

2000 Watt C and X-Band Dual-Band Rack Mount High Power Amplifier



FEATURES

- Compact Size
- High Efficiency
- Digital Display and Control Interface
- Power Factor Correction
- Linearizer Option

XTRD-2000CX digital rack-mount amplifiers are designed for fixed (ground and shipboard) as well as mobile uplink applications and occupy only 11 rack units while providing RF output of 2000 Watts. These high efficiency traveling wave tube amplifiers include RF gain control, a solid-state pre-amplifier, RF filters, cooling, and monitor & control (M&C) systems.

The dual-drawer amplifier conserves rack space and occupies only 19.25 inches (11 rack units) of a standard 19 inch rack cabinet. A complete 1:1 or 1:2 redundant TWTA system, including a redundant controller, can be mounted in a single rack.

The unit features a menu-driven front panel display and RS-232 & RS-422/RS-485 serial port interfaces for complete remote control. Gain control is set by the front panel manual control or by computer commands sent via the remote interface(s).

The units incorporate high efficiency, multi-stage depressed collector TWTs. Reliability is enhanced because both prime power consumption and internal operating temperatures are reduced for the linear and saturated modes of operation. The high frequency resonant conversion power supply is highly efficient and allows for quick recovery from prime power outages. Depending upon user requirements, the high power amplifiers can be configured for single-thread, or redundant operation.

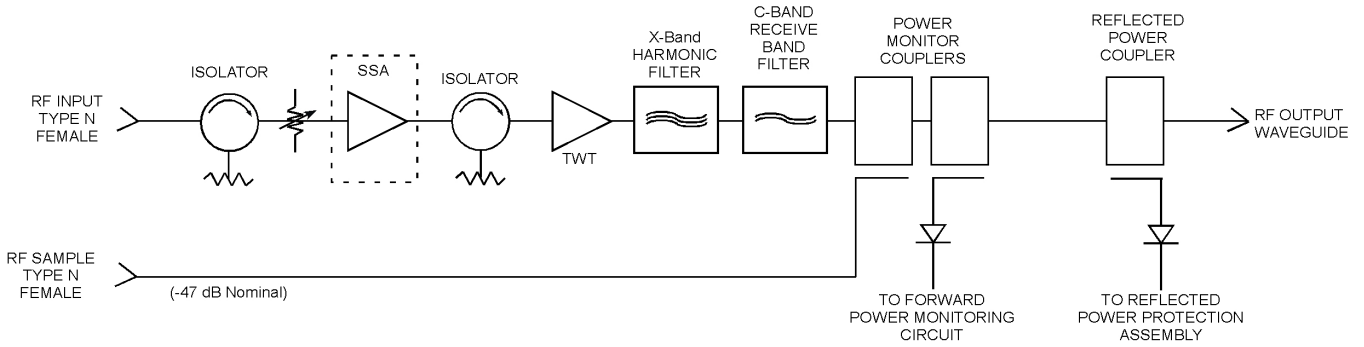


PERFORMANCE SPECIFICATION

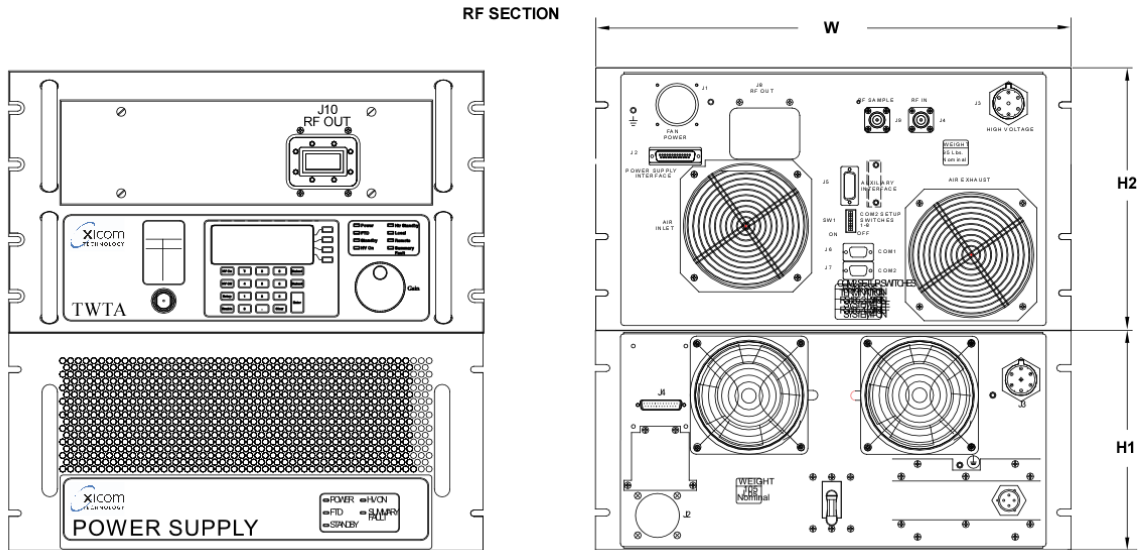
Parameters	C-Band	X-Band
FREQUENCY RANGE (extended frequency coverage available)	5.850 to 6.425 GHz	7.90 to 8.40 GHz
OUTPUT POWER		
Traveling Wave Tube		2000 W
Amplifier Flange		1750 W
Rated Power	500 W	500 W (1000 W w/optional X-Band linearizer)
GAIN		
Large Signal (minimum)	70 dB	64 dB
Small Signal (minimum)	75 dB	75 dB (70 dB w/optional linearizer)
Attenuator Range (continuous)		25 dB
Maximum SSG Variation Over		
Any Narrow Band		1.0 dB per 40 MHz
Full 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	
MAXIMUM LINEAR POWER		
Spectral Regrowth (maximum)	-26 dBc @ 1 symbol rate offset from carrier @ rated linear power, QPSK	-30 dBc @ 1 symbol rate offset from carrier @ rated linear power, OQPSK
Intermodulation (maximum) (with two equal carriers)	-16 dBc @ 4 dB total output power backoff from rated power (-26 dBc in X-Band w/optional linearizer)	
HARMONIC OUTPUT (maximum)	-3 dBc @ 49 dBm	-7 dBc
AM/PM CONVERSION (maximum)	2.5 deg/dB at 6 dB below rated power	
NOISE POWER (maximum)		
Transmit Band		-70 dBW/4 kHz
Receive Band	-70 dBW/4 kHz 3.7 to 4.2 GHz	-70 dBW/4 kHz 7.25 to 7.75 GHz
GROUP DELAY (maximum)		
Bandwidth		Any 40 MHz
Linear		± 0.01 nS/MHz
Parabolic		± 0.005 nS/MHz 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)	10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -45 dBc	
VSWR		
Input (maximum)		1.3:1
Output (maximum)		1.3:1

* Extended frequency coverage available.

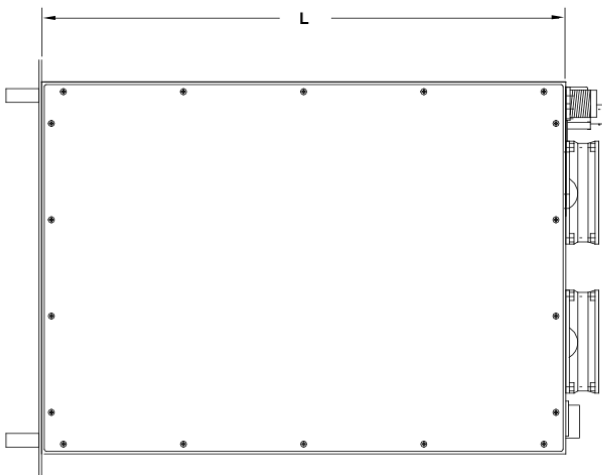
BLOCK DIAGRAM



OUTLINE DRAWING



POWER SUPPLY



DIMENSIONS		
L	24.00 in	60.96 cm
W	19.00 in	48.26 cm
H1	8.47 in	21.51 cm
H2	10.50 in	26.67 cm

WEIGHT	
215 lbs	97.52 kg
Nominal	

PRIME POWER

208 VAC ± 10% Three Phase, 4 Wire, 47-63 Hz
 220/380 VAC ± 10% Three Phase, 5 Wire, 47-63 Hz
 240/415 VAC ± 10% Three Phase, 5 Wire, 47 to 63 Hz
 8500 VA Maximum
 0.95 Minimum 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 MSL (maximum)
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air 275 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	-47 dB Nominal	

OPTIONS

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

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