



# MT2300

ANTENNA MOUNT TRAVELING WAVE TUBE  
LOW POWER AMPLIFIER

THE RUGGED AND ECONOMICAL SOLUTION  
FOR UPLINK APPLICATIONS



Ku-BAND: 125W  
200W  
Ka-BAND: 100W PK  
150W PK  
180W PK

### AVAILABLE SYSTEM OPTIONS:

- MT2311 1+1 Redundant System
- Other Configurations Available Upon Request

### AVAILABLE AMPLIFIER OPTIONS:

- L-Band Block Upconverter
- Switchover Control
- Internal Linearizer
- Mounting Configurations
- Remote Panel
- Hand-Held Local Controller
- Ethernet Control

## FEATURES:

**Compact Weather-Resistant Package**

**Extensive Diagnostic Capability**

**Designed to Meet MIL-188-164A**

**Software Communications Configuration for Both Remote and Computer Interfaces**

**Continuous Attenuator Adjustment shown in dB**

**Auto Power Control and Status**

**Rugged Construction for Extreme Environments**

**MTBF: 81,000 Hours (Tube)  
193,686 Hours (Power Supply)**

ISO 9001



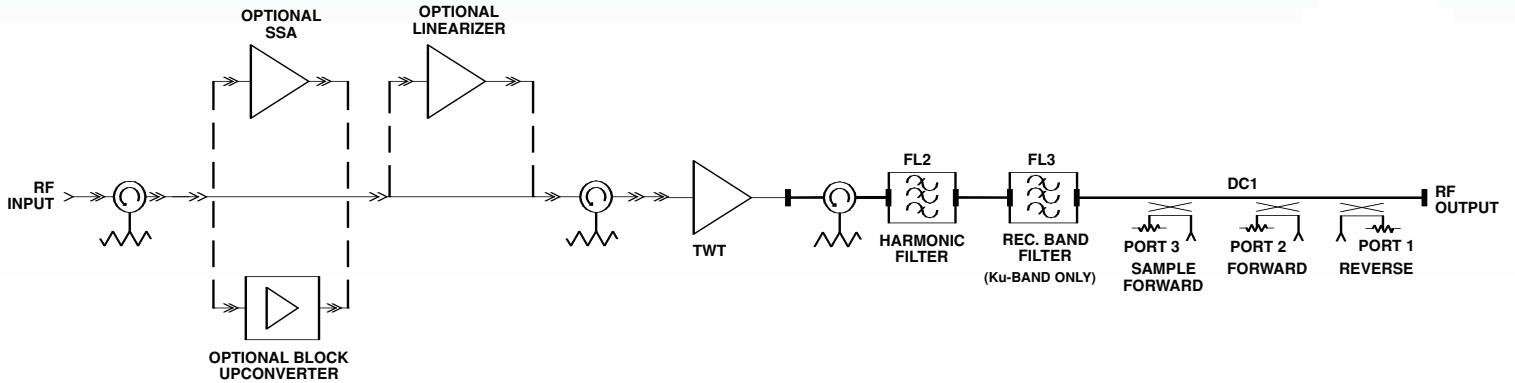
# MT2300

## ANTENNA MOUNT LOW POWER TRAVELING WAVE TUBE AMPLIFIER

ELECTRICAL SPECIFICATIONS	Ku-BAND		Ka-BAND					
	125 W	200 W	100 W PK	150 W PK	180 W PK			
Frequency Range (F <sub>0</sub> ) (Standard):	13.75 - 14.5 GHz		27.5 - 30.0 GHz or 30.0 - 31.0 GHz					
Output Power (min.):								
Tube Output Flange:	123 W (50.9 dBm)	200 W (53.0 dBm)	40 W CW/100 W Peak	70 W CW/150 W Peak	70 W CW/180 W Peak			
HPA Rated Output:	109 W (50.4 dBm)	178 W (52.5 dBm)	33 W (45.2 dBm)	60 W (47.8 dBm)	60 W (47.8 dBm)			
Gain:								
Large Signal (min.):	45 dB	35 dB	35 dB	40 dB	37 dB			
Small Signal Gain (SSG) (min.):	50 dB	40 dB	45 dB	45 dB	42 dB			
SSG with optional SSA (min.):	76 dB	66 dB	60 dB	70 dB	65 dB			
Attenuation Range with optional SSA:	26 dB	26 dB	26 dB	26 dB	26 dB			
Maximum SSG Variation Over:								
Narrow Band:			1.0 dB/80 MHz					
Full Band:			2.5 dB/500 MHz					
Slope, Max.:			±0.04 dB/MHz					
Gain Stability:			±0.25 dB					
Stability, -40 to +50°C:			±1.0 dB Typical					
Stability, Any 10° Max.:			±0.75 dB					
Input VSWR:			1.30:1 max. with respect to 50 ohms					
Input VSWR (with BUC):			1.35:1 max. with respect to 50 ohms					
Output VSWR:	1.25:1 max.		1.30:1 max.					
Load VSWR:			2.0:1 max. without damage, continuous					
AM/PM Conversion:								
6 dB Below Rated Power:			2.5°/dB					
Residual AM Noise, Max.:								
To 10 kHz:			-50 dBc					
10 - 500 kHz:			-20 (1.5 + Log <sub>f</sub> kHz) dBc					
Above 500 kHz:			-85 dBc					
Harmonic Output, Max.:	-60 dBc		-40 dBc (-60 dBc w/optional filter)					
Noise & Spurious, Max:								
Receive Band (Standard):	-150 dBW/4 kHz, 10.70 - 12.75 GHz		-130 dBW/4 kHz, <21.2 GHz (-150dBw/4kHz w/optional Rx filter)					
Transmit Band (F <sub>0</sub> ):	-65 dBW/4 kHz, 12.75-18.50 GHz		-65 dBW/4 kHz, 27.5 - 31.0 GHz					
Phase Noise:			10 dB below IESS Phase Noise Profile (4 dB below with BUC)					
AC Fundamental:			-50 dBc					
Sum Of All Spurs:			-47 dBc (-41 dB with BUC)					
Intermodulation	Total P <sub>0</sub>	IM Product	Total P <sub>0</sub>	IM Product	Total P <sub>0</sub>	IM Product	Total P <sub>0</sub>	IM Product
(for 2 equal carriers relative to single carrier rated output):	-4 dB	-18 dB	Rated	-18 dB	Rated	-16 dB	Rated	-18 dB
Typical Linearizer Option Performance:	-7 dB	-24 dB	Rated -3 dB	-24 dB	Rated -2.4 dB	-22 dB	Rated -1.5 dB	-22 dB
Group Delay, Max.:			Any 80 MHz Bandwidth					
Linear:			0.01 ns/MHz					
Parabolic:			0.005 ns/MHz <sup>2</sup>					
Ripple:			0.500 ns p-p					
Prime Power:								
Voltage:			100 - 264 VAC, 1-phase, 47 - 63 Hz, 2 Wire					
Power Consumption:	900 VA nom.	1100 VA nom.				550 VA nom.		
Power Factor:			0.95 min.					
In-Rush:			28A max.					
Input Transients:			EN61000-4-4, 4-5, 4-11 (Surge, Fast Transients, Line Dropout)					

Note: Performance information is subject to change without notification. Contact MCL for the latest specifications (TN2300-1).

## RF BLOCK DIAGRAM



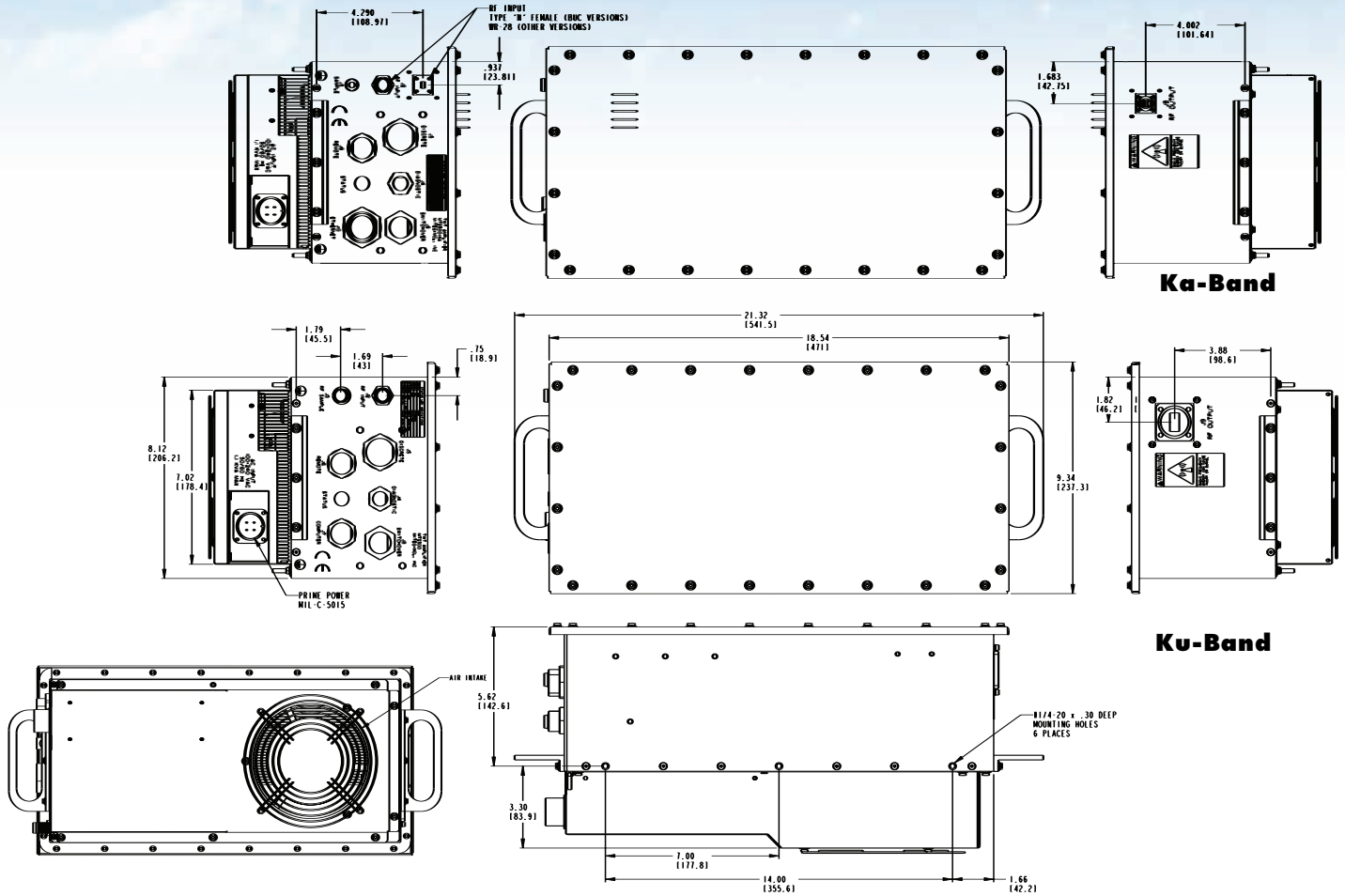
## CONTROL AND STATUS CAPABILITIES

TYPE	FUNCTION	
Controls	Power ON RF Inhibit* Remote/Computer Units Select Transmit/Standby	Reset Auto Power* Attenuation* Clear Event Log Time & Date
Displays (Remote & Computer Only)	RF Inhibit* RF Forward Power Proportional Filament Delay	Tube Drive Power* RF Reflected Power Helix Current Tube Temperature
Adjustable Parameters	Auto Power* RF Reflected Power Alarm RF Low Alarm	Tube Overdrive Alarm* Tube Temperature Alarm RF High Alarm Attenuation*
Alarms	RF High RF Reflected Power Tube Temperature	RF Low Tube Overdrive* Summary
Faults	Summary RF Reflected Power Helix Run Current	Tube Overdrive* WG Pressure Tube Temperature User Interlock

\* Function available with optional SSA

# MT2300

## OUTLINE DRAWINGS



### ENVIRONMENTAL SPECIFICATIONS

#### Operating Temperature:

Ku-Band: -40°C to +50°C  
Ka-Band: -40°C to +60°C

#### Non-Operating Temperature:

-40°C to +70°C

#### Relative Humidity:

95%, condensing

#### Operating Altitude:

10,000 ft. above sea level (3,048 m)  
with standard adiabatic derating

#### Non-Operating Altitude:

50,000 ft. above sea level (15,240 m)

#### Vibration:

MIL-STD-810E, Method 514.4

#### Shock:

10g, 11ms half sine

### MECHANICAL SPECIFICATIONS

#### RF Connectors:

Input: Type N female/Ka-WR28  
Output: (Waveguide Flange)  
Ku-Band: WR75G  
Ka-Band: WR28G

#### Installed Weight:

Depending on Options  
125W Ku- 31 lbs./14 kg  
200W Ku- 33 lbs./15 kg  
All Ka- 33 lbs./15kg

#### Cooling:

Forced air, 2.0" clearance required

#### Acoustic Noise:

<68 dBA max. at 1 meter

### PHYSICAL SPECIFICATIONS

#### Dimensions:

8.9" H 226 mm  
8.12" W 206 mm  
17.3" L 440 mm

#### Air Flow:

72 CFM

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