

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 mountable 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.

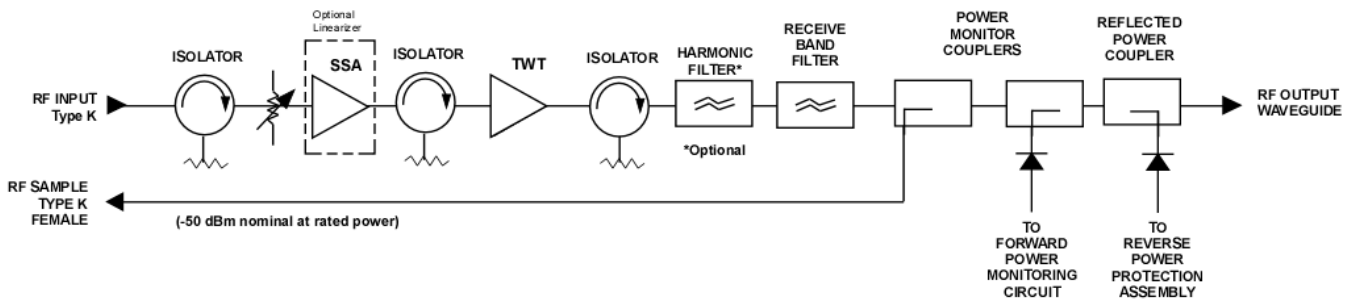
The unit features a menu-driven front panel display. RF, traveling wave tube, and default parameters are easily monitored on the four-line front panel display. Gain control is provided via the front panel or through the serial interface.



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

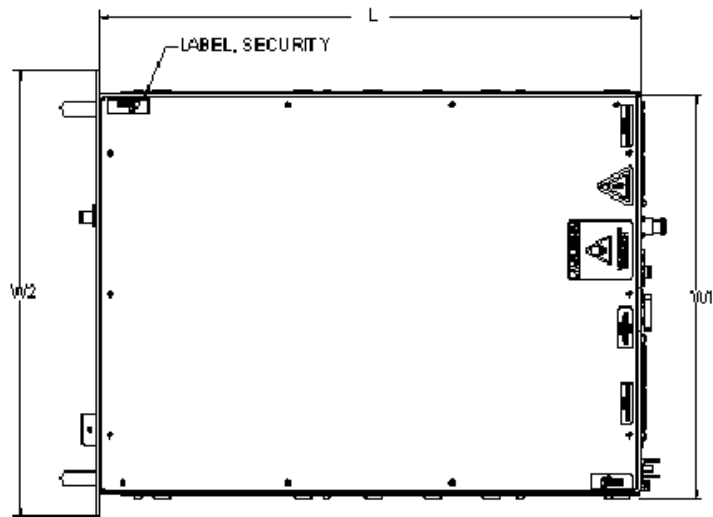
BLOCK DIAGRAM



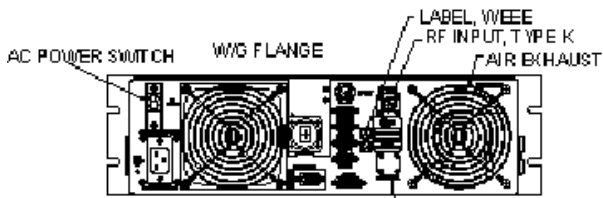
OUTLINE DRAWING



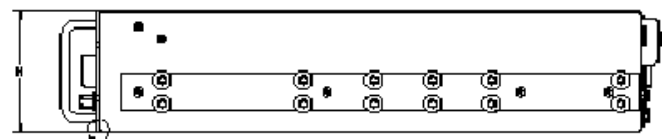
FRONT VIEW



TOP VIEW



BACK VIEW



SIDE VIEW

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
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PRIME POWER

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



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% Noncondensing
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
		Event Log	High Voltage
Trend Log		Helix Current	
System Status	TWT Temperature		
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

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