

# 500 Watt DBS-Band Antenna Mount High Power Amplifier



## FEATURES

- *Rugged 70 lb. antenna mount package*
- *Extended frequency band available*
- *Power factor correction*
- *High Efficiency*
- *Optional block upconverter*
- *Optional linearizer*
- *RS-232/ 422/485 interface*
- *1:1, 1:2, 1:N redundancy*

The **XTD-500DBS** are compact self-contained, antenna mountable power amplifiers designed for low cost installation and long life. The design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and the antenna feed horn. RF harmonic filters, cooling, and monitoring & control systems are all self-contained within the HPA. These features provide high reliability, low maintenance costs, and low replacement costs.

The amplifier incorporates high efficiency multi-stage collector TWTs. Some of the benefits of this type of TWT are: reduced prime power consumption, lower internal operating temperatures, and reliability enhancement. These benefits are obtained for both the linear and saturated modes of operation.

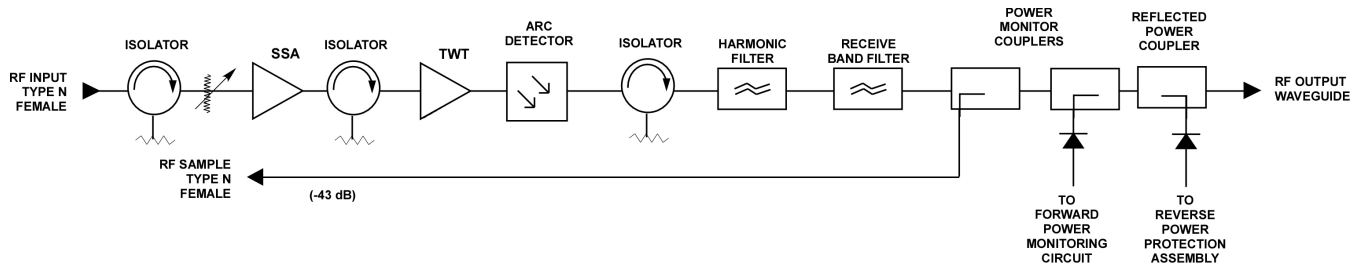
The **XTD-500DBS** may be configured for single thread, redundant or phase-combined operation. An optional linearizer is available to allow increased transient power while meeting spectral regrowth requirements. A remote external controller is available to operate the HPA from user selected location. Mounting brackets can be supplied to mount the HPA to most popular antennas.



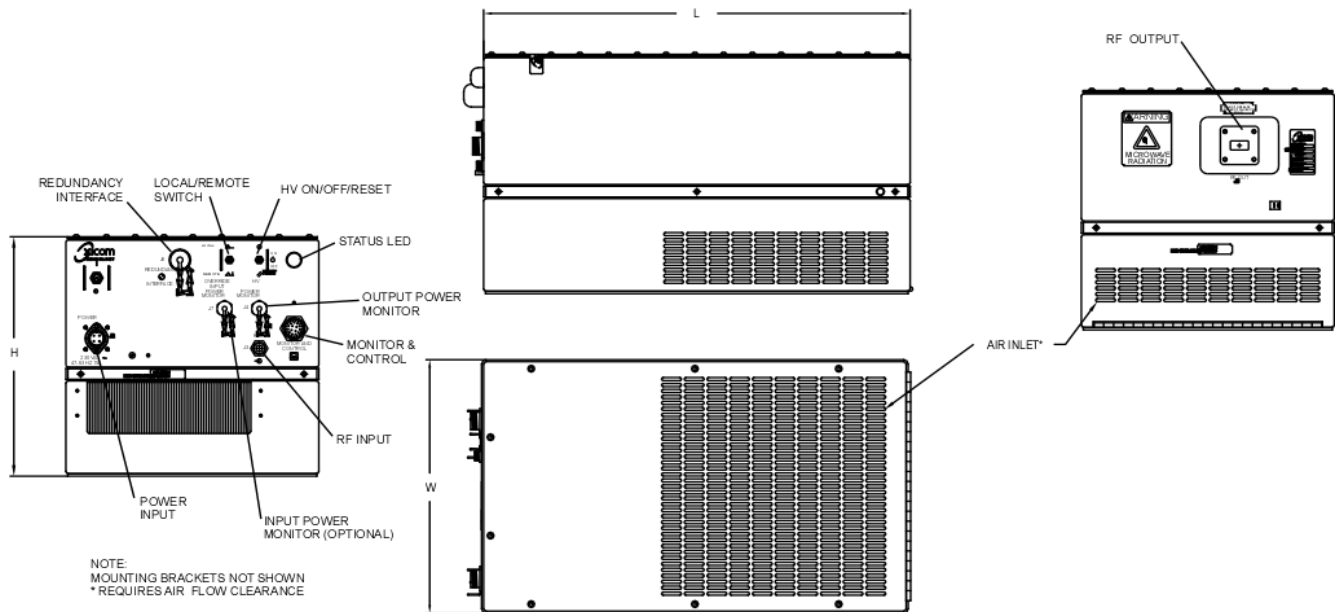
# PERFORMANCE SPECIFICATION

Parameters	XTD-500DBS
FREQUENCY RANGE (extended frequency range available)	17.3 to 18.1 GHz (17.3 to 18.4 GHz)
OUTPUT POWER	
Traveling Wave Tube	500W (17.3 to 18.1) 450W (18.1 to 18.4)
Rated Power (P1dB) @ Amplifier Flange (minimum)	415W (17.3 to 18.1) 380W (18.1 to 18.4)
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, max.	± 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 @ 4dB total output backoff
HARMONIC OUTPUT (maximum)	-60 dBc
AM/PM Conversion (maximum)	3.0 deg/dB at 6 dB below rated output 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/MHz <sup>2</sup>
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



	DIMENSIONS	
	INCHES	CENTIMETERS
L	21.50	54.61
H	12.13	30.81
W	12.75	32.39

RF OUTPUT = WR-62

Nominal Weight = 70 lbs (31.75 kg)

## PRIME POWER

180 to 260 VAC  
47 to 63 Hz, Single Phase  
2300 VA Maximum  
0.95 Minimum Prime Power Factor



## ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +50°C (2°C/1000 Feet Derating)
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 Feet MSL Max.
SHOCK AND VIBRATION	Normal Transportation
COOLING	Forced Air

## INTERFACE

Type	Function	
LOCAL CONTROL	Prime Power ON/OFF Power Supply ON/OFF	Local/Remote HV ON/OFF
LOCAL STATUS	Tri-Color LED: Fault: Red HV ON: Green	Standby: Continuous Amber FTD: Flashing Amber
REMOTE CONTROL	HV ON/OFF RF Attenuation (w/preamp) Heater Standby	RF Inhibit (HV OFF) Fault Reset
REMOTE STATUS	HV ON RF Output Power Reflected Power Filament Time Delay Helix Voltage	Heater/Beam Hours Fault Identification TWT Temperature Helix Current
FORM C DRY CONTACT CLOSURE	Summary Fault	
RF MONITOR PORT	-43 dB Coupling Value (approx.)	

## OPTIONS

- Extended Frequency Coverage
- Integrated Linearizer
- Parallel (Discrete) Interface
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Variable Phase Combined
- Block Upconverter

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