The XTD-150Ka, XTD-175Ka, and XTD-250KaL series are compact self-contained antenna mount power amplifiers designed for low cost installation and long life. Cooling and monitor & control systems are all self-contained within the amplifier. By combining the power supply and the RF components within the same amplifier case, the need for external high voltage cables (required for split-box designs) is eliminated. These highly compact units typically weigh only 48 pounds. TW Ts are available delivering 120 Watts to 250 Watts in the 26.5 to 31.0 GHz band. Alternative frequency coverage is available.

This series of amplifiers provides several methods of tube protection. Due to Xicom’s unique power supply design, less than 1 joule is stored in the power supply. A high frequency resonant conversion power supply is used that accepts a wide range of prime power (100 to 260 VAC). The unit also features power factor correction circuitry that minimizes line current distortion and reduces the required volt-amps input.

These amplifiers have built-in waveguide switch control capability. This can be used in a 1:1 redundancy configuration. A single RS-485 cable can control two amplifiers and redundancy switch.

The amplifiers are available with multiple options including redundant and phase combined system configurations, integral linearizers and harmonic filters. Remote external controllers are available to operate the HPA from a user selected location.

**FEATURES**

- No Shelter Required
- Variable Gain Control
- Complete RS-232/422/485 Interface
- Designed for Uplink Applications
## PERFORMANCE SPECIFICATION

<table>
<thead>
<tr>
<th>Parameters</th>
<th>XTD-150Ka</th>
<th>XTD-175Ka</th>
<th>XTD-250KaL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FREQUENCY RANGE</strong></td>
<td></td>
<td>28.0 to 30.0 GHz</td>
<td></td>
</tr>
<tr>
<td>(alternate frequency coverage over 26.5 to 31.0 GHz band available)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OUTPUT POWER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturated Power (typical)</td>
<td>150 W</td>
<td>175 W</td>
<td>250 W Peak</td>
</tr>
<tr>
<td>Rated Power @ Amplifier Flange (minimum)</td>
<td>125 W</td>
<td>145 W</td>
<td>100 W</td>
</tr>
<tr>
<td><strong>GAIN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Signal (minimum)</td>
<td>70 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Signal (minimum)</td>
<td>75 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attenuator Range (continuous)</td>
<td>20 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum SSG Variation Over</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Narrow Band</td>
<td>0.80 dB per 60 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any 1 GHz Band</td>
<td>2.5 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slope (maximum)</td>
<td>± 0.04 dB/MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability, 24 hr. (maximum)</td>
<td>± 0.25 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability, Temperature (maximum)</td>
<td>± 1.0 dB over temperature range at any frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INTERMODULATION</strong> (maximum)</td>
<td>-18 dBc</td>
<td>-19 dBc</td>
<td>-23 dBc</td>
</tr>
<tr>
<td>with two equal carriers</td>
<td>@ 50 W total output power backoff from rated power</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HARMONIC OUTPUT</strong> (maximum)</td>
<td>-15 dBc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-16 dBc with optional filter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AM/PM CONVERSION</strong> (maximum)</td>
<td></td>
<td>2.5 deg/db at 6 dB below rated power</td>
<td></td>
</tr>
<tr>
<td><strong>NOISE POWER</strong> (maximum)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Band (27.5 to 29.5 GHz)</td>
<td>-70 dBW/4 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receive Band (&lt;21.2 GHz)</td>
<td>-150 dBW/4 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GROUP DELAY</strong> (maximum)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bandwidth</td>
<td>Any 60 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear</td>
<td>0.01 nS/MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parabolic</td>
<td>0.005 nS/MHz²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ripple</td>
<td>0.5 nS/Pk-Pk</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RESIDUAL AM NOISE</strong> (maximum)</td>
<td>-50 dBc to 10 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-20 (1.5 + logf) dBc 10 to 500 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-85 dBc above 500 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PHASE NOISE</strong> (maximum)</td>
<td></td>
<td>12 dB below IESS phase noise profile</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC fundamental -50 dBc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sum of all spurs -47 dBc</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VSWR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input (maximum)</td>
<td>1.3:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output (maximum)</td>
<td>1.3:1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PRIME POWER
100 to 260 VAC
47 to 63 Hz, Single Phase
750 VA Max. — XTD-150Ka
800 VA Max. — XTD-175Ka, XTD-250KaL
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 (self cooked)

INTERFACE

<table>
<thead>
<tr>
<th>Type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL CONTROL</td>
<td>Prime Power ON/OFF</td>
</tr>
<tr>
<td></td>
<td>Power Supply ON/OFF</td>
</tr>
<tr>
<td>LOCAL STATUS</td>
<td>Tri-Color LED:</td>
</tr>
<tr>
<td></td>
<td>Fault: Red</td>
</tr>
<tr>
<td></td>
<td>HV ON: Green</td>
</tr>
<tr>
<td>REMOTE CONTROL</td>
<td>HV ON/OFF</td>
</tr>
<tr>
<td></td>
<td>RF Attenuation</td>
</tr>
<tr>
<td></td>
<td>Heater Standby</td>
</tr>
<tr>
<td>REMOTE STATUS</td>
<td>HV ON</td>
</tr>
<tr>
<td></td>
<td>RF Output Power</td>
</tr>
<tr>
<td></td>
<td>Reflected Power</td>
</tr>
<tr>
<td></td>
<td>Filament Time Delay</td>
</tr>
<tr>
<td></td>
<td>Helix Voltage</td>
</tr>
<tr>
<td>DISCRETE STATUS</td>
<td>Summary Fault (2X Form C Dry Contact Closure)</td>
</tr>
<tr>
<td>RF MONITOR PORT</td>
<td>-43 dB Coupling Value (approx.)</td>
</tr>
</tbody>
</table>

OPTIONS
- Linearizer
- Harmonic Filter (0.3 dB output power reduction)
- WR-34 Waveguide Output or Input
- Alternate Frequency Coverage
- Remote External Controller
- 1:1, 1:2, 1:N Redundancy
- Phase Combined

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Note: Technical specifications are subject to change without notice. Please contact Xicom Technology before using this information for system design.