M9383A

PXIe Microwave Signal Generator, 1 MHz to 44 GHz

Introduction

This configuration guide contains information to help you configure your M9383A PXIe microwave signal generator to meet your requirements. Ordering optional capabilities at the time of purchase provides the lowest overall cost.

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Hardware

Select options for M9383A signal generator

Steps 1 through 5 determine the modules needed for the M9383A.

Option	Description	Additional information
Step 1. Choose a frequency range (required)		
M9383A-F14	1 MHz to 14 GHz	Adds M9312A module (3 slots)
M9383A-F20	1 MHz to 20 GHz	Adds M9312A module (3 slots)
M9383A-F32	1 MHz to 31.8 GHz	Adds M9312A module (3 slots) and M9314A module (2 slots)
M9383A-F44	1 MHz to 44 GHz	Adds M9312A module (3 slots) and M9314A module (2 slots)
Step 2. Choose a synthesizer technology (required)		
Refer to the data sheet for the differences in phase noise and spurious signals for these options.		
M9383A-ST2	Synthesizer VCO, basic performance	Adds M9303A module (1 slot)
M9383A-ST4	Synthesizer VCO + DDS, enhanced performance	Adds M9303A module (1 slot) and M9305A module (2 slots)
Step 3. Choose the maximum I/Q bandwidth (required)		
Bandwidths listed are available through the internal arbitrary waveform generator. Refer to the data sheet for wider bandwidths available through the external I/Q inputs.		
M9383A-A01	No vector modulation and memory capability	Adds no additional modules
M9383A-B04	RF modulation bandwidth, 40 MHz, for use with option F14 or F20	Adds M9316A module (3 slots)
M9383A-B05	RF modulation bandwidth, 40 MHz, for use with option F32 or F44	Adds M9316A module (3 slots)
M9383A-B16	RF modulation bandwidth, 160 MHz, for use with option F14 or F20	Adds M9316A module (3 slots)
M9383A-B17	RF modulation bandwidth, 160 MHz, for use with option F32 or F44	Adds M9316A module (3 slots)
M9383A-C05	RF modulation bandwidth, 500 MHz, for use with option F14 or F20	Adds M9318A module (3 slots)
M9383A-C06	RF modulation bandwidth, 500 MHz, for use with option F32 or F44	Adds M9318A module (3 slots)
M9383A-C10	RF modulation bandwidth, 1 GHz, for use with option F14 or F20	Adds M9318A module (3 slots)
M9383A-C11	RF modulation bandwidth, 1 GHz, for use with option F32 or F44	Adds M9318A module (3 slots)
Step 4. Choose a frequency reference (required)		
An M9300A PXIe Frequency Reference is required to meet data sheet specifications. The M9300A provides five 100 MHz outputs. Select M9383A-000 if you already have an M9300A with an unused output.		
M9383A-000	No frequency reference required	Adds no additional modules
M9383A-300	Frequency reference, 10 MHz and 100 MHz	Adds M9300A module (1 slot)

Option	Description	Additional Information
Step 5. Choose high power (optional)		
M9383A-1EA	High output power	
M9383A-1EB	Booster amplifier (enhanced high output power, 20 to 40 GHz)	Adds M9405A module (1 slot) and M9155CH40 module (1 slot) Requires F32 or F44, C06 or C11, and ST4
Step 6. Calculate M9383A PXI slot usage		
To determine how many slots will be used by your selections in steps 1 through 5, add the slot widths shown in column 3.		
Step 7. Choose memory size (required)		
Option A01 does not use I/Q waveforms so no selection is required for Option A01- no vector modulation and memory capability.		
M9383A-M01	Memory, 32 MSa for I/Q waveforms (default)	
M9383A-M05	Memory, 512 MSa for I/Q waveforms	
M9383A-M10	Memory, 1024 MSa for I/Q waveforms	
Step 8. Choose external I/Q inputs (optional)		
M9383A-016	I/Q inputs, differential external wide band	Not available with Option A01
Step 9. Choose frequency switching speed (optional)		
M9383A-UNQ	Fast switching, band limited	
M9383A-UNZ	Fast switching, 250 µs	
Step 10. Choose output step attenuator for increased power range (optional)		
M9383A-1E1	Step attenuator	
Step 11. Choose additional filters for lower harmonics (optional)		
M9383A-1EH	Improved harmonics below 2 GHz	
Step 12. Choose AM, FM and phase modulation (optional)		
M9383A-UNT	Amplitude, frequency, phase modulation, and low frequency output	
Step 13. Choose pulse modulation (optional)		
M9383A-PM1	Pulse modulation, modified 30 ns	
M9383A-PM2	Pulse modulation, < 25 ns	
Step 14. Choose pulse train generator (optional)		
M9383A-320	Pulse train generator	Requires Option PM1 or PM2
Step 15. Choose vector system features (optional)		
M9383A-403	Calibrated AWGN	Not available with Option A01
Step 16. Choose enhanced performance options (optional)		
M9383A-DNV	Disable non-volatile memory access	
M9383A-LW1	Large waveform playback	Not available with Option A01

Select Controller

Embedded controller

To use embedded controller

Step 1. Select embedded controller[1]
M9035A-M16 PXIe embedded controller, Intel i3-8100H quad-core processor, 3.0 GHz, 4-thread, 16 GB RAM
M9038A-M32 High-performance embedded controller, Intel i7-9850HE 6-core processor, 2.7 GHz, 12-thread, 32 GB RAM, with two Thunderbolt 3.0 ports Select M9038A for the best performance if you have memory intensive applications, multiple applications running in parallel or if a lot of data is sent to the PC from the PXIe chassis. Features removable SSD drive for security and multiple connectors from front for connection to second chassis

Step 2. Upgrade from standard memory size (optional)	
M9035A-M32	Memory upgrade to 32 GB RAM
M9038A-M64	Memory upgrade to 64 GB RAM

To use your desktop PC as a controller [2,3]

Model	Description
Remote PC PCIe® Host Desktop Adapters for PXIe Systems	
M9048B	PCIe Host Adapter: Single Port (x8), Gen 3
M9049A	PCIe Host Adapter: Dual Port (x8 or x16), Gen 3
System and Cable Modules for PXIe Systems	
M9022A	PXIe System Module: Single Port (x8), Gen 3
M9023A	PXIe System Module: Dual Port (x16), Gen 3
M9024A	PXIe System Module with Connectivity Expansion: Dual Port (x16) Gen 3
M9025A	PXIe Thunderbolt™ System Module
Accessories	
Y1202A	PCIe cable: x8, 2.0m
Y1203A	PCIe cable: x8, 0.5m
Y1205A	USB-C Cable with Screw Lock

1 The M9019A 18-slot chassis includes empty space to the left of the 1st functional slot. The embedded controller occupies that empty space and the 1st functional slot.
2 For list of qualified external controllers, please see Tested PC and PXI / AXIe Chassis Configurations Technical Overview literature no. 5990-7632EN
3 For more detailed chassis configuration information including multi-chassis, see PXIe System Modules and Adapters literature no. 5992-0377EN.

Select a Chassis and Accessories

Model	Description
Step 1. Select a chassis	
M9010A	10-slot PXIe chassis
M9019A	18-slot PXIe chassis Gen 3
Step 2. Choose enough slot blocker kits and EMC filler panels to fill every open slot	
Y1212A	Slot blocker kit: 5 slots
Y1213A	PXI EMC filler panel kit: 5 slots
Step 3. Choose a rack mount kit (optional)	
Y1271A	Rack mount kit for M9010A
Y1215C	Rack mount kit for M9019A[4]
Y1216B	Recess mount adapter kit for M9019A For more information on the rack mount kit, see the chassis data sheet, literature number 5992-1481EN.
Y1217A	PXI chassis rack rail kit
Step 4. Choose an air inlet kit (optional)	
Y1214B	Air inlet kit

4 For more information on the rack mount kit, see the chassis data sheet, literature number 5992-1481EN.

Software

Included software

The M9383A comes standard with the following software:

Description
Keysight IO Libraries Suite including Connection Expert [5]
Soft front panel, drivers[6] for use with MATLAB, LabVIEW, Visual Studio (including VB Net, C#, C/C++), Keysight VEE
Sample waveforms and programming examples

Download free Keysight Command Expert software [7] (optional)

FREE software that provides fast and easy instrument control in many PC application environments. Command Expert combines instrument commands, documentation, syntax checking and command execution all in one simple interface. Command Expert helps you to:

- Find instrument commands
- View complete command documentation
- Verify command syntax
- Build instrument command sequences
- Execute instrument command sequences
- Integrate sequences into PC application environments

5 Both IO library (version 17.0 or newer) and Connection Expert software need to be installed on the PC controlling the PXI instruments. To download, visit www.keysight.com/find/iosuite.
6 Find latest versions of this software at www.keysight.com/find/m9383a.
7 To download or get more information on Command Expert, visit www.keysight.com/find/commandexpert.

Add PathWave Signal Generation software [8] (optional)

Model	Description
Cellular communications	
N7600EMBC	PathWave Signal Generation for W-CDMA/HSPA+
N7601EMBC	PathWave Signal Generation for cdma2000/1xEV-DO
N7602EMBC	PathWave Signal Generation for GSM/EDGE/Evo
N7612EMBC	PathWave Signal Generation for TD-SCDMA/HSPA
N7624EMBC	PathWave Signal Generation for LTE/LTE-Advanced/LTE-A Pro FDD
N7625EMBC	PathWave Signal Generation for LTE/LTE-Advanced TDD
N7631EMBC	PathWave Signal Generation for 5G NR
Wireless connectivity	
N7617EMBC	PathWave Signal Generation for WLAN 802.11
General RF and Microwave	
N7608EMBC	PathWave Signal Generation for custom modulation
N7614EMBC	PathWave Signal Generation for power amplifier test
N7650B	Waveform license 5 or 50-pack for PathWave Signal Generation

Add MATLAB software [9] (optional)

Create arbitrary waveforms, customize measurement and data analysis routines, create your own instruments applications and test systems, automate measurements, signal generation, and report generation

Model	Description
N6171A-M01	MATLAB basic package
N6171A-M02	MATLAB standard package
N6171A-M03	MATLAB advanced package

8 For more information, see PathWave Signal Generation brochure, literature number 5989-6448EN.
9 For more information on MATLAB software, visit www.keysight.com/find/n6171a.

Services

Warranty, Calibration, Start-Up Assistance

Model	Description	Additional information
	One day start-up assistance	Included in base configuration
	Return to Keysight warranty – 1 year	Included in base configuration
R-51B-001-5Z	Return to Keysight warranty – 5 years	
M9383A-UK6	Commercial calibration certificate with test data for M9383A	Calibration certificate with measurement results available only at time of purchase.
M9300A-UK6	Commercial calibration certificate with test data for M9300A	Calibration certificate with measurement results available only at time of purchase.
R-51B-001-3X	Express warranty – 5 day turnaround for 3 years	Available in the US, Japan, China and many EU countries
R-51B-001-5X	Express warranty –5 day turnaround for 5 years	Available in the US, Japan, China and many EU countries

Global Warranty

Keysight provides the peace of mind that today's high-tech industry requires. Your investment is protected by Keysight's global reach in more than 100 countries (either directly or through distributors). The warranty gives you convenient standard coverage for the country in which the product is used, eliminating the need to ship equipment back to the country of purchase. Keysight's warranty service provides:

- All parts and labor necessary to return your investment to full specified performance
- Recalibration for products supplied originally with a calibration certificate
- Return shipment

Express warranty

Reduce downtime with the fastest repair service in the industry. The express warranty upgrades the global warranty to provide:

- 5 day typical turnaround repair service in the US, Japan, China and many EU countries or up to a 10 day improvement in turnaround time in the rest of the world
- Priority return shipment

One Day Start-up Assistance

A Keysight Technologies applications engineer will get you started quickly by helping you install the modules in a chassis, configure the controller, load software and start making measurements.

Calibration services

The modular products are factory calibrated and shipped with a calibration certificate. A one year calibration cycle is recommended.

Upgrading your system

Your product can be easily upgraded after the initial purchase. Some PXIe microwave signal generator options are controlled by a licensing key and can be quickly installed by the user. To upgrade these options:

1. Contact your Keysight representative to place an order for an option upgrade.
2. You will receive your hardware entitlement certificate via email.
3. Redeem the certificate online by following the instructions provided to receive a license key file.
4. Install the license key file using the Keysight License Manager.
5. Begin using the new capability.

Some PXIe microwave signal generator options require additional hardware. Contact your Keysight representative for assistance with hardware upgrades.

Upgrade number	Description	Requirements	Additional Information
M9383AU-1EB	Add booster amplifier (enhanced high output power, 20 to 40 GHz)	F32 or F44, C06 or C11, and ST4	Hardware upgrade - return to Keysight
M9383AU-B04	Upgrade bandwidth from A01 to B04/M10	A01	Hardware upgrade - return to Keysight
M9383AU-B05	Upgrade bandwidth from A01 to B05/M10	A01	Hardware upgrade - return to Keysight
M9383AU-C05	Upgrade bandwidth from A01, B04 or B16 to C05/M10	A01, B04 or B16	Hardware upgrade - return to Keysight
M9383AU-C06	Upgrade bandwidth from A01, B05 or B17 to C06/M10	A01, B05 or B17	Hardware upgrade - return to Keysight
M9383AU-U01	Upgrade frequency from F20/A01 to F32/A01	F20 and A01	Hardware upgrade - return to Keysight
M9383AU-U02	Upgrade frequency from F20/B04 to F32/B05	F20 and B04	Hardware upgrade - return to Keysight
M9383AU-U03	Upgrade frequency from F20/B16 to F32/B17	F20 and B16	Hardware upgrade - return to Keysight
M9383AU-U04	Upgrade frequency from F20/C05 to F32/C06	F20 and C05	Hardware upgrade - return to Keysight
M9383AU-U05	Upgrade frequency from F20/C10 to F32/C11	F20 and C10	Hardware upgrade - return to Keysight
M9383AU-B16	Upgrade bandwidth from B04 to B16	B04	License key - customer installable
M9383AU-B17	Upgrade bandwidth from B05 to B17	B05	License key - customer installable
M9383AU-C10	Upgrade bandwidth from C05 to C10	C05	License key - customer installable
M9383AU-C11	Upgrade bandwidth from C06 to C11	C06	License key - customer installable
M9383AU-F20	Upgrade frequency from F14 to F20	F14	License key - customer installable
M9383AU-F44	Upgrade frequency from F32 to F44	F32	License key - customer installable
M9383AU-BU1	Upgrade to 016 differential I/Q inputs	B04, B05, B16 or B17	License key - customer installable
M9383AU-CU1	Upgrade to 016 differential I/Q inputs	C05, C06, C10 or C11	License key - customer installable
M9383AU-BM2	Upgrade to 1024 MSa memory for I/Q waveforms	B04, B05, B16 or B17	License key - customer installable
M9383AU-CM2	Upgrade to 1024 MSa memory for I/Q waveforms	C05, C06, C10 or C11	License key - customer installable
M9383AU-BM1	Upgrade to 512 MSa memory for I/Q waveforms	B04, B05, B16 or B17	License key - customer installable
M9383AU-CM1	Upgrade to 512 MSa memory for I/Q waveforms	C05, C06, C10 or C11	License key - customer installable
M9383AU-UNT	Upgrade to AM, FM phase modulation, and low frequency output	None	License key - customer installable
M9383AU-UNZ	Upgrade to fast switching, 150 us	None	License key - customer installable
M9383AU-UNQ	Upgrade to fast switching, band limited	None	License key - customer installable
M9383AU-1EA	Upgrade to high output power	None	License key - customer installable
M9383AU-1EH	Upgrade to improved harmonics below 2 GHz	None	License key - customer installable
M9383AU-PM2	Upgrade to pulse modulation, <25 ns	None	License key - customer installable
M9383AU-PM1	Upgrade to pulse modulation, modified 30 ns	None	License key - customer installable
M9383AU-320	Upgrade to pulse train generator (requires PM1 or PM2)	None	License key - customer installable
M9383AU-1E1	Upgrade to step attenuator	None	License key - customer installable
M9383AU-LW1	Upgrade to large waveform playback	C05, C06, C10, or C11	License key - customer installable
M9383AU-403	Calibrated AWGN	B04, B05, B16, B17, C05, C06, C10 or C11	License key - customer installable
M9383AU-DNV	Disable non-volatile memory access	None	License key - customer installable

Related Literature

For more detailed product and specification information refer to the following literature and web pages:

Description	Pub number
M9383A PXIe Microwave Signal Generator Data Sheet	5992-1928EN
M9018B and M9019A PXIe 18 slot Chassis, Data Sheet	5992-1481EN
M9035A PXIe Embedded Controller, Data Sheet	3121-1327EN
M9038A PXIe High Performance Embedded Controller	3122-1717EN
Signal Studio Software, Brochure	5989-6448EN

www.keysight.com/find/m9383a