



XTRD-400KD Ku and DBS-Band Rack Mount High Power Amplifier



- **Dual Band —
400 Watts Ku-Band
400 Watts DBS-Band**
- **Compact 7 Inch Package**
- **Digital Display &
Control Interface**
- **High Efficiency**

The XTRD-400KD is a highly efficient rack mountable traveling wave tube amplifier (TWTA) designed to cover both Ku-Band and DBS-Band in fixed and mobile uplink applications.

The units include RF gain control, a solid state pre-amplifier, RF filters, cooling and monitoring and control (M&C) systems.

Rack space is conserved because the amplifiers occupy only 4 rack units (7 Inches) of a standard 19-inch rack cabinet. Nominal weight is 75 pounds.

The units feature a menu driven front panel display and RS-232/422/485 serial port interfaces for complete computer control. RF, traveling wave tube, and default parameters are easily monitored on the four-line front panel display.

Gain control is provided via the front panel or through the serial interface.

The XTRD-450KD incorporates high efficiency, multistage collector TWT. Reliability is enhanced because the prime power consumption and internal operating temperatures are reduced for both the linear and saturated modes of operation.

Power factor correction circuitry is also included which minimizes line current distortion and reduces the required Volt-Amps input.

The automatic features of the high frequency resonant conversion power supply include quick recovery from prime power outages and multiple helix fault resets (three fault cycles.)

Depending upon user requirements, these amplifiers can be configured for either single thread or redundant system operation.

PERFORMANCE SPECIFICATIONS

| Parameter | XTRD-400KD |
|----------------------------------|--|
| FREQUENCY RANGE | Ku-Band 13.75 - 14.5 GHz DBS-Band 17.30 - 18.4 GHz |
| OUTPUT POWER | |
| Traveling Wave Tube | 400W |
| Rated Power @ Amplifier Flange | |
| Ku-Band (13.75 - 14.5 GHz) | 350W |
| DBS-Band (17.30 - 18.4 GHz) | 350W |
| GAIN | |
| Large Signal, minimum | 65 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 | 4.0 dB |
| Slope, maximum | ±0.04 dB/MHz |
| Stability, 24 Hr maximum | ±0.25 dBc |
| Stability, Temperature | ±1.0 dB maximum over temperature range at any frequency |
| INTERMODULATION, 4 dB Total B.O. | |
| 13.75 - 14.5 GHz Band | -16 dBc with two equal carriers maximum |
| 17.30 - 18.4 GHz Band | -16 dBc with two equal carriers maximum |
| HARMONIC OUTPUT, maximum | -60 dBc |
| AM/PM CONVERSION, maximum | 3.0°/dB @ 6 dB below rated power |
| NOISE POWER, maximum | |
| Transmit Band | -70 dBw/4 kHz |
| Receive Band | -150 dBw/4 kHz 10.95 to 11.75 GHz) |
| GROUP DELAY, maximum | |
| Bandwidth | Any 80 MHz |
| Linear | 0.01 nsec/MHz |
| Parabolic | 0.005 nS/MHz ² |
| Ripple | 0.5 nsec/Pk-Pk |
| RESIDUAL AM NOISE, maximum | -50 dBc to 10 kHz -20 (1.5 + log f) dBc 10 to 500 kHz -85 dBc above 500 kHz |
| PHASE NOISE, maximum | 10 dB below IESS phase noise profile AC fundamental -50 dBc Sum of all spurs -47 dBc |
| VSWR | |
| Input, maximum | 1.3:1 |
| Output, maximum | 2.5:1 |

PRIME POWER

180-260 VAC
47 to 63 Hz, single phase
Maximum 2450 VA
0.95 Minimum Prime Power Factor

OPTIONS

Extended Frequency Coverage
1:1, 1:2, 1:N Redundancy



ENVIRONMENT

| | |
|--------------------------------|-------------------------------|
| NONOPERATING TEMPERATURE RANGE | -50° C to +70° C |
| OPERATING TEMPERATURE RANGE | -10° C to +50° C |
| HUMIDITY | Up to 95% Condensing |
| ALTITUDE | 10,000 feet MSL maximum |
| SHOCK AND VIBRATION | Normal Transportation |
| COOLING | Forced Air: 200 CFM (typical) |

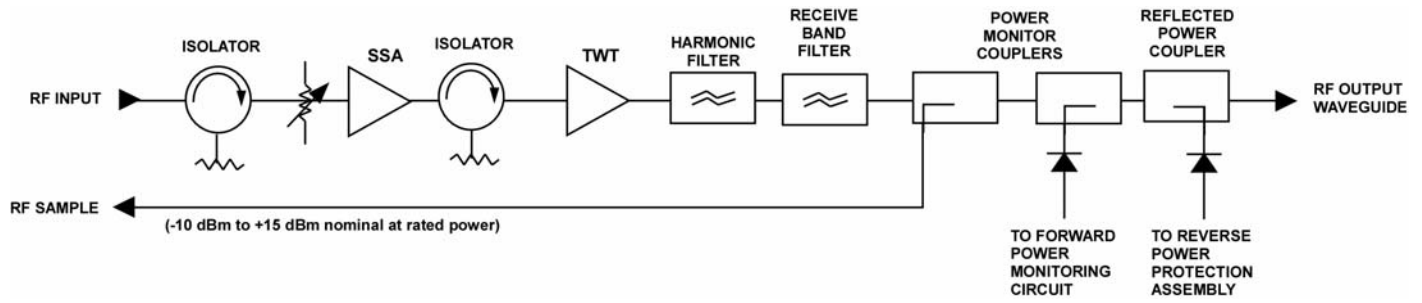
INTERFACE

| | TYPE | FUNCTION | | |
|-------------------------|---------------------------------|---------------------------------|-------------------------|-----------------------|
| CONTROLS | Local | Local/Remote | AC Power ON/OFF | |
| | Local and Remote | Gain | High Voltage ON/OFF | Fault Reset |
| | | Min/Max Power Alarm/Fault | Audio Alarm ON/OFF | Lamp Test |
| | | Reflected Power Alarm/Fault | Units (Watts, dBm, dBW) | Heater Standby ON/OFF |
| STATUS | Front Panel LEDs | Standby | Heater Standby | High Voltage |
| | | Local | Remote | Power |
| | | Summary Fault | Heater Time Out (FTD) | |
| | Front Panel Digital Display | Power Out | Attenuator Setting | Faults: |
| | | Reflected Power | Units Selection | High VSWR |
| | | TWT Temperature | Standby Hours | High Voltage |
| | | Heater Hours | Beam Hours | Helix Current |
| | | Helix Current | Heater Voltage | TWT Temperature |
| | Dry Form-C Relay Contacts (Two) | Summary Fault | | |
| COMPUTER | Hardware Interface | 2 ports: RS-232 & RS-422/RS-485 | | |
| SERIAL PORT | Xicom Command Set | ASCII Commands | | |
| RF SAMPLE PORT COUPLING | | -43 dB Nominal | | |

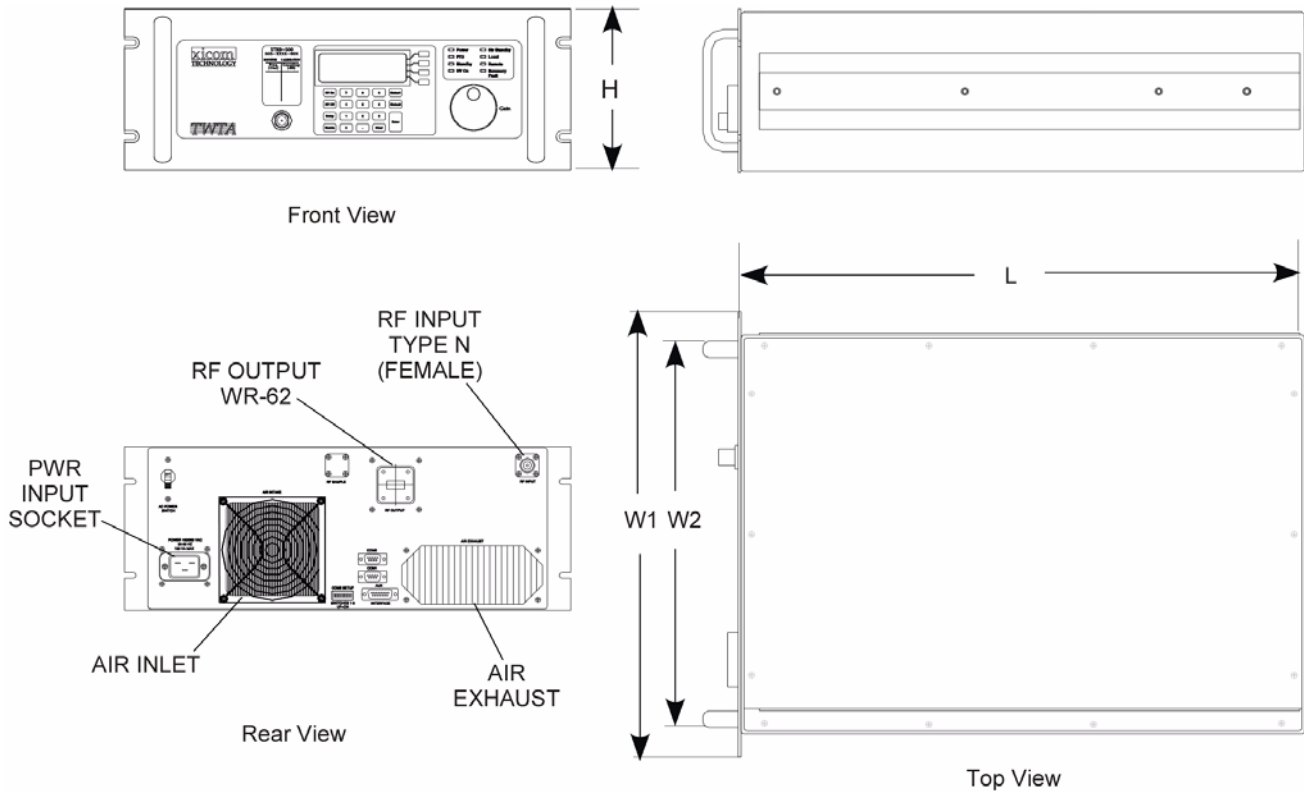
XTRD-400KD High Power Amplifiers



Block Diagram



Outline Drawing



Nominal Weight = 75 lb (34.02 kg)

| DIMENSIONS | | |
|------------|--------|-------------|
| | INCHES | CENTIMETERS |
| L | 24.00 | 60.96 |
| H | 6.97 | 17.70 |
| W1 | 19.00 | 48.26 |
| W2 | 17.00 | 43.18 |