Keysight M9383A PXIe Vector Signal Generator

Startup Guide

KEYSIGHT TECHNOLOGIES

Notices

Trademark Acknowledgments

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CAUTION

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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.

Where to Find the Latest Information

Documentation is updated periodically. For the latest information about this product, including instrument software upgrades, application information, and product information, browse to the following URL:

https://www.keysight.com/us/en/product/M9383A/pxie-microwave-signal-generator.html

Information on preventing instrument damage can be found at:

http://keysight.com/find/PreventingInstrumentRepair

Is your product software up-to-date?

Periodically, Keysight releases software updates to fix known defects and incorporate product enhancements. To search for software updates for your product, go to the Keysight Technical Support website at:

http://www.keysight.com/find/techsupport

1. Startup Guide

1 Startup Guide

The following topics can be found in this section:

Introduction

The scope of this Startup Guide is to detail the processes of installing the modules and cables that compose the M9383A PXIe Vector Signal Generator. This document also details how to install the required software. If you have any questions after reviewing this information, contact your local Keysight Technologies Inc. representative or contact us through our website at www.keysight.com/find/M9383A

Related Documentation

To access documentation related to the Keysight M9383A PXIe Vector Signal Generator, navigate to the locations listed below:

– If the product software is installed on your PC, the related documents are available in the software installation directory.

Document	Description	Location/Link	Format
Startup Guide	Includes procedures to help you to unpack, inspect, install (software and hardware), perform instrument connections, verify operation, and troubleshoot your product. Also includes an annotated block diagram.	C:\Program Files (x86)\Keysight\M9383\ Help\M9383_StartupGuide. pdf	PDF
Programming Guide	Shows you how to use Visual Studio 2010 with .NET Framework to write IVI-COM Console Applications in Visual C#.	C:\Program Files (x86)\Keysight\M9383\ Help\M9383_Programming Guide.pdf	PDF
SCPI Command Reference	Describes the SCPI commands available for the M9383A PXIe Vector Signal Generator.	C:\Program Files (x86)\Keysight\M9383\ Help\M9383_SCPI_Referen ce.chm	CHM (Microsoft Help Format)
IVI Driver Reference	Provides detailed documentation of the IVI-COM and IVI-C driver API functions, as well as information to help you get started with using the IVI drivers in your application development environment.	C:\Program Files (x86)\Keysight\M9383\ Help\KtMVsg.chm	CHM (Microsoft Help Format)
Soft Front Panel (SFP) Help	Provides product introduction, a tour of the SFP user interface, how to procedures (for example, configuration, self-test, operational check), and troubleshooting.	C:\Program Files (x86)\Keysight\M9383\ Help\M9383_SFP_Help.ch m	CHM (Microsoft Help Format)

Document	Description	Location/Link	Format
Data Sheet	Provides key features, and specifications. Also includes annotated block diagrams.	Data Sheet	PDF
Configuration Guide	Provides information to help you configure your M9383A PXIe Vector Signal Generator and create solutions to meet your requirements.	Configuration Guide	PDF

NOTE Alternatively, you can find most of these documents under: Start > All Programs > Keysight M9383. The Data Sheet and Configuration Guide can be found on Keysight.com

– To find the very latest versions of the user documentation, go to the product website www.keysight.com/find/M9383A and download the files from the Manuals support page (go to Technical Support > Resources)

Items You Will Need

To complete the startup process and begin using the instrument, you will need the following items:

– Pozidriv P1 or flathead screwdriver to secure the modules into the chassis.

– Adjustable torque wrench (at minimum, accommodate an 8 in-lb [0.904 Nm] torque on SMA, 3.5 mm and 2.4 mm connectors).

– A USB flash drive. Download the installer files to a computer, transfer the installer files to a USB flash drive, and install the software from the USB flash drive.

– A high-quality SMA (male) to SMA (male) cable at least 10 inches (25.4 cm) long. This cable is used in Step 6: Make a Measurement. If you are using a signal analyzer other than the Keysight M9393A PXIe Vector Signal Analyzer, the cable end at the signal generator RF Output may be different.

Protecting against electrostatic discharge

Electrostatic discharge (ESD) can damage or destroy electronic components (the possibility of unseen damage caused by ESD is present whenever components are transported, stored, or used).

Test Equipment and ESD

To help reduce ESD damage that can occur while using test equipment:

WARNING **For your safety, do not use these first three techniques when working on circuitry with a voltage potential greater than 500 volts.**

- Before connecting any coaxial cable to an instrument connector for the first time each day, momentarily short the center and outer conductors of the cable together.
- Personnel should be grounded with a 1 MΩ resistor-isolated wrist-strap before touching the center pin of any connector and before removing any assembly from the instrument.
- Be sure that all instruments are properly earth-grounded to prevent build-up of static charge.
- Perform work on all components or assemblies at a static-safe workstation.
- Keep static-generating materials at least one meter away from all components.
- Store or transport components in static-shielding containers.
- Always handle printed circuit board assemblies by the edges. This reduces the possibility of ESD damage to components and prevent contamination of exposed plating.

Additional Information About ESD

For more information about ESD and how to prevent ESD damage, contact the Electrostatic Discharge Association (http://www.esda.org). The ESD standards developed by this agency are sanctioned by the American National Standards Institute (ANSI).

Unpack and Inspect the Modules

Before unpacking your modules, inspect the packaging container for evidence of mishandling during transit. Report any damage to the shipping agent immediately, as such damage is not covered by the warranty (refer to the warranty information at the beginning of this document).

Remove the modules from the packaging container and ensure that all accessories are included. Inspect the modules and accessories for damage. If the contents appear damaged, notify your local Keysight Technologies Inc. representative.

CAUTION The modules are shipped in containers which prevent damage from static. The modules should only be removed from the packaging in an anti-static area ensuring that correct anti-static precautions are taken. Store the modules in anti-static envelopes when not in use. See more about electrostatic discharge on page 10.

NOTE Visit www.keysight.com/find/tips for information on preventing damage to your Keysight equipment.

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

Inspect for Damage

After unpacking an instrument, inspect it for any shipping damage. Report any damage to the shipping agent immediately, as such damage is not covered by the warranty (see warranty information at beginning of this document).

If the shipping materials are damaged or the contents of the container are incomplete:

- Contact the nearest Keysight Technologies office.
- Keep the shipping materials for the carrier's inspection.
- If you must return the M9383A VSG to Keysight Technologies, use the original (or comparable) shipping materials. Refer to “Return an Instrument for Service” on page 60.

Verify M9383A Shipment Contents and Model Options

The M9383A PXIe Vector Signal Generator is housed in a PXIe chassis. The minimum Vector Signal Generator consists of the software, chassis, a M9303A PXIe Synthesizer, a M9316A PXIe Digital Vector Modulator, M9312A PXIe Output, and optionally a M9300A PXIe Frequency Reference. The M9300A may be used in this and other configurations. For instance, you may also configure the M9393A PXIe Performance Vector Signal Analyzer in the same chassis and

use the same M9300A Reference module between an M9383A bundle and an M9393A bundle. To upgrade the frequency range (up to 44GHz) of the M9383A VSG, the M9314A PXIe Upconverter needs to be added to the VSG.

NOTE

When the M9305A Direct Digital Synthesizer is paired with the M9303A Synthesizer, it can be used to improve phase noise performance (up to 20 dB) of the M9383A VSG.

The M9318A Vector Modulator is another PXIe module designed to work with M9383A VSG. It can be used in place of M9316A Vector Modulator in the M9383A VSG for enhanced performance and greater RF bandwidth (up to 1 GHz).

M9383A Shipment Contents

The M9383A shipment contents may differ depending upon the M9383A Analog/Vector configuration. However, all the M9383A configurations include the following shipment contents:

Qty	Keysight Part Number	Description
1	M9383-90002	Keysight M9383A PXIe Vector Signal Generator Flyer
1	5023-1450	Wrench, socket, extension, 5/16 inch, SMA
1	5002-3361	Cable removal tool, SMB/SMP/MMCX
1	5972-3335	PXI Modular Product Startup Quick Reference
1	5061-7383	South Korean Class A EMC Declaration

For the cabling diagrams and cabling tables of the recommended M9383A configurations, refer to “Cable The Modules” on page 32.

The following are the M9383A shipment contents for each M9383A configuration:

Configuration 1 (Analog 14/20 GHz) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9383-20015	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20016	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20026	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)

Qty	Keysight Part Number	Description
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm

Configuration 2 (Analog 31.8/44 GHz) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20024	Cable, semi-rigid, APC male connector (3.5 mm) - APC male connector (3.5 mm)
1	M9383-20025	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20027	Cable, semi-rigid, SMA (male) - SMA (male)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 3 (Analog 14/20 GHz with Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)

Qty	Keysight Part Number	Description
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	M9383-20024	Cable, semi-rigid, APC male connector (3.5 mm) - APC male connector (3.5 mm)
1	M9383-20025	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20026	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm

Configuration 4 (Analog 31.8/44 GHz with Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	M9383-20024	Cable, semi-rigid, APC male connector (3.5 mm) - APC male connector (3.5 mm)
1	M9383-20025	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20027	Cable, semi-rigid, SMA (male) - SMA (male)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm

Qty	Keysight Part Number	Description
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 5A (Vector 14/20 GHz, with 160 MHz Bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9316A	Keysight M9316A PXIe Digital Vector Modulator
1	M9312A	Keysight M9312A PXIe Source Output
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9316-20016	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 5B (Vector 14/20 GHz, with 160 MHz Bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9316A	Keysight M9316A PXIe Digital Vector Modulator
1	M9312A	Keysight M9312A PXIe Source Output
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9316-20016	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)

Qty	Keysight Part Number	Description
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20015	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20016	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2827	Cable, coaxial, SMB (female) - SMP (female) 210 mm

Configuration 6 (Vector 31.8/44 GHz, with 160 MHz bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9316A	Keysight M9316A PXIe Digital Vector Modulator
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9316-20016	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20004	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20023	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm

Qty	Keysight Part Number	Description
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 7A (Vector 14/20 GHz, with 1 GHz Bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 7B (Vector 14/20 GHz, with 1 GHz Bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)

Qty	Keysight Part Number	Description
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20015	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20016	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2827	Cable, coaxial, SMB (female) - SMP (female) 210 mm

Configuration 8 (Vector 31.8/44 GHz, with 1 GHz Bandwidth) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20004	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20023	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 9 (Vector 14/20 GHz, with 160 MHz Bandwidth and Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9316A	Keysight M9316A PXIe Digital Vector Modulator
1	M9312A	Keysight M9312A PXIe Source Output
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9316-20016	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 10 (Vector 31.8/44 GHz, with 160 MHz Bandwidth and Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9316A	Keysight M9316A PXIe Digital Vector Modulator
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter

Qty	Keysight Part Number	Description
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9316-20016	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20004	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	M9383-20023	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 11 (Vector 14/20 GHz, with 1 GHz Bandwidth and Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)

Qty	Keysight Part Number	Description
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9312-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (3.5 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20001	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20003	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 12 (Vector 31.8/44 GHz, with 1 GHz Bandwidth and Enhanced Phase Noise) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20004	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)

Qty	Keysight Part Number	Description
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	M9383-20023	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

Configuration 12A (Vector 31.8/44 GHz, with 1 GHz Bandwidth, Enhanced Phase Noise, and Increased Output Power) Shipment Contents

Qty	Keysight Part Number	Description
1	M9300A	Keysight M9300A PXIe Frequency Reference Option M9383A-300
1	M9303A	Keysight M9303A PXIe Synthesizer
1	M9312A	Keysight M9312A PXIe Source Output
1	M9314A	Keysight M9314A PXIe Upconverter
1	M9318A	Keysight M9318A PXIe Digital Vector Modulator
1	M9305A	Keysight M9305A PXIe Direct Digital Synthesizer
1	M9405A	Keysight M9405A PXIe Amplifier
1	M9155C H40	Keysight M9155C H40 PXIe Switch Module
1	M9305-20041	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9305-20042	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9314-20008	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9318-20009	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20002	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20004	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20005	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)

Qty	Keysight Part Number	Description
1	M9383-20006	Cable, semi-rigid, APC male connector (3.5 mm) - male connector (3.5 mm)
1	M9383-20013	Cable, semi-rigid, APC female connector (3.5 mm) - APC female connector (3.5 mm)
1	M9383-20014	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20017	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20018	Cable, semi-rigid, male connector (2.4 mm) - male connector (2.4 mm)
1	M9383-20021	Cable, semi-rigid, SMA (male) - SMA (male)
1	M9383-20022	Cable, semi-rigid, SMA (male) - APC male connector (3.5 mm)
1	M9383-20023	Cable, semi-rigid, SMA (male) - male connector (3.5 mm)
1	M9383-20031	Cable, semi-rigid, K-connector (male) - K-connector (male)
1	M9383-20032	Cable, semi-rigid, male connector (2.4 mm) - K-connector (male)
1	M9383-20033	Cable, semi-rigid, K-connector (male) - K-connector (male)
1	M9383-20034	Cable, semi-rigid, K-connector (male) - K-connector (male)
1	8121-2554	Cable, coaxial, SMP (female) - SMP (female) 150 mm
1	8121-2723	Cable, coaxial, SMB (female) - SMP (female) 150 mm
1	8121-2859	Cable, coaxial, SMP (female) - SMP (female) 200 mm

NOTE For information about the available list of M9383A options, refer to the M9383A Configuration Guide.

Assemble the M9383A

Proceed through this section in the following order:

1. Review "Before Installing the PXIe Modules" on page 24 to understand installation guidelines and precautions.
2. "Prepare the PXIe Chassis" on page 26 for the installation process
3. "Install the Controller" on page 26 (embedded or external).
4. "Install the PXIe Modules" on page 31.
5. "Cable The Modules" on page 32.
6. "Install Slot Blockers and Filler Panels" on page 50 in the empty PXIe chassis slots.
7. "Power up the Chassis" on page 51.

Before Installing the PXIe Modules

CAUTION

PXIe hardware does not support "hot-swap" capabilities (changing modules while power is applied to the chassis). Before installing or removing a module to or from the chassis, power down the chassis to prevent damage to the module

VSG Best Cooling Practices

The following are the recommended best practices to ensure proper and safe module operating conditions:

- To maintain proper airflow within the chassis, all empty chassis slots must be fitted with slot blockers (Keysight model Y1212A, 5 per kit) and EMC filler panels (Keysight model Y1213A, 5 per kit). This includes any empty slots to the left of slot 1.
- Ensure that adequate clearance is provided around all chassis vents, both air intake vents, and air exhaust vents, including any vents at the bottom of the chassis. Refer to your chassis documentation for more information.
- Ensure that all the fan filters are clean and unobstructed.
- To the extent possible, install the chassis in a location with lower ambient temperatures. For example, avoid the situation where the exhaust air from another chassis feeds into the air intake for this chassis.
- If you have multiple modules and space is available in your chassis, leave an empty slot between modules to enhance airflow. Ensure that a slot blocker and a filler panel are installed in the empty slots. Be aware that leaving an empty slot between modules changes the length of inter-module cables, if any, and may also cause the modules to be on different chassis backplane PXI_TRIG trigger bus segments.

– Set the fan speed switch on the rear panel of the chassis to HIGH. If this switch is set to AUTO, the module may not receive sufficient airflow to provide adequate cooling. This can result in a thermal shutdown of the VSG. Note that some chassis, when the fan speed switch is set to AUTO, ramp up the fan speed if excess heat is detected within the chassis. However, all chassis do not exhibit this behavior; so setting the fan speed switch to HIGH ensures maximum cooling with all chassis.

Chassis Air Flow

The Keysight M9018B/M9019B has multiple air intakes. They are located at the lower sides, lower front, and bottom of the chassis.

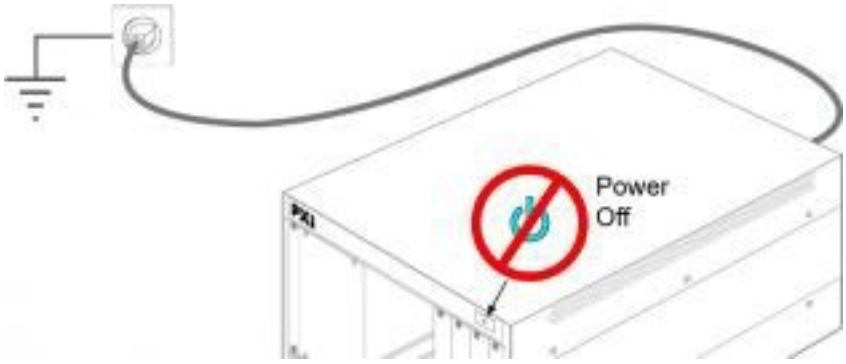
Cable and Connector Care

When you need to disconnect push-on cables from the module front panel connectors, use the Keysight Cable Removal Tool (PN 5002-3361) provided in your Keysight PXIe instrument's ship kit

To avoid damage to the cables or connectors, pull the cable straight away from the connector. Do not use the tool as a pry bar.

Prepare the PXIe Chassis

1. Make sure that the line cord is plugged into a grounded outlet to establish earth ground.



2. Make sure the chassis power switch is Off.
3. Position the chassis to provide ample space between the chassis fan intake and exhaust vents. Blockage by walls or obstructions affects the airflow needed for cooling.
4. Before inserting a module into the chassis, back the mounting screws out to ensure that there is no interference between the screws and the mounting rails.

Install the Controller

Use the instructions below for installing the embedded controller (Keysight model M9037A) or the remote controller (Keysight M9021A Cable Interface with the M9048A adapter for desktop PC).

CAUTION Do not power up the chassis until instructed to do so later in this document

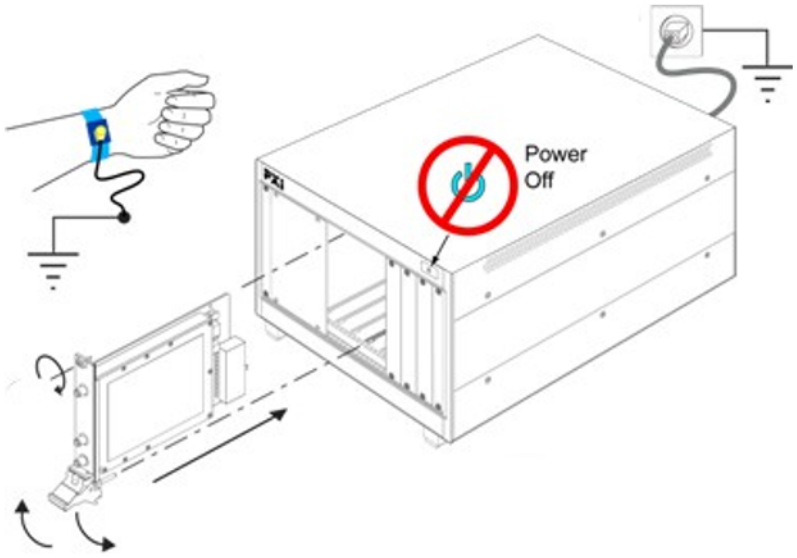
Embedded Controller

(For additional details, refer to instructions in the M9037A Startup Guide)

CAUTION

Observe ESD Precautions: “Protecting against electrostatic discharge” on page 10

1. Install the embedded controller in Slot 1 in the chassis. 



NOTE Generic module installation shown. It may not reflect your module's actual size and chassis placement.

   a. While holding the module by the injector/ejector handle and making sure the injector/ejector handle is pushed down in the unlatched (downward) position, slide the controller module into chassis, using the slot guides (top and bottom).
   b. Slide the module into position. When you begin to feel resistance, pull up on the injector/ejector handle to fully inject the module into the chassis backplane connectors.
   c. Tighten the module retaining screws (top and bottom) and torque them to 5 in-lb (0.57 N-m).
2. Install a blank Y1213A filler panel in the empty slot to the left of the controller.
3. Connect the peripherals:
   - Monitor with M9037A - Use the Display Port to VGA adapter (an accessory to the M9037A) if necessary
   - USB compatible keyboard
   - USB compatible mouse

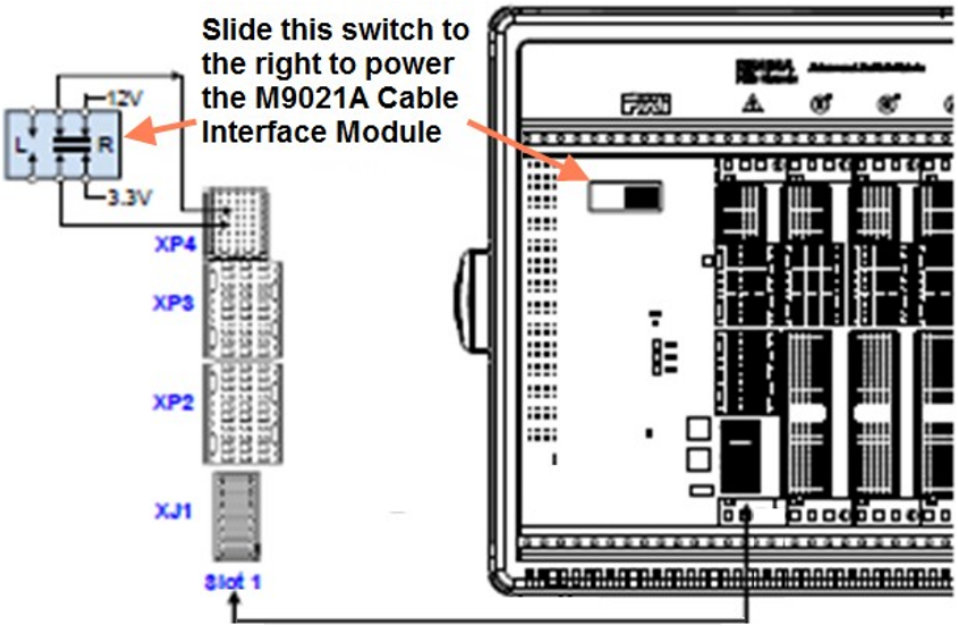
If your configuration contains a M9021A Cable Interface Module, follow the procedure below. For additional information about installing the M9021A, refer to the M9021A Installation Guide.

Remote Controller

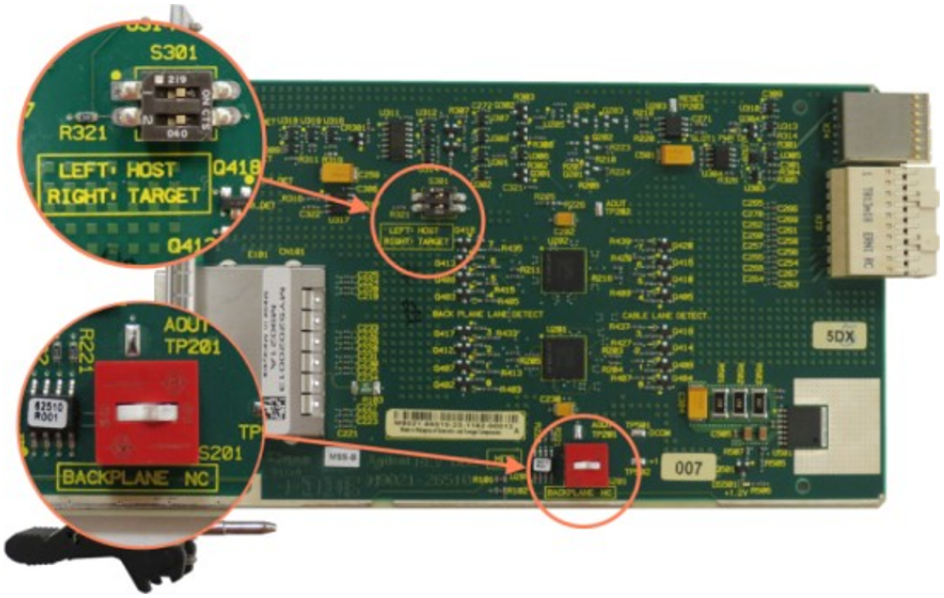
If your configuration contains a M9021A Cable Interface Module, follow the procedure below. For additional information about installing the M9021A, refer to the M9021A Installation Guide.

1. Locate slot 1 in the chassis. It has this icon above it 

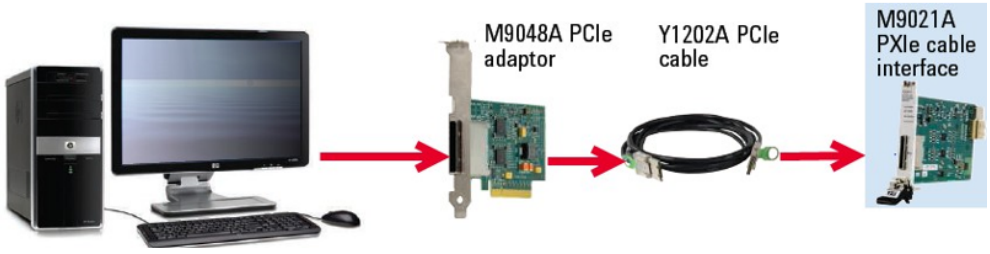
2. Set the M9018B/M9019A chassis controller slot power supply switch to the right-hand position. This provides power to slot 1 for the M9021A card.



3. On the M9021A module, set both S301 switches to the “Host” (right-hand) position and set the S201 rocker switch to the left-hand position. Refer to the following figure for M9021A switch locations and positions.



4. Install the M9021A Cable Interface module into the chassis:
   a. While holding the module by the injector/ejector handle and making sure the injector/ejector handle is pushed down in the unlatched (downward) position, slide the M9021A module into chassis, using the slot guides (top and bottom).
   b. Slide the module into position, when you begin to feel resistance, pull up on the injector/ejector handle to fully inject the module into the chassis backplane connectors.
   c. Tighten the module retaining screws (top and bottom) and torque them to 5 in-lb (0.57 N-m).
5. Connect the M9021A to your desktop PC. If you are using a desktop PC as a controller, connect to the M9021A using the following components:



The above procedure addresses using the M9021A as a cabled PCIe interface between the M9018B/M9019A chassis and an external host computer. However, if you intend to use an M9021A module to control a subordinate downstream chassis:

1. Install the M9021A in an x8 hybrid slot in the PXIe chassis (M9018B/M9019A chassis slots 2, 6, 11, or 15).
2. Reverse the switch settings from those noted in the above procedure:
   - On the M9021A module, set both S301 switches to “Host” and set the S201 rocker switch to the left-hand position.
   - On the M9018B/M9019A chassis backplane, set the controller slot power-supply switch to the left.

Install the PXIe Modules

- Place the M9300A Reference in Slot 10 (the timing slot).
- Place the other modules in the slots on either side of slot 10 as shown in “Cable The Modules” on page 32.

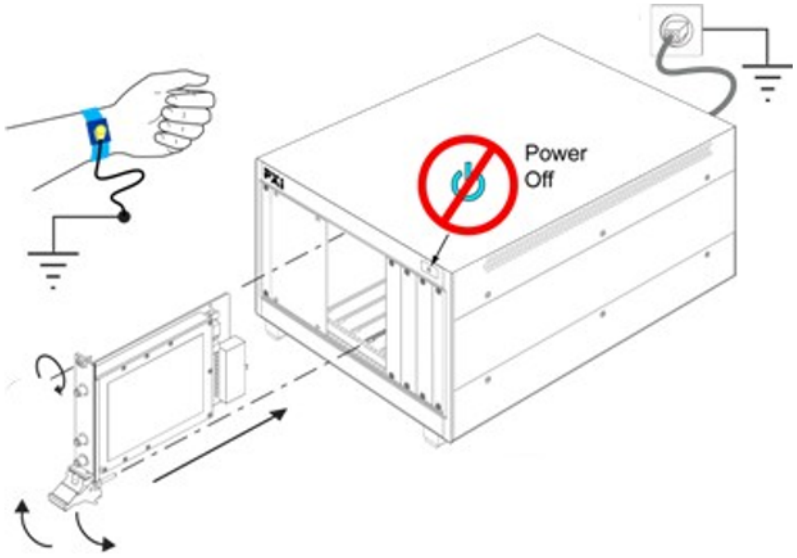
Procedure For Installing Modules

Install the left-most module first and then continue installing modules from left to right according to the following photo.

When installing each module:

1. Hold the module by the injector/ejector handle and make sure the injector/ejector handle is pushed down in the unlatched (downward) position, slide the module into chassis using the slot guides (top and bottom).
2. Slide the module into position, when you begin to feel resistance, pull up on the injector/ejector handle to fully inject the module into the chassis backplane connectors.

3. Tighten the module retaining screws (top and bottom) and torque them to 5 in-lb (0.57 N-m).



NOTE

Keysight recommends you install all the modules in the exact order.

Generic module installation shown. It may not reflect your module's actual size and chassis placement.

Cable The Modules

Before you connect the cables to configure the system, refer to M9383A Data Sheet for the front panel descriptions of the modules.

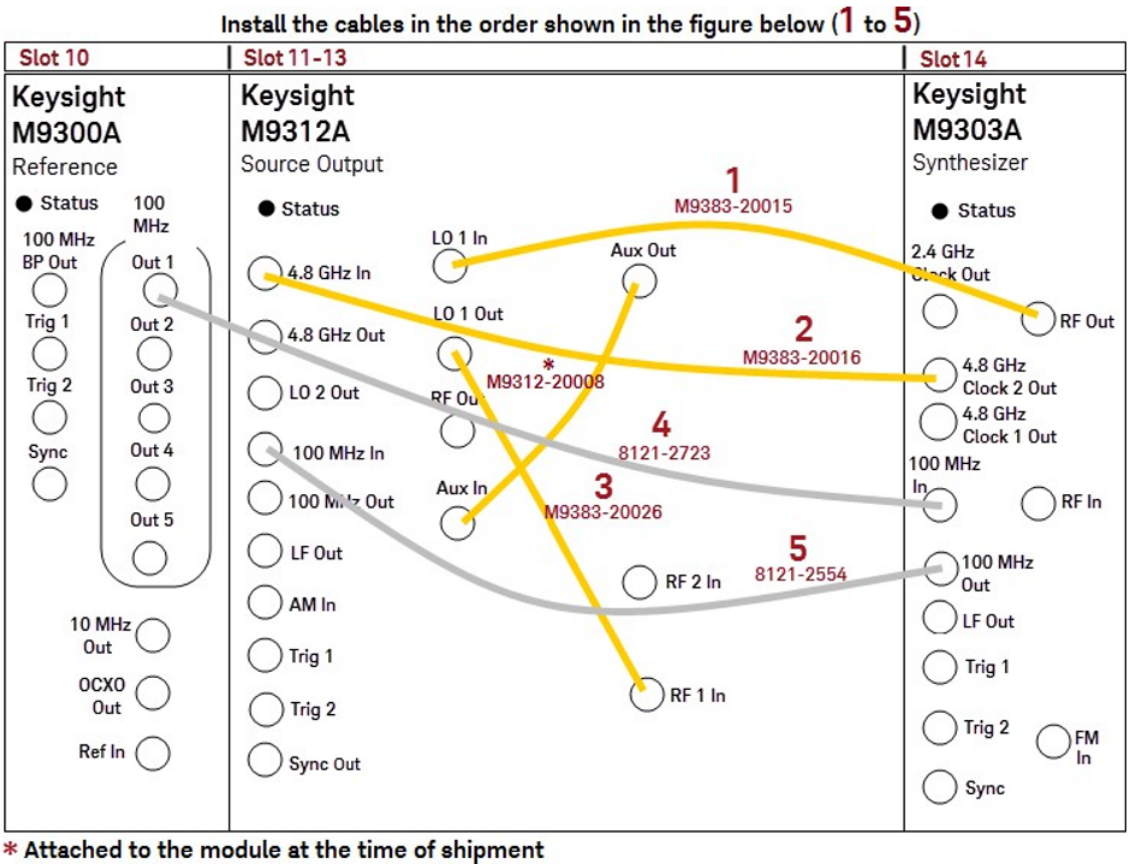
The images below show the recommended cabling configurations for M9383A VSG in an M9018B/M9019A chassis.

Recommended Analog Configurations

NOTE

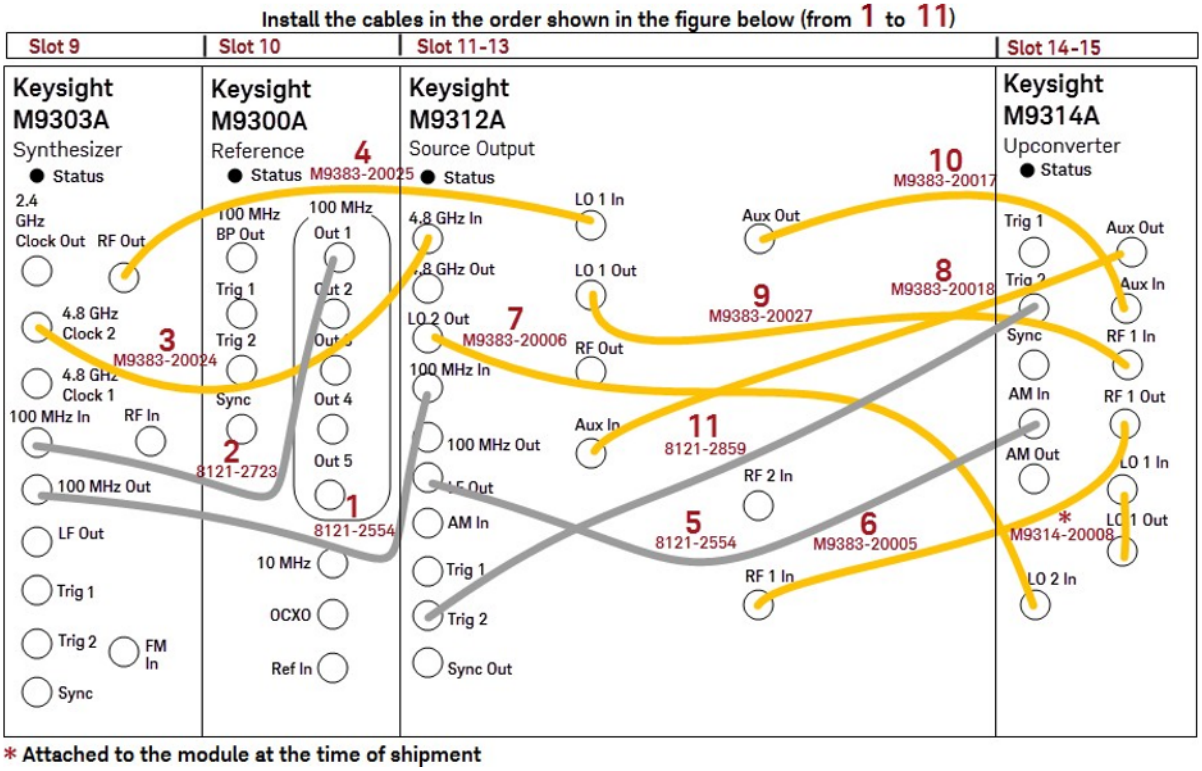
It is necessary to perform amplitude accuracy adjustment for the cables/ports before use in any 44 GHz M9383A configurations. For information on how to perform amplitude accuracy adjustment, refer to the *Set Amplitude Accuracy Adjustment* topic in the M9383A SFP Help.

Configuration 1 (Analog 14/20 GHz)



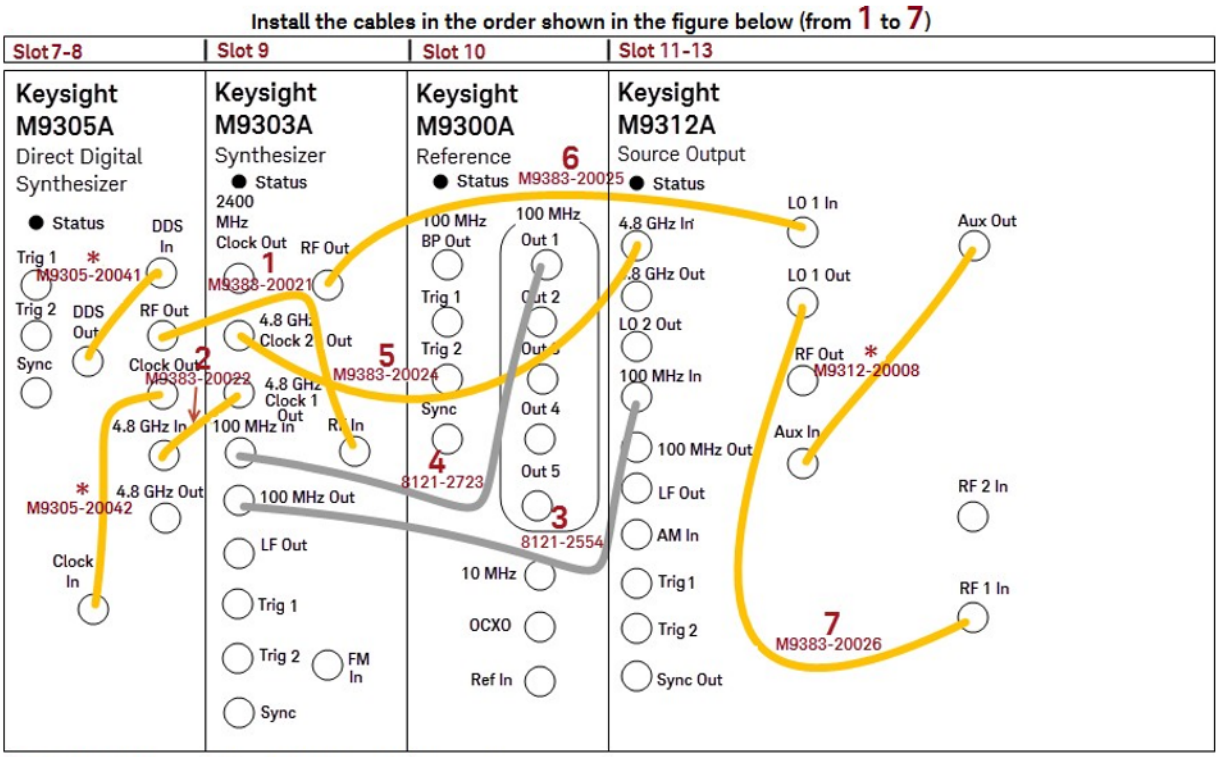
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20015	M9303A	RF Out	M9312A	LO1 In
2	M9383-20016	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
3	M9383-20026	M9312A	LO 1 Out	M9312A	RF 1 In
4	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
5	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
*	M9312-20008	M9312A	Aux Out	M9312A	Aux In

Configuration 2 (Analog 31.8/44 GHz)



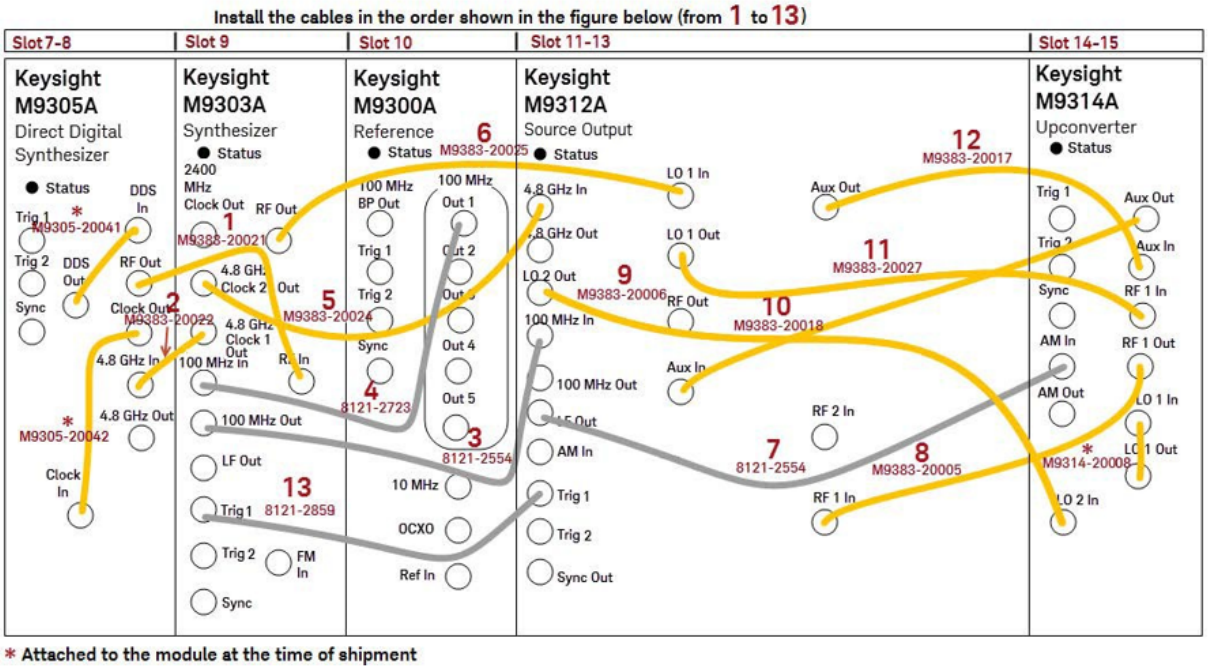
Order	Cable Part Number	Module	Connector	Module	Connector
1	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
2	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
3	M9383-20024	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
4	M9383-20025	M9303A	RF Out	M9312A	LO 1 In
5	8121-2554	M9312A	LF Out	M9314A	AM In
6	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
7	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
8	M9383-20018	M9312A	Aux In	M9314A	Aux Out
9	M9383-20027	M9312A	LO 1 Out	M9314A	RF 1 In
10	M9383-20017	M9312A	Aux Out	M9314A	Aux In
11	8121-2859	M9312A	Trig 2	M9314A	Trig 2
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Configuration 3 (Analog 14/20 GHz with Enhanced Phase Noise)



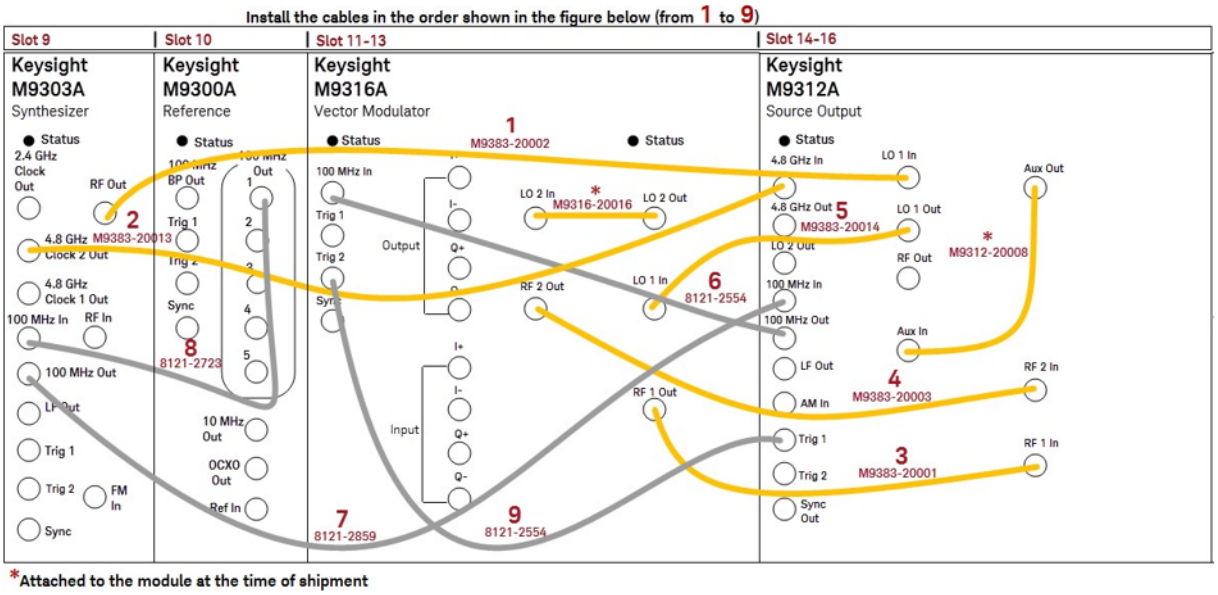
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
4	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
5	M9383-20024	M9303A	4.8 GHz Clock Out 2	M9312A	4.8 GHz In
6	M9383-20025	M9303A	RF Out	M9312A	LO 1 In
7	M9383-20026	M9312A	LO 1 Out	M9312A	RF 1 In
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9312-20008	M9312A	Aux Out	M9312A	Aux In

Configuration 4 (Analog 31.8/44 GHz with Enhanced Phase Noise)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
4	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
5	M9383-20024	M9303A	4.8 GHz Clock Out 2	M9312A	4.8 GHz In
6	M9383-20025	M9303A	RF Out	M9312A	LO 1 In
7	8121-2554	M9312A	LF Out	M9314A	AM In
8	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
9	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
10	M9383-20018	M9312A	Aux In	M9314A	Aux Out
11	M9383-20027	M9312A	LO 1 Out	M9314A	RF 1 In
12	M9383-20017	M9312A	Aux Out	M9314A	Aux In
13	8121-2859	M9312A	Trig 2	M9314A	Trig 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

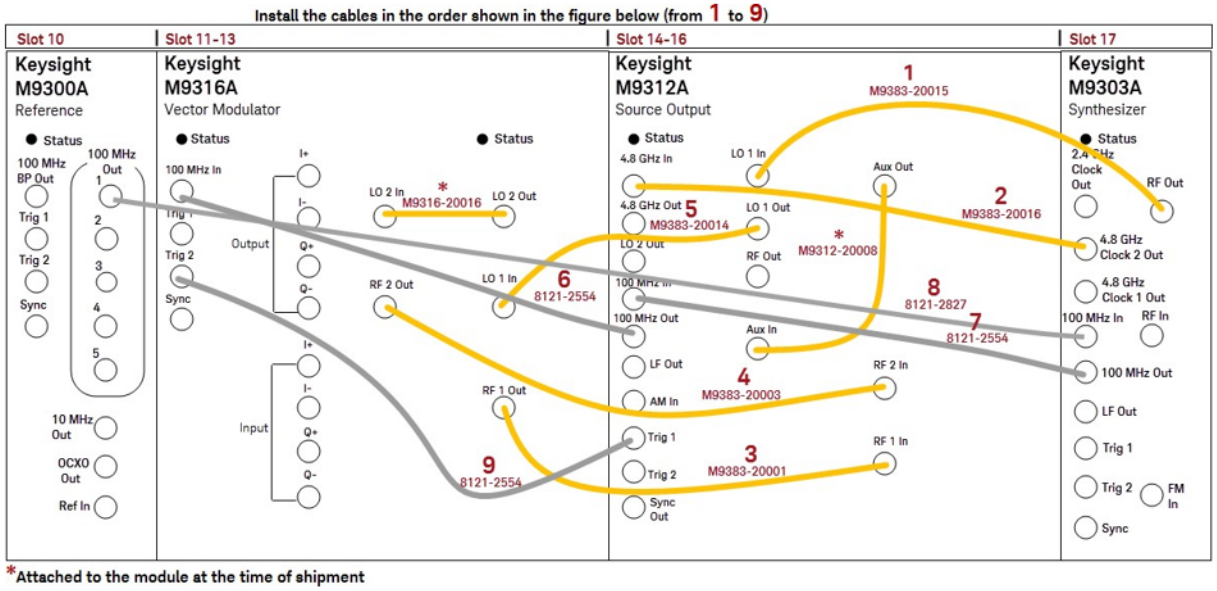
Configuration 5A (Vector 14/20 GHz, with 160 MHz Bandwidth)



*Attached to the module at the time of shipment

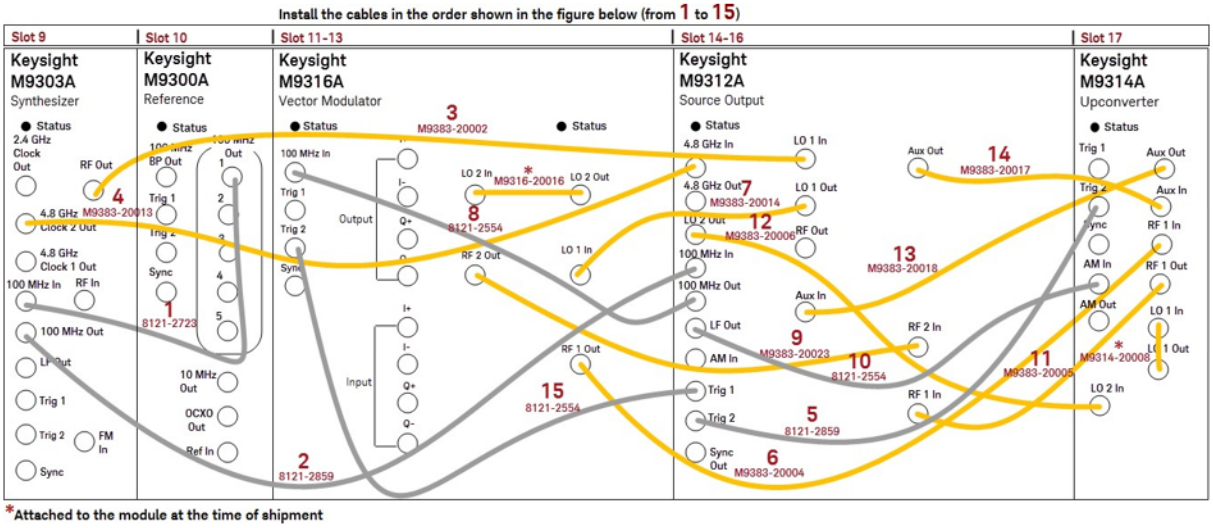
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
2	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
3	M9383-20001	M9316A	RF 1 Out	M9312A	RF 1 In
4	M9383-20003	M9316A	RF 2 Out	M9312A	RF 2 In
5	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
6	8121-2554	M9312A	100 MHz Out	M9316A	100 MHz In
7	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
8	8121-2723	M9300A	100 MHz Out 1	M9303A	100 MHz In
9	8121-2554	M9312A	Trig 1	M9316A	Trig 2
*	M9316-20016	M9316A	LO 2 In	M9316A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

Configuration 5B (Vector 14/20 GHz, with 160 MHz Bandwidth)



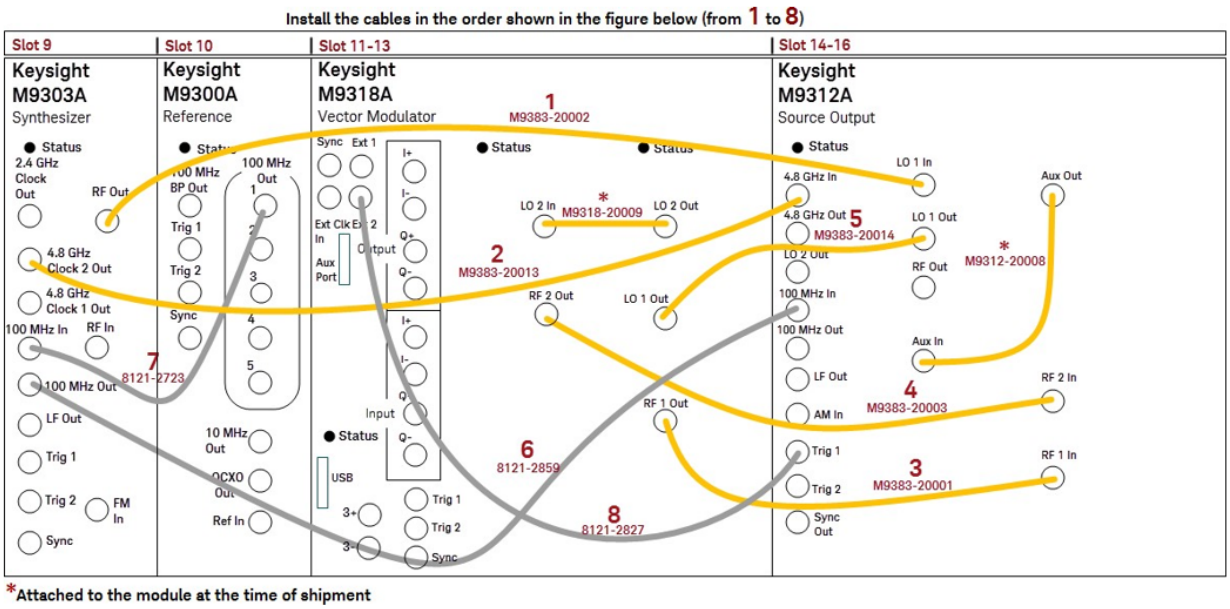
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20015	M9303A	RF Out	M9312A	LO 1 In
2	M9383-20016	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
3	M9383-20001	M9316A	RF 1 Out	M9312A	RF 1 In
4	M9383-20003	M9316A	RF 2 Out	M9312A	RF 2 In
5	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
6	8121-2554	M9312A	100 MHz Out	M9316A	100 MHz In
7	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
8	8121-2827	M9300A	100 MHz Out 1	M9303A	100 MHz In
9	8121-2554	M9312A	Trig 1	M9316A	Trig 2
*	M9316-20016	M9316A	LO 2 In	M9316A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

Configuration 6 (Vector 31.8/44 GHz, with 160 MHz bandwidth)



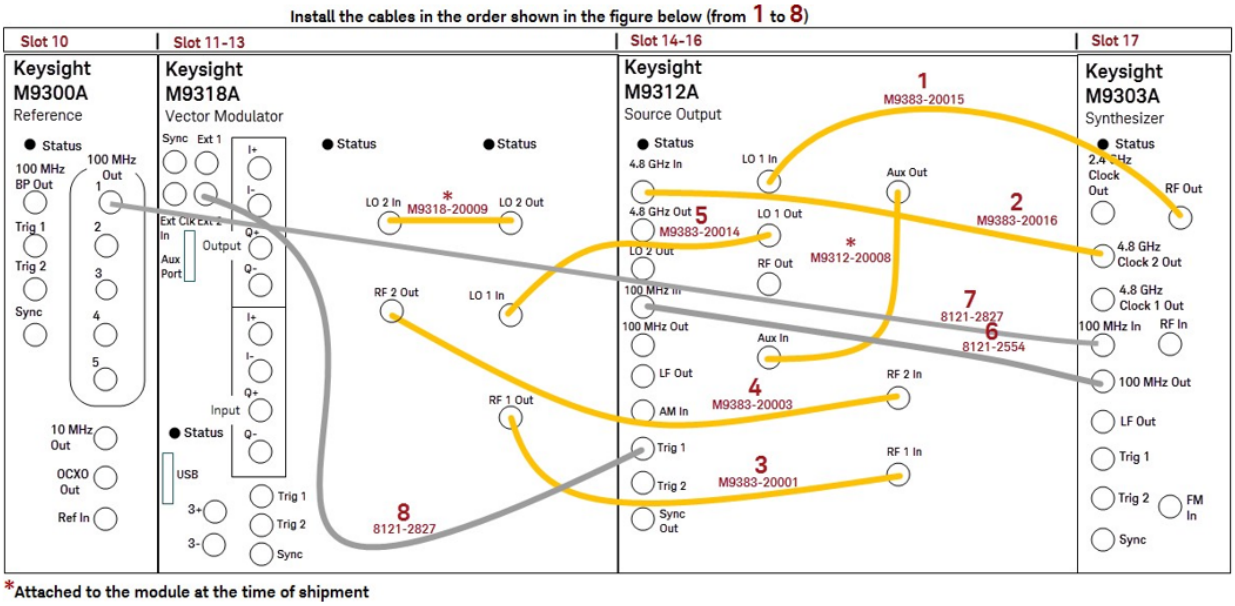
Order	Cable Part Number	Module	Connector	Module	Connector
1	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
2	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
3	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
4	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
5	8121-2859	M9312A	Trig 2	M9314A	Trig 2
6	M9383-20004	M9316A	RF 1 Out	M9314A	RF 1 In
7	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
8	8121-2554	M9312A	100 MHz Out	M9316A	100 MHz In
9	M9383-20023	M9316A	RF 2 Out	M9312A	RF 2 In
10	8121-2554	M9312A	LF Out	M9314A	AM In
11	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
12	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
13	M9383-20018	M9312A	Aux In	M9314A	Aux Out
14	M9383-20017	M9312A	Aux Out	M9314A	Aux In
15	8121-2554	M9312A	Trig 1	M9316A	Trig 2
*	M9316-20016	M9316A	LO 2 In	M9316A	LO 2 Out
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Configuration 7A (Vector 14/20 GHz, with 1 GHz Bandwidth)



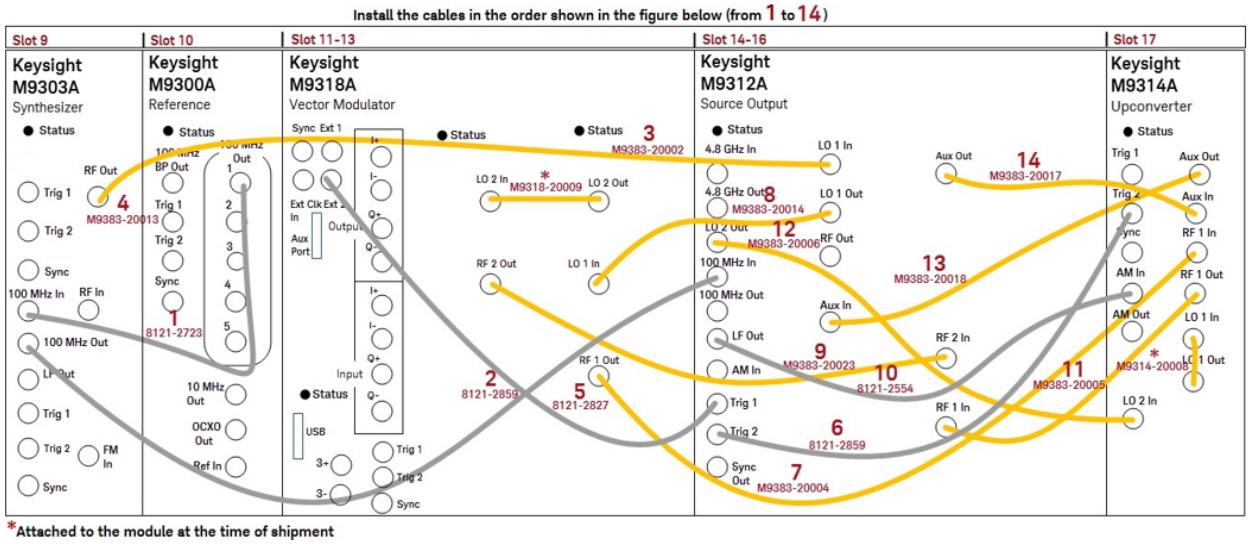
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
2	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
3	M9383-20001	M9318A	RF 1 Out	M9312A	RF 1 In
4	M9383-20003	M9318A	RF 2 Out	M9312A	RF 2 In
5	M9383-20014	M9318A	LO 1 In	M9312A	LO 1 Out
6	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
7	8121-2723	M9300A	100 MHz Out 1	M9303A	100 MHz In
8	8121-2827	M9312A	Trig 1	M9318A	Ext 2
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

Configuration 7B (Vector 14/20 GHz, with 1 GHz Bandwidth)



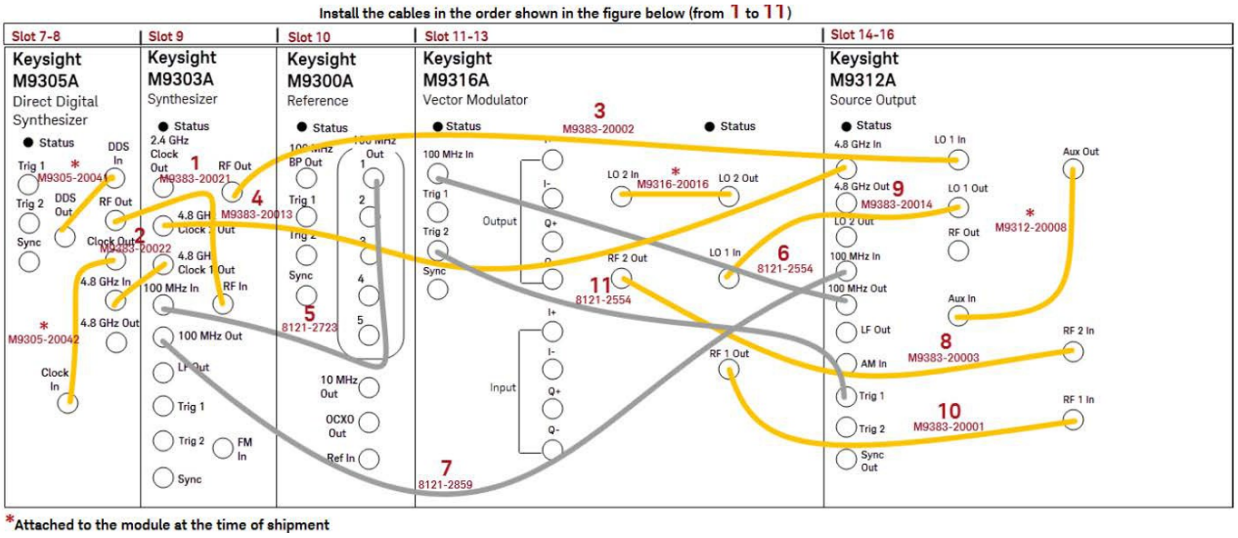
Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20015	M9303A	RF Out	M9312A	LO 1 In
2	M9383-20016	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
3	M9383-20001	M9318A	RF 1 Out	M9312A	RF 1 In
4	M9383-20003	M9318A	RF 2 Out	M9312A	RF 2 In
5	M9383-20014	M9318A	LO 1 In	M9312A	LO 1 Out
6	8121-2554	M9303A	100 MHz Out	M9312A	100 MHz In
7	8121-2827	M9300A	100 MHz Out 1	M9303A	100 MHz In
8	8121-2827	M9312A	Trig 1	M9318A	Ext 2
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

Configuration 8 (Vector 31.8/44 GHz, with 1 GHz Bandwidth)



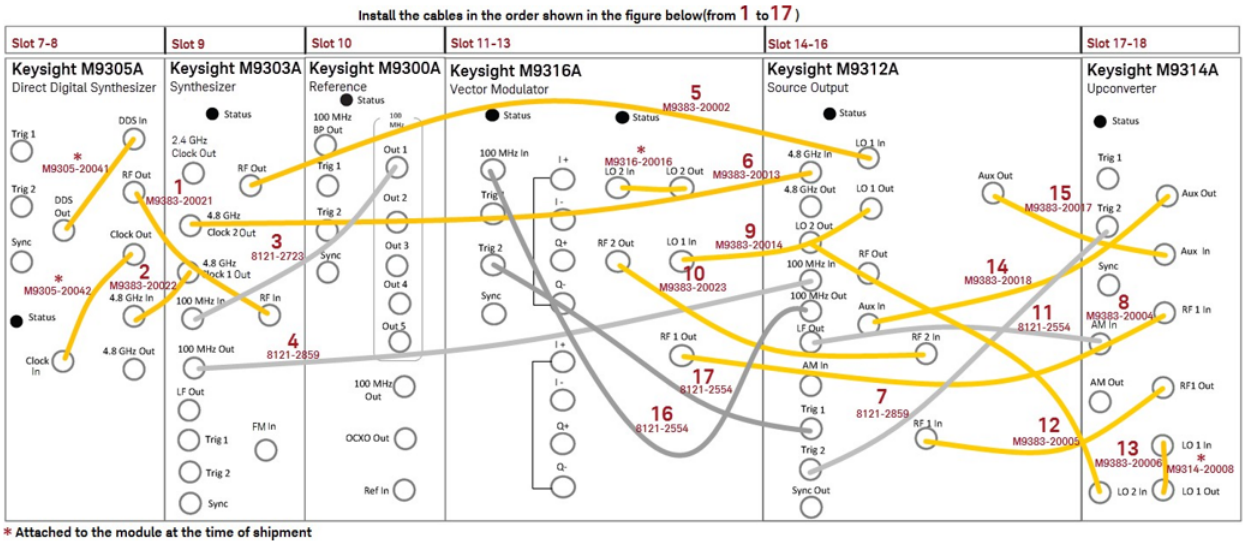
Order	Cable Part Number	Module	Connector	Module	Connector
1	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
2	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
3	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
4	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
5	8121-2827	M9312A	Trig 1	M9318A	Ext 2
6	8121-2859	M9312A	Trig 2	M9314A	Trig 2
7	M9383-20004	M9316A	RF 1 Out	M9314A	RF 1 In
8	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
9	M9383-20023	M9316A	RF 2 Out	M9312A	RF 2 In
10	8121-2554	M9312A	LF Out	M9314A	AM In
11	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
12	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
13	M9383-20018	M9312A	Aux In	M9314A	Aux Out
14	M9383-20017	M9312A	Aux Out	M9314A	Aux In
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Configuration 9 (Vector 14/20 GHz, with 160 MHz Bandwidth and Enhanced Phase Noise)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
4	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
5	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
6	8121-2554	M9312A	100 MHz Out	M9316A	100 MHz In
7	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
8	M9383-20003	M9316A	RF 2 Out	M9312A	RF 2 In
9	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
10	M9383-20001	M9316A	RF 1 Out	M9312A	RF 1 In
11	8121-2554	M9312A	Trig 1	M9316A	Trig 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9316-20016	M9316A	LO 2 In	M9316A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

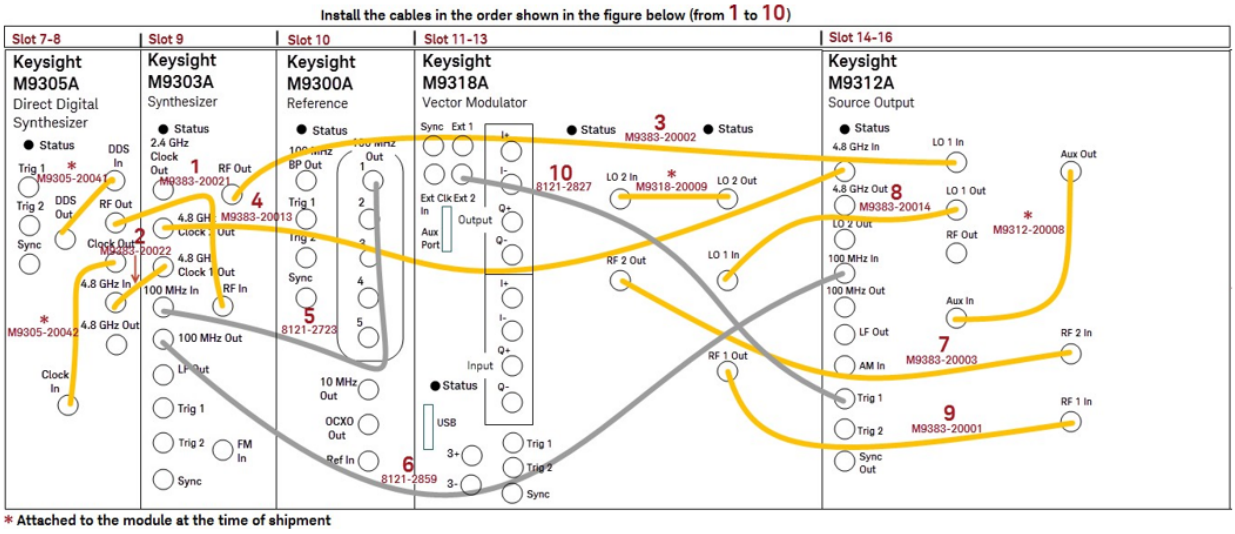
Configuration 10 (Vector 31.8/44 GHz, with 160 MHz Bandwidth and Enhanced Phase Noise)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
4	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
5	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
6	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
7	8121-2859	M9312A	Trig 2	M9314A	Trig 2
8	M9383-20004	M9316A	RF 1 Out	M9312A	RF 1 In
9	M9383-20014	M9316A	LO 1 In	M9312A	LO 1 Out
10	M9383-20023	M9316A	RF 2 Out	M9312A	RF 2 In
11	8121-2554	M9312A	LF Out	M9314A	AM In
12	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
13	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
14	M9383-20018	M9312A	Aux In	M9314A	Aux Out
15	M9383-20017	M9312A	Aux Out	M9314A	Aux In
16	8121-2554	M9312A	100 MHz Out	M9316A	100 MHz In
17	8121-2554	M9312A	Trig 1	M9316A	Trig 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In

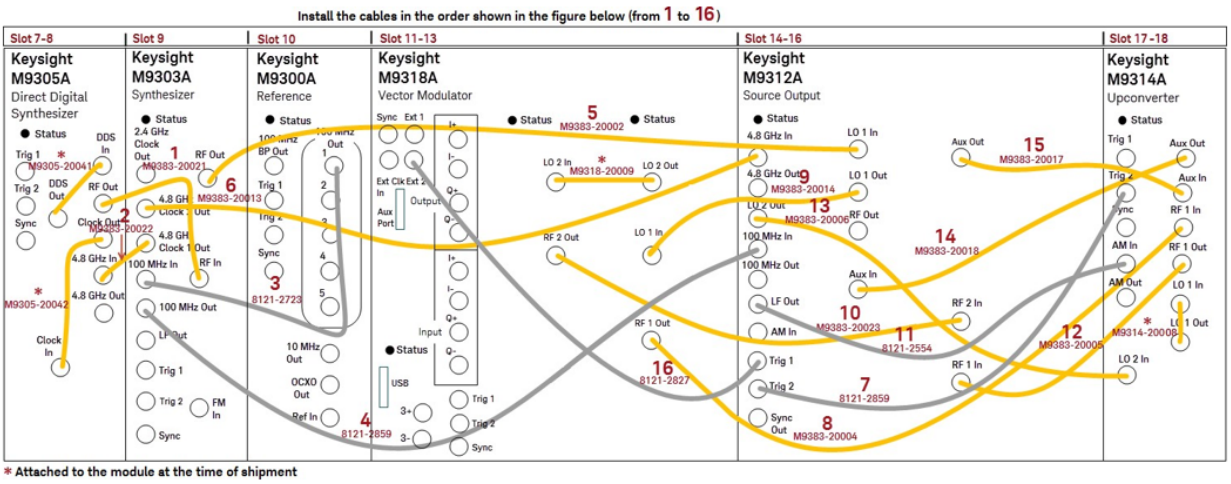
Order	Cable Part Number	Module	Connector	Module	Connector
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9316-20016	M9316A	LO 2 In	M9316A	LO 2 Out
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Configuration 11 (Vector 14/20 GHz, with 1 GHz Bandwidth and Enhanced Phase Noise)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
4	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
5	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
6	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
7	M9383-20003	M9318A	RF 2 Out	M9312A	RF 2 In
8	M9383-20014	M9318A	LO 1 In	M9312A	LO 1 Out
9	M9383-20001	M9318A	RF 1 Out	M9312A	RF 1 In
10	8121-2827	M9312A	Trig 1	M9318A	Ext 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out
*	M9312-20008	M9312A	Aux In	M9312A	Aux Out

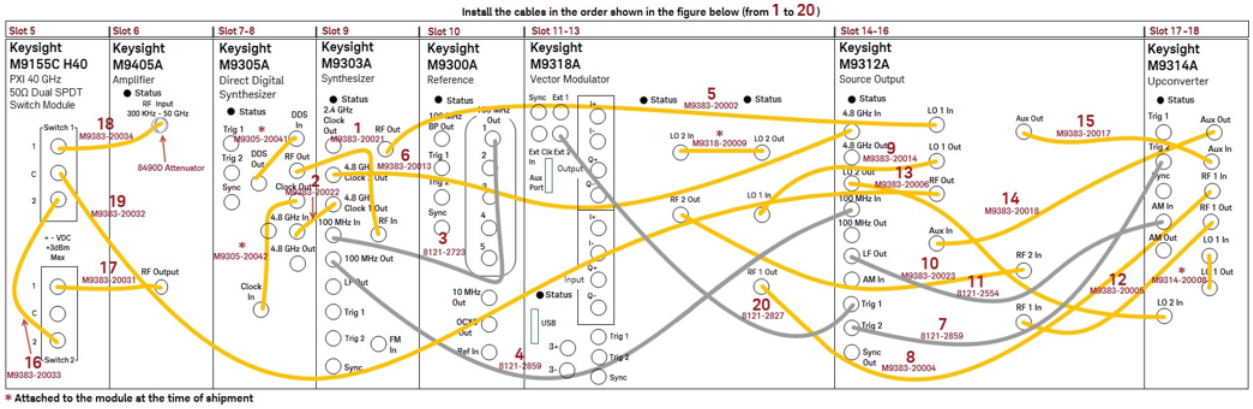
Configuration 12 (Vector 31.8/44 GHz, with 1 GHz Bandwidth and Enhanced Phase Noise)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
4	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
5	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
6	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
7	8121-2859	M9312A	Trig 2	M9314A	Trig 2
8	M9383-20004	M9318A	RF 1 Out	M9314A	RF 1 In
9	M9383-20014	M9318A	LO 1 In	M9312A	LO 1 Out
10	M9383-20023	M9318A	RF 2 Out	M9312A	RF 2 In
11	8121-2554	M9312A	LF Out	M9314A	AM In
12	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
13	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
14	M9383-20018	M9312A	Aux In	M9314A	Aux Out
15	M9383-20017	M9312A	Aux Out	M9314A	Aux In
16	8121-2827	M9312A	Trig 1	M9318A	Ext 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out

Order	Cable Part Number	Module	Connector	Module	Connector
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Configuration 12A (Vector 31.8/44 GHz, with 1 GHz Bandwidth, Enhanced Phase Noise, and Increased Output Power)



Order	Cable Part Number	Module	Connector	Module	Connector
1	M9383-20021	M9305A	RF Out	M9303A	RF In
2	M9383-20022	M9305A	4.8 GHz In	M9303A	4.8 GHz Clock 1 Out
3	8121-2723	M9303A	100 MHz In	M9300A	100 MHz Out 1
4	8121-2859	M9303A	100 MHz Out	M9312A	100 MHz In
5	M9383-20002	M9303A	RF Out	M9312A	LO 1 In
6	M9383-20013	M9303A	4.8 GHz Clock 2 Out	M9312A	4.8 GHz In
7	8121-2859	M9312A	Trig 2	M9314A	Trig 2
8	M9383-20004	M9318A	RF 1 Out	M9314A	RF 1 In
9	M9383-20014	M9318A	LO 1 In	M9312A	LO 1 Out
10	M9383-20023	M9318A	RF 2 Out	M9312A	RF 2 In
11	8121-2554	M9312A	LF Out	M9314A	AM In
12	M9383-20005	M9312A	RF 1 In	M9314A	RF 1 Out
13	M9383-20006	M9312A	LO 2 Out	M9314A	LO 2 In
14	M9383-20018	M9312A	Aux In	M9314A	Aux Out
15	M9383-20017	M9312A	Aux Out	M9314A	Aux In
16	M9383-20033	M9155C H40	Switch 1, 2	M9155C H40	Switch 2, 2
17	M9383-20031	M9405A	RF Output	M9155C H40	Switch 2, 1

Order	Cable Part Number	Module	Connector	Module	Connector
18	M9383-20034 (add 6 dB 8490D Attenuator at the RF Input)	M9405A	RF Input	M9155C H40	Switch 1, 1
19	M9383-20032	M9312A	RF Out	M9155C H40	Switch 1, C
20	8121-2827	M9312A	Trig 1	M9318A	Ext 2
*	M9305-20041	M9305A	DDS Out	M9305A	DDS In
*	M9305-20042	M9305A	Clock Out	M9305A	Clock In
*	M9318-20009	M9318A	LO 2 In	M9318A	LO 2 Out
*	M9314-20008	M9314A	LO 1 In	M9314A	LO 1 Out

Install Slot Blockers and Filler Panels

To assure proper operating temperatures, install slot blockers (Keysight model Y1212A, 5 per kit) and EMC filler panels (Keysight model Y1213A, 5 per kit) in empty module slots.

Power up the Chassis

CAUTION

If you are using a remote controller, you must power up the chassis before you power up the PC. When you power down your configuration, shut down the PC before you power down the chassis

System Requirements

System	Software Requirements
Operating system	Windows 7 (32- & 64-bit), Windows Embedded Standard 7, and Windows 10
Processor speed	1 GHz 32-bit (x86), 1 GHz 64-bit (x64), no support for Itanium64
Available memory	4 GB minimum (8 GB recommended for 64-bit operating systems)
Available disk space	1.5 GB available hard disk space (includes 1 GB for Microsoft .NET Framework 4.0, and 100 MB for Keysight IO Libraries Suite)
Video	Support for DirectX 9 graphics with 128 MB graphics memory recommended (Super VGA is supported)
Browser	Microsoft Internet Explorer 7.0 or greater

System	Hardware Requirements
Controllers	A PXI or PXI Express embedded controller or remote controller (external PC connected to the chassis by a PCI-to-PXI interface) is required.
Embedded controller	Keysight M9037A or an embedded controller that meets the following requirements: - PXIe system controller (PXI-1 embedded controllers are not compatible) - Utilize a 2x8, or 4x4, PXIe system slot link configuration. - Run one of the operating systems listed in System Requirements (above)
Remote controller	(Keysight M9018A chassis only) A PC running one of the operating systems listed in System Requirements above and a Keysight M9021A Cable Interface x8 with the following PC interface option: - Keysight M9048A PCIe Desktop Adapter x8, with cable (for desktop PCs)

Software Installation

Install the software in the order indicated in the following table onto the embedded controller, or PC if your configuration contains an M9021A PXIe cable interface.

Restart your controller when prompted by the respective software installer.

CAUTION

If you are using a remote controller, use this sequence to restart the PC and chassis: 1) Shut down the PC. 2) Power down the chassis. 3) Power up the chassis. 4) Power up the PC

Order	Software	Install From
1*	Keysight IO Libraries Suite version 17.2 Update 1 (version 17.2.20407.1) or newer; includes Keysight Connection Expert	www.keysight.com/find/iosuite
2*	M9018B/M9019A 18 Slot PXIe Chassis Drivers	www.keysight.com/find/M9018B www.keysight.com/find/M9019A
3	M9383A PXIe Vector Signal Generator	www.keysight.com/find/M9383A

* The software is already installed on instrument configurations that include the M9037A embedded controller.

NOTE

The Keysight Instrument Control DVD, which includes the IO Libraries Suite software, is no longer shipped with Keysight instruments. If you require a Keysight Instrument Control DVD, it can be ordered by contacting your local Keysight Customer Contact Center.

Verify Operation of the Keysight M9383A PXIe Vector Signal Generator

Before running a Self Test, make sure that all required software is installed, the chassis is powered on, and all cabling is correct. See "Cable The Modules" on page 32 for proper cabling.

NOTE Allow the M9383A VSG to warm up for at least 30 minutes before using.

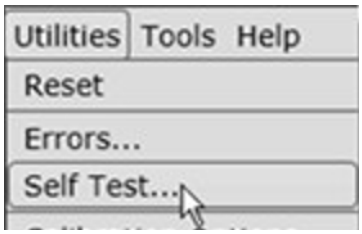
1. Select Start > All Programs > Keysight M9383 > M9383 SFP to open the M9383A SFP.
2. Upon opening the SFP, the Connect to Instrument dialog is displayed. Use Control/Select to select all of the modules that are components of the M9383A and press Connect.

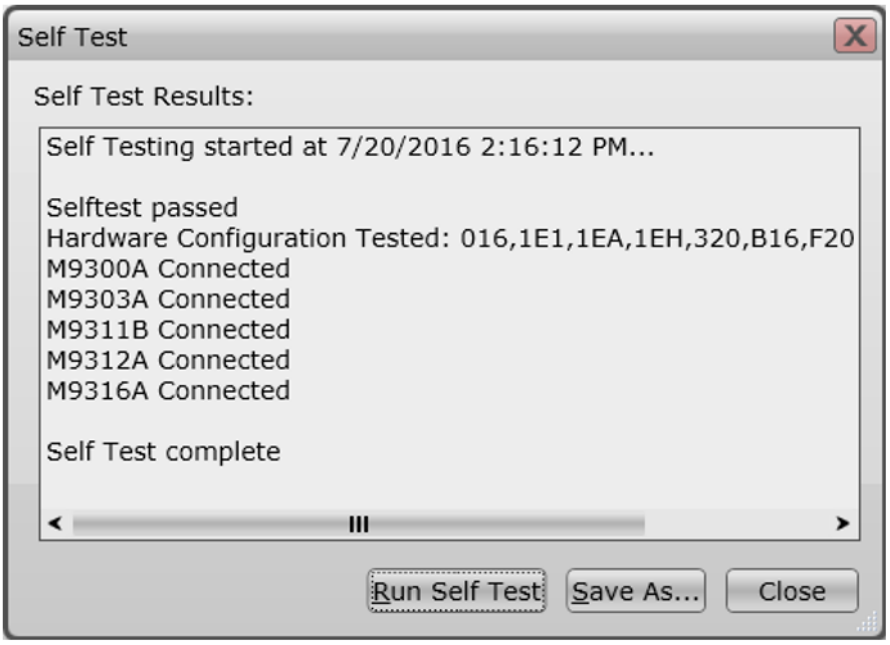
NOTE An M9316A module appears in the above dialog as two modules: M9311B and M9319A. An M9318A module appears in the above dialog as three modules: M9319A, M9348A, and M9336A.

NOTE If not all modules and their slot locations are visible in the SFP Connect to Instrument dialog, close the SFP and see "Communications" on page 54. After running Keysight Connection Expert, you may restart the SFP.

3. Check the status of front panel LED states. See "Status LED States" on page 57.

4. Conduct a Self Test (Utilities > Self Test... > Run Self Test).
   If the Self Test passes (see results below), proceed with Run Internal Alignments.





NOTE

If the M9383A Self Test fails, it indicates which module is likely to need service. However, you must return all modules (except the M9300A) and all cables. See "Return an Instrument for Service" on page 60

Run Internal Alignments

1. On the Utilities menu, select Internal Alignments.
2. Select Run... or Clear... as per the requirement.
   Selecting Clear... erases all field alignment data stored in memory. The alignments that have been cleared need to run again to produce new alignment data.

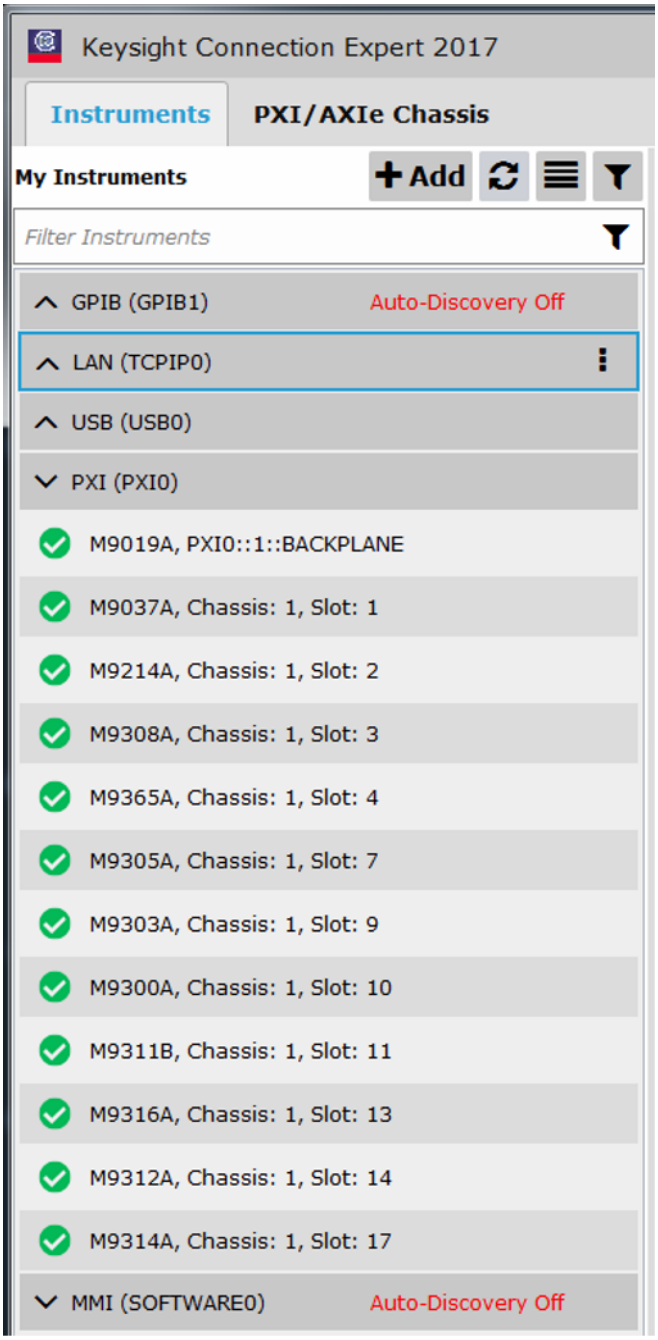
Communications

If you are unable to communicate with the M9383A Vector Signal Generator verify that the following components are properly installed:

- Keysight IO Libraries Suite
- M9383A SFP program
- Module and chassis drivers
- System Interface Card, cable, and PC PXIe card connections, if you are using an external host PC

If not all modules and their slot locations are visible in the SFP "Connect to Instrument" dialog:

1. Close the SFP.
2. Start Keysight Connection Expert, by selecting Start > All Programs > Keysight Connection Expert. If any or all modules and their slot locations are still not visible, select Refresh All.
3. Restart the SFP.


Keysight Connection Expert 2017
Instruments
PXI/AXIe Chassis
My Instruments
Add
Filter Instruments
GPIB (GPIB1)
Auto-Discovery Off
LAN (TCPIP0)
USB (USB0)
PXI (PXI0)
M9019A, PXI0::1::BACKPLANE
M9037A, Chassis: 1, Slot: 1
M9214A, Chassis: 1, Slot: 2
M9308A, Chassis: 1, Slot: 3
M9365A, Chassis: 1, Slot: 4
M9305A, Chassis: 1, Slot: 7
M9303A, Chassis: 1, Slot: 9
M9300A, Chassis: 1, Slot: 10
M9311B, Chassis: 1, Slot: 11
M9316A, Chassis: 1, Slot: 13
M9312A, Chassis: 1, Slot: 14
M9314A, Chassis: 1, Slot: 17
MMI (SOFTWARE0)
Auto-Discovery Off

Status LED States

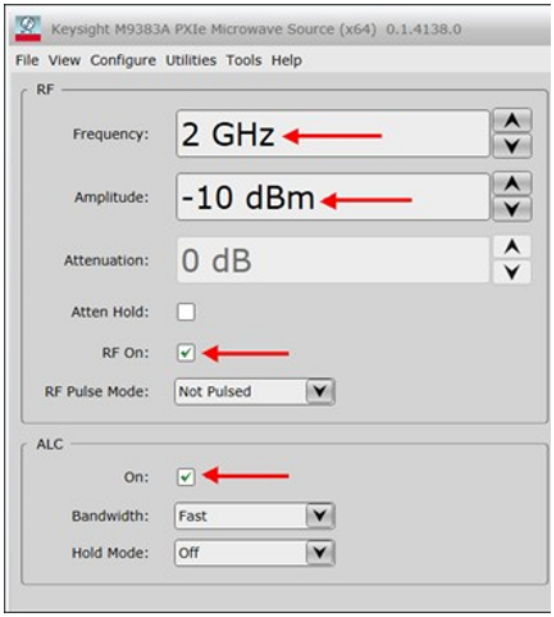
Module	Green	Orange	Red	Off
M9300A	The Soft Front Panel has initialized the connection to the module.	n/a	Indicates that the VCXO is unlocked.	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9303A	The Soft Front Panel has initialized the connection to the module.	Tuning is in progress, or the M9303A is unlocked from the reference.	Error condition (power or over temperature, etc., not okay)	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9305A	The Soft Front Panel has initialized the connection to the module.	n/a	Error condition (power or over temperature, etc., not okay)	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9312A	The Soft Front Panel has initialized the connection to the module.	Missing 100 MHz reference	Indicates that the ALC is unleveled.	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9314A	The Soft Front Panel has initialized the connection to the module.	n/a	Error condition (power or over temperature, etc., not okay)	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9316A	The Soft Front Panel has initialized the connection to the module.	Missing 100 MHz reference The modulator is playing an ARB	Error condition (power or over temperature, etc., not okay)	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.
M9318A	The Soft Front Panel has initialized the connection to the module.	n/a	Error condition (power or over temperature, etc., not okay)	- Not connected by the SFP - Failure in the power supplies. Module hardware health cannot be determined until the power supply failure is resolved.

Generate and View an Output Signal

NOTE

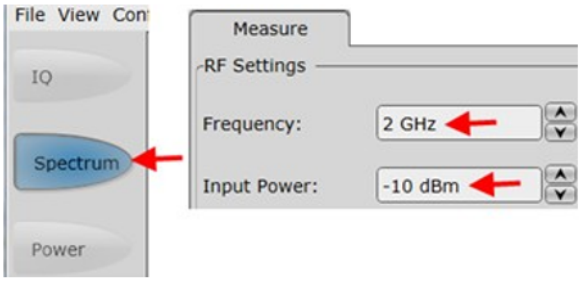
The following measurement uses a Keysight M9383A PXIe Vector Signal Generator to generate the 2 GHz signal and Keysight M9393A PXIe Vector Signal Analyzer to analyze it. You may use any frequency depending upon the signal analyzer used.

1. Open the SFP of the M9383A VSG and the M9393A VSA.
    a. Select Start > All Programs > Keysight M9383 > M9383 SFP to open the M9383A SFP.
    b. Select Start > All Programs > Keysight > M9393 > M9393 SFP to open the M9393A SFP.
    c. For each SFP, the Connect to Instrument dialog is displayed. Use Ctrl/Select to select all of the modules that are components of the M9383A and the M9393A and click Connect. Make sure to configure the M9300A reference as described in "Sharing the M9300A Frequency Reference" on page 63.
2. Connect an SMA (male) to SMA (male) cable between the RF Out connector on the M9312A Source Output and the RF In connector on the M9365A Downconverter.
3. Torque the connectors to 8 In-lb (0.904 Nm).
4. On the M9383A SFP, set the following parameters:
    a. Frequency: 2 GHz
    b. Amplitude: -10 dBm
    c. RF On: selected
    d. ALC On: selected

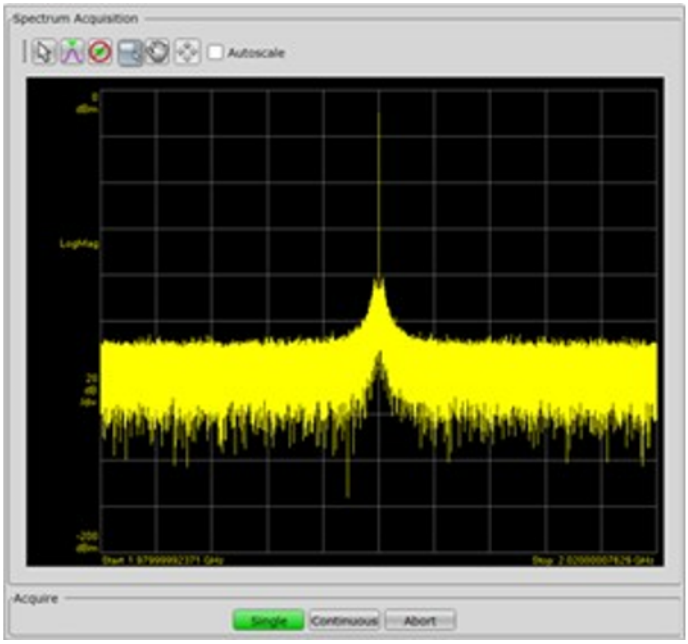


5. On the M9393A SFP Measure Tab, set the following parameters:
    a. Frequency: 2 GHz
    b. Input Power: -10 dBm

c. Acquisition: Spectrum



6. Below the display, select Continuous for a sustained sweep of the analyzer. You should see the following display on your M9393A SFP. The frequency of the signal is 2 GHz and the amplitude is -10 dBm.



Return an Instrument for Service

Calling Keysight Technologies

Keysight Technologies has offices around the world to provide you with complete support for your instrument. To obtain servicing information or to order replacement parts, contact the nearest Keysight Technologies office listed below. In any correspondence or telephone conversations, refer to your instrument by its product number, full serial number, and software revision.

Locations for Keysight Technologies

Online assistance: www.keysight.com/find/assist

Americas		
Canada 1 877 894 4414	Latin America 305 269 7500	United States 1 800 829 4444

Asia Pacific		
Australia 1 800 629 485	China 800 810 0189	Hong Kong 800 938 693
India 1 800 112 929	Japan 0 120 421 385	Korea 080 769 0800
Malaysia 1 800 888 848	Singapore 1 800 375 8100	Taiwan 0 800 047 866
Thailand 1 800 226 008		

Europe & Middle East		
Austria 43 0 1 360 277 1571	Belgium 32 0 2 404 93 40	Denmark 45 70 13 15 15
Finland 358 0 10 855 2100	France 0825 010 700* *0.125 Euro/minute	Germany 49 0 7031 464 6333

Europe & Middle East		
Ireland 1890 924 204	Israel 972 3 9288 504/544	Italy 39 02 92 60 8484
Netherlands 31 0 20 547 2111	Spain 34 91 631 3300	Sweden 0200 88 22 55
Switzerland 0800 80 53 53	United Kingdom 44 0 118 9276201	

Other European Countries: www.keysight.com/find/contactus

Packaging the Instrument

Use original packaging or comparable. It is best to pack the unit in the original factory packaging materials if they are available.

WARNING

Instrument damage can result from using packaging materials other than those specified. Never use styrene pellets in any shape as packaging materials. They do not adequately cushion the equipment or prevent it from shifting in the carton. They cause equipment damage by generating static electricity and by lodging in the instrument louvers, blocking airflow.

You can repackage the instrument with commercially available materials, as follows:

1. Wrap the instrument in anti-static plastic to reduce the possibility of damage caused by electrostatic discharge.
2. Use a strong shipping container.
   The carton must be both large enough and strong enough to accommodate the instrument. A double-walled, corrugated cardboard carton with 159 kg (350 lb) bursting strength is adequate. Allow at least 3 to 4 inches on all sides of the instrument for packing material.
3. Surround the instrument with three to four inches of packing material and prevent the instrument from moving in the carton.
   If packing foam is not available, the best alternative is plastic bubble-pack.
   This material looks like a plastic sheet filled with 1-1/4 inch air bubbles. Use the pink-colored bubble which reduces static electricity. Wrapping the instrument several times in this material should both protect the instrument and prevent it from moving in the carton.
4. Seal the shipping container securely with strong nylon adhesive tape.
5. Mark the shipping container “FRAGILE, HANDLE WITH CARE” to assure careful handling.

6. Retain copies of all shipping papers.

Service Options

Keysight Technologies offers several optional maintenance plans to service your instrument after the warranty has expired. Call your Keysight Technologies office for full details.

If you want to service the instrument yourself after the warranty expires, you can download the service documentation that provides all necessary troubleshooting and maintenance information from the Keysight web page.

Appendix

Sharing the M9300A Frequency Reference

The M9300A Frequency Reference module can be shared by multiple instruments. If you connect to a hardware configuration that includes a currently connected M9300A (either independently or as part of another hardware configuration) the latest instance of the SFP will take control of the M9300A. You will see no warning or error message.

CAUTION

While the M9300A module is being shared, any of the configurations that share this reference can control it fully, including setting the reference to use an external frequency reference source. If the external frequency reference setting does not match that of the supplied frequency, the reference will be unlocked, as expected. However, only the instance of the SFP that creates the reference unlock condition can correct the problem. This is done by either correcting the frequency or by setting the reference back to internal, so that a subsequent instance will not take control of the reference module unintentionally.

CAUTION

The Reference module can also be shared among multiple measurement applications, such as the Keysight 89600 VSA software. The Reference module must be initialized before use, so including it in all configurations allows applications to be started in any order. However, when sharing a module the user interface of some applications may not reflect M9300A settings made by other applications. For example, the Keysight 89600 software can control the Reference module internal/external setting, but the changes made by other applications will not be reflected in the Keysight 89600.

NOTE

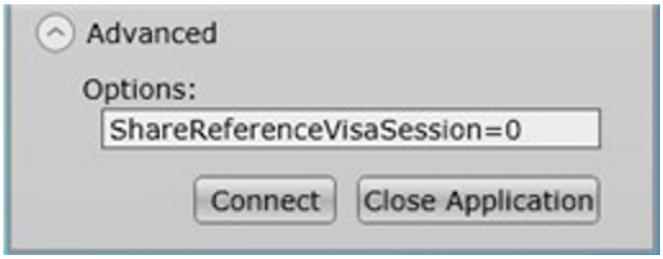
FPGA updates are not allowed on a Keysight M9300A PXIe Frequency Reference while it is being shared. To perform M9300A FPGA updates, reserve the Reference.

Reserving the Reference for a Configuration

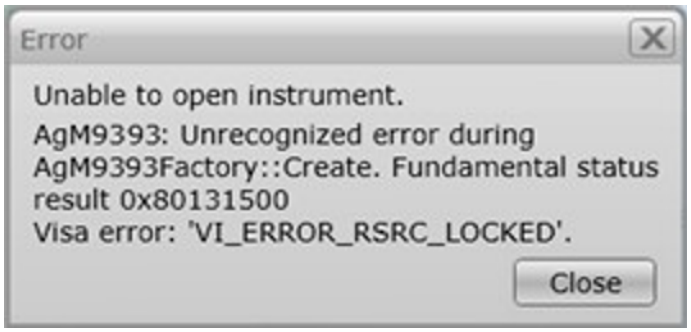
If you are running a test in the background with a certain M9300A setting and then connect a hardware configuration that also contains the same M9300A, you may alter the test setup that is already running.

If you would prefer to keep the reference control with the first instance of the hardware configuration so that a subsequent instance will not take control of the reference module unintentionally:

1. On the SFP Connect to Instrument screen, click the Advanced control to open the Options: dialog.



2. Type the following string: `ShareReferenceVisaSession=0`
   This configuration will retain control of the M9300A if you try to open a new configuration. If you connect a new configuration, that includes the same M9300A, you will see the following error:



CAUTION If an existing instance of the SFP is connected to the reference module in a shared (default) mode, and you try to connect a second instance of the SFP to the same reference with ShareReferenceVisaSession=0 Advanced Option, you will get the resource locked error shown above.

API Overview

Keysight's IVI drivers simplify the creation and maintenance of instrument control applications in a variety of development environments; they allow programmatic control of instrumentation while providing a greater degree of instrument interchangeability and code reuse. IVI drivers currently come in two basic types: IVI-COM and IVI-C. Although the functionality offered by both types of drivers is often very similar, the fundamental differences in interface technology result in a very different end-user experience. The IVI drivers support compiling application programs for 32- or 64-bit platforms.

Supported ADEs (application development environments) Arguably the most important consideration in comparing IVI-COM and IVI-C drivers is the end user experience in various ADEs. Since IVI-COM drivers are based on Microsoft COM technology, it's not surprising that IVI-COM drivers offer the richest user experience in Microsoft ADEs. Users working in Visual C++, Visual C#, Visual Basic.NET, and Visual Basic 6 enjoy a host of features, such as object browsers, IntelliSense, and context-sensitive help.

When you install the product software, the IVI driver files are installed in the standard IVI Foundation directories (C:\Program Files\IVI Foundation\IVI\Drivers\). Example programs are provided to demonstrate driver functionality (C:\Program Files (x86)\IVI Foundation\IVI\Drivers\KtMVsg\Examples). The reference material for the driver functions (a Microsoft HTML Help .chm file) is installed with the IVI driver and is available for Microsoft Visual Studio's IntelliSense context linking.In addition, you can directly access the .chm file (KtMVsg.chm) from this Start menu location: Start > All Programs > Keysight Instrument Drivers > IVI-COM-C-Drivers > M9383 IVI documentation.

Chassis Triggers

The Keysight M9383A source supports the following triggering modes for starting modulation and/or lists.

Immediate	(Default) Modulation begins as soon as the Vector Modulator is ready.
Software Triggering	The source will begin modulating when a software trigger is called via the API. In the implementation a User Command is attached to the Vector Modulator FPGA to cause state transition from armed to triggered.
External Triggering	The Digitizer FPGA state synchronization for triggering an acquisition can be attached to any of the front panel or PXI backplane triggers.

NOTE

You must set up the PXI chassis trigger lines to enable the M9383A trigger routing feature for backplane triggers crossing chassis segments. For more information about backplane triggers, refer to Managing Triggers chapter in the M9383A PXIe Vector Signal Generator Soft Front Panel Help.

2 Safety and Maintenance Information

The following topics can be found in this section:

Safety Information

IMPORTANT The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

IMPORTANT Proper Ergonomics should be considered when using accessories such as a keyboard or a mouse.

IMPORTANT When installing the instrument(s) into a cabinet, consideration shall be given to the convection flow into and out of the cabinet. Consideration shall also be given to the individual instruments to avoid having the heated discharge of one instrument, now becoming the cooling intake air for another instrument. Another area of concern is verification that the maximum ambient operating temperature of the instrument(s) is not exceeded by cabinet installation. Keysight recommends forced air convection whenever an instrument(s) are installed in a cabinet and further recommends that the maximum operating temperature of the cabinet be reduced 10°C from the lowest, of the maximum operating temperature of a single instrument. If there are any concerns or special requirements a Keysight Field Engineer should be consulted to assure instrument(s) temperature compliance and performance.

Warnings, Cautions, and Notes

The documentation for this product uses the following safety notations. Familiarize yourself with each notation and its meaning before operating the signal generator.

WARNING

Warning denotes a hazard. It calls attention to a condition or situation that could result in personal injury or loss of life. Do not proceed beyond a warning until you fully understand the indicated conditions or situations.

CAUTION

Caution calls attention to a condition or situation that could result in damage to or destruction of the signal generator, or in the loss of a user's settings or data. Do not proceed beyond a caution until you fully understand the indicated conditions.

NOTE

Note calls the user's attention to an important point or special information in the text.

General Safety Considerations

WARNING If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

NOTE This product has been designed and tested in accordance with accepted industry standards, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

Before Applying Power

WARNING Use a Keysight supplied power cord that has the same or better electrical rating.

WARNING Capable of rendering an electrical shock or burn.

WARNING Install the instrument so that the detachable power cord is readily identifiable and is easily reached by the operator. The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch. Alternatively, an externally installed switch or circuit breaker (which is readily identifiable and is easily reached by the operator) may be used as a disconnecting device.

WARNING This is a Safety Protection Class I Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the product is likely to make the product dangerous. Intentional interruption is prohibited.

WARNING Cleaning connectors with alcohol shall only be done with the instruments power cord removed, and in a well-ventilated area. Allow all residual alcohol moisture to evaporate and the fumes to dissipate prior to energizing the instrument.

CAUTION The instrument has an auto–ranging line voltage input – be sure the supply voltage is within the specified range and the voltage fluctuations do not exceed 10 percent of the nominal supply voltage.

CAUTION The measuring terminals on this instrument are designed to be used with external signals described in Measurement Category I, but NOT with external signals described in Categories II, III, and IV. The input of this instrument cannot be connected to the mains.

CAUTION The Mains wiring and connectors shall be compatible with the connector used in the premise electrical system. Failure to ensure adequate earth grounding by not using the correct components may cause product damage, and serious injury.

NOTE The main power cord can be used as the system disconnecting device. It disconnects the mains circuits from the mains supply.

Servicing

WARNING These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

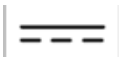
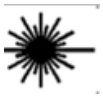
WARNING No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.

Operating Conditions

CAUTION This product is designed for use in Installation Category II and Pollution Degree 2.

Instrument Markings

The table below lists the definitions of markings that may be on or with the product. Familiarize yourself with each marking and its meaning before operating the signal generator.

Marking	Description
	This symbol marks the standby position of the power line switch.
	This symbol marks the ON position of the power line switch.
	This symbol marks the OFF position of the power line switch.
	This symbol indicates that the input power required is AC.
	This symbol indicates DC voltage
	This symbol indicates a three-phase alternating current.
	This symbol indicates Frame or chassis Terminal.
	The instruction documentation symbol. The product is marked with this symbol when it is necessary for the user to refer to the instruction in the documentation.
	This symbol indicate the presence of a Laser device.
	This symbol indicates the surface can be hot.
	This symbol indicated the product is sensitive to electrostatic discharge.
	This symbol identifies the Protective Conductor terminal.
	This symbol indicates the equipment is protected throughout by double or reinforced insulation.

Marking	Description
CE	The CE mark is a registered trademark of the European Community (if accompanied by a year, it is the year when the design was proven). It indicates that the product complies with all the relevant directives.
UK CA	The UK conformity mark is a UK government owned mark. Products showing this mark comply with all applicable UK regulations.
ccr.keysight@keysight.com	The Keysight email address is required by EU directives applicable to our product.
C SP US	The CSA mark is a registered trademark of the CSA International.
	Two person lift required.
CAN ICES/NMB-001(A)	Canada EMC label. Interference-Causing Equipment Standard for industrial, scientific and medical (ISM) equipment. Matériel industriel, scientifique et médical (ISM).
	CE/ICES/ISM label. (Old mark for reference only.) This is a space saver label that combines three markings - CE with CAN ICES and ISM (see above) and ISM (see below).
CE CAN ICES/NMB-001(A) ISM GRP 1-A	This is a space saver label that combines three markings - CE with CAN ICES and ISM (see above) and ISM (see below).
	The RCM mark is a registered trademark of the Australian Communications and Media Authority.
CAN ICES/NMB-001(A) ISM GRP 1-A	This is a space saver label that combines two markings - CAN ICES and ISM.
ISM 1-A	This is a symbol of an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 5).
	South Korean Certification (KC) mark. It includes the marking's identifier code.
	The crossed-out wheeled bin symbol indicates that separate collection for waste electric and electronic equipment (WEEE) is required, as obligated by the EU DIRECTIVE and other National legislation. Please refer to www.keysight.com/go/takeback to understand your trade-in options with Keysight, in addition to product takeback instructions.

Marking	Description
	China Restricted Substance Product Label. The EPUP (environmental protection use period) number in the center indicates the time period during which no hazardous or toxic substances or elements are expected to leak or deteriorate during normal use and generally reflects the expected useful life of the product.
	Universal recycling symbol. This symbol indicates compliance with the China standard GB 18455-2001 as required by the China RoHS regulations for paper/fiberboard packaging.
IP x y	This mark indicates product has been designed to meet the requirements of "IP x y", where "x" is the solid particle protection and "y" is the liquid ingress protection.

Instrument Maintenance

Cleaning the instrument

To remove dirt or dust from the external case of the M9484C VXG, clean the case using a dry or slightly-dampened cloth only.

Cleaning Connectors

Cleaning connectors with alcohol shall only be done with the instrument power cord removed, and in a well-ventilated area. Allow all residual alcohol moisture to evaporate, and the fumes to dissipate prior to energizing the instrument.

WARNING To prevent electrical shock, disconnect the instrument from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.

Returning an Instrument for Service

Calling Keysight Technologies

Keysight Technologies has offices around the world to provide you with complete support for your instrument. To obtain servicing information or to order replacement parts, contact the nearest Keysight Technologies office listed below. In any correspondence or telephone conversations, refer to your instrument by its product number, full serial number, and software revision.

Locations for Keysight Technologies

Online assistance: http://www.keysight.com/find/assist

Americas

Canada 1 877 894 4414	Latin America (305) 269 7500	United States 1 800 829 4444

Asia Pacific

Australia 1 800 629 485	China 800 810 0189	Hong Kong 800 938 693
India 1 800 112 929	Japan 0 120 (421) 345	Korea 080 769 0800
Malaysia 1 800 888 848	Singapore 1 800 375 8100	Taiwan 0800 047 866
Thailand 1 800226 008		

Europe & Middle East

Austria 43 (0) 1 360 277 1571	Belgium 32 (0) 2 404 93 40	Denmark 45 70 13 15 15
Finland 358 (0) 10 855 2100	France 0825 010 700* *0.125 Euros/minute	Germany 49 (0) 7031 464 6333
Ireland 1890 924 204	Israel 972-3-9288-504/544	Italy 39 02 92 60 8484
Netherlands 31 (0) 20 547 2111	Spain 34 (91) 631 3300	Sweden 0200-88 22 55
Switzerland 0800 80 53 53	United Kingdom 44 (0) 118 9276201	

Other European Countries: http://www.keysight.com/find/contactus

Service Options

Keysight Technologies offers several optional maintenance plans to service your instrument after the warranty has expired. Call your Keysight Technologies office for full details.

If you want to service the instrument yourself after the warranty expires, you can download the service documentation that provides all necessary troubleshooting and maintenance information from the Keysight web page.

Packaging the Instrument

Use original packaging or comparable. It is best to pack the unit in the original factory packaging materials if they are available.

WARNING

Instrument damage can result from using packaging materials other than those specified. Never use styrene pellets in any shape as packaging materials. They do not adequately cushion the equipment or prevent it from shifting in the carton. They cause equipment damage by generating static electricity and by lodging in the instrument louvers, blocking airflow.

You can repackage the instrument with commercially available materials, as follows:

Step	Notes
1. Wrap the instrument in anti-static plastic to reduce the possibility of damage caused by electrostatic discharge	
2. Use a strong shipping container.	The carton must be both large enough and strong enough to accommodate the instrument. A double-walled, corrugated cardboard carton with 159 kg (350 lb) bursting strength is adequate. Allow at least 3 to 4 inches on all sides of the instrument for packing material.
3. Surround the equipment with three to four inches of packing material and prevent the equipment from moving in the carton.	If packing foam is not available, the best alternative is plastic bubble-pack. This material looks like a plastic sheet filled with 1-1/4 inch air bubbles. Use the pink-colored bubble which reduces static electricity. Wrapping the equipment several times in this material should both protect the equipment and prevent it from moving in the carton.
4. Seal the shipping container securely with strong nylon adhesive tape.	

Step	Notes
5. Mark the shipping container "**FRAGILE, HANDLE WITH CARE**" to assure careful handling.	
6. Retain copies of all shipping papers.	

Edition 1, April 2022

M9383-90001

www.keysight.com