Digital Rack-Mount High Power Amplifiers

750 Watts C-Band

750 Watts Ku-Band

• Compact 7-Inch Package • Digital Display & Control Interface • High Efficiency

The XTRD-750C & XTRD-750K are highly efficient rack-mountable traveling wave tube amplifiers (TWTAs) designed for 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-750C & XTRD-750K incorporate high-efficiency, multi-stage depressed collector TWTs. Reliability is enhanced because both 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 SPECIFICATIONS

Parameter	XTRD-750C, C-Band	XTRD-750K, Ku-Band
FREQUENCY RANGE	5.85 - 6.425 GHz	13.75 - 14.5 GHz
(Alternate frequency coverage available)	(5.85 - 6.650 GHz)	(12.75 - 14.5 GHz)
OUTPUT POWER		
Traveling Wave Tube	750 W	750 W
Rated Power @ Amplifier Flange	650 W	650 W
GAIN		
Large Signal, min	70 dB	70 dB
Small Signal, min	75 dB	75 dB
Attenuator Range (continuous)	25 dB	25 dB
Maximum SSG Variation Over:		
Any Narrow Band	1.0 dB per 40 MHz	1.0 dB per 80 MHz
Full Band	2.5 dB	2.5 dB per 500 MHz
Slope, max	±0.04 dB/MHz	±0.04 dB/MHz
Stability, 24 Hr max	±0.25 dB	±0.25 dB
Stability, Temperature	±1.0 dB maximum over temperature range at any frequency	
INTERMODULATION	-18 dBc	-18 dBc
	maximum with two equal signals @ 4 dB total output backoff	
HARMONIC OUTPUT, max	-60 dBc	-60 dBc
AM TO PM CONVERSION, max	2.5°/dB @ 6 dB below rated power	
NOISE POWER, max		
Transmit Band	-70 dBw/4 KHz	-70 dBw/4 KHz
Receive Band	-150 dBw/4 KHz	-150 dBw/4 KHz
	3.7 - 4.2 GHz	10.95 - 12.75 GHz
GROUP DELAY, max		
Bandwidth	Any 40 MHz	Any 80 MHz
Linear	0.01 nsec/MHz	0.01 nsec/MHz
Parabolic	0.005 nsec/MHz^2	0.005 nsec/MHz^2
Ripple	0.5 nsec/P-P	0.5 nsec/P-P
RESIDUAL AM NOISE, max	-50 dBc to 10 KHz	
	-20 (1.5 + Log f) dBc 10 to 500 KHz	
	-85 dBc above 500 KHz	
PHASE NOISE, max	10 dB below IESS phase-noise profile	
	AC fundamental -50 dBc Sum of all spurs -47 dBc	
VSWR		
Input, max	1.3:1	1.3:1
Output, max	1.3:1	1.3:1

Prime Power

180-260 VAC
47-63 Hz, Single Phase
0.95 Minimum Power Factor
Maximum VA: 2450

CE COMPLIANT

Options

Extended Frequency Coverage
1:1, 1:2, 1:N Redundancy
Variable Phase Combined
Integrated Linearizers

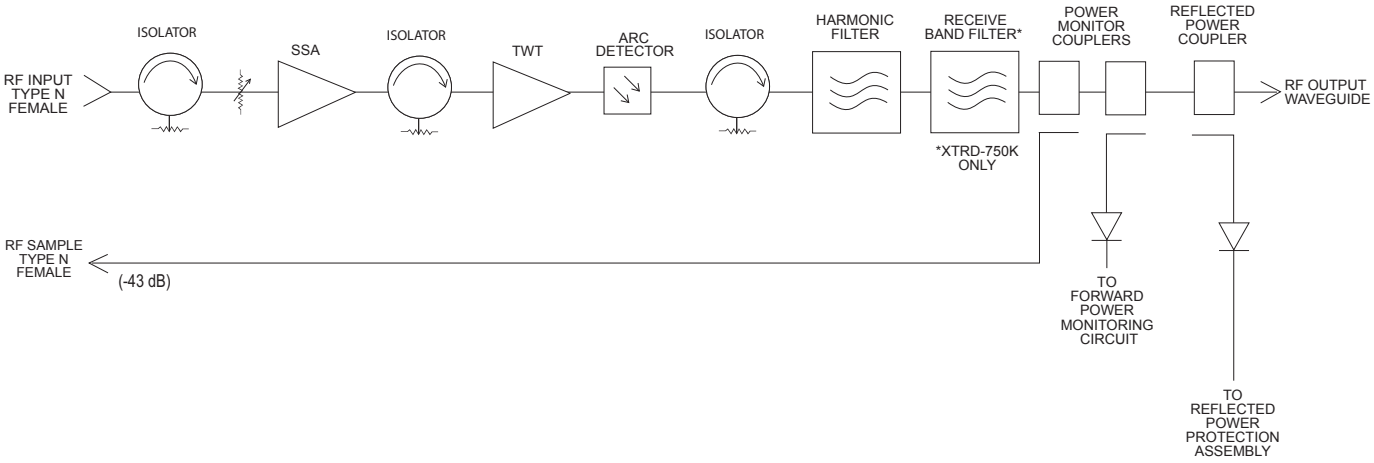
Environment

NON-OPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-10°C to +50°C
HUMIDITY	Up to 95% Non-Condensing
ALTITUDE	10,000 feet MSL maximum
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air: 250 CFM (typical)

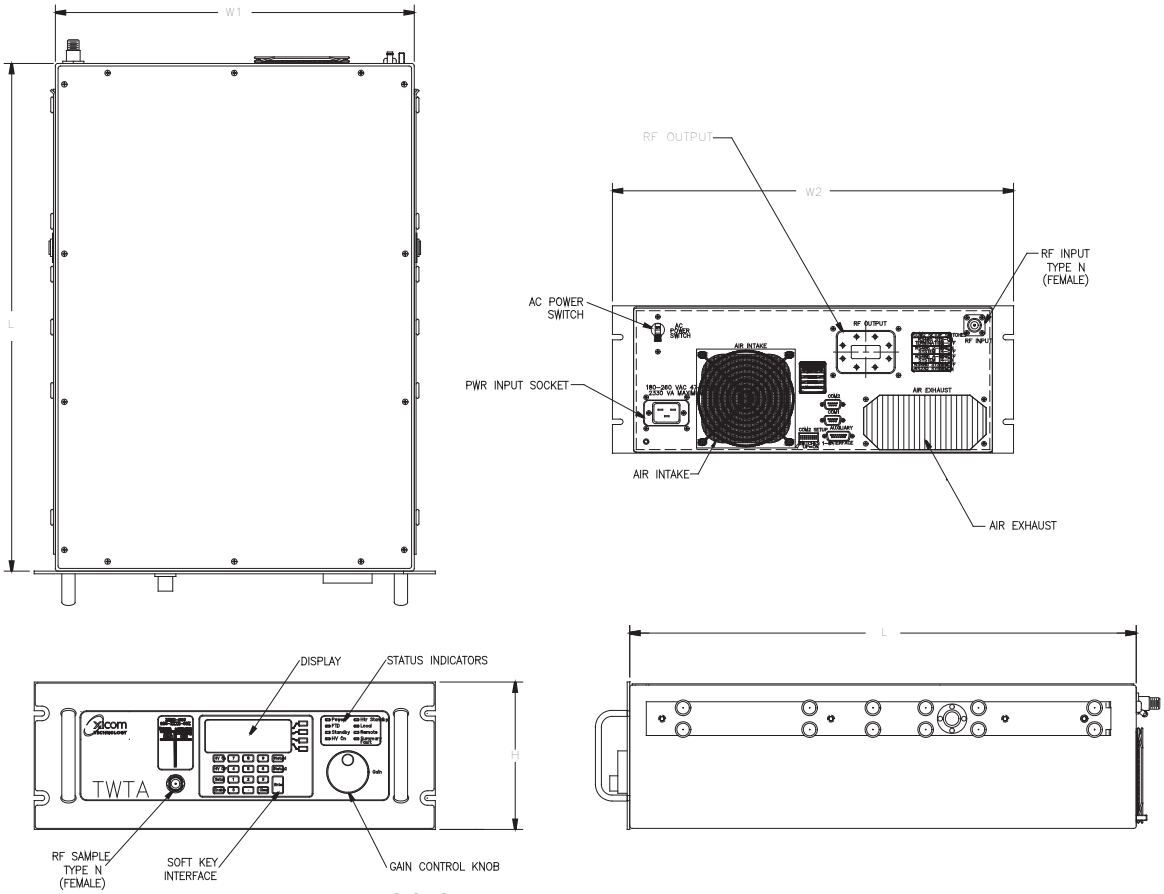
Interface

	TYPE AND MODE	FUNCTION	
CONTROLS	Local	Local/Remote	AC Power ON/OFF
	Local and Remote	Gain	High Voltage ON/OFF
		Heater Standby ON/OFF	Audio Alarm ON/OFF
		Min/Max Power Alarm/Fault	Units (Watts, dBm, dBw)
		Reflected Power Alarm/Fault	Constant Power
		Fault Reset	Lamp Test
STATUS	Front Panel LEDs	Power	Heater Standby
		Heater Time Out (FTD)	Local Mode
		Standby	Remote Mode
		High Voltage	Summary Fault
	Front Panel Digital Display	Power Out	Attenuator Setting
		Reflected Power	Units Selection
		TWT Temperature	Faults:
		Helix Current	High VSWR
		Helix Voltage	High Voltage
		Heater Hours	Helix Current
		Beam Hours	TWT Temperature
			Arc Detection
	Dry Form-C Relay Contacts (Two)	Summary Fault	
COMPUTER SERIAL PORT	Hardware Interface	2 ports: RS-232 & RS-232/RS-422/RS-485	
	Xicom Command Set	ASCII Commands	
RF SAMPLE PORT	COUPLING	-43 dB Nominal	

Block Diagram



Outline Drawing



DIMENSIONS

	INCHES	CENTIMETERS
W1	17.00	43.18
W2	19.00	48.26
L	24.00	60.96
H	6.97	17.7

Nominal Weight = 75 lbs. (34.02 kg)

RF OUTPUT

Ku-band	WR-75
C-band	CPR-137G

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