Agilent
ENA-L RF Network Analyzers

Configuration Guide

E5061A  300 kHz to 1.5 GHz
E5062A  300 kHz to 3 GHz

This configuration guide describes standard configurations, options, accessories and peripherals for the ENA-L RF network analyzers. For a complete description and technical specifications of the ENA-L RF network analyzers refer to the ENA-L Data Sheet available on our Web site:
www.agilent.com/find/ena
This guide is intended to assist you in the ordering process. Additional information and products (such as multiport test set, calibration kits and cables) are described throughout this document.

● = Choose ONE and ONLY one  
■ = Choose any combination

In step 2 through 9, to order options for the E5062A, replace E5061A with E5062A (e.g. E5062A-XXX)

Step 1: Choose a frequency range
● 300 kHz to 1.5 GHz, choose E5061A  
● 300 kHz to 3 GHz, choose E5062A

Step 2: Choose the test set configuration
● T/R test set 50 ohm, choose Option E5061A-150  
● T/R test set 75 ohm, choose Option E5061A-175  
● S-parameter test set 50 ohm, with extended power range, choose Option E5061A-250  
● S-parameter test set 75 ohm, with extended power range, choose Option E5061A-275

Step 3: If you chose T/R test set, would you like extended power range (-45 dBm to 10 dBm)?
● Yes, choose Option E5061A-1E1  
● No

Step 4: Would you like to add fault location and structural return loss analysis?
● Yes, choose Option E5061A-100  
● No

Step 5: Would you like a touch screen?
● Yes, choose Option E5061A-016  
● No, choose Option E5061A-015

Step 6: Would you like any rack mount accessories?
■ Rack mount kit only, choose Option E5061A-1CM  
■ Front handle kit only, choose Option E5061A-1CN  
■ Rack mount and front handle kit, choose Option E5061A-1CP

Step 7: Would you like to add any accessories?
■ Add a keyboard, choose Option E5061A-810  
■ Add a mouse, choose Option E5061A-820

Step 8: Choose a language of manual set and specify quantity
■ Add English manual set, choose Option E5061A-ABA and specify quantity  
■ Add Japanese manual set, choose Option E5061A-ABJ and specify quantity

Step 9: Would you like a commercial calibration certificate (ISO 17025 compliant) with test data?
● Yes, choose Option E5061A-1A7  
● No
ENA-L RF Network Analyzer

The ENA-L is an integrated RF network analyzer with test set, synthesized RF source, 10.4-inch color LCD, floppy and hard disc drives.

- **E5061A** 300 kHz to 1.5 GHz
- **E5062A** 300 kHz to 3 GHz

Options for the E5061A are listed in this section. To order options for the E5062A, replace E5061A with E5062A (e.g. E5062A-XXX)

**Options**

**Test set options**

- Option **E5061A-150** T/R test set 50 ohm
- Option **E5061A-175** T/R test set 75 ohm
- Option **E5061A-250** S-parameter test set 50 ohm with extended power range
- Option **E5061A-275** S-parameter test set 75 ohm with extended power range

**Source power range option**

- Option **E5061A-1E1** extended power range
  
  Adds 40 dB step attenuator to T/R test set options to extend the source power range down to -45 dBm

**Additional feature option**

- Option **E5061A-100** fault location analysis
  
  Adds fault location and structural return loss analysis capabilities.

**Display options**

- Option **E5061A-015** standard color LCD
  
  Add standard 10.4-inch color LCD without touch screen capability
- Option **E5061A-016** touch screen color LCD
  
  Adds touch screen capability to the standard 10.4-inch color LCD.

**Accessories options**

- Option **E5061A-1CM** rack mount kit
  
  Adds a rack mount kit (part number 5063-9216)
- Option **E5061A-1CN** front handle kit
  
  Adds a front handle kit (part number 5063-9229)
- Option **E5061A-1CP** rack mount and front handle kit
  
  Adds a rack mount kit (part number 5063-9223)
- Option **E5061A-810** adds a keyboard
- Option **E5061A-820** adds a mouse

**Documentation options**

- Option **E5061A-ABA** add specified quantities of English manual set
- Option **E5061A-ABJ** add specified quantities of Japanese manual set

**Certification option**

- Option **E5061A-1A7** ISO 17025 compliant calibration

For online information about Agilent’s service and support products visit: [www.agilent.com/find/tm_services](http://www.agilent.com/find/tm_services)
Measurement Accessories

A complete line of RF test accessories can be found at the Agilent RF and Microwave Test Accessories Web site:
www.agilent.com/find/accessories

Accessories are available in these connector types: 50 ohm Type-N, 3.5 mm, 7 mm, 7-16, 50 ohm Type-N, and Type-F. Test port cables and a calibration kit should be added for a complete measurement system.

50 ohm Accessories

Test port cables

Test port cables are used to connect the network analyzer to the device under test.

- 8120-6469 economy 50 ohm Type-N cable. Includes one 610 mm (24 in) cable with male connectors
- N6314A 50 ohm Type-N RF cable, 300 kHz to 9 GHz. Includes one 610 mm (24 in) cable with male connectors (part number 8120-8862)
- N6315A 50 ohm Type-N RF cable, 300 kHz to 9 GHz. Includes one 610 mm (24 in) cable with both female and male connectors (part number 8120-8863)
- 11500E cable, APC 3.5 mm (m), DC to 26.5 GHz
  - Option 11500E-060 60 cm cable, APC 3.5 mm (m)
    - Includes one 610 mm (24 in) cable with male connectors.
    - 3.5 mm (f) to 50 ohm Type-N (m) adapters (1250-1744) are recommended to connect to the network analyzer's test ports.
- 11500F 150 cm cable, APC 3.5 mm (m), DC to 26.5 GHz
  - Includes one 1520 mm (60 in) with male connectors.
  - 3.5 mm (f) to 50 ohm Type-N (m) adapters (1250-1744) are recommended to connect to the network analyzer's test ports.

Calibration kits

Mechanical calibration kits include standards, such as opens, shorts and loads, which are measured by the network analyzer for increased measurement accuracy.

Electronic calibration (ECal) kits replace mechanical calibration standards with one solid-state calibration module that is controlled by the network analyzer to present many different impedances to the test ports. A full two-port calibration can be performed quickly with a single connection. This technique reduces operator errors and connector wear and abrasion.

Choose a calibration kit for each connector type to be used.

For devices with 50 ohm Type-N connectors

Mechanical calibration kits

- 85032E economy: DC to 6 GHz. Includes:
  - 00909-60009 Type-N (m) fixed load
  - 85032-60011 Type-N (m) open/short
- 85032F economy: 30 kHz to 9 GHz. Includes:
  - 85032-60017 Type-N (m) fixed load
  - 85032-60018 Type-N (f) fixed load
  - 85032-60013 Type-N (m) open
  - 85032-60014 Type-N (f) open
  - 85032-60016 Type-N (m) short
  - 85032-60015 Type-N (f) short
  - Option 85032F-100 adds:
    - 85032-60021 Type-N (f) to Type-N (f) adapter
  - Option 85032F-200 adds:
    - 85032-60019 Type-N (m) to Type-N (m) adapter
  - Option 85032F-300 adds:
    - 85032-60020 Type-N (m) to Type-N (f) adapter
  - Option 85032F-500 adds:
    - 85054-60001 Type-N (f) to 7 mm adapter (two included)
    - 85054-60009 Type-N (m) to 7 mm adapter (two included)

Electronic calibration kits

- 85092C RF ECal: 300 kHz to 9 GHz, 2 ports. Includes:
  - Option 85092C-MOF module with:
    - 85092-60008 Type-N (f) to Type-N (m) RF ECal module
  - Option 85092C-00M module with:
    - 85092-60009 Type-N (m) to Type-N (m) RF ECal module
  - Option 85092C-00F module with:
    - 85092-60010 Type-N (f) to Type-N (f) RF ECal module
  - Option 85092C-00A adds:
    - 85054-60037 Type-N (f) to Type-N (f) adapter
    - 85054-60038 Type-N (m) to Type-N (m) adapter
- N4431A RF ECal module: 300 kHz to 9 GHz, 4 ports
  - Option N4431A-020 adds four Type-N (f) module port connectors
  - Option N4431A-UK6 Commercial calibration certification with test data
For devices with 3.5 mm or SMA connectors

**Mechanical calibration kits**
- **85033E** economy: 30 kHz to 9 GHz. Includes:
  - 85033-60016 3.5 mm (m) load
  - 85033-60017 3.5 mm (f) load
  - 85033-60018 3.5 mm (m) open
  - 85033-60019 3.5 mm (f) open
  - 85033-60020 3.5 mm (m) short
  - 85033-60021 3.5 mm (f) short
  - 8710-1761 torque wrench

  - **Option 85033E-100** adds:
    - 85027-60005 3.5 mm (f) to 3.5 mm (f) adapter

  - **Option 85033E-200** adds:
    - 85027-60007 3.5 mm (m) to 3.5 mm (m) adapter

  - **Option 85033E-300** adds:
    - 85027-60006 3.5 mm (m) to 3.5 mm (f) adapter

  - **Option 85033E-400** adds:
    - 1250-1744 3.5 mm (f) to 50 ohm Type-N (m) adapter
    - 1250-1743 3.5 mm (m) to 50 ohm Type-N (m) adapter
    - 1250-1745 3.5 mm (f) to 50 ohm Type-N (f) adapter
    - 1250-1750 3.5 mm (m) to 50 ohm Type-N (f) adapter

  - **Option 85033E-500** adds:
    - 1250-1746 3.5 mm (m) to 7 mm adapter (two included)
    - 1250-1747 3.5 mm (f) to 7 mm adapter (two included)

**Electronic calibration kits**
- **85093C** RF ECal: 300 kHz to 9 GHz, 2 ports. Includes:
  - **Option MOF** module with:
    - 85093-60007 3.5 mm (m) to 3.5 mm (f) RF ECal module
  - **Option 00F** module with:
    - 85093-60009 3.5 mm (f) to 3.5 mm (f) RF ECal module
  - **Option 00M** module with:
    - 85093-60008 3.5 mm (m) to 3.5 mm (m) RF ECal module
  - **Option 00A** adds:
    - 11906-80015 7-16 (m) to 7-16 (m) adapter
    - 11906-80016 7-16 (f) to 7-16 (f) adapter

**Adapters**
- **11853A** 50 ohm Type-N accessory kit. Includes:
  - 1250-1472 Type-N (f) to Type-N (f) adapter (two included)
  - 1250-1475 Type-N (m) to Type-N (m) adapter (two included)
  - 11511A Type-N (f) short
  - 11512A Type-N (m) short

  - **Option 85038C** 30 kHz to 7.5 GHz, 2 ports. Includes:
    - **Option FOFC** module with:
      - 85093-60007 7-16 (m) to 7-16 (f) RF ECal module
    - **Option 00F** module with:
      - 85093-60009 7-16 (f) to 7-16 (f) RF ECal module
    - **Option 00M** module with:
      - 85093-60008 7-16 (m) to 7-16 (m) RF ECal module
    - **Option 00A** adds:
      - 11906-80015 7-16 (m) to 7-16 (m) adapter
      - 11906-80016 7-16 (f) to 7-16 (f) adapter

**Electronic calibration kits**
- **85093C** RF ECal: 300 kHz to 7.5 GHz, 2 ports. Includes:
  - **Option MOF** module with:
    - 85098-60007 7-16 (m) to 7-16 (f) RF ECal module
  - **Option 00F** module with:
    - 85098-60009 7-16 (f) to 7-16 (f) RF ECal module
  - **Option 00M** module with:
    - 85098-60008 7-16 (m) to 7-16 (m) RF ECal module
  - **Option 00A** adds:
    - 11906-80015 7-16 (m) to 7-16 (m) adapter
    - 11906-80016 7-16 (f) to 7-16 (f) adapter

**Adapters**
- **11878A** Type-N to 3.5 mm adapter kit. Includes:
  - 1250-1744 3.5 mm (f) to 50 ohm Type-N (m) adapter
  - 1250-1743 3.5 mm (m) to 50 ohm Type-N (m) adapter
  - 1250-1745 3.5 mm (f) to 50 ohm Type-N (f) adapter
  - 1250-1750 3.5 mm (m) to 50 ohm Type-N (f) adapter

- **11906A** 7-16 to 7-16. Includes:
  - 7-16 (m) to 7-16 (m) adapter
  - 7-16 (f) to 7-16 (f) adapter
  - 7-16 (m) to 7-16 (f) adapter (two included)

- **11906B** 7-16 to Type-N. Includes:
  - Type-N (m) to 7-16 (m) adapter
  - Type-N (f) to 7-16 (f) adapter
  - Type-N (f) to 7-16 (m) adapter
  - Type-N (m) to 7-16 (f) adapter

**Options**
- **11854A** 50 ohm BNC accessory kit. Includes:
  - 1250-0929 BNC (m) short
  - 1250-1473 BNC (m) to Type-N (m) adapter (two included)
  - 1250-1474 BNC (f) to Type-N (f) adapter (two included)
  - 1250-1476 BNC (f) to Type-N (m) adapter (two included)
  - 1250-1477 BNC (m) to Type-N (f) adapter (two included)
Test port cables

Test port cables are used to connect the network analyzer to the device under test.
- **8120-8898** precision 75 ohm Type-N cable. Includes one 610 mm (24 in) cable with male connectors
- **11857B** precision 75 ohm Type-N cable set. Includes Type-N (m) and Type-N (m-f) cables
- **11857F** 75 ohm Type-N to Type-F cable set
  - **Option M0F** includes:
    - Type-N (m) to Type-F (m) cable
    - Type-N (m) to Type-F (f) cable
  - **Option 00F** includes:
    - Type-N (m) to Type-F (f) cable
  - **Option 00M** includes:
    - Type-N (m) to Type-F (m) cable

Calibration kits

Mechanical calibration kits include standards, such as opens, shorts and loads, which are measured by the network analyzer for increased measurement accuracy.

Electronic calibration (ECal) kits replace mechanical calibration standards with one solid-state calibration module that is controlled by the network analyzer to present many different impedances to the test ports. A full two-port calibration can be performed quickly with a single connection. This technique reduces operator errors and connector wear and abrasion.

Choose a calibration kit for each connector type to be used. **Economy**, includes:
- open standards (male and female)
- short standards (male and female)
- fixed-termination standards (male and female)
- in-series adapters

**Standard**, includes the devices in the economy kit and adds:
- connector tools

For devices with 75 ohm Type-N connectors

**Electronic calibration kits**
- **85096C** RF ECal: 300 kHz to 3 GHz, 2 ports. Includes:
  - **Option 85096C-M0F** module with:
    - 85096-60007 Type-N (m) to Type-N (f) RF ECal module
  - **Option 85096C-00F** module with:
    - 85096-60009 Type-N (f) to Type-N (f) RF ECal module
  - **Option 85096C-00M** module with:
    - 85096-60008 Type-N (m) to Type-N (m) RF ECal module
  - **Option 85096C-00A** adds:
    - 85036-60013 Type-N (m) to Type-N (m) adapter
    - 85036-60014 Type-N (f) to Type-N (f) adapter

**Mechanical calibration kits**
- **85039B** Standard: DC to 3 GHz, includes:
  - **Option 85039B-MOF** includes:
    - 85039-60007 Type-F (m) load
    - 85039-60008 Type-F (m) short
    - 85039-60009 Type-F (m) open
    - 85039-60004 Type-F (f) load
    - 85039-60003 Type-F (f) short
    - 85039-60005 Type-F (f) open
    - 85039-60006 Type-F (m) to Type-F (m) adapter
    - 85039-60002 Type-F (f) to Type-F (f) adapter
  - **Option 85039B-00F** includes:
    - 85039-60004 Type-F (f) load
    - 85039-60003 Type-F (f) short
    - 85039-60005 Type-F (f) open
    - 85039-60002 Type-F (f) to Type-F (f) adapter
  - **Option 85039B-00M** includes:
    - 85039-60007 Type-F (m) load
    - 85039-60008 Type-F (m) short
    - 85039-60009 Type-F (m) open
    - 85039-60006 Type-F (m) to Type-F (m) adapter

For devices with 75 ohm Type-F connectors

**Electronic calibration kits**
- **85099C** RF ECal: 300 kHz to 3 GHz, 2 ports, includes:
  - **Option 85099C-M0F** module with:
    - 85099-60009 Type-F (m) to Type-F (f) RF ECal module
  - **Option 85099C-00F** module with:
    - 85099-60011 Type-F (f) to Type-F (f) RF ECal module
  - **Option 85099C-00M** module with:
    - 85099-60010 Type-F (m) to Type-F (m) RF ECal module
  - **Option 85096C-00A** adds:
    - 85039-60002 Type-F (f) to Type-F (f) adapter
    - 85039-60006 Type-F (m) to Type-F (m) adapter

**Adapters**
- **11852B** Minimum-loss pad
  - **Option 11852B-004** Type-N connectors, 50 ohm (m) to 75 ohm (f)
  - **Option 11852B-401** Type-N connectors, 50 ohm (f) to 75 ohm (m)
General Accessories

System racks

- **5063-9229** handle kit, may be ordered as option 1CN (two included)
- **5063-9216** rack mount kit, for use without handles: may be ordered as option 1CM
- **5063-9223** rack mount kit, for use with previously supplied handles; may be ordered as option 1CP
- **E3663AC** rack mount rail kit, for use with 5063-9216 or 5063-9223

Interface cables

The following GPIB cables can be used to connect the network analyzer with an external device such as a computer

- **10833A** GPIB cable, 1.0 m (3.3 ft)
- **10833B** GPIB cable, 2.0 m (6.6 ft)
- **10833C** GPIB cable, 3.0 m (9.9 ft)
- **10833D** GPIB cable, 0.5 m (1.6 ft)

Monitors

- VGA-compatible monitor
Additional Information

ENA-L Brochure
Literature number 5989-0167EN
ENA-L Technical Specifications
Literature number 5989-0018EN

Key Web Resources

For additional ENA-L product information and literature, visit: www.agilent.com/find/ena

For electronic calibration (ECal) modules, visit: www.agilent.com/find/ecal

For Agilent RF and Microwave Test accessories, visit: www.agilent.com/find/accessories

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements.

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