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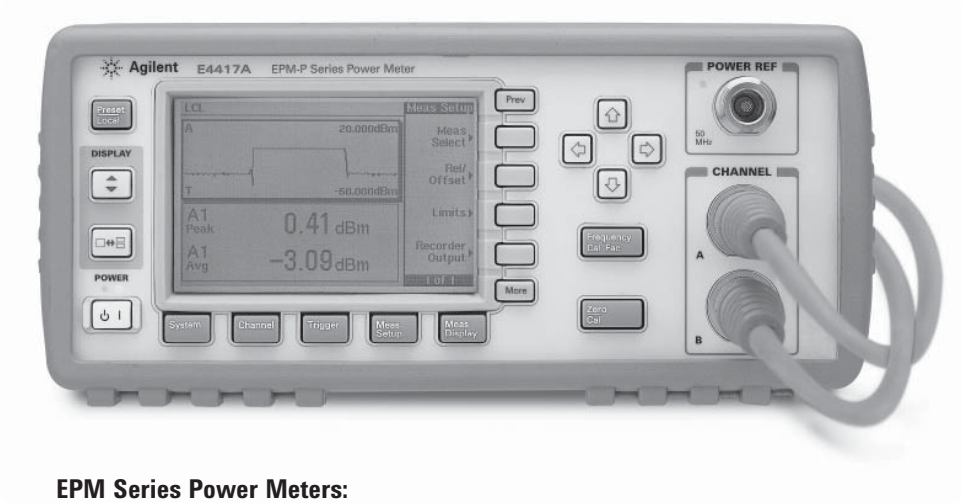
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Agilent EPM and EPM-P Series Power Meters E-series Power Sensors

Configuration Guide



EPM Series Power Meters:

E4418B Power Meter (single channel)
E4419B Power Meter (dual channel)

EPM-P Series Power Meters:

E4416A Power Meter (single channel)
E4417A Power Meter (dual channel)

E-series Power Sensors:

E441XA CW Power Sensors
(10 MHz to 26.5 GHz, sensor dependent)
E9300 Average Power Sensors
(9 kHz to 18 GHz, sensor dependent)
E9320 Peak and Average Power Sensors
(50 MHz to 18 GHz, sensor dependent)

Introduction

This configuration guide describes standard configurations, options and compatible accessories. For full specifications, see *EPM Series Power Meters and E-Series Power Sensors Technical Specifications* (Agilent literature number 5965-6382E), or *EPM-P Series Power Meters and E9320 Power Sensors Technical Specifications* (Agilent literature number 5980-1469E). Contact your local Agilent Technologies representative at the offices listed on the back of this guide if you need more information.

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EPM-P series power meters

The EPM-P series power meters provide peak, peak-to-average ratio, average and time-gated power measurements. For peak, peak-to-average ratio and time-gated measurements, the EPM-P series must operate with the E-series E9320 power sensors. For average power measurements only, the EPM-P series power meters are compatible with all the 8480 series power sensors, the E-series CW, the E-series E9300 average power sensors, and the E-series E9320 power sensors.

The standard EPM-P series power meters include:

- Single-channel power meter, **order E4416A**
  or dual-channel power meter, **order E4417A**
- Input sensor connector(s) on front panel
- Reference calibrator connector on front panel
- Hardcopy English-language *Installations Guide*
- Hardcopy English-language *User's Guide* and *Programming Guide* (Option ABA)
- *CD-Rom*, the English-language and localized *User's Guide*, the English-language *Programming Guide* and the Agilent *EPM-P analyzer software*
- Supplied accessories:
  Power sensor cable (1.5 meter (5 ft) **E9288A**)
  One per E4416A and two per E4417A
  Power cord (plug matches destination requirements)

EPM series power meters

The EPM series power meters provide average power measurements.

The standard E4418B and E4419B power meters include:

- Single-channel power meter, **order E4418B**
  or Dual-channel power meter, order **E4419B**
- Input sensor connector(s) on front panel
- Reference calibrator connector on front panel
- English-language *User's Guide* and *Programming Guide* (Option ABA)
- Supplied Accessories:
  Power sensor cable (1.5 meter (5 ft) **11730A**).
  One per E4418B and two per E4419B
  Power cord (plug matches destination requirements)

E-series power sensors

The standard E4412A and E4413A CW power sensors include:

- Power sensor 10 MHz to 18 GHz, **order E4412A**
  Power sensor 50 MHz to 26.5 GHz, **order E4413A**
- English-language *Operating and Service Manual*

The standard E9300 average power sensors include:
+20 to –60 dBm:

- Power sensor 10 MHz to 18 GHz, **order E9300A**
- Power sensor 10 MHz to 6 GHz, **order E9301A**
- Power sensor 9 kHz to 6 GHz, **order E9304A**
- Power sensor 9 kHz to 18 GHz, **order E9304A Option H18**

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- Power sensor 9 kHz to 18 GHz, **order E9304A Option H20 (APC 3.5 mm connector)**

+30 to –50 dBm:
- Power sensor 10 MHz to 18 GHz, **order E9300H**
- Power sensor 9 kHz to 18 GHz, **order E9300H Option H19**
- Power sensor 10 MHz to 6 GHz, **order E9301H**

+44 to –30 dBm:
- Power sensor 10 MHz to 18 GHz, **order E9300B**
- Power sensor 10 MHz to 6 GHz, **order E9301B**
- *English-language Operating and Service Manual* (also available as Agilent part number E9300-90009)

The standard E9320 Peak and Average Power Sensors include:
- Power sensor, 50 MHz to 6 GHz, 300 kHz bandwidth, **order E9321A**
- Power sensor, 50 MHz to 6 GHz, 1.5 MHz bandwidth, **order E9322A**
- Power sensor, 50 MHz to 6 GHz, 5 MHz bandwidth, **order E9323A**
- Power sensor, 50 MHz to 18 GHz, 300 kHz bandwidth, **order E9325A**
- Power sensor, 50 MHz to 18 GHz, 1.5 MHz bandwidth, **order E9326A**
- Power sensor, 50 MHz to 18 GHz, 5 MHz bandwidth, **order E9327A**
- *English-Language Operating and Service Manual*

Compatibility

Power sensor compatibility

For compatibility of Power Meters, Power Sensors and Power Sensor Cables please refer to the table below.

Power Sensors	Power Meters		Power Sensor Cables	
	EPM-P Series Power Meters	EPM Series Power Meters	11730 Sensor Cables (grey)	E9288 Sensor Cables (blue)
E441X family	Yes	Yes	Yes	Yes
E9300 family	Yes	Yes[1]	Yes	Yes
E9320 family	Yes	No	No	Yes
8480 series	Yes	Yes	Yes	Yes

Firmware compatibility

The table below shows the required revision of firmware for operation of the E9300 power sensors as well as the part number of the required hardware upgrade kit.

	E4418A/E4419A		E4418B/E4419B
	Firmware	Hardware	Firmware
E9300A/01A/04A	Rev A1.04.00/A2.04.00	E4418-60021	Rev A1.04.00/A2.04.00
E9300H/01H	Rev A1.06.00/A2.06.00	E4418-60021	Rev A1.06.00/A2.06.00
E9300B/01B	Rev A1.06.00/A2.06.00	E4418-60021	Rev A1.06.00/A2.06.00

1. Please refer to the firmware compatibility table to ensure compatibility for this combination.

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Firmware upgrade information can be accessed from the World Wide Web, free of charge. It can also be purchased as a firmware upgrade kit, Agilent part number E4418-61035. The hardware upgrade is a simple upgrade and the kit provides the parts required. The upgrade can be performed at any local Service Center or at a customer site.

Hardware options

The following options are available on the EPM and EPM-P power meters.

Option	Description	EPM-P Series Power Meter	EPM Series Power Meter
E441xA/B-001	Internal rechargeable battery	No	Yes
E441xA/B-002	Parallel rear panel sensor input connector(s) and front panel reference calibrator connector	Yes	Yes
E441xA/B-003	Parallel rear panel sensor input connector(s) and rear panel reference calibrator connector	Yes	Yes
E441xA/B-004	Delete power sensor cable	Yes	Yes
E441xA/B-908	Rack mount kit (one instrument)	Yes	Yes
E441xA/B-909	Rack mount kit (two instruments)	Yes	Yes

Service and support options

Warranty
Included with each EPM and EPM-P series power meter is a standard 12-month, return-to-Agilent warranty and service plan.

Calibration[1]
For 3 years, order 36 months of the appropriate calibration plan shown below.

R-50C-001	Standard calibration plan
R-50C-002	Standard compliant calibration plan

Special options

Special options for EPM-P series power meters, EPM series power meters, and E-series sensors are available. Contact your local Agilent representative for more information.

1. Options not available in all countries.

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Documentation

- The EPM power meters supply the standard documentation (English-language *User's Guide* and *Programming Guide*) in hardcopy (Option ABA)
- The EPM-P power meters provide a hardcopy *Installation Guide* which includes all languages, hardcopy of the English-language *User's Guide* and *Programming Guide* (Option ABA), and a CD-ROM which contains the Agilent EPM-P analyzer software, *User's Guide* and *Programming Guide*. The localized versions of the *Users Guide* are included on the CD.

Power Meters	**EPM-P Series Power Meter**	**EPM Series Power Meter**
User's Guide	E441xA-0BK (hard copy)	E441xB-916 (additional)
Programming Guide	E441xA-0BK (hard copy)	E441xB-916 (additional)
Service Manual	E441xA-0B3	E441xB-915
Delete manual set	E441xA-0B0	E441xB-0B0
Add manual set (English)	E441xA-0BK	E441xB-916

Power sensors	**E4412/3A**	**E9300**	**E9320A**
Add manual set	E4412/3A-0B1	E930xx-0B1	E932xA-0B1

Localization options

The following table supplies the option number to order the documentation.

The following options provide a hardcopy of the localized *User's Guide*. For the EPM-P the localized manuals are all available on the CD-ROM supplied with the product. The localized options for the EPM-P provide a hardcopy of the localized *User's Guide* and an English hardcopy of the *Programming Guide*.

Language	**EPM-P Series Power Meter**	**EPM Series Power Meter**	**E4412/3A Sensors**	**E9300 Sensors**
German	E441xA-ABD	E441xB-ABD	E4412/3A-ABD	E930xx-ABD
Spanish	E441xA-ABE	E441xB-ABE	E4412/3A-ABE	E930xx-ABE
French	E441xA-ABF	E441xB-ABF	E4412/3A-ABF	E930xx-ABF
Japanese	E441xA-ABJ	E441xB-ABJ	E4412/3A-ABJ	E930xx-ABJ
Italian	E441xA-ABZ	E441xB-ABZ	E4412/3A-ABZ	E930xx-ABZ
Korean				E930xx-ABI

Calibration options

Option E441xA/B-A6J - Supplies ANSI Z540 certificate of calibration with data.

Option E93xxA/B/H-A6J - Supplies ANSI Z540 certificate of calibration with data.

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Accessories available

- **E9288A-C power sensor cables** (refer to the compatibility section):
  1.5 meters (5 ft) E9288A
  3 meters (10 ft) E9288B
  10 meters (31 ft) E9288C

- **11730A-F power sensor cables:** (refer to the compatibility section)
  1.5 meters (5 ft) 11730A
  3 meters (10 ft) 11730B
  6.1 meters (20 ft) 11730C
  15.2 meters (50 ft) 11730D
  30.5 meters (100 ft) 11730E
  61 meters (200 ft) 11730F

- **Accessory pouch, 34161A**
  Holds accessories supplied or ordered

- **Basic instrument transit case, 34131A**
  Protects the power meter during transit

- **Soft carry/operating case, 34141A**
  Power meter with battery option can be operated in case

- **Spare battery, E9287A**
  Extra battery for EPM series power meters with **Option 001**

Auxiliary equipment

The 11683A range calibrator verifies the accuracy and linearity of the EPM-P and EPM series power meters. Outputs corresponding to meter readings of 3, 10, 30, 100 and 300 µW and 1, 3, 10, 30 and 100 mW are provided. Calibration uncertainty is ±0.25% on all ranges.

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Literature reference

EPM-P Series Power Meters and E9320 Sensors, Product Overview,
5980-1471E

EPM-P Series Power Meters and E9320 Sensors, Technical Specifications,
5980-1469E

EPM-P Series Single and Dual Channel Power Meters, Demo Guide,
5988-1605EN

EPM-P Series Power Meters, CD-ROM,
E4416-90032

Choosing the Right Power Meter and Sensor, Product Note,
5968-7150E

EPM Series Power Meter and E-Series Power Sensors, Technical Specifications,
5965-6382E

EPM Series Power Meter and E-Series Power Sensors, Brochure,
5965-6380E

Fundamentals of RF and Microwave Power Measurements,
Application Note 64-1,
5965-6630E

4 Steps for better Power Measurements, Application Note 64-4,
5965-8167E

E-Series E9300 Power Sensors, Product Overview,
5968-4960E

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For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

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Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	0820 87 44 11
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 € fixed network rates
Germany	01805 24 6333**
	**0.14€/minute
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland (French)	41 (21) 8113811(Opt 2)
Switzerland (German)	0800 80 53 53 (Opt 1)
United Kingdom	44 (0) 118 9276201

Other European Countries:
www.agilent.com/find/contactus

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