450 Watt Ku and DBS-Band Rack Mount High Power Amplifier

FEATURES

- *Dual band fixed and transportable application*
- *Compact 4RU chassis*
- *Menu driven front panel display & control*
- *Variable gain correction*
- *RS-232/422/485 interface*
- *Optional integrated linearizer*

The **XTRD-450KD** is a highly efficient rack mountable traveling wave tube amplifier (TWTA) designed to cover both Ku-Band and DBS-Band in fixed and mobile uplink applications. The units include RF gain control, a solid state pre-amplifier, RF filters, cooling and monitoring and control (M&C) systems. Rack space is conserved because the amplifiers occupy only 4 rack units (7 Inches) of a standard 19-inch rack cabinet. Nominal weight is 75 pounds.

The units feature a menu driven front panel display and RS-232/422/485 serial port interfaces for complete computer control. 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 **XTRD-450KD** incorporates high efficiency, multistage collector TWT. Reliability is enhanced because the prime power consumption and internal operating temperatures are reduced for both the linear and saturated modes of operation. Power factor correction circuitry is also included which minimizes line current distortion and reduces the required Volt-Amps input. The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles.) Depending upon user requirements, these amplifiers can be configured for either single thread or redundant system operation.

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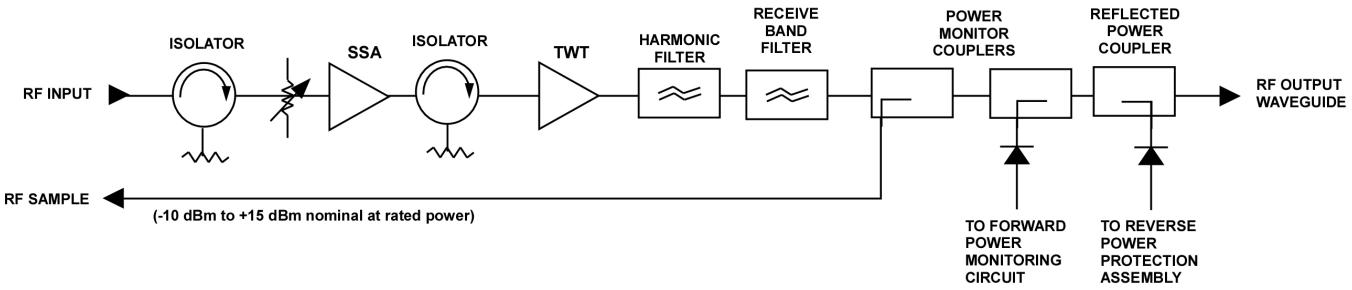
PERFORMANCE SPECIFICATION

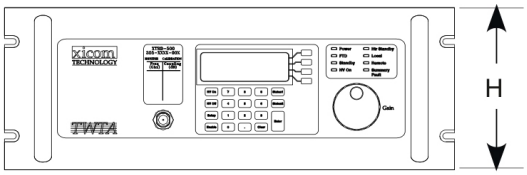
Parameters	Ku-Band	DBS-Band
FREQUENCY RANGE (extended frequency coverage available)	13.75 to 14.5 GHz	17.3 to 18.4 GHz
OUTPUT POWER		
Traveling Wave Tube	450 W	
Rated Power @ Amplifier Flange (minimum)	400 W	
GAIN		
Large Signal (minimum)	70 dB	
Small Signal (minimum)	75 dB	
Attenuator Range (continuous)	25 dB	
Maximum SSG Variation Over:		
Any Narrow Band	1.0 dB per 80 MHz	
Full Band	4.0 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	13.75 to 14.5 GHz: -17 dBc	17.3 to 18.1 GHz: -16 dBc 18.1 to 18.4 GHz: -15 dBc
	@ 4 dB total output power backoff from rated power	
HARMONIC OUTPUT (maximum)	-60 dBc	
AM/PM CONVERSION (maximum)	3.0 deg/dB at 6 dB below rated power	
NOISE POWER (maximum)		
Transmit Band	-70 dBW/4 kHz	
Receive Band	-150 dBW/4 kHz 10.95 to 11.75 GHz* -70 dBW/4 kHz 10.95 to 13.25 GHz**	
GROUP DELAY (maximum)		
Bandwidth	Any 80 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 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)	2.4:1	

* Applicable to optional Ku-Band transmit frequency 12.75 to 14.5 GHz and 10.95 to 14.5 GHz)
** An external filter is available for 10.95 to 13.25 GHz to achieve -150 dBW/4 kHz

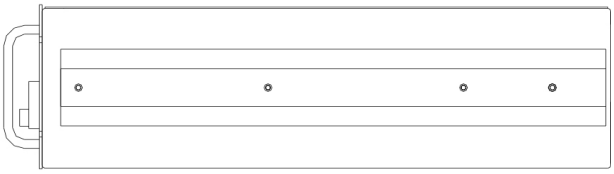
BLOCK DIAGRAM

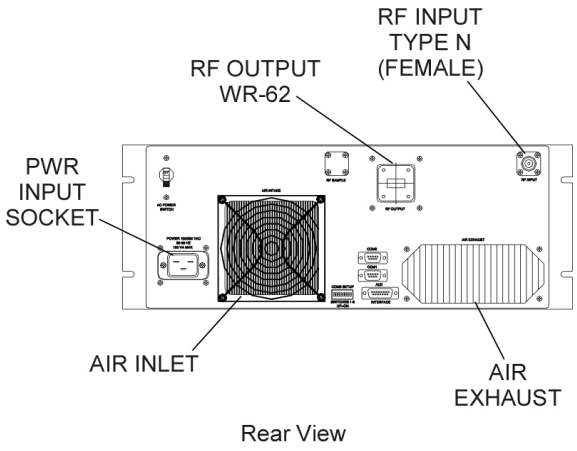


OUTLINE DRAWING

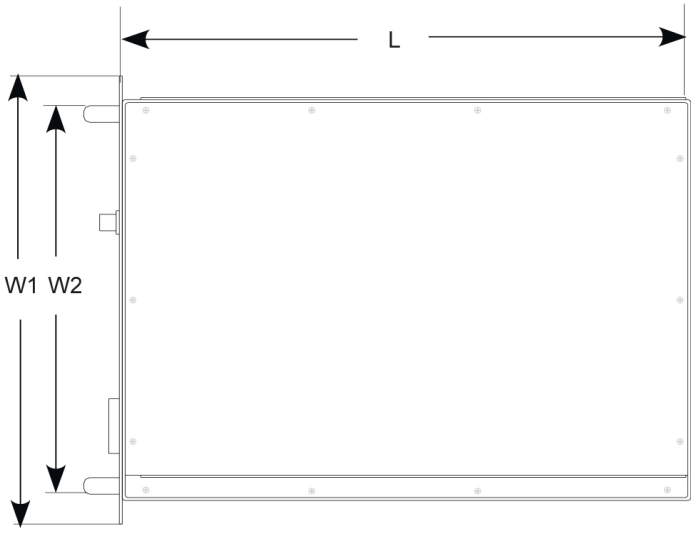


Front View





Rear View



Top View

Nominal Weight = 75 lb (34.02 kg)

DIMENSIONS		
	INCHES	CENTIMETERS
L	24.00	60.96
H	6.97	17.70
W1	19.00	48.26
W2	17.00	43.18

PRIME POWER

180 to 260 VAC
47 to 63 Hz, Single Phase
2400 VA (maximum)
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% Noncondensing
ALTITUDE	10,000 Feet MSL (maximum)
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air 200 CFM (typical)

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: High VSWR High Voltage Helix Current TWT Temperature
	DRY FORM-C RELAY CONTACTS (2)	Summary Fault	
COMPUTER SERIAL PORT	HARDWARE INTERFACE	Two Ports: RS-232 & RS-422/RS-485	
	XICOM COMMAND SET	ASCII Commands	
	RF SAMPLE PORT COUPLING	-43 dB Nominal	

OPTIONS

- Extended Frequency Coverage
- 1:1, 1:2, 1:N Redundancy

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