Wideband EMC Benchtop Power Amplifier 0.02GHz-0.52GHz

Note: Photo is for illustration purposes only.
Please refer to outline drawing.

Product Description

REMC0052G200A is a wideband EMC power amplifier with a frequency range of 0.02 to 0.52GHz.

The power output of this amplifier is 53dBm typical. The typical small signal gain is 55dB with a flatness of ±3.0dB. This excellent performance is achieved through the use of GaN devices.

The power amplifier input connector is N-Female and output connector is N-Female.

The operating temperature of this product is within 0ºC to +50ºC.

Features

- Wideband EMC Solid State Power Amplifier
- Small Signal Gain 55dB Typical
- Output Saturation Power 53dBm Typical
- Supply Voltage 110/220 VAC
- 50 Ohm Matched Input/Output
- Over temperature protection
- Over current protection
- Auto Calibration

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications (T_A=+25ºC)

Parameter		Min	Typ	Max	Units
Frequency Range		0.02		0.52	GHz
Small Signal Gain		50	55		dB
Gain Flatness			±3.0		dB
Gain Variation Over Temperature (0ºC to +50ºC)			±3.0		dB
Input VSWR			1.5		:1
Output 1dB Compression Point (P1dB)			50		dBm
Saturated Output Power (Psat) (CW)			53		dBm
Supply Current (110V AC)			1	7	A
Power Added Efficiency (PAE)			30		%
Turn On/Off Speed (Switch Disable)	ON		100		ns
	OFF		100		ns
Turn On/Off Speed (Drain Disable)	ON		500		us
	OFF		500		us
Turn On/Off Speed (Gate Disable)	ON		/		us
	OFF		/		us
Weight			/		lbs.
Impedance			50		Ohms
Input / Output Connectors			N-Female(Input)/N-Female (Output)		
Package			3U Rack-mount/Tabletop Chassis		

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Sales: sales@rflambda.com Technical: support@rflambda.com

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	110VAC to 240VAC
*RF Input Power (RFIN)	Psat – Large Signal Gain

Bias Up Procedure

1. Connect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)
2. Connect Power Cable
3. Turn On Back Panel AC Power Supply Switch
4. Press Front Panel Power Switch to Power Display

Bias Down Procedure

1. Press Front Panel Power Switch to Power Off Display
2. Turn Off Back Panel AC Power Supply Switch
3. Remove Power Cable (If Moving Equipment)
4. Disconnect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	0ºC to +50ºC (Case Temperature)
Storage Temperature	-50ºC to +105ºC
Thermal Shock	0ºC → +50ºC (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +50ºC for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

*Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.
**For vibration testing details please see additional information section.

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EMC Equipment Specifications

Front Panel

- LCD
- RF Output
- Gain Adjustment Knob
- GND connector
- Keypad
- RF Input
- ON/OFF switch

Rear Panel

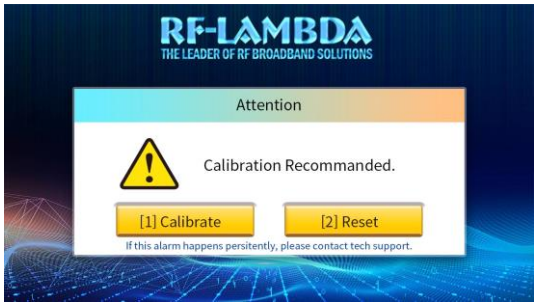
- USER CONTROL
  DB-15 Connector
  TTL control signals
  See page below for more information
- LAN Port(remote control)
- USB-B Port(remote control)
- USB-A Port (work log)
  USB-A Port (N/A)
- Main AC connector
- AC power supply switch
- GND connector
- 40dB Coupling

Front Panel LCD Screen Display

Switching On Instrument

Please follow the instructions on the front panel LCD screen after switching on the power.
Press “1” on keypad to continue.

Self Calibration Screen



Calibration is may be recommended
“**[1] Calibrate**” to execute instrument self calibration process.

“**[2] Reset**” to reboot the instrument.

*Please turn OFF RF input power.

Instrument Protection Alarms

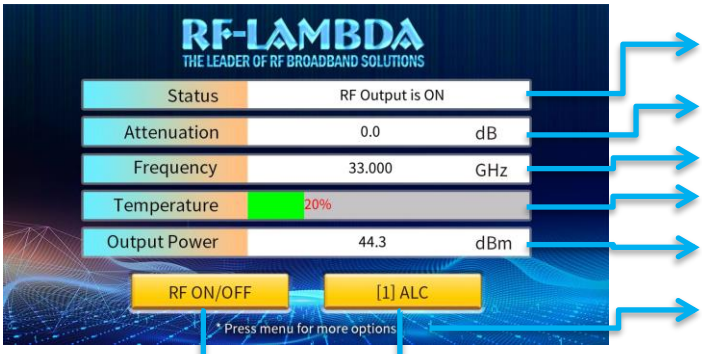
The front panel LCD screen will display the error code or error message when instrument self protection is triggered. Front panel alarm indicator will light up.

To eliminate the error code, press “RESET” on front panel keypad to reboot the instrument and clear the alarms.

If error code can not be eliminated after reboot, please contact support@rflambda.com

Front Panel LCD Screen Function

Instrument Status Display Page



Indicates instrument RF output status. It will display: Output is Ready to Turn on or RF Output is ON

RF output attenuation (change with adjustment knob)

RF input signal frequency

Instrument temperature

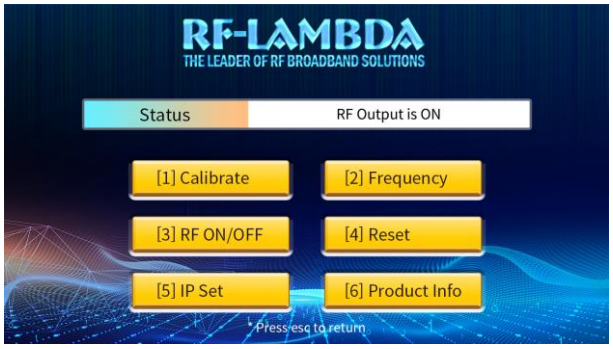
Instrument RF output power

Press “Menu” on keypad to enter instrument functions selection menu

ALC mode, power lock

Switches On or Off for instrument RF output port

Instrument Function Selection Page



To enter this function selection page, press “Menu” on front panel keypad while the instrument is showing the status page.

Press the corresponding number on front panel keypad to select:

“**[1] Calibrate**” calibrates the instruments

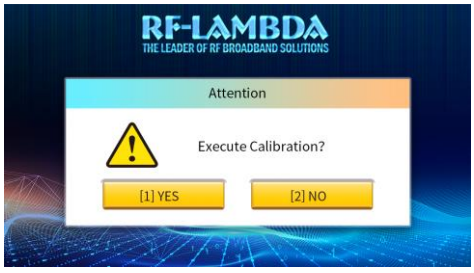
“**[2] Frequency**” enters RF input signal frequency

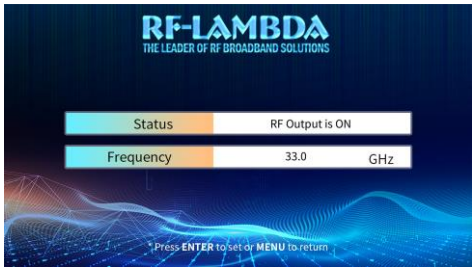
“**[3] RF ON/OFF**” switches the RF output port on or off

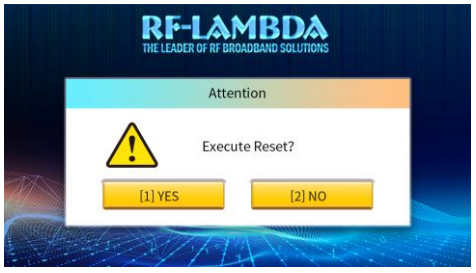
“**[4] Reset**” Restarts the instrument (Turns RF output off)

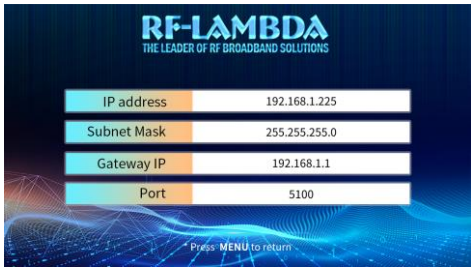
“**[5] IP Set**” enters IP display page

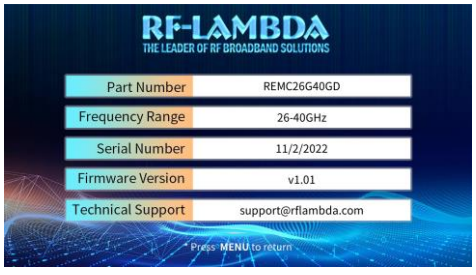
“**[6] Product Info**” displays product information

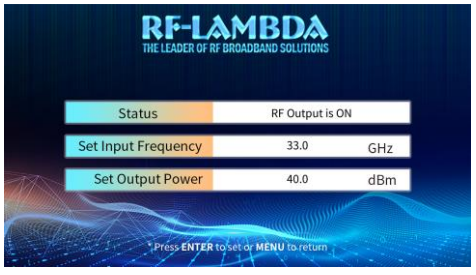












All action functions will ask for confirming execution when selected from function selection menu.

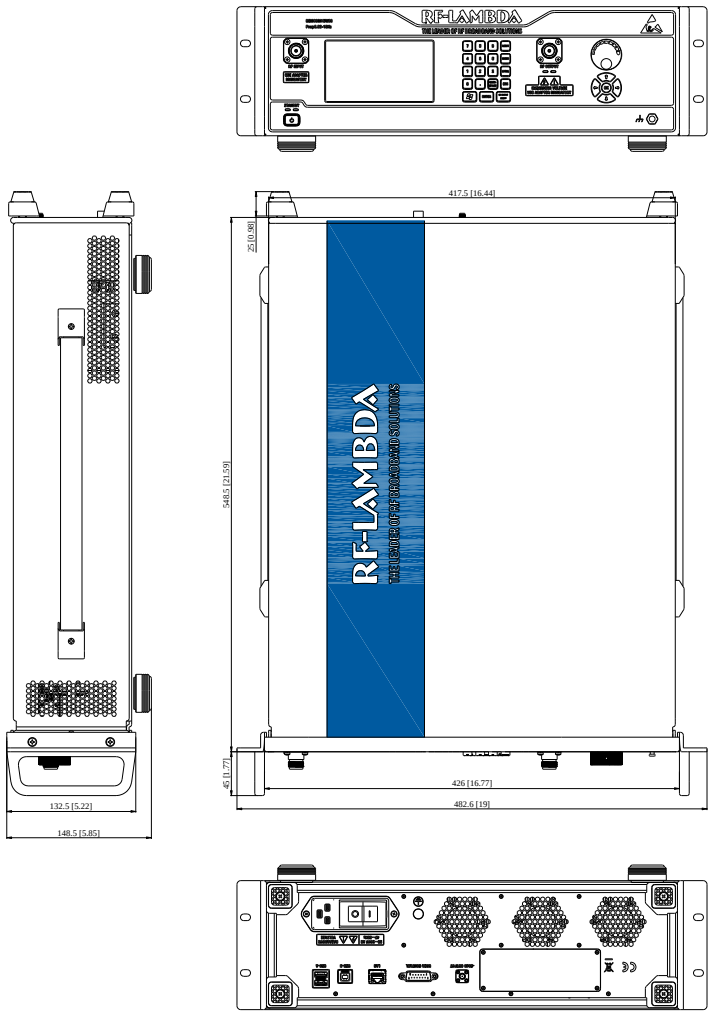
Protection Connector Table

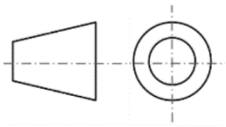
Female D-Sub is on the housing
The mating Male part number: 172-E15-113R001

Pin #	Name	Function	Initial State	Description	Applied
1	Reset	Control	HIGH	Resets PA when logic LOW is applied for five more seconds and released	Yes
2	Gate Disable	Control	LOW	Applying logic HIGH disable gates of amplifiers	NO
3	Drain Disable	Control	LOW	Applying logic HIGH disable drains of amplifiers	Yes
*3	Fast Blinking Control	Control	LOW	Turns OFF last stage amplifiers with faster speed in micro-second level.	available upon request in PO
4	RF Input Over Drive	Indicator	LOW	Pin will be latched to logic HIGH when input signal is over limit	Yes
5	Over Temp	Indicator	LOW	Pin will be latched to logic HIGH when amplifier is driven over temperature	Yes
6	Over Current	Indicator	LOW	Pin will be latched to logic HIGH when drain current limit is reached or current imbalance	Yes
7	ID Imbalance	Indicator	LOW	Pin will be latched to logic HIGH when an imbalance in the drain current of the combining branches occurs	NO
8	PA Off Alarm	Indicator	LOW	Pin will be latched to logic HIGH when any of the protection limit is reached	Yes
9	Fan Alarm	Indicator	LOW	Pin will be latched to logic HIGH when Fan limit is reached	Yes
10	Switch Disable	Control	LOW	Applying logic HIGH disconnect RF signal of amplifiers	Yes
11	VSWR	Indicator	LOW	Pin will be latched to logic HIGH when output reflection is over limit	Yes
12	Fixed Attenuation 10dB	Control	LOW	Applying and holding logic HIGH to enable 10dB fixed attenuation	Yes
13	Fixed Attenuation 20dB	Control	LOW	Applying and holding logic HIGH to enable 20dB fixed attenuation	Yes
14	+5V	Power Supply	+5V	+5V DC is supplied for reference (200mA)	Yes
15	GND	Ground	GND	Ground	Yes

Notes:
- HIGH/LOW voltages are standard TTL signals 0.0V-0.8V = LOW. 2.8V-5V = HIGH.

Outline Drawing





Notes:
1. Package Material: Aluminum
2. Finish: White Baking Paint
3. All dimensions are in millimeters [inches].
4. Housing Tolerances±0.1 [0.004]unless otherwise specified.
5. Standard torque wrench must be used to secure RF connectors.

Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Heatsink Lookup Specifications	https://rflambda.com/search_heatsink.jsp
Connector Torque Specifications	https://www.rflambda.com/pdf/Torque_Specifications.pdf
Random Vibration Test Standard	https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
REMC0052G200A	Input connector N-Female Type and Output connector N-Female Type	0.02GHz-0.52GHz Wideband EMC Benchtop Power Amplifier

Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

Power Supply Requirements
Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF - Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

Each RF - Lambda amplifier will go through power and temperature stress testing.
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Important Notice

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