XTU-400C/Ku-Band Antenna Mount Amplifers

- **400 Watts C-Band**
  400 Watts Ku-Band
- **L-Band Input**
- **No Shelter Required**
- **Short Waveguide Run**
- **Variable Gain Control**
- **High Efficiency Dual-Stage TWTs**
- **RS-232/422/485 Interface**

The XTU-400 is a compact self contained antenna mountable power amplifier with built-in block upconverter designed for low cost installation and long life.

The XTU-400 design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and the antenna feed horn. For example, an antenna mount 400 Watt Ku-Band amplifier with its shorter waveguide run will often deliver EIRP comparable to a 600 Watt rack mount HPA.

RF filters, cooling, and monitoring & control systems are all self contained within the HPA. These features provide high reliability, low maintenance costs, and low replacement costs.

The XTU-400 uses high efficiency dual-stage collector Traveling Wave Tubes (TWT). Some benefits of this type of TWT are: reduced prime power consumption Lower internal operating temperatures Reliability enhancement. These benefits are obtained for both the linear and saturated modes of operation.

The unit incorporates an L-Band block Upconverter, thereby eliminating 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.

The XTU-400 may be configured for single thread, redundant, phase-combined, to linearized operation.

A remote external controller is available to operate the HPA from a user selected locations. Mounting brackets can be supplied to mount the HPA to most popular antennas.

3550 Bassett Street • Santa Clara, CA • 95054
Tel: (408) 213-3000 • Fax: (408) 213-3001
www.xicomtech.com

PERFORMANCE SPECIFICATIONS

Parameter	XTU-400C, C-Band	XTU-400K, Ku-Band	XTU-400K1, Ku-Band
FREQUENCY RANGE			
Output	5.850 to 6.425 GHz	14.0 to 14.5 GHz	13.75 to 14.5 GHz
Input	950-1525 MHz	950-1450 MHz	950-1700 MHz
LO Frequency	4900 MHz	13050 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 ±5 dB	2 dBm ±5 dB	2 dBm ±5 dB
Reference Input Impedance	50 Ohms	50 Ohms	50 Ohms
OUTPUT POWER			
Traveling Wave Tube	400 Watts	400 Watts	400 Watts
Rated Power @ Amplifier Flange	350 Watts	350 Watts	350 Watts
GAIN			
Large Signal, minimum	70 dB	47 dB	47 dB
Small Signal, minimum	75 dB	52 dB	52 dB
Attenuator Range (continuous)	25 dB	25 dB	25 dB
Maximum SSG Variation Over:			
Any Narrow Band	1.0 dB per 40 MHz	1.0 dB per 80 MHz	1.0 dB per 80 MHz
Full Band	±2 dB	±2 dB	±2 dB
Slope, maximum	± 0.04 dB/MHz	± 0.04 dB/MHz	± 0.04 dB/MHz
Stability, 24 Hr maximum	± 0.25 dB	± 0.25 dB	± 0.25 dB
Stability, Temperature	± 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 deg/dB at 6 dB below rated 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
GROUP DELAY, maximum			
Bandwidth	Any 40 MHz	Any 80 MHz	Any 80 MHz
Linear	0.01 nS/MHz	0.01 nS/MHz	0.01 nS/MHz
Parabolic	0.005 nS/MHz^2	0.005 nS/MHz^2	0.005 nS/MHz^2
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		
PHASE NOISE, maximum	IESS phase noise profile		
VSWR			
Input, maximum	1.6:1		
Output, maximum	1.3:1		

PRIME POWER OPTIONS

100-260 VAC
47 to 63 Hz, single phase
1550 VA Typical
0.95 Minimum Prime Power Factor

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

CE COMPLIANT

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

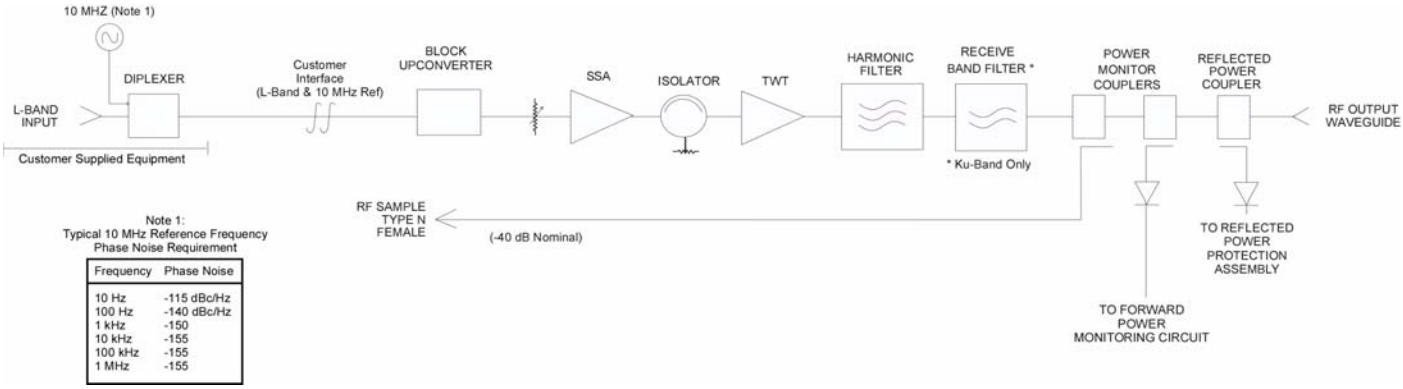
INTERFACE

TYPE		FUNCTION		
LOCAL CONTROL		Prime Power ON/OFF	Local/Remote	HV ON/OFF
REMOTE CONTROL		High Voltage ON/OFF	Constant Power	Heater Standby ON/OFF
		Min/Max Power Alasrm/Fault	Gain	Units (Watts, dBm, dBW)
		Reflected Power Alarm/Fault	Fault Reset	
LOCAL STATUS		Tri-Color LED:		
		Fault: Red	Standby: Continuous Amber	
		HV ON: Green	FTD: Flashing Amber	
REMOTE STATUS		Power Out	Reflected Power	TWT Temperature
		Helix Current	Helix Voltage	Faults:
		Heater Hours	Beam Hours	High VSWR High Voltage Helix Current TWT Temperature Arc Detection
		Attenuator Setting	Units Selection	
Form C Dry Contact Closure		Summary Fault		
COMPUTER SERIAL PORT	Hardware Interface Xicom Command Set	2 ports: ASCII Commands	RS-232 & RS-422/485	
RF SAMPLE PORT COUPLING		-40 dB Nominal		

XTU-400C/Ku High Power Amplifiers

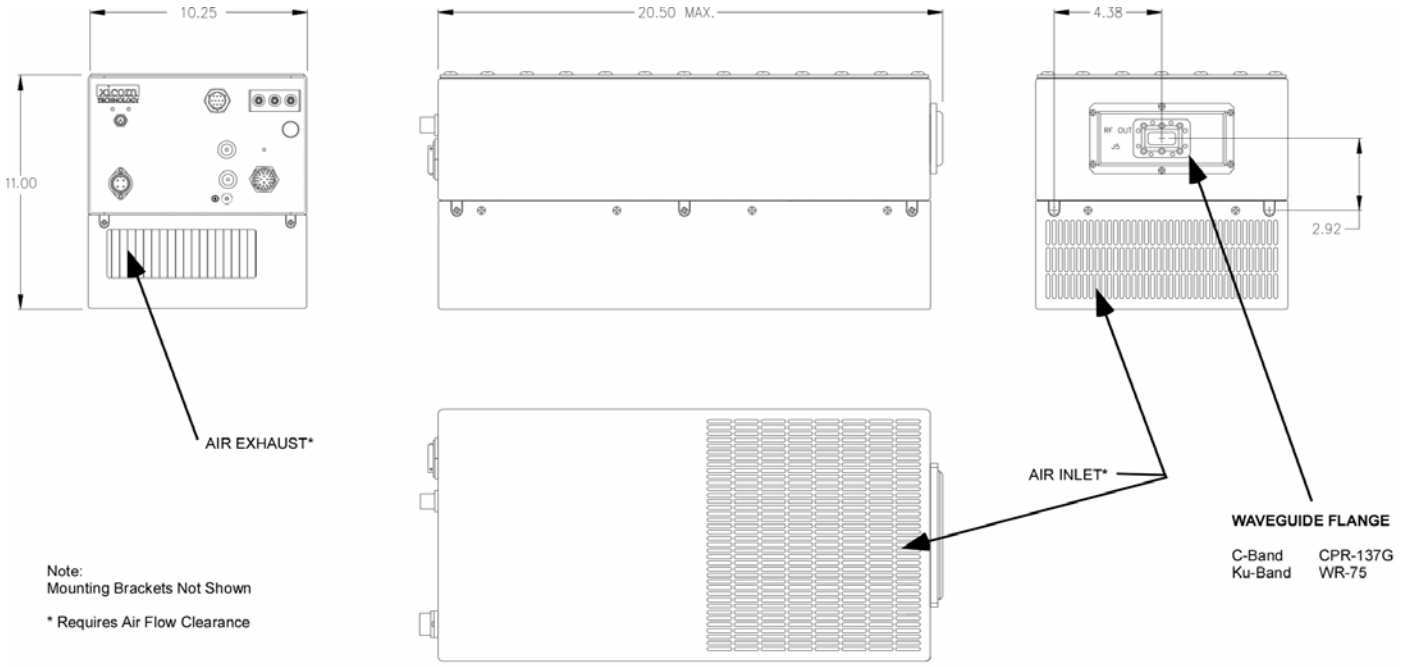
xicom TECHNOLOGY

Block Diagram



Frequency	Phase Noise
10 Hz	-115 dBc/Hz
100 Hz	-140 dBc/Hz
1 kHz	-150
10 kHz	-155
100 kHz	-155
1 MHz	-155

Outline Drawing



Typical Weight = 60 lbs (27.22 kg)

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XTU-400 REV 2

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