

# Keysight Technologies Connector Kit

This documentation provides information for the following  
X-Series Instruments:

N9041B UXA Signal Analyzer

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### Manual Part Number

N9041-90006

### Edition

Edition 1, July 2017  
Published in USA

### Published by:

Keysight Technologies, Inc.  
1400 Fountaingrove Parkway  
Santa Rosa, CA 95403

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# 1 Keysight Connector Kit

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"Use of the Test Port Adaptors on Instrument RF Input 2" on page 7

"Input Connector Vise Assembly " on page 8

## Connector Kit Overview

The N9041B, Signal Analyzer has two input connectors, the right side RF Input 1 connector is a 2.4 mm male.

The left side RF Input 2 connector is a special 1.0 mm male Keysight bulk head connector that has 14 mm wrench flats. This test port connector has external threads that accept the Keysight Test port adaptors, and has internal threads that will accept Keysight standard 1.0 mm female adaptor, such as the 11920B.

The Connector Kit contains:



Adaptor - 2.4 Female to K Female	Used on RF Input 1 as a connector saver to connect 3.5 mm or sma devices or cables.
Adaptor 2.4 mm Female- 2.4 mm Female	Used on RF Input 1 as a connector saver
1 mm female test port to 1 mm female adaptor	Used on RF Input 2 as a connector saver
1 mm female test port to 1.85 mm female adaptor	Used on RF Input 2 as a connector saver and to connect 1.85 mm devices or cables
Torque Wrench	Double ended wrench with 10 inch-pound (setting for test port adaptors) and 4 inch-pound (setting for Keysight standard 1 mm adaptors)
Connector Vise for RF Input 2	If the test port adaptors cannot be used, this vise will help secure a Keysight standard 1 mm female adaptor to the instrument RF Input 2 connector.

## Use of the Test Port Adaptors on Instrument RF Input 2

Two, 1 mm test port adaptors are supplied in the kit. The 1 mm female test port to 1 mm female adaptor is used as a connector saver to extend the lifespan of the instrument RF Input 2 connector. The other test port adaptor is a 1 mm female test port to 1.85 mm female adaptor. This adaptor is also a connector saver.

**CAUTION**

**USE CAUTION WHEN INSTALLING ADAPTORS! Rotation of the adaptor after the connectors are engaged will damage the input connector on the instrument.**

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1. Align the test port adaptor with the 1 mm RF Input 2 connector on the instrument and engage the nut of the input connector with the adaptor. Fully engage the threads, but do not attempt to fully torque the connection.
2. Locate the torque wrench in the kit. Locate a 14 mm open-end wrench.
3. Place the jaws of the open end wrench onto the test port adaptor wrench flats, but do not turn this wrench.
4. Place the jaws of the 10-inch-pounds end of the torque wrench onto the instrument RF Input 2 connector. While holding the test port adaptor still with the open end wrench, torque the input connector to 10- inch-pounds.

## Input Connector Vise Assembly

Keysight Technologies recommends the use of the supplied Keysight Technologies test port adaptors when using RF Input 2, the 1 mm input connector. The test port adaptors attach to the external threads on the instrument bulkhead input connector.

However, if Keysight Technologies standard adaptors will be used instead of the test port adaptors, the use of the supplied Connector Vise assembly is recommended to prevent damage to the 1 mm input connector due to over torque.

Standard adaptors other than those manufactured by Keysight Technologies may not work with the Vise Clamp.

### CAUTION

**USE CAUTION WHEN INSTALLING ADAPTORS! Rotation of the adaptor after the connectors are engaged will damage the input connector on the instrument.**

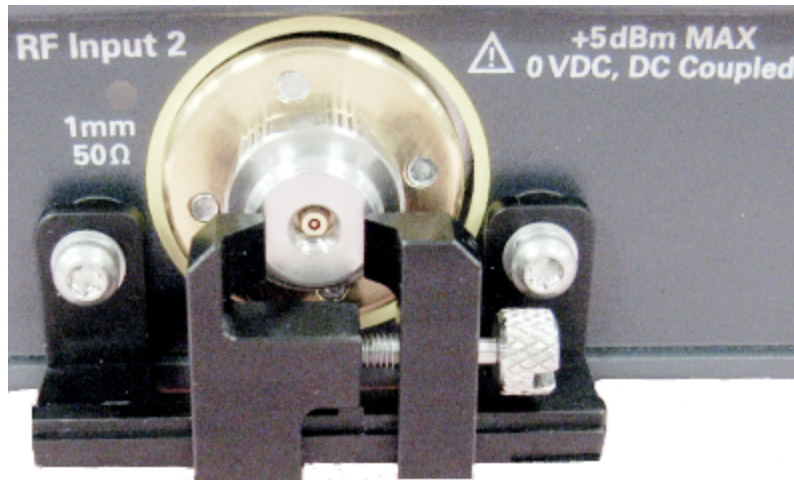
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To use Keysight Technologies standard adaptors with the Vise Clamp:

1. Install the Vise Clamp with the two supplied pan-head screws. Tighten the screws to 9 inch-pounds.
2. Loosen the Vise Clamp screw so that the vise jaws clear the body of the standard adaptor that is to be used.
3. Align the flats of the 1 mm female end of the adaptor with the vise jaws and tighten the Vise Clamp screw until the jaws grip the adaptor. Loosen the screw slightly to allow the adaptor to slide in the jaws.
4. Align the adaptor with the 1 mm input connector on the instrument and engage the nut of the input connector with the adaptor. Fully engage the threads, but do not attempt to fully torque the connection.
5. Re-align the jaws of the vise so they make good contact with the flats on the adaptor. Do this by pulling back on the vise jaws while tightening the vise clamp screw. **DO NOT OVER TIGHTEN.**
6. Tighten the input connector nut to 4 inch-pounds using the 4-inch-pounds end of the 14 mm torque wrench.
7. Re-tighten the vise clamp screw to snugly lock the jaws against the flats of the adaptor. **DO NOT OVER TIGHTEN.**
8. If the standard adaptor will remain on the input connector for a long period of time, periodically check the Vise Clamp screw to ensure that it remains snugly tightened.



The Vise Clamp will now protect the input connector from damage when connections are made to the adaptor that exceed 4 inch-pounds torque. The Vise Clamp is only a rotation prevention device. It will not protect the input connector against damage from bending due to heavy side to side or up/down loading on the adaptor.



## RF Input 1, 2.4 mm adaptor installation

Align the adaptor with the 2.4 mm input connector on the instrument and engage the nut of the input connector with the adaptor.

Torque the bulkhead 2.4 mm input connector (with an 8 mm or 5/16" torque wrench) to 8 inch-pounds while holding the adaptor with a 7 mm open-end wrench.

Refer to "[Connector Care](#)" on page 11.

## 2 Connector Care

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"Connector Contacts" on page 13

"Making Connections" on page 15

"Cleaning Connectors" on page 16

"Replacement Parts" on page 17

## Visual Inspection

Visual inspection and , if necessary cleaning should be done every time a connection is made. Metal particles from connector threads may fall into the connector when it is disconnected. One connection made with a dirty or damaged connector can damage both connectors beyond repair.

Magnification is helpful when inspecting connectors, but it is not required and may actually be misleading. Defects and damage that cannot be seen without magnification generally have no effect on electrical or mechanical performance. Magnification is of great use in analyzing the nature and cause of damage and in cleaning connectors, but it is not required for inspection.

### Obvious defects or damage

Examine the connectors first for obvious defects or damage:

- Plating
  - Bare metal showing
  - Burrs or blisters
- Deformed threads
- Center conductors
  - Bent
  - Broken
  - Misaligned
  - Concentricity
- Connector nuts should move smoothly and be free of:
  - Burrs
  - Loose metal particles
  - Rough spots

Any connector that has obvious defects should be discarded.

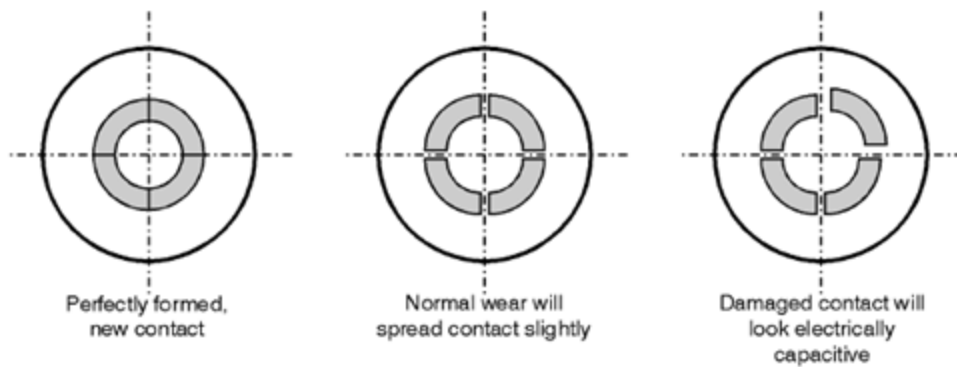
## Connector Contacts

Inspect the connector contacts for integrity. It is necessary to use good lighting (such as a halogen task light) to see the contacts.

Notice the location of the cross hairs in relationship to the center of the figures.

### Contact integrity

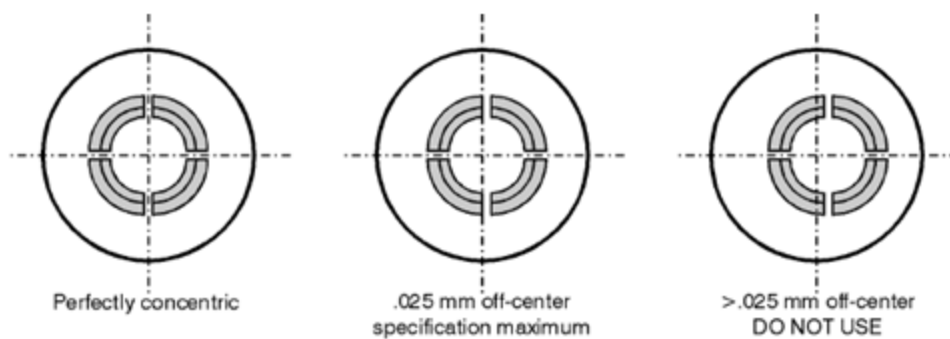
Refer to the following for visual guidelines when evaluating the contact integrity of a connector.



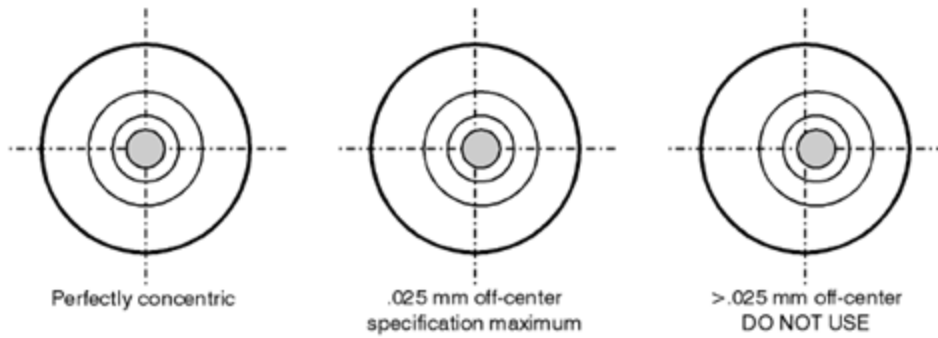
### Concentricity

The following examples show the concentricity of both the male and female 1.0 mm connectors:

Female connector:



Male connector:



## Making Connections

Good connections require a skilled operator. Instrument sensitivity and coaxial connector mechanical tolerances are such that slight errors in operator technique can have a significant effect on measurements and measurement uncertainties.

**NOTE**

The most common cause of measurement error is poor connections.

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### Connection Procedure

1. Ground yourself and all devices (wear a grounded wrist strap and work on an antistatic mat).
2. Visually inspect the connectors (refer to Visual Inspection).
3. If necessary, clean the connectors (refer to Cleaning Connectors).
4. Carefully align the connectors. The male connector center pin must slip concentrically into the contact fingers of the female connector.
5. Push the connectors straight together. Do *not* twist or screw them together. As the center conductors mate, there is usually a slight resistance.

**CAUTION**

Do *not* twist one connector into the other (like inserting a light bulb). This happens when you turn the device body, rather than the connector nut. Major *damage* to the center conductor and the outer conductor can occur if the device body is twisted.

7. Initial tightening can be done by hand or with an open-end wrench. Tighten until "snug" or where the connectors are first making contact. The preliminary connection is tight enough when the mating plane surfaces make uniform, light contact. Do *not over tighten* this connection.  
At this point, all you want is for the outer conductors to make gentle contact on both mating surfaces. Use very light finger pressure (no more than 2 inch-pounds of torque).
8. Relieve any side pressure on the connection from long or heavy devices or cables. This assures consistent torque.
9. Torque the cable or device to the final value using a torque wrench.

## Cleaning Connectors

### Basic Cleaning Procedure

1. Inspect the connectors for dust, dirt, metal fragment, oils or film, and debris.
2. Blow off any dust with a filtered, clean supply of compressed air.
3. Add a few drops of high-purity isopropyl alcohol to a small cleaning swab (do not apply alcohol directly to the parts).

**NOTE**

When using isopropyl alcohol to clean connectors *do not* allow the liquid to flow down inside the connector. This may cause measurement errors due to residue inside the connector. If possible keep the connector facing down.

5. Gently wipe connecting surfaces with the end of the cleaning swab.
6. Blow dry with compressed air.
7. Inspect and repeat cleaning procedure if necessary.



## Replacement Parts

Description	Ordering number
Test Port Adaptor, 1mm (f) to 1mm (f)	Y1900B
Test port Adaptor, 1mm (f) to 1.85mm (f)	Y1901B
2.4 mm (f) to 2.4 mm (f),	11900B
2.4 mm (f) to 2.92 mm (f),	11904B
Wrench-Torque Special Double-end 14mm-open end 4 and 10-lb-in	8710-2819
Vise Kit	N9041-60032



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Edition 1, July 2017

N9041-90006

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