XTU-750 C and Ku-Band Antenna Mount High Power Amplifier

- **750 Watts C-Band**
  750 Watts Ku-Band
- **No Shelter Required**
- **Short Waveguide Run**
- **Variable Gain Corrected**
- **High Efficiency Dual-Stage TWTs**
- **Complete RS-232/422/485 Interface**

The XTU-750 is a compact, self-contained, antenna mountable power amplifier designed for low cost installation and long life. The XTU-750 design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and antenna feed horn. RF filters, cooling, and monitoring & control (M&C) systems are all self-contained within the High Power Amplifier (HPA). These features provide high reliability, low maintenance costs, and low replacement costs.

The XTU-750 uses high efficiency, dual-stage collector Traveling Wave Tubes (TWT). Some benefits of this type of tube 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 XTU-750 incorporates power factor correction circuitry, which minimizes line current distortion and reduces the required Volt-Amps. The combination of power factor correction and high efficiency TWTs reduces input Volt-Amps by 45% when compared to equivalent amplifiers. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (180 to 260 VAC). the automatic features of the power supply include quick recovery from prime power outages and multiple helix arc fault resets (three fault cycles).

A complete serial M&C system is built into the unit.

The XTU-750 may be configured for single thread, redundant, phase-combined, or linearized operation.

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

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PERFORMANCE SPECIFICATIONS

Parameter	XTU-750C, C-Band	XTU-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 Signal Frequency	external 10 MHz	external 10 MHz
10 MHz power level	2 dBm ±5 dB	2 dBm ±5 dB
Reference Input Impedance	50 Ohms	50 Ohms
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 (continuous)	25 dB	25 dB
Maximum SSG Variation Over:		
Any narrow band	1.0 dB per 40 MHz	1.0 dB per 80 MHz
Full Band	±2 dB	±2 dB
Slope, maximum	± 0.04 dB/MHz	± 0.04 dB/MHz
Stability, 24 Hr maximum	± 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	- 60 dBc
AM/PM CONVERSION, maximum	2.5°/dB at 6 dB below rated output 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 dB > 100 kHz from carrier AC fundamental -50 dBc Sum of all spurs -47 dBc	
PHASE NOISE, maximum	IESS phase noise [rpfile	
VSWR		
Input, maximum	1.6:1	1.6:1
Output, maximum	1.3:1	1.3:1

PRIME POWER

180-260 VAC
47 to 63 Hz, single phase
2450 VA Maximum
0.95 Minimum Prime Power Factor

CE COMPLIANT

OPTIONS

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

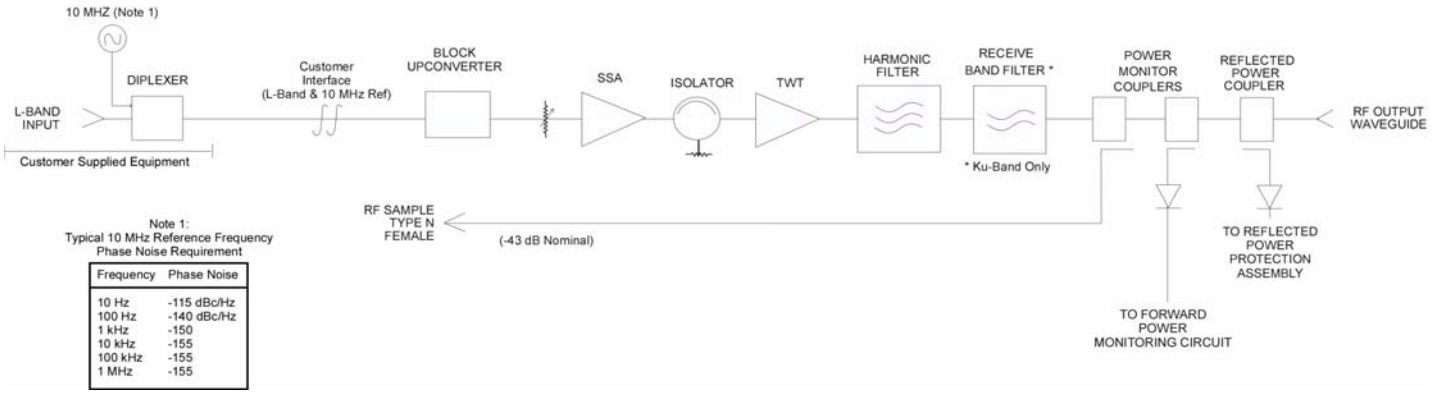
ENVIRONMENT

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
	Power Supply ON/OFF		
REMOTE CONTROL	High Voltage ON/OFF	Constant Power	Heater Standby ON/OFF
	Min/Max Power Alarm/Fault	RF Inhibit (HV OFF)	
	RF Attenuation (w/preamp)	Fault Reset	
LOCAL STATUS	Tri-Color LED:		
	Fault: Red	Standby: Continuous Amber	
	HV ON: Green	FTD: Flashing Amber	
REMOTE STATUS	RF Output Power	Reflected Power	TWT Temperature
	Helix Current	Helix Voltage	Fault Identification
	Heater/Beam Hours	Filament Time Delay	
	Attenuator Setting	HV ON	
Form C Dry Contact Closure	Summary Fault		
RF MONITOR PORT	-43 dB Coupling Value (Approx)		

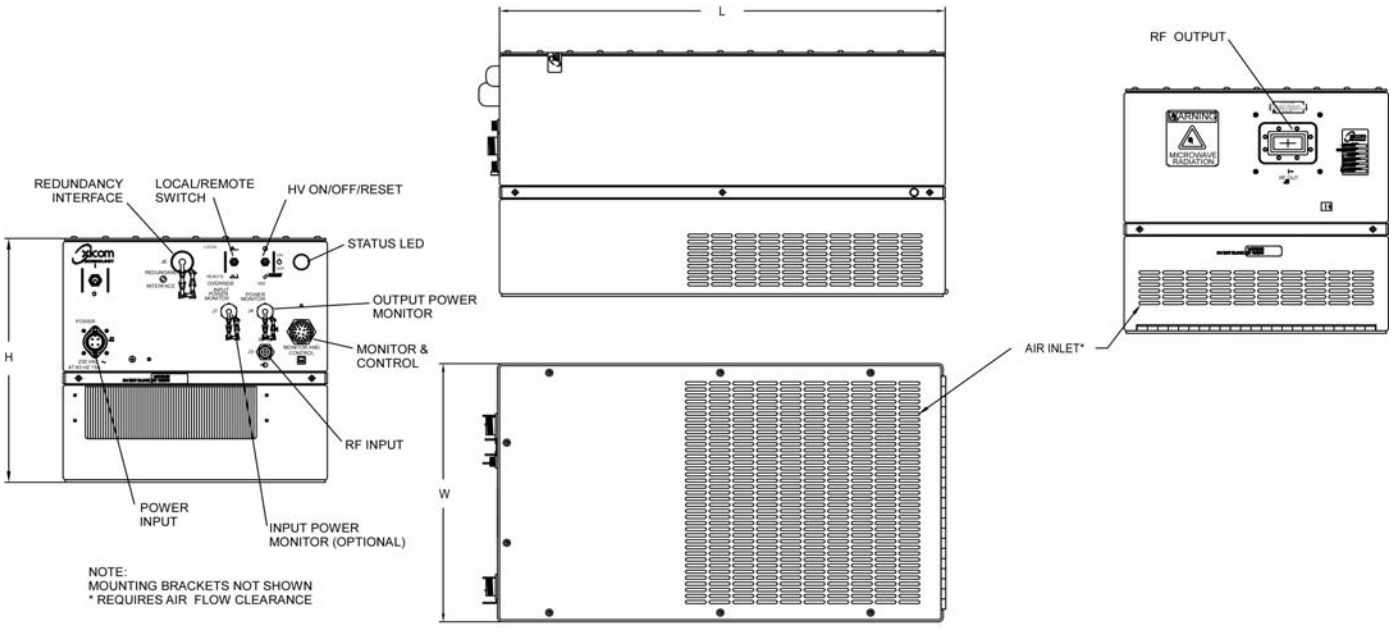
Block Diagram



Note 1:
Typical 10 MHz Reference Frequency Phase Noise Requirement

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



DIMENSIONS		
	INCHES	CENTIMETERS
L	21.50	54.61
H	12.13	30.81
W	12.75	32.39

Nominal Weight = 75 lbs (34.02 kg)

RF OUTPUT	
FREQUENCY BAND	WAVEGUIDE FLANGE
KU	WR-75
C	CPR-137

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