

270 Watt DBS-Band Rack Mount High Power Amplifier



FEATURES

- *Compact 3RU chassis*
- *Menu driven front panel display and control*
- *High efficiency*
- *1:1, 1:2, 1:N redundancy*
- *Optional integrated linearizer*

The **XTRD-270DBS** is a highly efficient rack mountable traveling wave tube amplifier (TWTA) designed for fixed and mobile uplink applications. The unit includes RF gain control, a solid-state pre-amplifier, RF filters, cooling, and monitor and control (M&C) systems. Rack space is conserved because the amplifier occupies only 3 rack units (5¼ inches) of a standard 19 inch rack cabinet. Nominal weight is 50 pounds.

The unit features 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-270DBS** incorporates high efficiency, dual stage 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.

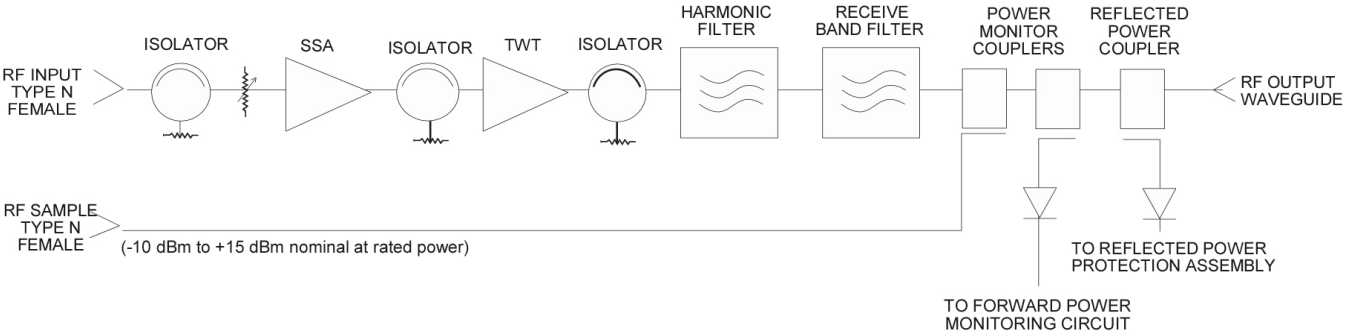
The **XTRD-270DBS** incorporates power factor correction circuitry, which minimizes line current distortion and reduces the required Volt-Amps input. The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles.) Depending upon user requirements, this high power amplifier can be configured for either single thread, redundant, or phase combined system operation.



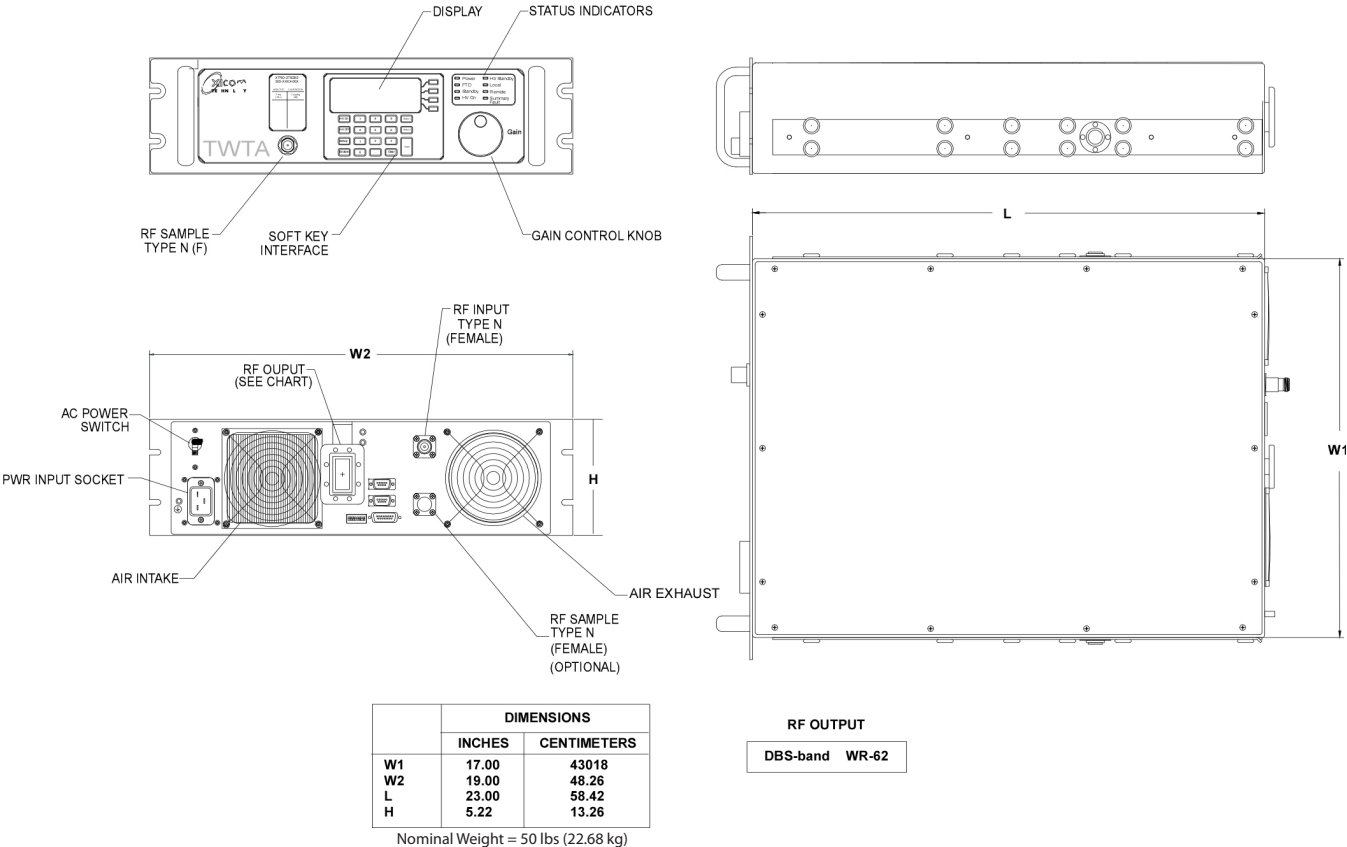
PERFORMANCE SPECIFICATION

Parameters	XTRD-270DBS
FREQUENCY RANGE (extended frequency range available)	17.3 to 18.1 GHz
OUTPUT POWER	
Traveling Wave Tube	270 W
Rated Power @ Amplifier Flange (minimum)	225 W
GAIN	
Large Signal (minimum)	65 dB
Small Signal (minimum)	70 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	-18 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 12.75 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)	1.3:1

BLOCK DIAGRAM



OUTLINE DRAWING



PRIME POWER

100 to 260 VAC

47 to 63 Hz, Single Phase

1300 VA (maximum)

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 MSL (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: 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	-37 dB Nominal	

OPTIONS

- Extended Frequency Coverage
- 1:1, 1:2, 1:N Redundancy
- Variable Phase Combined
- Integrated Linearizer
- Block Upconverter

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