

Agilent Technologies 11612V Option K21

Bias Network User's Guide



Agilent Technologies

Manufacturing Part Number: 11612-90061

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Safety Notes

The following safety notes are used throughout this document. Familiarize yourself with each of these notes and its meaning before performing any of the procedures in this document.

WARNING	Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.
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CAUTION	Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.
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Definitions

- Specifications describe the performance of parameters covered by the product warranty (temperature -0 to 55 °C, unless otherwise noted.)
- *Typical* describes additional product performance information that is not covered by the product warranty. It is performance beyond specification that 80% of the units exhibit with a 95% confidence level over the temperature range 20 to 30 °C. Typical performance does not include measurement uncertainty.
- *Nominal* values indicate expected performance, or describe product performance that is useful in the application of the product, but is not covered by the product warranty.

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Chapter 1

Description

The Agilent 11612V Option K21 is a 50 GHz bias network with force/sense capability. The Option K21 provides a force connection to allow input of a current or voltage signal, and a sense connection to allow monitoring of voltage or current. A ground connection for application of an active ground is also provided. The force, sense, and ground are triaxial connectors.

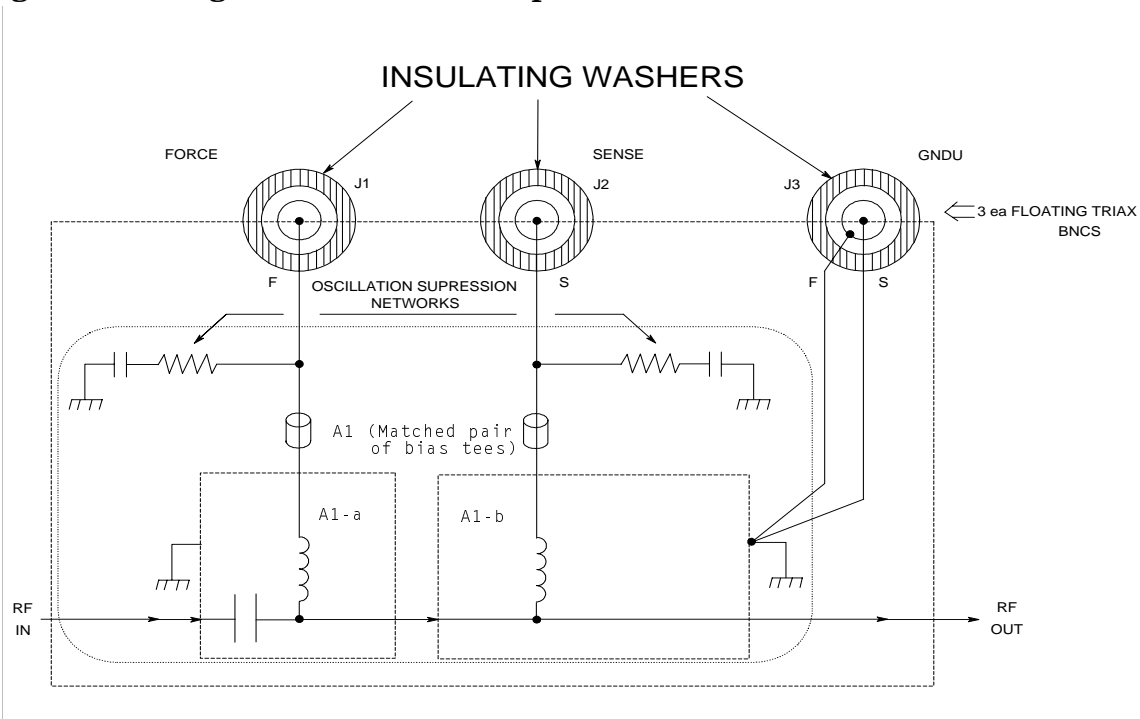
When used as part of the 85122A system, the bias network is intended to be connected to cables from the SMUs in the 4142 DC source/monitor. The force and sense connectors on the quadaxial cables from the SMUs are connected to the force and sense connectors on the bias network. The triaxial cable from the GNDU is connected to the ground connector on the bias network.

The RF connectors on the bias network are 2.4 mm (f) connectors. The Agilent 11612V Option K21 is used at port 2 of the network analyzer and Option K11 is used at port 1. The RF cable from the network analyzer test port is connected to the RF IN port of the bias network. The RF OUT port of the bias network is connected to the probes, or the fixture, or the device itself.

Bias Network

Internally, each bias network includes two bias tees, one for force and one for sense. The force bias tee includes a capacitor that functions as a DC block and high-pass filter. The sense bias tee provides a through path for DC voltage. Oscillation suppression networks are located on each DC path to help prevent bias oscillation of the DUT. Figure 1 is a schematic diagram of the bias network.

Figure 1 Diagram of the 11612V Option K21 Bias Network



Specifications

Return Loss - Minimum (both ports)	
Freq Band	Customer Specs
0.045 to 10 GHz	20 dB
10 to 20 GHz	15 dB
20 to 30 GHz	12 dB
30 to 50 GHz	10 dB
Insertion Loss - Maximum	
0.045 to 10 GHz	2.2 dB
10 to 30 GHz	3.5 dB
30 to 45 GHz	5.5 dB
45 to 50 GHz	7.0 dB

Replaceable Parts

The Bias Tee Assembly is a matched pair and can not be separated. The triax bulkhead jack is a Trompeter Model BJ72.

Refer to Table 1 for a list of replaceable parts. For ordering information refer to “Contacting Agilent” on page 7.

Table 1 11612V Option K21 Replaceable Parts

Reference Designator	Description	Agilent Part Number	Qty
	Base	11612-00028	1
	Cover	11612-00006	1
A1	Bias Tee Assembly	11612-60004	1
J1, J2, J3	Insulated Triax Bulkhead Jack	1250-3182	3

Safety and Service Information

Introduction

Review this product and related documentation to familiarize yourself with safety markings and instructions before you operate the instrument. This product has been designed and tested in accordance with international standards.

Before Applying Power

Verify that the product is configured to match the available main power source. If this product is to be powered by autotransformer, make sure the common terminal is connected to the neutral (grounded) side of the ac power supply.










Service Information

The 11612V Option K21 should be verified using a standard Network Analyzer System performance verifications.

Shipping Instructions

You must always call the Agilent Technologies Instrument Support Center to initiate service before retuning your instrument to a service office. See “Contacting Agilent” on page 7. Always transport or ship the instrument using the original packaging if possible. If not, comparable packaging must be used. Attach a complete description of the failure symptoms.

Instrument Markings

	When you see this symbol on your instrument, you should refer to the instrument's instruction manual for important information.
	This symbol indicates hazardous voltages.
	The laser radiation symbol is marked on products that have a laser output.
	This symbol indicates that the instrument requires alternating current (ac) input.
	The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.
	The CSA mark is a registered trademark of the Canadian Standards Association.
ISM1-A	This text indicates that the instrument is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).
	This symbol indicates that the power line switch is ON.
	This symbol indicates that the power line switch is OFF or in STANDBY position.
	This symbol indicates the product meets the Australian Standards.

**Safety
 Earth
 Ground** 

This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Contacting Agilent

By internet, phone, or fax, get assistance with all your test and measurement needs.

Online assistance: www.agilent.com/find/assist			
Americas			
Brazil (tel) (+55) 11 4197 3600 (fax) (+55) 11 4197 3800	Canada (tel) 877 894 4414 (fax) (+1) 905 282-6495	Mexico (tel) (+52) 55 5081 9469 (alt) 01800 5064 800 (fax) (+52) 55 5081 9467	United States (tel) 800 829 4444 (alt) (+1) 303 662 3998 (fax) 800 829 4433
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Australia (tel) 1800 629 485 (alt) 1800 143 243 (fax) 1800 142 134	China (tel) 800 810 0189 (alt) (+86) 10800 650 0021 (fax) 800 820 2816	Hong Kong (tel) 800 930 871 (alt) (+852) 3197 7889 (fax) (+852) 2 506 9233	India (tel) 1600 112 929 (fax) 000800 650 1101
Japan (tel) 0120 421 345 (alt) (+81) 426 56 7832 (fax) 0120 421 678	Malaysia (tel) 1800 888 848 (alt) 1800 828 848 (fax) 1800 801 664	Singapore (tel) 1800 375 8100 (alt) (+65) 6 375 8100 (fax) (+65) 6836 0252	South Korea (tel) 080 769 0800 (alt) (+82) 2 2004 5004 (fax) (+82) 2 2004 5115
Taiwan (tel) 0800 047 866 (alt) 00801 651 317 (fax) 0800 286 331	Thailand (tel) 1800 226 008 (alt) (+66) 2 268 1345 (fax) (+66) 2 661 3714		
Europe			
Austria (tel) 0820 87 44 11* (fax) 0820 87 44 22	Belgium (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	Denmark (tel) (+45) 7013 1515 (alt) (+45) 7013 7313 (fax) (+45) 7013 1555	Finland (tel) (+358) 10 855 2100 (fax) (+358) 10 855 2923
France (tel) 0825 010 700* (alt) (+33) (0)1 6453 5623 (fax) 0825 010 701*	Germany (tel) 01805 24 6333* (alt) 01805 24 6330* (fax) 01805 24 6336*	Ireland (tel) (+353) (0)1 890 924 204 (alt) (+353) (0)1 890 924 206 (fax) (+353) (0)1 890 924 024	Israel (tel) (+972) 3 9288 500 (fax) (+972) 3 9288 501
Italy (tel) (+39) (0)2 9260 8484 (fax) (+39) (0)2 9544 1175	Luxemburg (tel) (+32) (0)2 404 9340 (alt) (+32) (0)2 404 9000 (fax) (+32) (0)2 404 9395	Netherlands (tel) (+31) (0)20 547 2111 (alt) (+31) (0)20 547 2000 (fax) (+31) (0)20 547 2190	Russia (tel) (+7) 095 797 3963 (alt) (+7) 095 797 3900 (fax) (+7) 095 797 3901
Spain (tel) (+34) 91 631 3300 (alt) (+34) 91 631 3000 (fax) (+34) 91 631 3301	Sweden (tel) 0200 88 22 55* (alt) (+46) (0)8 5064 8686 (fax) 020 120 2266*	Switzerland (French) (tel) 0800 80 5353 opt. 2* (alt) (+33) (0)1 6453 5623 (fax) (+41) (0)22 567 5313	Switzerland (German) (tel) 0800 80 5353 opt. 1* (alt) (+49) (0)7031 464 6333 (fax) (+41) (0)1 272 7373
Switzerland (Italian) (tel) 0800 80 5353 opt. 3* (alt) (+39) (0)2 9260 8484 (fax) (+41) (0)22 567 5314	United Kingdom (tel) (+44) (0)7004 666666 (alt) (+44) (0)7004 123123 (fax) (+44) (0)7004 444555		
(tel) = primary telephone number; (alt) = alternate telephone number; (fax) = FAX number; * = in country number			

