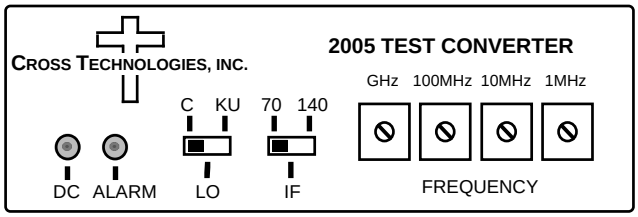
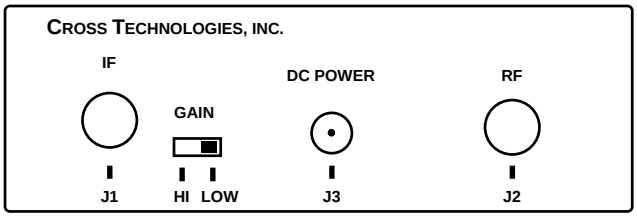
Instruction Manual

Model 2005-10P
Upconverter

October 2013, Rev. E





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

CROSS TECHNOLOGIES, INC.

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INSTRUCTION MANUAL

MODEL 2005-10P Upconverter

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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 no other warranties, express or implied, except as stated herein.

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MODEL 2005-10P Upconverter

1.0 General

1.1 Equipment Description

The 2005-10P 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.

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. The 70 or 140 MHz carrier input is mixed with a synthesized local oscillator (LO) signal. The output frequency is selected with 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 attenuator providing a nominal gain of -10 dB (high gain) or -30 dB (low gain). Connectors are 50Ω BNC (female) for the IF input and for the RF output (other connector options are available). Standard Power (**P**), 120 ±10% VAC, 60 Hz, 10W max. wall mount power supply. The 2005 can be mounted on a 1 3/4" X 19" rack mount panel (**option -R**).

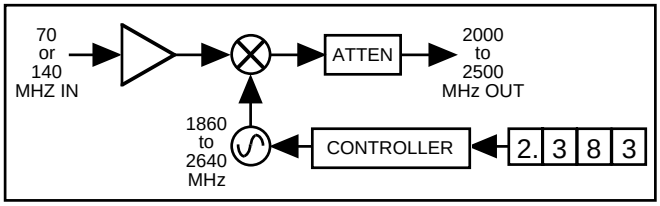


FIGURE 1.1 Block Diagram

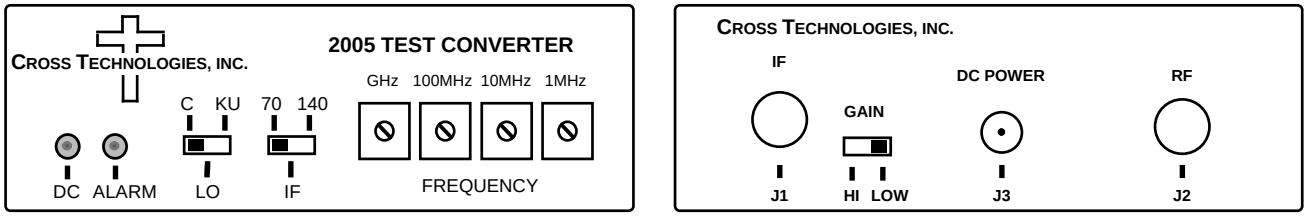


FIGURE 1.2 Front and Rear Panel

1.2 Technical Characteristics

TABLE 1.0 2005-10P Upconverter Specifications**	
Input Characteristics	
Impedance	50Ω
Return Loss	15 dB
Frequency	70 or 140 MHz center, ±20 MHz
Level	-10 to -25 dBm (LOW GAIN)
	-25 to -40 dBm (HI GAIN)
1 dB Compression	0 dBm (LOW GAIN)
	-15 dBm (HI GAIN)
Output Characteristics	
Impedance	50Ω
Return Loss	12 dB
Frequency Range	2.0 to 2.5 GHz
Channel Characteristics	
Gain	-30 dB ±3 dB (LOW GAIN)
	-10 dB ±3 dB (HI GAIN)
Spurious Response	< -40 dBC max. < -45 dBC typical; **Outpt Not Filtered**
Frequency Response	±2 dB, 2.0 - 2.5 GHz; ± 0.5 dB, any 10 MHz increment
Synthesizer Characteristics	
Frequency Accuracy	±25 kHz maximum
Frequency Step	1.0 MHz minimum

Phase Noise @ F (Hz) >	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	BNC (female)
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 (Option -R)
Power, Standard (P)	120 ± 10% VAC, 60 Hz, 10W max. wall mount power supply, +15VDC unregulated, 600 ma.
Power Supply Options:	
(Option P4)	100-240 ± 10% VAC, 47-63 Hz wall mount power supply, +15VDC unregulated, 600 ma.
(Option C)	No power supply - Requires external 2000-01 power supply.

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

2.0 Installation

2.1 Mechanical

The 2005 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 RF out center conductor (+14 to +24 VDC) or the wall power supply (+15V unregulated, **option -P, -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 - Figure 2.1 shows front panel controls and indicators for the 2005-10.

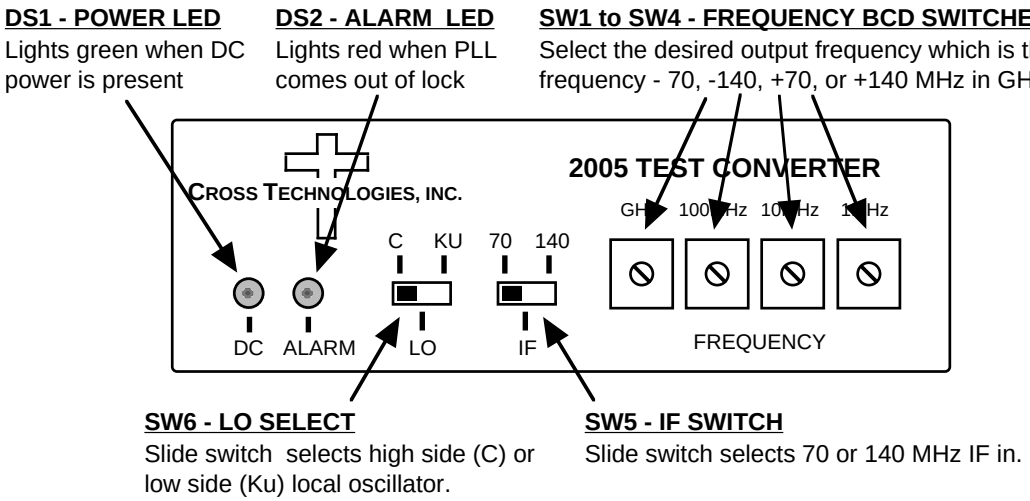


FIGURE 2.1 2005-10P Front Panel Controls and Indicators

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

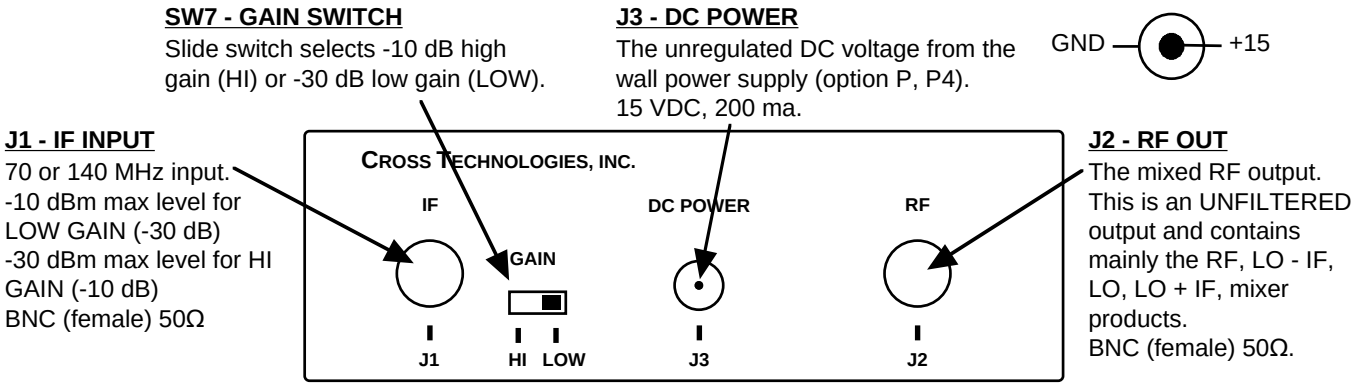


FIGURE 2.2 2005-10P Rear Panel Inputs and Outputs

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.

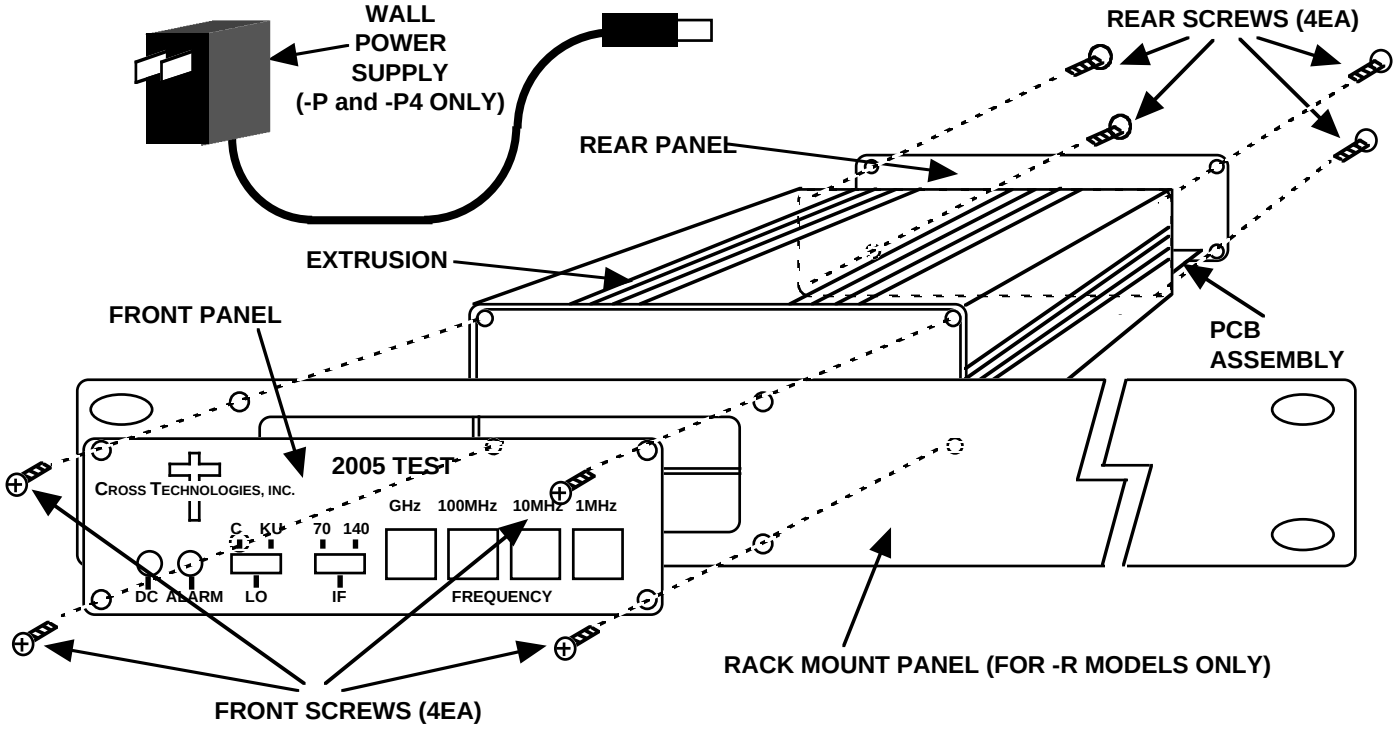


FIGURE 2.3 2005 Assembly Drawing

2.5 Installation / Operation

2.5.1 Installing and Operating the 2005-10P

1. If using the receiver LNB voltage to power the 2005-10P, 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 VAC (**-P**) or 100-240 ±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. Select either HI or LOW GAIN using the switch (SW7) on the rear panel (Figure 2.2).
4. Connect a -10dBm max (LOW GAIN) or -25 dBm max (HI GAIN) signal to IF In, J1 (Figure 2.2).
5. Connect the RF OUT, J2, to the receiver under test (Figure 2.2).
6. Set BCD switches, SW1 to SW4, to the desired frequency (Figure 2.1).
7. Be sure DS1 (green, DC Power) is on and DS2 (red, Alarm) is off (Figure 2.1).

2.6 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.

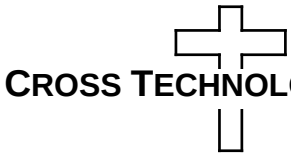
C. **Elevated operating ambient temperature** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra.

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 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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