PEOPLE AND PROCESS EQUALS CUSTOMER SATISFACTION

# MT2300

## ANTENNA MOUNT LOW POWER TRAVELING WAVE TUBE AMPLIFIER

### THE RUGGED AND ECONOMICAL SOLUTION FOR UPLINK APPLICATIONS

Ku-BAND: 125W
200W

## 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

## FEATURES:

**Compact Weather-Resistant Package**

**Event Log**

**Software Communications Configuration For Remote And Computer Interfaces**

**Continuous Attenuator Adjustment in dB**

**Auto Power Control And Status**

**Rugged Construction For Extreme Environments**

ISO 9001

UL REGISTERED FIRM NO. A3180

CE

CCC RUSSIA

MCL INC A MITEQ COMPANY

501 S. Woodcreek Drive, Bolingbrook, IL U.S.A., 60440-4999 • 630-759-9500 FAX: 630-759-5018

# MT2300

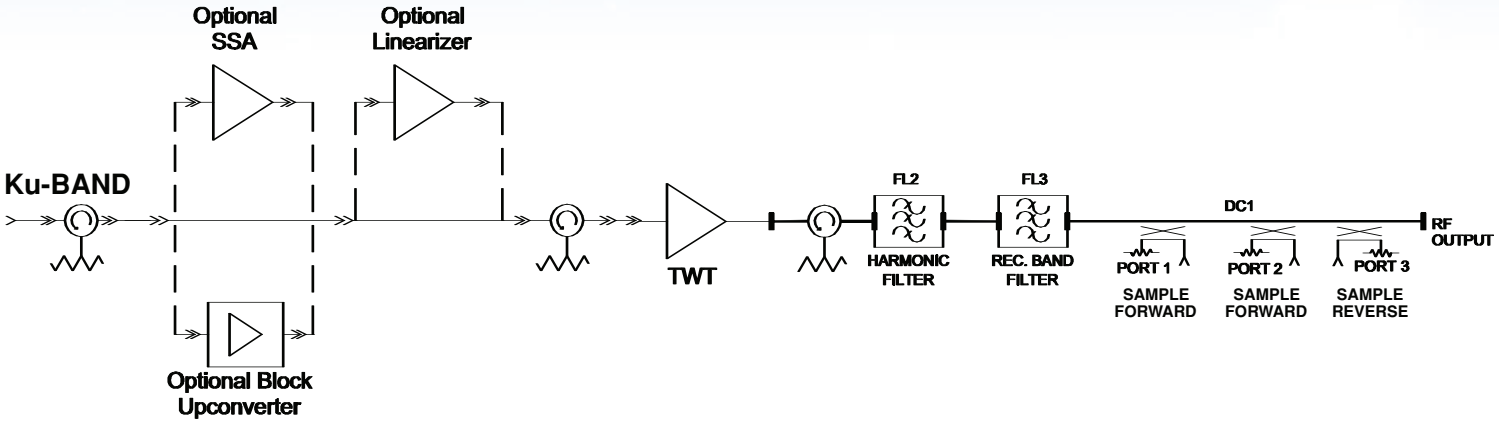
## ANTENNA MOUNT TRAVELING WAVE TUBE LOW POWER AMPLIFIER

| ELECTRICAL SPECIFICATIONS | Ku-BAND 125 W | 200 W |
|---|---|---|
| Frequency Range ($F_0$) (Standard): | 13.75 - 14.5 GHz | |
| Output Power (min.): | | |
| Tube Output Flange: | 123 W (50.9 dBm) | 200 W (53.0 dBm)* |
| HPA Rated Output: | 109 W (50.4 dBm) | 178 W (52.5 dBm)* |
| Gain: | | |
| Large Signal (min.): | 45 dB | 35* dB |
| Small Signal Gain (SSG) (min.): | 50 dB | 40* dB |
| SSG with optional SSA (min.): | 76 dB | 66* dB |
| Attenuation Range With Optional SSA: | 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, Any Freq. -40 to 50° C: | ±1.0 dB Typical | |
| Stability, Any Freq. ±° Max.: | ±0.75 dB | |
| Input VSWR: | 1.20:1 max. with respect to 50 ohms | |
| Output VSWR: | 1.25:1 max. with respect to 50 ohms | |
| Load VSWR: | 2.0:1 max. without damage, continuous | |
| AM/PM Conversion: | | |
| At Rated Power: | 6.0°/dB | |
| 6 dB Below Rated Power: | 2.5°/dB | |
| Residual AM Noise, Max.: | | |
| To 10 kHz: | -50 dBc | |
| 10 - 500 kHz: | -20 (1.5 + Log$f$ kHz) dBc | |
| Above 500 kHz: | -85 dBc | |
| Harmonic Output, Max.: | -60 dBc | |
| Noise & Spurious, Max: | | |
| Receive Band (Standard): | -150 dBW/4 kHz, 10.70 - 12.75 GHz | |
| Transmit Band ($F_0$): | -65 dBW/4 kHz, 12.75-18.50 GHz | |
| Phase Noise: | 10 dB below IESS Phase Noise Profile | |
| AC Fundamental: | -50 dBc | |
| Sum Of All Except AC Fundamental: | -47 dBc | |
| Intermodulation | Total $P_0$ | IM Product |
| (for 2 equal carriers relative | -4 dB | -18 dBc |
| to single carrier rated output): | -7 dB | -24 dBc |
| Typical Linearizer Option Performance: | -4 dB | -27 dBc |
| Group Delay, Max.: | Any 80 MHz Bandwith | |
| Linear: | 0.01 ns/MHz | |
| Parabolic: | 0.005 ns/MHz$^2$ | |
| Ripple: | 0.500 ns p-p | |
| Prime Power: | | |
| Voltage: | 90 - 264 VAC, 1-phase, 47 - 63 Hz | |
| Power Consumption: | 700 VA typ. | 900 VA typ. |
| 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.

* Preliminary

## RF BLOCK DIAGRAM



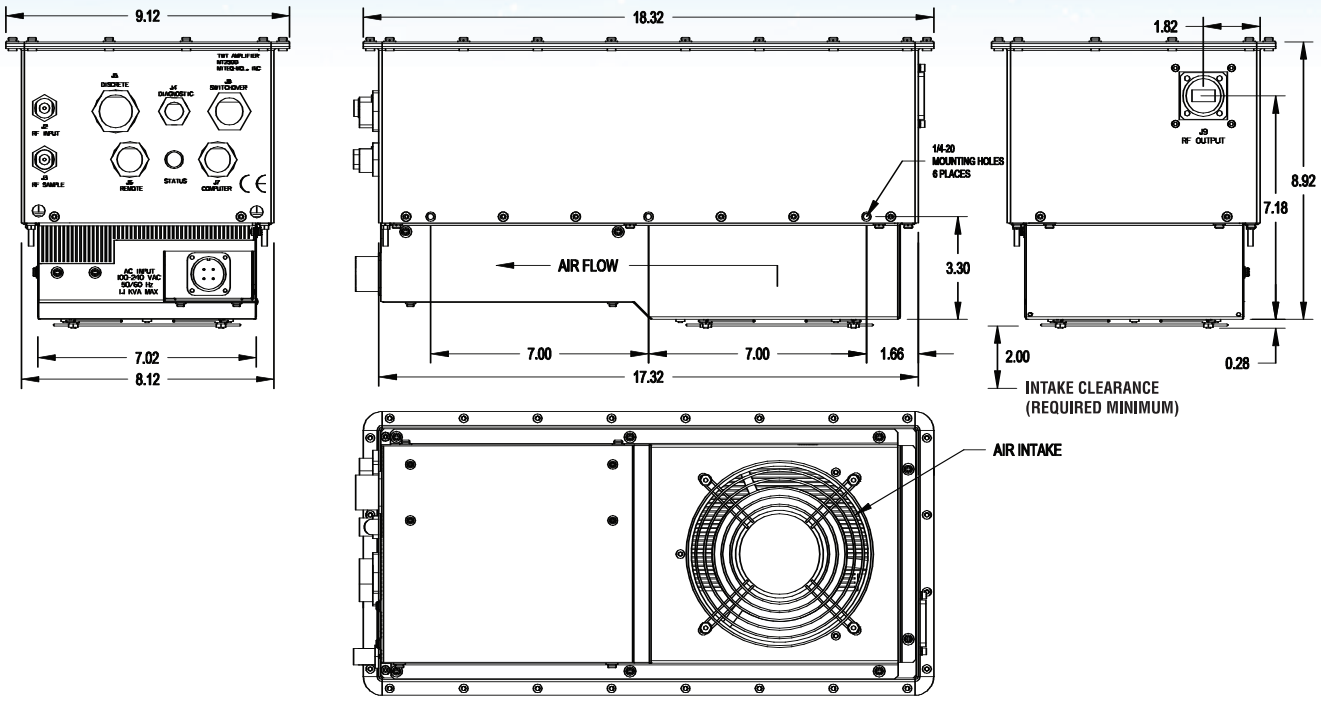

## CONTROL AND STATUS CAPABILITIES

| TYPE | FUNCTION | |
|---|---|---|
| Controls | Power ON<br>RF Inhibit<br>Remote/Computer<br>Units Select<br>Transmit/Standby | Reset<br>Auto Power*<br>Attenuation*<br>Clear Event Log<br>Time & Date |
| Displays<br>(Remote & Computer Only) | RF Inhibit<br>RF Foward Power<br>Helix Voltage<br>Filament Delay | Tube Drive Power*<br>RF Reflected Power<br>Helix Current<br>Tube Temperature |
| Adjustable Parameters | Auto Power*<br>RF Reflected Power Alarm<br>RF Low Alarm | Tube Overdrive Alarm<br>Tube Temperature Alarm<br>RF High Alarm<br>Attenuation* |
| Faults | Summary<br>RF Reflected Power<br>Helix Run Current | Tube Overdrive<br>WG Pressure<br>Tube Temperature<br>User Interlock |
| Alarms | RF High<br>RF Reflected<br>Tube Temperature | RF Low<br>Tube Overdrive<br>Summary |
| * Function available with optional SSA | | |

MCL INC
A MITEQ COMPANY

# MT2300

## OUTLINE DRAWING




## ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature:**
-40°C to +50°C (derated 1.9°C per 1,000 ft. above sea level)

**Non-Operating Temperature:**
-40°C to +70°C

**Relative Humidity:**
100%, condensing

**Operating Altitude:**
10,000 ft. above sea level (3,048 m)

**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
Sample: Type N female
Output: (Waveguide Flange)
Ku-Band: WR75G

**Installed Weight:**
125W w/out SSA < 32 lbs./14.5 kg
200W < 34 lbs./15.4 kg

**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

**MCL, INC**
501 S. Woodcreek Drive, Bolingbrook, IL U.S.A., 60440-4999 • 630-759-9500 FAX: 630-759-5018
**24-HOUR CUSTOMER SUPPORT NUMBER IN THE USA: 1-800-743-4625**
**OUTSIDE THE USA: 312-461-4536 • www.mcl.com**