# 1250 Watt Ku-Band Antenna Mount High Power Amplifier

Green Power by XICOM TECHNOLOGY

## 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*
- *Includes overdrive protection circuitry*

The **XTD-1250KHE** is a compact, self-contained, antenna mountable power amplifier designed for low cost installation and long life. The **XTD-1250KHE** 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-1250KHE** 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-1250KHE** 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.

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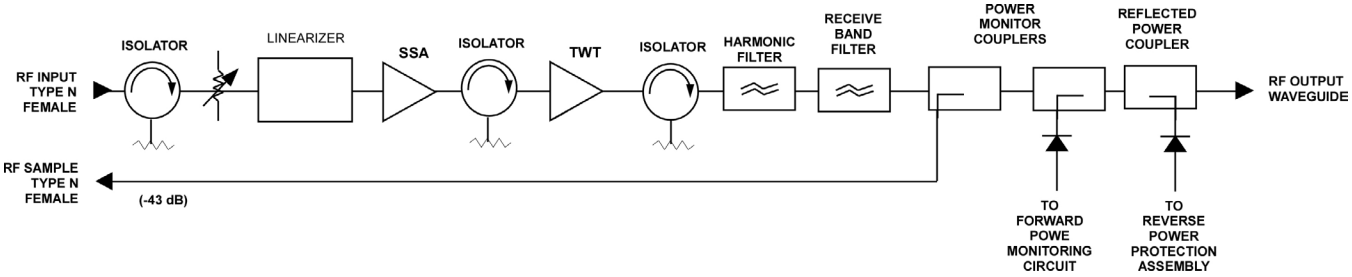
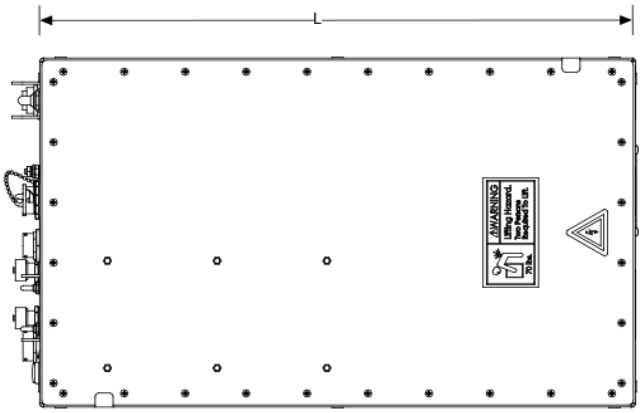
# PERFORMANCE SPECIFICATION

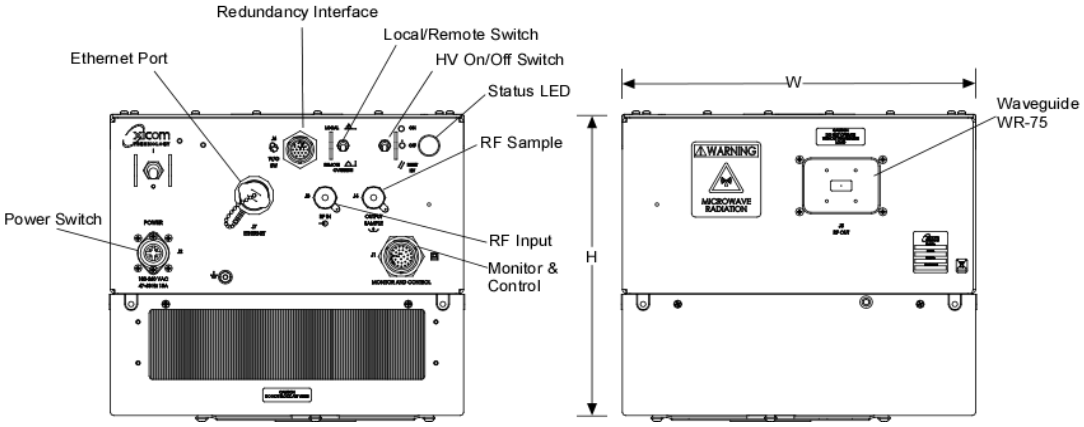
| Parameters | XTD-1250KHE | XTD-1250KHE1 |
|---|---|---|
| FREQUENCY RANGE<br>(extended frequencies available) | 13.75 to 14.5 GHz | 12.75 to 14.5 GHz |
| OUTPUT POWER | | |
| TWT Peak Power (typical) | 61.0 dBm (1250 W) | |
| HPA Flange Peak Power | 60.5 dBm (1120 W) | |
| Linear Rated Power, HPA Flange (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<br>with two equal carriers | -27 dBc<br>@ 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<br>10.95 to 12.75 GHz | -150 dBW/ 4 kHz<br>10.95 to 11.75 GHz |
| GROUP DELAY (maximum) | | |
| Bandwidth | Any 80 MHz | |
| Linear | 0.01 nS/MHz | |
| Parabolic | 0.001 nS/MHz$^2$ | |
| Ripple | 0.5 nS/Pk-Pk | |
| RESIDUAL AM NOISE (maximum) | -50 dBc to 10 kHz<br>-20 (1.5 + logf) dBc 10 to 500 kHz<br>-85 dBc above 500 kHz | |
| PHASE NOISE (maximum) | 12 dB below IESS phase noise profile<br>AC fundamental -50 dBc<br>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 | 21.5 | 54.61 |
| H | 11.0 | 27.94 |
| W | 12.75 | 32.39 |
| Weight: 81 lbs, (36.8 kg) | | |

| RF OUTPUT | |
|---|---|
| **Frequency Band** | **Wave Guide Flange** |
| KU | WR-75, Cover |

# PRIME POWER

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

CE

# ENVIRONMENT

| | |
|---|---|
| NONOPERATING TEMPERATURE RANGE | -50°C to +70°C |
| OPERATING TEMPERATURE RANGE | -40°C to +60°C<br>(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 | Constant Power |
| | Min/Max Power Alarm/Fault | Gain |
| | Reflected Power Alarm/Fault | Fault Reset |
| | Heater Standby ON/OFF | Units (Watts, dBm, dBW) |
| REMOTE STATUS | Power Out | Reflected Power |
| | Helix Current | Helix Voltage |
| | Heater Hours | Beam Hours |
| | Attenuator Settings | Units Selection |
| | TWT Temperature | Faults:<br>High VSWR<br>High Voltage<br>Helix Current<br>TWT Temperature<br>Arc Detection |
| FORM C DRY CONTACT CLOSURE | Summary Fault | |
| COMPUTER SERIAL PORT | Hardware Interface:<br>2 ports: RS-232 & RS-422/485 | Xicom Command Set:<br>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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