



MT3400

ANTENNA MOUNT TRAVELING WAVE TUBE
MEDIUM POWER AMPLIFIER

THE RUGGED AND ECONOMICAL
SOLUTION FOR UPLINK APPLICATIONS

C-BAND: 400W
X-BAND: 400W
Ku-BAND: 400W
DBS-BAND: 270W



AVAILABLE SYSTEM OPTIONS:

MT3411 1 + 1 Redundant System

MT3412 1 + 2 Redundant System

MT34PC Phase Combined, Single Path
Redundant System

Other Configurations Available Upon Request

AVAILABLE AMPLIFIER OPTIONS:

SSA With Gain Control

Block Upconverter

Switchover Control

Linearizer

Mounting Configurations

Extended Band Operations

Remote Controller

Hand-Held Local Controller

Ethernet Interface

FEATURES:

Rugged Construction for Extreme Environments

**Event Log Screen with Report of Failure
Level, Date, and Time**

Sample Port Coupling Factor Screen

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

Continuous Attenuator Adjustment Shown in dB

Auto Power Control and Status

Filament Off State

Remote or Computer Control Modes

ISO 9001



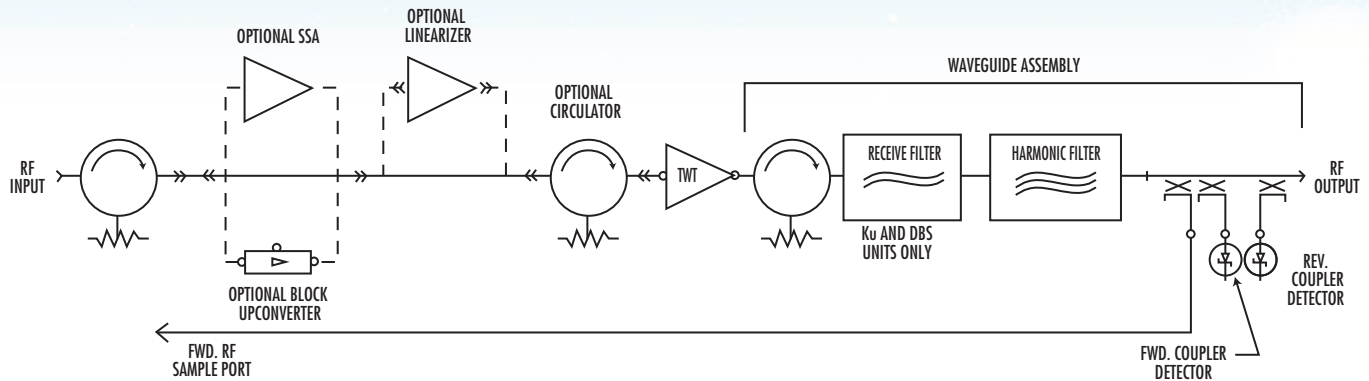
MT3400

TRAVELING WAVE TUBE MEDIUM POWER AMPLIFIER

ELECTRICAL SPECIFICATIONS	C-BAND	X-BAND	Ku-BAND	DBS-BAND
	400 W	400 W	400 W	270 W
Frequency Range (F ₀) (Standard): (Extended): (Extended):	5.850 - 6.650 GHz Option: 5.850 - 7.025 GHz Option: 5.850 - 7.100 GHz	7.9 - 8.4 GHz	13.75 - 14.5 GHz Option: 12.75 - 14.5 GHz	17.3 - 18.4 GHz
Output Power (min.): Tube Output Flange: HPA Rated Output:	400 W (56.0 dBm) 360 W (55.5 dBm)	400 W (56.0 dBm) 360 W (55.5 dBm)	400 W (56.0 dBm) 360 W (55.5 dBm)	270 W (54.3 dBm) 230 W (53.6 dBm)
Gain:				
Large Signal (min.):	46 dB	48 dB	48 dB	41 dB
Small Signal Gain (SSG) (min.):	52 dB	54 dB	54 dB	46 dB
SSG with optional SSA (min.):	75 dB	75 dB	75 dB	75 dB
Attenuation Range with optional SSA:	25 dB	25 dB	25 dB	25 dB
Maximum SSG Variation Over:				
Narrow Band:	.5 dB/40 MHz	1.0 dB/40 MHz	1.0 dB/80 MHz	1.0 dB/80 MHz
Full Band:	2.5 dB	2.5 dB	2.5 dB/500 MHz	2.5 dB/500 MHz
Slope, Max.:	±0.04 dB/MHz	±0.04 dB/MHz	±0.04 dB/MHz	±0.04 dB/MHz
Gain Stability:	±0.25 dB/24 hr. max.	±0.25 dB/24 hr. max.	±0.25 dB/24 hr. max.	±0.25 dB/24 hr. max.
Stability, Any Freq. -40 to +50°C:	±1.0 dB typ.	±1.0 dB typ.	±1.0 dB typ.	±1.0 dB typ.
Stability, Any Freq. ±10°C Max.:	±0.75 dB	±0.75 dB	±0.75 dB	±0.75 dB
Input VSWR:	1.20:1 max. with respect to 50 ohms			
Output VSWR:	1.25:1 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.:	-60 dBc			
Noise & Spurious, Max.:				
Receive Band (Standard):	-150 dBW/4 kHz, 3.4 - 4.2 GHz	-70 dBW/4 kHz, 7.23-7.75 GHz	-150 dBW/4 kHz, 10.7-12.75 GHz	-150 dBW/4 kHz, 10.70-12.75 GHz
(Extended):	-150 dBW/4 kHz, 3.4 - 4.2 GHz	N/A	-150 dBW/4 kHz, 10.7-11.70 GHz	N/A
Transmit Band (F ₀):	-70 dBW/4 kHz	-70 dBW/4 kHz	-70 dBW/4 kHz	-65 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):	Total P ₀		IM Product	
	-4 dB		-18 dBc	
	-7 dB		-23 dBc	
Typical Linearizer Option Performance:	-4 dB		-27 dBc	
Group Delay:	Any 40 MHz Bandwidth		Any 80 MHz Bandwidth	
Linear:			0.01 ns/MHz	
Parabolic:			0.005 ns/MHz ²	
Ripple:			0.5 ns p-p	
Prime Power:				
Voltage:	90 - 264 VAC, 1-phase, 47 - 63 Hz, 2-Wire			
Power Consumption:	1.5 KVA typ.			
Power Factor:	0.95 min.			
In-Rush:	28A max.			
Input Transients:	EN61000-4-4, 4-5, 4-11 (Surge, Fast Transients, Line Dropout)			

Notes: All specifications, except gain, are applicable with and without the optional SSA.
Performance information is subject to change without notification. Contact MCL for the latest specifications (TN3300/3400-1).

RF BLOCK DIAGRAM



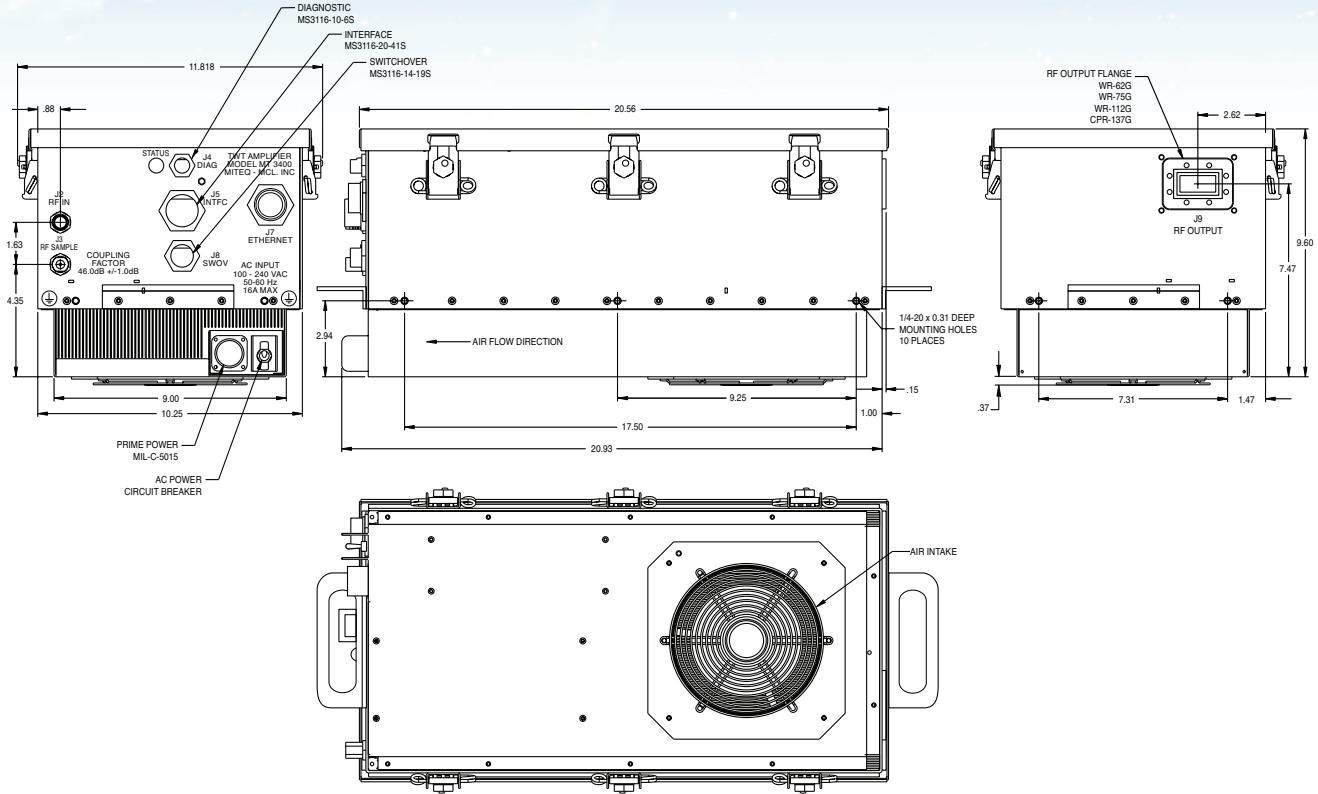
CONTROL AND STATUS CAPABILITIES

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

*Function available with optional SSA

MT3400

OUTLINE DRAWING



ENVIRONMENTAL SPECIFICATIONS

Operating Temperature:

-40°C to +60°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

Shock:

10g, 11ms half sine

MECHANICAL SPECIFICATIONS

RF Connectors:

Input: Type N
 Output: (Waveguide Flange)
 C-Band: CPR137G
 X-Band: CPR112G
 Ku-Band: WR75G
 DBS-Band: WR62G

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 (243.84 mm)
 10.25" W (260.35 mm)
 20.5" L (520.7 mm)

Air Flow:

C, X, Ku-Band: 150 CFM
 DBS-Band: 100 CFM