250 Watt Ka-Band Antenna Mount High Power Amplifiers With Blockupconverter

FEATURES

- *Optional linearizer*
- *Includes L-band BUC*
- *Variable gain control*
- *Complete RS-232/422/485 interface*

The **XTD-250Ka-B1** series are compact, self contained antenna mount power amplifiers designed for low cost installation and long life. Cooling and monitor & control systems are all self contained within the amplifier. By combining the power supply and the RF components within the same amplifier case the need for external high voltage cables (required for split box designs) is eliminated. This highly compact unit typically weighs only 46 lbs.

This series of amplifiers provides several methods of tube protection. Due to Xicom's unique power supply design less than 1 joule is stored in the power supply. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (90 to 264 VAC).

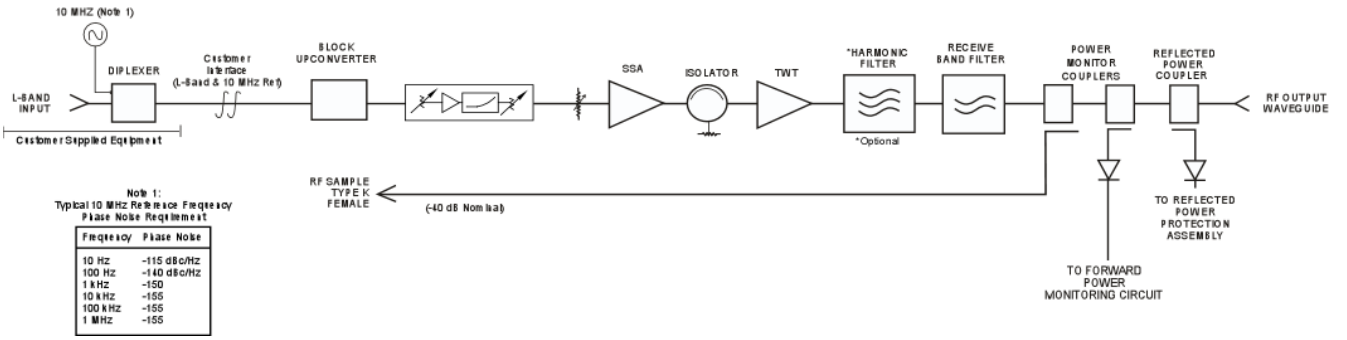
The unit also features power factor correction circuitry that minimizes line current distortion and reduces the required volt-amps input. This amplifier has built-in waveguide switch control capability. This can be used in a 1:1 redundancy configuration. A single RS-485 cable can control two amplifiers and redundancy switch. The amplifiers are available with multiple options including redundant and phase combined system configurations, integral linearizers and harmonic filters. Remote external controllers are available to operate the HPA from a user selected location.

COMTECH XICOM TECHNOLOGY

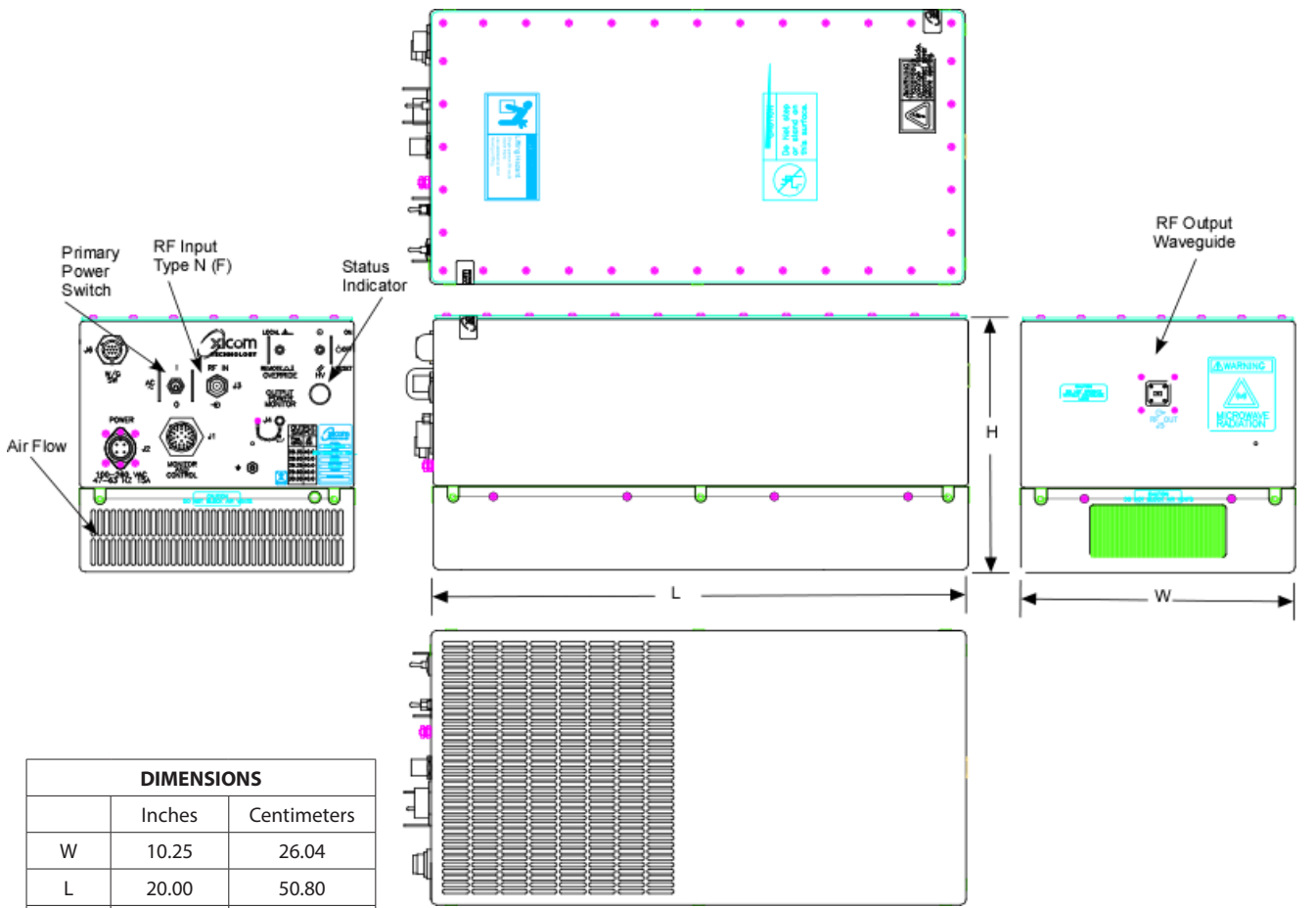
PERFORMANCE SPECIFICATION

Parameters	XTD-250KaL-B1	XTD-250Ka-B1
FREQUENCY RANGE (extended frequency range available)		
Output	30.0 to 31.0 GHz	
Input	1000 to 2000 MHz	
LO Frequency	29.0 GHz	
Input Level, w/o damage (maximum)	10 dBm	
Reference Signal Frequency	external 10 MHz	
10 MHz Power level	2 dBm ± 5 dB	
OUTPUT POWER		
Traveling Wave Tube	250 W (54 dBm)	250 W (54 dBm)
Rated Power @ Amplifier Flange (minimum)	100 W (50.0 dBm)	220 W (53.4 dBm)
GAIN		
Large Signal (minimum)	70 dB	
Small Signal (minimum)	75 dB	
Small Signal w/Linearizer Option (minimum)	70 dB	
Attenuator Range (continuous)	30 dB, 0.1 dB steps	
Maximum SSG Variation Over		
Any Narrow Band	0.80 dB per 60 MHz	
Any 1 GHz Band	2.5 dB	
Slope (maximum)	± 0.04 dB/MHz	
Stability, 24 hr. (maximum)	± 0.25 dB	
Stability, Temperature	± 1.0 dB at any frequency	
INTERMODULATION (maximum) with two equal carriers	-18 dBc @ 4 dB backoff from rated power (-24 dBc with Linearizer)	
HARMONIC OUTPUT (maximum)	-15 dBc (-60 dBc with optional filter)	
AM/PM CONVERSION (maximum)	2.5 deg/dB at 4 dB below rated power	
NOISE POWER (maximum)		
Transmit Band (27.5 to 30.0 GHz)	-70 dBW/4 kHz	
Receive Band (<21.2 GHz)	-150 dBW/4 kHz	
GROUP DELAY (maximum)		
Bandwidth	Any 60 MHz	
Linear	0.01 nS/MHz	
Parabolic	0.005 nS/MHz^2	
Ripple	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)	Per IESS phase noise profile	
VSWR		
Input (maximum)	1.8:1	
Output (maximum)	1.3:1	

BLOCK DIAGRAM



OUTLINE DRAWING



DIMENSIONS		
	Inches	Centimeters
W	10.25	26.04
L	20.00	50.80
H	9.50	24.13
Nominal Weight = 46 lbs (20.87 kg)		
RF Output = WR-28 Tapped		

PRIME POWER

90 to 264 VAC
47 to 63 Hz, Single Phase
750 VA Typical
0.95 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 Max.
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

INTERFACE

Type	Function	
LOCAL CONTROL	Prime Power ON/OFF	Local/Remote
	Power Supply ON/OFF	HV ON/OFF
LOCAL STATUS	Tri-Color LED:	
	Fault: Red	Standby: Continuous Amber
	HV ON: Green	FTD: Flashing Amber
REMOTE CONTROL	HV ON/OFF	RF Inhibit (HV OFF)
	RF Attenuation (w/preamp)	Fault Reset
	Heater Standby	
REMOTE STATUS	HV ON	Heater/Beam Hours
	RF Output Power	Fault Identification
	Reflected Power	TWT Temperature
	Filament Time Delay	Helix Current
	Helix Voltage	
FORM C DRY CONTACT CLOSURE	Summary Fault	
RF MONITOR PORT	-40 dB Coupling Value (approx.)	

OPTIONS

- Integrated Linearizer
- Harmonic Filter (0.3 dB output power reduction)
- WR-34 Waveguide Output or Input
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Phase Combined

CDIP
www.cdip.ru
info@cdip.ru
+7 (495) 956-20-22

COMTECH XICOM TECHNOLOGY

Document XTD-250Ka/KaL-B1 Rev 1, 12/12/2020