



XTRD-750 Rack Mount High Power Amplifier With L-Band Block Upconverter



- **Compact 7 inch Package**
- **Digital Display**
- **Control Interface**
- **High Efficiency**

The XTRD-750C and XTRD-750K are highly efficient rack mountable traveling wave tube amplifiers (TWTAs) designed for fixed and mobile uplink applications.

The units include RF gain control, Built-in BUC, a solid state pre-amplifier, RF filters, cooling, and monitoring and control(M&C) systems.

Rack space is conserved because the amplifiers occupy only 4 rack units (7 inches) of a standard 19 inch rack cabinet. Nominal weight is 75 pounds.

The units feature a menu driven front panel display and RS-232/422/485 serial port interfaces for complete computer control. RF, traveling wave tube, and default parameters are easily monitored on the four line front panel display.

Gain control is provided via the from panel or through the serial interface.

XTRD-750C and XTRD-750K incorporate high efficiency, multi-stage depressed collector TWTs. Reliability is enhanced because both prime power consumption and internal operating temperatures are reduced for both the linear and saturated modes of operation.

Power factor correction circuitry is also included which minimizes line current distortion and reduces the required Volt-Amps input.

The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles.)

Depending upon user requirements, these amplifiers can be configured for either single thread or redundant system operation.

PERFORMANCE SPECIFICATIONS

Parameter	XTRD-750C, C-Band	XTRD-750K, Ku-Band
FREQUENCY RANGE		
Output	5.850 to 6.425 GHz	13.75 to 14.5 GHz
input	950 - 1525 MHz	950 - 1700 MHz
LO Frequency	4900 MHz	12800 MHz
Input Level, w/o damage	10 dBm, max	10 dBm, max
Reference Input Impedance	0 dBm \pm 5 dB	0 dBm \pm 5 dB
RF Drive Level	-17 \pm 3 dBm	-17 \pm 3 dBm
OUTPUT POWER		
Traveling Wave Tube	750 Watts	750 Watts
Rated Power @ Amplifier Flange	650 Watts	650 Watts
GAIN		
Large Signal, minimum	67 dB	67 dB
Small Signal, minimum	72 dB	72 dB
Attenuator range (0.1 dB steps)	25 dB	25 dB
Maximum SSG Variation Over:		
Any Narrow Band	1.0 dB per 40 MHz	1.3 dB per 80 MHz
Full Band	\pm 2 dB	\pm 2 dB
Slope, maximum	\pm 0.04 dB/MHz	\pm 0.04 dB/MHz
Stability, 24 Hr maximum	\pm 0.25 dB	\pm 0.25 dB
Stability, Temperature	\pm 1.0 dB maximum over temperature range at any frequency	
INTERMODULATION		
with two equal signals	-18 dBc maximum with two equal carriers at 4 dB total output backoff	
HARMONIC OUTPUT, maximum		
	- 60 dBc	
AM/PM CONVERSION, maximum		
	2.5°/dB at 6 dB below rated power	
NOISE POWER, maximum		
Transmit Band	-70 dBw/4 kHz	-70 dBw/4 kHz
Receive Band	-150 dBw/4 kHz 3.7 to 4.2 GHz	-150 dBw/4 kHz 10.95 to 12.75 GHz
GROUP DELAY, maximum		
Bandwidth	Any 40 MHz	Any 80 MHz
Linear	0.01 ns/MHZ	0.01 ns/MHZ
Parabolic	0.005 ns/MHz ²	0.005 ns/MHz ²
Ripple	0.5 ns/Pk-Pk	0.5 ns/Pk-Pk
RESIDUAL AM NOISE, maximum		
	-60 dBc at > 100 kHz from carrier AC fundamental -50 dBc Sum of all spurs -47 dBc	
PHASE NOISE, maximum		
	IESS phase noise profile	
VSWR		
Input, maximum	1.6:1	
Output, maximum	1.3:1	

PRIME POWER

100-260 VAC
 47 to 63 Hz, single phase
 600 VA Typical
 0.95 Minimum Prime Power Factor

OPTIONS

- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Integrated Linearizers
- Input Diplexer (combining IF & 10 MHz reference)
- Reverse RF Inhibit



ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50° C to +70° C
OPERATING TEMPERATURE RANGE	-10° C to +50° C
HUMIDITY	Up to 95% Noncondensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air, 250 CFM Typical

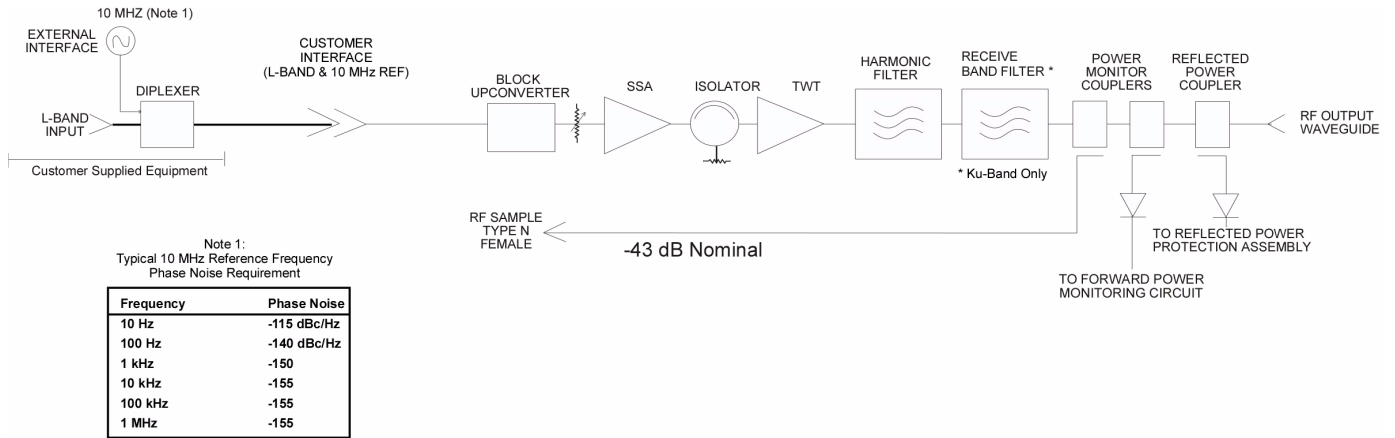
INTERFACE

TYPE	FUNCTION			
CONTROLS	Local	Local/remote	AC Power ON/OFF	
	Local and Remote	Gain	Transmit ON/OFF Fault Reset	
		Min/Max Power Alarm/Fault	Audio Alarm ON/OFF Lamp Test	
		Reflected Power Alarm/Fault	Units (Watts, dBm, dBW) Constant Power	
STATUS	Front Panel LEDs	Standby	Transmit	
		Local	Remote	
		Summary Fault		
	Front Panel Digital Display	Power Out	Attenuator Setting	Faults:
		Reflected Power	Units Selection	High VSWR
		Temperature	Standby Hours	High Voltage
Transmit Hours			Helix Current	
	Dry Form-C Relay Contacts (Two)	Summary Fault	TWT Temperature	
			Arc Detection	
COMPUTER	Hardware Interface	2 ports: RS-232 & RS-232/RS-422/RS-485		
SERIAL PORT	Xicom Command Set	ASCII Commands		
RF SAMPLE PORT COUPLING	-43 dB Nominal			

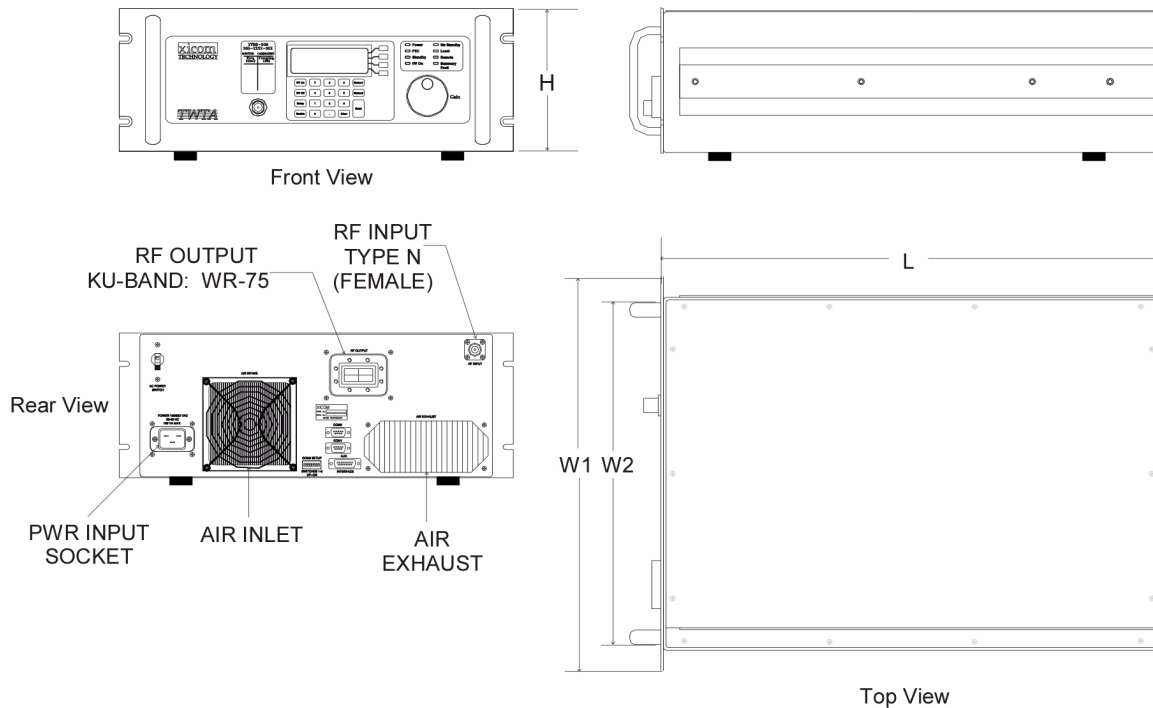
XTRD-750 High Power Amplifier with L-Band Block Upconverter



Block Diagram



Outline Drawing



	DIMENSIONS	
	Inches	Centimeters
W1	17.00	43.18
W2	19.00	48.26
L	24.00	60.96
H	6.97	17.70

Nominal Weight = 75 lbs. (34.02 kg)

RF Output	
Ku-Band	WR-75
C-Band	CPR-137G