

# **Advanced Amplifiers**

Instruction Manual Including Quick Start Guide  
Advanced Amplifiers  
Solid State RF Amplifier System

AA-1M6G-30

1 MHz - 6.0 GHz, 30 Watt, 45dB Min



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## SAFETY INSTRUCTIONS

### BEFORE USING THIS EQUIPMENT

Read this manual and become familiar with safety markings and instructions.  
Inspect unit for any sign of external damage. Do not use this equipment if there is physical damage or missing parts.  
Verify the input AC voltage to the main power supply.

**For a system with a digital controller option – DO NOT USE OR CONNECT a PoE enabled ethernet switch to a system. Our digital controller does not support PoE connection and will cause permanent damages to a controller unit.**

### INTENDED USE

This product is intended for general laboratory use in a wide variety of industrial and scientific applications.

### RF OUTPUT LOAD & PROPER GROUNDING REQUIRED

The RF output connector must be connected to a load before the AC switch is turned on.  
AC & RF power must be off before disconnecting the output load or other components.  
The main power source to the equipment must have an uninterrupted safety ground that has sufficient size to the power cord.

### REPAIR & MAINTENANCE

All repair or maintenance work must be performed by a factory authorized technician in order to extend the operating life of this equipment and not to void any outstanding warranty.

### FORCED AIR COOLING

This equipment requires forced air cooling. All air inlets and outlets must be cleared and free of blocking at all time. Insufficient air flow will result in damaged equipment.

### SAFETY SYMBOLS

This symbol is marked on the equipment when it is necessary for the user to refer to the manual for important safety information. This symbol is indicated in the Table of Contents to assist in locating pertinent information.



Dangerous voltages are present. Use extreme care.



The caution symbol denotes a potential hazard. Attention must be given to the statement to prevent damage, destruction or harm.



This symbol indicates protective earth terminal.

## SPECIFICATIONS

### ELECTRICAL SPECIFICATIONS: 50Ω, 25°C

Parameter	Specification		Notes
	A	B	
Band			
Operating Frequency Band	1 - 1000 MHz	1 - 6 GHz	Band switching @ 15 mS Max
Power Output @ Psat	30 Watt Min / 50 Watt Typ		CW or Pulse
Power Gain	45 dB Min		0dBm or less for rated Pout
Power Gain Flatness	4.0 dB p-p Max		Constant input power
Gain Adjustment Range	20 dB Min		Local or remote
Input Return Loss	-10 dB Max		
2-Tone Intermodulation (IMD)	-30 dBc Typ		35dBm/Tone, Δ = 1MHz
Harmonics	<-20 dBc Typ		At rated Pout
Spurious	-60 dBc Max		Non-harmonics
Operating Voltage	100 - 240 VAC		47 - 63 Hz
Power Consumption	500 Watt Max		At rated Pout
Input Power Protection	+10 dBm Max <sup>1</sup>		
Load VSWR Protection	6 : 1: Max <sup>2</sup>		Foldback @ preset limit
Sample Port (optional)	-40 dB		N-Female

1 Units with optional digital monitor and control, for basic units <10 Sec without damage

2 Units with optional digital monitor and control, for basic units <1 minute at rated Pout

### ENVIRONMENTAL CHARACTERISTICS

Parameter	Specification	Notes
Operating Ambient Temperature	0 to +50 °C	
Storage Temperature	-40 to +85 °C	
Relative Humidity	up to 95 %	Non-condensing
Altitude	3000 meters	
Shock & Vibration	Normal transport <sup>3</sup>	

3 MIL Spec available for quotation

### MECHANICAL SPECIFICATIONS

Parameter	Specification	Notes
Dimensions W x H x D	430 x 88 x 700 mm	2U, excluding handles
Weight	12 Kg.	
RF Connectors Input/Output/Sample	N-Female	Front or rear panel
Interface Connector	9-Pin D-Sub	Rear panel
AC Power	IEC 60320-C14	Or equivalent
Cooling	Built in Fan Cooling	Variable speed
<b>OPTIONAL:</b> Digital Monitor & Control (DMC) FWD, REV, VSWR, GAIN, ALC, V & I, TEMP, Optional Safety Interlock (INT)	Ethernet RJ-45 TCP/IP, RS422/485, USB Optional GPIB Interface Open=STBY/Short=RFON	IEEE rear panel BNC-F rear panel

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## **OPERATING INSTRUCTIONS & GENERAL INFORMATION**

### **INTRODUCTION**

Advanced Amplifiers is an amplifier equipment and services company supporting commercial and government organizations worldwide.

Headquartered in San Diego, California, the company utilizes its global network of resources to effectively serve and support customer requirements.

As a unique original equipment manufacturer of power amplifiers ranging from 10KHz to 40GHz with various output power levels for CW & pulse testing applications, we can also fully support custom designs and manufacturing requirements for both small and large volume procurements. We bring decades of combined experience in the RF field for numerous applications including and not limited to, EMI/EMC, communications, and various commercial and industry standards.

With our in-house capabilities and fully equipped testing facilities, Advanced Amplifiers is committed to provide the best in RF products with industry leading quality and lead times.

### **INCOMING INSPECTION**

Inspect unit for any sign of external damage. Do not use this equipment if there is physical damage or missing parts. Inspect all front and rear panel connectors for damage. Inspect fans and their airways for any damage or blockings. For a unit with a digital controller option, the USB and ethernet interface and commands list is in the second part of the manual.

### **RF & AC CABLE CONNECTION**

RF Input and Output connectors are outlined in the specifications table. Use the standard AC cable that was supplied by the manufacturer or higher power rating cables than the manual specifies. Refer to the front and rear panel description page for the location of RF and AC connectors.

**For a system with a digital controller option – DO NOT USE OR CONNECT a PoE enabled ethernet switch to a system. Our digital controller does not support PoE connection and will cause permanent damages to a controller unit.**

### **RF TURN ON PROCEDURE**

Connect RF input to an RF Pulse Generator and Gating signal. Connect a suitable load for the power rated and continuous operation to the output connector. Turn on the AC switch, display will show STANDBY. Optionally, connect the unit to a digital control Software or Ethernet connection. Set the RF generator to nominal 0dBm and set the desired frequency in the specified range. Select Gain or ALC and set to the desirable output power level then press the ONLINE button. Use the front panel LCD gain adjust or the remote function to adjust the output power on the power meter and the LCD screen to desired levels.

Refer to Appendix-1 for detailed operating instructions of the local and remote controller.

### **RF TURN OFF PROCEDURE**

Decrease the RF drive from the RF generator to below -20dBm and press STANDBY on the LCD or via the control software. Turn off AC switch on the front panel. Disconnect any unnecessary cable connections.

## **DECLARATION OF CE CONFORMITY**

We, Advanced Amplifiers Corp, declare under our sole responsibility that the product to which this declaration relates is in conformity with the following standard(s) or other normative document(s):

Council Directive 98/37/EC on the Safety of Machinery Directive

Council Directive 2014/35/EC on Low Voltage Equipment Safety

## **LIMITED WARRANTY**

Advanced Amplifiers warrants that goods delivered hereunder, at the time of delivery, will be free from defects in workmanship and material and will conform to the requirements of the purchase order. Seller's liability hereunder shall be limited to the repair or replacement of defective goods F.O.B. factory of which Seller is modified in writing by Buyer within three (3) years following delivery thereof to Buyer, and in no event will Seller be liable for incidental, special or consequential damages. (Note: One (1) year warranty for moving parts such as fans and power supplies). The foregoing warranty is in lieu of all other warranties express or implied (except as to title), including any implied warranty of merchantability or suitability for purpose or against infringement.

## **CONTACT INFORMATION**

Please send all inquiries to:  
Advanced Amplifiers

10401 Roselle Street  
San Diego, CA 92121

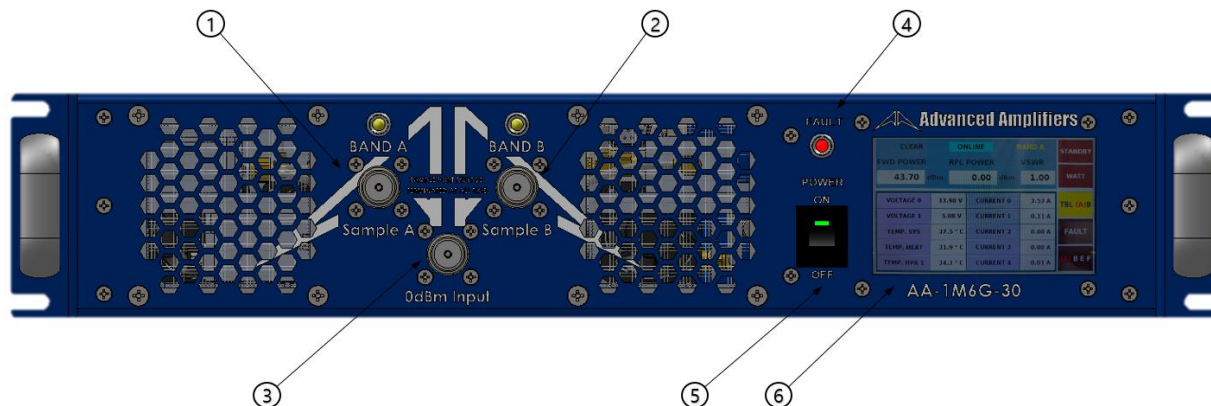
WEB: [WWW.ADVANCEDAMPLIFIERS.COM](http://WWW.ADVANCEDAMPLIFIERS.COM)  
EMAIL: [SALES@ADVANCEDAMPLIFIERS.COM](mailto:SALES@ADVANCEDAMPLIFIERS.COM)

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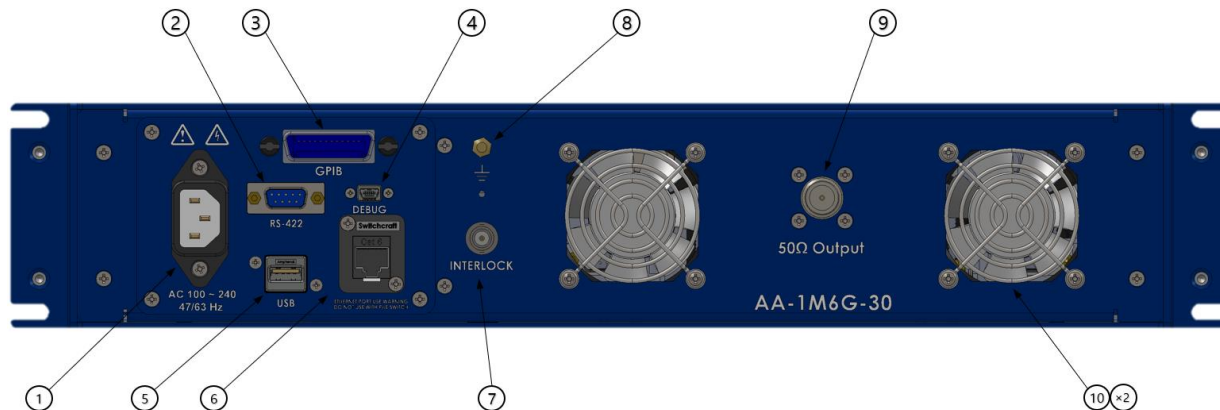
## FRONT & REAR PANEL DESCRIPTIONS

### FRONT PANEL VIEW



No.	Title	Function
1	RF SAMPLE A	N Female, RF SAMPLE Connector. SAMPLE PORT MUST BE TERMINATED AT ALL TIME
2	RF SAMPLE B	N Female, RF SAMPLE Connector. SAMPLE PORT MUST BE TERMINATED AT ALL TIME
3	0dBm INPUT	N Female, 0dBm INPUT Connector.
4	FAULT LED	System Fault LED: Turn ON an LED when Over-Temp, Ext. Shutdown.
5	POWER SWITCH	System Power Switch.
6	LCD DISPLAY	4" Touch screen LCD Display, System Control LCD Panel.

## REAR PANEL VIEW



No.	Title	Function										
1	AC POWER CONNECTOR	AC Power Input 100 ~ 240VAC, 47/63Hz, IEC60320-14 Connector.										
2	RS-422	System RS-422 Communication / Gating Signal Female 9-Pin D-Sub Connector. <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">P1 TX-</td> <td style="width: 50%;">P6 N/C</td> </tr> <tr> <td>P2 TX+</td> <td>P7 N/C</td> </tr> <tr> <td>P3 RX+</td> <td>P8 N/C</td> </tr> <tr> <td>P4 RX-</td> <td>P9 N/C</td> </tr> <tr> <td>P5 GND (RS-422)</td> <td></td> </tr> </table>	P1 TX-	P6 N/C	P2 TX+	P7 N/C	P3 RX+	P8 N/C	P4 RX-	P9 N/C	P5 GND (RS-422)	
P1 TX-	P6 N/C											
P2 TX+	P7 N/C											
P3 RX+	P8 N/C											
P4 RX-	P9 N/C											
P5 GND (RS-422)												
3	GPIB	IEEE-488 GPIB Interface Connector, Female.										
4	DEBUG	System Controller Debugging Female Connector. <b>Port access requires factory authorization</b>										
5	USB	USB Communication Connector, Type A Female.										
6	ETHERNET	Ethernet Communication Female Connector, RJ-45. <b>For a system with a digital controller option – DO NOT USE OR CONNECT a PoE enabled ethernet switch to a system. Our digital controller does not support PoE connection and will cause permanent damages to a controller unit.</b>										
7	INTERLOCK	BNC Female, Safety Interlock Connector Interlock Close Circuit : Normal operation Interlock Open Circuit : RF Off operation										
8	GND	Frame Ground.										
9	50Ω OUTPUT	N Female, 50Ω OUTPUT Connector.										
10	Cooling FAN	System Outlet Cooling FAN.										



**SYSTEM OUTLINE VIEW**

