# 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

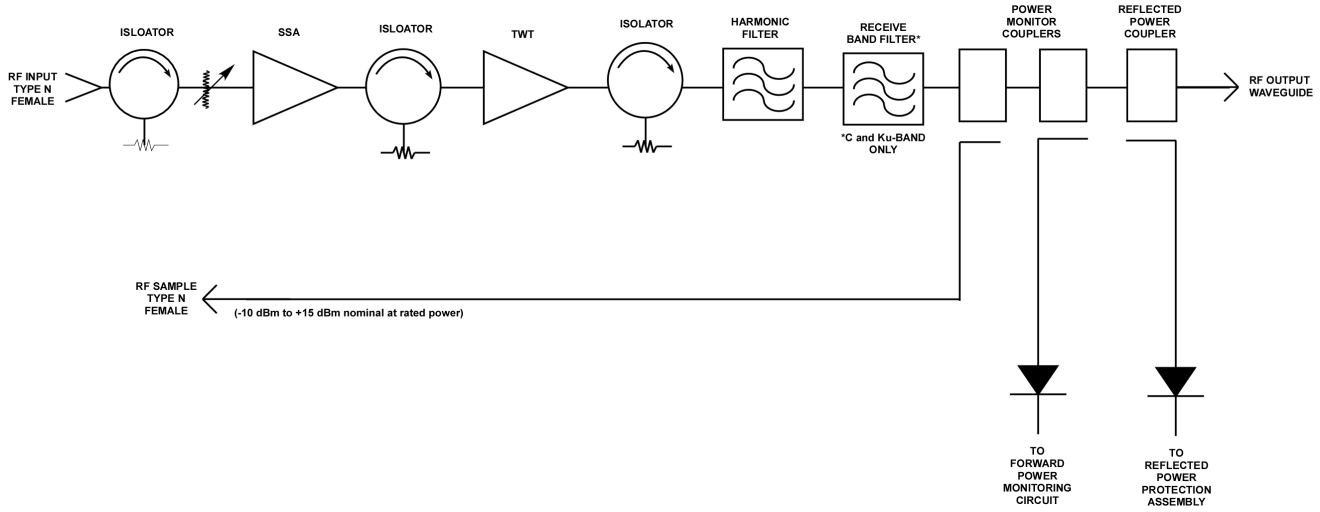
A complete serial M&C system is built into the unit. A remote external controller is available to operate the HPA from a user selected location.

COMTECH XICOM TECHNOLOGY™

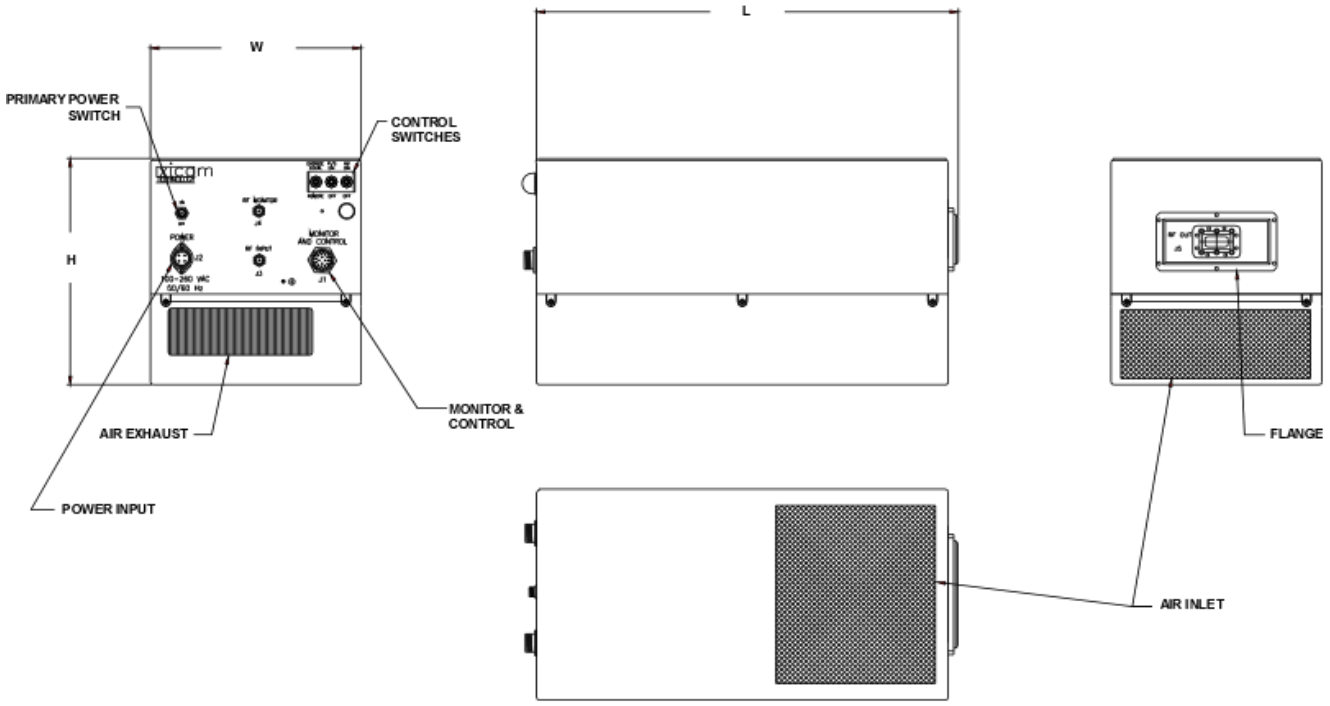
# PERFORMANCE SPECIFICATION

| 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<br>(5.85 to 6.65 GHz)<br>(5.85 to 6.725 GHz)<br>(5.85 to 7.025 GHz) | 7.90 to 8.40 GHz | 13.75 to 14.50 GHz<br>(12.75 to 13.25 GHz)<br>(12.75 to 14.50 GHz)<br>(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<br>(-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<br>3.7 to 4.2 GHz | -70 dBW/4 kHz<br>7.25 to 7.75 GHz | -150 dBW/4 kHz<br>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<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 -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 OR | - CPR 112G 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

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 (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 Coverange
- 1:1, 1:2, 1:N Redundancy
- Variable Phase Combined
- Integrated Linearizer
- Block Upconverter
- Ethernet





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