

**User's Guide**  
**Agilent Technologies**  
**85320A/B Mixer Modules**



**Part Number 85320-90001**

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## Warranty

This Agilent Technologies instrument product is warranted against defects in material and workmanship for a period of one year from date of delivery, or, in the case of certain major components listed in the Operating and Service manual, for the specified period. During the warranty period, Agilent will, at its option, either repair or replace products which prove to be defective.

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## Assistance

*Product maintenance agreements and other customer assistance agreements are available for Agilent products. For any assistance, contact your nearest Agilent Technologies Sales and Service Office.*

## General Information

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The Agilent 85320A test mixer and Agilent 85320B reference mixer operate from 2 to 26.5 GHz. They are designed for use with the Agilent 85309A Distributed Frequency Converter. These mixers work with the Agilent 85309A to downconvert RF frequencies to the 20 MHz IF signal required by the Agilent 8510 or 8530 receiver. The 85309A, 85320A and 85320B are the components in an Agilent 85310A Distributed Frequency Converter system.

In fundamental mode, the LO signal must be 20 MHz away from the incoming RF signal. This mode has better sensitivity than the third harmonic mode, but is limited in operation to the highest LO frequency available at the mixer inputs (18 GHz).

In the third harmonic mode the mixer uses the third harmonic of the LO to convert RF frequencies to the 20 MHz IF signal. This mode has less sensitivity than the fundamental mode, but allows you to measure RF signals three times higher than the maximum LO frequency.

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### 85320A Test Mixer

The test mixer has a “diplexer” circuit that allows both LO and IF signals to travel through a single cable. This is convenient because both signals can travel through a rotary joint. This circuit works in conjunction with an identical diplexer in the 85309A.

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### 85320B Reference Mixer

The reference mixer has a diode detector built into it. This circuit detects the LO input power, and outputs a proportional voltage. The detected voltage should be connected to the 85309A (which displays the voltage on its front panel). This detector voltage is used to set the LO power to precisely the correct level. When the LO power is correct, the detector voltage will match that shown on the label mounted on the mixer.

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## Specifications and Physical Characteristics

This is not a comprehensive list of specifications, others are listed in the *Agilent 85310A Distributed Frequency Converter Operating and Service Manual* part number 85310-90001.

### Frequency Range

Fundamental Mode: 2 to 18 GHz

Third Harmonic Mode: 6 to 26.5 GHz

### Maximum Input Levels

Do not exceed the following levels at either mixer input:

Maximum DC voltage at input: 10V

Maximum RF Level at RF or LO inputs: +26 dBm

### Minimum LO Input Level

**Table 1-1. Mixer LO Signal Power Level**

LO Frequency	Minimum Power	Typical Power	Maximum Power
1 to 18 GHz	+7.5 dBm	+11 dBm	+16 dBm

### Conversion Loss

The typical performance values shown apply to the mixer modules themselves. This performance data is intended to help customers who wish to build their own custom downconverters.

**Table 1-2. 85320A/B Conversion Loss**

Frequency Range	LO Harmonic	Typical Loss	Maximum Loss
1 to 2 GHz	1	18.0 dB	22 dB
2 to 3 GHz	1	12.0 dB	16 dB
3 to 5 GHz	1	11.0 dB	15 dB
5 to 18 GHz	1	14.7 dB	17 dB
6 to 8 GHz	3	23.8 dB	26 dB
8 to 16 GHz	3	26.5 dB	28 dB
16 to 26.5 GHz	3	28.5 dB	33 dB

## Connector Types

85320A/B: type-N female except for RF Input (3.5 mm male)

## Environmental Characteristics

Operating conditions: 0 °C to +55 °C

Non-operating conditions: -40 °C to +75 °C; 5 to 90% relative humidity, non condensing

## Size and Weight

### Net Weight

85320A: 615 g (1.35 lb)

85320B: 840 g (1.85 lb)

### Size

85320A: 83 mm (3.25 in) W x 122 mm (4.8 in) H  
x 33 mm (1.3 in) D

85320B: 92 mm (3.6 in) W x 185 mm (7.3 in) H  
x 25 mm (1.0 in) D

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## Rebuilt/Exchange Parts

You can obtain rebuilt mixer modules through the rebuilt-exchange program. These factory *rebuilt* (repaired and tested) mixers meet all specifications required of a new unit. They are offered on an *exchange* (trade-in) basis only. The defective mixer must be returned for credit, so rebuilt-exchange mixers are not suitable for stock or spares.

Here is how to use the exchange program:

1. Order a rebuilt mixer from Agilent (see the part number listing below).
2. You will receive the rebuilt mixer in a reusable shipping box, open it carefully because you must return the old mixer in the same box. Take the return address label out of the shipping box.
3. Insert the bad mixer into the box and seal the box with tape.
4. Inside the U.S.A., place the return address label on top of the old shipping label. If shipping from outside the U.S.A. do not use the pre-printed label; instead address the box to the nearest Agilent office.

**Table 1-3. Rebuilt/Exchange Part Numbers**

Mixer Module	Rebuilt Part Number
85320A	85320-69001
85320B	85320-69002

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## Where to Find More Information

The 85320A/B mixer are intended for use with the 85309A. Agilent sells the mixers and the 85309A together as the 85310 Distributed Frequency Converter. Installation, specifications, performance verification, and service information can be found in the *Agilent 85310A Distributed Frequency Converter Operating and Service Manual* part number 85310-90001.

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

**Table 1-4. Agilent Technologies Sales and Service Offices**

**Online Assistance:** [www.agilent.com/find/assist](http://www.agilent.com/find/assist)

<b>United States</b> (tel) 1 800 452 4844	<b>Japan</b> (tel) (81) 426 56 7832 (fax) (81) 426 56 7840	<b>New Zealand</b> (tel) 0 800 738 378 (fax) 64 4 495 8950
<b>Canada</b> (tel) 1 877 894 4414 (fax) (905) 206 4120	<b>Latin America</b> (tel) (305) 269 7500 (fax) (305) 269 7599	<b>Asia Pacific</b> (tel) (852) 3197 7777 (fax) (852) 2506 9284
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