

USB Smart Power Sensor

PWR-4GHS

50Ω -30 dBm to +20 dBm, 9 kHz to 4000 MHz

The Big Deal

- Low cost
- USB HID device compatible with 32/64 Bit operating systems
- Includes “Measurement Application” GUI (Graphical User Interface) software with an API-DLL com object
- High speed measurement capability



CASE STYLE: JL1504

Product Overview

The Mini-Circuits PWR-4GHS Smart Power Sensor is a pocket-sized, 4.89” x 1.74” x 0.95”, precision test USB HID device (no driver installation required) that turns a Windows® or Linux® PC into a power meter. All specifications provided in the data sheet apply to continuous wave (CW) signals. Each unit is shipped with our N-to-SMA adapter and a quick-locking USB cable for reliable connectivity. Native software and detailed user guides are available for download from <http://www.minicircuits.com/softwaredownload/pm.html> anywhere an internet connection is available, providing a full range of data analysis options.

Key Features

| Feature | Advantages |
|---|--|
| USB HID (Human Interface Device) | Plug-and-Play (no need to install driver for the device). |
| GUI Measurement Application Software built-in | Enables the user to perform measurements on RF components such as Couplers, Filters, Amplifiers etc. and displays numerical data and graphs. |
| 32/64 Bit operating systems | Compatible with Windows® and Linux® operating systems. |
| No calibration required before taking measurement | The PWR-4GHS does not require any reference signal for calibration. |

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USB Smart Power Sensor

PWR-4GHS

50Ω 9 kHz to 4000 MHz

Product Features

- Wide bandwidth, 9 kHz to 4000 MHz
- 50 dB Dynamic Range, -30 to +20 dBm
- Good VSWR, 1.1:1 typ.
- Fast measurement speed, 30 msec typ.
- Automatic frequency calibration & temperature compensation
- Multi-sensor capability (up to 24)
- Built in Application Measurement Software
- Remote operation via internet
- Effective, easy-to-use Windows® GUI
- Compatible with 32/64-bit Windows® or Linux® operating systems
- Supports a wide range of programming environments (See application note [AN-4-001](#) for details)
- CE Compliant



CASE STYLE: JL1504

| Model No. | Description |
|-----------------------------|-------------------------------|
| PWR-4GHS | USB smart Power Sensor |
| Included Accessories | |
| PWR-SEN-4GHS | Power Sensor Head |
| USB-CBL+ | Data cable (USB Type-A plug) |
| NF-SM50+ | N-Type (F) to SMA(M) Adapter |

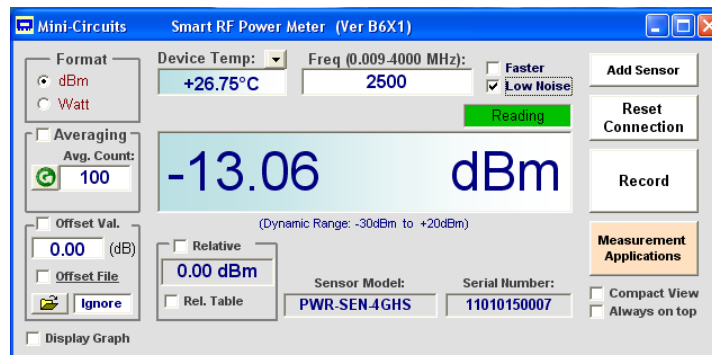
Typical Applications

- Turn almost any Windows or Linux PC into a Power Meter
- Pocket-sized portability for benchtop testing anywhere
- Remote location monitoring
- Automatic, scheduled data collection
- Evaluate high-power, multi-port devices with built-in virtual couplers/attenuators & other software tools

RoHS Compliant

See our web site for RoHS Compliance methodologies and qualifications

Mini-Circuits Power Meter Program for Smart USB Power Sensor



Electrical Specifications (CW) ¹, -30 dBm to +20 dBm, 9kHz to 4000 MHz

| Parameter | | Freq. Range (MHz) | Min. | Typ. | Max. | Units |
|--|------------------|-------------------|------|--------|--------|-------|
| Dynamic Range ² | | 0.009 - 4000 | -30 | - | +20 | dBm |
| VSWR | | 0.009 - 4000 | - | 1.1 | 1.4 | :1 |
| Uncertainty of Power Measurement @ 25°C | @ -30 to +5 dBm | 0.009 - 1000 | - | ± 0.05 | ± 0.35 | dB |
| | | 1000 - 4000 | - | ± 0.05 | ± 0.30 | dB |
| | @ +5 to +12 dBm | 0.009 - 1000 | - | ± 0.05 | ± 0.30 | dB |
| | | 1000 - 4000 | - | ± 0.05 | ± 0.25 | dB |
| | @ +12 to +20 dBm | 0.009 - 1000 | - | ± 0.05 | ± 0.30 | dB |
| | | 1000 - 4000 | - | ± 0.10 | ± 0.35 | dB |
| Uncertainty of Power Measurement @ 0°C to 50°C | @ -30 to +5 dBm | 0.009 - 1000 | - | ± 0.10 | - | dB |
| | | 1000 - 4000 | - | ± 0.10 | - | dB |
| | @ +5 to +12 dBm | 0.009 - 1000 | - | ± 0.10 | - | dB |
| | | 1000 - 4000 | - | ± 0.10 | - | dB |
| | @ +12 to +20 dBm | 0.009 - 1000 | - | ± 0.10 | - | dB |
| | | 1000 - 4000 | - | ± 0.10 | - | dB |
| Linearity @ 25°C | | 0.009 - 4000 | - | ± 1.5 | - | % |
| Measurement Resolution | | 0.009 - 4000 | 0.01 | - | - | dB |
| Averaging Range | | 0.009 - 4000 | 1 | - | 999 | - |
| Measurement Speed | @ Low Noise Mode | 0.009 - 4000 | - | 100 | - | msec |
| | @ Faster Mode | | - | 30 | - | |
| Current (via host USB) | | 0.009 - 4000 | - | 40 | 70 | mA |

Minimum System Requirements

| Parameter | Requirements |
|--------------------------|---|
| Interface | USB HID |
| Host operating system | Windows 32/64 Bit operating system: Windows 98®, Windows XP®, Windows Vista®, Windows 7®, Windows 8®, Windows 10® Linux® support: 32/64 Bit operating system |
| Hardware | Pentium® II or higher, RAM 256 Mb, USB port |
| Control cable (supplied) | Power sensor to be used with the supplied control cable only |

Absolute Maximum Ratings

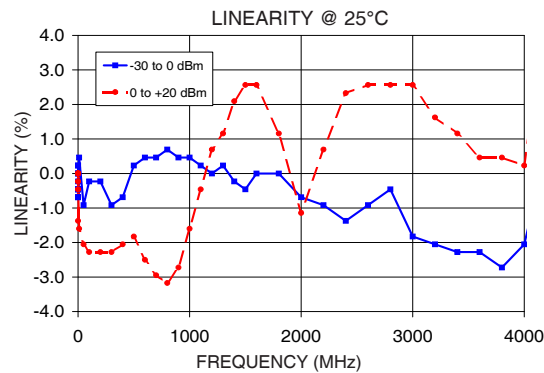
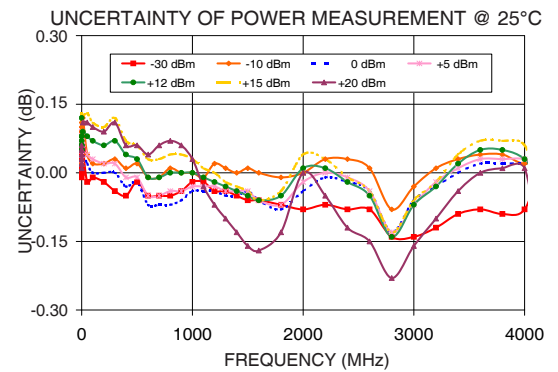
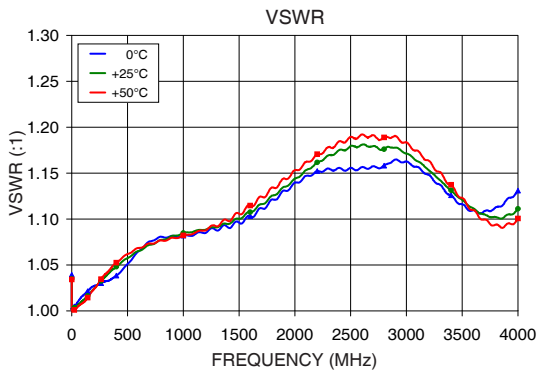
| Parameter | Ratings |
|-----------------------|---------------|
| Operating Temperature | 0°C to 50°C |
| Storage Temperature | -30°C to 70°C |
| DC Voltage at RF port | 4V |
| CW Power | +25dBm |

Permanent damage may occur if any of these limits are exceeded. Operating in the range between operating power limits and absolute maximum ratings for extended periods of time may result in reduced life and reliability.

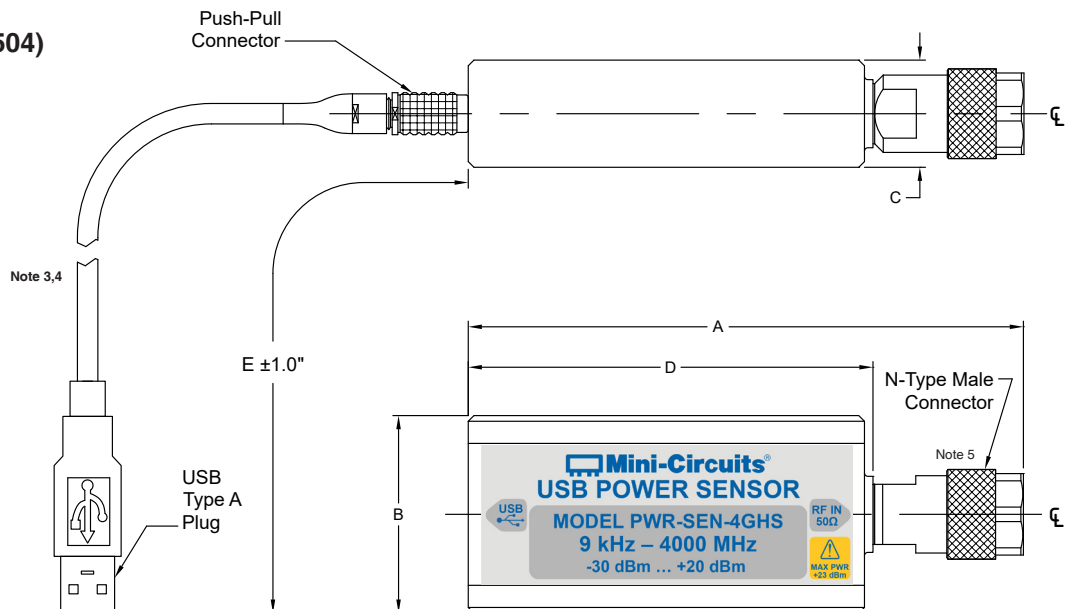
¹ All specifications apply to continuous wave (CW) signals.

² Maximum continuous safe operational power limit: +23 dBm. Performance is guaranteed up to +20 dBm.

Typical Performance Curves



Outline Drawing (JL1504)






Outline Dimensions (inch/mm)

| A | B | C | D | E | WT. GRAMS |
|-------|------|------|------|------|-----------|
| 4.89 | 1.74 | .95 | 3.50 | 81.9 | 250 |
| 124.2 | 44.2 | 24.1 | 88.9 | 2080 | |

- ³ Power sensor to be used with the supplied control cable only.
- ⁴ Length shown for USB-CBL+. USB-CBL-2+ length is :15.2 in / 385 mm
- ⁵ Maximum torque 8 in-lb (90 N-cm).

Ordering Information

| Model | Description | |
|---|------------------------|--|
| PWR-4GHS | USB Smart Power Sensor | |
| Included Accessories | Part No. | Description |
|  | PWR-4GHS | Power Sensor Head |
|  | USB-CBL+ ⁶ | 6.6 ft data cable with USB Type-A plug connector |
|  | NF-SM50+ | N-Type Female to SMA Male Adapter. |

⁶ Power sensor to be used with the supplied control cable only.

| Optional Accessories | Description |
|-------------------------|--|
| PWR-SEN-CD ⁷ | Software CD |
| USB-CBL+ (spare) | 6.6 ft data cable with USB Type-A plug connector |
| USB-CBL-2+ | 15 in data cable with USB Type-A plug connector |
| NF-SM50+ (spare) | N-Type Female to SMA Male Adapter |
| NF-SF50+ | N-Type Female to SMA Female Adapter |
| NF-BM50+ | N-Type Female to BNC Male Adapter |

⁷ To receive the CD at no extra cost, request when placing order. CD contents can be downloaded from Mini-Circuits website at <http://www.minicircuits.com/softwaredownload/pm.html>

| Calibration | Description | |
|----------------|---------------------|----------------------------|
| CALSN-PWR-4GHS | Calibration Service | Click Here |

Additional Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp