

# **INSTRUCTION MANUAL**

## **MODEL 2006-04 TEST UPCONVERTER**

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# INSTRUCTION MANUAL

## 2006-04 TEST UPCONVERTER

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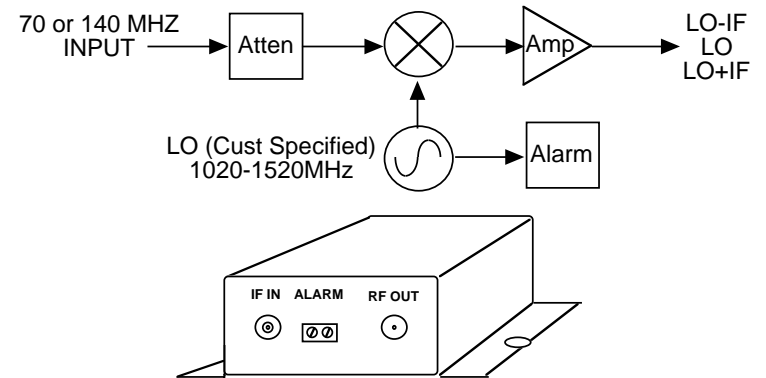
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## 2006-04 TEST UPCONVERTER

### 1.0 General

#### 1.1 Equipment Description

The 2006-04 converts a 70 or 140 MHz IF signal to frequencies determined by a customer specified LO from 1020 to 1520 MHz. The IF input is attenuated and then mixed with a customer specified LO from 1020 to 1520 MHz. The 2006-04's frequency can be changed by replacing the controller IC. The mixer output goes to the output amplifier. A green LED indicates the presence of DC power. An alarm is indicated through an open collector output to ground at the alarm terminal block when PLL is not locked. Power is provided by the LNB voltage from the receiver under test and connectors are BNC female for the 70 MHz input and F, female for the RF output. **Option -P** includes a wall power supply for 115 VAC, 60 Hz. **Option -P4** includes a wall power supply that covers 90-260 VAC, 47-63 Hz. Specify US, EUR, AUS, or UK plug for **option -P4**. **Option -C** allows for power to come from a customer supplied wall mount power supply (unregulated +15VDC min, +18VDC max, center pin positive, 2.5mm jack).



**FIGURE 1.1 2006-04 Test Upconverter  
 Block Diagram and Chassis**

## 1.2 Technical Characteristics

**TABLE 1.0 2006-04 UPCONVERTER SPECIFICATIONS\***

<b>Input Characteristics</b>	
Input Impedance/RL	75 $\Omega$ /15 dB
Frequency	70 or 140 MHz center
Input Level Range	-10 dBm to -20 dBm
Input 1dB/3RD ORDER	0 / +10 dBm
<b>Output Characteristics</b>	
Impedance/RL	75 $\Omega$ /12 dB
Frequency , LO	1020-1520 fixed
Frequency , OUTPUT	LO-IF, LO, LO+IF
Level, with -10 dBm in	-15 dBm
<b>Channel Characteristics</b>	
Gain	-5 $\pm$ 3 dBm
Spurious Response	NA; output not filtered
Frequency Response	$\pm$ 1 dB, over $\pm$ 20 MHz; $\pm$ 0.5 dB, any 10 MHz
<b>Synthesizer Characteristics</b>	
Frequency Accuracy	$\pm$ 25 kHz max
Phase Noise(dBC/Hz)	$\leq$ -80, 10 kHz; $\leq$ -90, 100 kHz; $\leq$ -100, 1 MHz
Frequency Selection	NONE: Fixed tuned
<b>Indicators</b>	
DC Power	Green LED
PLL Alarm	Terminal Block (open collector to ground, min sink current = 16ma)
<b>Other</b>	
RF Connector	Type F (female)
IF Connector	BNC (female)
Size	3.4"W x 1.2"H x 4.0"D
Power	+14 to +20 VDC, 150 ma on RF IN from LNB
Power (option -P)	+15 VDC min, 150 ma, 115 VAC wall pwr supply
Power (option -P4)	90-260VAC, 47-63Hz wall ps (US, EUR, AUS, UK)
Power (option -C)	unregulated +15VDC min, +18VDC max, center pin positive, 2.5mm jack

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

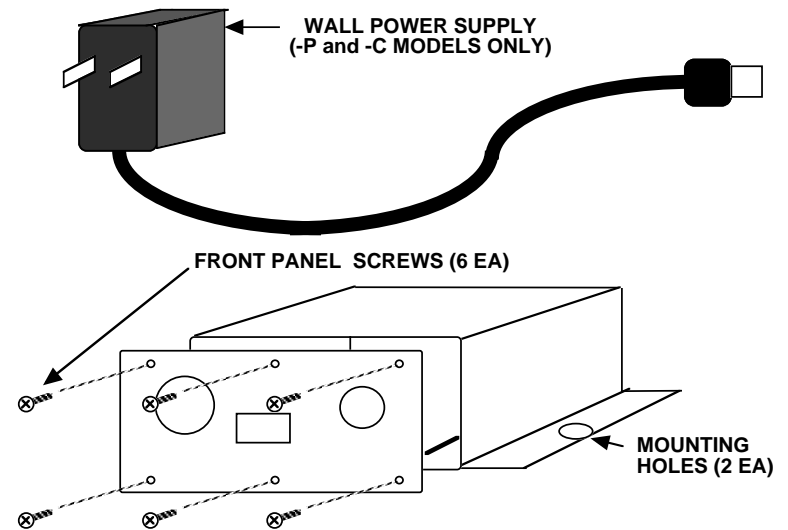
## 2.0 Installation

### 2.1 Mechanical

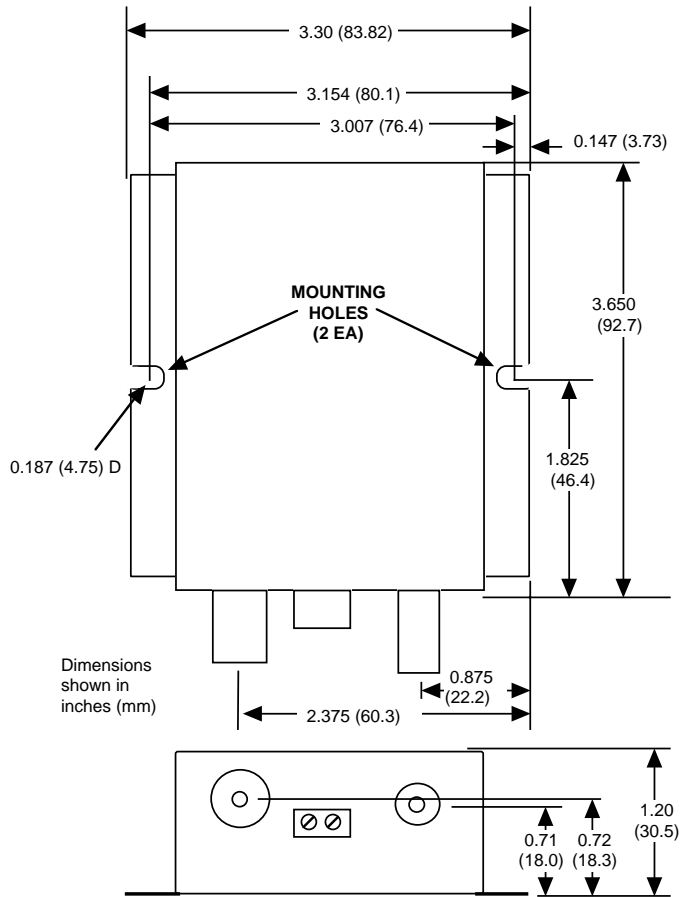
The 2006-04 is packaged in an aluminum chassis. The unit can be mounted to a panel using the 2 holes at the bottom side flange. The unit derives +DC (+14 to +20 VDC) from the RF out center conductor (from the LNB) or +15 VDC from a wall mount power supply for the -P, -P4, and -C models. (See Figure 2.1 and Figure 2.2).

#### 2.1.1 Cleaning Instructions

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



**FIGURE 2.1 2006-04 Assembly Drawing**



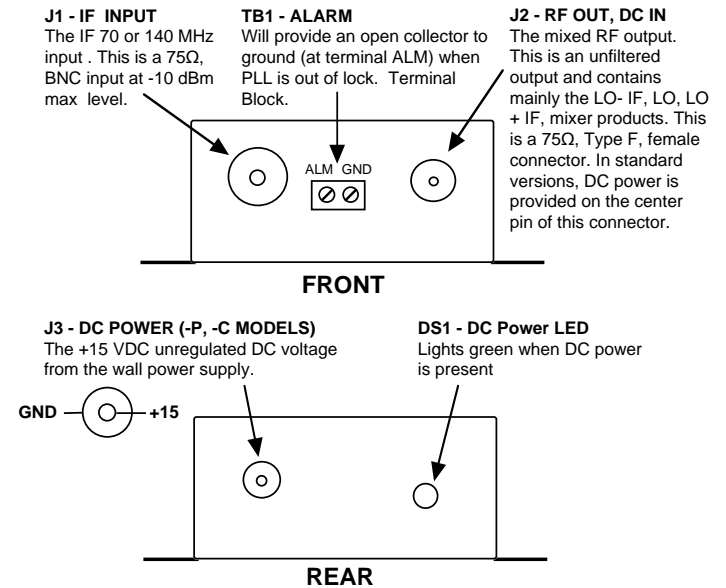
**FIGURE 2.2 2006-04 Package Dimensions**

## 2.2 Controls and Indicators

There are no controls. A green LED indicates presence of DC power and a terminal block indicates a PLL alarm with an open collector to ground at the ALM terminal (Figure 2.3).

## 2.3 Input / Output Signals

Figure 2.3 shows the input and output signals to the 2006-04.



**Figure 2.3 2006-04 Input, Output, Alarm Power LED, External DC In (-P, -C Options)**

## 2.4 Installation / Operation

### 2.4.1 Installing and Operating the 2006-04

- 1.) Secure the 2006-04 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 2006-04, is +14 to +20 VDC on the RF center conductor. The -P and -C models receive unregulated +15 VDC from a wall power supply provided either by Cross Technologies (-P) or by the customer (-C).
- 3.) Observe that the green power LED (DS1) is illuminated.
- 4.) Connect -10 dBm (maximum) signal to IF In, J1 (Figure 2.3).
- 5.) Connect the RF OUT, J2, to the receiver under test.

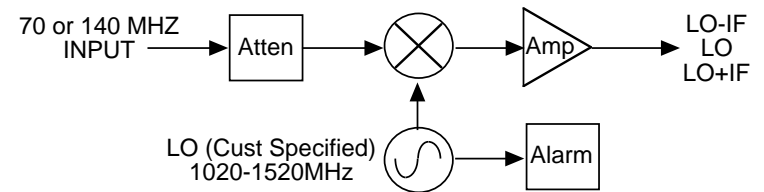
### 2.4.2 LO and IF for the 2006-04

The 2006-04 LO is customer specified from 1020 to 1520 MHz as noted on the top decal and has a LO-IF, LO, and LO+IF output.

## 3.0 Circuit Description

### 3.1 Block Diagram Description - 2006-04 (Figure 3.1)

The 70 or 140 MHz input goes to an attenuator. The signal then goes to a mixer which receives the LO generated by the VCO and provides the LO  $\pm$  IF and LO unfiltered output. This signal next goes to an amplifier and a 50 to 75 ohm output matching pad. 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 Block Diagram**

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