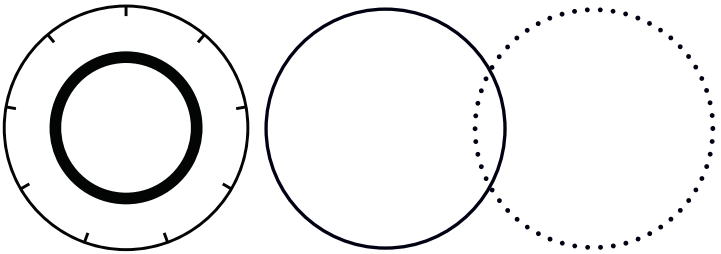
PM10K+

Quick Start Guide



INNOVATIONS THAT RESONATE

COHERENT

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Table of Contents

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 particular hazards defined or special attention is drawn to particular conditions. This is 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.

The following signal words designate the degree or level of hazard when there is risk of injury:

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 the risk of property damage.

1.2 Laser and Electrical Safety

At all times, make sure that all personnel are protected from accidental or unnecessary exposure to laser radiation when the sensor system is used with a laser. Refer to laser safety precautions provided with any laser systems used with the sensor.

The PM10K+ 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.

2.0 Before Work Is Started

Coherent product information includes software downloads, documentation, data sheets, application notes and more is available to easily access location on the Coherent website at:
https://www.coherent.com/resources

- For the manual, do a search for 'PowerMax PM10K+' or the title: *PM10K+ Operator's Manual* (P/N 2303642)
- For software used with PowerMax sensors, do a search for 'Coherent Meter Connection'

3.0 Set Up Hardware

This section shows how to set up a PM10K+ and to connect to a personal computer.

The sensor can be set up with:

- an adjustable supplied dovetail rail mount
- customer-supplied mount posts on the metric and imperial thread holes
- directly onto an optical work surface/table

CAUTION!
Do NOT touch the sensor surface when the unit is handled. Contamination can cause damage and incorrect measurements.

3.1 Unpack the PM10K+ Sensor

1. Remove the top layer of foam and accessories and then remove the sensor. Hold the attached handle and lift it out of the box. The sensor is heavy and has a removable handle used for handling.

Figure 1. Remove by Shipment and Stow Handle

2. Put all of the components on a clean surface.

NOTICE
The contents of the shipping box change by the model that is ordered.

3. Set the sensor in place with access to the handle.

3.2 Set Up With Dovetail Mount

Coherent recommends that users use the supplied dovetail rail mount accessory. It is easier to move the sensor in one axis to help put the beam in the center, versus a fixed mount with posts attached directly to the sensor.

To install a mount base to the dove-tail rails, do the following:

CAUTION!
The protective cover for the absorber surface must be removed when the sensor is used.

1. Remove the plastic protective cover from the sensor.

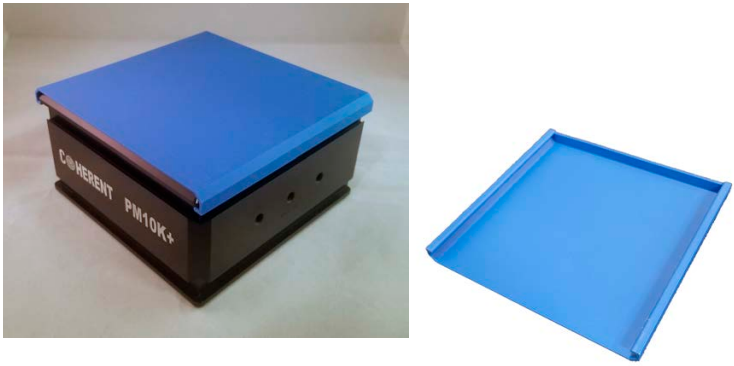

Figure 2. PM10L+ with Protective Cover Plate

2. Keep the protective cover plate. It is necessary to have when the unit is transported or shipped, to prevent damage to the absorber surface.
3. Find the rail mount plate accessory. Refer to the Accessories section in the *PM10K+ Operator's Manual*. Refer to Figure 3.

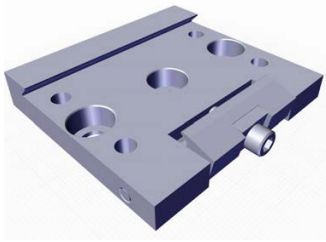

Figure 3. Rail Mount Accessory

4. If necessary, install mount posts onto the rail mount plate.

   Customer-supplied posts can now be attached to the dovetail mount, if necessary. The mount plate can be loosened to move the sensor back and forth during beam alignment, and then attached by tightening the screw when in the right location.

   Coherent recommends that when posts are used, that minimum two are set up, to prevent unwanted turns when a single post is used. Due to the variety

of post sizes and lengths necessary for different setups, Coherent does not supply mount posts with the PM10K+.

Refer to the example of the dovetail mount attached to posts in Figure 4.

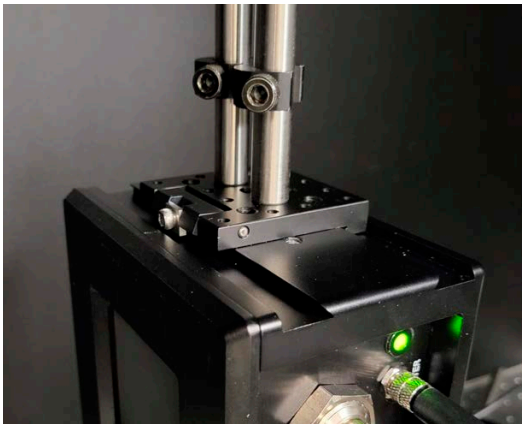

Figure 4. Example Dove-tail Mount with Post Setup

5. Put the rail mount plate onto the dovetail rail on the unit. Refer to Figure 6.

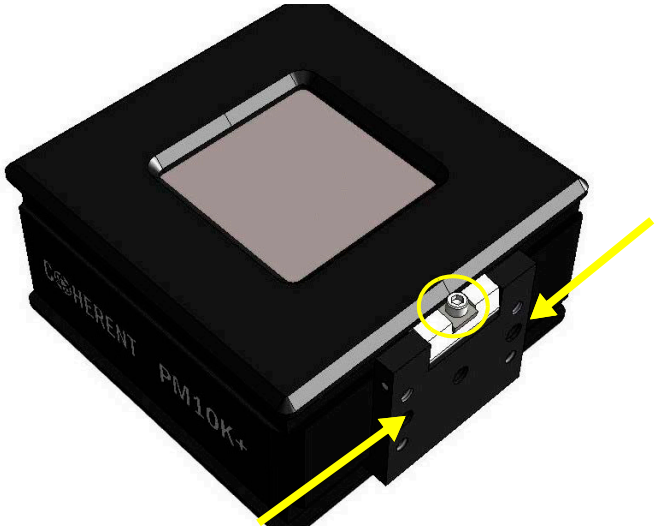

Figure 5. Move Mount Plate onto Dove-tail Rail

6. Tighten the lock screw on the mount base, shown with a circle.

3.3 Set Up with Posts in Mount Holes (Optional)

1. Note the location of the mount holes with threads on either side of the power sensor. One side has M6 x 1.0 mount holes, the other side has 1/4-in. x20 holes. Refer to the example in Figure 6.

Figure 6. Threaded 1/4 - 20 Mount Holes

See Figure 7 for an example of a recommended post mount setup.

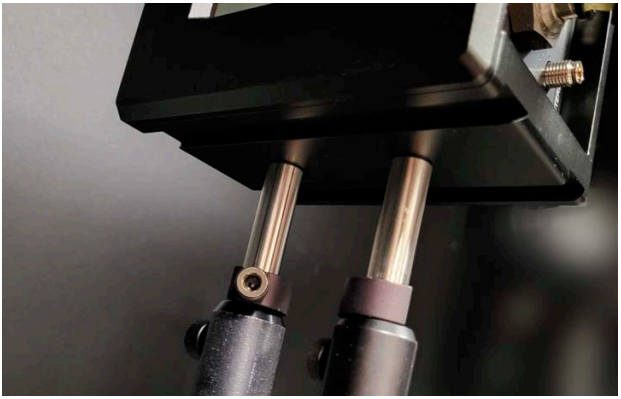

Figure 7. Direct Post Mount Setup Example

3.4 Set up Water Supply System

CAUTION!
Water flow must always be within the correct flow rate, stability and temperature specifications. If not, incorrect measurements can occur.

3.4.1 Required Hardware and Water Supply

The water must flow in the direction from the inlet to the outlet in the sensor system, at a nominal flow rate of 8 liters per minute and a minimum of 6 liters per minute and between 10 to 25 deg C. For full water supply/coolant requirements refer to the water supply requirements in the *PM10K+ Operator's Manual*.

Water hoses are not included with the PM10K+ Sensor System. Customer-supplied hoses can be attached directly to the push-to-connect fittings on the sensor. Tubes with size that can attach to the push to connect fittings on the sensor system must be used.

The water inlet and outlet are 10mm outer diameter.

Figure 8. Example Water Tubes

It is recommended to use the accessories described in the Optional Accessories section of the *PM10K+ Operator's Manual*.

3.4.2 Install Water Lines

CAUTION!
It is very important to prevent contamination on the sensor element. Do not touch the sensor element. It can deposit natural oils from your fingertips onto the absorber surface. Do not use solvents to clean the surface.

It is recommended that water hoses are given labels at each end to identify 'hot' or 'cold'. This helps make sure that connections are made.

To set up water system for the PM10K+ Sensor System:

CAUTION!
Reversal of the inlet and outlet water connections will cause incorrect measurements.

1. Collect the necessary tools and parts, including water hoses of sufficient length to reach the cooling system or chiller. Use water hoses that support the specifications shown in the *PM10K+ Operator's Manual*.
2. If installed, remove the protective caps to the water inlet and outlets. Push the outer ring of the inlet in to release each cap, and then remove the cap. Refer to Figure 9.

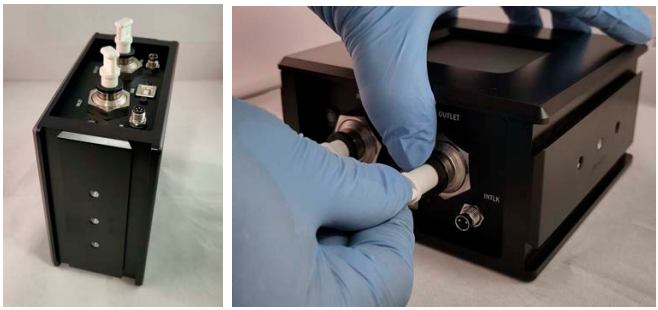

Figure 9. Remove Protective Caps

The end of the hose (or step-down fitting, if used) for water that comes from the chiller, goes into the sensor fitting with label *INLET*. The water fitting for the line to return water to the chiller is with label OUTLET. Refer to Figure 10.

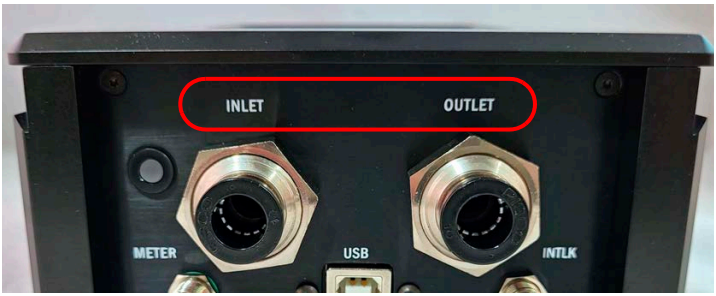

Figure 10. Water Inlet and Outlet Fitting Labels

3. If standard 10mm hoses are used, attach the water hoses to the correct INLET and OUTLET push-to-connect fittings on the PM10K+ sensor, shown in Figure 11.

Figure 11. Attach Water Hoses Directly to Fittings on Sensor

4. If 3/8-in. water hoses are used, attach the supplied 3/8-in.-to-10mm adapter fittings on the hoses.

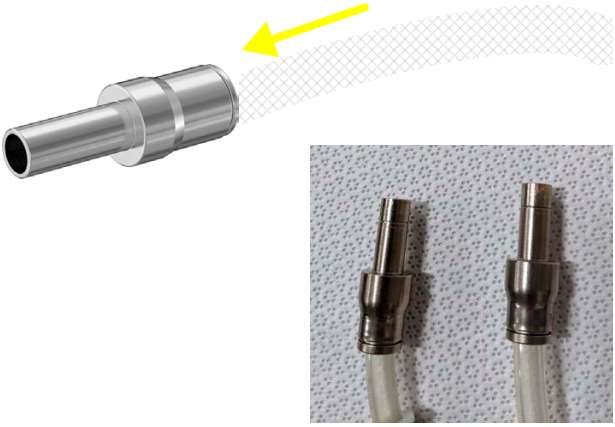

Figure 12. Install Water Hoses onto 3/8-in Adapters

5. Then install the hoses, with the adapter fittings to the correct INLET and OUTLET connectors. Refer to Figure 13.

Figure 13. Water Hoses With Step-down Fittings

3.5 Connect Communications Interfaces

For meterless setups, a USB or RS-232 cable is used to connect to a PC workstation with measurement software, depending on the configuration. A cable with a DB25 connector on one end can be connected to a meter for a metered setup (USB model).

3.5.1 Connect Sensor to a PC with USB

A supplied standard USB cable is used to connect the sensor system and PC.

USB interface gives the highest performance in when compared with data sent through DB25 to a meter because of signal type and dynamic range variances. It also allows for use of the speed-up function.

1. Attach the type B end of the USB cable to the port labeled ‘USB’ on the sensor system. Refer to Figure 14.

Figure 14. PM10K+ Sensor System USB Connector - USB Model

2. Attach the other end of the USB cable to a USB port on the PC.

Figure 15. Attach USB Cable to Sensor and PC

3.5.2 Connect Sensor to PC with RS-232

A standard RS-232 cable is used to attach the sensor to a workstation computer.

1. Attach the RS-232 cable to the sensor at the connector with label RS232.

Figure 16. Sensor System RS-232 Port

2. Attach the other end of the cable to the correct RS-232 connector on the workstation computer.

3.5.3 Connect Sensor to a Meter

For USB-configured systems with a metered setup, do as follows:

1. Find the 2m DB25 analog cable (P/N 2311500). Refer to Figure 17.

Figure 17. DB25 Cable for Meter Connection

2. Make sure that the serial number on the cable is the same as the serial number on the PM10K+ sensor. Each cable is calibrated to the sensor it is shipped with.
3. Attach the small barrel-end of the DB-25 cable to the METER input on the PM10K+ Sensor System sensor. Refer to Figure 18.

Figure 18. Meter Cable Connector - USB Model

4. Attach the DB-25 connector from the PM10K+ sensor to a meter, as shown in the example in Figure 19.

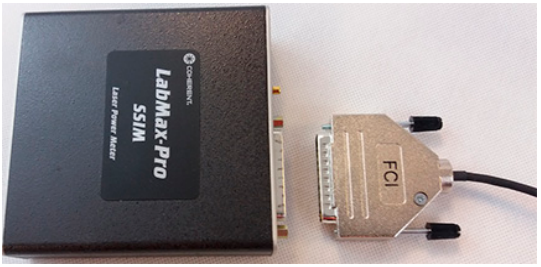

Figure 19. Connect Sensor to Meter

3.6 Provide Power

3.6.1 Supply Power - USB Sensors

For the systems configured with USB, there is NO more power setup necessary other than to make sure that the supplied USB cable or the meter cable is installed correctly. Refer to Figure 14

3.6.2 Supply Power - RS-232 Sensors

The meterless RS-232 sensor systems must have an external power supply.

To connect the power supply:

1. Attach the connector from the supplied 5V power supply to the 5-24V input on the interface panel on the sensor. Refer to Figure 20.

Figure 20. PM10K+ Sensor System Power Connector - RS-232 Model

2. Connect the power supply plug is to a wall outlet.

3.7 Set up Protective Interlock

For function, description and specifications about the supported customer-supplied cable interface for the interlock, refer to the PM10K+ Operator's Manual (PN 2303642).

To set up the safety interlock with the sensor:

1. Find the interlock cable and attach it to the connector with label INTLK on the sensor. Refer to Figure 21

.

Figure 21. PM10K+ Sensor System Interlock Connector - RS-232 Model

2. Attach the other end of the cable to the laser interlock circuit.

4.0 Software

Coherent Meter Connection software operates correctly in a Windows 10 environment.

NOTICE

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

4.1 Install Software

Refer to *PM10K+ Operator's Manual* (P/N 2303642) for system requirements for the software and installation instructions.

Before the software is installed, first make sure that administrative privileges are in given that can be necessary for installation.

1. Go to the Coherent website to find the software and drivers necessary to operate the PM10K+:
   https://www.coherent.com/resources
2. Search for and download these installation files (, where 'x' is the latest version):

   `Coherent-Meter-Connection-v1.3.x.x-Release-Setup.exe`
3. Save the installation files to the computer.

NOTICE

To prevent instability of the software, it is strongly recommended to first disable computer hibernation or suspend mode before the software is installed.

4. Start the installation and follow the prompts.

Figure 22. Example Coherent Meter Connection Splash Screen

4.2 Use Host Commands

For instructions about communication with the sensor directly with host commands, refer to the *PM10K+ Operator's Manual* (P/N 2303642).

5.0 Service and Support

This section gives information about how to contact Customer Support, how to get service, and product shipping information.

5.1 Contact Support

Coherent gives telephone and web-based technical aid as a service to its customers. Coherent assumes no liability thereby for injuries or damage that can occur contemporaneous with such services.

For general Technical Support, contact your local Coherent Service Representative, or contact Coherent as follows:

- By phone: 1(800) 343-4912 or 1-503-454-5700
- By e-mail directly: LSMservice@coherent.com
  or e-mail: Customer.Support@Coherent.com

- To see a list of contact names, phone numbers, and addresses worldwide, visit the Coherent website: www.Coherent.com

Telephone support is available Monday through Friday (but not during U.S. holidays). For users not in of North America, contact Technical Support directly, as follows:

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

CAUTION!

These support services DO NOT affect the terms of a warranty agreement between Coherent and the buyer.

5.2 Calibration

To maintain this high level of performance, Coherent recommends that meters and sensors are given service and re-calibrated one time a year. Any necessary service must be done at a Coherent facility; see 'Get Service' on page 22.

5.3 Get Service

To get service under warranty, Customer must tell the Company of the defect before the expiration of the warranty period and prepare for the performance of service.

The Company will give direction whether to do warranty service at the Customer's facility, the Company's facility, or an approved repair facility.

If Customer is directed by the Company to ship the product to the Company or a repair facility with a Company-provided RMA number.

- Pack and 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 in less than the first twelve(12) months of time of sale or during an extended 12-month warranty period. Refer to the *PM10K+ Operator's Manual* (P/N 2303642) for instructions on how to package and ship the product to Coherent.

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部件名称 Part Name	产品中有害物质的名称及含量 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 Printed Circuit Board Assembly	X	O	O	O	O	O
电缆装配 Cable Assembly	X	O	O	O	O	O
硬件 Hardware	X	O	O	O	O	O
电源 Power Supply	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

2303643 AA

PM10K+ Quick Start Guide

Part No. 2303643, Rev. AA