PowerMax USB/RS

Installation and Quick Start Guide
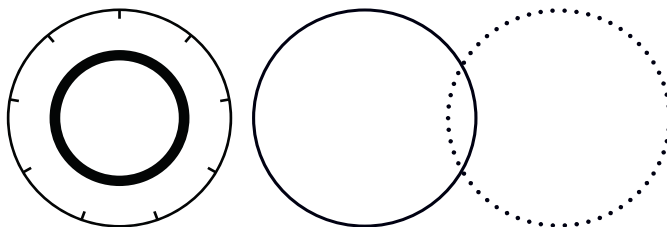
COHERENT

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Coherent, Inc.
27650 SW 95th Ave.
Wilsonville, OR 97070

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1.0 Safety Information

This section provides an introduction to safety information, including signal words and symbols that users must know before measurements are taken.

1.1 Signal Words and Symbols

This documentation contains sections in which particular hazards are defined or special attention is drawn to particular conditions. These sections are indicated with signal words in accordance with ANSI Z-535.6 and safety symbols (pictorial hazard alerts) in accordance with ANSI Z-535.3 and ISO 7010.

1.1.1 Signal Words

The following signal words are used in this documentation:

Signal Word	Description
WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates information considered important, but not hazard-related. "NOTICE" may also be used when there is a risk of property damage.

1.1.2 Symbols

The following signal words are always emphasized with a safety symbol that indicates a special hazard, regardless of the hazard level. The icons are intended to alert the operator, as described here:

Icon	Tells the operator About …
	Important information or instructions for operation and maintenance.
	Danger of exposure to hazardous visible and invisible laser radiation.
	Susceptible to Electrostatic Discharge (ESD).

1.2 Laser Safety

Laser light that is emitted may be in the infrared area of the electromagnetic spectrum and may not be visible to the human eye. Safety precautions listed here are to be read and followed by anyone working with or near a laser.

At all times, make sure that all personnel are protected from accidental or unnecessary exposure to laser radiation.

WARNING!

Direct eye contact with the output beam from a laser causes serious eye injury and possible blindness. Always avoid exposure to eye or skin from both DIRECT and SCATTERED radiation.

Because of its optical qualities, laser light brings safety hazards not associated with light from conventional light sources.

Avoid direct exposure to the laser light, and follow these control measures:

- Always wear appropriate laser safety eyewear for protection against the specific wavelengths and laser energy being generated.

- Never look directly into the laser light source or at scattered laser light from any reflective surface, even when wearing laser safety eyewear.

- Laser beams can easily cause flesh burns or ignite clothing.

- Avoid wearing watches, jewelry, or other objects that may reflect or scatter the laser beam.

- Stop the laser beam with a light-absorbing material, and use energy-absorbing targets for beam blocking.

1.3 Electrical Safety

The PowerMax-USB/RS sensor does not have dangerous voltages.

NOTICE
Do not disassemble the enclosure. There are no user-serviceable parts inside.

All units should be operated as assembled. The warranty is canceled if the enclosure is disassembled. See 'Service and Support' on page 21 for assistance.

1.4 China RoHS Label

The China RoHS label is as follows for the PowerMax-USB/RS sensor:

部件名称 Part Name	有害物质 Hazardous Substances						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	
印刷电路板组装 PCB Assembly	X	O	O	O	O	O	
硬件 Hardware	X	O	O	O	O	O	
电缆装配 Cable Assembly	X	O	O	O	O	O	
本表格依据SJ/T 11364的规定编制							
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。							

2.0 Before Work is Started

Coherent product information is now available in one easily accessible location on the Coherent website. Filter the search by product type, document category, or both.

2.1 Downloads

- Software
- Drawing Files
- Quick Start Guides
- User Manuals
- Datasheets
- Application Notes

2.2 Product Information

Go to the Resources section on the Coherent website:

> https://www.coherent.com/resources

- For the User Manual, search for 'PowerMax USB' (or the title: *PowerMax-USB/RS Sensor System User Manual)* P/N 1169780.

- For software used with PowerMax sensors, search for 'Coherent Meter Connection' or 'PowerMax PC' software.

For more information about the range of sensor products offered by Coherent, go to:

https://www.coherent.com/laser-power-energy-measurement

3.0 Install Software

This section describes how to start the installation of the **Coherent Meter Connection** software and any drivers necessary to operate a PowerMax-USB/RS sensor.

Coherent Meter Connection works well in a Windows 10 environment; however, it does not yet support ratiometric operation. For that operation, it is recommended to use a prior version of the software, **PowerMax PC**. Coherent Meter Connection is recommended for all other applications.

NOTICE
Complete installation of all software *before* the physical connection of a PowerMax-USB sensor to the computer.

3.1 Software System Requirements

The system requirements for the Coherent Meter Connection software are:

- Windows 10, 32- or 64-bit systems
- 2.5 GHz processor or faster
- 4 GB of RAM or higher
- 100 MB of available hard disk space
- USB 2.0 high-speed port

- Microsoft .NET Framework 4.0 or higher. If no version (or an older version) is found on the workstation, then the installation program installs a version of Microsoft .NET Framework.

3.2 Software Installation

Before the software is installed, first make sure that any administrative privileges are given that are required for installation.

NOTICE
When installing software, check whether your organization's IT department has security policies or controls in place that can cause the software installation to be incomplete.

1.   Go to the Coherent website to locate the software and drivers needed to operate the PowerMax-USB/RS sensor:

     https://www.coherent.com/resources

     Software previously shipped with the product can be used to install software. However, more current software may be available and is highly recommended.

NOTICE
It is recommended to have administrator privileges to install and run software.

2. Search for the following installation files (where 'x' is the latest version) and then click **Download**:

- `Coherent-Meter-Connection-v1.3.x.x-Release-Setup.exe`

    (and/or)

- `PowerMax_PC_v2.x.x.x_Setup.exe`

    If any LabView components are to be installed, also download the following files:

- PowerMax-USB-RS-LabVIEW-Instrument-Driver

- PowerMax-Pro-LabVIEW-Examples

3. Save the installation files to the computer.

4. Install the software. Refer to *Coherent Meter Connection User Manual* (P/N 1343658) available at: www.coherent.com/resources. If PowerMax PC is to be used, refer to instructions in the *PowerMax-USB/RS Sensor System User Manual* (P/N 1169780)

NOTICE
To avoid instability of the application, it is strongly recommended to first disable computer hibernation or suspend mode before installing the software.

For instructions about communicating with the sensor directly with host commands, see the 'Host Interface' section of the *PowerMax-USB/RS Sensor System User Manual* (P/N 1169780). Download from the Coherent website, or search for 'PowerMax USB' to find the document:

https://www.coherent.com/resources.

4.0 Set Up Hardware

This section describes how to set up a PowerMax-USB/RS sensor with a personal computer:

- PowerMax USB connection to a PC with Coherent Meter Connection.

- PowerMax-RS RS-232 connectivity.

WARNING!
Follow all laser safety procedures. Confirm that the laser is set to OFF or is shuttered *before* the sensor is connected.

For information about how to take measurements with the software, refer to the following, which can be downloaded from the Coherent website:

https://www.coherent.com/resources

Search for 'PowerMax USB' or these User Manuals:

- *PowerMax-USB/RS Sensor System User Manual* (P/N 1169780)

- *Coherent Meter Connection User Manual* (P/N 1343658)

4.1 Set Up a PowerMax-USB Sensor

This section describes how to set up and connect a PowerMax-USB thermopile sensor and begin to take measurements with Coherent Meter Connection (CMC) software. For procedures to operate with PowerMax PC, refer to the *PowerMax-USB/RS Sensor System User Manual,* P/N 1169780.

1.   First install the software. (See 'Install Software' on page 10.)

2.   Connect the USB cable from the PowerMax-USB sensor to a USB 2.0 port on a computer.


A power supply is not required for a USB sensor. When a PowerMax-USB sensor is used, power is supplied through a USB connection.

Note that if a PC shares the USB bus and voltage over many devices, a powered USB hub can be used on the PC with the sensor cable to the hub. This provides an uninterrupted power and current source for the operation of the sensor, which may be more reliable.

3.   Make sure that the blue LEDs on the USB connector are on and slowly increase and decrease in intensity. This means that the sensor is working and the driver is correctly loaded. Start the CMC software.

4.   Click **Open Meter** in the main drop-down menu.

5.   From the dialog box, select the COM port to which the PowerMax-USB sensor is attached. The COM port number is automatically determined by the computer. (If needed, check in Device Manager for available COM ports.)
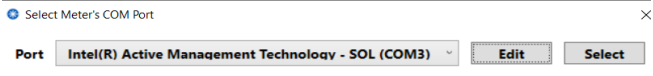
6.   Put the sensor into the beam path.

WARNING
Make sure the laser is set to OFF or is shuttered until the sensor is set to zero.

7. Click the **Zero** button to zero out any offset in the sensor.
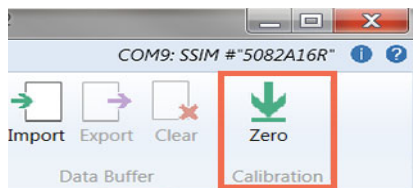
8. Click the **Star**t button, and then set the laser to ON.
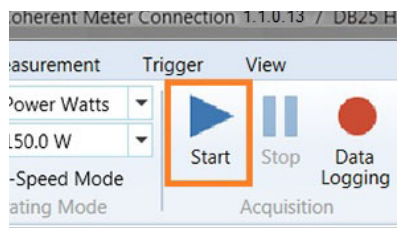
9. Power measurements can now be taken.

4.2 Set Up a PowerMax-RS Sensor

This section describes how to set up and connect a PowerMax-RS thermopile sensor and begin to take measurements with use of the Coherent Meter Connection (CMC) software. For procedures with use of PowerMax PC software, refer to *PowerMax-USB/RS Sensor System User Manual,* P/N 1169780.

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WARNING!
Make sure that the laser is set to OFF or is shuttered before this tutorial is started.

1.   First, install the software. (See 'Install Software' on page 10.)

2.   Attach the PowerMax-RS sensor cable into an available RS-232 COM port on the computer.
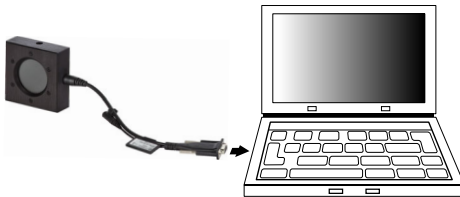
When a PowerMax RS-232 meterless sensor is used, power input is supplied by a +5VDC input. The separate power supply (P/N 1105557) can be ordered from Coherent as an optional accessory.

3. Attach the +5V DC power supply cable into the sensor power cable. Attach the power supply to a wall electrical outlet. Use only the correct 5V power supply.

Sensor power cable

Power supply
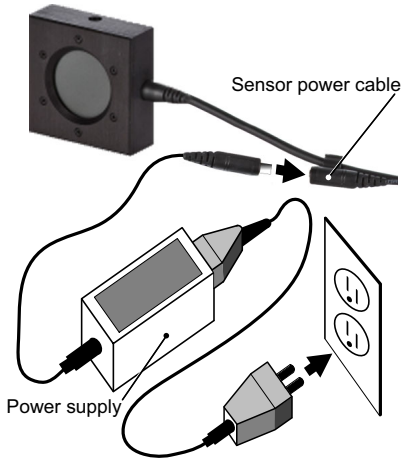
4. Make sure that the blue LEDs on the RS connector are on and slowly increasing and decreasing in intensity (which means the sensor is operating).

Blue LEDs
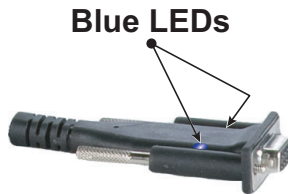
5. Start the Coherent Meter Connection software.

6.   Click Open Meter in the main drop-down menu.
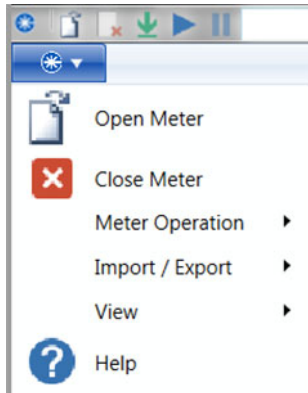
7.   From the dialog box, select the COM port to which the PowerMax-RS sensor is attached. The COM port number is automatically determined by the computer. (If needed, check in Device Manager for available COM ports.)

8.   Click **OK**. When the COM port is selected, the software scans that port and identifies the connected sensor.

Note that as long as the sensor is correctly connected powered up and selected, the serial number and port displays in the top menu bar in the software.

9.   Put the sensor into the beam path.

CAUTION!
**Make sure that the laser is set to OFF or is shut-
tered until the sensor is set to zero.**

10.   Click the **Zero Sensor** button to zero out any offset in
the sensor.
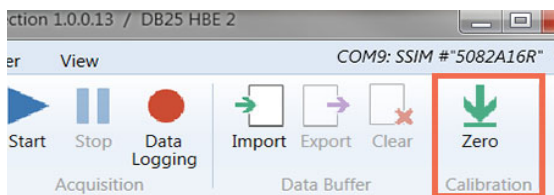
11.   Click the **Star**t button to start data collection.

12.   Set the laser to ON.

13.   Power measurements can now be made.

4.2.1 For More Information

For information about features and functions of the software,
see the appropriate User Manual (download from the
Coherent website): https://www.coherent.com/resources

Search for 'PowerMax USB' or these user manuals:

- *PowerMax-USB/RS Sensor System User Manual*
  (P/N 1169780)

- *Coherent Meter Connection User Manual*
  (P/N 1343658)

- *PowerMax-USB/RS Software Installation and Quick
  Start Guide* (P/N 1169931)

5.0 Service and Support

This section provides information about how to contact Product Support, how to obtain service, and product shipping instructions.

5.1 Contact Product Support

Coherent provides telephone and web-based technical assistance as a service to its customers and assumes no liability thereby for any injury or damage that may occur during such services.

For general Technical Support, contact your local Coherent Service Representative as described on the following page, or contact Coherent as follows:

- By phone: 1-800-367-7890 or 1-(408)-767-4042

- By e-mail: Customer.Support@Coherent.com
  or e-mail directly to Wilsonville:
  LSMservice@coherent.com

- To view a list of contact names, telephone numbers, and addresses worldwide, visit: www.Coherent.com

Telephone coverage is available Monday through Friday (except during U.S. holidays). Inquiries received outside normal office hours are tracked by our automatic answering system and promptly returned the next business day.

CAUTION!
Under no circumstances do these support services affect the terms of any warranty agreement between Coherent and the buyer.

Please be prepared to provide the following information:

- Model or part number of the unit
- Serial number of the unit
- A description of the problem
- Any corrective steps that may have been attempted

5.1.1 International Support

For users located in Europe, contact Technical Support directly, as follows:

- Germany: +49–6071–968–0
- Japan: +813–5635–8680

5.2 Calibration

Coherent laser power and energy meters are precision instruments, that can supply very accurate measurements. They can provide many years of useful service. To maintain

this high level of performance, Coherent recommends that meters and sensors are serviced and re-calibrated once a year. Any necessary service must be done at a Coherent facility; see 'Product Shipment Instructions' on page 25.

Calibration of a Coherent power and energy laser measurement product includes:

- Calibration to original uncertainty levels

- Minor repairs (see more information, below)

- Extended 12 month warranty, on eligible products

- Fast calibration turn around time.

5.2.1 Calibration Facilities and Capabilities

As the largest laser manufacturer in the world, Coherent has built state-of-the-art calibration facilities. These facilities contain the widest possible range of light sources from 193 nm to 10,600 nm, with powers in the range of nanowatts to kilowatts.

Coherent Wilsonville, Oregon, and its satellite sites, are fully accredited to ISO/IEC 17025:2017 by ANAB - The ANSI National Accreditation Board. ANAB is a signatory of the International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC) multilateral recognition arrangements. ANAB has signed the MRAs of the InterAmerican Accreditation Cooperation (IAAC) and the Asia Pacific Accreditation Cooperation (APAC). Accreditation to ISO/IEC 17025 is the formal recognition that a calibration laboratory is technically competent to carry out specific calibrations.

5.2.2 Optical Calibration

Optical calibration is a core competency at Coherent, and we strive to continually improve our methods, precision, and repeatability.

Additionally, most of the calibrations are performed with highly automated systems, thus reducing the possibility of human error to nearly zero.

Strict quality inspections during many stages of calibration and testing assure a precise and accurate instrument that is NIST traceable and CE-marked. The benefit is that instruments calibrated by Coherent consistently perform as expected under their actual use conditions.

5.3 Obtain Service

To obtain service under this warranty, customers must notify the company of the defect before the expiration of the warranty period. Customers must make suitable arrangements for the performance of service.

The company shall, in its sole discretion, determine whether to perform warranty service at the customer's facility, at the company's facility, or at an authorized repair station.

If customer is directed by the company to ship the product to the company or a repair station,

Customer shall:

- Package the product (to protect from damage during shipping) as instructed in 'Product Shipment Instructions'.

- Ship it to the address given by the Company, with shipping prepaid, back to Coherent in conjunction with recalibration and recertification.

- Coherent shall pay the cost of shipping the Product back to the Customer in conjunction with product failures within the first twelve (12) months from time of sale or during an extended 12-month warranty period.

5.4 Product Shipment Instructions

A Returned Material Authorization (RMA) number assigned by the Company must be included on the outside of all shipping packages and containers. Items returned without an RMA number are subject to return to the sender.

To prepare a product for shipping to Coherent:

1. Contact Coherent Customer Service (see 'Contact Product Support' on page 21 in) for a Return Material Authorization number.

2. Attach a tag to the product that includes the name and address of the owner, the person to contact, the serial number, and the RMA number you received from Coherent Customer Service. Pack this tag inside the box.

3. Wrap the product with polyethylene sheeting or equivalent material.

4. If the original packing materials and carton are available, use them to pack the product.

5. If the original packing material and carton are not available, do the following:

- Locate a corrugated cardboard shipping carton with inside dimensions at least 6 in. (15 cm) taller, wider, and deeper than the product.The shipping carton must be constructed of cardboard with a minimum 375 lbs. (170 kg) test strength.

- Cushion the instrument unit in the shipping carton with packing material or urethane foam on all sides between the carton and the instrument or probe sensor. Allow 3 in. (7.5 cm) clearance on all sides, top, and bottom.

6. Make a seal on the shipping carton with shipping tape or an industrial stapler.

7. Add the RMA number received from Coherent Customer Service to the shipping label on the outside of the box.
Ship the product to one of the following repair and calibration facilities:

USA
Coherent Laser Measurement and Control Service Center
Attn: (your RMA number)
27650 SW 95th Avenue
Wilsonville, OR 97070

Europe
Coherent Shared Services B.V.
Dieselstr. 5 b
D-64807 Dieburg
Germany

Asia
Coherent, Inc. Japan
Atsugi Technical Center
Toda 1042-4
Atsugi, Kanagawa Prefecture
243-0023, Japan

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INNOVATIONS THAT RESONATE

部件名称 Part Name	有害物质 Hazardous Substances						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	
印刷电路板组装 PCB Assembly	X	O	O	O	O	O	
硬件 Hardware	X	O	O	O	O	O	
电缆装配 Cable Assembly	X	O	O	O	O	O	
本表格依据SJ/T 11364的规定编制							
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。							

Download software and manuals at https://www.coherent.com/resources:

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