

# 1250 Watt Ku-Band Antenna Mount High Power Amplifier



## FEATURES

- 1250 watts peak power  
450 watts linear power with  
linearizer
- Rugged design operates to  
+60°C
- Optional L-band BUC
- No shelter required
- Identical outline makes an  
ideal upgrade from 750W  
systems
- RS-232/422/485 M&C  
interface

The **XTD-1250KL** is a compact, self-contained, antenna mountable power amplifier designed for low cost installation and long life. The **XTD-1250KL** design eliminates the need for an amplifier shelter as well as a long waveguide run between the amplifier and antenna feed horn. RF filters, cooling, and monitoring & control (M&C) systems are all self-contained.

The **XTD-1250KL** incorporates a high efficiency, dual-stage collector 1250W Peak Power TWT. The output operational power is limited to 600W (500W Flange power); however, the linear power performance at this point is equivalent to a 1250W tube. By incorporating an integral linearizer, users can deliver more linear power to the feed than with a traditional klystron solution because the IFL losses are eliminated. Further savings can be achieved by multiplexing multiple carriers through the TWTA as opposed to running only a single carrier through a klystron amplifier.

The **XTD-1250KL** may be configured for single thread, redundant, phase-combined, or linearized operation.

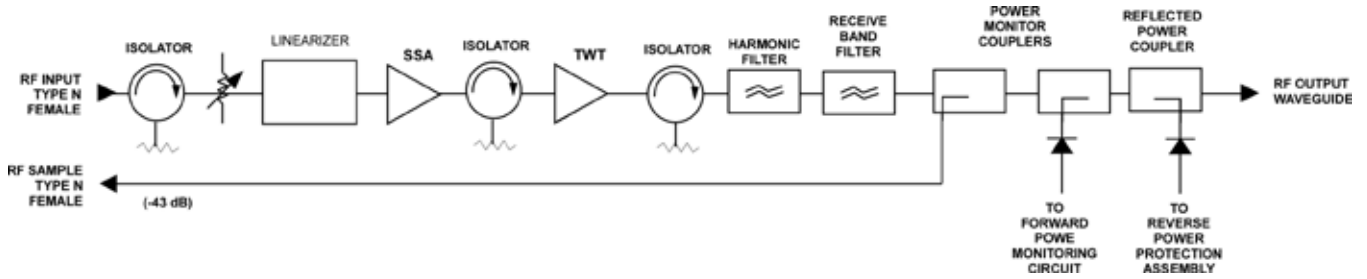
A remote external controller is available to operate the HPA from a user selected location. Mounting brackets can be supplied to mount the HPA to most popular antennas.



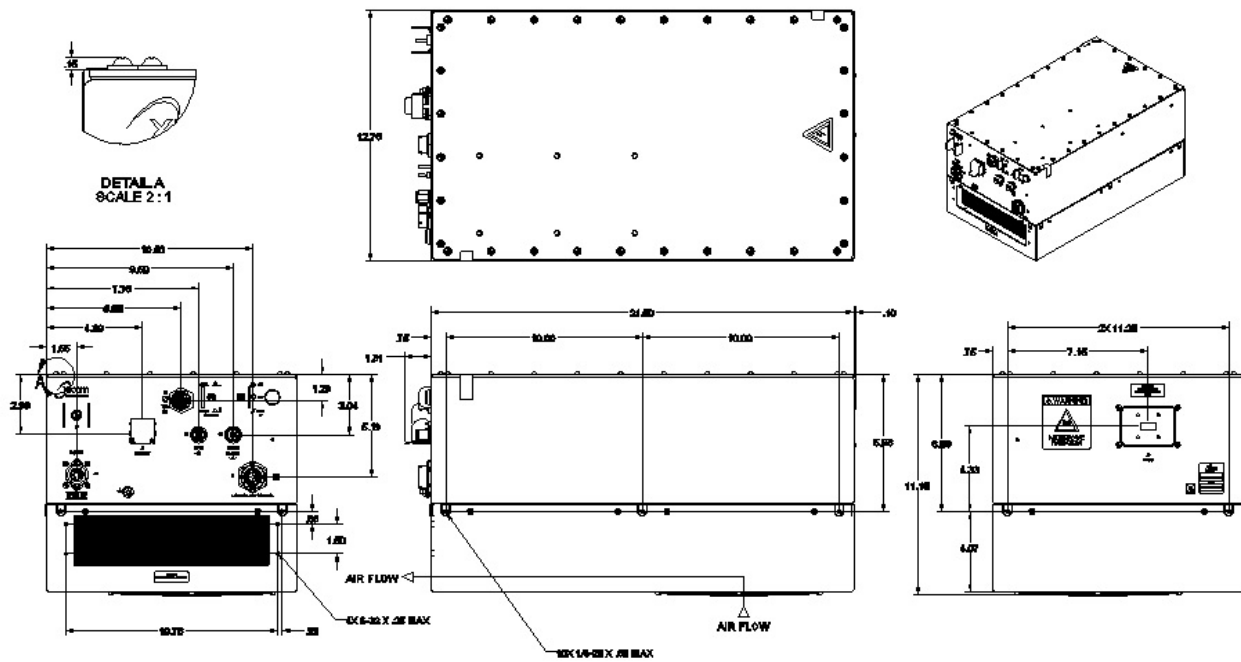
# PERFORMANCE SPECIFICATION

Parameters	XTD-1250KL
FREQUENCY RANGE (extended frequencies available)	13.75 to 14.5 GHz
OUTPUT POWER	
TWT Peak Power (typical)	61.0 dBm (1250 W)
HPA Flange Peak Power	60.5 dBm (1120 W)
Linear Rated Power, HPA Flange (w/Linearizer)	56.5 dBm (450 W)
Single Carrier Power, HPA Flange	57.0 dBm (500 W)
GAIN	
Large Signal (minimum)	70 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	2.5 dB per 500 MHz
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 with two equal carriers	-27 dBc @ 450 W total power
HARMONIC OUTPUT (maximum)	-60 dBc
AM/PM CONVERSION (maximum)	2.0 deg/dB at ≤ 450 /w
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 -45 dBc
VSWR	
Input (maximum)	1.3:1
Output (maximum)	1.3:1

# BLOCK DIAGRAM



# OUTLINE DRAWING



DIMENSIONS		
	INCHES	CENTIMETERS
L	22.5	57.15
H	12.13	30.81
W	12.75	32.39

RF OUTPUT	
FREQUENCY BAND	WAVEGUIDE FLANGE
KU	WR-75, COVER

Weight: 95 lb (43.2 kg)

## PRIME POWER

180 to 260 VAC  
 47 to 63 Hz, Single Phase  
 2300 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 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 Min/Max Power Alarm/Fault Reflected Power Alarm/Fault Heater Standby ON/OFF	Constant Power Gain Fault Reset Units (Watts, dBm, dBW)
REMOTE STATUS	Power Out Helix Current Heater Hours Attenuator Settings TWT Temperature	Reflected Power Helix Voltage Beam Hours Units Selection Faults: High VSWR High Voltage Helix Current TWT Temperature Arc Detection
FORM C DRY CONTACT CLOSURE	Summary Fault	
COMPUTER SERIAL PORT	Hardware Interface: 2 ports: RS-232 & RS-422/485	Xicom Command Set: ASCII Commands
RF MONITOR PORT	-43 dB Nominal	

## OPTIONS

- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Block Upconverter
- Ethernet Interface
- Extended Frequency Range

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