200 Watt Ku-Band Antenna Mount Amplifiers With Block Upconverters

FEATURES

- *L-band input*
- *Rugged 34 lb. antenna mount package*
- *Extened frequency available*
- *Simple low cost operation*
- *RS-232/422/485 M&C interface*

The **XTD-200K-B1** series 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 **XTD-200K-B1** eliminates 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 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 (90 to 264 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.

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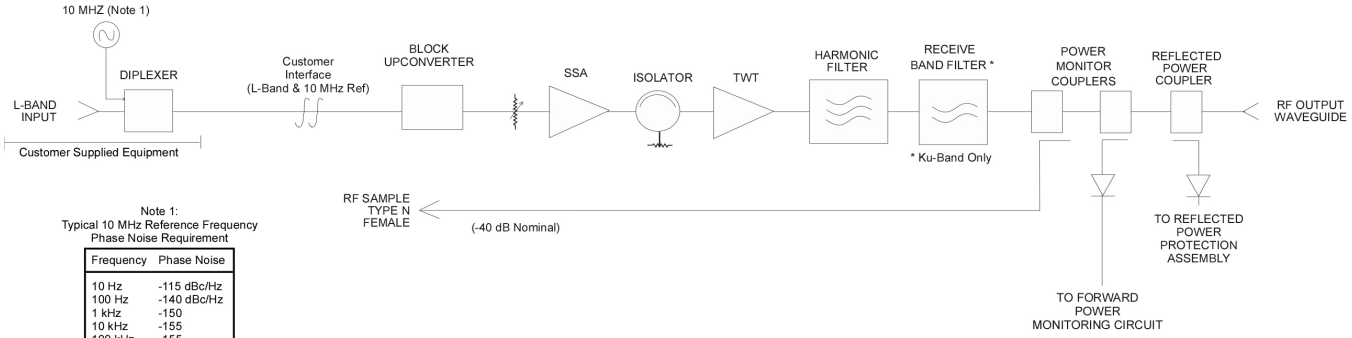
PERFORMANCE SPECIFICATION

Parameters	XTD-200K-B1	XTD-200K1-B1
FREQUENCY RANGE		
Output	14.0 to 14.5 GHz	13.75 to 14.5 GHz
Input	950 to 1450 MHz	950 to 1700 MHz
LO Frequency	13050 MHz	12800 MHz
Input Level, w/o damage (maximum)	10 dBm	
Reference Signal Frequency	external 10 MHz	
10 MHz Power Level	2 dBm ± 5 dB	
Reference Input Impedance	50 Ohms	
OUTPUT POWER		
Traveling Wave Tube	200 Watts	
Rated Power @ Amplifier Flange (minimum)	175 Watts	
GAIN		
Large Signal (minimum)	67 dB	
Small Signal (minimum)	72 dB	
Attenuator Range (continuous)	25 dB	
Maximum SSG Variation Over		
Any Narrow Band	1.3 dB per 80 MHz	
Full Band	± 2 dB	
Slope (maximum)	± 0.04 dB/MHz	
Stability, 24 hr. (maximum)	± 0.25 dB	
Stability, Temperature (maximum)	± 1.0 dB over temperature range at any frequency	
INTERMODULATION (maximum) with two equal carriers	-18 dBc @ 4 dB total output power backoff from rated power	
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	
Receive Band	-150 dBW/4 kHz 10.95 to 12.75 GHz	
GROUP DELAY (maximum)		
Bandwidth	Any 80 MHz	
Linear	0.01 nS/MHz	
Parabolic	0.005 nS/MH^2	
Ripple	0.5 nS/Pk-Pk	
RESIDUAL AM NOISE (maximum)	-60 dBc > 100 kHz from carrier AC fundamental -50 dBc Sum of all spurs -45 dBc	
PHASE NOISE (maximum)	Per IESS phase noise profile AC fundamental -50 dBc Sum of all Spurs -47 dBc	
VSWR		
Input (maximum)	1.8:1	
Output (maximum)	2.2:1 *Note: 1.3:1 output VSWR available with optional external isolator*	

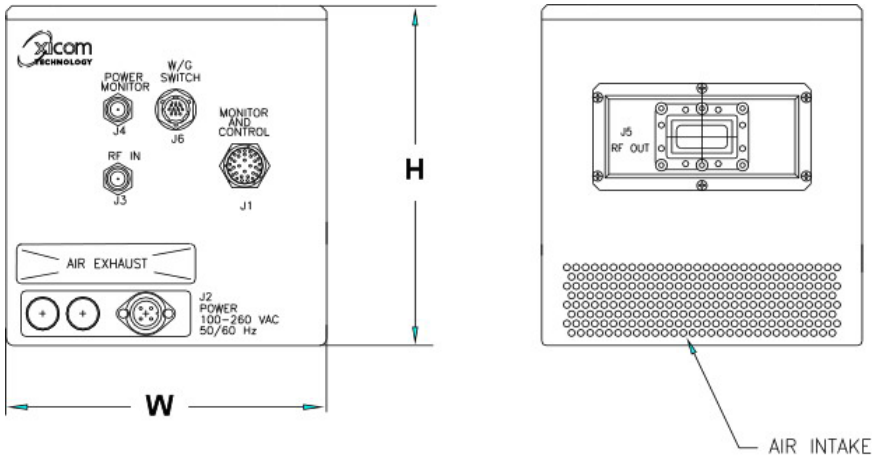
BLOCK DIAGRAM

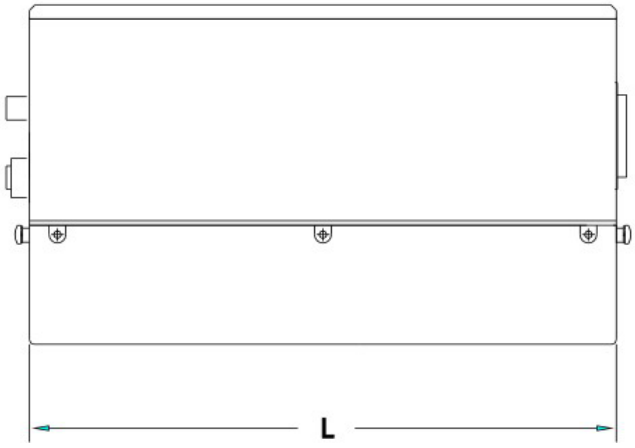


Note 1:
Typical 10 MHz Reference Frequency Phase Noise Requirement

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
W	8.6	21.84
L	15.75	40.01
H	9.10	23.11

Nominal Weight = 34 lbs. (15.42 kg)

NOTE: All waveguide holes are tapped.

PRIME POWER

90 to 264 VAC
47 to 63 Hz, Single Phase
850 VA (maximum)
0.96 Minimum Prime Power Factor

CE

ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +50°C (2°C/1000 Feet Derating)
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)
	RF Attenuation (w/preamp)	Fault Reset
	Constant Power	Heater Standby
	Min/Max Power Alarm/Fault	
REMOTE STATUS	HV ON	Heater/Beam Hours
	RF Output Power	Fault Identification
	Reflected Power	TWT Temperature
	Attenuator Setting	Helix Current
	Filament Time Delay	Helix Voltage
REDUNDANCY INTERFACE	External Waveguide Switch Control	
FORM C DRY CONTACT CLOSURE	Summary Fault	
RF MONITOR PORT	-40 dB Coupling Value (approx.)	

OPTIONS

- Remote External Controller
- M&C Cable and Software Driver
- Input Diplexer (combining IF & 10 MHz reference)
- Reverse RF Inhibit
- Internal 10 MHz
- 60°C Operation
- Internal Linearizer
- Ethernet Connector
- Extended Frequency Coverage

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