

Amplifiers

Model 500A250D

Features:

- 500 W CW, 10 kHz – 250 MHz
- Class A design
- 100% mismatch tolerant
- Built-in fault monitoring and protection
- Remote control: Ethernet, USB, GPIB, fiber-optic serial, RS-232
- Modular design for easy maintenance and service
- Low acoustical noise
- 3 Year Warranty

Applications:

- EMC (military, aviation, automotive, commercial)
- Radiated and conducted EMC testing
- General purpose, antenna, and component testing
- 4G LTE, 5G NR (FR1/FR2), OFDM, PSK/QAM, Wi-Fi etc.

To view our full amplifier portfolio visit: www.ar.ametek-cts.com

AR RF/Microwave Instrumentation
160 Schoolhouse Rd
Souderton, PA 18964
215.723.8181
ISO 9001: 2015 Certified
ISO 17025 :2017 Accredited

The Model 500A250D is a self-contained, air-cooled, solid-state Class A broadband power amplifier designed for applications demanding wide bandwidth coverage, high gain, and linear performance. It delivers a minimum of 500 W over a frequency range of 10 kHz to 250 MHz. The unit includes safeguards against input overdrive beyond 0 dBm, as well as various fault conditions such as excessive temperature and power supply issues.

A scalable, module-based design combined with advanced forced air cooling ensures reliable operation and long-term performance in demanding test environments. A clear front panel display provides immediate visibility of operating status and fault conditions, enabling fast setup and confident operation. For maximum flexibility, all control and monitoring functions can be accessed either locally via the front panel or remotely through a wide range of standard interfaces, including GPIB/IEEE 488, RS 232, fiber optic serial, USB, and Ethernet.

This Class A amplifier is engineered for EMC immunity, communications, and aerospace & defense testing, delivering exceptional stability and linearity under demanding load conditions, including high VSWR, open, or short circuits. Low spurious emissions, high spectral purity, and wideband performance make it ideal for modern wireless and 5G applications.

Export classification for this device is EAR99. These goods, technologies, or software are regulated under U.S. Export Administration Regulations, and unauthorized diversion is prohibited by U.S. law.



Model 500A250D

- **500 W**
- **10kHz – 250MHz**

Electrical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Rated Power Output	PSAT	525	600	>620	W
Input for Rated Output	Pin			1	mW
				0	dBm
Power Output @ 3 dB Compression (10KHz – 200MHz)	P3dB	525	600	>650	W
Power Output @ 3 dB Compression (200 – 250MHz)	P3dB	475	550	>580	W
Power Output @ 1 dB Compression (10KHz – 200MHz)	P1dB	475	550	>580	W
Power Output @ 1 dB Compression (200 – 250MHz)	P1dB	375	425	>500	W
Operating Frequency	BW	0.01		250	MHz
Gain (Small Signal)			57.2		dB
Gain Reduction Adjustment (when below gain compression)		20			dB
Flatness @ small signal (-20 dBm input)	ΔG		±1.5	±2.0	dB
Input Impedance	Z in		50		Ohm
			1.5:1	2.0:1	VSWR
Output Impedance	Z out		50		Ohm
3rd Order Intercept	IP3		+68		dBm
Noise Figure	NF		7		dB
Harmonic Distortion @ 400 W	H2, H3			-20	dBc
Harmonic Distortion @ 500 W	H2, H3		-20		dBc
Spurious			-73		dBc
Power Consumption	PD			2400	W

Absolute Maximum Rating

Exceeding any of the limits listed here may result in permanent damage to the device.

Parameter	Minimum	Typical	Maximum	Unit
RF Drive		0	+13	dBm
RF Load		1:1	∞	VSWR
RF Load Reflected Will operate without damage or oscillation when connected to any load impedance without the aid of foldback circuitry.			100	%
AC Power (single phase)	200		240	VAC
AC Power	47	60	63	Hz
Ambient Temperature	+5	+25	+40	°C
Storage Temperature	-20		+50	°C
Altitude			2000	m
Shock/Vibration	Normal Truck Transport			

Model 500A250D

- **500 W**
- **10kHz – 250MHz**

Mechanical Specifications		
Parameters	**Typical**	**Unit**
Dimensions (With Cabinet) (W x H x D)	50.3 x 38.1 x 75.5	cm
	19.8 x 15.0 x 29.7	in
Dimensions (No Cabinet) (W x H x D)	48.3 x 35.6 x 75.5	cm
	19.0 x 14.0 x 29.7	in
Weight (With Cabinet)	78	kg
	171	lb
Weight (No Cabinet)	58	kg
	128	lb
Cooling	Forced air (self-contained fans)	
Acoustic Noise Measured @ 1 Meter		dBA

Connector Interfaces	
Function	**Type**
RF Input	N, female, rear (50 Ω) (option front)
RF Output	N, female, rear (50 Ω) (option front)
RF Sample	N, female, rear (50 Ω) (57dB typical) (option front)
IEEE-488	24-pin
RS-232	9 pin subminiature D
Ethernet	RJ-45
RS-232 (fiber optic)	ST
USB 2.0	Type B
Interlock	15-pin subminiature D

Regulatory Compliance	
Type	**Standard**
EMC	EN 61326-1
Safety	UL 61010-1
	CAN/CSA C22.2 #61010-1
	CENELEC EN 61010-1
RoHS	Directive 2011/65/EU
Export	EAR99

Ordering Options

500A250D	-		-	N	-		-	N	-		-	
Model		**RF IN Conn Location, Type**				**RF OUT Conn Location, Type**				**Enclosure No Enclosure**		**RF Sample Ports**

Connector	
Front	F
Rear	R

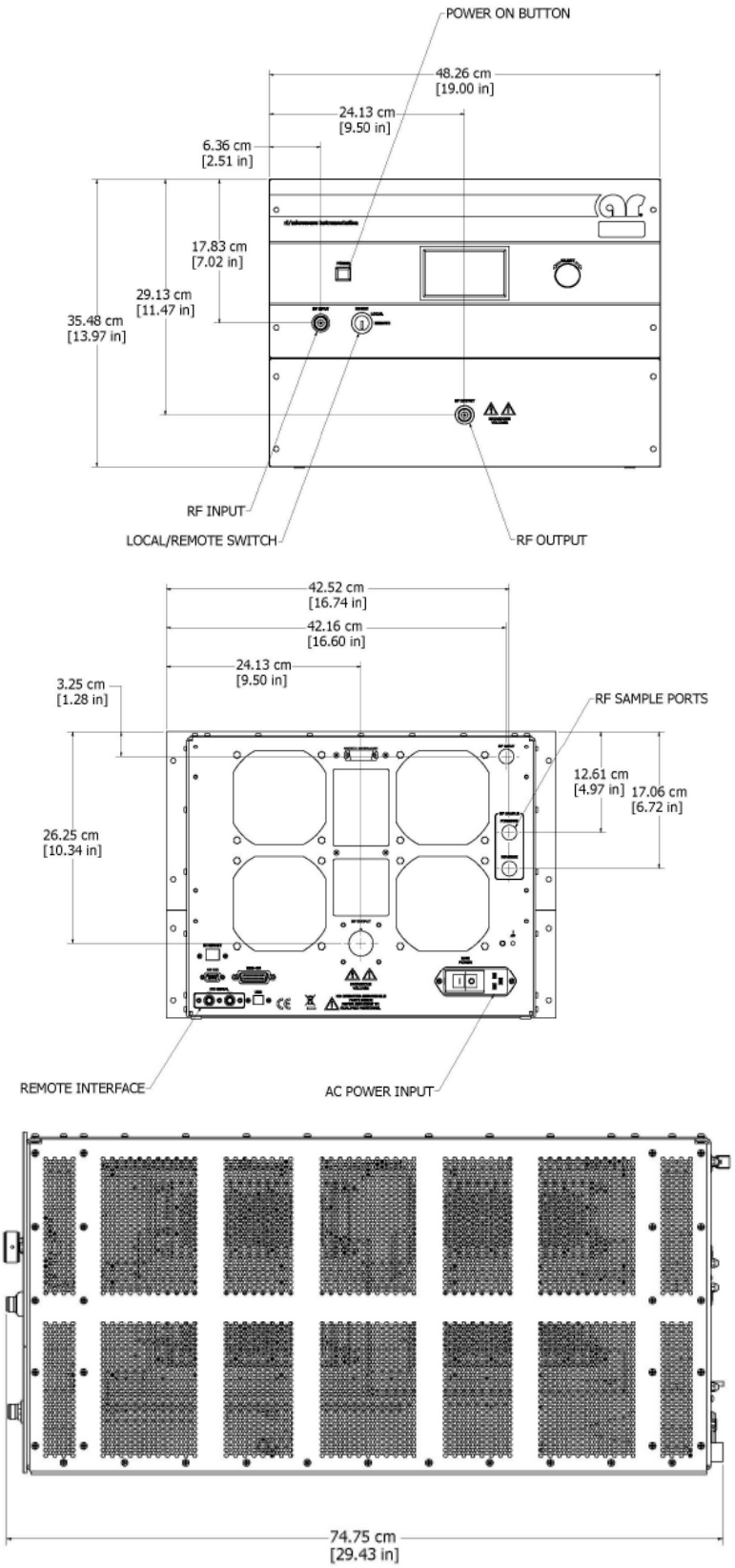
Enclosure	
Enclosure	E
No Enclosure	NE

RF Sample Ports	
No Sample Ports	NSP
Front	SPF
Rear	SPR

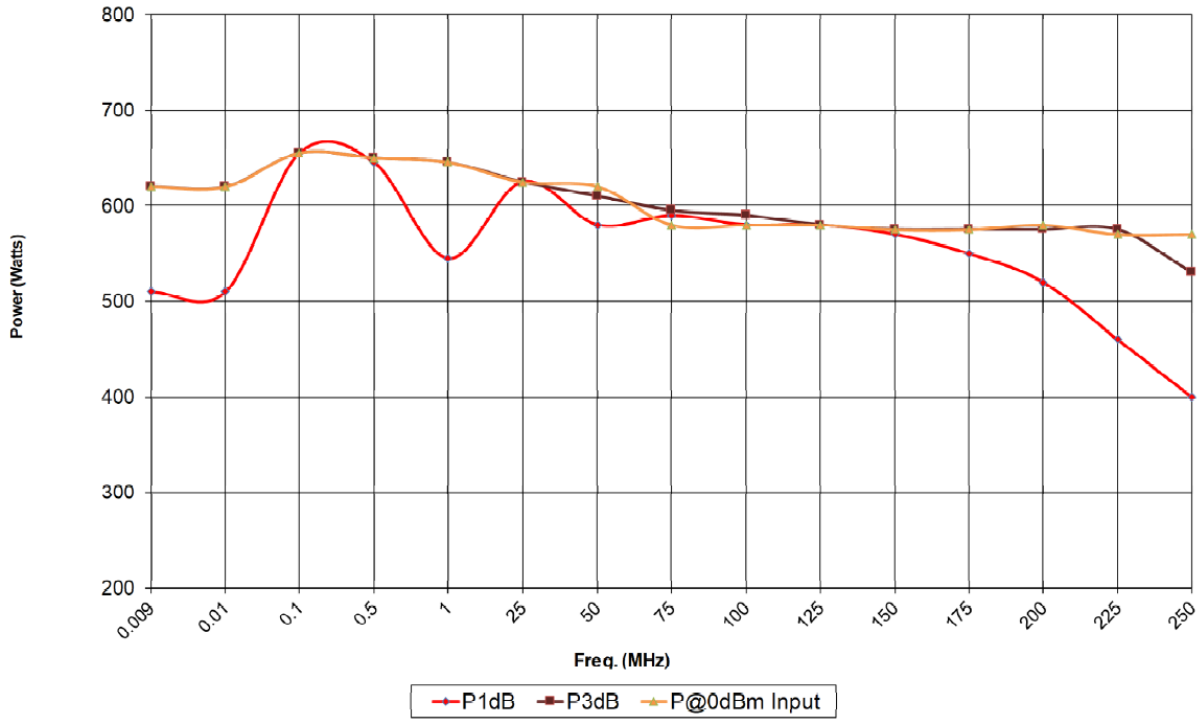
Model 500A250D

- **500 W**
- **10kHz – 250MHz**

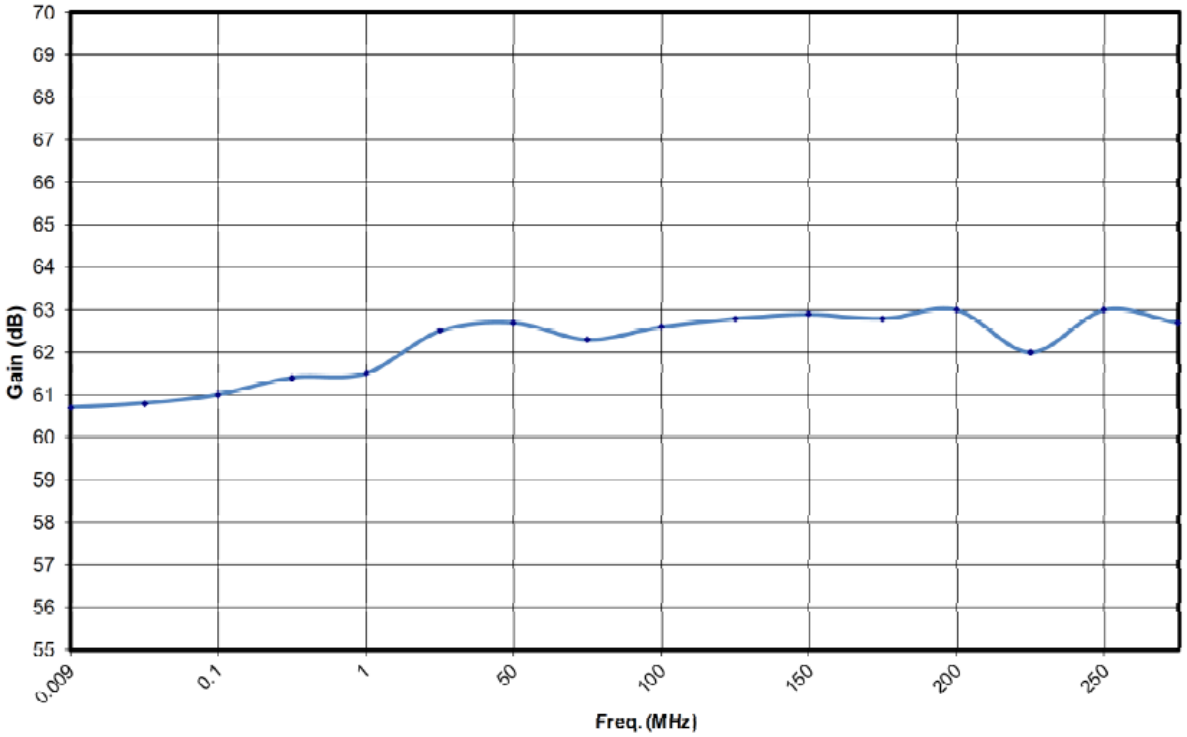
Envelope Drawing



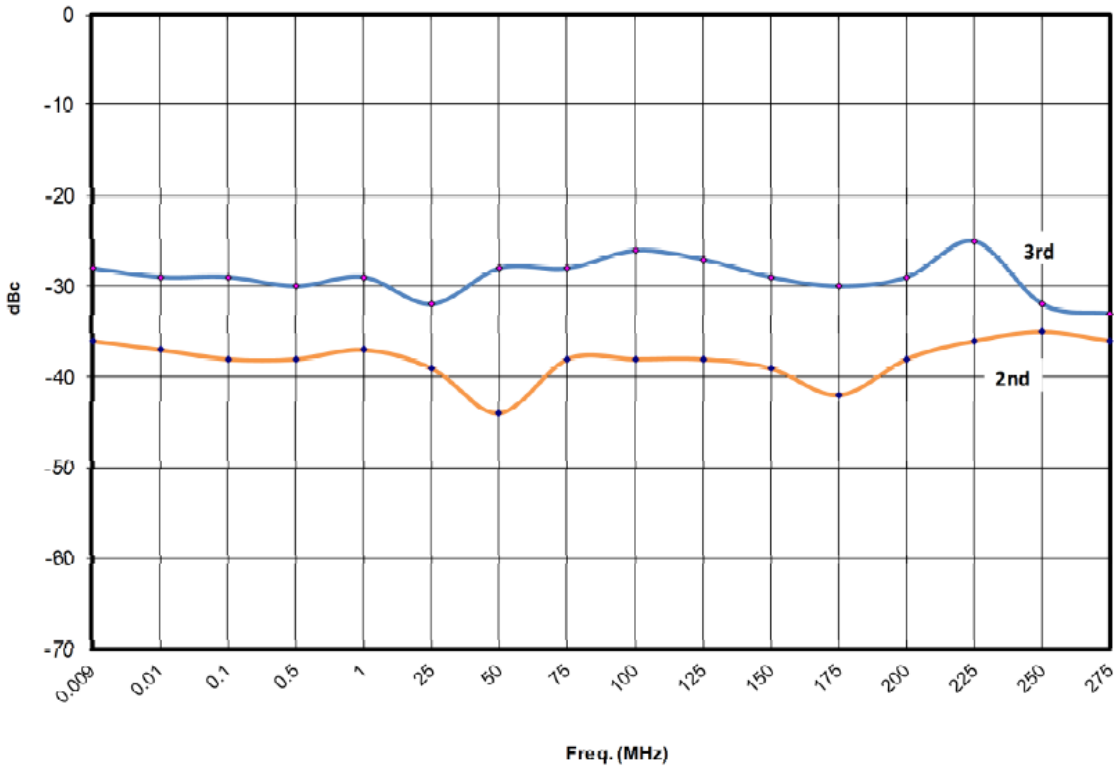
TYPICAL OUTPUT POWER



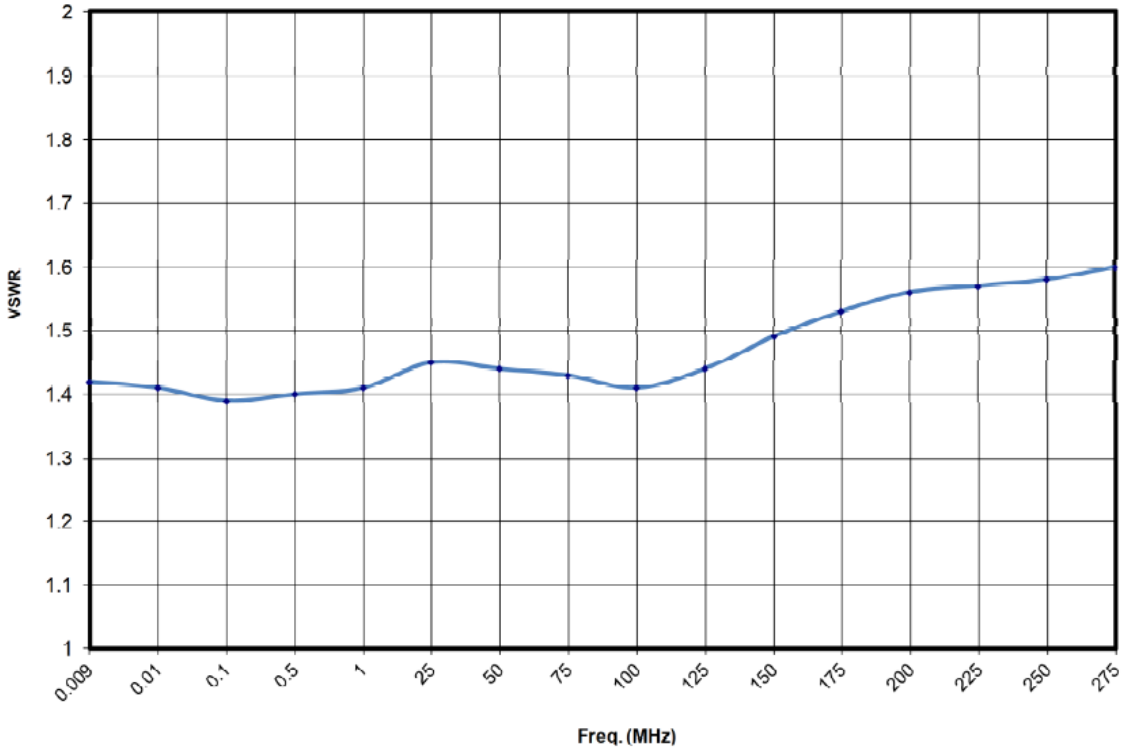
TYPICAL SMALL SIGNAL GAIN @ -20 DBM INPUT



TYPICAL HARMONICS @ 400 WATTS



TYPICAL INPUT VSWR



TYPICAL NOISE FIGURE

