



MT3300

ANTENNA MOUNT TRAVELING WAVE TUBE
POWER AMPLIFIER

FOR SATELLITE UPLINK APPLICATIONS

Ka-BAND: 120W
150W
175W
250W



AVAILABLE SYSTEM OPTIONS:

MT3311 1 + 1 Redundant System

MT3312 1 + 2 Redundant System

Other Configurations Available Upon Request

AVAILABLE AMPLIFIER OPTIONS:

SSA With Gain Control

Switchover Control

Linearizer

Mounting Configurations

Remote Controller

Handheld Local Controller

FEATURES:

Weather Resistant Antenna Mount TWT Amplifier

Phase Noise 10 dB Below IESS-308

Extensive Built-In Diagnostic Capabilities

Advanced Thermal Design

Rugged Construction For Extreme Environments

Optional Handheld Controller For Total Local Monitoring And Control

THE MT3300 antenna mount TWT amplifier is available for applications in Ka-Band up to 250 watts. This weather-resistant amplifier is a compact, rugged power amplifier designed for extremely reliable operation. Always keeping our customers' needs in mind, MCL has designed the MT3300 to be easily integrated in both new and existing outdoor amplifier installations.

Incorporating the latest technologies, MCL provides a robust and efficient thermal design. Moreover, the MT3300's innovative high voltage power supply results in an extremely efficient, stable and low noise power system.

To compliment the high voltage power supply, MCL has incorporated a new digital M & C system internal to the HPA to allow our customers a higher level of system monitoring and control. Easy access to these new monitoring and control capabilities can be achieved by available RS485/RS232 interfaces or through the use of a portable handheld device.

ISO 9001



MT3300

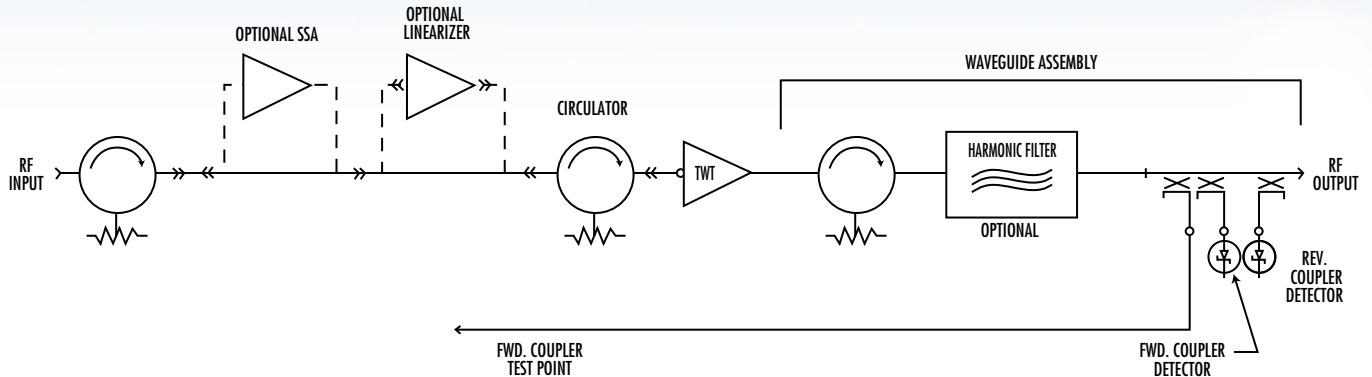
TRAVELING WAVE TUBE MEDIUM POWER AMPLIFIER

ELECTRICAL SPECIFICATIONS	Ka-BAND				
	120 W	150 W	175 W	250 W*	
Frequency Range (F ₀):	27.5 - 30.0 GHz 30.0 - 31.0 GHz				
Output Power (min.): Tube Output Flange: HPA Rated Output:	120 W (50.8 dBm) 100 W (50.0 dBm)	150 W (51.8 dBm) 125 W (51.0 dBm)	175 W (52.4 dBm) 145 W (51.6 dBm)	[120 W (50.8 dBm)]/250 W (54.0 dBm) [100 W (50.0 dBm)]/210 W (53.2 dBm) [Maximum Operating Power]	
Gain:					
Large Signal (min.):	38 dB	39 dB	39 dB	40 dB	
Small Signal Gain (SSG) (min.):	44 dB	45 dB	45 dB	46 dB	
SSG with optional SSA (min.):			70 dB		
Attenuation Range with optional SSA (min.):			20 dB		
Maximum SSG Variation Over:					
Narrow Band:			0.8 dB/60 MHz		
Full Band:			2.5 dB/1 GHz		
Slope, Max.:			±0.04 dB/MHz		
Gain Stability:			±0.25 dB/24 hr. max.		
Stability, Any Freq. -40 to 50°C:			±1.0 dB typ.		
Stability, Any Freq. ±10°C Max.:			±0.75 dB		
Input VSWR:			1.3:1 max.		
Output VSWR:			1.3:1 max.		
Load VSWR:			2.0:1 without damage		
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.:			-15 dBc (-60 dBc with optional harmonic filter)		
Noise & Spurious, Max.:					
Receive Band:			-150 dBW/4 kHz, <21.2 GHz		
Transmit Band (F ₀):			-70 dBW/4 kHz		
Phase Noise:			10 dB below IESS Phase Noise Profile		
AC Fundamental:			-50 dBc		
Sum of All Spurs:			-47 dBc		
Intermodulation (for 2 equal carriers relative to single carrier rated output):					
		(27.5 - 30.0 GHz)	(30.0 - 31.0 GHz)	(27.5 - 30.0 GHz)	(30.0 - 31.0 GHz)
	Total P ₀	IM Product	IM Product	IM Product	IM Product
	-1.5 dB	-13 dBc	-12 dBc	-	-
	-3 dB	-16 dBc	-15 dBc	-16 dBc	-15 dBc
	-10 dB	-30 dBc	-29 dBc	-	-
Linearizer Option:	-3 dB	-22 dBc	-21 dBc	-22 dBc	-21 dBc
Group Delay:		Any 60 MHz Bandwidth			
Linear:		0.01 ns/MHz			
Parabolic:		0.005 ns/MHz ²			
Ripple:		0.5 ns p-p			
Prime Power:					
Voltage:		100 - 260 VAC, 1-phase, 47 - 63 Hz			
Power Consumption:		650 VA			
Power Factor:		0.95 min.			
In-Rush:		13A max.			
Input Transients:		EN61000-4-4, 4-5, 4-11 (Surge, Fast Transients, Line Dropout)			

*Peak power indicated.

Note: Performance information is subject to change without notification. Contact MCL for the latest specifications.

RF BLOCK DIAGRAM



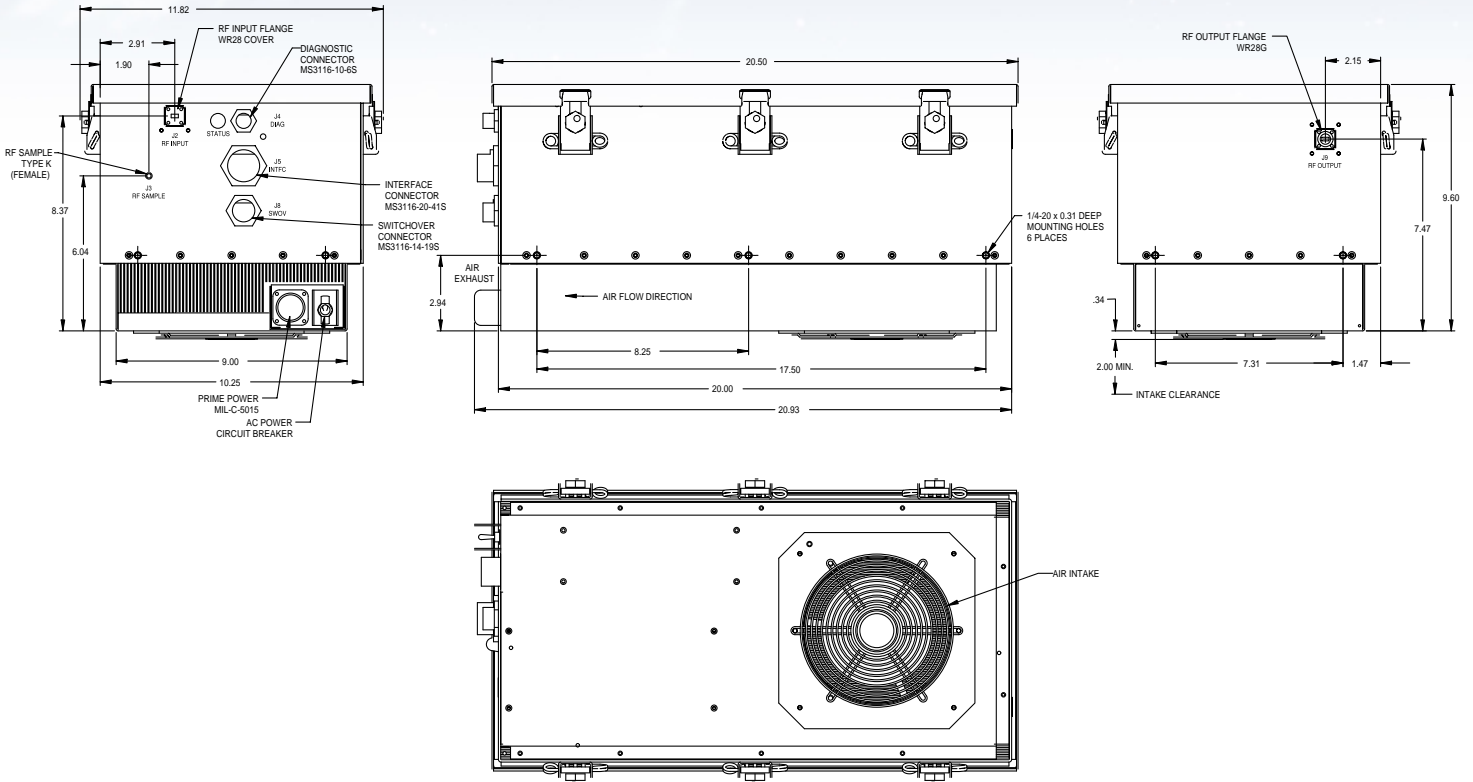
CONTROL AND STATUS CAPABILITIES

TYPE	FUNCTION		
Controls	Filament ON/OFF Transmit/Standby RF ON/OFF Reset Attenuation	Units Select Hold Power ON/OFF* Auto Switching (1:1) Manual Switching (1:1)	Fault Counter ON/OFF Antenna Position (1:1) Load Position (1:1) Local Remote Computer
Adjustable Parameters	Auto Power* Tube Temperature Alarm RF Low Alarm Comm Address Date	Tube Overdrive Alarm RF Reflected Power Alarm RF High Alarm Comm Band Rate Time	Tube Overdrive Fault RF Reflected Power Fault Filament Under Current Fault Comm Protocol
Meters	RF Forward Power Helix Voltage Filament Delay	Tube Drive Helix Current Tube Temperature	RF Reflected Power Filament Current PS Temperature
Faults	Tube Temperature Switch Tube Temperature Analog Helix Run Current HV Under Volt User Interlock	WG Pressure WG Arc Helix Surge Current HV Over Volt	Arc Test Failed PS Temperature Chassis Interlock Filament Under Current
Alarms	RF High RF Reflected Blower Failed Exciter	RF Low Tube Temperature AC Low Line	Tube Overdrive PS Temperature RF Switch Failed
Additional Status	Delay Summary Alarm Maintenance Log	Transmit Selected Summary Fault Event Log	Sampler Port Cal Table RF Low Switching ON/Off Fault Log

*Function available with optional SSA

MT3300

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:

-50°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, Proc. 1, Cat. 1

Shock:

10g, 11ms Half Sine

MECHANICAL SPECIFICATIONS

RF Connectors:

Input: WR-28
Output: WR-28G

Installed Weight:

65 lbs. nominal/29.5 kg

Cooling:

Forced air, 2.0" clearance required

Acoustic Noise:

<68 dBA Max. at 1 Meter

PHYSICAL SPECIFICATIONS

Dimensions:

9.60" H
10.25" W
20.5" L

Air Flow:

150 CFM