

400 Watt C, X, and Ku-Band Antenna Mount High Power Amplifiers



FEATURES

- *Rugged 60 lb. antenna mount package*
- *Extended frequency bands available*
- *RS-232/422/485 M&C interface*
- *1:1, 1:2, 1:N redundancy*
- *Options
L-band BUC
Linearizer
Ethernet*

The **XTD-400** is a compact self contained antenna mountable high power amplifier (HPA) designed for low cost installation and long life. The outdoor design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and the antenna feed horn. RF filters, cooling, and monitoring & control (M&C) systems are all self contained within the HPA. These features provide high reliability, low maintenance costs, and low replacement costs.

The **XTD-400** uses high efficiency dual-stage collector Traveling Wave Tubes (TWT). Some benefits of this type of TWT are:

- Reduced prime power consumption
- Lower internal operating temperatures
- Reliability enhancement

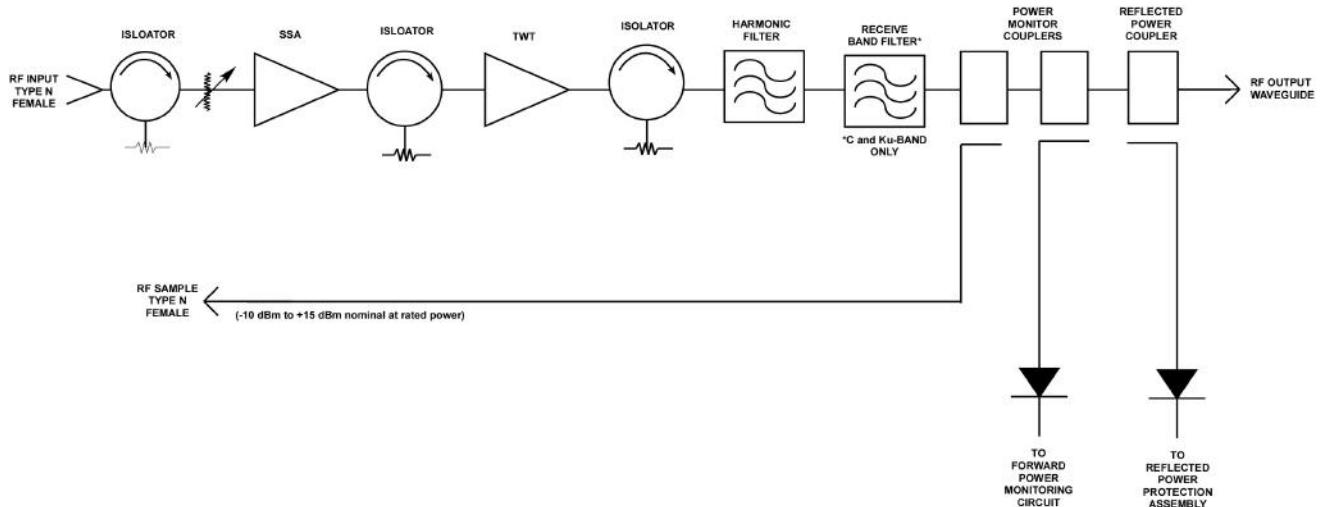
A complete serial M&C system is built into the unit. A remote external controller is available to operate the HPA from a user selected location.



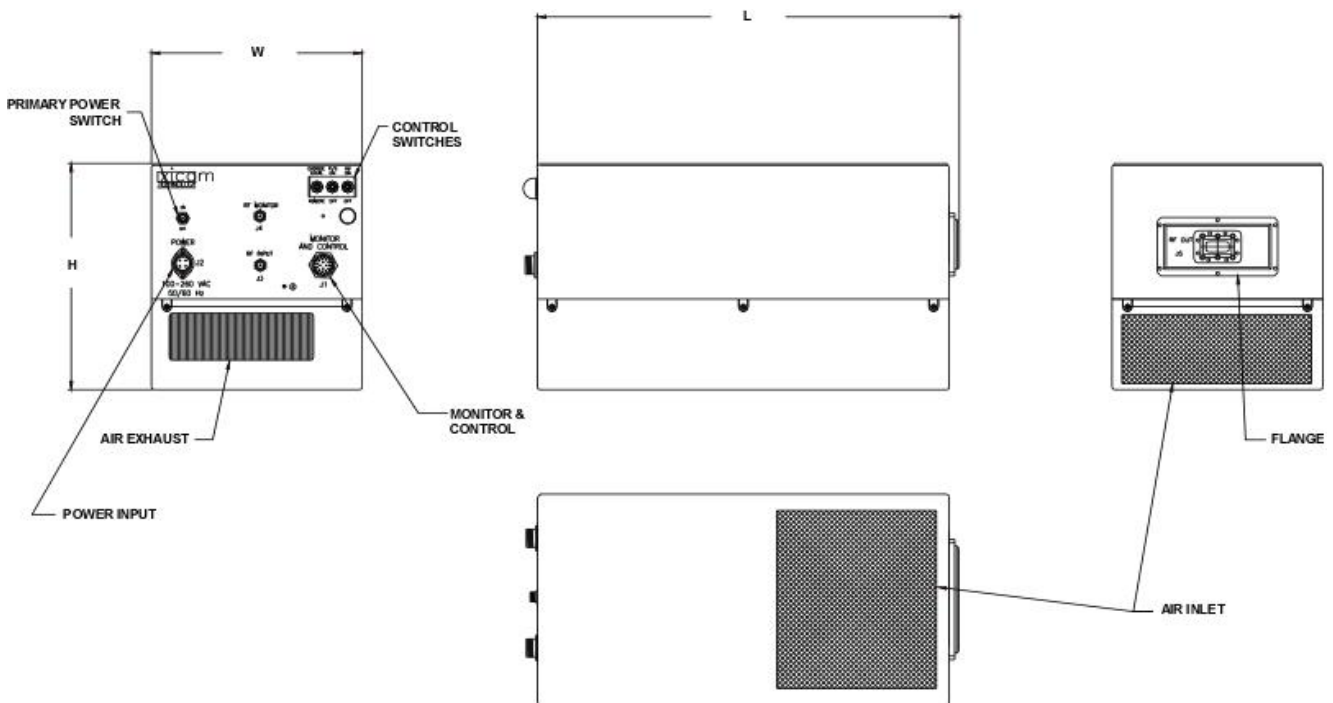
PERFORMANCE SPECIFICATION

Parameters	XTD-400C C-Band	XTD-400X X-Band	XTD-400K Ku-Band
FREQUENCY RANGE (extended frequency coverage available)	5.850 to 6.425 GHz (5.85 to 6.65 GHz) (5.85 to 6.725 GHz) (5.85 to 7.025 GHz)	7.90 to 8.40 GHz	13.75 to 14.50 GHz (12.75 to 13.25 GHz) (12.75 to 14.50 GHz) (13.75 to 14.8 GHz)
OUTPUT POWER			
Traveling Wave Tube		400 Watts	
Rated Power @ Amplifier Flange		350 Watts	
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	1.0 dB per 40 MHz	1.0 dB per 80 MHz
Full Band	2.5 dB/575 MHz	2.75 dB/500 MHz	2.5 dB/750 MHz
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 @ 4dB total output power backoff from rated power		-18 dBc (-26 dBc with linearizer option)	
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	-150 dBW/4 kHz 3.7 to 4.2 GHz	-70 dBW/4 kHz 7.25 to 7.75 GHz	-150 dBW/4 kHz 10.95 to 12.75 GHz
GROUP DELAY (maximum)			
Bandwidth	Any 40 MHz	Any 40 MHz	Any 80 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 -47 dBc	
VSWR			
Input (maximum)		1.3:1	
Output (maximum)		1.3:1	

BLOCK DIAGRAM



OUTLINE DRAWING



DIMENSIONS		
	INCHES	CENTIMETERS
W	10.25	26.04
L	20.50	52.07
H	11.0.0	27.94

Nominal Weight = 60 lbs. (27.3 kg) maximum

RF OUTPUT
C-BAND - CPR 137G
X-BAND - CPR 112G
OR CPR 137G
Ku-BAND - WR 75

PRIME POWER

100-260 VAC
47 to 63 Hz, Single Phase
1550 VA Maximum, 1400 VA Typical
0.95 Minimum Prime Power Factor



ENVIRONMENT

NONOPERATING TEMPERATURE RANGE	-50°C to +70°C
OPERATING TEMPERATURE RANGE	-40°C to +60°C (2°C/1000 Feet Derating)
HUMIDITY	Up to 100% Condensing
ALTITUDE	10,000 feet MSL (maximum)
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)	Heater Standby
	RF Attenuation (w/preamp)	Fault Reset	
REMOTE STATUS	HV ON	Heater/Beam Hours	Filament Time Delay
	RF Output Power	Fault Identification	Helix Current
	Reflected Power	TWT Temperature	Helix Voltage
FORM C DRY CONTACT CLOSURE	Summary Fault		
RF MONITOR PORT	-37 dB Coupling Value (Approx)		

OPTIONS

- Remote External Controller
- Extended Frequency Range Coverage
- 1:1, 1:2, 1:N Redundancy
- Variable Phase Combined
- Integrated Linearizer
- Block Upconverter
- Ethernet

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