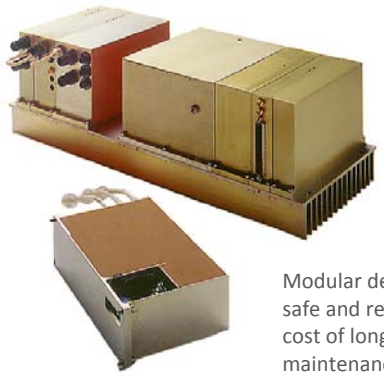
# Satellite Communications
## Model 400C/Ku TWT Amplifier


### Built To Last
ETM's dual C-band and Ku-band satellite uplink amplifiers, packaged in ruggedized three rack-unit enclosures, have been designed specifically for the demands of fly-away, truck and other mobile applications. These amplifiers combine the latest technology, over three decades of ETM's TWT experience, and design features based on in-the-field operation.

### Simple, Low-Cost Maintenance
ETM's modular power supply design simplifies maintenance and reduces downtime. Easy-to-access modules considerably improve MTTR and amplifier availability. Each high voltage module is completely encapsulated, safe, and isolated from other electronics.



Modular design is safe and reduces cost of long-term maintenance.

### Ease of Operation
Detailed status and monitoring information is provided by a 20-character by 4-line fluorescent display and straightforward four-button control. Complete monitoring includes forward and reverse power, TWT voltages and currents, and operating temperatures.

### In-The-Field Reliability
During ETM's rigorous testing program, every amplifier is subjected to an environmental burn-in that includes temperature cycling, multiple cold starts, and shock and vibration testing as required.

### Long Term Value
ETM stands behind our amplifiers with a full two-year warranty. After the warranty period, ETM's easy-to-service and low cost modular power supply design reduces service time and helps keep your maintenance costs low.

### Service, Service, Service
Every ETM product is backed by worldwide service provided 24 hours a day, 7 days a week. (800) 883-4ETM or outside North America: (510) 797-1100.

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### ELECTRICAL

| | |
|---|---|
| Frequency: | 5.850 – 6.425 GHz, C-Band<br>14.0 – 14.5 GHz, Ku-Band |
| Output Power at Flange: | 325 watts min. |
| Amplifier Gain: | 70 dB min. at rated power, C-Band<br>75 dB min. at rated power, Ku-Band |
| Small Signal Gain Variation: | 4 dB max. (across each operating band) |
| Small Signal Gain Slope: | ±0.03 dB / MHz max. |
| Gain Stability: | ± 0.25 dB / 24-hours (after 30 min warm-up, constant drive and temp) |
| Gain Adjust Range: | 0-30 dB (continuously adjustable) |
| Intermodulation: | -24 dBc max. at 4.0 dB backoff, C-Band<br>-24 dBc max. at 7.3 dB backoff, Ku-Band<br>(from total o/p power w/ 2 equal carriers) |
| Spectral Regrowth: | Meets -26 dBc at 200 watts, C-Band<br>Meets -26 dBc at 117 watts, Ku-Band<br>(Single, QPSK Digital Signal) |
| AM to PM Conversion: | 6° / dB at rated power |
| Harmonic Output: | -60 dBc max. (with optional ETM absorptive harmonic filters) |
| Residual AM: | |
| Below 4 kHz: | -50 dBc |
| 4 to 500 kHz: | -20 [1.15+LogF in kHz] dBc max. |
| Above 500 kHz: | -85 dBc |
| Phase Noise: | Meets Limits Part 1 & 2 of IESS-308 |
| Noise and Spurious: | -65 dBW / 4 kHz max. |
| Group Delay (in any 40 MHz band): | |
| Linear: | 0.05 ns / MHz |
| Parabolic: | 0.01 ns / MHz (squared) |
| Ripple: | 0.50 ns / MHz (pk-pk) |
| VSWR: | |
| Input: | 1.30:1 |
| Output: | 2.50:1 |
| Load: | 1.50:1 (spec. compliance)<br>2.00:1 (continuous operation) |
| Primary Power: | |
| Voltage: | 99-255 VAC, single-phase |
| Frequency: | 50/60 Hz |
| Consumption: | 1.8 kVA |

### MECHANICAL

| | |
|---|---|
| Dimensions: | 19” W x 5.25” H x 24” L |
| Weight: | 68 Pounds |
| RF Connectors: | |
| Input: | Type-N (f), rear panel |
| Output: | WRD-580, rear panel |
| Sample Port: | Type-N (f), rear panel |
| Cooling: | Built-in forced air w/ integral fan |

### ENVIRONMENTAL

| | |
|---|---|
| Altitude: | Up to 10,000 ft<br>(derate 2°C / 1,000 ft above 3,000 ft) |
| Temperature: | |
| Operating: | 0° to 50°C |
| Storage: | -40° to 70°C |
| Humidity: | |
| Operating: | Up to 95% non-condensing |
| Non Operating: | Up to 100% non-condensing |
| Shock and Vibration: | Normal Transportation |

### MONITOR & CONTROL

| | |
|---|---|
| Interface: | RS-422/485 |
| Metering: | Vacuum Fluorescent Display<br>4-line, 20-character |
| Monitored Parameters: | Fwd Power (dBm, Watts)<br>Rev Power (dBm, Watts, % fwd power)<br>Cathode Voltage<br>Helix Current<br>Filament Voltage and Current<br>Collector Voltage<br>TWT Baseplate and Cabinet Temp |
| User-Settable Warnings: | Over / Under Fwd Power<br>Over Rev Power<br>Over Helix Current<br>Over TWT Baseplate and Cabinet Temp |

Note: Specifications subject to change without notice.

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