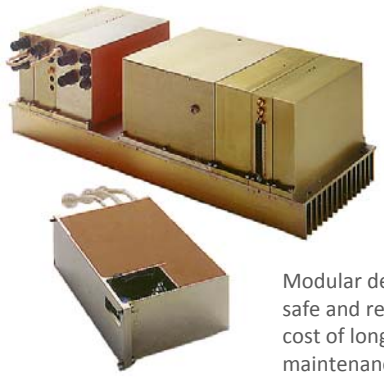
Satellite Communications
Model 400C/Ku-ODU TWTA

Built To Last
ETM's dual C-band and Ku-band outdoor unit (ODU) satellite uplink amplifiers, housed in compact ruggedized enclosures, have been designed specifically for the demands of outdoor ground station and antenna mount 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
ETM's remote control software, included free-of-charge, provides a graphical interface for operating over the RS-485 port. The GUI display mimics the easy-to-use front panel of ETM's rack-mount products. Optional half-rack, 3U remote control units are also available.

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 13.75 – 14.50 GHz, Ku-Band
Output Power at Flange:	325 watts min.
Amplifier Gain:	70 dB min. at rated power, C-Band 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 (over any 10 MHz)
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 -24 dBc max. at 7.3 dB backoff, Ku-Band (from total o/p power w/ 2 equal carriers)
Spectral Regrowth:	Meets -26 dBc at 200 watts, C-Band Meets -26 dBc at 117 watts, Ku-Band (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) 2.00:1 (continuous operation)
Primary Power:	
Voltage:	99-255 VAC, single-phase
Frequency:	50/60 Hz
Consumption:	1.8 kVA

MECHANICAL

Dimensions:	10.25” W x 12.75” H x 23” L
Weight:	65 Pounds
RF Connectors:	
Input:	Type-N (f), front panel
Output:	WR-75, front panel
Sample Port:	Type-N (f), front panel
Cooling:	Built-in forced air w/ integral fan

ENVIRONMENTAL

Altitude:	Up to 10,000 ft (derate 2°C / 1,000 ft above 3,000 ft)
Temperature:	
Operating:	-40° to 60°C
Storage:	-50° to 70°C
Humidity:	Up to 100% condensing
Shock and Vibration:	MIL-STD-810F per 514.5C-3

This HPA is designed for outdoor applications and will withstand rain, snow, blowing sand and dust.

MONITOR & CONTROL

Interface:	RS-422/485
Monitored Parameters:	Fwd Power (dBm, Watts) Rev Power (dBm, Watts, % fwd power) Cathode Voltage Helix Current Filament Voltage and Current Collector Voltage TWT Baseplate and Cabinet Temp

Note: Specifications subject to change without notice.

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