THORLABS

Thorlabs Beam
Beam Analyzing Software

M2MS Extension Set
Quick Reference

2021

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Item No.: M0009-510-842

Contents

We aim to develop and produce the best solution for your application in the field of optical measurement technique. To help us to live up to your expectations and constantly improve our products we need your ideas and suggestions. Therefore, please let us know about possible criticism or ideas. We and our international partners are looking forward to hearing from you.

Thorlabs GmbH

Warning

Sections marked by this symbol explain dangers that might result in personal injury or death. Always read the associated information carefully, before performing the indicated procedure.

Attention

Paragraphs preceded by this symbol explain hazards that could damage the instrument and the connected equipment or may cause loss of data.

Note

This manual also contains "NOTES" and "HINTS" written in this form.

Please read this advice carefully!

1 General Information

The Thorlabs M2MS M^2 measurement extension set turns Thorlabs beam profilers into a fully-automated M^2 measurement system. Thorlabs offers the M2MS extension sets.for measurements below 400 nm (M2MS-AL) and above 400 nm (M2MS). Adapters allow to mount the BC207 or BC106N camera beam profiler or BP209 slip beam profiler to the extension.

2 Getting Started

2.1 Ordering Codes and Accessories

M^2 Measurement Extension Sets for Thorlabs BC207 Series camera beam profiler or Thorlabs BP209 Series slit beam profiler:

M2MS (silver coating)	M^2 Measurement Extension Set, Wavelength Range > 400 nm with M2MS Adjustment Laser, Mounting Adapters for BC207 Series and BP209 Series.
M2MS-AL	M^2 Measurement Extension Set, Wavelength Range 250 - 600 nm (Aluminum Mirrors) with M2MS Adjustment Laser, Mounting Adapters for BC207 Series and BP209 Series.

Recommended Accessories:

A mounting adapter for the former Camera Beam Profilers BC106N-UV(/M) or BC106N-VIS(/M) can be purchased by contacting Thorlabs directly.

To purchase the above products, please visit our homepage http://www.thorlabs.com. For further information or custom made solutions, please contact our technical support.

2.2 Parts List M2MS-AL and M2MS

M2MS-AL

1. M2MS-AL Measurement System Extension Set with Aluminum Mirrors (250 - 600 nm)
2. Mounting Adapter for BC207 Series Camera Beam Profilers
3. Mounting Adapter for BP209 Series Slit Beam Profilers
4. Power supply 100 to 240 V AC / 15 V 3 A DC
5. Cable USB 2.0 A to Mini B, 3 m length
6. Cable USB 2.0 A to Mini B, angled, 0.5 m length
7. 1 pcs. 0.05" Hex Key
8. M2MS Accessory Box UV, that includes:
   - 1 pcs. LA4158-UV Plano Convex Lens, f = 250 mm, UV AR coating
   - 1 pcs. LA1461-A Plano Convex Lens, f = 250 mm, AR coating 350 - 700 nm
   - 4 pcs. CL6 Rail clamps
   - 1 pcs. M2MS Adjustment laser
   - 1 pcs. Ball Driver 3 mm
   - 1 pcs. spare screw M4x10
9. Quick Reference

M2MS

1. M2MS Measurement System Extension Set with Protected Silver mirrors (> 400 nm)
2. Mounting Adapter for BC207 Series Camera Beam Profilers
3. Mounting Adapter for BP209 Series Slit Beam Profilers
4. Power Supply 100 to 240 V AC / 15 V 3 A DC
5. Cable USB 2.0 A to Mini B, 3 m Length
6. Cable USB 2.0 A to Mini B, Angled, 0.5 m Length
7. 1 pcs. 0.05" Hex Key
8. M2MS Accessory Box VIS, that includes:
    - 1 pcs. LA1461-A Plano Convex Lens, f = 250 mm, AR coating 350 - 700 nm
    - 1 pcs. LA1461-B Plano Convex Lens, f = 250 mm, AR coating 650 - 1050 nm
    - 1 pcs. LA1461-C Plano Convex Lens, f = 250 mm, AR coating 1050 - 1700 nm
    - 1 pcs. LA5255-D Plano Convex Lens, f = 250 mm, AR coating 1650 - 3000 nm
    - 4 pcs. CL6 Rail clamps
    - 1 pcs. M2MS Adjustment laser
    - 1 pcs. Ball Driver 3 mm
    - 1 pcs. spare screw M4x10
9. Quick Reference

3 Beam Quality (M²) Measurement

The **Beam Quality** panel can be opened from the menu bar (Menu **Windows**) or by clicking the M² icon in the tool bar.

3.1 M² Meter Extension Set

The M² Meter Extension Set is compatible with all Thorlabs Beam Profilers of the BP209 and BC207 Series as well as the former BC106N Series. Suitable mounting adapters are supplied.

M2MS M² Measurement System Extension Set with adapters for BC207 Series and BP209 Series as well as the alignment laser.

3.2 Setup M2MS

The M2MS Measurement System is a complete system that is factory aligned. The mounting adapter for the Beam Profiler provides a secure and reproducible positioning of the Beam Profiler's input aperture to the M2MS. This eases the mechanical setup.

Note

It is strongly recommended to fix the M2MS properly to the optical table using the four rail clamps that are included in the M2MS Accessory Box. To ensure a proper mounting, first remove the rubber feet from the M2MS base plate.

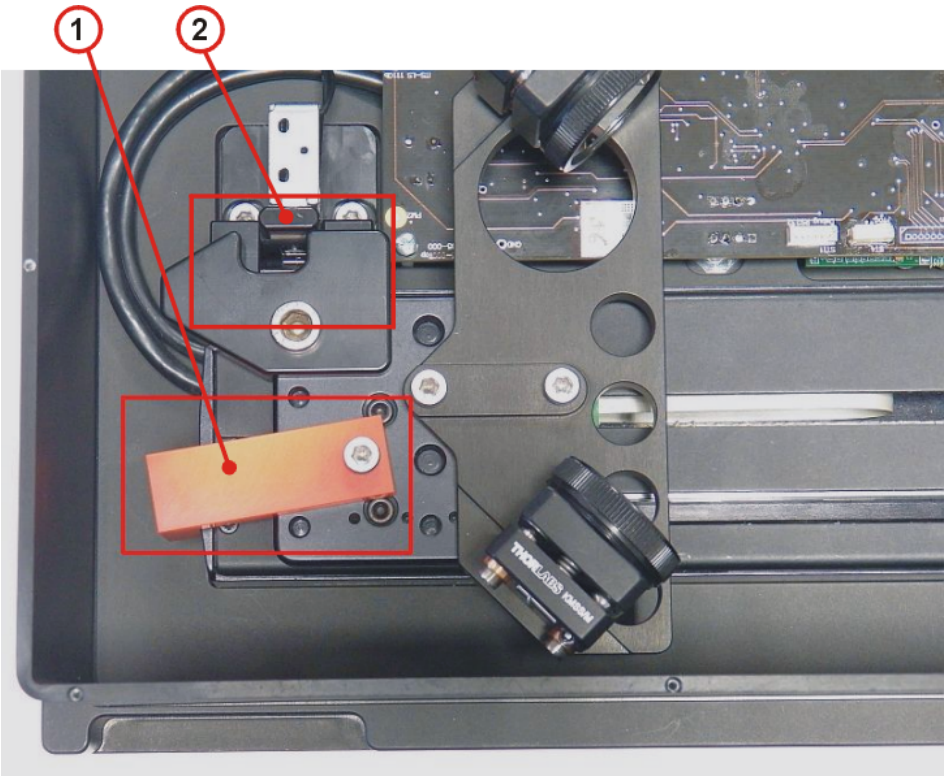
Transportation Lock and Stop Position Latch

In order to avoid transportation damages to the translation stage, it is locked when delivered. This lock must be removed prior to powering-up the stage, and it must be re-installed for transportation. Additionally, the DDS100 stage is fixed at its initial position by a solenoid controlled latch, which is the left stop in the photo (2).This latch fixes the stage when the power supply is switched off and releases the stage when power is applied.

Removal of the Transportation Lock

1. Remove the 4 screws fixing the top cover using a 0.05" hex key (supplied with the M2MS) and remove the cover.

2. Remove the M4 screw that fixes the red stopper (1), and remove the stopper using the 3 mm ball driver included with the accessory box. Keep the stopper and the fixing screw in a safe place.

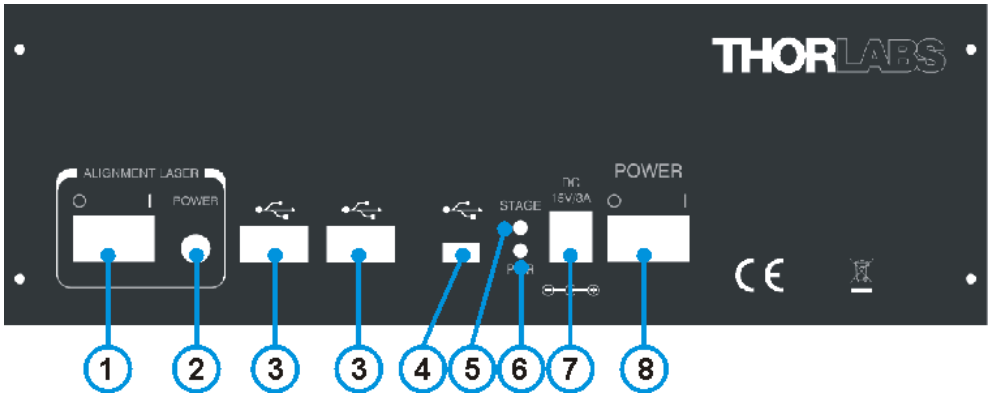


1 - Transportation Lock
2 - Electromagnetic Endpoint Latch

3. Close the M2MS.

3.2.1 Connection to the PC

The M2MS comprises an integrated control electronics with translation stage controller, an USB 2.0 hub and a current source for the alignment laser.



① Switch to enable Alignment Laser
② Output connector for Alignment Laser
③ USB 2.0 hub outputs (to Beam Profiler) (not recommended for BC207 as BC207 required USB 3.0)
④ USB 2.0 input (from PC)
⑤ Yellow indicator "Stage active"
⑥ Green indicator "Power On"
⑦ DC power supply input
⑧ M2MS power switch

Attention!

It is strongly recommended that only the supplied USB cables are used to connect the Beam Profiler and the control PC to the M2MS. These cables were selected and tested under point of fulfilling the entire USB 2.0 specifications. The operation systems Windows® 8.1 and 10 are less tolerant to deviation from this specification than former operating systems.

The use of other than the supplied USB 2.0 cables may lead to USB connection instabilities.

Attention

Do NOT connect the M2MS to a computer prior to installing the Beam Software!

Attention!

Prior to connecting the M2MS to the power supply, make sure the transportation lock is removed 5! Otherwise the stage drive may be damaged!

1. Connect AC power to the power supply and its output to the DC jack (7).
2. Connect the Beam Profiler using the supplied angled USB 2.0 cable to one of the USB hub outputs (3).
3. Switch the M2MS on (8). The green **Power On** indicator lights up.
4. Connect the M2MS to the PC using the supplied 3 m long USB 2.0 cable; do not start the BEAM software yet.
5. The PC's operating system recognizes the connected new hardware and performs the driver installation:

Note

The first three entries ("AMD USB2.0 MTT Hub", "USB Test and Measurement Device (IVI)" and the "APT USB Device") are hardware components of the M2MS extension.

6. Start the Beam Software.
7. Please see further instructions in the full manual that can be found in the "Manuals" folder.

4 Appendix

4.1 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 Beam Profiler must not be operated in explosion endangered environments! To prevent the Beam Profiler from overheating, do not cover the instrument.

This precision device is only serviceable if properly packed into the complete original packaging including the plastic foam sleeves. If necessary, ask for replacement packaging. Refer servicing to qualified personnel!

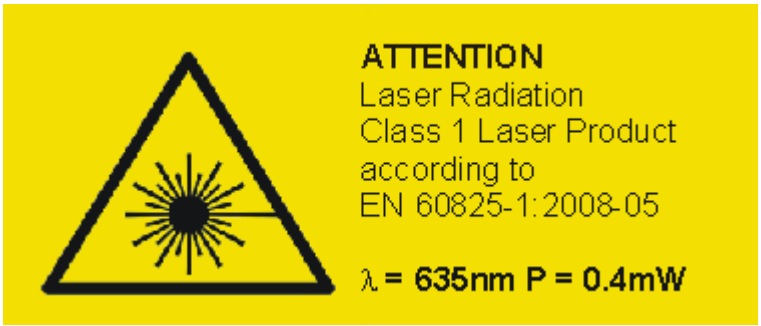
Before applying power to the PC system used to operate the Beam Profiler, make sure that the protective conductor of the 3 conductor mains power cord is correctly connected to the protective earth contact of the socket outlet! Improper grounding can cause electric shock with damages to your health or even death!

The instrument must only be operated with a duly shielded and low resistance USB cable delivered by Thorlabs.

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

Warning

The M2MS(-AL) M² Measurement System comes with an alignment laser that is powered by a M2MS(-AL) internal driver. Be careful when using this laser!



4.2 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.

4.3 Manufacturer Address

Manufacturer Address Europe
Thorlabs GmbH
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www.thorlabs.de
Email: europe@thorlabs.com

EU-Importer Address
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Fax: +49-8131-5956-99
www.thorlabs.de
Email: europe@thorlabs.com

4.4 Warranty

Thorlabs warrants material and production of the M2MS Extension Set for a period of 24 months starting with the date of shipment in accordance with and subject to the terms and conditions set forth in Thorlabs' General Terms and Conditions of Sale which can be found at:

General Terms and Conditions:

https://www.thorlabs.com/Images/PDF/LG-PO-001_Thorlabs_terms_and_%20agreements.pdf

and

https://www.thorlabs.com/images/PDF/Terms%20and%20Conditions%20of%20Sales_Thorlabs-GmbH_English.pdf

4.5 Exclusion of Liability and Copyright

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.

Please refer to the general terms and conditions linked under Warranty 9.

4.6 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.

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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.

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