COMTECH™

Fluent in the Future™

500 Watt Ka-Band Rack Mount High Power Amplifier

Features

- 500 Watts Ka-band CW TWT Power
- 28.0 to 31.0 GHz
- Optional Linearizer
- Touch Screen Display
- High Efficiency

The **XTRT-500Ka** series are highly efficient rack mount- able traveling wave tube amplifiers (TWTAs) designed for fixed and mobile uplink applications.

The unit includes RF gain control, a solid-state pre-amplifier, RF filters, cooling, and monitoring and control (M&C) systems. Rack space is conserved because the amplifier occupies only 3 rack units (5 1/4 inches) or a standard 19-inch rack cabinet. Nominal weight is 56 pounds.

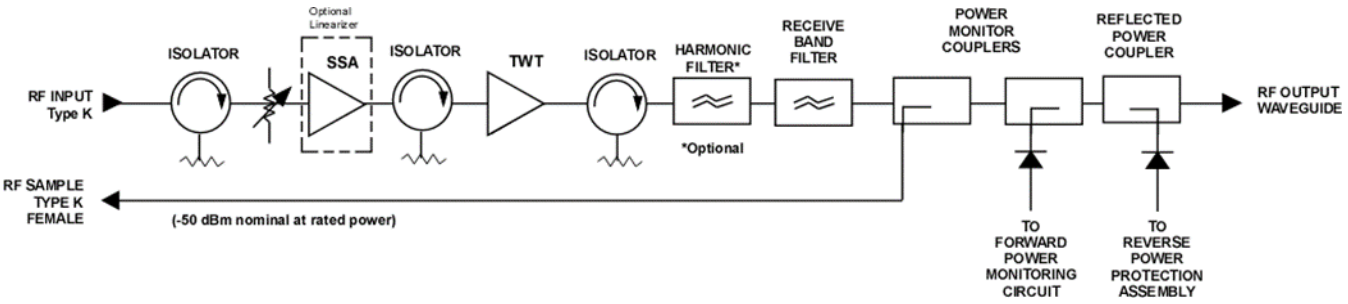
The unit features a menu-driven front panel display. RF, traveling wave tube, and default parameters are easily monitored on the four-line front panel display. Gain control is provided via the front panel or through the serial interface.

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.

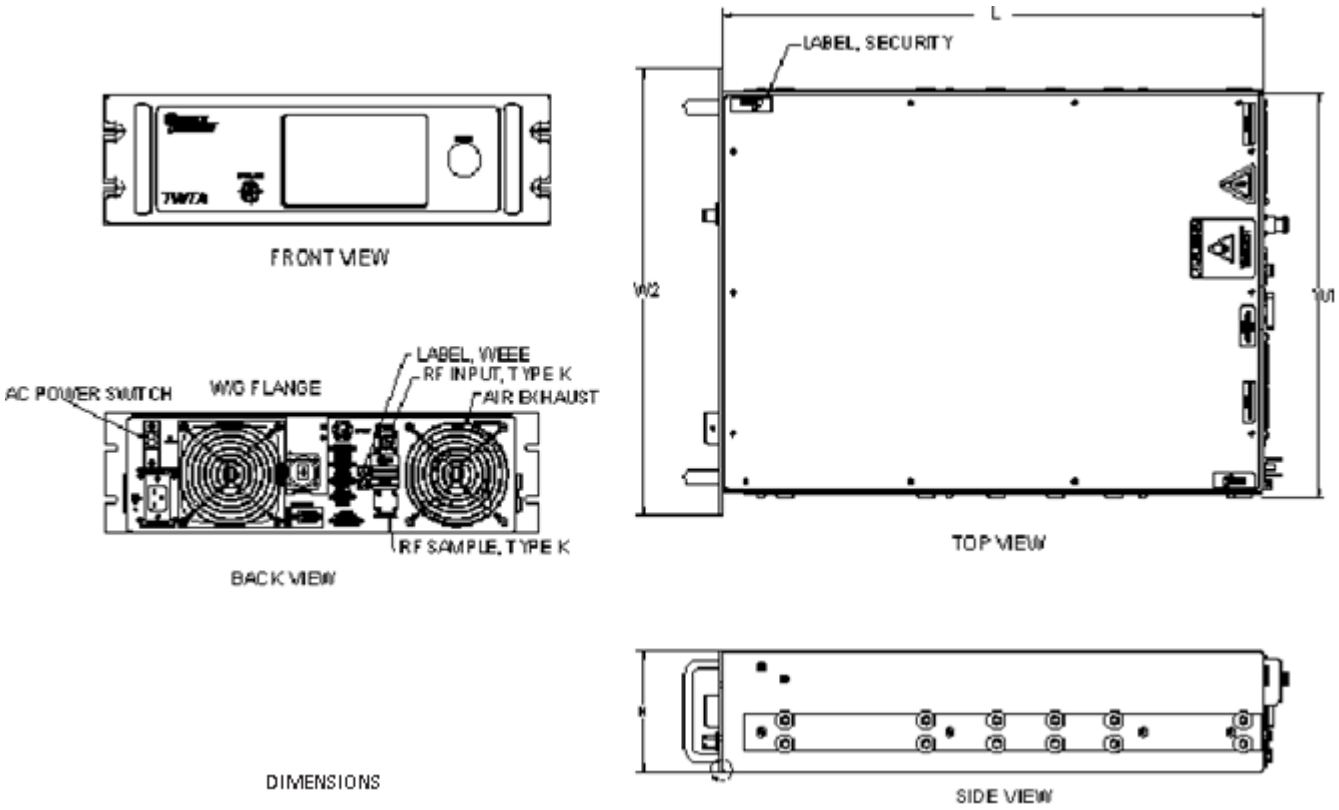
Performance Specification

Parameters	XTRT-500Ka3
FREQUENCY RANGE	28.0 to 31.0 GHz
OUTPUT POWER	
Traveling Wave Tube	500 W (57 dBm) CW
Rated Power @ Amplifier Flange	415W (56.2 dBm)
GAIN	
Large Signal (minimum)	70 dB
Small Signal (minimum)	70 dB
Attenuator Range (continuous)	25 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 (maximum)	± 1.0 dB over temperature range at any frequency
INTERMODULATION (maximum) with two equal carriers	-18 dBc @ Po = 52 dBm (-26 dBc with linearizer)
HARMONIC OUTPUT (maximum)	-15 dBc (-60 dBc with optional filter)
AM/PM CONVERSION (maximum)	2.5 deg/dB at 6 dB below rated power (1 deg/dB with linearizer)
NOISE POWER (maximum)	
Transmit Band	-75 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/MH^2
Ripple	0.5 nS/Pk-Pk
RESIDUAL AM NOISE (maximum)	-50 dBc to 10 kHz -20 (1.5 + logf) dBc 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



Dimensions			
	Inches		Centimeters
W1	17.00		43.18
W2	19.00		48.26
L	26.0		66.04
H	5.22		13.26
		Nominal Weight = 56 lbs. (25.40 kg)	

RF OUTPUT	
Ka-Band	WR-28 or WR-34

Prime Power

90 to 260 VAC
47 to 63 Hz, Single Phase
1400 VA Typical
0.95 Minimum Prime Power Factor

CE

Environment

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-10°C to +50°C (2°C/1000 Feet Derating)
HUMIDITY	Up to 95% Condensing
ALTITUDE	10,000 Feet MSC (maximum)
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

Interface

	Type	Function	
CONTROLS	LOCAL	Local/Remote	AC Power On/OFF
	LOCAL AND REMOTE	Gain	High Voltage ON/OFF
		Min/Max Power Alarm/Fault	Audio Alarm ON/OFF
		Reflected Power Alarm/Fault	Units (Watts, dBm, dBW)
		Fault Reset	Lamp Test
		Heater Standby ON/OFF	
STATUS	FRONT PANEL LEDs	Standby	Power
		Local	Remote
		Summary Fault	High Voltage ON/OFF
		Heater Time Out (FTD)	Heater Standby
	FRONT PANEL DIGITAL DISPLAY	Power Out	Beam Hours
		Reflected Power	Helix Current
		TWT Temperature	Helix Voltage
		Heater Hours	Faults:
		Uplink Power (option)	High VSWR High Voltage Helix Current
		Event Log	TWT Temperature
		Trend Log	
		System Status	
	DRY FORM-C RELAY CONTACTS (2)	Summary Fault	
COMPUTER SERIAL PORT	HARDWARE INTERFACE	Two Ports: RS-232 & RS-422/485 Ethernet T10/100	
	XICOM COMMAND SET	ASCII Commands	
	RF SAMPLE PORT COUPLING	-40 dB Nominal	

Options

- Alternate Frequency Coverage
- 1:1, 1:2, 1:N Redundancy
- Phase Combined
- Linearizer
- WR-34 Waveguide
- Harmonic Filter
- Uplink Power Control

About Us

Comtech Telecommunications Corp. is a leading global technology company providing terrestrial and wireless network solutions, next-generation 9-1-1 emergency services, satellite and space communications technologies, and cloud native solutions to commercial and government customers around the world. Our unique culture of innovation and employee empowerment unleashes a relentless passion for customer success. With multiple facilities located in technology corridors throughout the United States and the world, Comtech leverages its global presence, technology leadership and decades of experience to create the world's most innovative communications solutions.

3550 Bassett Street. Santa Clara, CA
95054 USA
Phone: +1-408-213-3000
Fax: +1-408-213-3001

sales@xicomtech.com
www.xicomtech.com
www.comtech.com

Document XTRT-500Ka3 Rev 1a, 03/12/2023
Note: Technical specifications are subject to change without notice. Please contact Comtech before using this information for system design.