

750 and 850 Watt X-Band Antenna Mount High Power Amplifiers



FEATURES

- *Rugged 75 lb. antenna mount package*
- *Optional internal L-band BUC*
- *Optional linearizer*
- *High efficiency*
- *RS-232/485 M&C interface*
- *1:1, 1:2, 1:N redundancy*

The **XTD-750X** and **XTD-850XL** 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.

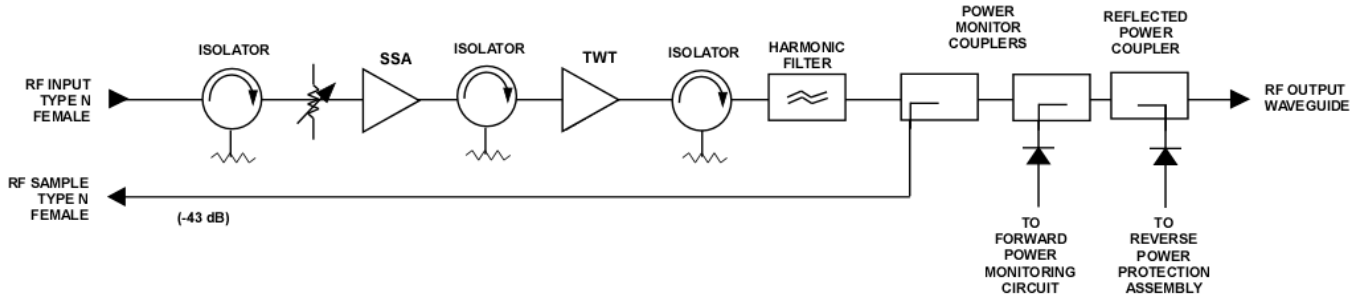
The **XTD-750X** and **XTD-850XL** may be configured for single thread, redundant or phase-combined operation. An optional linearizer is available to allow increased transient power while meeting spectral regrowth requirements. A remote external controller is available to operate the HPA from a user selected location.



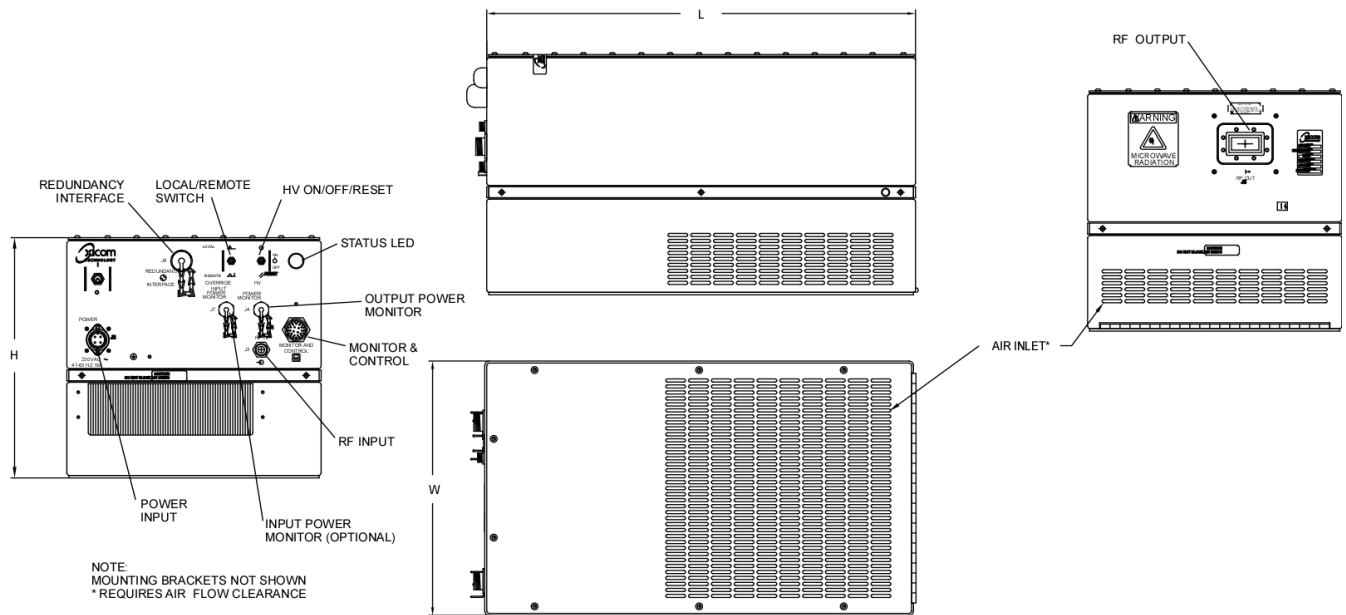
PERFORMANCE SPECIFICATION

Parameters	XTD-750X	XTD-850XL
FREQUENCY RANGE	7.9 to 8.4 GHz	
OUTPUT POWER		
Traveling Wave Tube	750 W (58.7 dBm)	850 W (59.3 dBm) Peak
Rated Power @ Amplifier Flange	650 W (58.1 dBm)	400 W (56.0 dBm) Peak
Linear Power @ Amplifier Flange w/o Linearizer	160 W (52.1 dBm)	200 W (53.0 dBm) CW max.
Linear Power @ Amplifier Flange w/Linearizer	360 W (55.6 dBm)	400 (56.0 dBm)
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 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	
INTERMODULATION (maximum) with two equal carriers	-26 dBc @ 8 dB total output backoff from rated power	
SPECTRAL REGROWTH @ Linear Power	-30 dBc	
HARMONIC OUTPUT (maximum)	-60 dBc	
AM/PM CONVERSION (maximum)	2.5 deg/dB at 6 dB below rated output power	
NOISE POWER (maximum)		
Transmit Band	-70 dBW/4 kHz	
Receive Band	-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)	12 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	

BLOCK DIAGRAM



OUTLINE DRAWING



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

Nominal Weight = 75 lbs (34.02 kg)

RF OUTPUT = CPRG-112

PRIME POWER

180 to 260 VAC
 47 to 63 Hz, Single Phase
 2500 (750W) VA Maximum
 2500 (850W Peak) 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	Local/Remote
	Power Supply ON/OFF	HV ON/OFF
LOCAL STATUS	Tri-Color LED:	
	Fault: Red	Standby: Continuous Amber
	HV ON: Green	FTD: Flashing Amber
REMOTE CONTROL	HV ON/OFF	RF Inhibit (HV OFF)
	Gain	Units (Watts, dBm, dBW)
	Minimum Power Alarm/Fault	Maximum Power Alarm/Fault
	RF Attenuation (w/preamp)	Fault Reset
	Heater Standby	Reflected Power Alarm/Fault
REMOTE STATUS	HV ON	Heater/Beam Hours
	RF Output Power	Helix Current
	Reflected Power	Helix Voltage
	Filament Time Delay	TWT Temperature
	Helix Voltage	Fault Identification: High VSWR High Voltage Helix Current TWT Temperature RF Arc
FORM C DRY CONTACT CLOSURE	Summary Fault	
RF MONITOR PORT	-43 dB Coupling Value (approx.)	

OPTIONS

- Integrated Linearizer
- Remote External Controller
- 1:1, 1:2 Redundancy
- Phase Combined
- Block Upconverter

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