



# XTU-100 and XTU-200 Antenna Mount Amplifiers with Block Upconverters



- **125 Watts Ku-Band**  
**170 Watts C-Band**  
**200 Watts Ku-Band**
- **L-Band Input**
- **No Shelter Required**
- **Short Waveguide Run**
- **Power factor Corrected**
- **Serial Interface**
- **1:1 Redundancy Built-in**

The XTU-100 and XTU-200 are compact antenna mountable traveling wave tube amplifiers with built-in block upconverters designed for low cost installation and long life.

Intended for outdoor operation the self contained XTU-100 and XTU-200 eliminate the need for separate amplifier shelter. In addition, the distance between the amplifier and the antenna feed horn can be short, thus eliminating long waveguide runs and their associated losses.

RF filters, cooling, and monitor & control (M&C) systems are all self contained within the package.

A high frequency resonant conversion power supply is used that accepts a wide range of prime power (100 to 260 VAC).

The unit incorporates an L-Band block upconverter that eliminates the need for a separate outdoor unit (ODU). The L-Band transmit signal and a 10 MHz reference signal are brought out to the Unit on a single coax line.

A remote external controller is available to operate the HPA from a user selected location. In addition, a M&C cable and software driver are available enabling operation and setup from a PC. Depending upon user requirements, these high power amplifiers can be configured for single thread, redundant, or phase combined configurations. A redundancy waveguide switch controller is built into the amplifier.

Mounting brackets are supplied to mount the high power amplifier to most popular antennas.

# PERFORMANCE SPECIFICATIONS

Parameter	XTU-200C	XTU-100K	XTU-200K
<b>FREQUENCY RANGE</b>			
Output	5.850 - 6.425 GHz	13.75 - 14.5 GHz	13.75 - 14.5 GHz
Input	950-1525 MHz	950-1700 MHz	950-1700 MHz
LO Frequency	4900 MHz	12800 MHz	12800 MHz
Input Level, w/o damage	10 dBm, max	10 dBm, max	10 dBm, max
Reference Signal frequency	external 10 MHz	external 10 MHz	external 10 MHz
10 MHz power level	2 dBm $\pm$ 5 dB	2 dBm $\pm$ 5 dB	2 dBm $\pm$ 5 dB
Reference Input impedance	50 Ohms	50 Ohms	50 Ohms
<b>OUTPUT POWER</b>			
Traveling Wave Tube	170 Watts	125 Watts	200 Watts
Rated Power @ Amplifier Flange	140 Watts	100 Watts	175 Watts
<b>GAIN</b>			
Large Signal, minimum	67 dB	67 dB	67 dB
Small Signal, minimum	72 dB	72 dB	72 dB
Attenuator Range (continuous)	25 dB	25 dB	25 dB
Maximum SSG Variation Over:			
Any Narrow Band	1.0 dB per 40 MHz	1.3 dB per 80 MHz	1.3 dB per 80 MHz
Full Band	$\pm$ 2 dB	$\pm$ 2 dB	$\pm$ 2 dB
Slope, maximum	$\pm$ 0.04 dB/MHz	$\pm$ 0.04 dB/MHz	$\pm$ 0.04 dB/MHz
Stability, 24 Hr maximum	$\pm$ 0.25 dB	$\pm$ 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 power backoff from rated output		
HARMONIC OUTPUT, maximum	- 60 dBc		
AM/PM CONVERSION, maximum	2.5 deg/dB at 6 dB below rated output power		
NOISE POWER, maximum			
Transmit Band	- 70 dBW/4 kHz	- 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	- 150 dBW/4 kHz 10.95 to 12.75 GHz
PHASE NOISE, maximum	IESS phase noise profile		
GROUP DELAY, maximum			
Bandwidth	Any 40 MHz	Any 80 MHz	Any 80 MHz
Linear	$\pm$ 0.01 nS/MHz	$\pm$ 0.01 nS/MHz	$\pm$ 0.01 nS/MHz
Parabolic	$\pm$ 0.005 nS/MHz <sup>2</sup>	$\pm$ 0.005 nS/MHz <sup>2</sup>	$\pm$ 0.005 nS/MHz <sup>2</sup>
Ripple	0.5 nS/Pk-Pk	0.5 nS/Pk-Pk	0.5 nS/Pk-Pk
RESIDUAL AM NOISE, maximum	-60 dBc > 100 kHz from carrier AC fundamental -50 dBc    Sum of all spurs -47 dBc		
VSWR			
Input, maximum	1.6:1	1.6:1	1.6:1
Output, maximum	2.2:1	2.2:1	2.2:1

Note: 1.3:1 Output VSWR Available With Optional External Isolator.

## PRIME POWER

100-260 VAC  
47 to 63 Hz, single phase  
XTU-100: 650 VA Maximum  
XTU-200: 850 VA Maximum  
0.96 Minimum Prime Power Factor

## OPTIONS

Remote External Controller  
M&C Cable and Software Driver  
Input Diplexer (combining IF & 10 MHz reference)  
Reverse RF Inhibit  
Forward Power Monitor



## ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50° C to + 70° C
OPERATING TEMPERATURE RANGE	-40° C to +50° C
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

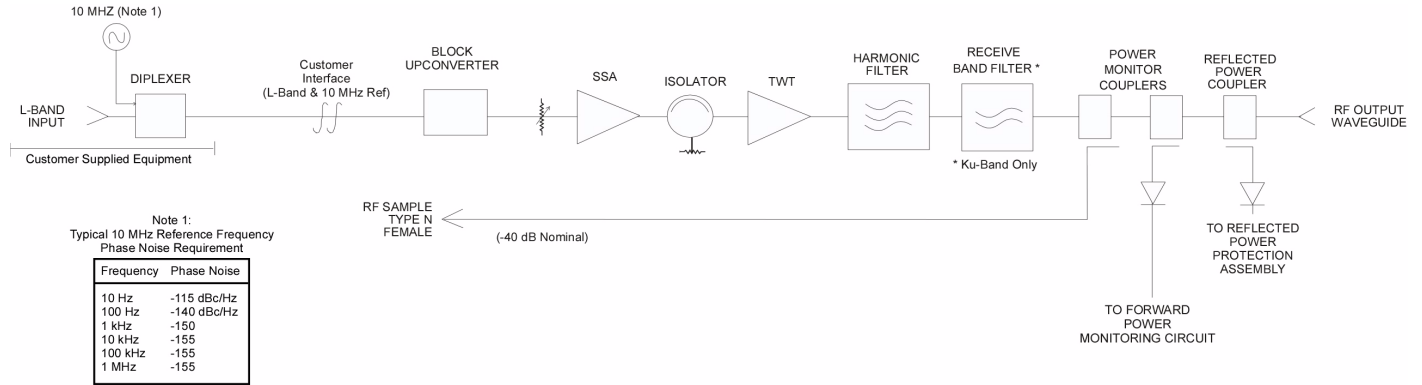
## INTERFACE

TYPE	FUNCTION		
REMOTE CONTROL	HV ON/OFF	RF Inhibit (HV OFF)	Heater Standby
	RF Attenuation (w/preamp)	Fault Reset	Min/Max Power Alarm/Fault
	Constant Power		
REMOTE STATUS	HV ON	Heater/Beam Hours	Filament Time Delay
	RF Output Power	Fault Identification	Helix Current
	Reflected Power	TWT Temperature	Helix Voltage
	Attenuator Setting		
REDUNDANCY INTERFACE	External Waveguide Switch Control		
Form C Dry Contact Closure	Summary Fault		
RF MONITOR PORT	-40 dB Coupling Value (Nominal)		

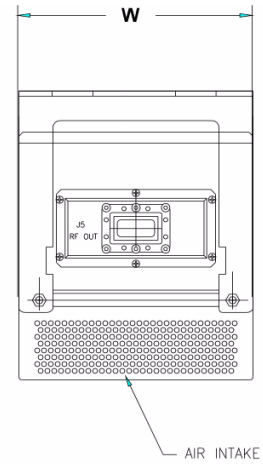
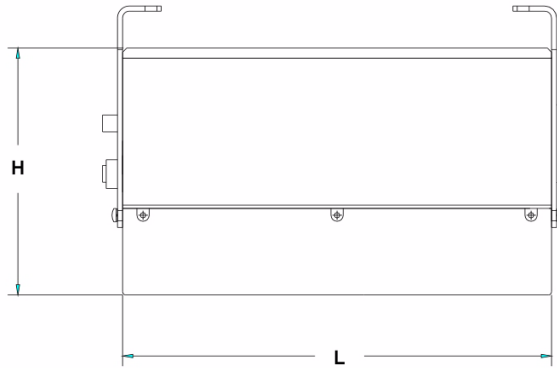
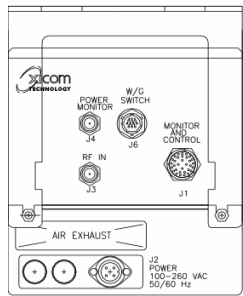
# XTU-100 and XTU-200 High Power Amplifiers with Block Upconverters



# Block Diagram



# Outline Drawing



DIMENSIONS

	INCHES	CENTIMETERS
W	8.6	21.84
L	15.75	40.01
H	9.10	23.11

Nominal Weight = 34 lbs (15.42 kg)

FLANGE CHART	
C-BAND	CPR-137G
KU-BAND	WR-75

NOTE: ALL WAVEGUIDE HOLES ARE TAPPED.