

Technical Publication Change Instructions

Updated replacement pages and/or drawings are attached to this Technical Publication Change Instructions. Please follow the directions under **Publication Update Requirements** and replace corresponding pages with the attached pages provided. Failure to make these replacements may result in loss of product efficiency and possible failure. Please note that page numbers no longer have alpha suffixes, and now the revision level on newer publications adds a numerated suffix denoting its difference from the core revision. Most specific changes are identified by change bars in the corresponding margins. A replacement page with no numerated suffix means a change has not occurred, but the page is included because its page is double-sided.

Replacement pages will become standard pages at the next printing cycle. The Front Matter (excluding Cover page), Table of Contents, List of Illustrations and Tables, Preface (in most cases) and Index will be updated at this cycle. For record purposes you are encouraged to retain this TPCI as a permanent part of the publication. Record changes in your publication's Preface section (Under newer Giga-tronics publications, "Record of Publication Changes", in older, "Record of Manual Changes").

Publication	Former P/N, Revision & Date	Updated P/N, Revision & Date
Series 12000A Microwave Synthesizers Service Manual	31232, Rev. A4, June 2002	31232, Rev. A5, July 2002

Publication Update Requirements				
Change Originator			Replace Old Page(s)/ Add New Page(s)	Remarks
ECO	CAR	QIR		
ECO 8284			Replace old first 2 pages of the Front Matter with new.	Update to revision level on front matter to Rev. A5, Date July 2002.
			Replace old pages 3-1 to 3-2 and 3-7 to 3-8 with new.	Updates to Chapter 3 and Timebase cal procedure in Section 3.4.



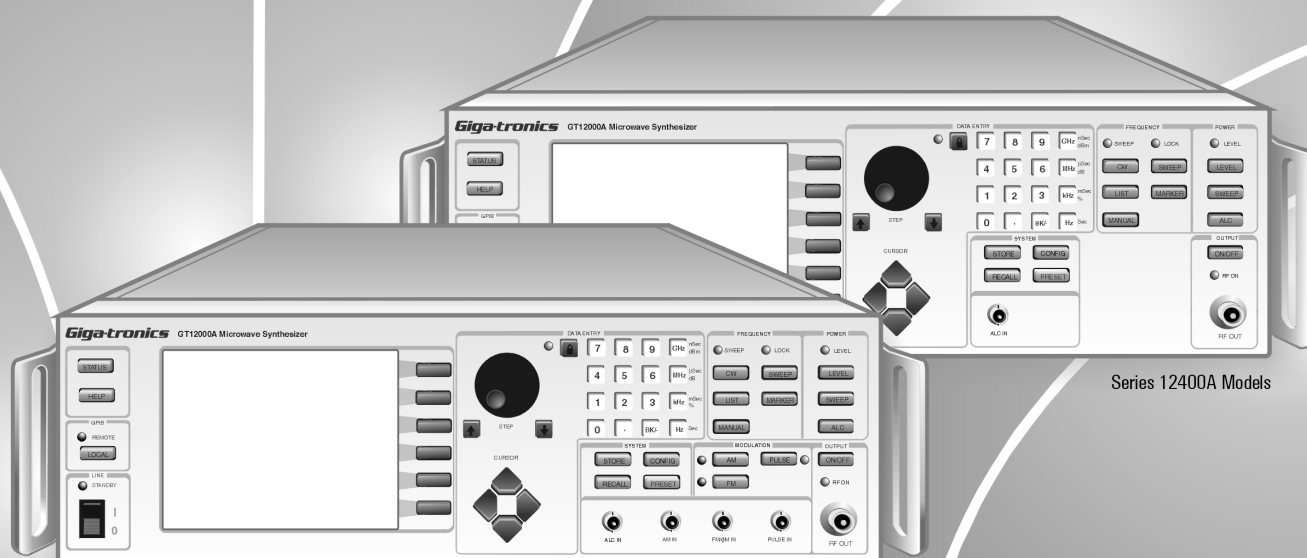
NOTE: Errata 31232-A4 must still be shipped along with errata 31232-A5.

Technical Publication Change Instructions

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Giga-tronics

www.gigatronics.com



Series 12500A/12700A Models

Series 12400A Models

Series 12000A Microwave Synthesizers

Service Manual

Publication 31232, Rev. A5, July 2002

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WARRANTY

Giga-tronics Series 12000A instruments are warranted against defective materials and workmanship for three years 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.

MODEL NUMBERS

The Series 12000A has model numbers for each instrument with a specific frequency range as described in Chapter 1. All models are referred to in this manual by the general term 12000A, except where it is necessary to make a distinction between the models. In these cases, the specific model number(s) will be used.

DECLARATION OF CONFORMITY

Giga-tronics

Giga-tronics Incorporated
4650 Norris Canyon Road
San Ramon, CA 94583
Tel: 925/328-4650
Fax: 925/328-4700

DECLARATION OF CONFORMITY

Application of Council Directive(s)

Standard(s) to which Conformity is Declared:

89/336/EEC and 73/23/EEC

EN61010-1 (1993)

EN61326-1 (1997)

EMC Directive and Low Voltage Directive

Electrical Safety

EMC - Emissions & 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 Synthesizer

Model Series Number:

12000A

Model Number(s) in Series:

12408A, 12420A, 12422A, 12428A

12508A, 12520A, 12522A, 12528A

12708A, 12720A, 12722A, 12728A

*I, the undersigned, hereby declare that the equipment specified
above conforms to the above Directive(s) and Standard(s).*

Claudio Mariotta
(Full Name)


(Signature)

Acting Director of Quality Assurance
(Position)

San Ramon, California
(Place)

February 27, 2002
(Date)

Calibration

3.1 Introduction

Introduction (Calibration)	Model	
	124XXA	125XXA/ 127XXA
	√	√

The Series 12000A features completely 'closed case' calibration. There are no mechanical adjustments anywhere in the instrument and all calibration is done under computer program control. Prior to performing any of the calibration procedures, allow the instrument to operate for at least 30 minutes. The calibration process is divided into sections of related steps. Each section should be performed in its entirety.



NOTE: In order to verify performance after calibration, refer to Chapter 2.

The Calibration Control Program runs on a Pentium based Windows 95/98® PC. The computer may use either a Capital Equipment Corporation CEC488 IEEE 488 interface or a National Instrument IEEE 488 interface. Please refer to the instructions below on installing the program.

1. Insert CD-ROM into CD-ROM drive.
2. Open the Windows Explorer program by right clicking the **Start** button and selecting **Explore**.
3. Select **(D:)** drive for opening and reading the CD-ROM or the drive used on your PC for reading CD-ROMs.
4. Copy the 12000A Calibration folder, 31232.pdf, 31232.doc and the README.txt files to a directory of your choice.
5. Open the 12000A Calibration folder and click on 12000 .exe file. Drag the file onto your desktop to create the 12000A Calibration Program shortcut.



NOTE: Do not right click the file and use Send to > Desktop (Create shortcut) feature. It does not create a shortcut for this program.

6. Open and print the Calibration Procedure 31232.pdf or the 31232.doc prior to performing any calibration sequence.
7. Double click the 12000A Calibration program icon you created in Step # 5 to run the program.

3.2 Equipment & Documentation Required

Equipment & Documentation Required	Model	
	124XXA	125XXA/ 127XXA
	√	√ (See Also 3.2.2)

3.2.1 All Models

- Giga-tronics 12000 Cal Software CD (P/N 32464)
- Pentium™ PC with Windows 95/98™, Equipped with National Instrument IEEE 488™ Interface (Version NI-488/NI-488.2)
- Giga-tronics 8651A or 8652A Power Meter
- Giga-tronics 80313A Sensor
- Giga-tronics Series 12000A Microwave Synthesizer
- Giga-tronics Series 12000A Microwave Synthesizer Service Manual (P/N 31232)
- Male “N” to Female “K” Adapter (Only for Synthesizer Equipped with Option 23)
- 10 MHz Frequency Standard, Accuracy better than 1E-10, .5 to 5 V_{P-P} into 100 ohms (Stanford Research FS 725 or Equivalent)

3.2.2 Additional Requirements (Series 125XXA/127XXA Only)

- DC Voltage Source 0-10 VDC, .5% Accuracy, 100 mA (Tektronix™ PS280 or Equivalent)
- Audio Oscillator, 10 Hz-200 kHz, 2 V_{P-P} +/- .01 V into 50 ohm (Stanford Research™ DS-345 or equivalent)
- HP™ 8902A Measuring Receiver
- Giga-tronics Series 12520A or 12720A Synthesizer
- Giga-tronics Mixer/Divider (P/N 002CA04900)
- Digital Voltmeter 3 ½ digits (Fluke™ 8920A or Equivalent)

3.4 Timebase Calibration

Timebase Calibration	Model	
	124XXA	125XXA/ 127XXA
	√	√

The timebase oscillator used in the 12000A operates at a frequency of 10 MHz and uses Electronic Frequency Control to adjust its output frequency. The calibration is performed entirely by the 12000A without the need for an external computer. Prior to performing this calibration the instrument should be connected to the mains for at least 24 hours. It is not necessary to have the instrument on. Note that calibration accuracy is directly related to the accuracy of the external standard.

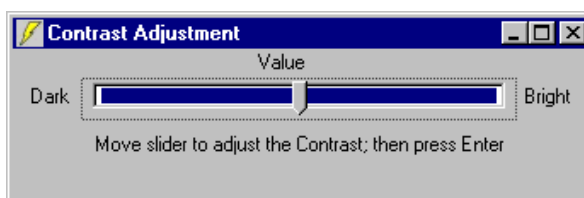


NOTE: Updating firmware may clear the calibration data.



NOTE: Use the 'LCD/Timebase' button for units with firmware V073-B49-22 and higher. Otherwise, just perform the steps listed under 3 below.

1. Click on the LCD/Timebase button.
2. Per the action required window, set the timebase as described next.
3. To set the timebase:
 - a. Press the front panel **[LOCAL]** button.
 - b. Connect the frequency standard to the rear panel 'Ref In' BNC connector and make sure the instrument has had at least a 15 minute warm-up.
 - c. Press the **[CONFIG]** button, then the *Service* softkey, then the *Hardware Testing* softkey.
 - d. Now press the *Timebase Cal* softkey. Either a 5 or 10 MHz reference frequency may now be selected using the up/down buttons.
 - e. Press the *Cal Timebase* softkey to calibrate the timebase.
 - f. Press the *Store Cal* to store the calibration.
4. The Contrast Adjustment window will now appear.



- a. Click on the window. Use the mouser (or the keyboard left and right arrow keys) to move the slider pointer. The word 'value' will change to a number showing the contrast value.
- b. Press Enter after a good viewing contrast is attained.

Series 12000A Microwave Synthesizers

- c. A message window will show Characterization Complete. Click OK. Power the 12000A down and back up.
- d. After the Fixed Frequency screen is displayed on the 12000A, click the Read button under the parameter block to re-establish program control.