

# 650 Watt Ka-Band Antenna Mount High Power Amplifiers



## FEATURES

- 650 watt Ka-band, peak power
- Frequencies between 27.5 and 30.0 GHz
- Includes linearizer
- Rugged outdoor mountable
- Complete RS-232/422/485 ethernet interface
- -40°C to +60°C ambient

The **XTD-650KaL** series are compact, self contained antenna mount power amplifiers designed for low cost installation and long life. The **XTD-650KaL** family features high RF efficiency which enables a smaller, lighter amplifier with the ability to operate at up to 60°C ambient temperatures.

Comtech Xicom has developed proprietary features to improve performance and life including an automatic bias control system which extends TWT life by maintaining constant beam current over time and a precise system for matching linearizer performance to a specific tube over a wide range of operating conditions maximizing useable linear power.

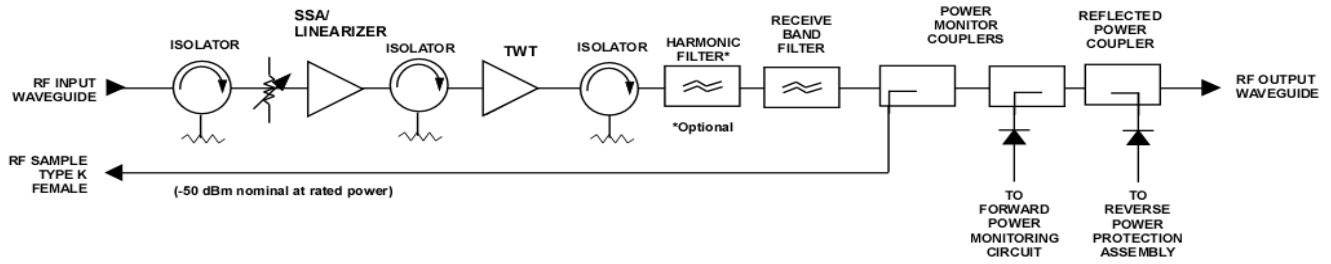
The amplifier is equipped with an internal 1:1 switch control capable of driving an input and output switch for redundancy. Rack mountable controllers are also available.



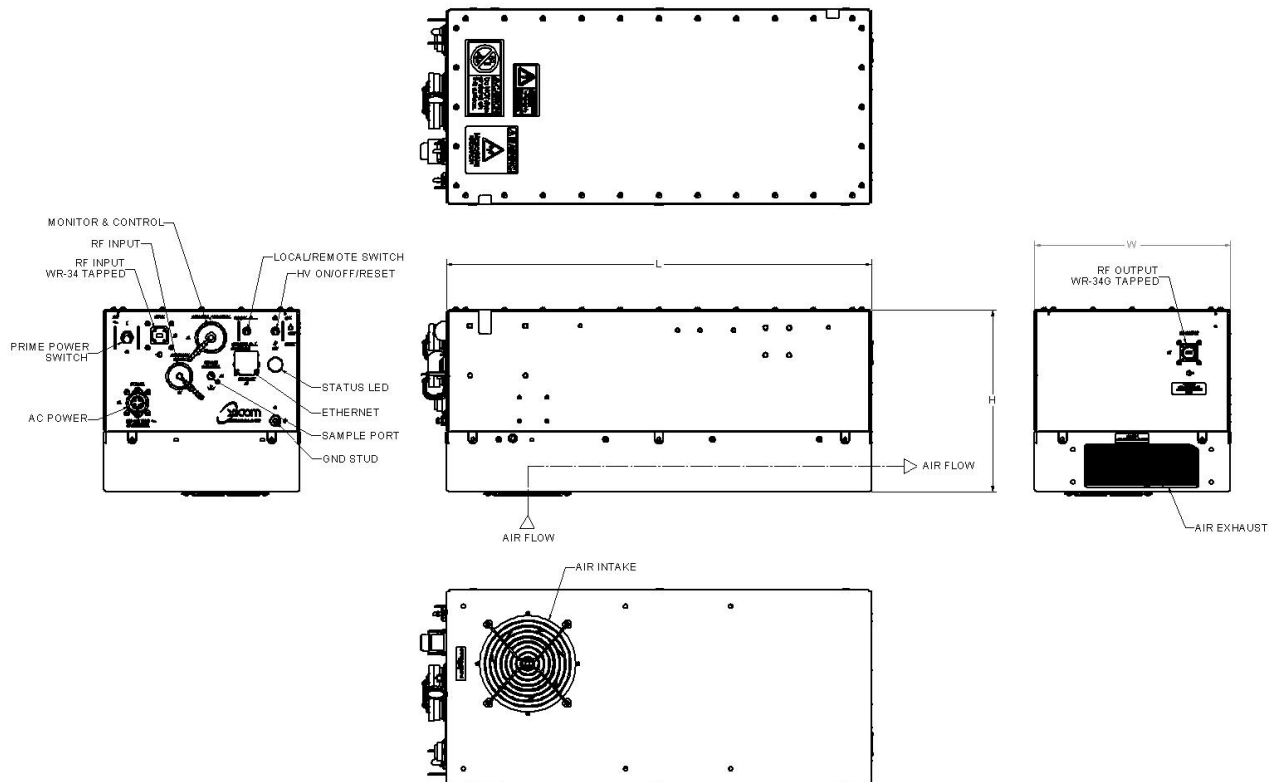
# PERFORMANCE SPECIFICATION

Parameters	Peak Power XTD-650KaL	
FREQUENCY RANGE	27.5 to 30.0 GHz	
OUTPUT POWER		
Traveling Wave Tube	650W (58.1 dBm)	
Maximum CW Power @ Amplifier Flange	280W (54.5 dBm)	
Linear Power @ Amplifier Flange: -19 dB NPR	215W (53.3 dBm)	
GAIN		
Large Signal (minimum)	70 dB	
Small Signal (minimum)	70 dB	
Attenuator range (0.1 dB steps)	30 dB	
Maximum SSG Variation Over		
Any Narrow Band	1.2 dB per 250 MHz	
Full Band	2.0 dB	
Slope (maximum)	± 0.08 dB/MHz	
Stability, 24 hr. (maximum)	± 0.25 dB	
Stability, Temperature (maximum)	± 1.0 dB at any frequency	
INTERMODULATION (maximum) with two equal carriers	-25 dBc at 230 W (53.6 dBm)	
HARMONIC OUTPUT (maximum) with optional harmonic filter	-60 dBc	
AM/PM Conversion (maximum)	2.0 deg/dB to maximum linear power	
NOISE POWER (maximum)		
Transmit Band	-75 dBW/4 kHz	
Receive Band	-150 dBW/4 kHz	
GROUP DELAY (maximum)		
Bandwidth	Any 250 MHz	
Linear	0.01 nS/MHz	
Parabolic	0.001 nS/MHz <sup>2</sup>	
Ripple	0.25 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	
SPURIOUS (In band) Linear	-60 dBc	
PHASE NOISE (maximum)	10 Hz	-42 dBc
	100 Hz	-72 dBc
	1 kHz	-82 dBc
	10 kHz	-92 dBc
	100 kHz	-102 dBc
	1 MHz	-112 dBc
VSWR		
Input (maximum)	1.3:1	
Output (maximum)	1.3:1	

# BLOCK DIAGRAM



# OUTLINE DRAWING



DIMENSIONS		
	INCHES	CENTIMETERS
L	22.25	56.52
H	9.50	24.13
W	10.25	26.04
Typical Weight = 58 lb (26.31 kg)		

## PRIME POWER

100 to 264 Max.  
47 to 66 Hz, single phase  
1400 VA Typical  
0.95 Min. Prime Power Factor



## ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +60°C
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 feet MSL max. with standard adiabatic derating
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air (self cooled)

## 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	Fault Reset
	Heater Standby	Constant Power
REMOTE STATUS	HV On	Heater/Beam Hours
	RF Output Power	Fault Identification
	Reflected Power	TWT Temperature
	Filament Time Delay	Helix Current
	Helix Voltage	
DISCRETE STATUS	Summary Fault (2X Form C Dry Contact Closure)	
RF MONITOR PORT	-40 dB Coupling Value (approx)	
INTERFACE	Serial RS-232/422/485 Ethernet	

## OPTIONS

- Harmonic Filter
- WR-34 Waveguide Output or Input
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Phase Combined
- Unlinearized

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