PM160, PM160T, PM160T-HP

USB and Bluetooth Optical Power Meter

User Guide



Table of Contents

Chapter 1 General Information 1
1.1 Ordering Codes and Accessories 2
Chapter 2 First Steps 3
2.1 Parts List 3
2.2 Requirements 3
Chapter 3 Operating Elements 4
3.1 PM160 Operating Elements 4
3.2 PM160T Operating Elements 5
3.3 PM160T-HP Operating Elements 6
3.4 Rear View PM160x 7
Chapter 4 Operating Instructions 8
4.1 Local Operation 8
4.2 Remote Operation (Windows) 12
4.3 Remote Operation (iOS) 13
4.4 Remote Operation (Android) 14
4.5 Firmware Updates 14
Chapter 5 Appendix 15
5.1 Technical Data PM160 15
5.2 Technical Data PM160T, PM160T-HP 16
5.3 Energy Saving 17
5.4 Dimensions 18
5.5 Safety 19
5.6 Certifications and Compliances 21
5.7 Return of Devices 22
5.8 Warranty 22
5.9 Copyright and Exclusion of Liability 22
5.10 Thorlabs 'End of Life' Policy (WEEE) 22
5.11 Thorlabs Worldwide Contacts 23

Chapter 1 General Information

The Thorlabs PM160x Power Meters consist of an ultra-slim sensor connected to a portable power meter with a built-in graphical organic LED (OLED) display. The ultra-slim sensor end of the device connects to the handle with a joint mechanism that allows 270° of rotation. The PM160x can be run as a handheld device or remotely using the Bluetooth® or USB connections.

Settings can be adjusted either directly on the PM160x or remotely using the OPM software on a connected PC, tablet, or laptop via USB or Bluetooth. This flexibility simplifies integration of the instrument into automated test and measurement setups.

The OPM software, including the instrument drivers, is available for download from the Thorlabs website. Please refer to the user guide of the OPM software for detailed function description.

The PM160x is available in three versions with different sensors:

- **PM160**
  The silicon photodiode detects laser light or other monochromatic or near monochromatic light of optical power between 10 nW and 200 mW, and within the wavelength range of 400 to 1100 nm.
- **PM160T**
  The thermal sensor detects light with optical power between 100 µW and 2 W, within the wavelength range of 0.19 to 10.6 µm.
- **PM160T-HP**
  The high-power thermal sensor measures light with optical power between 10 mW and 70 W, and within the wavelength range of 190 nm to 20 µm.

PM160T and PM160T-HP are also capable of measuring power of broadband light sources due to their integrated thermal sensors and flat absorption curve. They are well suited e.g. for LED, SLED and supercontinuum sources.

Attention

Please find all safety information and warnings concerning this product in the chapter Safety in the Appendix.

1.1 Ordering Codes and Accessories

PM160 Handheld Power Meter with attached Silicon Photodiode; Optical Power Range: 10 nW - 200 mW;
Wavelength Range: 400 to 1100 nm.

PM160T Handheld Power Meter with attached Thermal Sensor; Optical Power Range:100 µW - 2 W;
Wavelength Range: 0.19 to 10.6 µm

PM160T-HP Handheld Power Meter with attached High-Power Thermal Sensor; Optical Power Range: 10 mW - 70 W;
Wavelength Range: 190 nm to 20 µm.

Accessories

For fiber coupled applications, we recommend to use the following connectors fiber adapters:

Fiber Connector	Adapter for Internal SM05 Thread (PM160)	Adapter for Internal SM1 Thread (PM160T)
FC	PM20-FC	S120-FC
SC	PM20-SC	S120-SC
LC	PM20-LC	S120-LC
SMA	PM20-SMA	S120-SMA
ST	PM20-ST	S120-ST

Please visit the Thorlabs website for various accessories like fiber adapters, posts and post-holders, data sheets and further information.

Chapter 2 First Steps

Inspect the shipping container for damage.

If the shipping container seems to be damaged, keep it until you have inspected the contents for completeness and tested the PM160x mechanically and electrically.

Verify that you have received the following items within the package:

2.1 Parts List

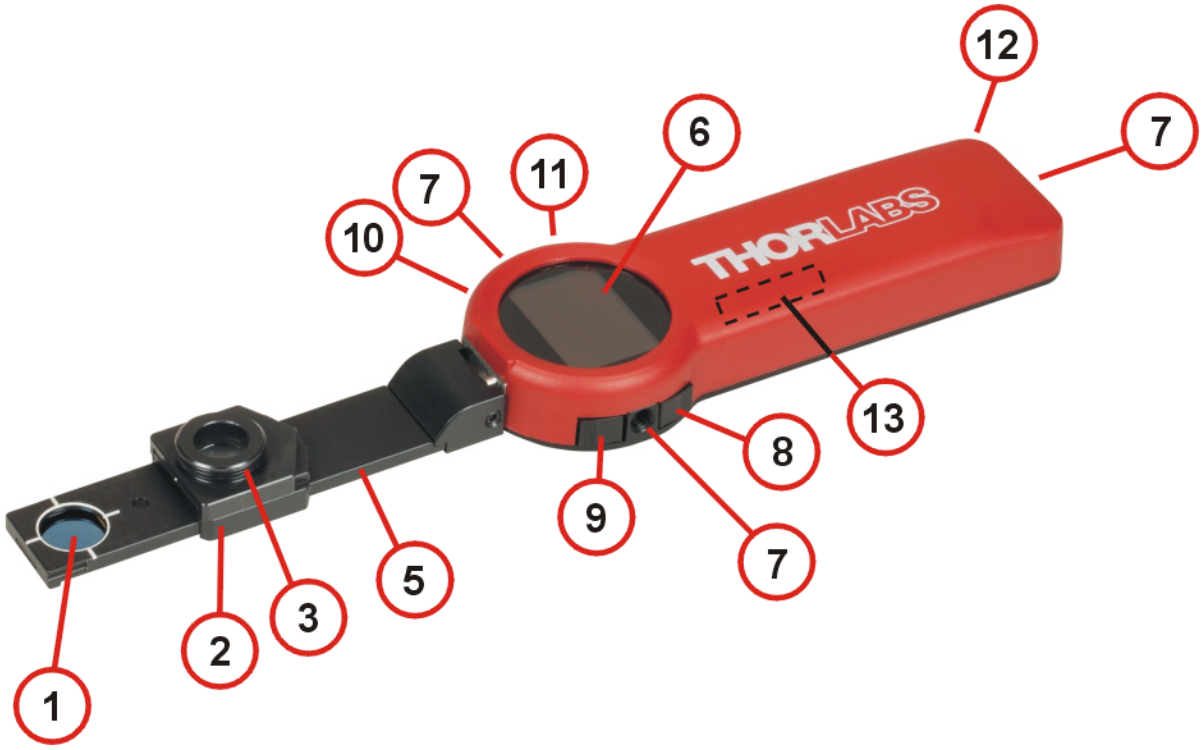
1. PM160x Wireless Handheld Power Meter
2. USB Cable, Type ‘A’ to ‘Micro USB’
3. SM05 Adapter (PM160) / SM1 Adapter (PM160T, PM160T-HP)
4. 0.9 mm (0.035") Hex Key (PM160T to Mount the Adapter)
5. Quick Reference
6. Certificate of Calibration

2.2 Requirements

The Optical Parameter Monitor (OPM) Software for remote operation of the PM160x requires a PC hardware and software environment as specified on the software website.

Chapter 3 Operating Elements

3.1 PM160 Operating Elements



Callout	Description
1	Sensor Aperture
2	Slideable Optical Filter
3	SM05 Adapter
5	270° Rotatable Arm with Build-In Sensor and Optical Filter
6	OLED Display
7	Combined #8-32 / M4 Threads for Mounting (3 Places)
8 to 11	Push Buttons for Local Control
12	USB Connector
13	Integrated Bluetooth Antenna

The position of the slideable optical filter (2) is detected in order to correct the power read-out accordingly.

The push buttons 8 to 11 are soft keys, their function is shown in the display. The functions as stated on the rear panel are the defaults when the PM160 is switched off. The position for the functions changes when the display orientation is changed.

The SM05 adapter can accommodate a Thorlabs fiber adapter.

3.2 PM160T Operating Elements



Callout	Description
1	Sensor Aperture
4	SM1 Adapter
5	270° Rotatable Arm with Build-In Sensor and Optical Filter
6	OLED Display
7	Combined #8-32 / M4 Threads for Mounting (3 Places)
8 to 11	Push Buttons for Local Control
12	USB Connector
13	Integrated Bluetooth Antenna

The push buttons 8 to 11 are soft keys, their function is shown in the display. The functions as stated on the rear panel are the defaults when the PM160T is switched off. The position for the functions changes when the display orientation is changed.

The SM1 adapter can accommodate a Thorlabs fiber adapter.

3.3 PM160T-HP Operating Elements

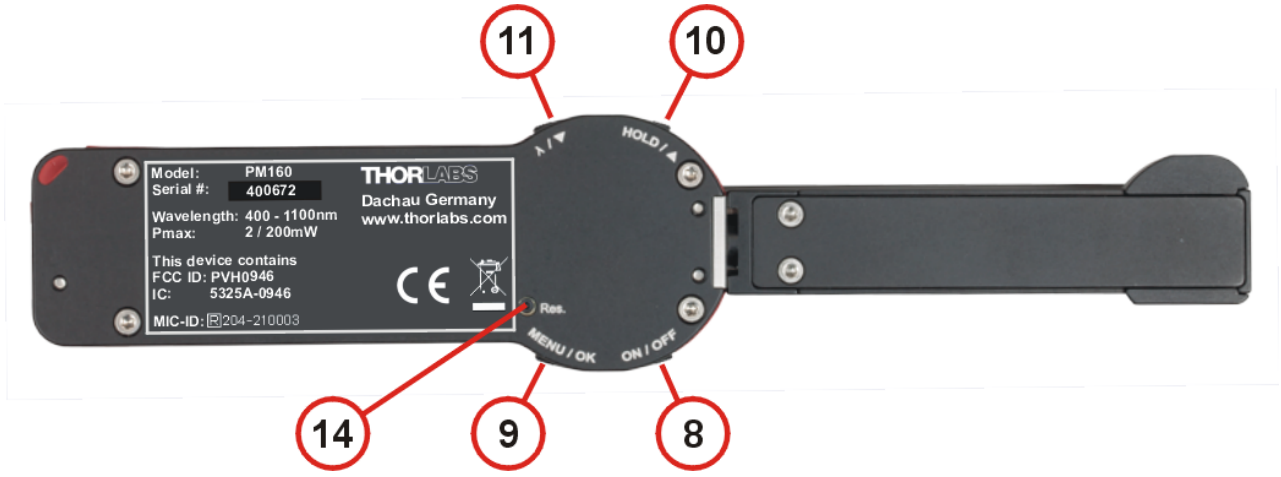


Callout	Description
1	Sensor Aperture
4	SM1 Adapter
5	270° Rotatable Arm with Build-In Sensor and Optical Filter
6	OLED Display
7	Combined #8-32 / M4 Threads for Mounting (3 Places)
8 to 11	Push Buttons for Local Control
12	USB Connector
13	Integrated Bluetooth Antenna

The push buttons 8 to 11 are soft keys, their function is shown in the display. The functions as stated on the rear panel are the defaults when the PM160T-HP is switched off. The position for the functions changes when the display orientation is changed.

The SM1 adapter can accommodate a Thorlabs fiber adapter.

3.4 Rear View PM160x



Callout	Description
8	ON/OFF Push Button
9	MENU Button to Go Though Options
10	HOLD and START a Measurement
11	UP/DOWN Button to Go Though the Menu
14	RESET Button

The position for the functions changes when the display orientation is changed. The PM160T-HP has 4 tapped holed (4-40UNC) on the back of the sensor. This allows mounting of a 30 mm cage system.

Chapter 4 Operating Instructions

The PM160x can be operated locally as a stand-alone device or remotely, via USB or wireless (Bluetooth). Choose the operation mode directly on the device, using the interface menu. In any operating mode, the internal battery can be charged by connecting the PM160x to a PC or to a USB charger using the supplied USB cable.

For remote operation (USB and Bluetooth), download and install the OPM software on the steering device (PC with Windows® operating system). For more information see chapter Remote Operation.

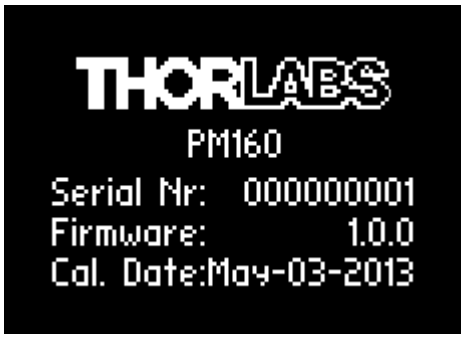
For Apple® MAC®, iPod® devices (iPad®, iPod® and iPhone®), a Bluetooth remote control for PM160x is available in the AppStore. For more information see chapter Remote Operation (iOS).

For Android devices, please find the OPM application in the app store. This application requires Android 4.2 or higher.

4.1 Local Operation

The screenshots shown in this user guide apply to all listed products. Regardless of the actual part number used, the device's display will show the designation "PM160".

- To switch on the PM160x, push the "ON/OFF" button (8) on the side of the device.
- A start-up screen is displayed for a moment, followed by the standard measurement display.





- In the header, the connection type (USB or Bluetooth) and the battery status are shown. Select the **Local Only** mode from the menu (button 9) on the device.
- **Battery:** The PM160x automatically starts charging the battery when connected via USB.
- **Adjust settings** directly on the device. Use the up or down button to select settings. Confirm the selection by pressing the button next to the OK icon or cancel the entry by pressing the button next to the ESC icon.

- **Turning off** the PM160x in Local Only mode: The PM160x shuts down 20 sec after the last button was pressed. The energy saving feature automatically dims the display.

Wavelength Selection

To set the correct wavelength, push the "Wave" button.



Use the up ▲ or down ▼ button to adjust the wavelength of the incident light. Confirm the entry by pressing the button next to the OK icon or cancel the entry by pressing the button next to the ESC icon ☒.

Max-Hold Function

As long as the button Hold is pressed, the PM160x detects the maximum power. After the button is released, the MAX power is displayed together with the "delta", the difference between the actual and the MAX value.



Push the Run button to return to the normal measurement mode.

Menus

Push Menu (button 9) to scroll through the menu screens. Each time this button is pressed, the next menu item appears. Return to the measurement screen by pressing the button next to ☒.

Menu "Zero Adjust"



This function is used to compensate the photo diode's dark current (PM160) or the thermal sensor's offset voltage (PM160T, PM160T-HP). Cover the sensor aperture and press Run.

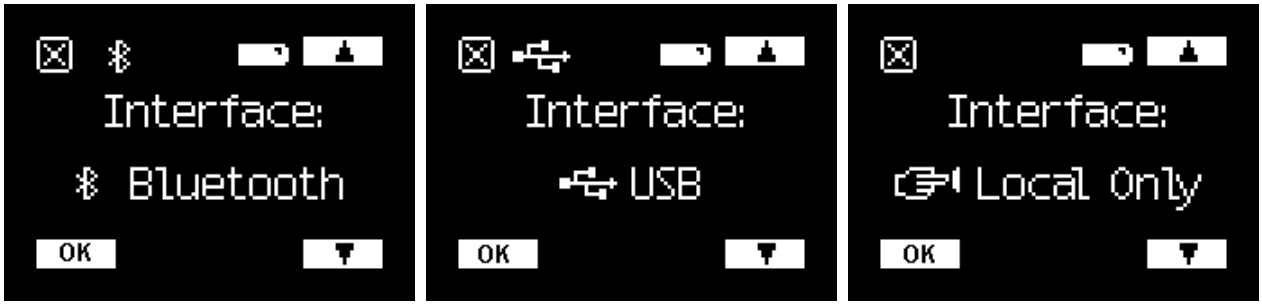


If zeroing was successfully carried out, the PM160x returns to normal operation, else the error screen appears:



Menu "Interface"

To operate the PM160x remotely (see sections "Operation via USB" and/or "Operation via Bluetooth"), the appropriate interface needs to be selected. Press the menu button until the "Interface" menu appears. Use the buttons next to up ▲ or down ▼ icons to select Bluetooth or USB interface or to disable the interface ("Local Only"). Push the button next to the OK icon to confirm or ☒ to cancel.



Menu "Orientation"

The display can be rotated in 90° steps for convenient reading. Use the up ▲ or down ▼ button to select the desired orientation, shown by the smiley, then press the OK button to confirm or ☒ to cancel:



Note

The control buttons are soft keys. When changing the display orientation, the soft keys, including the switch off button, rotate with the display orientation. Switch the PM160x on again by pressing button (8).

Menu "Brightness"



Using the up ▲ or down ▼ button, the display brightness can be adjusted. When pressing any button, the brightness will be set to max. for 7 sec.

The value "Min." is the minimum readable brightness in local mode.

Note

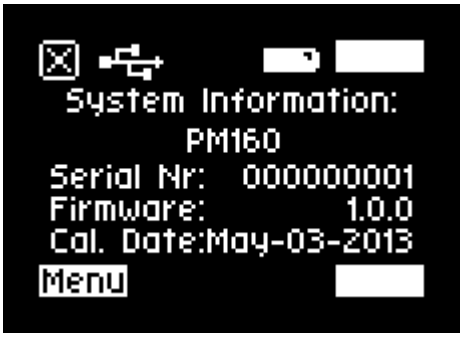
If the PM160x is operated remotely via USB or Bluetooth and the brightness is set to "Min.", the display will be switched off 7 sec after a button was pressed. Wake it up by pressing any button.

Menu "Sound Output"



Enable or disable the sound output.

Menu "System Information"



Displays the item name, serial number, firmware version and most recent calibration date.

4.2 Remote Operation (Windows)

1. Install the application software Optical Parameter Montor (OPM) prior to connecting the PM160x to a PC, by USB or Bluetooth. The software Optical Parameter Monitor (OPM) and the respective manual can be downloaded from the Thorlabs website. Please see the system requirements for the OPM software on the respective website.
2. Turn on the unit by pushing the ON/OFF button (8) on the side of the PM160x.
3. If a wireless operation is desired, set the connection mode on the device to Bluetooth. Otherwise, connect the enclosed USB cable.
4. Operate the device by following the instructions in the OPM software manual.
5. Energy Saving function when a remote interface (USB or Bluetooth) is enabled:
   a. USB cable connected, no remote connection active: the PM160x will automatically shut down after 5 minutes.
   b. When the USB cable is connected and the USB remote connection is active, the PM160x will never shut down.

4.3 Remote Operation (iOS)

This describes the remote operation of a PM160x from an iPad, representative for other iOS devices.

Connecting the PM160x with the iPad

1. Make sure the PM160x app has been installed properly.
2. Switch the PM160x on and set the interface to Bluetooth.
3. Open the iPad settings (the icon can be found in the dock bar) and select the Bluetooth tab.
4. Switch on the iPad Bluetooth interface, using the slide button on the top right.
5. In the Devices List, an entry "Thorlabs PM160x xxxxxxxxx" should be found, where xxxxxxxxx stands for PM160x's serial number. Compare that number with the serial number printed on the PM160x's back or in the PM160x's System Information menu screen. Click the "Not Paired" or the "Not Connected" text. It should quickly change to "Connected".
6. Exit the Settings screen by clicking the Home button.
7. Click the PM160x App Icon in the dock bar. The app will start and immediately show measurement values.

Disconnecting the Bluetooth Connection

As long as the PM160x is connected to the iPad, no other Bluetooth connections with the PM160x (e.g. from a Windows PC) can be established. Follow the procedure described below to release the PM160x Bluetooth connection:

1. Press the Home button to set the PM160x App to background.
2. Start the Settings screen.
3. Enter the Bluetooth tab.
4. Find the PM160x entry in the Devices list and click the arrow on the right of this entry.
5. On the following screen click on Forget this Device and confirm.
6. The display returns to the Bluetooth device list and should now show the PM160x's entry with the text Not Paired. The PM160x now can connect to other Bluetooth hosts.

   Note

   If you start the PM160x App now, with no PM160x available, the App will run in a demo mode with a fake measurement.
7. If you want to reconnect the PM160x with the PM160x App then proceed as described in Connect the PM160x with the iPad.

Troubleshooting

If the app or the connection hang up, a restart might be required. Follow this procedure:

1. Disconnect the Bluetooth connection as described in the previous section.
2. Click the Home button once to set the active App to background.
3. Double Click the Home button. The list of active Apps appears at the bottom.

4. Press and hold the PM160x App icon until a Minus symbol appears at the top left corner of the App's icon:



5. Click the small Minus symbol on the lower left corner. The App is stopped.
6. Click the Home button twice to leave.
7. Connect the PM160x with the iPad as described above to reestablish the setup.

4.4 Remote Operation (Android)

For Android devices, please find the application Optical Power Monitor in the app store. This application requires Android version 4.2 or higher.

1. Install the application Optical Parameter Monitor through the app store prior to connecting the PM160x to the device, by USB or Bluetooth.
2. Turn on the unit by pushing the ON/OFF button (8) on the side of the PM160x.
3. If a wireless operation is desired, set the connection mode on the device to Bluetooth. Otherwise, connect the enclosed USB cable.
4. Energy Saving function when a remote interface (USB or Bluetooth) is enabled:
   When the USB cable is connected and the USB remote connection is active, the PM160x will never shut down.
   When Active Bluetooth remote connection is established and no USB cable is connected, the PM160x will only shut down when the battery is low. The display will be dimmed to save battery and the OLED's life time.

4.5 Firmware Updates

Find the latest firmware on the product website under the tab software. Click the software icon and the website to download the software OPM and the firmware will open.

To install new firmware, follow the instructions in the Change Log of the PM160x firmware.

Chapter 5 Appendix

5.1 Technical Data PM160

All technical data are valid at 23 ± 5°C and 45 ± 15% rel. humidity (non-condensing).

Specifications	PM160
Sensor Specifications	
Wavelength Range	400 to 1100 nm
Optical Power Measurement Range	10 nW to 2 mW (1 µW - 200 mW)[a]
Optical Power Resolution	100 pW (10 nW)[a]
Measurement Uncertainty	±3% @ 451 to 1000 nm ±5% @ 400 to 450 nm and 1001 nm - 1100 nm
Power Linearity with Optical Power	±1%
Active Area Uniformity	±1%
Slideable Optical Filter	Reflective ND [OD1.5] with Diffuser
Average Power Density (Max)	1 W/cm² (20 W/cm²)[a]
Sensor Aperture	Ø9.5 mm
Aperture Thread	SM05 with Included Adapter
Distance to Sensor	1.7 mm (4.2 mm)[a,d]
Sensor Thickness	3.5 mm (6.0 mm)[a,d]
Power Meter Specifications	
Analog Measurement Ranges	500 nA, 50 µA, 5 mA[b]
AD Converter	24 Bit
Analog Amplifier Bandwidth	10 Hz
Built-in Display	Monochrome White OLED 24.0 mm (0.95") Across Diagonal 96 x 64 Pixel
Local Operation	Four Push Buttons
Remote Interface	USB 2.0, Bluetooth 2.1 (Class II, 10 dBm)
General Data	
Overall Dimensions	172.7 mm x 36.4 mm x 13.0 mm
Weight	60 g
Operating Temperature	0 °C - 50 °C (32 °F - 122 °F)
Power Supply	External: 5VDC via USB Internal: LiPo+ 380 mAh[c]
Battery-Powered Operation	Up to 20 Hours
Mounting Options	8-32 (Imperial) and M4 (Metric) Tap Combined, 3 Places

a. Values in ( ) are with filter slided in.
b.The appropriate range is chosen internally by the power meter to achieve the best accuracy.
c.The battery is recharged through the USB connection.
d. See chapter Dimensions for precise distances.

5.2 Technical Data PM160T, PM160T-HP

All technical data are valid at 23 ± 5°C and 45 ± 15% rel. humidity (non condensing).

Specifications	PM160T	PM160T-HP
Sensor Specifications		
Wavelength Range	190 nm to 10600 nm	190 nm to 20000 nm
Optical Power Measurement Range	100 µW to 2 W	10 mW to 70 W[a]
Optical Power Resolution	10 µW	1 mW
Measurement Uncertainty	±3% @ 1064 nm ±5% (Entire Range)	±3% @ 1064 nm ±5% (250 nm to 17000 nm)
Power Linearity with Optical Power	±1%	
Active Area Uniformity	±1%	
Average Power Density (Max)	500 W / cm^2	2 kW / cm^2
Sensor Aperture	Ø10.0 mm (0.39")	Ø25.2 mm (0.99")
Sensor Coating	Black Broadband	High Power Broadband
Adapter Plate Aperture Thread	SM1 with Included Adapter	Internal SM1 (1.035"-40); Adapter to External Thread Included; 4 x 4-40 Tapped Holes on the Back of the Sensor (Compatible with 30 mm Cage System)
Distance to Sensor[d]	2.6 mm	4.5 mm
Sensor Thickness[d]	5.5 mm	13.0 mm
Power Meter Specifications		
Analog Measurement Ranges	1.6 mV, 25 mV, 400 mV[b]	2.56 mV, 16 mV, 100 mV[b]
AD Converter	24 bit	
Analog Amplifier Bandwidth	10 Hz	
Built-in Display	Monochrome White OLED 24.0 mm (0.95") Across Diagonal; 96 x 64 Pixel, 10 Hz Refresh Rate	
Local Operation	4 Push Buttons	
Remote Interface	USB 2.0, Bluetooth 2.1 (Class II, 10 dBm)	
General Data		
Overall Dimensions	172.7 mm x 36.4 mm x 13.0 mm	206.0 mm x 56.0 mm x 13.0 mm
Weight	60 g	130 g
Operating Temperature	0 °C - 50 °C	
Power Supply	External: 5VDC via USB Internal: LiPo+ 380 mAh[c]	
Battery-Powered Operation	Up to 20 Hours	

Specifications	PM160T	PM160T-HP
Mounting Options	8-32 (Imperial) and M4 (Metric) Tap Combined, 3 Places	8-32 (Imperial) and M4 (Metric) Tap Combined, 3 Places; 4 x 4-40 Tapped Holes on Back of Sensor for Ø6 mm Cage Rods

a. Maximum exposure time: 70 W - 10 s; 30 W - 60 s; 10 W - 1 hour. Please see also back of the device.
b. The appropriate range is chosen internally by the power meter to achieve the best accuracy.
c. The battery is recharged through the USB connection.
d. See chapter Dimensions for precise distances.

5.3 Energy Saving

The PM160x features display dimming and an automatic shut down in order to save battery and the lifetime of the OLED display.

Display Dimming

When a button is pressed, the display brightness is set to 100%. 7 sec after a button was pressed last time, the display is dimmed to the brightness that can be adjusted in the menu "Brightness", between a "Min" value and 100%.

Note

The "Min" value is 1% in local operation mode (Interface: "Local Only") and 0% in remote mode (USB or Bluetooth interface enabled and remote connection established). This is a convenient feature when using the PM160x remotely in a dark room: The stray light from the OLED display is eliminated.

Auto Shut Down

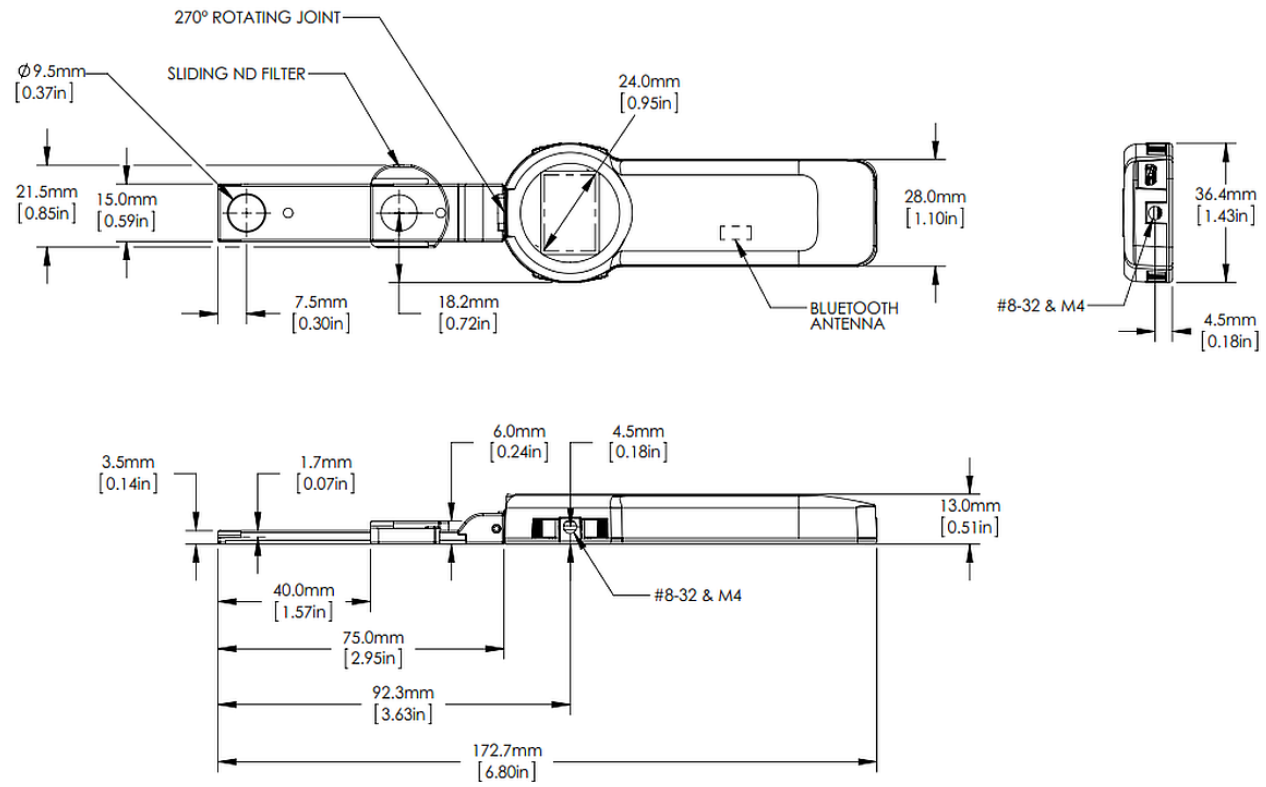
During battery charging via the USB cable, the auto shut down is disabled, but after a certain time the display is switched off ("Stand-by").

The table below illustrates all possible states:

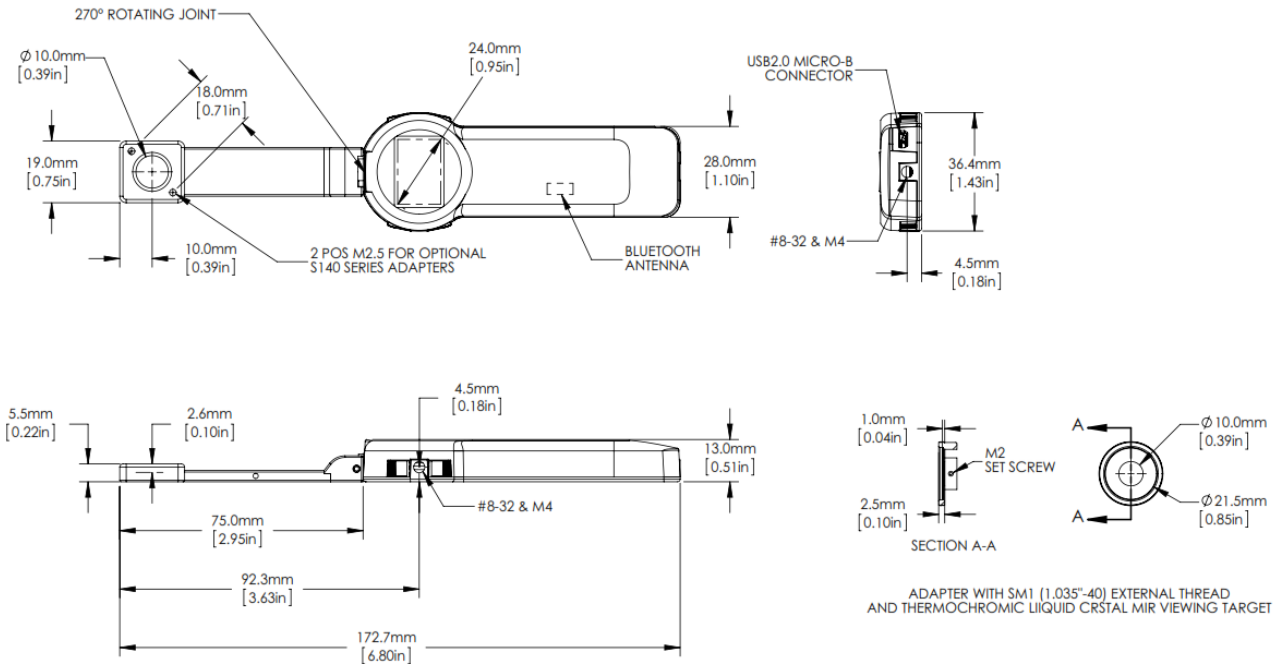
Interface Setting	Operation Mode	USB Cable	Stand By	Shut Down
Local Only	Local	No	Never	20 sec
		Yes	20 sec	Never
USB or Bluetooth		No	Never	5 min
		Yes	5 min	Never
USB	Remote Control	Yes	Never	Never
Bluetooth		No	Never	When Battery Empty
		Yes	Never	Never

5.4 Dimensions

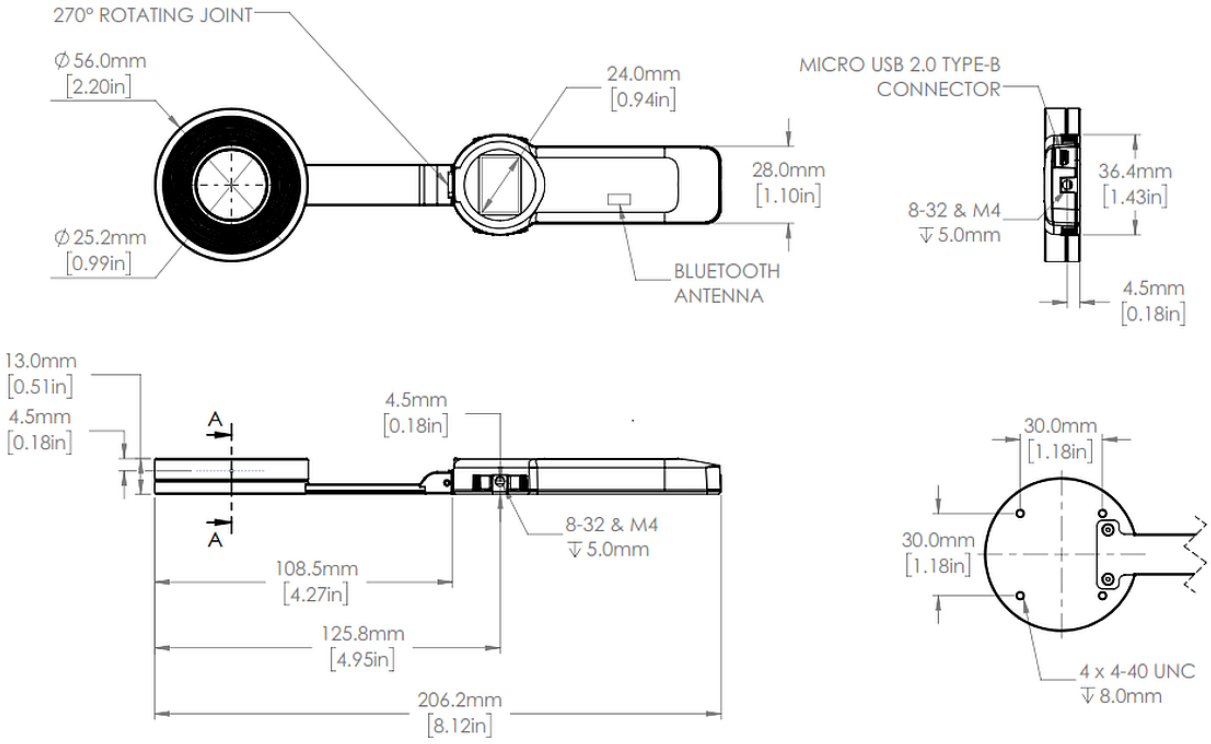
PM160



PM160T



PM160T-HP



5.5 Safety

Attention

The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

All statements regarding safety of operation and technical data in this instruction manual will only apply when the unit is operated correctly as it was designed for.

The PM160x must not be operated in explosion endangered environments!

Do not obstruct the air ventilation slots in the housing! Do not remove covers and do not open the cabinet. There are no parts serviceable by the operator inside!

This precision device is only serviceable if returned and properly packed into the complete original packaging including the cardboard insert that holds the enclosed devices. If necessary, ask for replacement packaging. Refer servicing to qualified personnel.

Only with written consent from Thorlabs may changes to single components be made or components not supplied by Thorlabs be used.

All modules including control inputs / outputs must be connected with duly shielded connection cables.

Attention

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and meets all requirements of the Canadian Interference-Causing Equipment Standard ICES-003 for digital apparatus. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/T.V. technician for help.

Thorlabs is not responsible for any radio television interference caused by modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Thorlabs. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

Attention

Mobile telephones, cellular phones, or other radio transmitters are not to be used within the range of three meters of this unit since the electromagnetic field intensity may then exceed the maximum allowed disturbance values according to IEC 61326-1.

This product has been tested and found to comply with the limits according to IEC 61326-1 for using connection cables shorter than 3 meters (9.8 feet).

5.6 Certifications and Compliances

EU Declaration of Conformity

in accordance with EN ISO 17050-1:2010

We: Thorlabs GmbH

Of: Münchner Weg 1, 85232 Bergkirchen, Deutschland

in accordance with the following Directive(s):

2011/65/EU	Restriction of Use of Certain Hazardous Substances (RoHS)
2014/53/EU	Radio Equipment Directive (RED)

hereby declare that:

Model: ***PM160(T)-(HP)***

Equipment: ***Wireless, Handheld Power Meter Series***

is in conformity with the applicable requirements of the following documents:

EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use	2010
EN 301 489-1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1	V2.1.1
EN 301 489-17	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17	V2.2.1
EN 55032	Electromagnetic compatibility of multimedia equipment. Emission requirements	2015
EN 300 328	Wideband transmission systems;Data transmission equipment in the 2,4 GHz band	V2.1.1
EN 62479	Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields	2010

and which, issued under the sole responsibility of Thorlabs, is in conformity with Directive 2011/65/EU of the European Parliament and of the Council of 8th June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, for the reason stated below:

does not contain substances in excess of the maximum concentration values tolerated by weight in homogenous materials as listed in Annex II of the Directive

I hereby declare that the equipment named has been designed to comply with the relevant sections of the above referenced specifications, and complies with all applicable Essential Requirements of the Directives.

Signed:  *On:* 20 November 2019

Name: Bruno Gross

Position: General Manager

EDC - PM160(T)-(HP) -2019-11-20

CE

5.7 Return of Devices

This precision device is only serviceable if returned and properly packed into the complete original packaging including the complete shipment plus the cardboard insert that holds the enclosed devices. If necessary, ask for replacement packaging. Refer servicing to qualified personnel.

5.8 Warranty

The precision devices are only serviceable if returned and properly packed into the complete original packaging including the complete shipment plus the cardboard insert that holds the enclosed devices. If necessary, ask for replacement packaging. Refer servicing to qualified personnel.

5.9 Copyright and Exclusion of Liability

Thorlabs has taken every possible care in preparing this document. We however assume no liability for the content, completeness or quality of the information contained therein. The content of this document is regularly updated and adapted to reflect the current status of the product.

All rights reserved. This document may not be reproduced, transmitted or translated to another language, either as a whole or in parts, without the prior written permission of Thorlabs. Copyright© Thorlabs 2026. All rights reserved.

Please refer to the general terms and conditions linked under Warranty.

5.10 Thorlabs 'End of Life' Policy (WEEE)



Thorlabs verifies our compliance with the WEEE (Waste Electrical and Electronic Equipment) directive of the European Community and the corresponding national laws. Accordingly, all end users in the EC may return “end of life” Annex I category electrical and electronic equipment sold after August 13, 2005 to Thorlabs, without incurring disposal charges. Eligible units are marked with the crossed out "wheelie bin" logo (see right), were sold to and are currently owned by a company or institute within the EC, and are not dissembled or contaminated. Contact Thorlabs for more information. Waste treatment is your own responsibility. "End of life" units must be returned to Thorlabs or handed to a company specializing in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site. It is the users responsibility to delete all private data stored on the device prior to disposal.

5.11 Thorlabs Worldwide Contacts

For technical support or sales inquiries, please visit us at www.thorlabs.com/contact for our most up-to-date contact information.



Corporate Headquarters
Thorlabs, Inc.
43 Sparta Ave
Newton, New Jersey 07860
United States

sales@thorlabs.com
techsupport@thorlabs.com

Product Manufacturer
Thorlabs GmbH
Münchner Weg 1
D-85232 Bergkirchen
Germany

sales.de@thorlabs.com
europe@thorlabs.com

EU Importer
Thorlabs GmbH
Münchner Weg 1
D-85232 Bergkirchen
Germany

sales.de@thorlabs.com
europe@thorlabs.com

UK Importer
Thorlabs Ltd.
204 Lancaster Way Business Park
Ely CB6 3NX
United Kingdom

sales.uk@thorlabs.com
techsupport.uk@thorlabs.com



THORLABS
www.thorlabs.com