



# **Agilent M9330A Series Arbitrary Waveform Generator Modules**



## ***Startup Guide***

M9330-90001  
March 15, 2011



**Agilent Technologies**

NOTICE: In August 2014, Agilent Technologies' former Test and Measurement business became Keysight Technologies. This document is provided as a courtesy but is no longer kept current and thus will contain historical references to Agilent. For more information, go to **[www.keysight.com](http://www.keysight.com)**.



# Notices

© Agilent Technologies, Inc. 2006, 2010

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws.

Microsoft® and Visual Studio® are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

PCI-SIG®, PCI™, PCI Express®, PCIe®, EXPRESSMODULE™, PCI-X™, PCI-X™ 66, PCI-X™ 133, PCI-X™ 266, PCI-X™ 533, PCI HOT PLUG™, and MINI PCI™ are registered trademarks and/or service marks of PCI-SIG.

## Manual Part Number

M9330-90001

## Edition

March 15, 2011

Printed in USA

Agilent Technologies, Inc.  
1400 Fountaingrove Pkwy  
Santa Rosa, CA 95403

## Warranty

**The material contained in this document is provided “as is,” and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.**

## Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

## Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or sub-contract, Software is delivered and licensed as “Commercial computer software” as defined in DFAR 252.227-7014 (June 1995), or as a “commercial item” as defined in FAR 2.101(a) or as “Restricted

computer software” as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies’ standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

## Safety Notices

### CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

### WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

## Table of contents

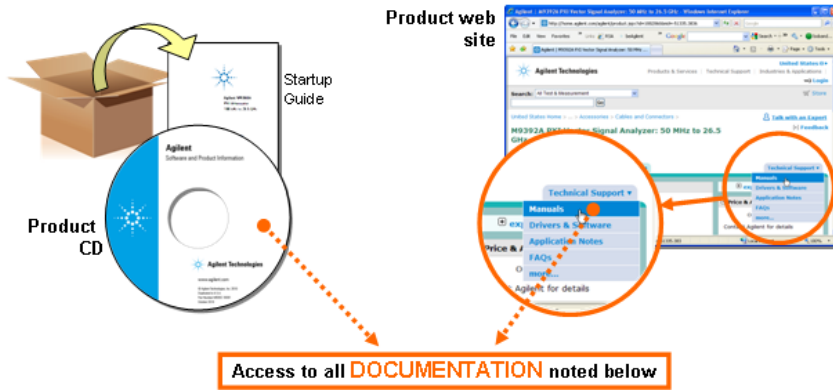
|  |    |
|--|----|
| Documentation Map                                      | 5  |
| Introduction   | 7  |
| Step1: Check the Shipment                              | 7  |
| Step2: Unpack and Inspect the Module                   | 8  |
| Step 3: Check System Requirements                      | 9  |
| Step 4: Installing the Software                        | 9  |
| Step 5: Installing the Module in a Chassis             | 10 |
| Step 6: Operation Verification and Waveform Generation | 11 |
| Step 7: Shutting Down the System                       | 12 |

### NOTE

Preliminary notice: This document covers both modules **M9330A** and **M9331A**



## Documentation Map



### Startup Guide



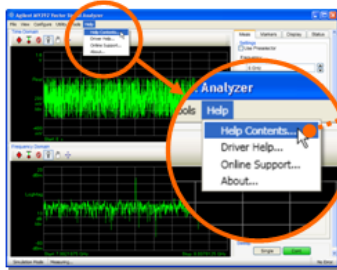
- Unpack product
- Verify shipment
- Install software
- Install & connect hardware
- Verify operation

### Data Sheet

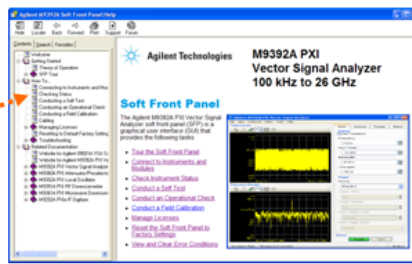


- Product description
- Technical specifications

### Soft Front Panel (SFP) user interface

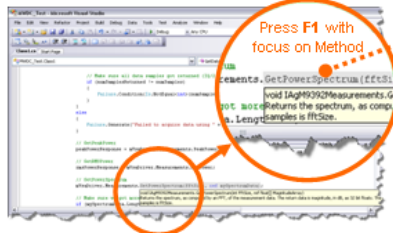


### SFP help system



- Product theory of operation
- Configuration
- Self test
- Field calibration
- Error reports

### Visual Studio

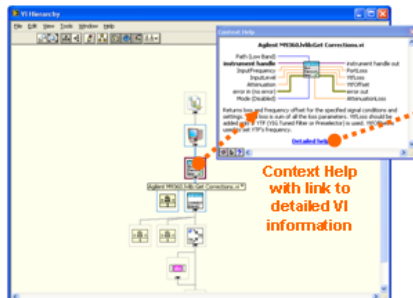


### IVI Driver help system



- IVI-COM and IVI-C driver programmer's reference

### LabVIEW



### LabVIEW Driver help system



- LabVIEW driver programmer's reference



## Installation and Operation Verification

## Introduction

The scope of this Startup Guide is to detail the processes of receiving and installing the Agilent M9330A series Arbitrary Waveform Generator modules, installing the required software, and verifying the basic module operation. If you have any questions after reviewing this information, please contact your local Agilent Technologies Inc. representative or contact us through our website at: [www.agilent.com/find/awg](http://www.agilent.com/find/awg)



Prior to installation of any Agilent Technologies M9330A Series AWG Modules, an embedded controller or interface card must be installed in Slot-1 of the CompactPCI/PXI chassis. For information on this installation process, refer to the documentation provided by the chassis manufacturer.

## Step1: Check the Shipment

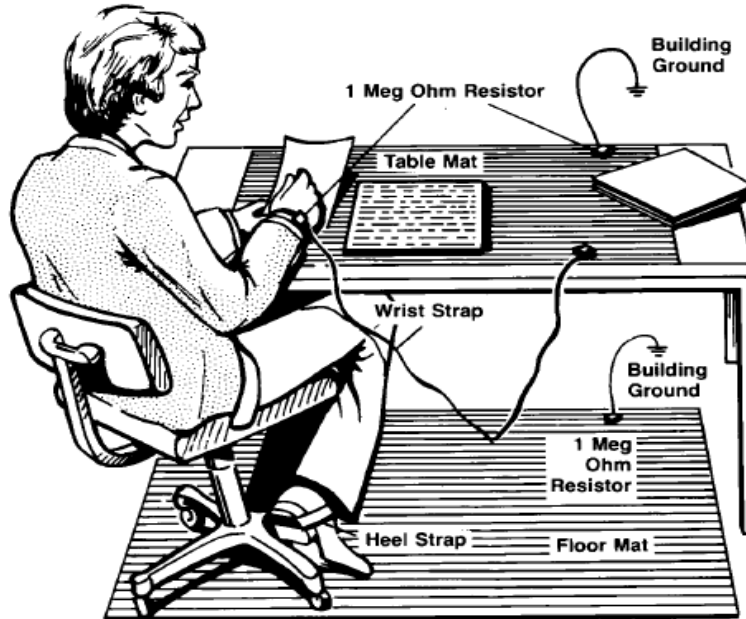
- ✓ M9330A Series AWG Modules
- ✓ M9330A CD (M9330-10001)
- ✓ Agilent IO Libraries Suite (E2904-60003)
- ✓ M9330A Series AWG Modules Quick Start Guide (this document)



## Step2: Unpack and Inspect the Module

### CAUTION

The module is shipped in materials which prevent damage from static. the module should only be removed from the packaging in an anti-static area ensuring that correct anti-static precautions are taken. Store all modules in anti-static envelopes when not in use.



Electrostatic discharge (ESD) can damage or destroy electronic components. All work on assemblies should be performed at a static-safe workstation. The preceding figure shows an example of a static-safe workstation using 2 types of ESD protection.

- Conductive table-mat and wrist-strap combination.
- Conductive floor-mat and heel-strap combination.

### Inspect the module

After unpacking the module, carefully inspect if for any shipping damage. Report any damage to the shipping agent immediately, as such damage is not covered by the warranty.

### CAUTION

To avoid damage when handling a module, do not touch any exposed connector pins.

Information on preventing damage to your Agilent equipment can be found at [www.agilent.com/find/tips](http://www.agilent.com/find/tips).

## Step 3: Check System Requirements

### Software Requirements

- IVI Compliance Package, Version 4.1 or greater, which includes the IVI Shared Components. Available from: [www.ni.com/ivi/ivi\\_prod.htm](http://www.ni.com/ivi/ivi_prod.htm)
- Agilent IO Libraries Suite (IOLS), version 16.0 (or newer) which includes the Agilent Connection Expert (ACE)

The following table lists the system configurations that Agilent tested the IO Libraries version 16.0 on, and are therefore guaranteed to work. In general, any x86 or x64 (except Itanium) processor should work but there may be a decrease in performance.

| Topic                       | Requirements  |   |   |
|-----------------------------|---|---|---|
|                             | Windows XP  | Windows Vista®  | Windows 7   |
| <b>Operating systems</b>    | Windows XP, Service Pack 3  | Windows Vista®, SP1 and SP2 (32-bit and 64-bit), Business, Ultimate, Enterprise, Home Basic, and Home Premium | Windows 7 (32-bit and 64-bit) Starter, Home Basic, Home Premium, Professional, Ultimate, Enterprise |
| <b>Processor speed</b>      | 600MHz or higher required<br>800MHz recommended   | 1Ghz 32-bit (x86), 1GHz 64-bit (x64), no support for Itanium64  | 1Ghz 32-bit (x86), 1GHz 64-bit (x64), no support for Itanium64                                      |
| <b>Available memory</b>     | 256 MB minimum<br>(1 GB or greater recommended)   | 1 GB minimum  | 1 GB minimum  |
| <b>Available disk space</b> | 1.5 GB available hard disk space, includes:<br>- 1GB available for Microsoft .NET Framework 3.5 SP1<br>- 100MB for Agilent IO Libraries Suite |   |   |
| <b>Video</b>                | Super VGA (800x600) 256 colors or more  | Support for DirectX 9 graphics with 128MB graphics memory recommended (Super VGA supported)                   | Support for DirectX 9 graphics with 128MB graphics memory recommended (Super VGA supported)         |
| <b>Browser</b>              | Microsoft Internet Explorer 6.0 or greater  | Microsoft Internet Explorer 7 or greater  | Microsoft Internet Explorer 7 or greater  |

**Table 1** System requirements

### NOTE

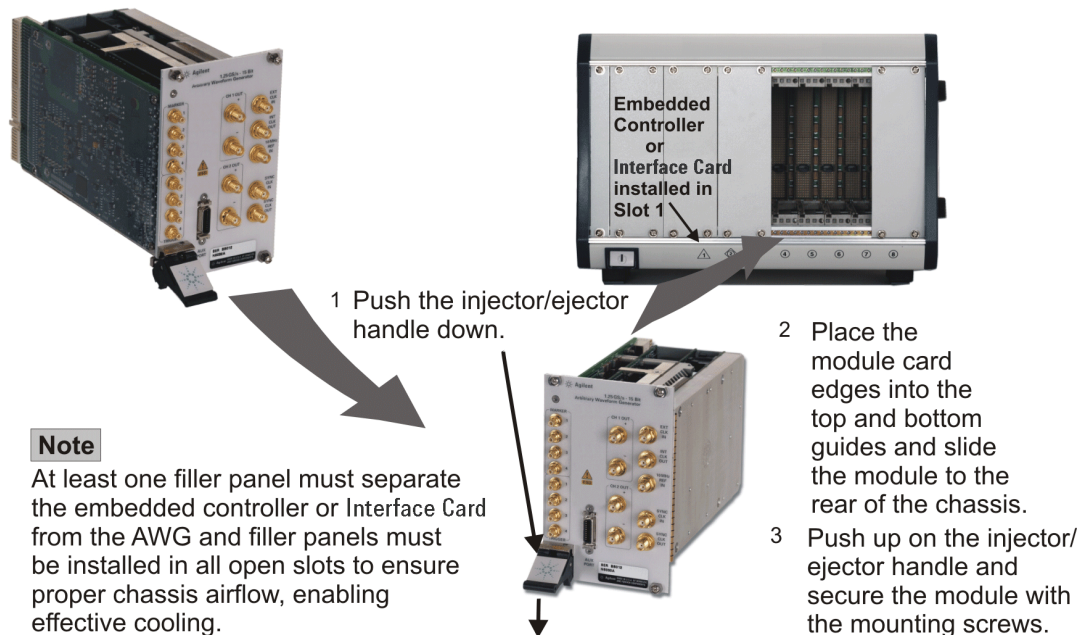
Version 16.0 (or newer) of the Agilent IO Libraries Suite is required.

## Step 4: Installing the Software

- 1 From the Agilent IOLS CD (E2904-60003) browser launch the installer.
- 2 Follow the installer prompts to install the IO libraries.
- 3 Insert the M9330A CD (M9330-10001) into the CD drive and follow the instructions.
- 4 If the install application fails to start automatically, navigate to the CD drive and double-click setup.bat.

## Step 5: Installing the Module in a Chassis

Before installing the module in the chassis, turn off the controller and make sure the chassis is switched off.



## Step 6: Operation Verification and Waveform Generation

The following steps guide you through operation verification and basic waveform generation.

### NOTE

In the case of an external controller, the chassis must be switched on before the controller is turned on.

For operation verification, an Agilent E4440A spectrum analyzer or equivalent is needed.

- 1 Connect a 10 MHz reference to the M9330A Series AWG modules front panel connector. If you are using a PXI chassis, use the backplane 10 MHz reference.
- 2 Connect the M9330A Series AWG modules front panel **CH 1 OUT (+)** connector to the spectrum analyzer RF input connector.
- 3 Open the user interface by double-clicking the **M9330A Control Utility** icon placed on the desktop during installation.



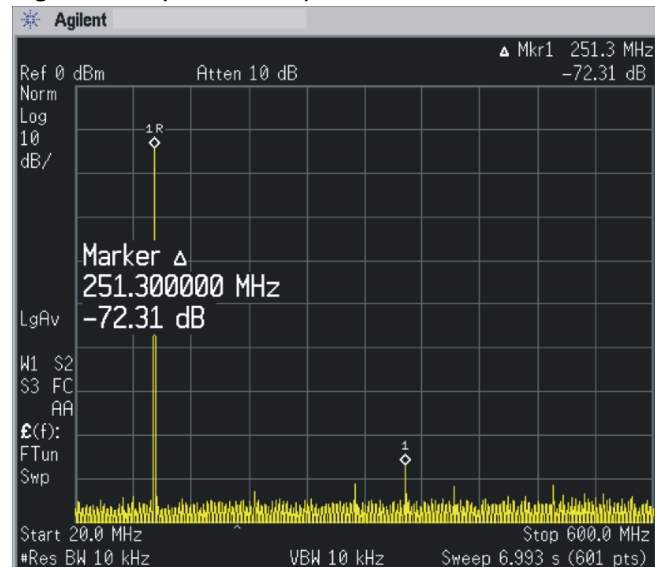
### NOTE

If you do not have an icon, go to **Start > Programs > Agilent > M933x > Soft Front Panel** to open the user interface.

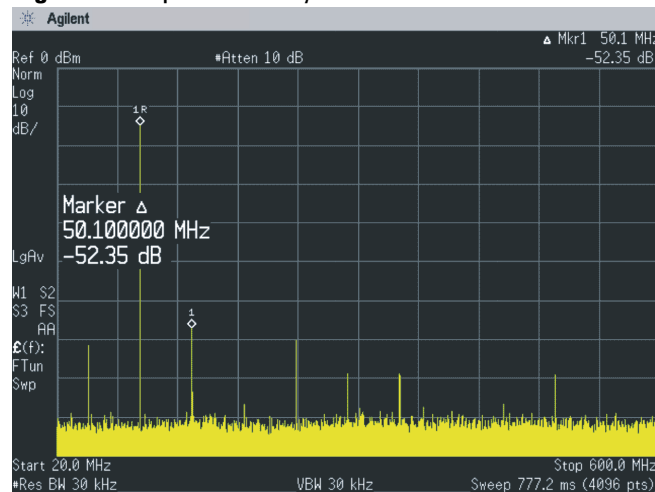
- 4 Select the **Output** tab and configure the signal conditioning path to include the 500 MHz reconstruction filter through CH1 OUT on channel 1. Enable single-ended output by closing the CH1 (+) switch (toggle the switch).
- 5 Select the **Clock** tab and configure the clock to either the **Backplane 10 MHz** (PXI chassis only) or the **10 MHz REF IN**.
- 6 In the **Quick Play** section of the user interface, browse and select the **100 MHz** waveform found on the CD for the Channel 1 Waveform.
- 7 Click **Play**.

The spectrum analyzer cabled to channel 1 should display a spectral purity of at least  $-65$  dBc for the M9330A Series AWG module, and at least  $-50$  dBc for the M9331A Series AWG module as shown in [Figure 1](#) and [Figure 2](#) respectively.

**Figure 1** Spectral Purity of the M9330A Series AWG Module



**Figure 2** Spectral Purity of the M9331A Series AWG Module



## Step 7: Shutting Down the System

Perform the following to shut down the M9330A Series AWG system.

- 1 Close the M9330A Control Utility.
- 2 Shut down Windows (**Start > Shut Down**).
- 3 When Windows is completely shut down, power off the chassis.