# 250 Watt V-Band Antenna Mount High Power Amplifier


## FEATURES

- *250 Watts Peak TWT Power*
- *-40°C to +60°C Operation*
- *Complete RS-422/485, Ethernet Interface*
- *Designed for Uplink Applications*

The **XTD-250QV** is a compact self-contained antenna mount power amplifier designed for low cost installation and long life.

Cooling and monitor & control systems are all self-contained within the amplifier.

TWTs are available delivering 250 Watts peak power across the 47.2 to 51.4 GHz band. A predistortion linearizer is also included to optimize linear power at the HPA flange.

The **XTD-250QV** provides several methods of tube protection including output power monitoring.

The amplifier is available with multiple options including redundant configurations, preamplifiers with fixed or variable gain.

A remote external controller is available to operate the HPA from a user selected location.

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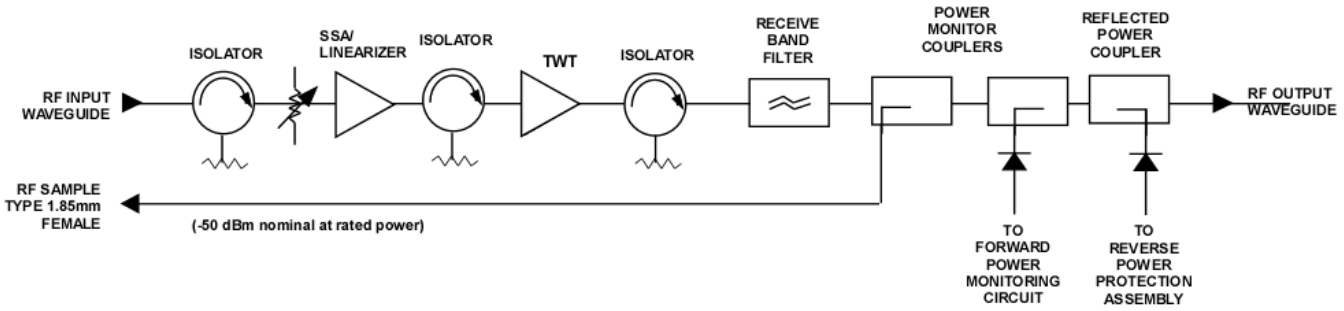
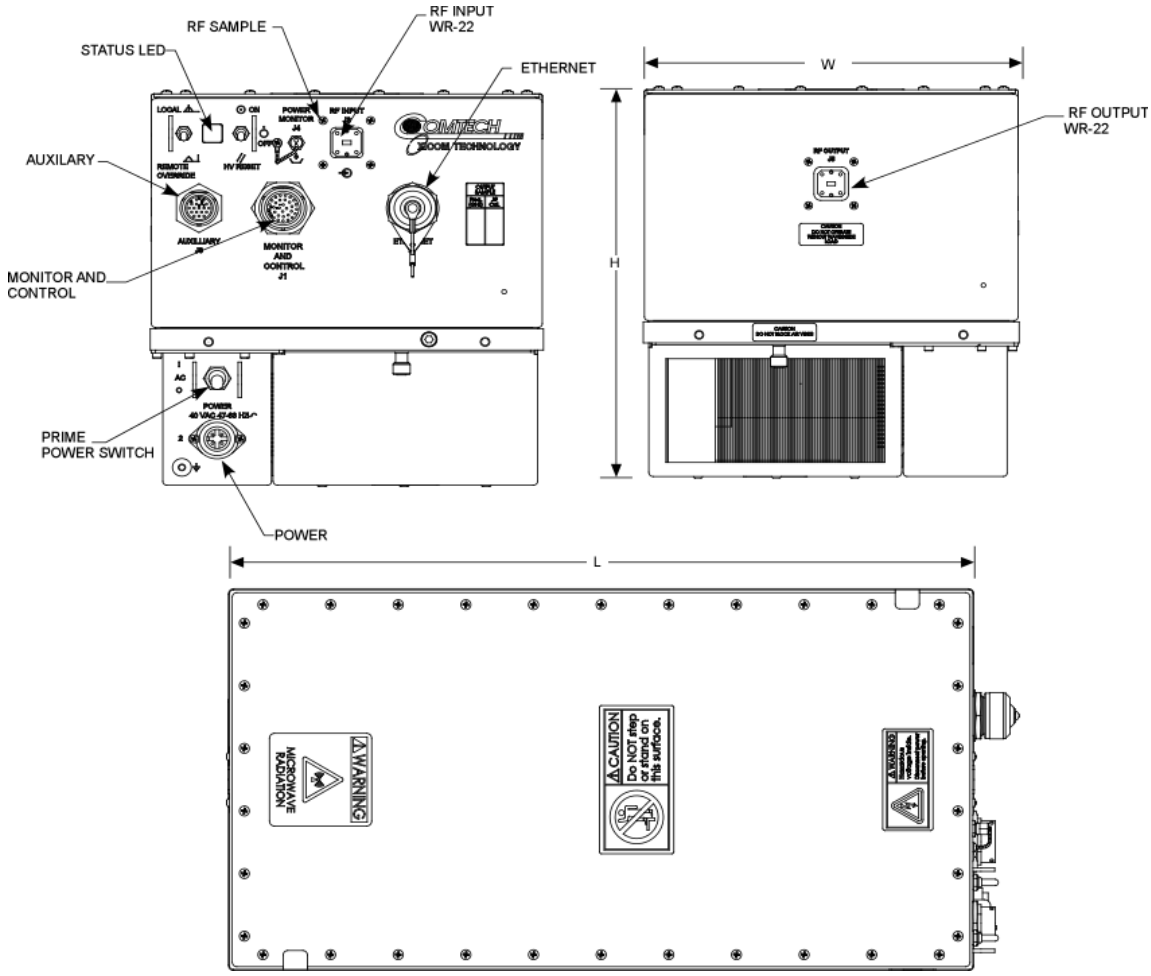
# PERFORMANCE SPECIFICATION

| Parameters | XTD-250QV |
|---|---|
| FREQUENCY RANGE<br>(extended frequency coverage available) | 47.2 to 51.4 GHz |
| OUTPUT POWER | |
| Traveling Wave Tube, Peak $P_O$ | 250 W (54.0 dBm) |
| $P_{Linear}$ @ Amplifier Flange (minimum) | 80 W (49.0 dBm) |
| GAIN | |
| Large Signal (minimum) | 60 dB |
| Small Signal (minimum) | 60 dB |
| Attenuator Range (continuous) | 20 dB |
| Maximum SSG Variation Over | |
| Any Narrow Band | 0.80 dB per 60 MHz |
| Any Full Band | 3.0 dB |
| Slope (maximum) | ± 0.02 dB/MHz |
| Stability, 24 hr. (maximum) | ± 0.25 dB |
| LSG Stability Over Temperature Range | ± 1.0 dB at any frequency |
| NOISE POWER RATIO | 19 dBc @ $P_{LINEAR}$ |
| AM/PM CONVERSION (maximum) | 2°/dB at linear power |
| NOISE POWER (maximum) | |
| Transmit Band | -70 dBW/4 kHz |
| Receive Band (37.5 to 42.5 GHz) | -150 dBW/4Hz |
| GROUP DELAY (maximum) | |
| Bandwidth | Any 60 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) | 10 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 |
| L | 20.0 | 50.8 |
| H | 11.0 | 27.94 |
| W | 10.31 | 26.19 |
| Typical Weight = 58 lbs. (26.31 kg) | | |

## PRIME POWER

100 to 260 VAC, Single Phase
60 Hz, Single Phase
1200 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) |
| | RF Attenuation (w/preamp) | Fault Reset |
| | Heater Standby | |
| REMOTE STATUS | HV ON | Heater/Beam Hours |
| | RF Output Power | Fault Identification |
| | Reflected Power | TWT Temperature |
| | Filament Time Delay | Helix Current |
| | Helix Voltage | |
| FORM C DRY CONTACT CLOSURE | Summary Fault | |
| RF MONITOR PORT | -37 dB Coupling Value (approx.) | |
| INTERFACE | Serial 232/422/485<br>Ethernet | |

## OPTIONS

- Remote External Control
- 1:1, 1:2, 1:N Redundancy
- Power Combined
- WR-19 Waveguide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