M IF) (non-inverting)
Frequency, Low (MHz)	1060 (70M IF), 990 (140M IF) (inverting)
Input Level	-15 to -25 dBm
Input 1dB	-10 dBm
Output Characteristics	
Impedance/RL	75 Ω/15 dB
Frequency	70 or 140 MHz center depending on input signal
Output Level	-20 to -30 dBm with -15 to -25 dBm in
Channel Characteristics	
Gain	-5 ± 2 dB
Spurious Response	output not filtered; < -40 dBC in band ± 20 MHz
Image Rejection	None; must use a clean carrier
Frequency Response	±0.5 dB, any 10 MHz increment; ±1.0 dB, any 40 MHz increment
Synthesizer Characteristics	
Frequency Accuracy	± 25 kHz max
Phase Noise (dBC/Hz)	≤ -80, 10kHz; ≤ -90, 100kHz; ≤ -100, 1MHz
Frequency Selection	NONE: Fixed tuned
Controls/Indicators	
Controls	None
DC Power	Green LED
Other	
RF, IF Connectors	Type F female, BNC female
Size (W x H x D)	3.3 x 1.2 x 4.0 (in.); 83.8 x 30.5 x 101.6 (mm)
Power Option -P Wall PS Option -P4 Wall PS	+16 to +20 VDC, 150ma max on RF In; 115 VAC, 60 Hz 100-240 ±10% VAC, 47-63 Hz, Specify US, EUR, AUS or UK plug for the -P4 option

*+10 to +40 degrees C; 2000 meters max. elevation; 80% max humidity; Pollution Degree 2; Specifications subject to change without notice.

2.0 Installation

2.1 Mechanical - The 2006-103 is packaged in an aluminum chassis. The unit can be mounted to a panel using the 2 holes at the bottom side flange. The unit derives +DC (+14 to +20 VDC) from the RF out center conductor or +15 VDC from a wall mount power supply for the -P models. (See Figure 2.1 and Figure 2.2).

2.1.1 Cleaning Instructions - Wipe the exterior with a dry, soft cloth. Use no detergent or cleaning chemicals.

2.2 Controls and Indicators - There are no controls. A green LED indicates presence of DC power (Figure 2.3).

2.3 Input / Output Signals - Figure 2.3 shows the input and output signals to the 2006-103.

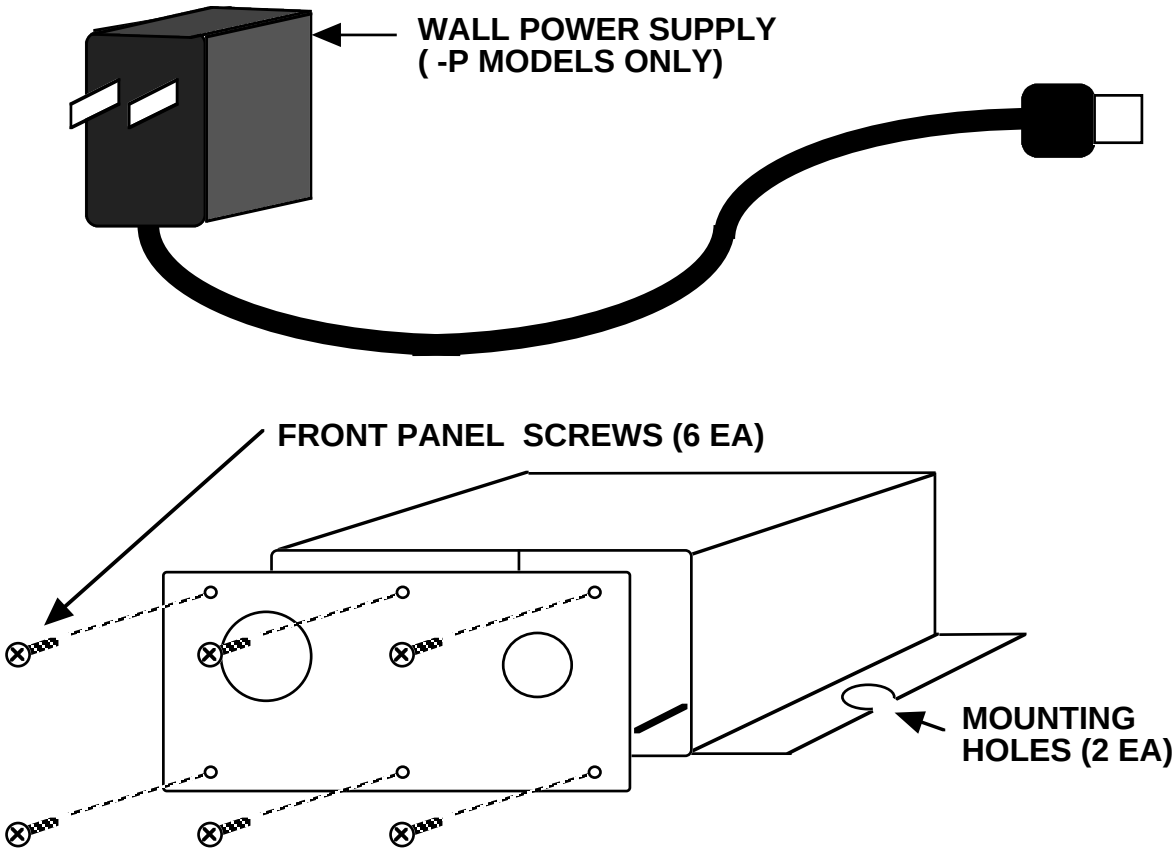

FIGURE 2.1 2006-103 Assembly Drawing

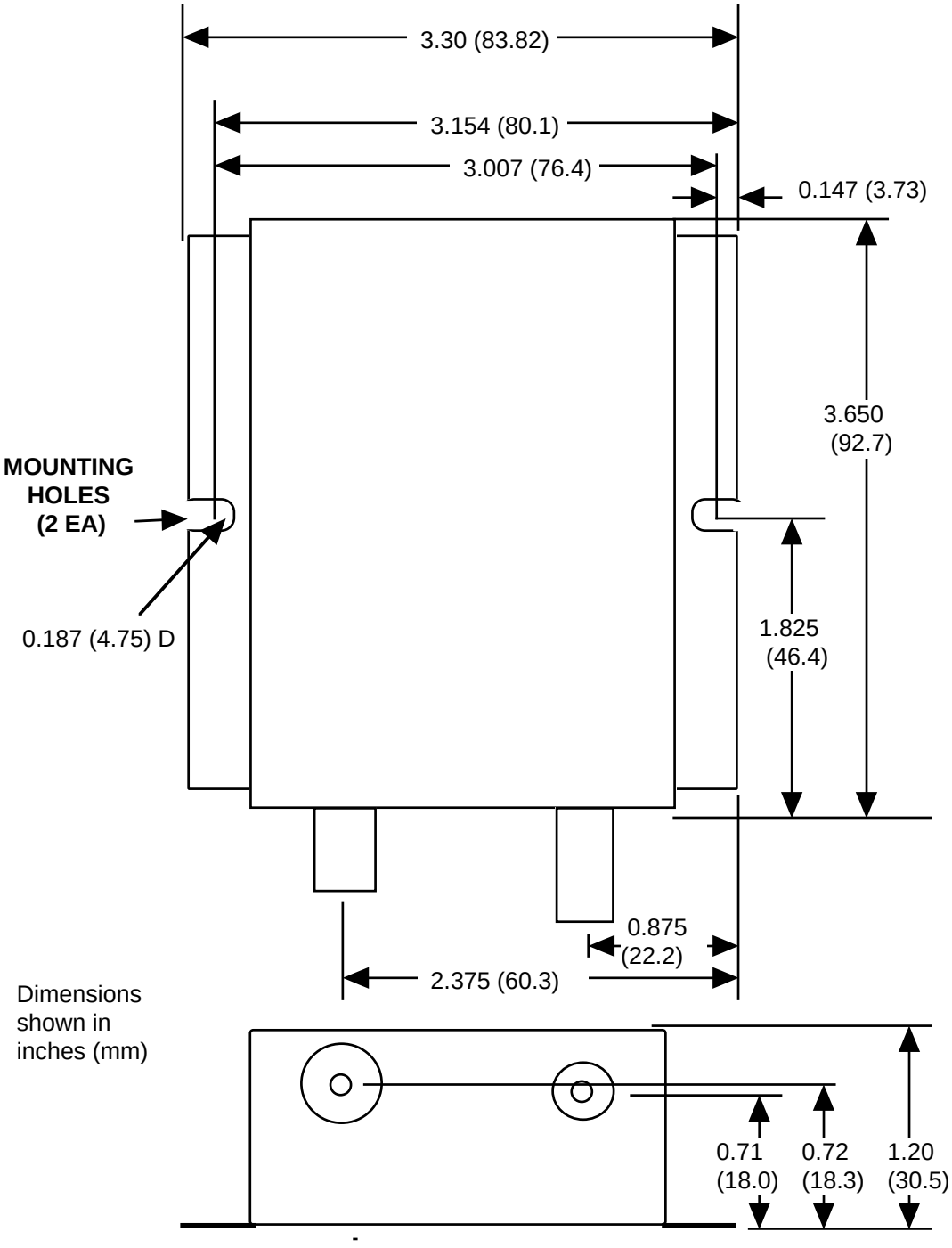

FIGURE 2.2 2006-103 Package Dimensions

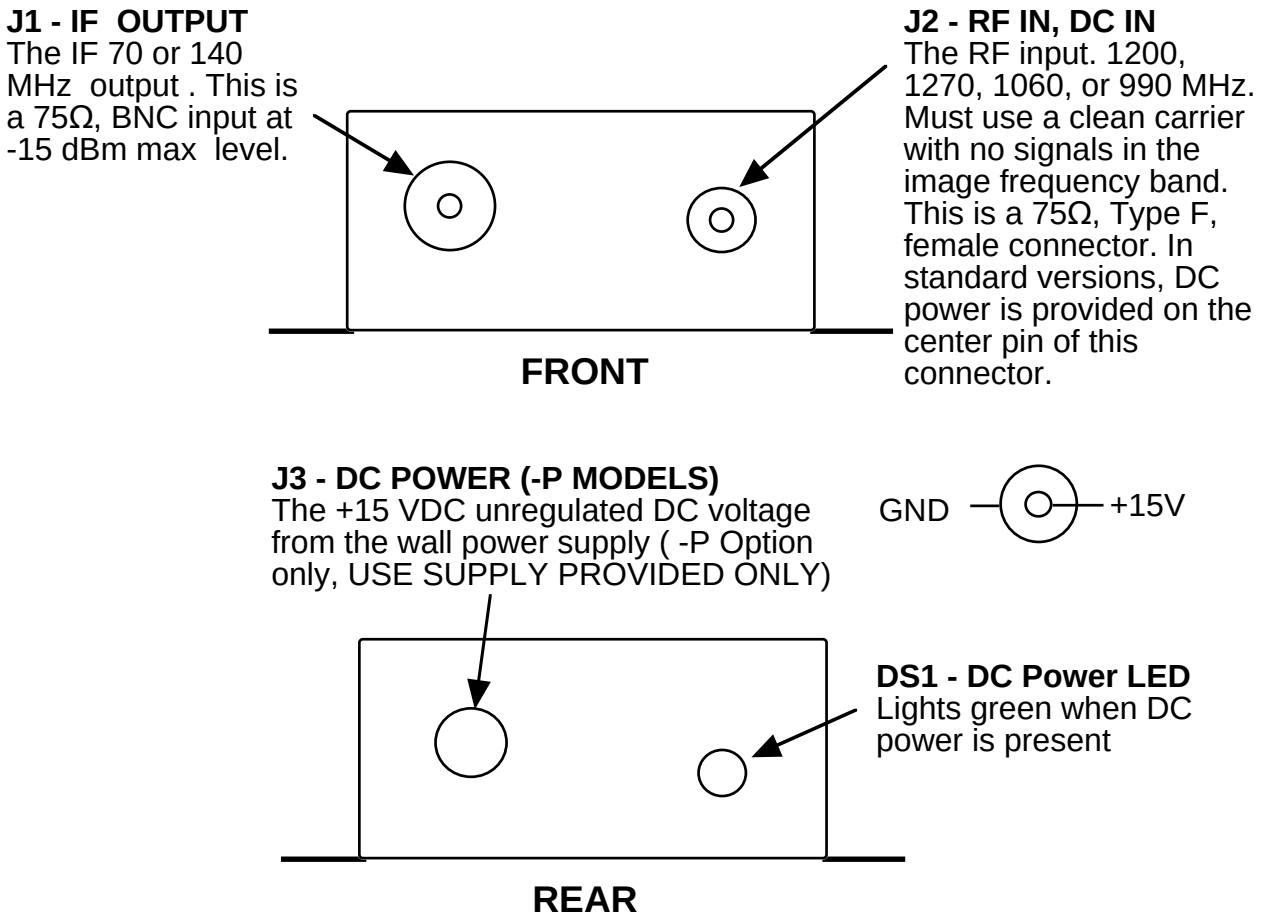

FIGURE 2.3 2006-103 Input, Output, Power LED, External DC In (-P option)

2.4 Installation / Operation

2.4.1 Installing and Operating the 2006-103

1) Secure the 2006-103 to a panel using the two bottom mounting holes (see Figure 2.1 and Figure 2.2).
2) Be sure the receiver LNB voltage to power the 2006-103, is +14 to +20 VDC on the RF center conductor. The -P models receive unregulated +15 VDC from a wall power supply provided.
3) Observe that the green power LED, DS1, is illuminated.
4) Connect -15 dBm to -25 dBm L-Band signal to RF input, J2 (Figure 2.3)
5) Connect the IF output, J1, to the receiver under test.

2.4.2 LO and IF for the 2006-103 - The 2006-103 has a fixed LO of 1130 MHz. The output frequency is 70 MHz with input frequencies of 1060 MHz or 1200 MHz. The output frequency is 140 MHz with input frequencies of 990 MHz or 1270 MHz.

3.0 Circuit Description

3.1 Block Diagram Description - 2006-103 (Figure 3.1) - The L-Band input goes via an amplifier to a mixer which receives the LO generated by the VCO. The output of the mixer goes through a 200 MHz low-pass filter and an attenuator before it is capacitivly coupled to the output connector, J1. Commands for the phase lock loop IC are provided serially from the microcontroller which determines the frequency of the LO. A 25 MHz crystal provides the reference frequency for the synthesizer IC.

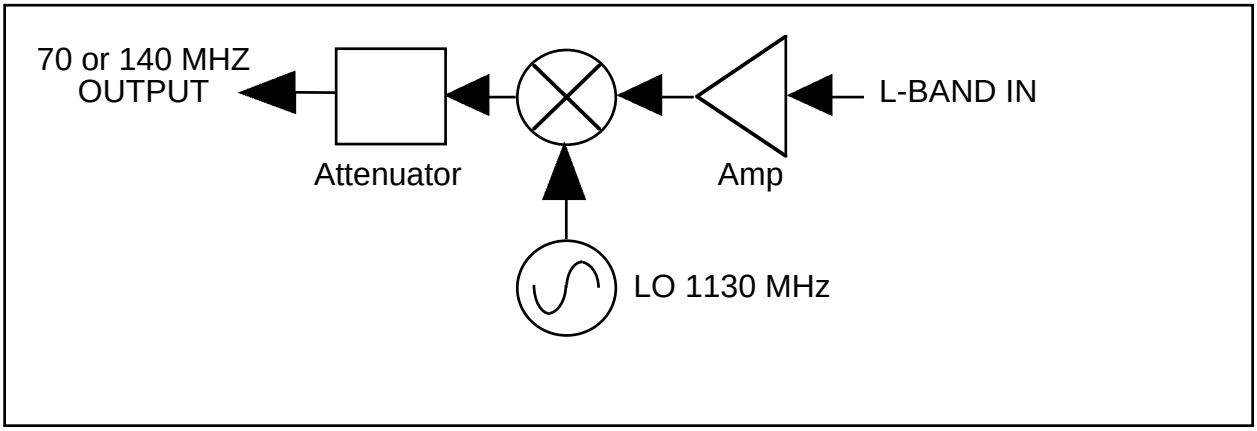

FIGURE 3.1 2006-103 Block Diagram

4.0 Environmental Use Information

A. **Rack-Mounting** - To mount this equipment in a rack, please refer to the installation instructions located in the user manual furnished by the manufacturer of your eqipment rack.

B. Mechanical loading - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.

C. **Elevated operating ambient temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra.

D. Reduced air flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Additional space between units may be required.

E. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on over current protection and supply wiring. Appropriate consideration of equipment name plate rating should be used, when addressing this concern.

F. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connection to the Branch (use of power strips).

G. Top Cover - There are no servicable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw MUST BE RE-INSTALLED prior to Top Cover screw replacement. FAILURE TO DO this may cause INGRESS and/or EGRESS emission problems.

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