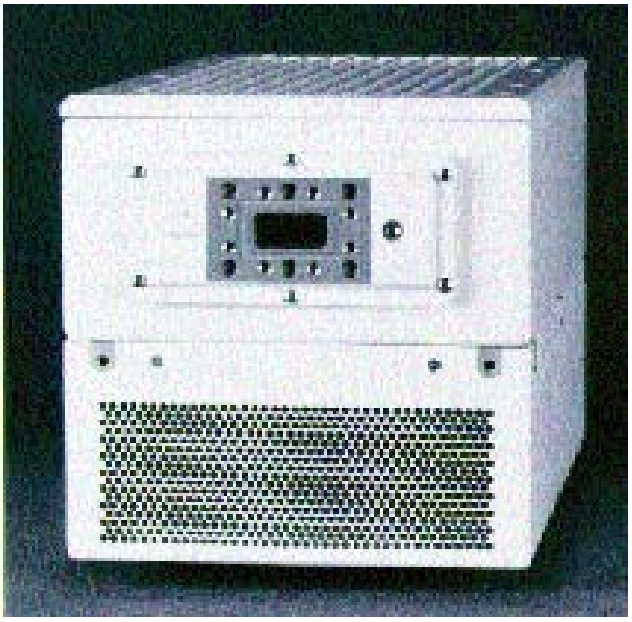
XT-100 C/Ku-Band Antenna Mount Amplifier



- 170 Watts C-Band
  125 Watts Ku-Band
- No Shelter Required
- Short Waveguide Run
- Low Cost Installation
- Power Factor Corrected
- High Efficiency Dual-Stage TWTs

The XT-100 is a compact, self-contained, antenna mountable TWT power amplifier designed for low cost installation and long life. Intended for outdoor operation, the need for a separate amplifier shelter is eliminated. In addition, the distance between the amplifier and the antenna feed horn can be short, thus RF output power is not wasted.

RF filters and cooling systems are all self-contained within the package. As a result of improved cathode technology typically used on space and military TWTs, the XT-100 tube has a design life in excess of ten years. These features have been incorporated to provide overall reliability and lower maintenance and replacement costs.

The XT-100 incorporates high efficiency, dual-stage collector TWTs. Some of the benefits of this type of TWT are: reduced prime power consumption, lower internal operating temperatures, and reliability enhancement. These benefits are obtained for both the linear and saturated modes of operation.

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

A remote external controller is available to operate the amplifier from a user selected location. The XT-100 may be configured for single-thread, redundant, or phase-combined.

Mounting brackets are supplied to mount the amplifier 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	XT-100C, C-Band	XT-100Ku, Ku-Band
FREQUENCY RANGE Standard	5.850 to 6.425 GHz	13.75 to 14.5 GHz
Extended frequency coverage available	(5.850 to 6.725 GHz)	(12.75 to 14.5 GHz)
OUTPUT POWER		
Traveling Wave Tube	170 Watts	125 Watts
Rated Power @ Amplifier Flange	140 Watts	100 Watts
GAIN		
Large Signal, minimum	40 dB	40 dB
Small Signal, minimum	46 dB	46 dB
Maximum SSG Variation Over:		
Any Narrow Band	1.0 dB per 40 MHz	1.0 dB per 80 MHz
Full Band	2.5 dB	2.5 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 deg/dB at 6 dB below rated power	
NOISE POWER, maximum		
Transmit Band	- 80 dBw/4 kHz	- 80 dBW/4 kHz
Receive Band	- 160 dBw/4 kHz 3.7 to 4.2 GHz	- 160 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	- 50 dBc to 10 kHz - 20 (1.5 + logf) dBc 10 to 500 kHz - 85 dBc above 500 kHz	
PHASE NOISE, maximum	10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc	
VSWR		
Input, maximum	1.3:1	1.3:1
Output, maximum	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
675 VA Typical
0.95 Minimum Prime Power Factor

CE COMPLIANT

OPTIONS

Detected RF
Remote External Controller
Preamplifiers
Gain Control
Serial Interface
Extended Frequency Coverage
1:1, 1:2, 1:N Redundancy
Variable Phase Combined

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	
CONTROLS	AC Power ON	HV ON
	Fault Reset	Heater Standby
	Note: Heater Standby reduces the TWT heater voltage for situations where the high voltage is off for extended periods.	
MONITORS — ANALOG	Helix Current (2 mA/V)	Cathode Voltage (1000:1 V/V)
	TWT Temperature	RF Output Power (optional)
AUXILIARY VOLTAGES	+15 VDC (100 MA Max)	
	+24 VDC (100 MA Max)	

XT-100C/Ku High Power Antenna Mount Amplifiers

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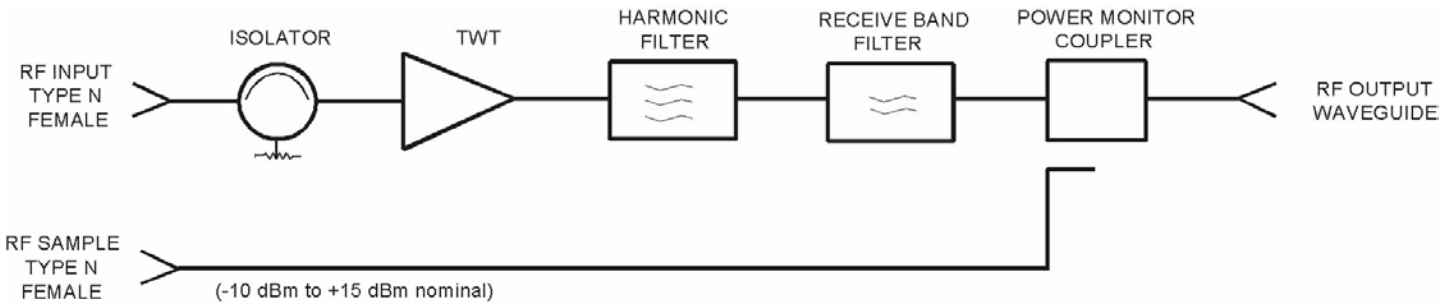
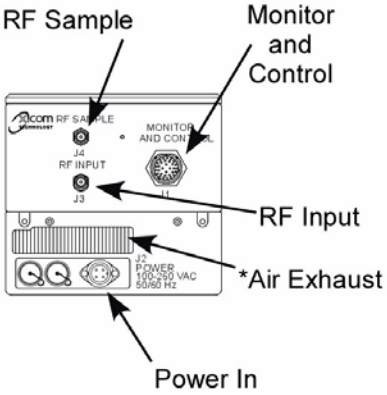
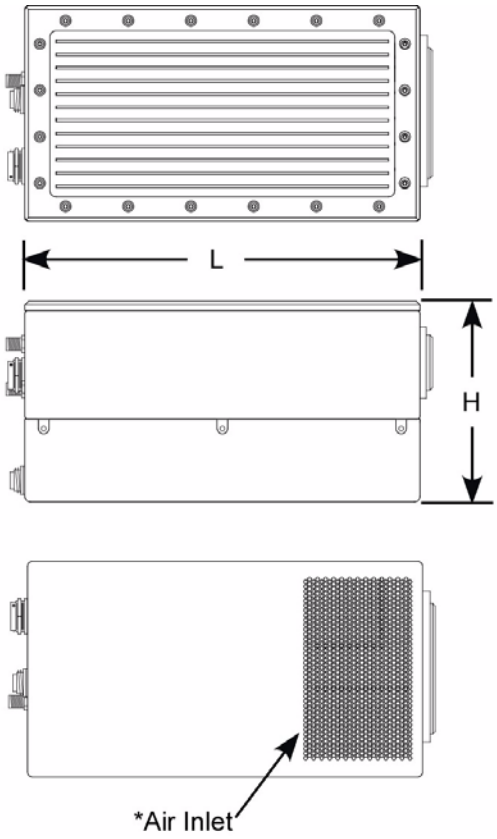
Block Diagram

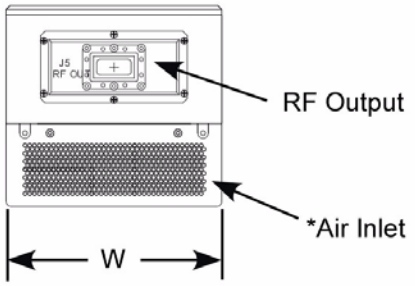


Outline Drawing

NOTE:
Mounting Brackets not shown
*Requires Air Flow Clearance







WEIGHT (Typical)
34 lbs (15.4 kg)

DIMENSIONS

	Inches	Centimeters
L	15.75	40.00
W	8.7	22.10
H	8.1	20.57

Waveguide Flange	
C-Ban	CPRG-137
Ku-Band	WR-75

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