Keysight Technologies
PXI Vector Network Analyzer Series

Drive down the size of test

KEYSIGHT TECHNOLOGIES

Full Two-Port VNA that Fits in Just One Slot

When you need to measure basic S-parameters, the right mix of speed, performance and footprint gives you an edge. Sharpen your edge with the Keysight PXIe M937XA vector network analyzer (VNA).

The Keysight PXI VNA is a full two-port VNA that fits in just one slot. The PXI VNA also performs fast, accurate measurements and reduces your cost-of-test by letting you simultaneously characterize many devices – two-port or multiport – using a single PXI chassis.

Get more VNA in less space

It offers the best PXI VNA performance on key specifications such as dynamic range, measurement speed, and trace noise. Each module is a completely independent two-port network analyzer and up to 16 modules can be added to a chassis for multi-site and multiport applications. All ports are fully synchronous so multiple ports can be measured simultaneously with multiport error correction applied.

Same Keysight VNA measurement science

The M937XA extends Keysight's expertise in measurement and metrology into the modular PXI form factor. It provides the same quality results you have come to expect in our vector network analyzers.

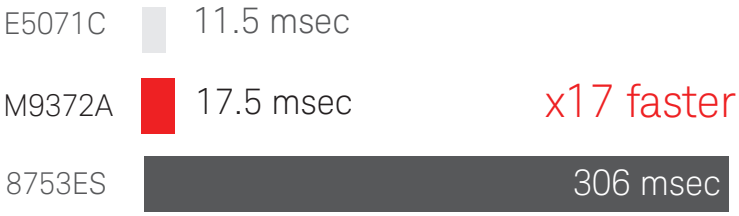
Main features and benefits

Product features	Your benefit
Choice of six frequency ranges up to 26.5 GHz (widest currently available)	Pay for only the frequency range you need
Best PXI VNA speed, dynamic range, trace noise and stability	Improve accuracy, yield and margins
Full 2-port S-parameters in a single-slot PXI	Have more slots available in your PXI chassis
Trusted Keysight measurement science and calibration	Get measurements you can count on
Electronic calibration (ECal) control via USB interface	Perform fast, easy, and accurate calibrations
Cascade multiple modules to address multiport applications	Test with full N-port correction capability
Simply add modules for multi-site applications	Increase throughput, lower cost-of-test per device
Cost-effective VNA capability	Achieve lower pricing as compared to other PXI VNAs

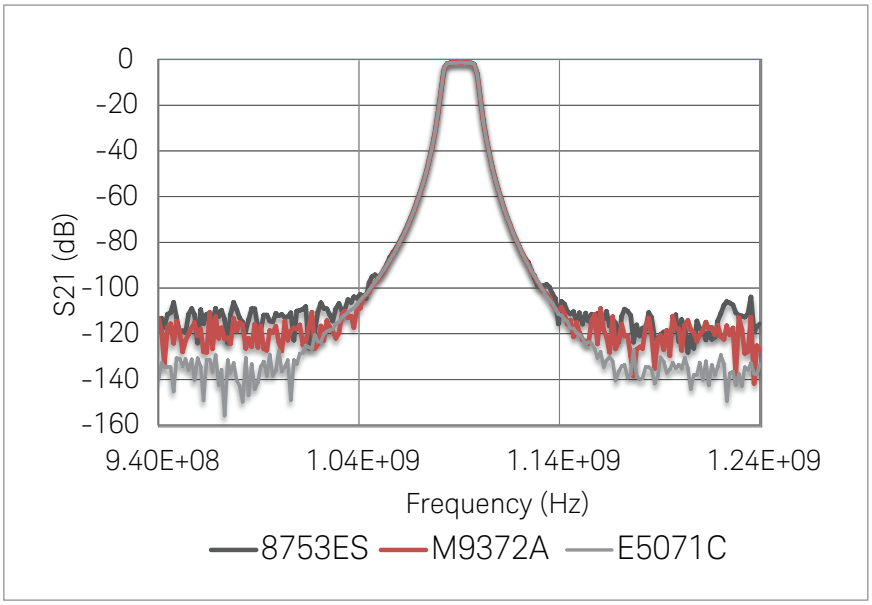
Figure 1. Pay for only the frequency range you need with the widest choice of frequency ranges from 300 kHz up to 26.5 GHz.

Measurements You Can Count On

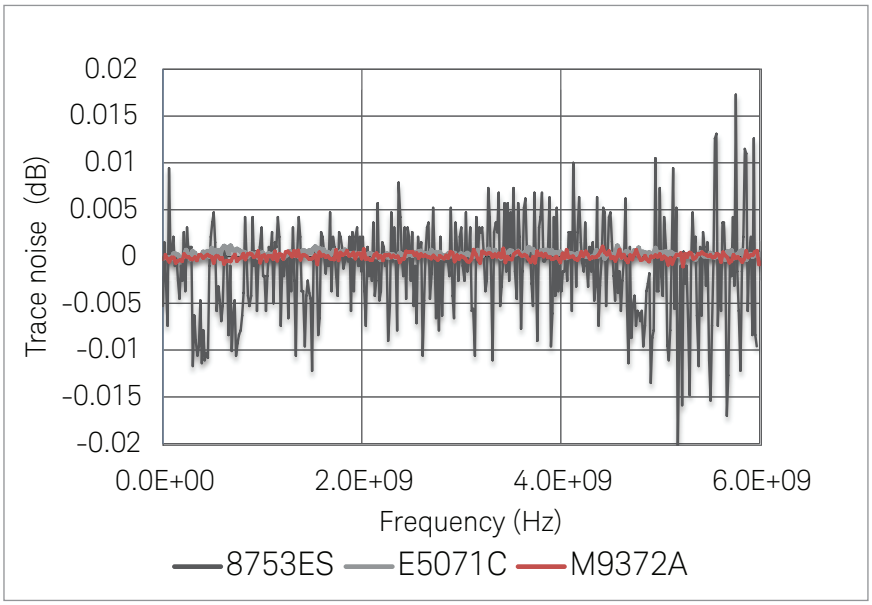
Fast measurement speed[1]



Wide dynamic range[2]



Low trace noise[3]



1. 401 pts, full 2-port cal, 800 M to 1.8 GHz
   IFBW = 6 kHz (8753ES), 500 kHz (E5071C), 600 kHz (M9372A)
2. IFBW = 10 Hz, max specified power
3. Standard deviation of traces at 1 kHz IFBW: E5071C: 0.3 mdB, M9372A: 0.4 mdB, 8753ES: 5.2 mdB

Multiport Testing with Full N-Port Correction Capability

The PXI VNA is an ideal solution for multiport measurements. It has a two-port (2- reference receivers and 2- test receivers) architecture in a one-slot module. It can be easily configured as a true multiport VNA by using additional modules installed in the same chassis. The full N-port correction capability allows for complete and accurate characterization of multiport devices.

A multiport PXI VNA provides higher throughput with much less sweeps required than a VNA with a switch matrix for the same multiport device. For example, a 12-port device requires just 12 sweeps with a 12-port multiport M937XA vs. 132-sweeps with a 2-port VNA and a switch matrix. The true multiport VNA has no degradation in performance (i.e. dynamic range, trace noise, directivity, stability) due to external switches.

Multiple PXI VNA modules may be installed in one chassis and identified by the M937XA firmware as one VNA under a single PXI controller. One or more modules in the set must have Option 551 (N-Port Calibrated Measurements). The frequency of the multi-port array is determined by the lowest frequency module configured in the array.

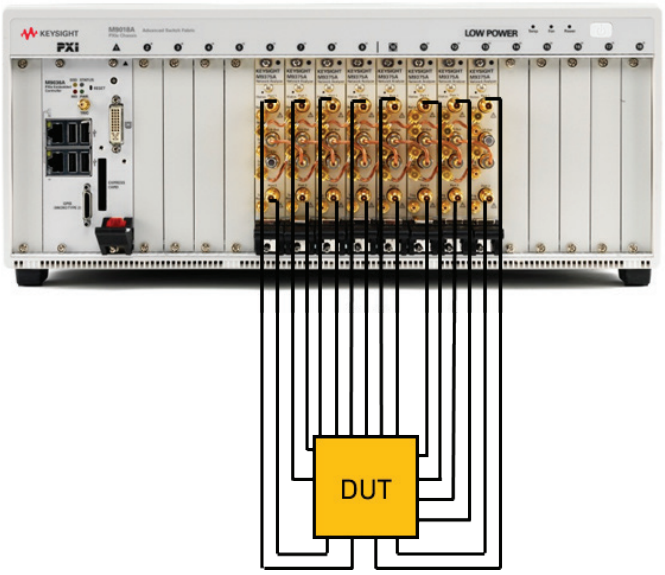


Figure 3. Easily add or subtract modules to meet all of your multiport measurement needs.

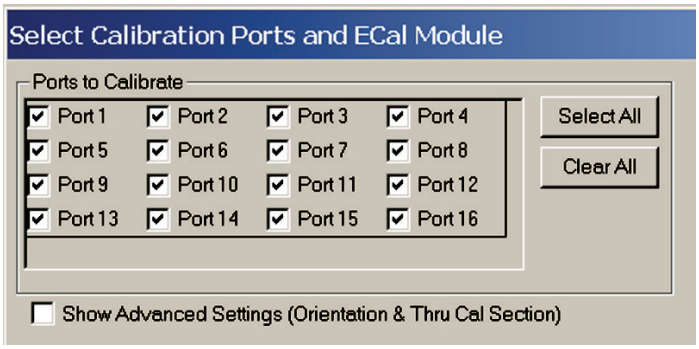


Figure 2. The full N-port correction capability allows for complete and accurate characterization of multiport devices.

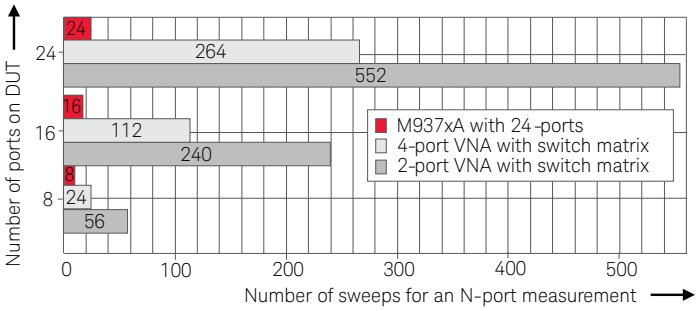


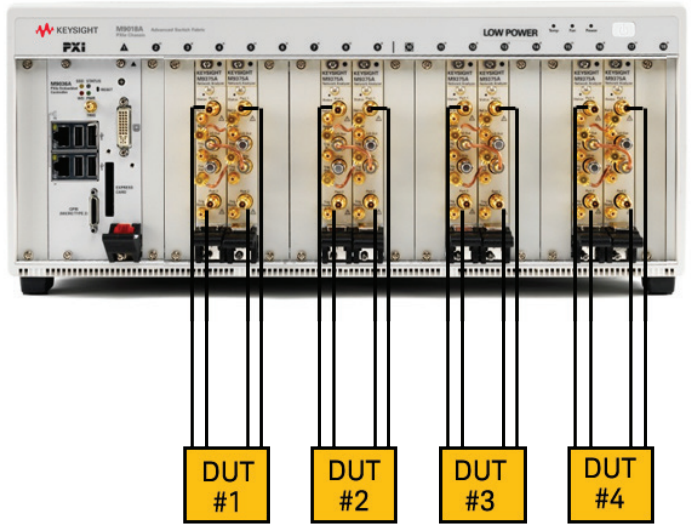
Figure 4. The multiport PXI VNA offers higher throughput with less sweeps required than a VNA with a switch matrix.

Increase Throughput with Multi-Site Capability

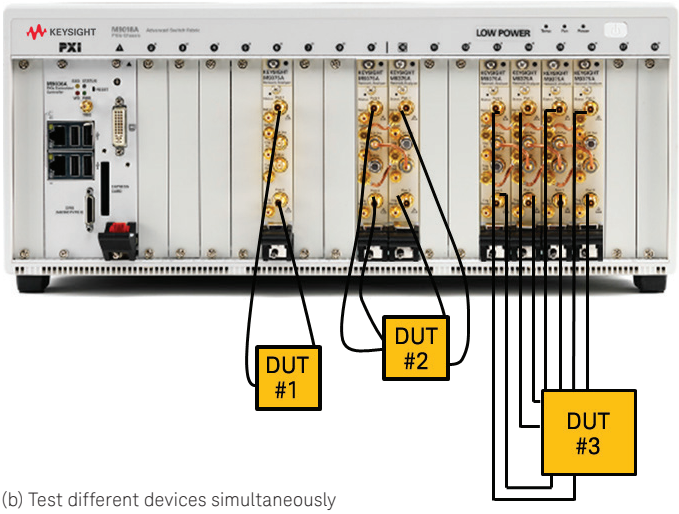
Unlike sequential measurements by a switch-based solution, the PXI VNA multi-site capability offers simultaneous measurements to improve overall throughput. Each PXI module or multiport array of modules is installed and identified under a single PXI controller. This makes it possible to run measurements of different devices at the same time or different measurement paths in a single component.

Multiple instances of the M937XA software are launched and each software instance is connected to either an individual M937XA, or a multiport array. Each instance behaves as an independent instrument to be used simultaneously. In addition, segment sweep enables you to optimize measurement conditions specifically for each device under test, so you can balance speed and accuracy. The PXI VNA multi-site capability gives you high throughput, so you can significantly lower the cost-of-test per device.

Figure 5. Multiple instances of the M937XA software are launched with each instance behaving as an independent instrument to be used simultaneously.



(a) Test multiple devices simultaneously



(b) Test different devices simultaneously

Figure 6. The PXI VNA multi-site capability increases throughput, resulting in a significantly lower cost-of-test per device.

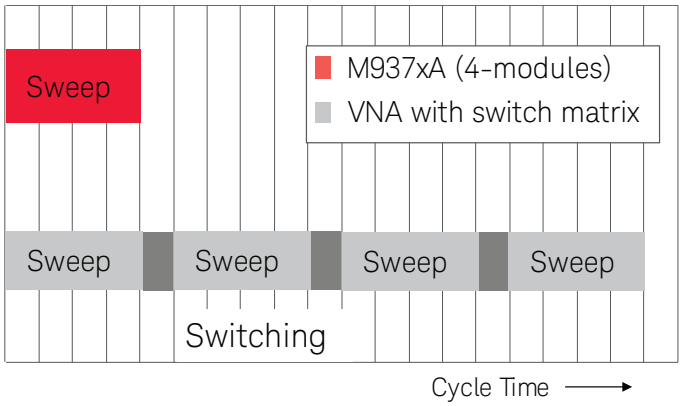


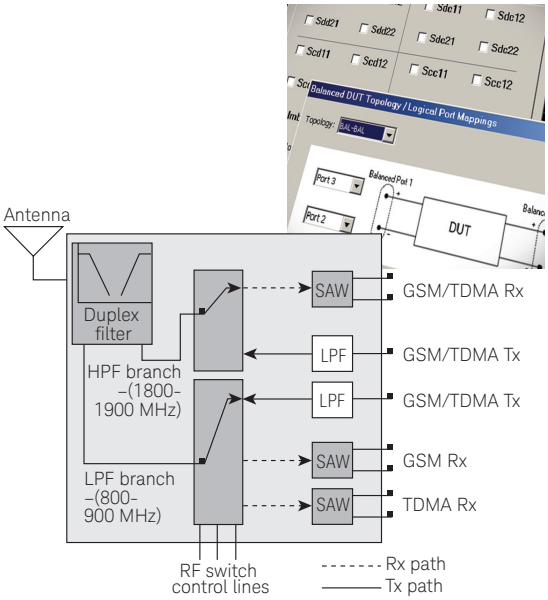
Figure 7. Unlike sequential measurements by switch-based solution, the PXI VNA offers simultaneous measurements to improve overall throughput.

Enhanced Measurement Capability

Balanced/differential components

For passive devices that have one or more balanced/differential ports, the PXI VNA is an excellent choice for mixed-mode S-parameter measurements, without the need or limitations of using baluns.

- Display differential-, common-, and mixed-mode performance, in a variety of trace formats
- Measurement parameters include common-mode-rejection ratio and amplitude and phase imbalance
- Supported port configurations include single-ended-to-balanced and balanced-to-balanced topologies



Advanced calibration tools

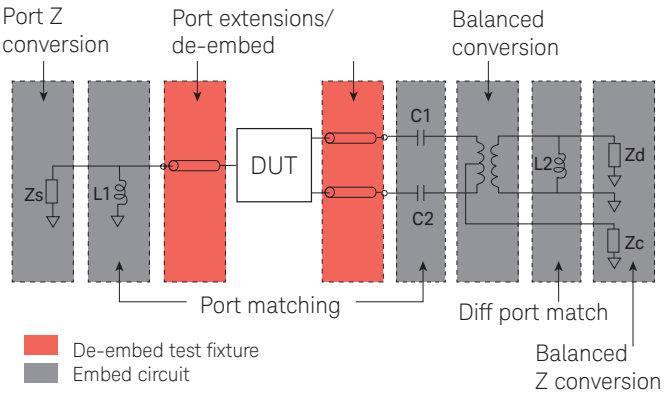
Calibrating network analyzers is critical for high accuracy measurements and can be particularly challenging in non-coaxial environments such as in-fixture, on-wafer, or waveguide. The PXI VNA supports a broad range of mechanical and electronic calibration kits, and offers advanced calibration methods to enhance ease-of-use while providing best-in-class accuracy.

Keysight calibration tools include:

- High-performance two-and four-port ECal modules, covering 300 kHz to 67 GHz, with nine connector types
- QSOLT and n-port calibration for multiport test systems

Powerful analysis capabilities

- Fixture simulator for
  - Mixed-mode S-parameter measurements
  - Embedding and de-embedding
  - Matching circuit simulation
  - Port impedance conversion
- Equation editor for real-time data processing
- Time-domain analysis (optional)



Easy Integration into Test Environments

Software platform

Keysight soft front panels provide easy to use instrument communications. The graphical user interface guides developers through module setup using a similar look and feel as the popular PNA. Users can quickly configure the instrument parameters and perform calibrations.

IO libraries

Keysight IO Libraries Suite offers fast and easy connection to both traditional and modular instruments. The Keysight IO Libraries Suite helps you by displaying all of the modules in your system, whether they are PXI, PXIe, or AXIe. From here you can view information about the installed software or launch the modules' soft front panel directly from Keysight Connection Expert (KCE). KCE offers an easy way to find the correct driver for your instrument.

Drivers

The M973XA PXI VNA is supplied with a comprehensive portfolio of module drivers, documentation, examples, and software tools to help you quickly develop test systems with your software platform of choice. The module comes with IVICOM, IVI-C, LabVIEW and MATLAB software drivers that work in the most popular T&M development environments including, LabVIEW and LabWindows/CVI from National Instruments, MATLAB from The MathWorks, Microsoft C/ C++, C#, and VB.NET.

Easy software integration

To help you get started and complete complex tasks quickly, the module software support provides context sensitive help, complete documentation and code examples that allow quick module set up. These code examples can be easily modified, so that the PXI VNA can be quickly integrated into a test system. Included are application code examples for LabVIEW, LabWindows/CVI, Visual Studio C, C++, and C#, Visual Basic, and MATLAB.

Hardware compliance

The M937XA is PXIe compliant and designed to benefit from fast data interfaces. The PXI VNA can be integrated with other test and automation modules in either a PXIe or Hybrid slot. The PXI format offers high performance in a small, rugged package. It is an ideal deployment platform for many automated test systems.

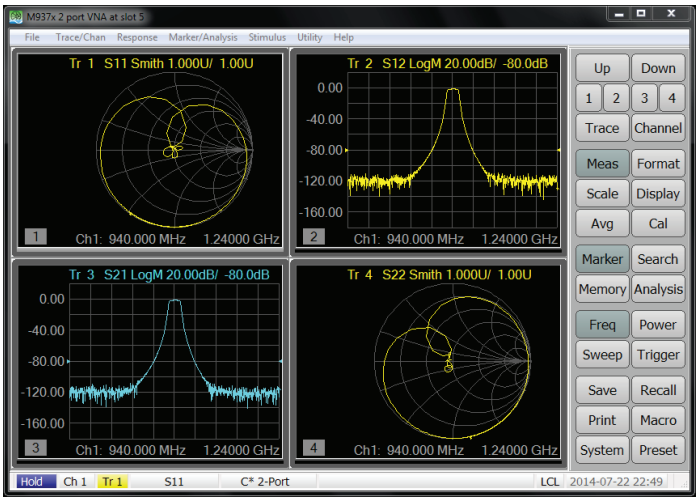


Figure 8. The graphical user interface guides test engineers using a similar look and feel as Keysight's popular PNA family of network analyzers.

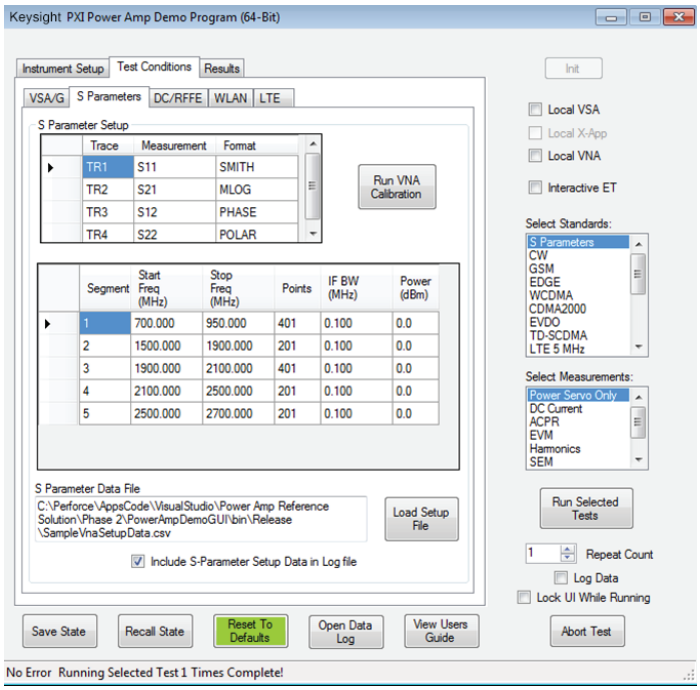


Figure 9. The PXI VNA's multiple programmatic interfaces allow for easy integration into test environments for reduced development time.

Ordering Information

Model	Description
M9370A	300 kHz to 4 GHz
M9371A	300 kHz to 6.5 GHz
M9372A	300 kHz to 9 GHz
M9373A	300 kHz to 14 GHz
M9374A	300 kHz to 20 GHz
M9375A	300 kHz to 26.5 GHz
Product options	
010	Time domain
551	N-port calibrated measurement
897	Built-in performance test software for inclusive calibration, perpetual license
898	Built-in performance test software for standards compliant calibration, perpetual license
Accessories	
Y1242A	Multiport cable kit
Y1281A	Accessory and tool kit – Pull tool for SMB connectors – Custom socket for 3.5/SMA connector nuts
M9018A	PXIe 18-slot chassis
M9037A	PXIe high performance embedded controller
Calibration	Electronic and mechanical kits available

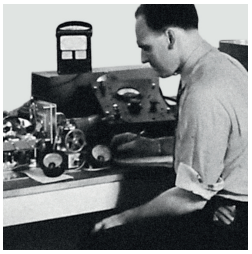
Software Information

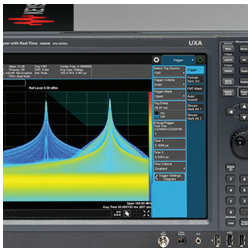
The PXI VNA includes instrument drivers, documentation, examples and software tools to help you quickly develop test systems in your application development environment of choice.

Operating systems	Microsoft Windows Vista SP1 and SP2 (32/64-bit) Microsoft Windows 7 (32/64-bit)
Standard compliant drivers	IVI-COM, IVI-C, LabVIEW, MATLAB
Application development environments (ADE)	Visual Studio (C/C++, C#, VB.NET), LabVIEW, LabWindows/CVI, MATLAB, VEE
Keysight Command Expert	Instrument control for SCPI or IVI-COM drivers
Keysight IO libraries (version 16.3.16603.3 or newer)	Includes: VISA libraries, Keysight Connection Expert, IO Monitor

From Hewlett-Packard through Agilent to Keysight

For more than 75 years, we've been helping you unlock measurement insights. Our unique combination of hardware, software and people can help you reach your next breakthrough. Unlocking measurement insights since 1939.





1939 THE FUTURE

myKeysight

www.keysight.com/find/mykeysight
A personalized view into the information most relevant to you.

www.pxisa.org

PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.

Three-Year Warranty
www.keysight.com/find/ThreeYearWarranty
Keysight's committed to superior product quality and lower total cost of ownership. Keysight is the only test and measurement company with a three-year warranty standard on all instruments, worldwide. And, we provide a one-year warranty on many accessories, calibration devices, systems and custom products.

Keysight Assurance Plans
www.keysight.com/find/AssurancePlans
Up to ten years of protection and no budgetary surprises to ensure your instruments are operating to specification, so you can rely on accurate measurements.

Keysight Infoline
www.keysight.com/find/service
Keysight's insight to best in class information management. Free access to your Keysight equipment company reports and e-library.

Keysight Channel Partners
www.keysight.com/find/channelpartners
Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

www.keysight.com/find/pxivna

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at:
www.keysight.com/find/contactus

Americas

Canada	(877) 894 4414
Brazil	55 11 3351 7010
Mexico	001 800 254 2440
United States	(800) 829 4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 11 2626
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

Europe & Middle East

Austria	0800 001122
Belgium	0800 58580
Finland	0800 523252
France	0805 980333
Germany	0800 6270999
Ireland	1800 832700
Israel	1 809 343051
Italy	800 599100
Luxembourg	+32 800 58580
Netherlands	0800 0233200
Russia	8800 5009286
Spain	800 000154
Sweden	0200 882255
Switzerland	0800 805353 Opt. 1 (DE) Opt. 2 (FR) Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:
www.keysight.com/find/contactus
(BP-02-10-16)

DEKRA Certified
ISO9001 Quality Management System

www.keysight.com/go/quality
Keysight Technologies, Inc.
DEKRA Certified ISO 9001:2015
Quality Management System

KEYSIGHT TECHNOLOGIES
Unlocking Measurement Insights

Published in USA, February 25, 2016
5992-0098EN
www.keysight.com