The following steps will guide you through configuring a turn key M8190A modular system.

**Step 1. Choose the number of channels per module. This is a hardware option and it is not upgradable later on (must choose one of the two options)**

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-001</td>
<td>Arbitrary Waveform Generator module with 1 Channel</td>
</tr>
<tr>
<td>M8190A-002</td>
<td>Arbitrary Waveform Generator module with 2 Channels</td>
</tr>
</tbody>
</table>

**Step 2. Choose the Sample Rate / Resolution combination per module (must choose one of the two options or both)**

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-12G</td>
<td>12 GSa/s with 12 bit resolution</td>
</tr>
<tr>
<td>M8190A-14B</td>
<td>14 bit resolution with 8 GSa/s</td>
</tr>
</tbody>
</table>

Comment: It is also possible to choose both options for one module and select the run mode as required. The options are upgradable with the product number M8190AU-12G or M8190AU-14B.)

Refer to Upgrade kits section on page 6 for retrofit information on the above options.
### Step 3. Choose the amount of memory per channel (If not required, go to step 4)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-02G</td>
<td>Upgrade from 128 MSa to 2 GSa Memory /Channel</td>
</tr>
</tbody>
</table>

Comment: Select this option Qty 1 for a module with 1 Channel and Qty 2 for a 2-channel module.

Refer to Upgrade kits section on page 6 for retrofit information on the above options.

### Step 4. Choose additional options per module (If not required, go to step 5; refer to Software upgrade section for retrofit information on the above option)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-AMP</td>
<td>Additional AC and DC Amplifier</td>
</tr>
<tr>
<td>M8190A-SEQ</td>
<td>Sequencer</td>
</tr>
<tr>
<td>M8190A-FSW</td>
<td>Fast Switching (requires Export Control License in conjunction with M8190A-12G)</td>
</tr>
<tr>
<td>M8190A-DUC</td>
<td>Digital Upconversion License for the M8190A Arbitrary Waveform Generator</td>
</tr>
</tbody>
</table>

Comment: Option M8190A-FSW determines the minimum switching time between selected segments in sequence mode in 12 bit / 12GSa/s operation. For quoting option M8190A-FSW, options M8190A-12G and M8190A-SEQ are required. Option M8190A-FSW does not affect switching time in 14 bit / 8GSa/s mode, it is basically included in option M8190A-14B.

Streaming is included in M8190A firmware version 3.x.

Refer to Upgrade kits section on page 6 for retrofit information on the above options.

### Step 5. Choose multi-channel support (if not required, go to step 6)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8192A</td>
<td>Synchronization Module for up to six M8190A AWG modules.</td>
</tr>
<tr>
<td></td>
<td>Please note that two clock cables and two trigger cables are included. For more than two modules, the corresponding number of clock cables and trigger cables needs to be ordered separately.</td>
</tr>
<tr>
<td>M8192A-801</td>
<td>Clock Cable for the Synchronization Module (M8192A) (required for configurations with three or more M8190A modules)</td>
</tr>
<tr>
<td>M8192A-802</td>
<td>Trigger Cable for the Synchronization Module (M8192A) (required for configurations with three or more M8190A modules)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical configurations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 4 analog channels</td>
<td>One M9505A 5-slot AXIe chassis, two M8190A AWG modules and one M8192A synchronization module (two clock cables and two trigger cables are included). This configuration can also be ordered as a pre-configured M8190S Multichannel Arbitrary Waveform Generator System.</td>
</tr>
<tr>
<td>Up to 8 analog channels</td>
<td>Two M9505A 5-slot AXIe chassis, three or four M8190A AWG modules and one M8192A synchronization module (two clock cables and two trigger cables are included). For 8 analog channels, two M8192A-801 clock cables and two M8192A-802 trigger cables are needed in addition. This configuration can also be ordered as a pre-configured M8190S Multichannel Arbitrary Waveform Generator System.</td>
</tr>
<tr>
<td>Up to 12 analog channels</td>
<td>Three M9505A 5-slot AXIe chassis, five or six M8190A AWG modules and one M8192A synchronization module (two clock cables and two trigger cables are included). For 12 analog channels, four M8192A-801 clock cables and four M8192A-802 trigger cables are needed in addition.</td>
</tr>
</tbody>
</table>

Comment: Please order the needed M8190A units in step 1. Units have to have the same configuration.

### Step 6. Choose calibration option per module (If not required, go to step 7)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-1A7</td>
<td>Calibration Certificate for ISO 17025</td>
</tr>
<tr>
<td>M8190A-2Z54</td>
<td>Calibration Certificate for Z540</td>
</tr>
</tbody>
</table>

Comment: Keysight factory calibration is provided as standard and free of additional charges.
Step 7. Choose the AXIe chassis (If not required, go to step 8)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9502A</td>
<td>2-slot AXIe chassis with embedded system module (Will fit max one M8190A module at the same time.)</td>
</tr>
<tr>
<td>M9505A</td>
<td>5-slot AXIe chassis with embedded system module (Will fit max two M8190A modules and one M9536A embedded controller at the same time.)</td>
</tr>
</tbody>
</table>

Comment: Both the M9502A and M9505A chassis contain an embedded system module that does not take up an instrument slot. This module performs the chassis management functions contained in the AXIe specification. Any mainframe includes AXIe filler modules, getting started guide, drivers, and Keysight I/O libraries.

Comment: Please also consider ordering bundle options M8190A-BU1 and M8190A-BU2 for turn-key configurations of the M8190A modules. Find more details in the Bundle options Section, just after Step 14 on page 6.

Step 8. Choose the AXIe mainframe accessories (if not required, go to step 9)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1225A</td>
<td>Rack mount kit for M9502A</td>
</tr>
<tr>
<td>Y1226A</td>
<td>Rack mount kit for M9505A</td>
</tr>
<tr>
<td>Y1223A</td>
<td>AXIe multi-frame cable: 0.5 m</td>
</tr>
<tr>
<td>Y1224A</td>
<td>AXIe multi-frame cable: 3 m</td>
</tr>
<tr>
<td>Y1232A</td>
<td>Soft carry bag for M9502A</td>
</tr>
</tbody>
</table>

Comment: AXIe multi-frame cable synchronizes timing signals with multiple daisy-chained chassis.

Step 9. Choose PC controller (must choose one of the three PC configurations)

1) Embedded PC configuration

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9536A</td>
<td>Embedded AXIe PC controller (will only fit into a M9505A 5-slot mainframe if ordered together with min 1 and max 2 M8190A modules.)</td>
</tr>
</tbody>
</table>

2) Laptop configuration

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9045B</td>
<td>PCIe ExpressCard adaptor: Gen 1</td>
</tr>
<tr>
<td>Y1200B</td>
<td>PCIe cable: x1 to x8, 2.0 m (used with M9045B)</td>
</tr>
</tbody>
</table>

3) Desktop configuration

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9048A</td>
<td>PCIe desktop PC adapter: Gen 2, x8</td>
</tr>
<tr>
<td>Y1202A</td>
<td>PCIe cable: x8, 2.0 m (used with M9048A)</td>
</tr>
</tbody>
</table>

Comment: In order to control the M8190A, a personal computer is required. It can be the embedded AXIe PC controller M9536A or a computer from the regularly updated Tested Computer List Technical Note: http://literature.cdn.keysight.com/litweb/pdf/5990-7632EN.pdf.

Comment: Supported operating systems - Microsoft Windows XP (32-bit), Microsoft Windows Vista (32/64-bit), Microsoft Windows 7 (32/64-bit).

Linux is supported via SCPI command link to a Windows driven computer with M8190A installed on the Windows PC.

Comment: The M8190A can also be controlled from a M9036A PXIe Embedded Controller with the M8190A firmware installed on it. An additional M9018A PXI chassis may be required.

Comment: Standard compliant drivers - IVI-COM, IVI-C, LabVIEW
### Step 10. Choose one or more application software options per setup (if not required, go to step 11)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
</table>
| N6171A-M03 | MATLAB-Advanced Package, individual license – node-locked  
  – MATLAB software environment  
  – Instrument Control Toolbox  
  – Communications Toolbox  
  – Signal Processing Toolbox  
  – Filter Design Toolbox  
  – RF Toolbox |
| N6171A-M02 | MATLAB-Standard Package, individual license – node-locked  
  – MATLAB software Environment  
  – Instrument Control Toolbox  
  – Communications Toolbox  
  – Signal Processing Toolbox |
| N6171A-M01 | MATLAB-Basic Package, individual license – node-locked  
  – MATLAB software environment  
  – Instrument Control Toolbox |

Comment: Matlab is a general purpose application programming environment. Free sample scripts are available on www.keysight.com/find/M8190 > Product Support Center > Technical Support > Drivers, Firmware & Software > AWG MATLAB examples. In order to use the full functionality of the sample scripts, options N6171A-M02 or N6171A-M03 are recommended.
### Step 10. Continued

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N7620B</td>
<td>Signal Studio for Pulse Building</td>
</tr>
<tr>
<td>N7620B-AF1</td>
<td>Connect to M8190A arbitrary waveform generator, fixed 1 month license</td>
</tr>
<tr>
<td>N7620B-AFP</td>
<td>Connect to M8190A arbitrary waveform generator, fixed perpetual license</td>
</tr>
<tr>
<td>N7620B-ATP</td>
<td>Connect to M8190A arbitrary waveform generator, transportable perpetual license</td>
</tr>
</tbody>
</table>

Note: Besides the options for instrument connectivity to the M8190A, you will also need the different application options of the Signal Studio for Pulse Building. Please see the configuration guide of the Pulse Building software for more details. [www.keysight.com/find/n7620b](http://www.keysight.com/find/n7620b)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N7617B</td>
<td>Signal Studio for WLAN 802.11a/b/g/n/ac</td>
</tr>
<tr>
<td>N7617B-AF1</td>
<td>Connect to M8190A arbitrary waveform generator, fixed 1 month license</td>
</tr>
<tr>
<td>N7617B-AFP</td>
<td>Connect to M8190A arbitrary waveform generator, fixed perpetual license</td>
</tr>
<tr>
<td>N7617B-ATP</td>
<td>Connect to M8190A arbitrary waveform generator, transportable perpetual license</td>
</tr>
</tbody>
</table>

Note: Besides the options for instrument connectivity to the M8190A, you will also need the different application options of the Signal Studio for Pulse Building. Please see the configuration guide of the Pulse Building software for more details. [www.keysight.com/find/n7617b](http://www.keysight.com/find/n7617b)

The option M8190A-DUC is a prerequisite and M8190A-AMP is recommended for best EVM performance.

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1461BP</td>
<td>SystemVue Comms Architect Perpetual bundle license</td>
</tr>
</tbody>
</table>

Comment: The hardware connectivity is included in the W1461 core platform. Recommended add-on libraries mostly used for the truly wideband AWGs are:

<table>
<thead>
<tr>
<th>Application</th>
<th>Related products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interference and complex multi-format signal/jamming scenarios</strong></td>
<td></td>
</tr>
<tr>
<td>- Radar / EW</td>
<td>W1905 Radar</td>
</tr>
<tr>
<td>- Mobile phone formats</td>
<td>W1910 LTE</td>
</tr>
<tr>
<td>- Networking &amp; connectivity</td>
<td>W1915 802.11ad</td>
</tr>
<tr>
<td>- Multi-band carrier aggregation</td>
<td>W1916 3G</td>
</tr>
<tr>
<td>- Networking &amp; connectivity</td>
<td>W1917 WLAN</td>
</tr>
<tr>
<td>- Multi-band carrier aggregation</td>
<td>W1918 LTE-A</td>
</tr>
<tr>
<td><strong>Wideband custom signal generation</strong></td>
<td></td>
</tr>
<tr>
<td>- OFDM (in W1461 core platform)</td>
<td>W1461 SystemVue</td>
</tr>
<tr>
<td>- SatComm and MilComm formats</td>
<td>W1915 mmWave</td>
</tr>
<tr>
<td>- 802.11ad (re-uses 81199 DLL)</td>
<td>W1905 Radar</td>
</tr>
<tr>
<td><strong>Signal generation requiring 3x-5x oversampling of common wireless waveforms for Digital Predistortion (DPD)</strong></td>
<td>W1716 DPD</td>
</tr>
<tr>
<td>- LTE-Advanced, LTE, MSR</td>
<td>W1918 LTE-A</td>
</tr>
<tr>
<td>- 802.11ac</td>
<td>W1917 WLAN</td>
</tr>
<tr>
<td></td>
<td>W1916 3G</td>
</tr>
</tbody>
</table>
### Step 11. Choose test accessories. (If not required, go to step 12)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-801</td>
<td>Microwave Phase Matched Balun, 6.5 GHz, Max SMA Jack (qty 1 per channel recommended)</td>
</tr>
<tr>
<td>M8190A-805</td>
<td>Low Pass Filter, 2800 MHz Max SMA, VLF 2850+ (qty 2 per channel recommended)</td>
</tr>
<tr>
<td>M8190A-806</td>
<td>Low Pass Filter, 3900 MHZ Max SMA, VLF 3800+ (qty 2 per channel recommended)</td>
</tr>
<tr>
<td>M8190A-810</td>
<td>Cable Assembly Coaxial–50 Ohm, SMA to SMA, 457 mm length (qty 2 per channel recommended)</td>
</tr>
<tr>
<td>M8190A-811</td>
<td>Cable Assembly Coaxial–50 Ohm, SMA to SMA, 1220 mm length (qty 2 per channel recommended)</td>
</tr>
</tbody>
</table>
| M8190A-815 | Dynamic Control Input Cable (qty 1 per module recommended)  
Comment: the DYNAMIC CONTROL IN allows selecting a new segment or sequence at run time from an external source. The connector provides 13 data bits, a select bit and a load signal.  
Comment: DYNAMIC CONTROL IN Connector - Description: Receptacle, Mini D  
- Number of Contacts: 20  
- Manufacturer: 3M  
- Part Number: 10220-0210EC |
| M8190A-820 | Connector-RF, SMA Termination, Plug Straight, 50 Ohm, 12.4GHz, 0.5W (qty 2 per channel recommended) |
### Step 12. Choose calibration service plan (If not required, go to step 13)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-50C-011-3</td>
<td>Calibration Assurance Plan – Return to Keysight – 3 years</td>
</tr>
<tr>
<td>R-50C-011-5</td>
<td>Calibration Assurance Plan – Return to Keysight – 5 years</td>
</tr>
<tr>
<td>R-50C-016-3</td>
<td>Keysight Calibration + Uncertainties + Guardbanding – 3 years</td>
</tr>
<tr>
<td>R-50C-016-5</td>
<td>Keysight Calibration + Uncertainties + Guardbanding – 5 years</td>
</tr>
<tr>
<td>R-50C-021-3</td>
<td>ANSI Z540-1-1994 Calibration – 3 years</td>
</tr>
<tr>
<td>R-50C-021-5</td>
<td>ANSI Z540-1-1994 Calibration – 5 years</td>
</tr>
</tbody>
</table>

### Step 13. Choose warranty and service plan (If not required, go to step 14)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>3 years – Beyond product specification, changing the ownership experience</td>
</tr>
<tr>
<td>R-51B-001-5Z</td>
<td>5 years priority service of no budget surprises including on-time coverage for an EOS/ESD failure</td>
</tr>
</tbody>
</table>

### Step 14. Choose startup assistance and consulting services (skip this step if not required)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-S10</td>
<td>Remote scheduled productivity assistance. Select the number of hours.</td>
</tr>
<tr>
<td>PS-S20</td>
<td>Startup assistance</td>
</tr>
<tr>
<td>PS-X10</td>
<td>Custom services to be qualified by a Keysight technical consultant.</td>
</tr>
</tbody>
</table>

### Bundle options

(Choose one of the two. Not compatible with separately chosen 5-slot or 2-slot mainframes from configuration step 7)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A-BU1</td>
<td>Bundle 1 consisting of M9505A AXIe chassis with 5-slots and M9536A AXIe Embedded Controller</td>
</tr>
<tr>
<td>M8190A-BU2</td>
<td>Bundle 2 consisting of M9502A AXIe chassis with 2-slots (PCle connectivity accessories will be added automatically)</td>
</tr>
</tbody>
</table>

Note: When choosing option BU2, you will be asked for the type of PCIe card and cable, that you would prefer. Available configurations are M9048A and Y1202A for a desktop configuration and M9045B and Y1200B for a laptop configuration. Please also refer to the technical note for Tested Computer List: http://literature.cdn.keysight.com/litweb/pdf/5990-7632EN.pdf

Comment: To maximize customer satisfaction, Keysight offers its AWG customers the bundled options BU1 and BU2. This way an AWG will be built into a mainframe and shipped containing all the necessary connectivity items, such as embedded controller and/or PCIe cards and PCIe cable. The unit is literally configured for immediate use.

Comment: When choosing either BU1 or BU2, usually it does not make sense to choose separate additional mainframes in one order. Either one of the bundle options or one separate mainframe configuration is sufficient.

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190S</td>
<td>Multichannel Arbitrary Waveform Generator System - two multi-channel selections are available</td>
</tr>
</tbody>
</table>

4-channel system

Consists of one M9505A 5-slot AXIe chassis (M8190S-B04), one M8192A synchronization module and two M8190A AWG modules, including the required number of clock and trigger cables.

8-channel system

Consists of two M9505A 5-slot AXIe chassis (M8190S-B08), one M8192A synchronization module and four M8190A AWG modules, including the required number of clock and trigger cables.

Comment: PCIe connectivity accessories will always be added automatically.
Upgrade kits (Software keys, Installable by field/customer)

<table>
<thead>
<tr>
<th>Option No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190AU-14B</td>
<td>Upgrade M8190A with 14 bit Resolution with 8 GSa/s (one per module)</td>
</tr>
<tr>
<td>M8190AU-12G</td>
<td>Upgrade M8190A with 12 GSa/s with 12 bit resolution (one per module)</td>
</tr>
<tr>
<td>M8190AU-DUC</td>
<td>Digital Upconversion License Upgrade for the M8190A Arbitrary Waveform Generator (one per module)</td>
</tr>
<tr>
<td>M8190AU-AMP</td>
<td>Upgrade M8190A with Additional AC and DC Amplifier (one per module)</td>
</tr>
<tr>
<td>M8190AU-SEQ</td>
<td>Upgrade M8190A with Sequencer (one per module)</td>
</tr>
<tr>
<td>M8190AU-FSW</td>
<td>Upgrade M8190A with Fast Switching (requires Export Control License for certain countries)</td>
</tr>
<tr>
<td>M8190AU-02G</td>
<td>Upgrade from 128 MSa to 2 GSa Memory (one per channel)</td>
</tr>
</tbody>
</table>

Related Keysight literature

<table>
<thead>
<tr>
<th>Publication title</th>
<th>Pub number</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8190A Arbitrary Waveform Generator Data Sheet</td>
<td>5990-7516EN</td>
</tr>
<tr>
<td>M9502A and M9505A 2- and 5-Slot AXIe Chassis Data Sheet</td>
<td>5990-6584EN</td>
</tr>
<tr>
<td>PXI and AXIe Modular Instrumentation Tested Computer List Technical Note</td>
<td>5990-7632EN</td>
</tr>
<tr>
<td>Tips to Achieve PCIe Connectivity with your Keysight AXIe or PXIe Chassis Application Note</td>
<td>5991-0385EN</td>
</tr>
<tr>
<td>N6171A MATLAB Data Analysis Software Technical Overview</td>
<td>5989-9723EN</td>
</tr>
<tr>
<td>Signal Studio for Pulse Building N7620B Technical Overview</td>
<td>5991-0779EN</td>
</tr>
<tr>
<td>33503A BenchLink Waveform Builder Pro and Basic Software Data Sheet</td>
<td>5990-7569EN</td>
</tr>
<tr>
<td>81199A Wideband Waveform Center Data Sheet</td>
<td>5990-9141EN</td>
</tr>
<tr>
<td>Keysight EEsof EDA SystemVue 2012 Technical Overview</td>
<td>5990-4731EN</td>
</tr>
<tr>
<td>M8192A Multi-Channel Synchronization Module for M8190A - Data Sheet</td>
<td>5991-2863EN</td>
</tr>
<tr>
<td>Creating and Optimizing 802.11ac Signals with the M8190A AWG - Application Note</td>
<td>5991-2908EN</td>
</tr>
</tbody>
</table>
### Videos

Scan the QR code provided below with your mobile internet device or enter the youtube link into your internet browser on your laptop or desktop computer.

Find out how powerful the new AXIe based AWG (M8190A) really is!

- [http://www.youtube.com/watch?v=75qWjmUPXY4](http://www.youtube.com/watch?v=75qWjmUPXY4)

Best IF Signal Quality Using Digital Up-conversion with Arbitrary Waveform Generator

- [http://www.youtube.com/watch?v=7ekSTf5gFb4](http://www.youtube.com/watch?v=7ekSTf5gFb4)

How to demo Digital Up-Conversion with the M8190A

- [http://www.youtube.com/watch?v=Z6F4XEp8Nlo](http://www.youtube.com/watch?v=Z6F4XEp8Nlo)

Digital Up-Conversion with the M8190A - Advanced Topics -

- [http://www.youtube.com/watch?v=2dyeeOPTO_Q](http://www.youtube.com/watch?v=2dyeeOPTO_Q)

Synchronization of multiple M8190A modules

- [http://www.youtube.com/watch?v=DhCekOuwDFM](http://www.youtube.com/watch?v=DhCekOuwDFM)

More M8190A AWG videos are available on [www.keysight.com/find/M8190A-videos](http://www.keysight.com/find/M8190A-videos)
AdvancedTCA® Extensions for Instrumentation and Test (AXIe) is an open standard that extends the AdvancedTCA for general purpose and semiconductor test. Keysight is a founding member of the AXIe consortium.

Three-Year Warranty
www.keysight.com/find/ThreeYearWarranty
Keysight’s commitment to superior product quality and lower total cost of ownership. The only test and measurement company with three-year warranty standard on all instruments, worldwide.

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

www.keysight.com/quality
Keysight Electronic Measurement Group
DEKRA Certified ISO 9001:2008
Quality Management System

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.

PCle is a US registered trademark and/or service mark of PCI-SIG.