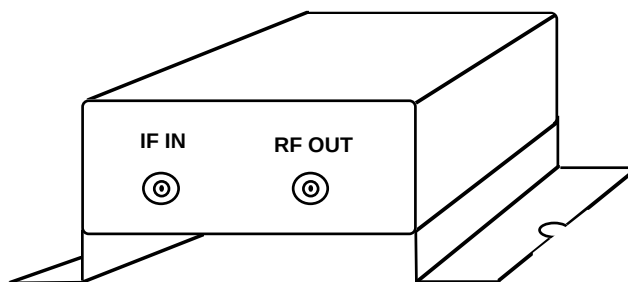


Instruction Manual

Model 2006-03 Upconverter

October 2013, Rev. B



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INSTRUCTION MANUAL

2006-03 UPCONVERTER

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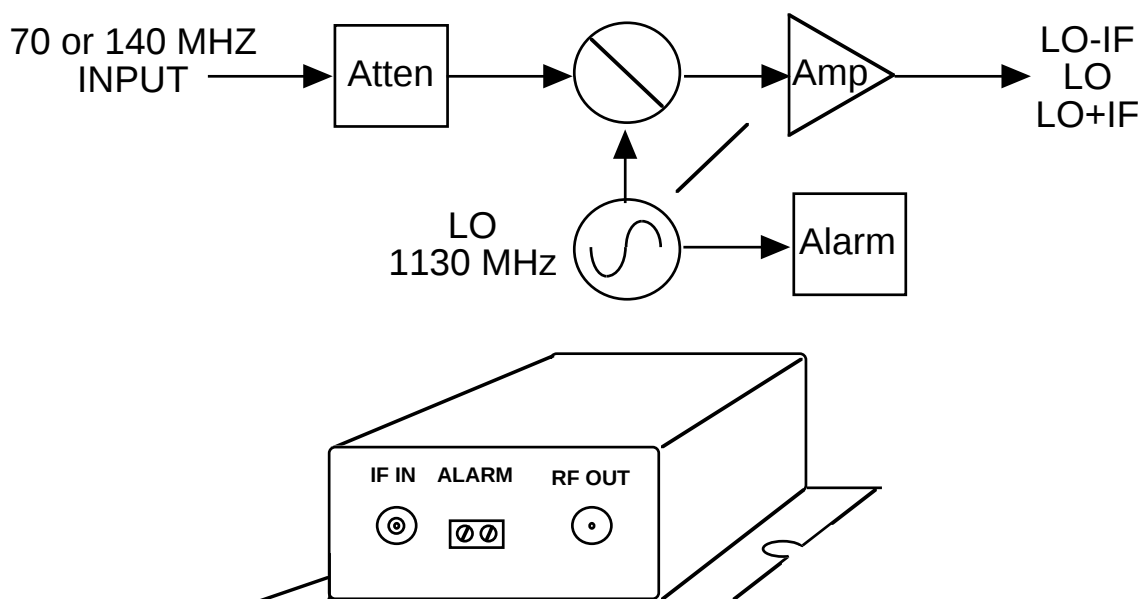
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2006-03 UPCONVERTER

1.0 General

1.1 Equipment Description

The 2006-03, for loop-back applications, converts a 70 or 140 MHz F signal to L-Band with a 1130 MHz LO frequency. The IF input goes to the attenuator, mixer and output amplifier providing -5 dB gain. A green LED indicates the presence of DC power, and a terminal block connector provides indication of a PLL alarm. Power is provided by the LNB voltage from the receiver under test and connectors are BNC female for the IF input and type-F female for the RF output. A 115 VAC, 60Hz wall power supply (option -P) and a 100-240 $\pm 10\%$ VAC, 47-63 Hz wall power supply (option -P4) are available. Specify US, EUR, AUS or UK plug for the -P4 option.



**FIGURE 1.1 2006-03 Upconverter
Block Diagram and Chassis**

1.2 Technical Characteristics

TABLE 1.0 2006-03 UPCONVERTER SPECIFICATIONS*

Input Characteristics

Input Impedance/RL	75 Ω /15 dB
Frequency	70 or 140 MHz center
Input Level Range	-20 dBm to -10 dBm
1 dB Compression	0 dBm

Output Characteristics

Impedance/RL	75 Ω /12 dB
Frequency , LO	1130 MHz
Frequency , OUTPUT	LO +IF (Ku), LO, and LO+IF (C)
Level, with -10 dBm in	-15 dBm with -10Bm in

Channel Characteristics

Gain	-5 $\pm$ 2 dBm
Spurious Response	NA; output not filtered
Frequency Sense	Inverted (C) or Non-inverted (Ku)
Frequency Response	$\pm$ 0.5 dB, any 10 MHz increment

Synthesizer Characteristics

Frequency Accuracy	$\pm$ 25 kHz max		
Phase Noise(dBC/Hz)	-80 @ 10kHz	-90 @ 100kHz	-100 @ 1MHz
Frequency Selection	NONE; Fixed tuned		

Indicators

DC Power	Green LED
PLL Alarm	Terminal Block (open collector to ground, min sink current = 16ma)

Other

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 max from LNB on RF OUT
Power (option -P)	+15 VDC min, 150 mA on RF IN from LNB
Power (option -P4)	100-240 $\pm$ 10% VAC, 47-63 Hz, 10 watts max, wall mount power supply (optional)
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 2006-03 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.

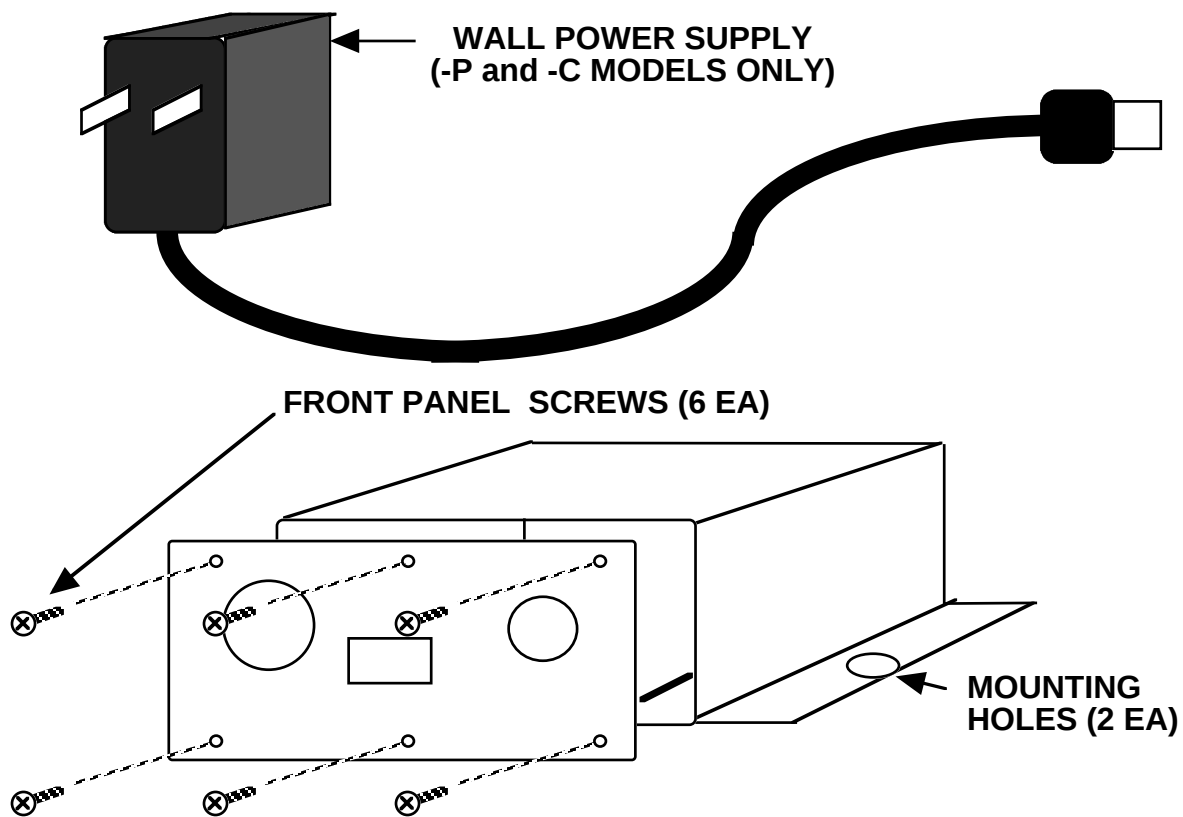


FIGURE 2.1 2006-03 Assembly Drawing

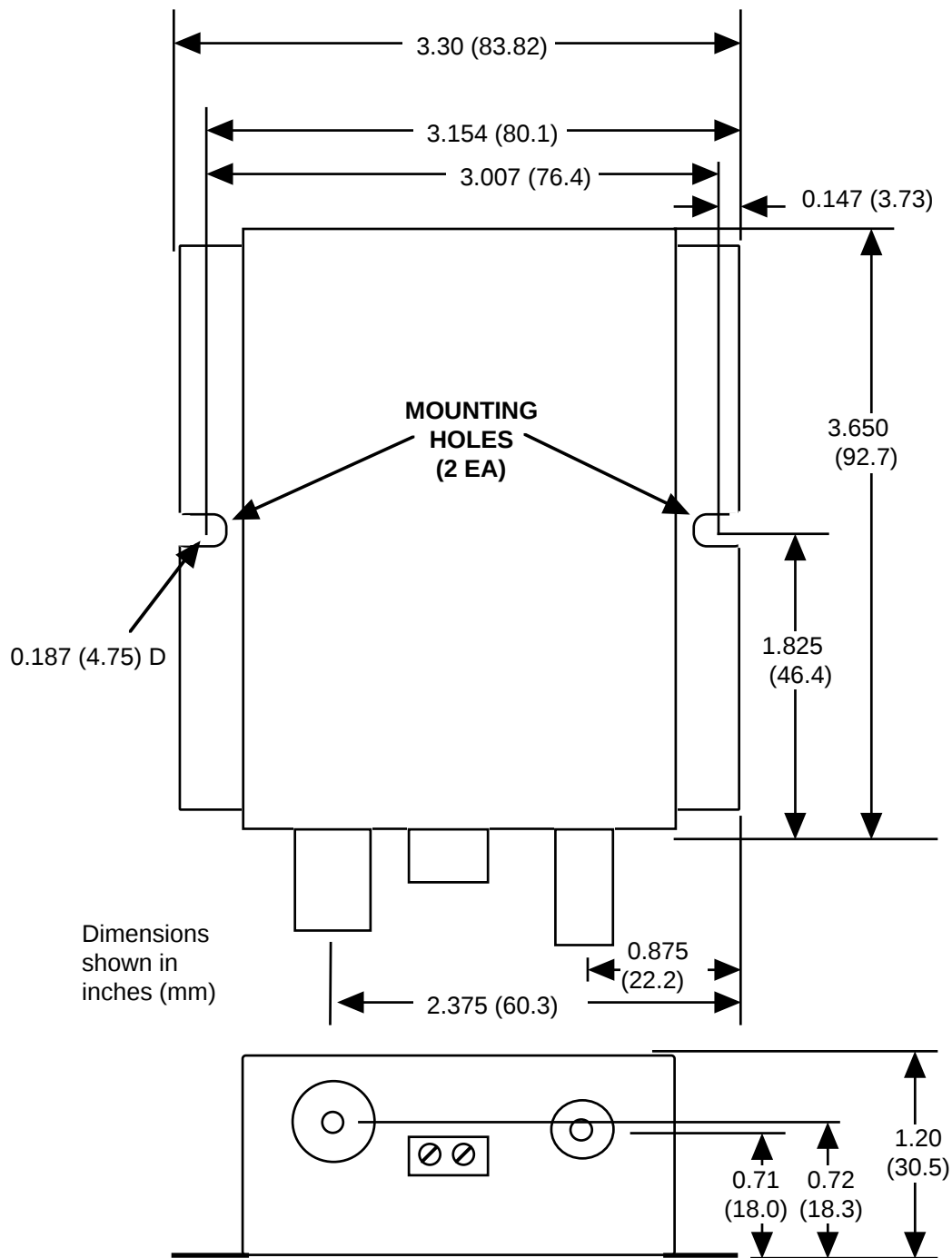


FIGURE 2.2 2006-03 Package Dimensions

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 2006-03.

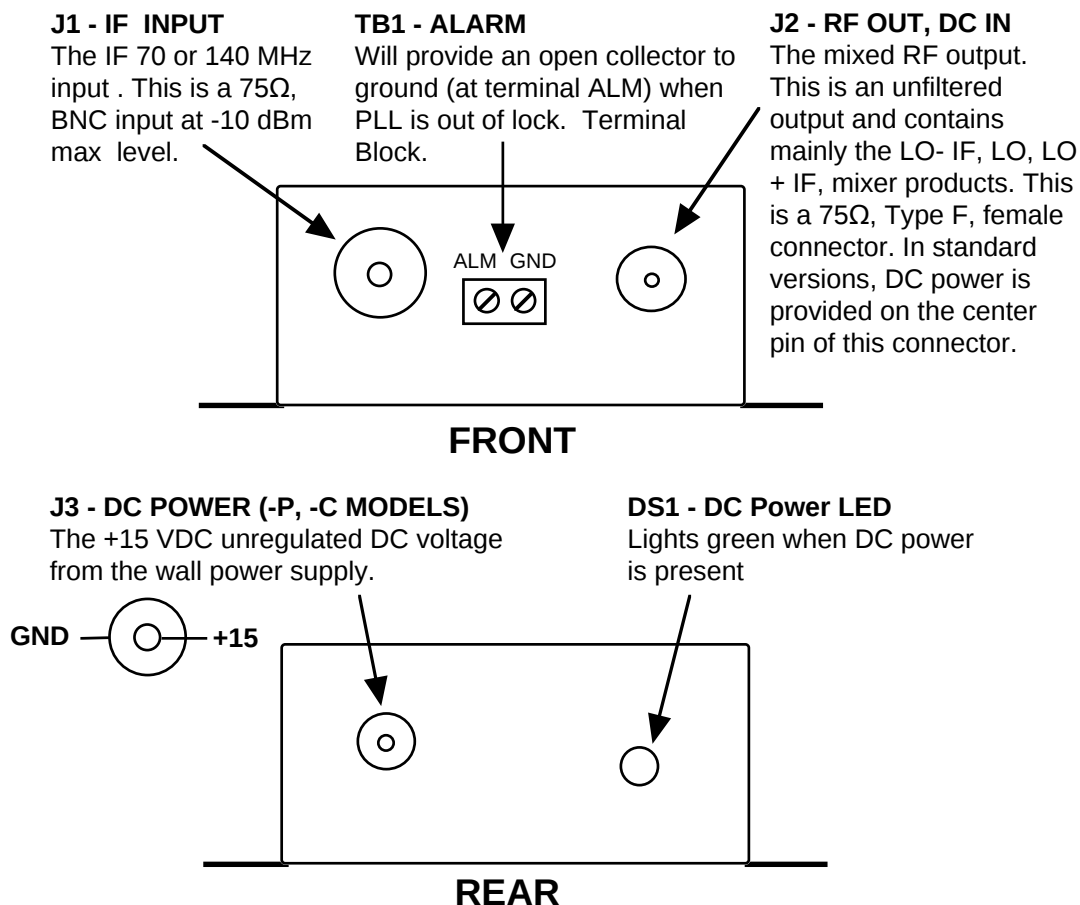


Figure 2.3 2006-03 Input, Output, Alarm Power LED, External DC In (-P, -C Options)

2.4 Installation / Operation

2.4.1 Installing and Operating the 2006-03

- 1.) Secure the 2006-03 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 2006-03, 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 2006-03

The 2006-03 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 - 2006-03 (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.

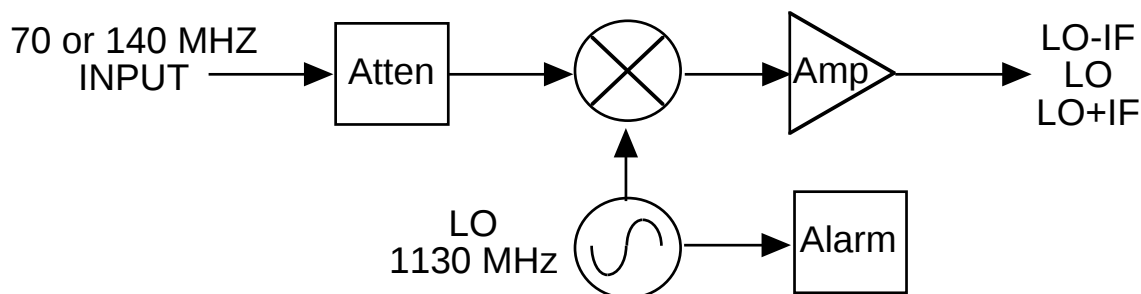


FIGURE 3.1 Block Diagram

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 equipment 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 unit 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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