250 Watt Ka-Band Antenna Mount High Power Amplifiers

FEATURES

- *Compact 48 lb. antenna mount package*
- *Variable gain control*
- *Complete RS-232/422/485 interface*
- *Ethernet interface*
- *Linearizer*

The **XTD-250Ka** 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 48 lbs.

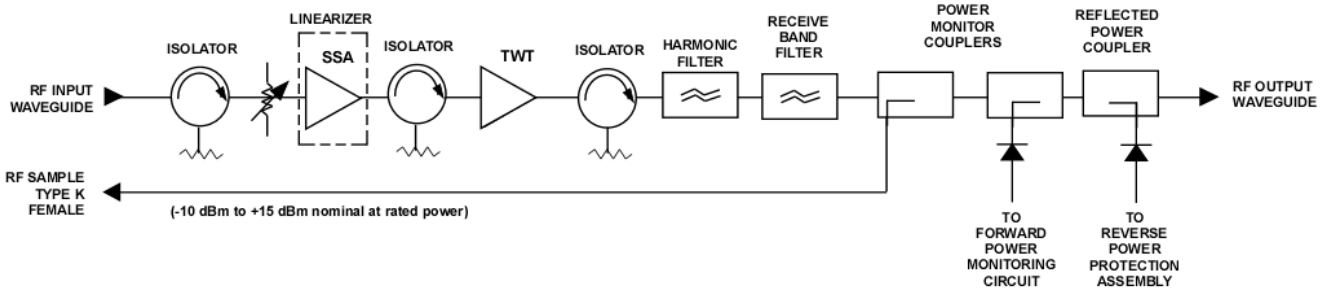
The amplifiers are available with multiple options including redundant and phase combined system configurations, integral linearizers and harmonic filters. Remote external controllers are available to operate the HPA from a user selected location.

COMTECH XICOM TECHNOLOGY

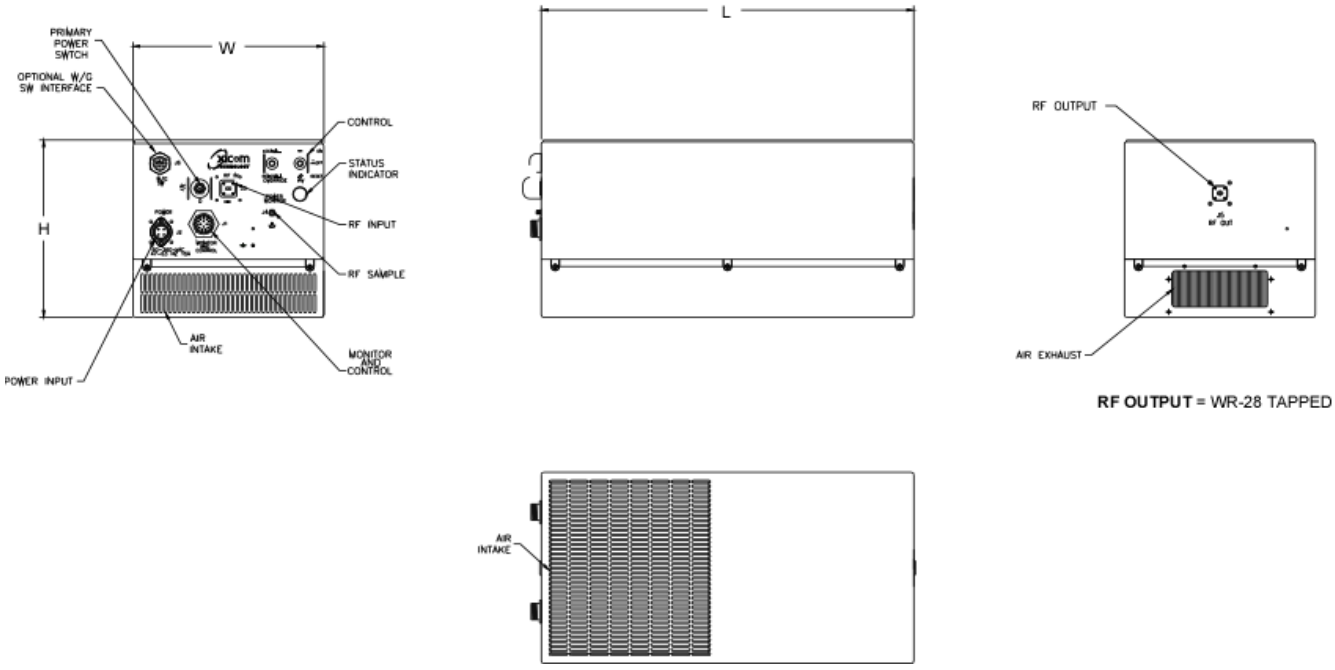
PERFORMANCE SPECIFICATION

Parameters	XTD-250KaL	XTD-250Ka
FREQUENCY RANGE	27.5 to 30.0 GHz (alternate sub-bands in the 27.0 to 31.0 GHz band available)	
OUTPUT POWER		
Traveling Wave Tube (Saturated Power (typical))	250W Peak (54 dBm)	250 W (54 dBm)
Rated Power @ Amplifier Flange (minimum) (P_{RATED})	100 W (50 dBm)	215 W (53.3 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	
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 2 equal carriers	-26 dBc @ P_{OUT} = 85W	
HARMONIC OUTPUT (maximum)	-60 dBc	
AM/PM CONVERSION (maximum) @ P_{OUT} = 55W	< 1.0 deg/dB at P_O = 55 W	
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)	12 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc	
VSWR		
Input (maximum)	1.3:1	
Output (maximum)	1.3:1	

BLOCK DIAGRAM



OUTLINE DRAWING



RF OUTPUT = WR-28 TAPPED

DIMENSIONS		
	INCHES	CENTIMETERS
W	10.25	26.04
L	20.00	50.80
H	9.50	24.13
Nominal Weight = 48 lb (21.77 kg)		

PRIME POWER

90 to 264 VAC
47 to 63 Hz, Single Phase
750 VA Max. — XTD-250KaL
800VA Max. — XTD-250Ka
0.95 Minimum Prime Power Factor

CE

ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +60°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

- Non-Linearized
- WR-34 Waveguide Output or Input
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Phase Combined
- Block Upconverter
- Liquid Cooling

Document XTD-250Ka Rev 12, 11/16/2018