GT-1051B 10 MHz to 50 GHz Microwave Power Amplifier

Operation Manual

Operation Manual, Part Number 35576, Rev. B, January 2014

All technical data and specifications in this publication are subject to change without prior notice and do not represent a commitment on the part of Giga-tronics, Incorporated.

Warranty

Giga-tronics GT-1051B Microwave Power Amplifiers are warranted against defective materials and workmanship for one year from date of shipment. Giga-tronics will at its option repair or replace products that are proven defective during the warranty period. This warranty DOES NOT cover damage resulting from improper use, nor workmanship other than Giga-tronics service. There is no implied warranty of fitness for a particular purpose, nor is Giga-tronics liable for any consequential damages. Specification and price change privileges are reserved by Giga-tronics.

CONTACT INFORMATION

Giga-tronics, Incorporated

4650 Norris Canyon Road

San Ramon, California 94583

Telephone: 800.726.4442 (only within the United States)

925.328.4650

Fax: 925.328.4700

On the Internet: www.gigatronics.com

Regulatory Compliance Information

This product complies with the essential requirements of the following applicable European Directives, and carries the CE mark accordingly.

89/336/EEC and 73/23/EEC	EMC Directive and Low Voltage Directive
EN61010-1 (1993)	Electrical Safety
EN61326-1 (1997)	EMC – Emissions and Immunity

Manufacturer's Name:

Giga-tronics, Incorporated

Manufacturer's Address

4650 Norris Canyon Road

San Ramon, California 94583

U.S.A.

Type of Equipment:

Microwave Power Amplifier

Model Series Number

GT-1051B

Model Numbers:

Not applicable

Declaration of Conformity on file. Contact Giga-tronics at the following;

Giga-tronics, Incorporated

4650 Norris Canyon Road

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925.328.4650

Fax: 925.328.4700

Record of Changes to This Manual

Use the table below to maintain a permanent record of changes to this document. Replacement pages will be issued as a TPCI (Technical Publication Change Instruction).

TPCI Number	TPCI Issue Date	Date Entered	Comments

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Chapter 1 Safety and Manual Conventions

This manual contains conventions regarding safety and equipment usage as described below.

1.1 Personal Safety Alert

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

1.2 Equipment Safety Alert

CAUTION: Indicates a situation which can damage or adversely affect the GT-1051B or associated equipment.

1.3 Notes

Notes are denoted and used as follows:

NOTE: Highlights or amplifies an essential operating or maintenance procedure, practice, condition or statement.

Review this manual to become familiar with the instrument safety markings and instructions before operation.

1.4 Electrical Safety Precautions

- Any servicing instructions are for use by service-trained personnel only. To avoid personal injury, do not perform any service unless you are qualified to do so.
- For continued protection against fire hazard, replace the AC line fuse only with a fuse of the same current rating and type. Do not use repaired fuses or short circuited fuse holders.

1.5 Important Operating Instructions

- The GT-1051B Amplifier does not include an enable/disable feature to activate and deactivate the amplifier. When connecting or disconnecting the output of the amplifier, ensure that the power switch on the rear of the amplifier is in the OFF position.
- When connecting the amplifier to a transmitting device, observe all safety procedures to ensure that the amplifier isn't interfering with other systems in the area. High power microwaves can adversely affect power sensitive instruments in the area of transmission.
- Exercise precautions to avoid exposure to radiated microwave energy at all times.

Chapter 2 Introduction

2.1 Overview

The Giga-tronics GT-1051B Microwave Power Amplifiers are high-performance solid-state microwave power amplifiers. The Giga-tronics GT-1051B provide excellent pulse fidelity, low intermodulation distortion, high linearity and superior gain flatness without the warm-up time, drift or aging issues of traveling wave tube amplifiers (TWTA). They feature low noise figure, low harmonics and spurious content, and are highly tolerant to load mismatch.

GT-1051B:

- Frequency Range: 10 MHz to 50 GHz.
- 2.4 mm compatible 1.85 mm (f) V input connector.
- 2.4 mm compatible 1.85 mm (f) V output connector.

2.1.1 Features and Benefits of the GT-1051B Microwave Power Amplifier

- 25 dB nominal gain over the 10 MHz to 50 GHz frequency range.
- Ideal for testing in R&D labs, ATE systems, wireless communications applications and defense EW systems.
- Small size allows easily placing the amplifier close to the device under test.

2.2 Controls, Indicators, and Connectors

The following pages describe all of the features shown in Figure 1 and Figure 2.

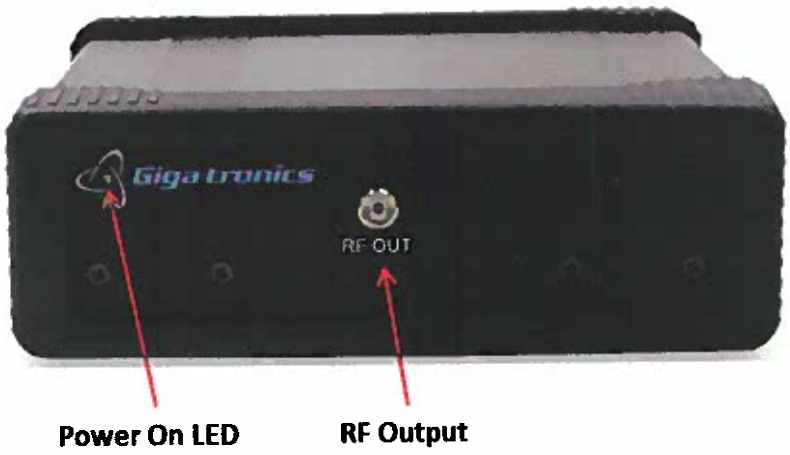

Figure 1: GT-1051B Front Panel

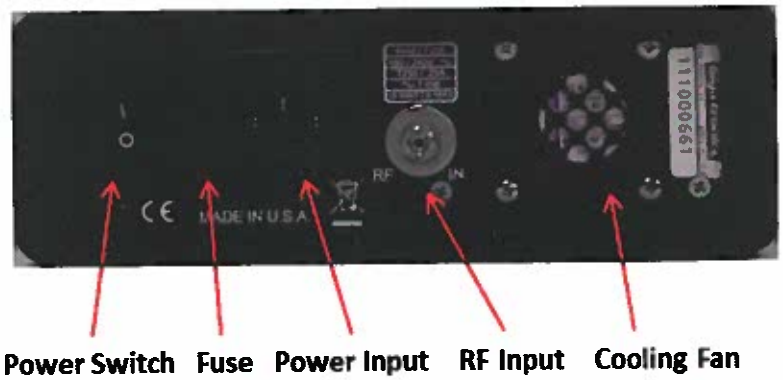

Figure 2: GT-1051B Rear Panel

The tables below describe the functions of the features shown in Figure 1 and Figure 2 on the previous page.

Table 1: GT-1051B Front Panel Controls, Indicators, and Connections

GT-1051B Front Panel Controls, Indicators, and Connections	
Name	**Function**
Power on LED	• Extinguished when DC power is not applied • Illuminated blue when DC power is applied
OUTPUT (RF output connector)	2.4 mm compatible 1.85 mm (f) V connector.

Table 2: GT-1051B Rear Panel Controls, Indicators, and Connections

GT-1051B Rear Panel Controls, Indicators, and Connections	
Name	**Function**
Power Switch	Switches the unit on and off.
Fuse	Field replaceable fuse.
Power Input	AC power input.
INPUT (RF input connector)	2.4 mm compatible 1.85 mm (f) V connector.
Fan	Cooling fan for unit.

2.3 Receiving and Inspection

Follow the procedure in Table 3 for receiving and inspecting the GT-1051B.

Table 3: Receiving and Inspection of the GT-1051B

Receiving and Inspection of the GT-1051B	
Step	**Action**
1.	Before opening the shipping container, inspect it for any signs of damage. **If THERE IS evidence of damage**; record the location and extent of the damage and contact the shipper immediately to report the damage. **If there is NO EVIDENCE of damage**; continue to the next step.
2.	Open the shipping container and inspect the contents for evidence of damage. The contents should include the following: • GT-1051B Microwave Power Amplifier • AC line cord If any of the contents are damaged or missing, contact Giga-tronics immediately. Refer to the Contact Information on the inside of the front cover of this manual.
End of procedure	

2.4 Prepare the GT-1051B for Use

2.4.1 Cooling

The GT-1051B has an internal cooling fan. The air intake is located on the rear panel of the instrument. When using the GT-1051B, ensure there are no obstructions to the flow of air into or out of the instrument.

2.4.2 AC Power Requirements

AC Power Requirements: See Table 10 on page 12

2.5 Shipping, Repair, and Calibration

2.5.1 Shipping the GT-1051B

If it is necessary to ship the GT-1051B, observe the following:

- Use the best packaging materials available. If possible, reuse the original shipping container.
- If the original shipping container is not available, use a strong carton (350 lbs./sq. in. bursting strength) or a wooden box.
- Wrap the amplifier in heavy paper or plastic before placing it into the shipping container.
- Completely fill the areas on all sides of the amplifier with packaging material. Take extra precaution to protect the front and rear panels.
- Seal the package with strong tape or metal bands. Mark the outside of the package clearly, and in bold type, as follows:

FRAGILE — DELICATE INSTRUMENT

2.5.2 Repairs

The Giga-tronics GT-1051B Microwave Power Amplifier is a robust instrument that has been designed and built for years of trouble-free service. However, if you experience problems with the instrument, do the following:

1. Contact your local Giga-tronics sales office, or the factory, and be prepared to provide the model, serial number, and any included options of your amplifier, and a description of the problem. To contact the factory directly, use the following information:

Contacting Giga-tronics Customer Service	
Email	repairs@gigatronics.com
Telephone (within the United States)	800.726.4442
Telephone	925.328.4702
Fax	925.328.4702

2. If it is has been determined that you must ship the GT-1051B to the factory or a service center for repair, you will be issued a ***Return Materials Authorization (RMA)*** number. Use the RMA number in all correspondence regarding the repair.
3. Pack the GT-1051B for shipment as described in the previous section, and enclose all relevant information regarding the problem.
4. Ship the GT-1051B to the address provided by Giga-tronics Customer Service.

2.5.3 Calibration

The GT-1051B Microwave Power Amplifier does not require calibration. There are no adjustments. For more information, contact Giga-tronics.

Chapter 3 Operation

3.1 Operating Safety and Instructions

CAUTION	**DO NOT EXCEED AN INPUT LEVEL OF +20 dBm INTO THE GT-1051B. EXCEEDING THIS LEVEL CAN DAMAGE THE GT-1051B MICROWAVE POWER AMPLIFIER.**

WARNING	**WHEN ENERGIZED, THE GT-1051B IS CAPABLE OF SUPPLYING POWER THAT CAN CAUSE DAMAGE OR INJURY. TAKE THE FOLLOWING PRECAUTIONS TO ENSURE SAFE SETUP AND OPERATION:** • **Verify that all cables, connectors, and equipment connected to the GT-1051B are in good condition.** • **Do not make connections to equipment while the output of any item of equipment is energized.**

Table 4: Operate the GT-1051B

Operate the GT-1051B	
Step	**Action**
1.	• Verify that the POWER switch on the rear of the unit is OFF. • Plug the included external power supply into a source of AC power that meets the specifications for power in Table 10 on page 12. • Plug the DC cable from the external power supply into the connector +9 V on the rear of the unit. • Put the POWER switch on the GT-1051B in the ON position. ***NOTE:*** For best results, let the GT-1051B warm up for one minute after switching the AC power ON.
2.	Verify that the output of the microwave signal source is NOT energized before continuing to the next step.
3.	Connect the equipment to the GT-1051B according to your application. ***NOTE:*** Verify all mating connectors are 50 Ohm, and that they are in good condition.
4.	Energize the output of the microwave signal source.
5.	Adjust the output of the microwave signal source until the output from the GT-1051B is at the desired level.
End of Procedure	

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