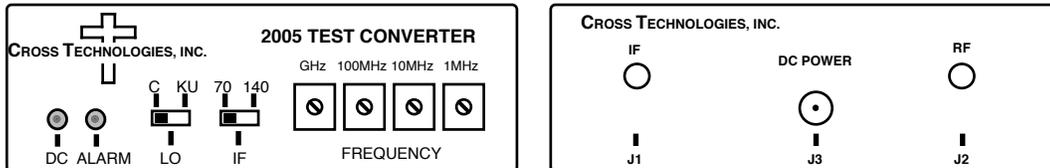


# Instruction Manual

# Model 2005-10-01 Upconverter

October 2013, Rev. A



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# INSTRUCTION MANUAL

## MODEL 2005-10-01 Upconverter

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**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.



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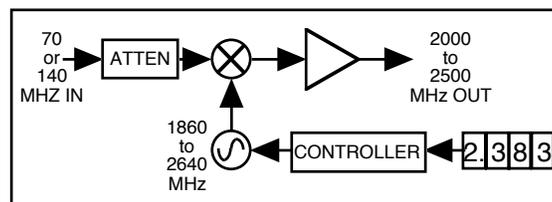
# MODEL 2005-10-01 Upconverter

## 1.0 General

### 1.1 Equipment Description

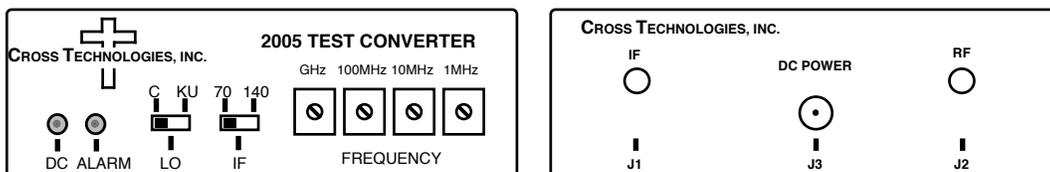
The 2005-10-01 Test Upconverter for loop-back applications converts a 70 MHz or 140 MHz IF signal to 2000 to 2500 MHz in 1 MHz steps with selection of high side LO (C = inverted) or low side LO (Ku = non-inverted) and 70 or 140 MHz input over the 2.0 - 2.5 GHz range. The 2005-10-01 allows for an input level range of +10 to -15 dBm.

Featuring low phase noise, these units are used to loop 70 or 140 MHz modulators to 2.0 - 2.5 GHz receivers for test purposes and the output consists of the LO and both upper and lower sidebands. The 70 or 140 MHz carrier input is mixed with a synthesized local oscillator (LO) signal. The output frequency is selected and indicated by the four BCD switches which control the synthesized LO. Front panel LEDs light when DC power is applied (green) and when a PLL alarm occurs (red). The mixer output is applied to the output amplifier providing a nominal gain of -10 dB. Connectors are 50Ω BNC (female) for the IF input and for the RF output (other connector options are available). Powered by a 120 VAC wall power supply (100-240 ±10% VAC, **option -P4**). The 2005 can be mounted on a 1 3/4" X 19" rack mount panel (**option -R**).



**Block Diagram**

**FIGURE 1.1 Block Diagram**



**FIGURE 1.2 Front and Rear Panel**

## 1.2 Technical Characteristics

**TABLE 1.0 2005-10-01 Upconverter Specifications\***

### Input Characteristics

Impedance	50Ω
Return Loss	15 dB
Frequency	70 or 140 MHz center, ±20 MHz
Level	+10 to -15 dBm
1dB compression	+15 dBm

### Output Characteristics

Impedance	50Ω
Return Loss	12 dB
Frequency Range	2.0 to 2.5 GHz

### Channel Characteristics

Gain	-10 dB ± 3 dB
Spurious Response	<-40dBC max, < -45dBC typ for Fc ±20MHz; <b>OUTPUT NOT FILTERED, Lo&lt;=RF nominal</b>
Frequency Response	± 2 dB, 2.0 - 2.5 GHz; ± 0.5 dB, any 10MHz increment

### Synthesizer Characteristics

Frequency Accuracy	± 25 kHz max; <b>Option -HT for ±0.1ppm Internal Reference</b>
Frequency Step	1.0 MHz minimum

Phase Noise @ Freq	100 MHz	1kHz	10kHz	100kHz	1MHz
dBC/Hz	-70	-70	-80	-90	-100

### Indicators

DC Power	Green LED
PLL Alarm	Red LED

### Other

RF, IF Connectors	50Ω BNC (RF), 50Ω BNC (IF)
Size, Bench Top	4.7" Wide X 1.75" High X 6.5" Deep
Size, Rack Mount	19 inch standard chassis 1.75"High X 7.0" Deep ( <b>option -R</b> )
Power, standard	120 ± 10% VAC, 60 Hz, 10W max wall mount power supply
AC Power	100-240 ±10% VAC, 47-63 Hz, wall mount power supply ( <b>option -P4</b> )

\*+10 to +40 degrees C; Specifications subject to change without notice

## 2.0 Installation

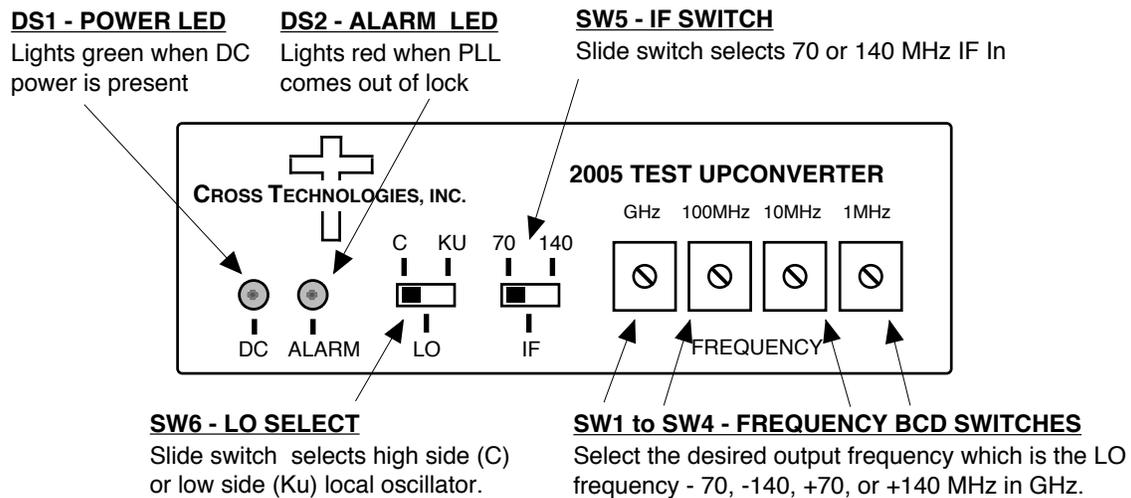
### 2.1 Mechanical

The 2005-10-01 is packaged in an aluminum extrusion. The **-R option** is mounted on a 1 3/4" X 19" panel that can be mounted to a rack using the 4 holes at the ends. The unit derives +DC from the wall power supply (+15V unregulated, or regulated universal **-P4**). See Figure 2.3.

#### 2.1.1 Cleaning Instructions

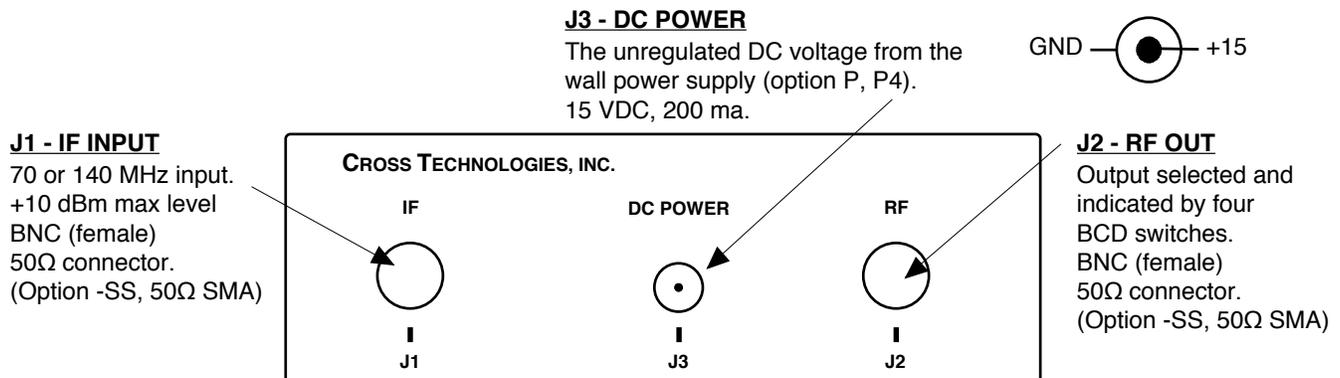
Wipe the exterior with a dry, soft cloth. Use no detergent or cleaning chemicals.

**2.2 Front Panel Controls/Indicators** - Fig. 2.1 shows front panel controls and indicators for the 2005-10-01.



**FIGURE 2.1 2005-10-01 Front Panel Controls and Indicators**

**2.3 Rear Panel Input/Output Signals** - Figure 2.2 shows the input and output signals to the 2005-10-01.



**FIGURE 2.2 2005-10-01 Rear Panel Inputs and Outputs**

## 2.4 Accessing the PC Card

There are NO USER JUMPERS or other on-card controls. ALTHOUGH IT IS NOT RECOMMENDED AND MAY VOID THE WARRANTY the following shows how to remove the printed circuit board (PCB) from the extrusion:

1. ALWAYS REMOVE POWER when installing or removing the PCB from the extrusion
2. Remove four (4) rear panel screws (see Figure 2.3).
3. GENTLY pull the rear panel and PCB assembly completely out of the extrusion.
4. To install the PCB, GENTLY push the rear panel and PCB assembly completely into the extrusion. Make sure the shield goes in the lower channel and the PCB in the next channel above that in the extrusion and that the front panel controls go through the front panel holes.
5. Install four (4) rear panel screws.

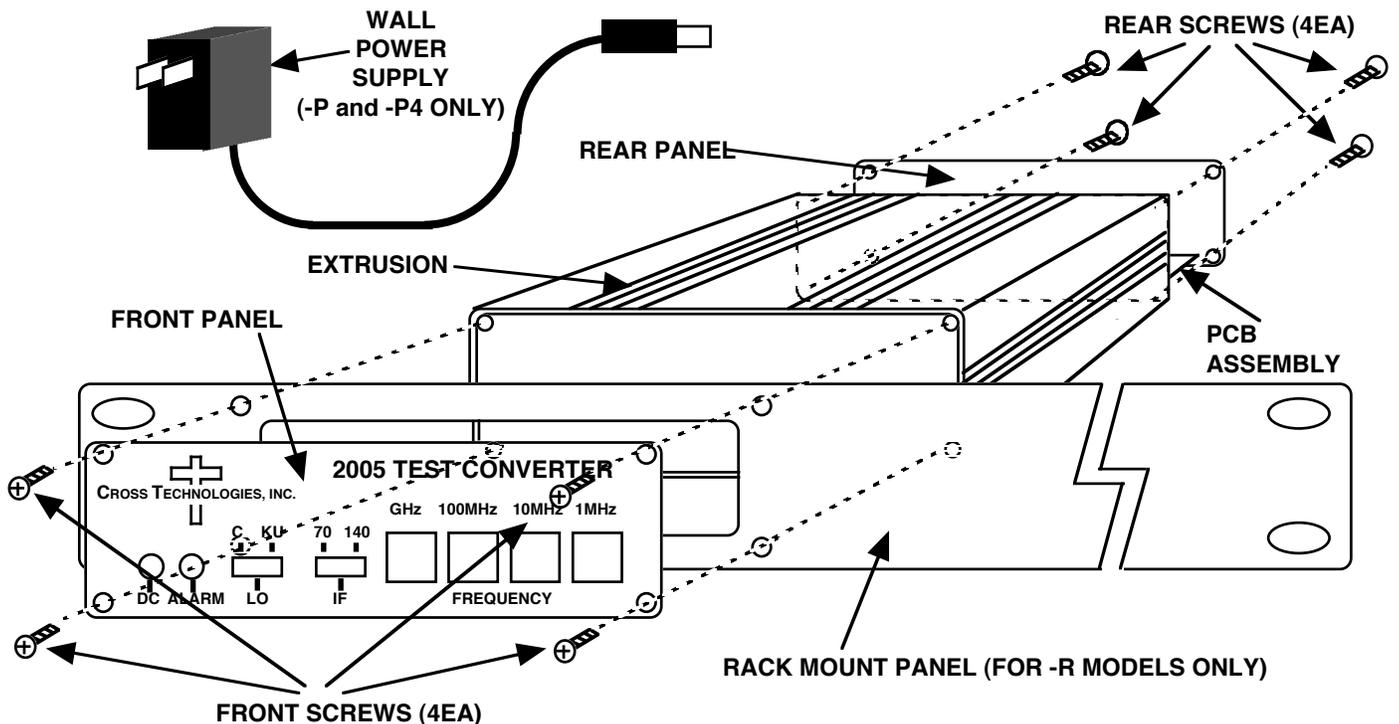


FIGURE 2.3 2005 Assembly Drawing

## 2.5 Installation / Operation

### 2.5.1 Installing and Operating the 2005-10-01

1. If using the receiver LNB voltage to power the 2005-10-01, be sure +14 to +24 VDC is on the RF center conductor. If using the wall power supply (**options -P or -P4**), connect the power supply to the DC POWER connector and either 120  $\pm 10\%$  (**-P**) or 100-240  $\pm 10\%$  VAC (**-P4**) (Figure 2.2)
2. Select either C or KU band (SW6) and either 70 or 140 MHz IF (SW5) using the front panel switches (Figure 2.1).
3. Connect a +10dBm max signal to IF In, J1 (Figure 2.2).
4. Connect the RF OUT, J2, to the receiver under test (Figure 2.2).
5. Set BCD switches, SW1 to SW4, to the desired frequency (Figure 2.1).
6. Be sure DS1 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.1).

### 3.0 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 serviceable 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 REINSTALLED** prior to Top Cover screw replacement. **FAILURE TO DO** this may cause **INGRESS** and/or **EGRESS** emission problems.



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