

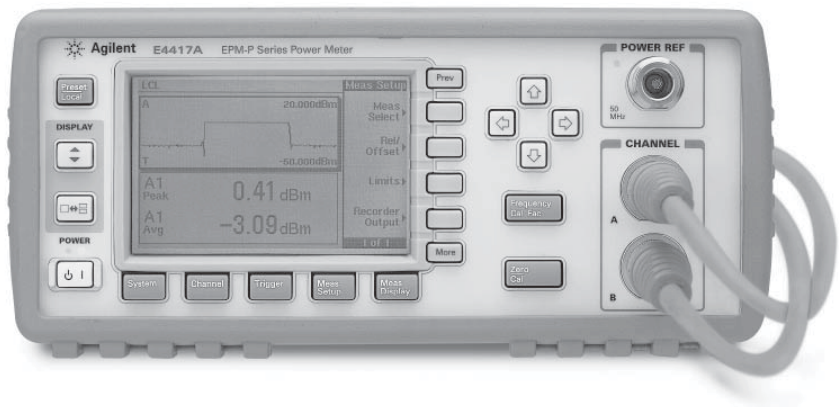


# Agilent EPM and EPM-P Series Power Meters E-Series Power Sensors

## Configuration Guide

### 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.



#### 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)



**Agilent Technologies**

## 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 power meters 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 the front panel
- Reference calibrator connector on the front panel
- Printed copy of English-language *Installations Guide*
- Printed copy of English-language *User's Guide* (Option ABA)
- CD-ROM, contains the English-language and localized *User's Guide*, English-language *Programming Guide* and 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 the front panel
- Reference calibrator connector on the front panel
- Printed copy of English-language *User's 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**,  
or power sensor 50 MHz to 26.5 GHz, order **E4413A**
- English-language *Operating and Service Guide*

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**
- 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 Guide* (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 Guide*

## 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	EPM Series	11730 (grey)	E9288 (blue)
E441X family	Yes	Yes	Yes	Yes
E9300 family	Yes	Yes <sup>1</sup>	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 Firmware	Hardware	E4418B/E4419B 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.

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 Series 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

A standard 12 months, return to Agilent warranty and service plan is included with each EPM and EPM-P Series power meter.

### Calibration<sup>1</sup>

Order 36 months of the appropriate calibration plan as 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 are not available in all countries.

## Documentation

- The EPM power meters are supplied with a printed copy of English-language *User's Guide* (Option ABA).
- The EPM-P power meters are supplied with a printed copy of *Installation Guide* which includes all languages, a printed copy of English-language *User's Guide* (Option ABA), and a CD-ROM which contains Agilent EPM-P analyzer software, *User's Guide and Programming Guide*, and the localized versions of *User's Guide*.

Documentation	EPM-P Series Power Meter	EPM Series Power Meter
English-language <i>Programming Guide</i>	E441xA-0BF	E441xB-0BF
<i>Service Guide</i>	E441xA-0B3	E441xB-915
Delete manual set	E441xA-0B0	E441xB-0B0
Add manual set (English), <i>User's Guide and Programming Guide</i>	E441xA-0BK	E441xB-916

Documentation	E4412/3A	E9300	E9320A
Add manual set	E4412/3A-0B1	E930xx-0B1	E932xA-0B1

## Localization Options

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

The following options provide a printed copy of 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 printed copy of localized *User's Guide* and a printed copy of English-language *Programming Guide*.

Language	EPM-P Series Power Meter	EPM Series Power Meter	E4412/3A Sensors	E9300 Sensors
German	E441xA-ABD	E441xA-ABD	E4412/3A-ABD	E930xx-ABD
Spanish	E441xA-ABE	E441xA-ABE	E4412/3A-ABE	E930xx-ABE
French	E441xA-ABF	E441xA-ABF	E4412/3A-ABF	E930xx-ABF
Japanese	E441xA-ABJ	E441xA-ABJ	E4412/3A-ABJ	E930xx-ABJ
Italian	E441xA-ABZ	E441xA-ABZ	E4412/3A-ABZ	E930xx-ABZ
Korean	Not available	Not available	Not available	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.

## Available Accessories

- 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 soft carry 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 the meter readings of 3, 10, 30, 100, and 300  $\mu$ W and 1, 3, 10, 30 and 100 mW are provided. Calibration uncertainty is  $\pm 0.25\%$  on all ranges.

## Literature References

- *EPM-P Series Power Meters and E9320 Sensors, Product Overview*, literature number 5980-1471E
- *EPM-P Series Power Meters and E9320 Sensors, Technical Specifications*, literature number 5980-1469E
- *EPM-P Series Single and Dual Channel Power Meters, Demo Guide*, literature number 5988-1605EN
- *EPM-P Series Power Meters, CD-ROM*, part number E4416-90032
- *Choosing the Right Power Meter and Sensor, Product Note*, literature number 5968-7150E
- *EPM Series Power Meter and E-Series Power Sensors, Technical Specifications*, literature number 5965-6382E
- *EPM Series Power Meter and E-Series Power Sensors, Brochure*, literature number 5965-6380E
- *Fundamentals of RF and Microwave Power Measurements, Application Note 64-1*, literature number 5965-6630E
- *4 Steps for better Power Measurements, Application Note 64-4*, literature number 5965-8167E
- *E-Series E9300 Power Sensors, Product Overview*, literature number 5968-4960E



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Malaysia	1 800 888 848
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Other European Countries:

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