RF-LAMBDA

THE LEADER OF RF BROADBAND SOLUTIONS

1500W Wideband EMC Rackmount Power Amplifier 0.15GHz-1.1GHz

REMC02M01GD

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Technical: support@rflambda.com

PRODUCT SUMMARY

PRODUCT OVERVIEW

GENERAL DESCRIPTION

REMC02M01GD is a wideband EMC power amplifier with a frequency range of 0.15 to 1.1 GHz.

The power output of this amplifier is 1500W or 62 dBm typical. The typical small signal gain is 71dB with a flatness of ±5dB.

This performance is achieved through the use of GaN devices. The power amplifier's input connector is N-Female and Output connector is 7/16 Connector. Included calibration feature which enables customer to obtain great performance through time and temperature changes.

The operating temperature range is from 0°C to +50°C.

FEATURES

- Wide band EMC Solid State Power Amplifier
- Small Signal Gain 71dB Typical
- Output Saturation Power 1500W (62dBm) Typical
- Supply Voltage 3-phase VAC
- 50 Ohm Matched Input / Output
- Fast RF Blanking -Optional
- Real Time VSWR measurement
- Internal Signal Generator – Optional
- Over temperature Protection
- Over current Protection
- Over voltage 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

QUALITY STANDARDS

ESD Policy

https://rflambda.com/pdf/rflambda_esd_control.pdf

Random Vibration Test Standard

https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Connector Torque Specifications

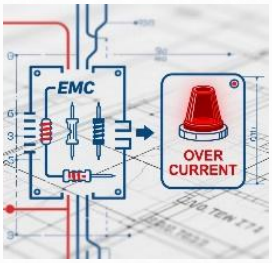
https://www.rflambda.com/pdf/Torque_Specifications.pdf

Parameter	Description
Operational Temperature	0°C to +50°C (Ambient Temperature)
Thermal Shock	40°C → +85°C (5 Cycles / 10 hours, Only internal modules tested prior to final assembly)
*Random Vibration	MIL-STD-202G, Table 214-I, Test Condition Letter C, 1.5 Hours Per Axis
High Temperature Burn In	Temperature +50°C for 72 Hours
Storage Temperature	0°C to +125°C

*For vibration testing details please see additional information section.

RF-Lambda is ISO: 9000 certified with 25,000 ft^2 combined R&D and production space, including an ISO7 10K Clean Room to meet ISO-14644-1.

PRODUCT FUNCTIONS



EMC Functions

- Output Power Lock
- Automatic Calibration

Mode Selections

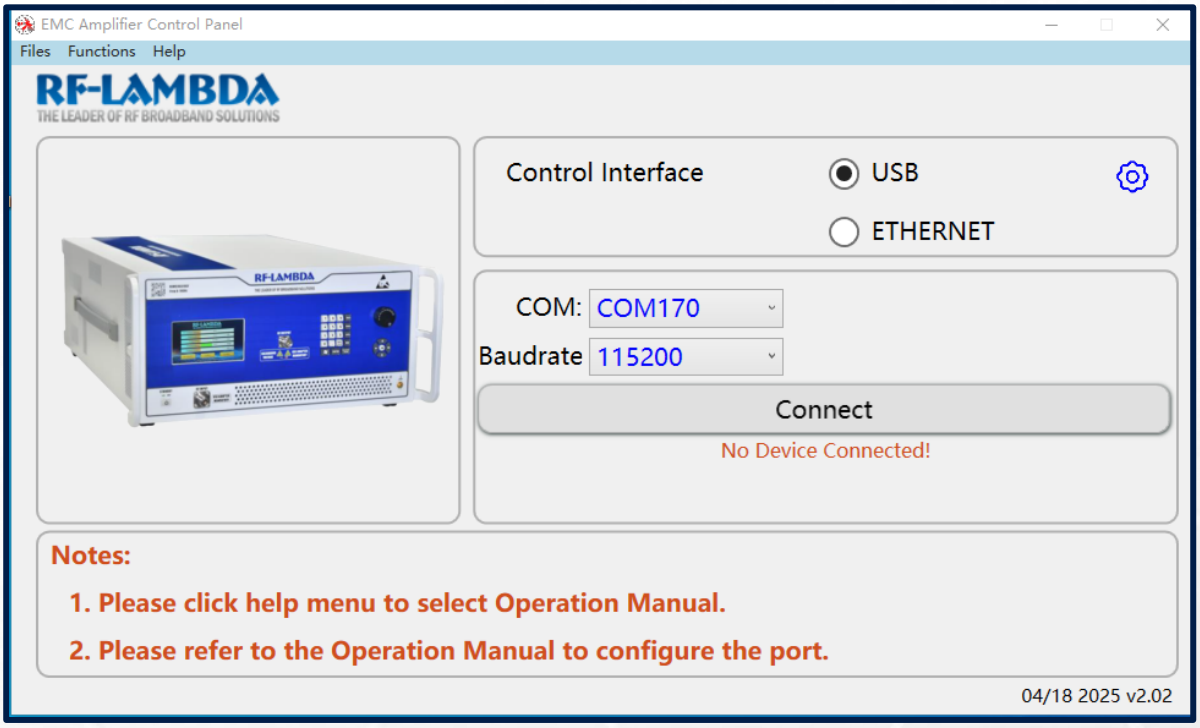
- Local
- Remote Control

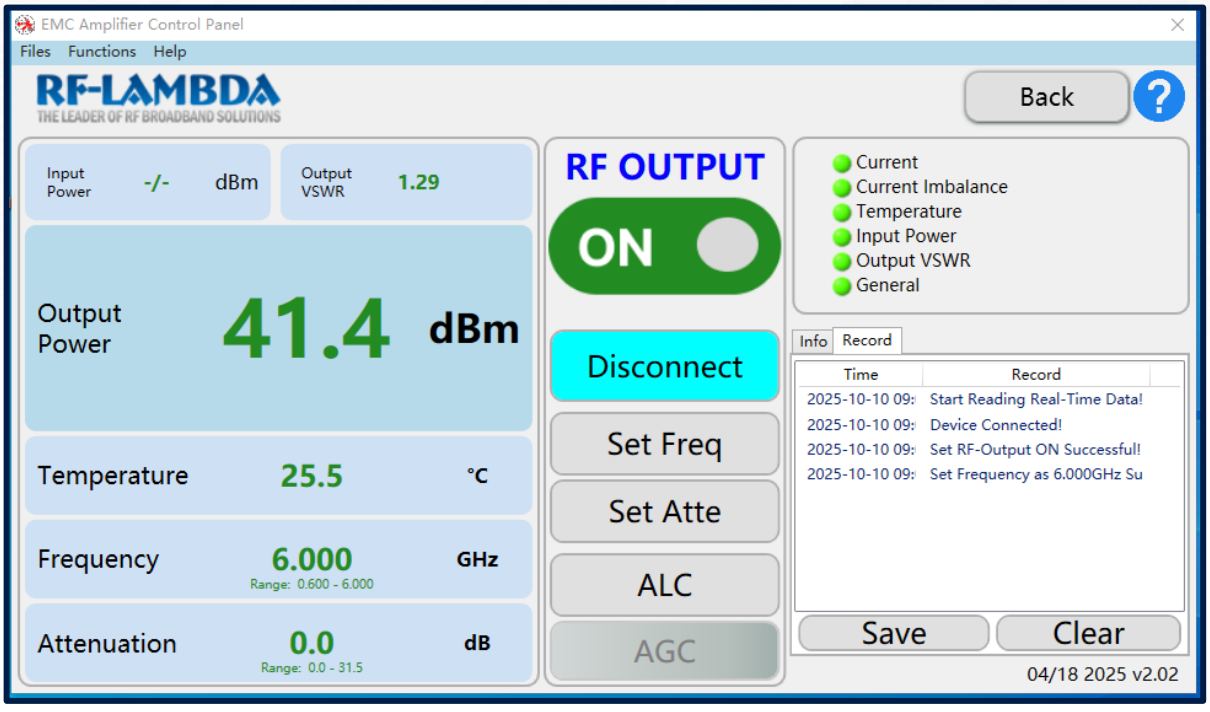
Product Safety Interlock

- Input Power Overload Protection
- Output Mismatch Protection
- Over temperature Protection
- Over current Protection
- Cooling System Anomaly Protection

Category	Function	Included	Optional (Licensing)	Optional (Hardware)	NOT Applicable
Product Safety Interlock	Input Overload Protection	☑	☐	☐	☐
	Output VSWR Protection	☑	☐	☐	☐
	Current Overload Protection	☑	☐	☐	☐
	Temperature Protection	☑	☐	☐	☐
	Current Imbalance Protection	☑	☐	☐	☐
	Overvoltage and Undervoltage Protection	☑	☐	☐	☐
	AC Power Abnormality Protection	☑	☐	☐	☐
	Fan Abnormality Protection	☑	☐	☐	☐
User Operation Functions	USB, LAN Communication	☑	☐	☐	☐
	DB Interface	☑	☐	☐	☐
	Self-Calibration Function	☑	☐	☐	☐
	Gain Compensation Over Temperature	☑	☐	☐	☐
	Current Compensation Over Temperature	☑	☐	☐	☐
	TDD Control - RF Switch Enable	☑	☐	☐	☐
	TDD Control - Positive Voltage Enable	☑	☐	☐	☐
	TDD Control - Negative Voltage Enable	☑	☐	☐	☐
	GUI Interface	☑	☐	☐	☐
	Parameter Setting	☑	☐	☐	☐
	Gain Calibration Each Stage	☑	☐	☐	☐
	Software ON/OFF Function	☑	☐	☐	☐
	Modularized System Integration	☑	☐	☐	☐
	Remote Software Control ON/OFF	☑	☐	☐	☐
EMC Functions	Rotary Gain Adjustment	☑	☐	☐	☐
	Screen Protection Function	☑	☐	☐	☐
	Touch Screen Display	☑	☐	☐	☐
	Developer Interface	☑	☐	☐	☐
User Customization Functions	System Log Recording	☑	☑	☐	☐
	Output VSWR Measurement	☑	☑	☐	☐
	Input Power Measurement	☑	☑	☐	☐
	ALC - Automatic Loop Control Gain	☐	☑	☑	☐
	AGC - Automatic Gain Control Function	☐	☑	☑	☐
	Input Circulator Protection (Internal Load)	☐	☐	☑	☐
	Output Circulator Protection (Internal Load)	☐	☐	☑	☐
	Waveguide Adapter (E-H)	☐	☐	☑	☐
	Fast RF Blanking	☐	☐	☑	☐
Internal Signal Generator	Single Frequency Output	☐	☐	☑	☐
	Frequency Auto Sweeping	☐	☐	☑	☐
	Frequency Hopping	☐	☐	☑	☐
	External Signal	☐	☐	☑	☐

REMOTE CONTROL



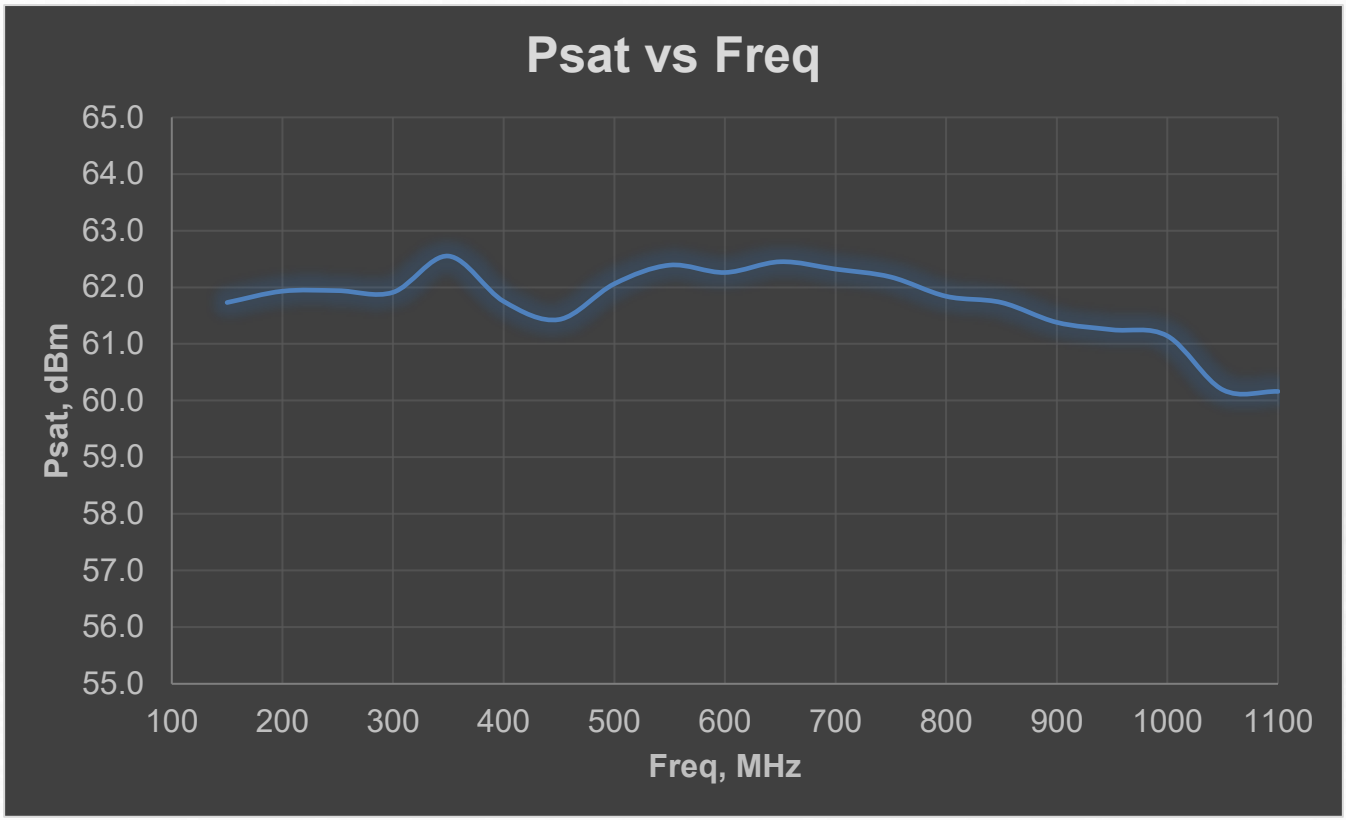


TECHNICAL DATA SPECIFICATIONS

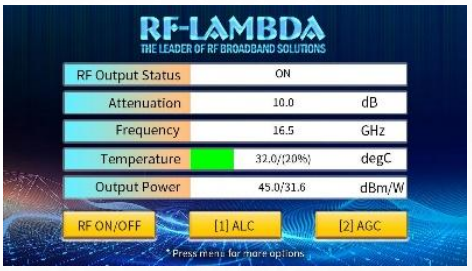
Parameter		Min	Typ	Max	Units
Frequency Range		0.15		1.1	GHz
Small Signal Gain			72		dB
Gain Flatness			±5		dB
Gain Variation Over Temperature (0°C to 50°C)			±3		dB
Input Return Loss			-15		dB
Saturated Output Power (Psat)			1500		Watt
			62		dBm
Power Added Efficiency (PAE) at Psat			25		%
Turn On/Off Speed (Switch Disable)	ON		100		ns
	OFF		100		ns
Turn On/Off Speed (Drain/Gate Disable)	ON		20		us
	OFF		20		us
Fast Blanking On/Off Speed (Optional)	ON		1		us
	OFF		1		us
Weight			220		lbs.
Impedance			50		Ohms

Package 12U Rack-mount/Tabletop Chassis

TYPICAL PERFORMANCE PLOT



INSTRUCTIONS FOR USE



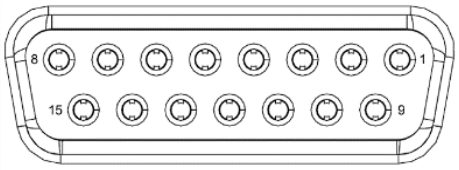
Please follow the instructions on the front panel LCD screen after switching on the power. Press "1" on keypad to continue.

Please follow the instructions.

Name	Description
RF Output Status	**Indicates instrument RF output status. It will display: ON or OFF**
Attenuation	**RF output attenuation (change with adjustment knob)**
Frequency	**RF input signal frequency (For illustrative purposes only)**
Temperature	**Instrument temperature (For illustrative purposes only)**
Output Power	**Instrument RF output power (For illustrative purposes only)**
RF ON/OFF	**Switches On or Off for instrument RF output port**
ALC	**ALC mode,** Automatic Loop Control (optional)
AGC	**AGC mode,** Automatic Gain Control (optional)

PROTECTION CONNECTOR TABLE

Female D-Sub is on the housing
The mating male part number: 172-E15-203R001



Pin #	Name	Function	Initial State	Description	Applied
1	Reset	Control	HIGH	Resets PA when logic LOW is applied and released	Yes
2	Gate Disable	Control	LOW	Appling logic HIGH disables gate of amplifiers	Yes
3	Drain Disable	Control	LOW	Applying logic HIGH disables drian of amplifiers	Yes
4	RF Input Over Drive	Indicator	LOW	Pin will be latched to logic HIGH when input signal is over limit	Yes
5	Temp Over	Indicator	LOW	Pin will be latched to logic HIGH when amplifier is driven over temperature	Yes
6	Current Over	Indicator	LOW	Pin will be latched to logic HIGH when drain current limit is reached	Yes
7	Current Imbalance	Indicator	LOW	Pin will be latched to logic HIGH when an imbalance in the drain current of the combining branches occurs	Yes
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	RF Input Switch	Control	LOW	Appling logic HIGH turns RF switch to load path	Yes
11	VSWR	Indicator	LOW	Pin will be latched to logic HIGH when output reflection is over limit	Yes
12	Fixed Attenuation 5dB	Control	LOW	Applying logic HIGH enables 5dB attenuation	NO
13	Fixed Attenuation 10dB	Control	LOW	Applying logic HIGH enables 10dB attenuation	NO
14	+5V	Power Supply	+5V	+5V DC is available for reference 400mA current ability	Yes
15	GND	Ground	GND	Ground	Yes

Notes:

- HIGH/LOW voltages are standard TTL signals 0.0V-0.8V = LOW. 2V-5V = HIGH. Input current is 10uA.
- Matching connector and cable will be shipped with the product.
- Applied=Yes means the feature is included. Applied=No means the feature is not included with this model.
- 5V reference supply can source 700mA.
- Indicator output signals can source 24mA.

PACKING LIST

Each amplifier is shipped in a well protected package.

ORDERING INFORMATION

Part Number	Modification	Description
REMC02M01GD	Input connector N-Female and Output connector 7/16 Connector	0.15GHz-1.1GHz 1500W Wideband EMC Benchtop Power Amplifier
REMC02M01GC	Input connector N-Female and Output connector 7/16 Connector	0.15GHz-1.1GHz 800W 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

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.
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