



# Agilent 8711/12C, 8713/14C

## RF Economy Network Analyzers

### Configuration Guide

#### **Agilent 8711C and 8712C** **300 kHz to 1.3 GHz**

#### **Agilent 8713C and 8714C** **300 kHz to 3.0 GHz**

This configuration guide describes standard configurations, options and compatible accessories. For full specifications, see *Agilent RF Economy Network Analyzer Data Sheet* (literature number 5965-1464E). Contact your Agilent representative at the offices listed on the back page of this guide if you need more information.

#### **Standard RF Economy Network Analyzers**

Standard analyzers include:

- 300 kHz to 1.3 GHz or 3.0 GHz synthesized source
- Built-in display, integrated transmission/reflection test set
- Built-in 3.5 inch disk drive
- Narrowband and broadband receivers
- Standard 50 ohm system (also available as 75 ohm system, Option 1EC)
- Type-N test port cable and 175 MHz demonstration filter
- One-year return-to-Agilent warranty
- Operating and programming manuals, and example program disks

- 8711C** scalar network analyzer, 300 kHz to 1.3 GHz
- 8712C** vector network analyzer, 300 kHz to 1.3 GHz
- 8713C** scalar network analyzer, 300 kHz to 3.0 GHz
- 8714C** vector network analyzer, 300 kHz to 3.0 GHz



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## Options

- 75 ohm system impedance, Option 1EC**  
Converts to 75 ohm system impedance. Substitutes 75 ohm type-N connectors, test port cable and demonstration filter.
- 60 dB step attenuator, Option 1E1**  
Extends output power range down to -60 dBm.
- Instrument BASIC (IBASIC), Option 1C2**  
IBASIC is a subset of BASIC for creating and executing test programs inside the network analyzer, including keystroke capture and one-button macros, without the need for an external controller. Includes Instrument BASIC User's Handbook (part number 08712-90045) and IBASIC example programs disk (part number 08712-10021).
- AM delay for 50 ohm systems, Option 1DA**
- AM delay for 75 ohm systems, Option 1DB (Option 1EC required)**  
Adds amplitude modulation group delay capability to measure group delay in frequency-translation devices such as tuners and receivers. Includes two external broadband detectors and a power splitter. Not recommended for devices with limiting circuits, saturated amplifiers, or automatic gain control. To test devices that are not frequency translators the 8712B or 8714B vector network analyzers offer lower noise and better accuracy when measuring group delay.
- Fault location and structural return loss, Option 100**  
Adds time-domain-based fault location, as well as structural return loss capability.
- LAN interface, Option 1F7**  
Adds TCP/IP-compliant LAN interface.
- Keyboard, Option 1CL**  
Adds mini-DIN interface keyboard (model number C1405B, Option ABA) and cable to enhance IBASIC editing and instrument control capability. Keyboard overlay (part number 08712-80004) is supplied with every instrument.
- Extra 50 ohm cable and type-N (f-f) adapter, Option AFN**
- Extra 75 ohm cable and type-N (f-f) adapter, Option AFP**
- Rack mount kit, Option 1CM**
- Performance test software, Option 1FP**

## Special Options

Special options are available for unique applications. Examples include multiport and reversing test sets. Contact your Agilent representative for more information.

## Documentation

- Adds manual set, Option 0B1
- Deletes manual set, Option 0B0
- Deletes service guide, Option AVB
- Deletes programming guide, Option AV7

## Localization Options

These options provide a localized user's guide at no extra charge. They include information on installation, instrument functions, optimized measurements, and calibration.

- Taiwanese User's Guide, Option AB0**  
Also available as part number 08712-90050.
- Korean User's Guide, Option AB1**  
Also available as part number 08712-90051.
- Chinese User's Guide, Option AB2**  
Also available as part number 08712-90049.
- German User's Guide, Option ABD**  
Also available as part number 08712-90054.
- Spanish User's Guide, Option ABE**  
Also available as part number 08712-90052.
- French User's Guide, Option ABF**  
Also available as part number 08712-90053.
- Japanese User's Guide, Option ABJ**  
Also available as part number 08712-90048.
- Italian User's Guide, Option ABZ**  
Also available as part number 08712-90055.

## Warranties

One-year return-to-Agilent service warranty is standard.

- Three-year return-to-Agilent service coverage, Option W30**  
Please contact your local sales office for prices.
- Five-year return-to-Agilent service coverage, Option W50**  
Please contact your local sales office for prices.

Conversion to one-year on-site warranty coverage (where available).

- 8711C, Option W17**
- 8712C, Option W17**
- 8713C, Option W17**
- 8714C, Option W17**
  
- Three-year on-site service coverage, Option W31 (Option W17 required)**  
Please contact your local sales office for prices.
- Five-year on-site service coverage, Option W51 (Option W17 required)**  
Please contact your local sales office for prices.
- Commercial calibration certificate with test data, Option UK6**  
Can be ordered at time of original purchase.

## Measurement Accessories

Accessories are available in these connector types: 3.5 mm, 50 and 75 ohm type-N, BNC, and type-F. A complete line of RF accessories can be found in the Agilent RF and Microwave Test Accessories Catalog, literature number 5091-4269E.

### 50 Ohm Accessories

- Type-N economy calibration kit, Agilent 85032E**  
Standards include fixed termination and open-circuit/short-circuit combination in type-N (m) only.
- RF scalar detector, Agilent 86200B**  
External scalar detector, 10 MHz to 3 GHz, 50 ohm type-N (m) connector.  
See literature number 5962-9931E for detailed technical specifications. Two-meter detachable cable, part number 8120-5514 included; order 20-meter cable separately as part number 8120-5515.
- BNC accessory kit, Agilent 11854A**  
Provides the RF components generally required for measuring devices with 50 ohm BNC connectors, dc to 3 GHz. Contains four 50 ohm type-N to BNC adapters in all combinations of both connector sexes, plus BNC (m) short.
- 50 to 75 ohm minimum loss pad, Agilent 11852B**  
Adapts from 50 ohm type-N (f) to 75 ohm type-N (m).
  - Option 004**  
Substitutes 50 ohm type-N (m) and 75 ohm type-N (f) connectors.
- Test port economy cable, part number 8120-6469**  
50 ohm type-N (m), 0.61m (2 ft) long.
- Test port precision cable, part number 8120-4781**  
50 ohm type-N (m), 0.61m (2 ft) long. SWR <1.1 to 3 GHz, high isolation, and phase-matched to  $\pm 2$  degrees at 3 GHz.

### 75 Ohm Accessories

- Type-N economy calibration kit, Agilent 85036E**  
Standards include fixed termination and open-circuit/short combination in type-N (m) only.
- Type-F calibration kit, Agilent 85039A**  
Includes 75 ohm type-F load, open circuit, and four adapters for the measurement of devices with type-F (f) connectors.
- RF scalar detector, Agilent 86201B**  
External scalar detector, 10 MHz to 3 GHz, 75 ohm type-N (m) connector.  
See literature number 5962-9931E for detailed specifications. Two-meter detachable cable, part number 8120-5514 included; order 20-meter cable as part number 8120-5515.
- BNC accessory kit, Agilent 11856A**  
Provides the RF components generally required for measuring devices with 75 ohm BNC connectors, dc to 2 GHz. Contains four 75 ohm type-N to BNC adapters in all combinations of both connector sexes, plus BNC (m) short.
- Type-F adapter kit, Agilent 86211A**  
Adapter kit provides three 75 ohm, dc to 2 GHz, type-N to type-F adapters.

**50 to 75 ohm minimum loss pad, Agilent 11852B**

Adapts from 50 ohm type-N (f) to 75 ohm type-N (m).

**Option 004**

Substitutes 50 ohm type-N (m) and 75 ohm type-N (f) connectors.

**Test port economy cable, part number 8120-6468**

75 ohm, type-N (m), 0.61 m (2 ft long).

**Test port precision cable, part number 8120-2408**

75 ohm, type-N (m), 0.61 m (2 ft long). SWR <1.1 to 2 GHz, and phase matched  $\pm 2$  degrees at 2 GHz.

## General Accessories

**Antistatic mat kit, part number 85043-80013**

## Peripherals

Economy network analyzers support interfaces in parallel (Centronics), serial (RS-232C) and GPIB, which conform to IEEE 488.2 and SCPI standard interface commands. Models change frequently; check with your Agilent representative on the latest peripheral models. Some peripherals not listed here may be compatible with Agilent network analyzers.

## Controllers

Agilent network analyzers can be controlled by external computer via GPIB. (Note that optional IBASIC offers programming capability inside the network analyzer.) Consult with your Agilent representative for alternatives.

## Printers

Your Agilent network analyzer can print hard copy directly to HP PCL (printer control language) printers. Some printers have options to specify their interface; consult your local Agilent representative for more details. The two most recommended models are:

**HP DeskJet 600**, most economical monochrome printer, with color kit, offers color plots.

**HP LaserJet 5L**, fastest monochrome printer.

The latest information about printers and printer compatibility is available on the World Wide Web. General printer information address is: [www.dmo.com/peripherals/printers/main.html](http://www.dmo.com/peripherals/printers/main.html)

## Upgrade Kits

Installation is not included in upgrade kits.

**AM delay kit 50 ohms, Agilent 86221B**

**AM delay kit 75 ohms, Agilent 86225B**

Adds AM delay modulator and includes power splitter and two detectors. Also available as part number 08711-60062, which excludes detectors and power splitter.

**IBASIC kit, Agilent 86224C**

Adds IBASIC programming capability; also available as part number 08711-60164.

**Step attenuator kit, Agilent 86223B**

Adds a 60 dB attenuator to all models; also available as part number 08711-60067.

**Firmware kit, Agilent 86226C**

Provides the latest version firmware; also available as part number 08712-60047.

**LAN upgrade kit, Agilent 86227C**

Adds a TCP/IP compliant LAN interface; also available as part number 08712-60052.

**Fault location, structural return loss kit, Agilent 86228C**

Adds fault location and structural return loss capability; also available as part number 08712-60048.

**Rack mount kit, Agilent 08712-60036** for use with or without handles.

## Service and Support

**Service kit, part number 08712-60012**

Service kit includes extender board, extender cables, voltage reference source, special wrench.

## Spare Parts Kits

Spare parts kits include CPU, power supply, receiver, source, fractional-N boards and disk drive for self-support.

**Spare parts kit, Agilent 86215C**

For 50 ohm 8711C and 8712C (part number 08712-60046)

**Spare parts kit, Agilent 86216D**

For 75 ohm 8711C and 8712C (part number 08712-60045)

**Spare parts kit, Agilent 86216C**

For 50 ohm 8713C and 8714C (part number 08713-60011)

**Spare parts kit, Agilent 86216D**

For 75 ohm 8713C and 8714C (part number 08713-60010)

## Recommended Test Equipment

Recommended test equipment for self support and performance of most performance tests and adjustments after a repair:

- Power meter, Agilent 437B or**
- Dual channel power meter, Agilent 438A**
- Power sensor, Agilent 8482A** (for both 50 and 75 ohm instruments)
- Diode power sensor, Agilent 8481D** (for step attenuator options only)
- Power sensor, Agilent 8483A** (for 75 ohm instruments)
- Minimum loss pad, Agilent 11852B**, for 75 ohm (2 each)
- 50 ohm calibration kit, Agilent 85032B**
- 75 ohm calibration kit, Agilent 85036B**
- Voltage reference, Agilent part number 08712-60031**  
(part of service kit part number 08712-60012)
- Function generator, Agilent 8116A**
- 10 dB step attenuator, Agilent 8496A or 8496G**
- Instrument controller, Agilent 9000-series** 200 and 300 computers
- 20 dB fixed attenuator, Agilent 8491A-series** (or part number 0955-0768 for 75W units)

Additional test equipment may include 8560-series or 8566A/B spectrum analyzer, and miscellaneous fixed attenuators, cables, adapters, and power splitters.

**Agilent Technologies' Test and Measurement Support, Services, and Assistance**

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

**Our Promise**

"Our Promise" means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When

you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

**Your Advantage**

"Your Advantage" means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

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