

INSTRUCTION MANUAL

MODELS 2006-103, -103P

TEST DOWNCONVERTERS

Data, drawings, and other material contained herein are proprietary to Cross Technologies, Inc., and may not be reproduced or duplicated in any form without the prior permission of Cross Technologies, Inc.

When ordering parts from Cross Technologies, Inc., be sure to include the equipment model number, equipment serial number, and a description of the part.

First Edition **May 2004 Rev 0**

CROSS TECHNOLOGIES, INC.
6170 SHILOH ROAD
ALPHARETTA, GEORGIA 30005

(770) 886-8005
Toll Free 888-900-5588
FAX (770) 886-7964

WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com

INSTRUCTION MANUAL

2006-103 TEST DOWNCONVERTER

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
Warranty	3
1.0 General	4
1.1 Equipment Description	4
1.2 Technical Characteristics	5
2.0 Installation	6
2.1 Mechanical	6
2.2 Controls and Indicators	6
2.3 Input / Output Signals	6
2.4 Installation / Operation	8
2.4.1 Installing and Operating	8
2.4.2 LO and IF	9
3.0 Circuit Description	9
3.1 Block Diagram Description	9

WARRANTY - The following warranty applies to all Cross Technologies, Inc. products.

All Cross Technologies, Inc. products are warranted against defective materials and workmanship for a period of one year after shipment to customer. Cross Technologies, Inc.'s obligation under this warranty is limited to repairing or, at Cross Technologies, Inc.'s option, replacing parts, subassemblies, or entire assemblies. Cross Technologies, Inc. shall not be liable for any special, indirect, or consequential damages. This warranty does not cover parts or equipment which have been subject to misuse, negligence, or accident by the customer during use. All shipping costs for warranty repairs will be prepaid by the customer. There are not other warranties, express or implied, except as stated herein.

CROSS TECHNOLOGIES, INC.
6170 SHILOH ROAD
ALPHARETTA, GEORGIA 30005

(770) 886-8005
FAX (770) 886-7964

WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com

2006-103, -103P TEST DOWNCONVERTER

1.0 General

1.1 Equipment Description

The 2006-103 Test Downconverter 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 90-260 VAC, 47-63 Hz. Specify US, EUR, AUS or UK plug for the -P4 option.

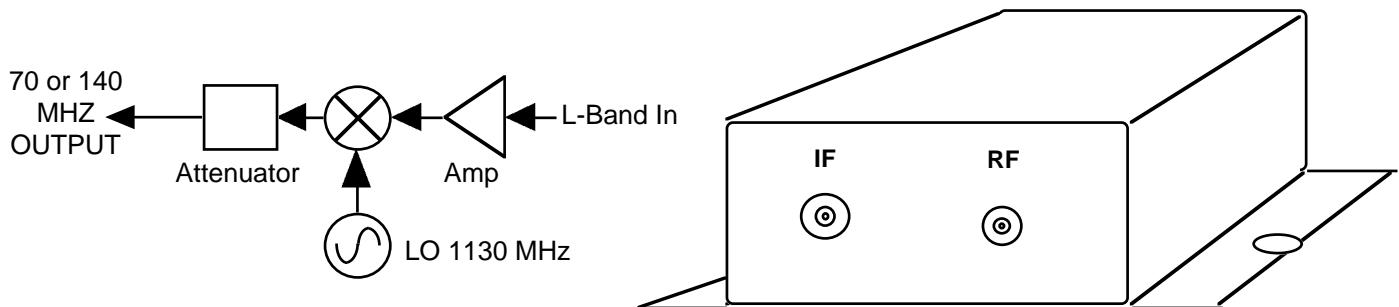


FIGURE 1.1 2006-103 Test Downconverter Block Diagram and Chassis

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	+16 to +20 VDC, 150ma max on RF In;
option -P Wall PS	115 VAC, 60 Hz
option -P4 Wall PS	90-260 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.

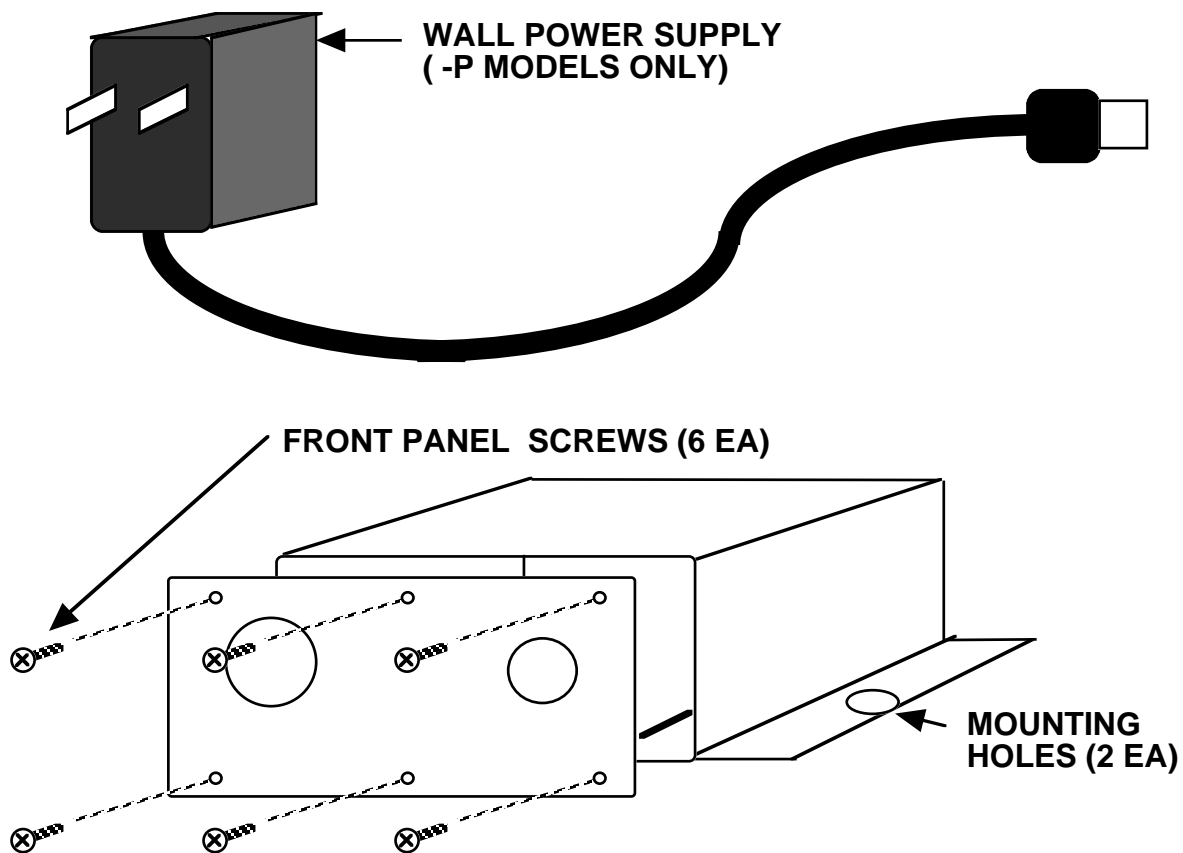


FIGURE 2.1 2006-103 Assembly Drawing

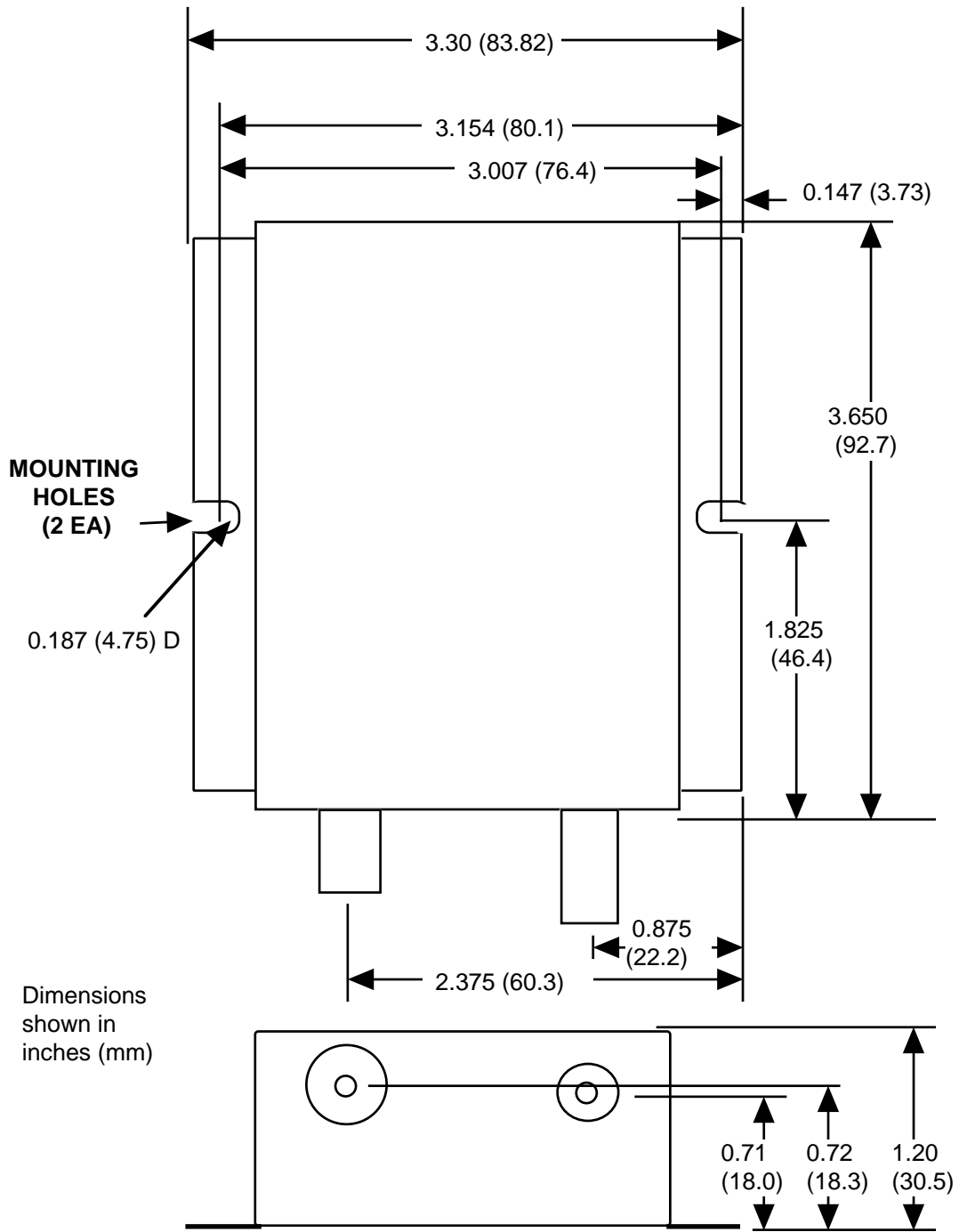


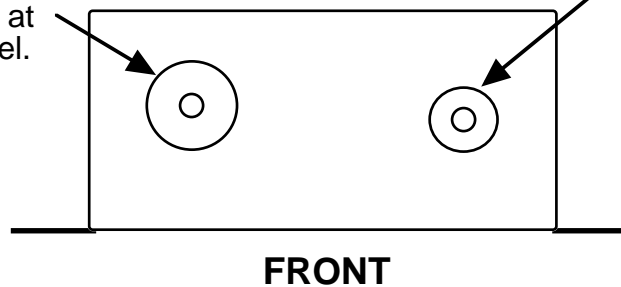
FIGURE 2.2 2006-103 Package Dimensions

J1 - IF OUTPUT

The IF 70 or 140 MHz output. This is a 75Ω, BNC input at -15 dBm max level.

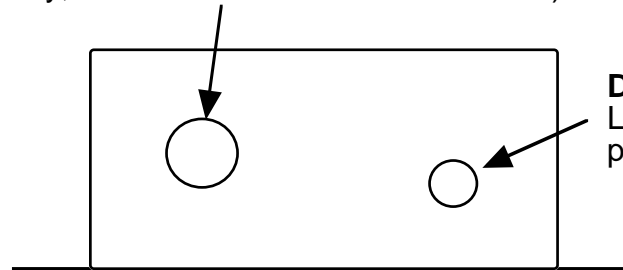
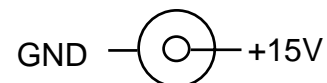
J2 - RF IN, DC IN

The RF input. 1200, 1270, 1060, or 990 MHz. Must use a clean carrier with no signals in the image frequency band. This is a 75Ω, Type F, female connector. In standard versions, DC power is provided on the center pin of this connector.



J3 - DC POWER (-P MODELS)

The +15 VDC unregulated DC voltage from the wall power supply (-P Option only, USE SUPPLY PROVIDED ONLY)



DS1 - DC Power LED
Lights green when DC power is present

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 capacitively 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.

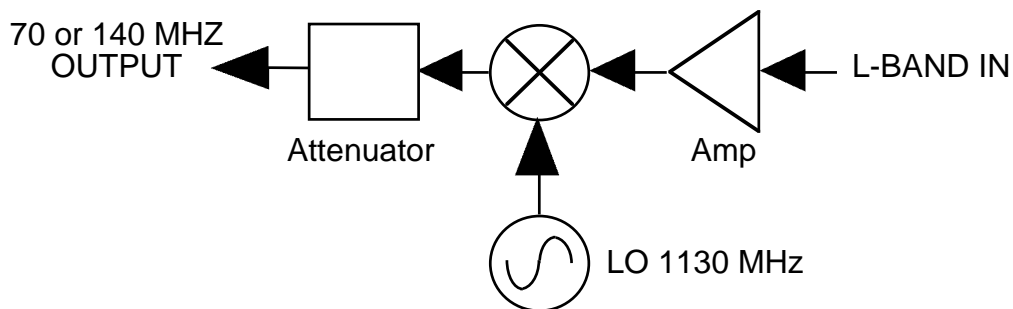


FIGURE 3.1 2006-103 Block Diagram

**CROSS TECHNOLOGIES, INC.
6170 SHILOH ROAD
ALPHARETTA, GEORGIA 30005**

**(770) 886-8005
Toll Free 888-900-5588
FAX (770) 886-7964**

**WEB www.crosstechnologies.com
E-MAIL info@crosstechnologies.com**