MCM3000 Series
3-Axis Controller

User Guide

Copyright © July 26, 2019 Thorlabs, Inc. All rights reserved.

Information in this document is subject to change without notice. The software described in this document is furnished under a license agreement or nondisclosure agreement. The software may be used or copied only in accordance with the terms of those agreements. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or any means electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Thorlabs, Inc.

Thorlabs, Inc.
108 Powers Court
Sterling, VA 20166
703-651-1700

Table of Contents

Chapter 1 Warning Symbols and Definitions 1
Chapter 2 Safety 2
Chapter 3 Description 3
3.1. Features at a Glance 3
Chapter 4 Getting Started 4
4.1. Unpacking and Inspection 4
4.2. Setting Up MCM3000 Series 5
4.2.1. Minimum Computer Requirements 5
4.2.2. Preparation 5
Chapter 5 Software 9
5.1. MCM3000 4.0 Software Installation 9
5.2. Software Startup 15
5.3. MCM3000 GUI (Graphical User Interface) 18
5.3.1. Display Area 18
5.3.2. Menu 19
5.4. Firmware 20
Chapter 6 Maintaining the MCM3000 Series 22
6.1. Cleaning 22
6.2. Troubleshooting 22
Chapter 7 Specifications 24
7.1. Controller Specifications 24
7.2. Compatible Motor Specifications 25
Chapter 8 Mechanical Drawing 26
Chapter 9 Regulatory 30
Chapter 10 Thorlabs Worldwide Contacts 31

Chapter 1 Warning Symbols and Definitions

Below is a list of warning symbols you may encounter in this manual or on your device.

Symbol	Description
	Direct Current
	Alternating Current
	Both Direct and Alternating Current
	Earth Ground Terminal
	Protective Conductor Terminal
	Frame or Chassis Terminal
	Equipotentiality
	On (Supply)
	Off (Supply)
	In Position of a Bi-Stable Push Control
	Out Position of a Bi-Stable Push Control
	Caution: Risk of Electric Shock
	Caution: Hot Surface
	Caution: Risk of Danger
	Caution: Laser Radiation
	Caution: Spinning Blades May Cause Harm

Chapter 2 Safety

All statements regarding safety of operation and technical data in this user guide will only apply when the unit is operated correctly.

Please read the following warnings and cautions carefully before operating the device.

WARNING

DO NOT use the device for anything other than its intended use. If the device is used in a manner not specified by Thorlabs, the protection provided by the equipment may be impaired.

WARNING

DO NOT operate in a wet, damp, or explosive environment.

Chapter 3 Description

The MCM3000 Series 3-Axis Stepper Motor Controller with Encoder feedback consists of a hand-operated knob box and a separate controller box. Each side face of the knob box includes a rotating knob and a push-button switch that are dedicated to a single axis. The push-button switch enables and disables the axis. The switch turns green when the axis is enabled. Disable the axis to preserve a position or prevent accidental movements. A smaller knob on the top face adjusts the amount of translation per rotation of the knob.

Since each MCM3000 Series Controller has three axes, you only need to purchase enough controllers for each of the stages you intend to drive. For example, a Cerna® microscope equipped with a ZFM2020 Motorized Focusing Module (which has one axis) and a PLS-XY Translation Stage (two axes) would only require one MCM3001 controller.

The MCM3001 is compatible with motorized Cerna components that have a travel range of 1", such as our Motorized Focusing Modules and Translation Stages for Rigid Stands. For components with a 2" travel range, such as Thorlabs' Translating Platforms, the MCM3002 controller should be used instead. The MCM3003 is compatible with LNR Series Stepper Motor stages without encoders that have a travel range of 2". The software allows you to configure the controller to more than one type of stage. The MCM3002 and MCM3003 controller come with different cables to attach to the stages.

The following table shows the different stages compatible with the MCM3000 Series Controller:

Item Number	MCM3001	MCM3002	MCM3003
Compatible Stages	Focusing Modules ZFM2020 and ZFM2030	Microscope Body Translator MMP-2XY	Linear Translation Stage LNR50S(/M)
	Translation Stages for Rigid Stands PLS-X and PLS-XY	Translating Platform PMP-2XY(/M)	Stepper Motor DRV014

3.1. Features at a Glance

- Designed for Cerna Components with Motorized Travel: Objective Focusing Module, Condenser Focusing Module, Translation Stages for Rigid Stands, and Translating Platform
- Knobs Provide Hand-Operated Control for up to Three Axes
- Option to Disable Each Channel to Prevent Unintended Movements or to Retain a Position
- Adjust Translation Speed via Top-Located Knob

Chapter 4 Getting Started

4.1. Unpacking and Inspection

Open the package, and carefully remove the MCM3000 Series and its accessories. The table lists the standard accessories shipped with the device.

Name	Quantity		
	MCM3001	MCM3002	MCM3003
3-Axis Knob Box	1	1	1
3-Axis Controller Box	1	1	1
Joystick Controller Cable (3m)	1	1	1
Hex Stand Off	-	12	6
M6 x 12 mm SHCS	2	2	2
1/4"-20 X 1/2" SHCS	2	2	2
24V 90W AC/DC Power Supply	1	1	1
Power Cord	1	1	1
USB Male A to Male B (RoHS Complaint)	1	1	1
Adapter Cable for 2" Cerna Stages (Component Item # MCM3000-CAB1)	-	3	-
Adapter Cable for Non-Cerna Stages (Component Item # MCM3000-CAB2)	-	-	3
MCM3000 Software CD	1	1	1

Inspect the device and its accessories for any missing parts or damage. If there is any problem, please contact our nearest office (see ***Thorlabs Worldwide Contacts Chapter on Page 31*** for details).

4.2. Setting Up MCM3000 Series

4.2.1. Minimum Computer Requirements

Operating System	Windows 7 or 10, 64 Bit
Driver	MCM3000.inf
Other Software	Visual C++ Redistributable Package (2012), Microsoft .NET 4.5.2 or later

4.2.2. Preparation

We recommend you to mount the 3-Axis Controller Box on an optical table or breadboard using the two included screws (M6 for metric, 1/4"-20x1/2" for imperial). This prevents any damage to the Controller Box from an accidental fall.

1. Use the Joystick Controller cable to connect the 3-Axis Controller Box to the 3-Axis Knob Box.

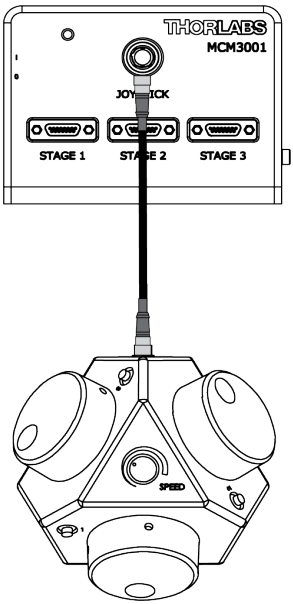


Figure 4–1 Connecting the Controller Box to the Knob Box

2. Use the USB cable to connect the 3-Axis Controller Box to the computer.

   Note: This step is optional. Connect the USB port only if you want to use the software to control the position of the stages. The 3-Axis Knob Box or the software can control the position of the stages. You can move the stage manually even after connecting the USB port to the computer.

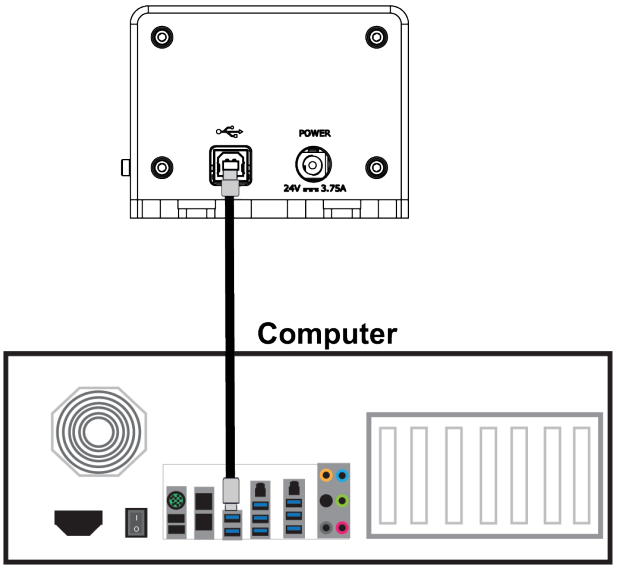


Figure 4–2 Connecting the Controller Box to the Computer

3. Connect one end of the power supply to the 3-Axis Controller Box and the other end to a standard power outlet.
4. Connect the cables from the required stages to the 3-Axis Controller Box.

The 3-Axis Controller Box can control up to three axes. For example, the following diagram shows a MCM3001 controller connected to a PLS-XY translation stage and a ZFM2030 focusing module.

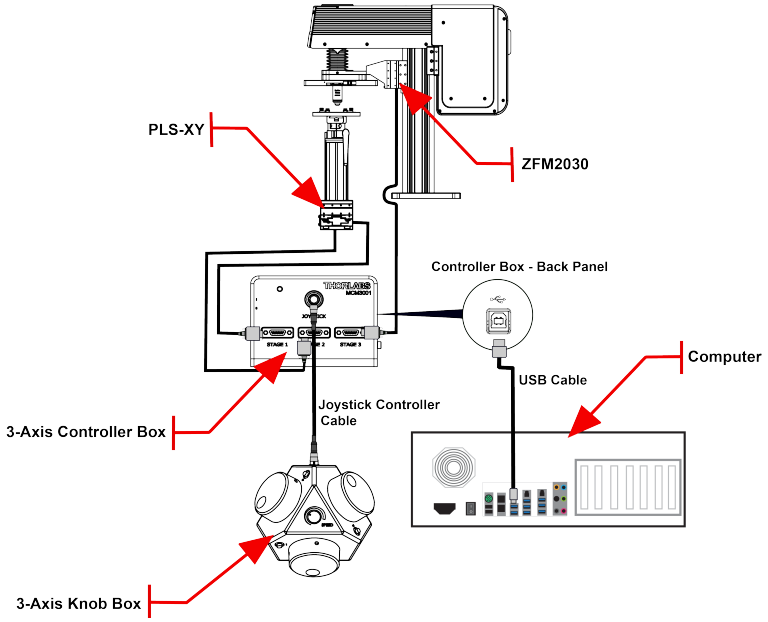


Figure 4–3 Connecting the Controller Box to Different Stages

Note: The MCM3002/MCM3003 controller is shipped with adapter cables to connect the device to the stages (as shown in the diagram below).

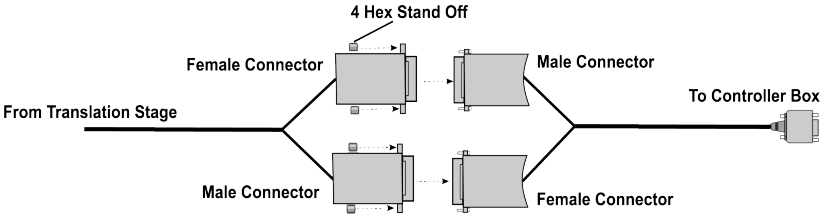


Figure 4–4 Connecting the Adapter Cable

5. Slide the Power switch on the 3-Axis Controller Box to the On position.

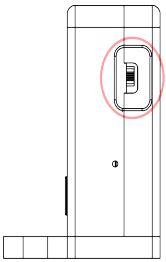


Figure 4–5 Power Switch on the 3-Axis Controller Box

6. If you do not want to control the stages via USB, go to Step 8. To control the stages via USB, install the required software/driver on your computer as described in the ***Software Chapter on page 9***.
7. Open the MCM3000 software, and configure the axes (see ***page 15***).
8. Adjust the position of the required stage.
   Use the software or the 3-Axis Knob Box to adjust the position of the stage.

   To adjust the position using the software:

   a. On the *MCM3000 Control* window, enter the value for the respective axis in the text box corresponding to X/Y/Z. Click *Go*.
   b. Enter a value for the Slide Step Size in the text box. By default, this value is set to 0.01 mm. Select Coarse/Fine option to determine the slider step type.
   c. Use the mouse wheel or ± buttons to change the X/Y/Z position.

   See ***Display Area on page 18*** for details.

   Press the Control Knob Deactivation Button on the 3-Axis Knob box to disable/enable the movement of the stage. The switch preserves the position and prevents accidental movement. To adjust the speed of the axes on the 3-Axis Knob Box, turn the Speed Control knob on the top face of the Knob Box.

   Note: The Speed Control knob (on top of 3-Axis Knob Box) adjusts the sensitivity of the 3-Axis Control knobs. The software is not affected by adjustments made to the Speed Control knob.

   See ***Mechanical Drawing Chapter on page 26***.

Chapter 5 Software

5.1. MCM3000 4.0 Software Installation

The CD includes software for the driver, the SDK, and the application for controlling the MCM3000.

1. Insert the MCM3000 Software Installation CD into the computer, and open the *70-0033-4.0 MCM3000 SDK v4.0* folder. Alternatively, download the software from www.thorlabs.com.
2. Double click the installer (.exe) application to open the *MCM3000 4.0 Setup* window. Click *Next* to continue.

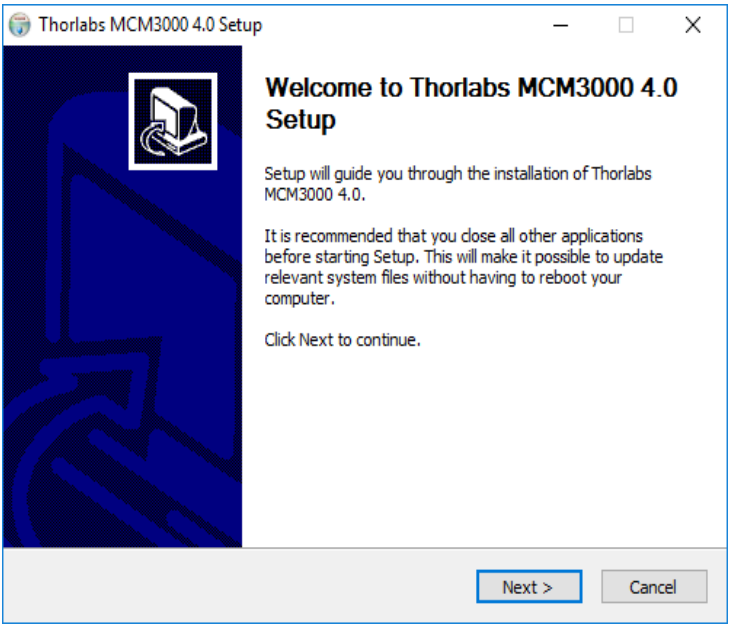


Figure 5–1 Thorlabs MCM3000 4.0 Setup Window

3. In the *Choose Components* window, select *SDK* if you want the software development kit files installed, then click *Next*.

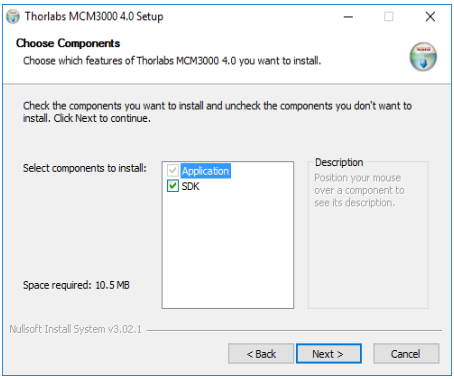


Figure 5–2 Choose Components Window

4. In the *Choose Install Location* window, select the destination folder and then click *Install*.

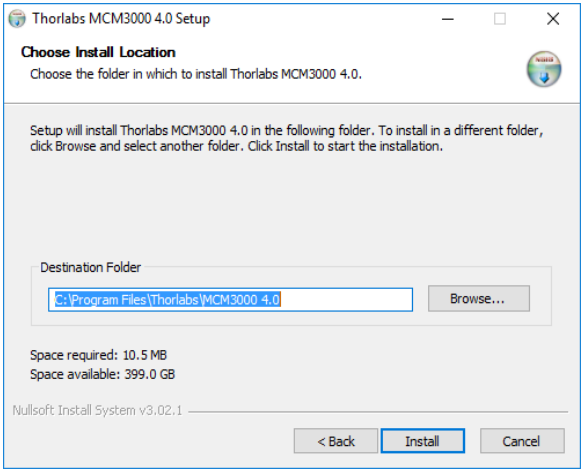


Figure 5–3 Thorlabs MCM3000 4.0 Setup Window

5. During installation, the *Device Driver Installation Wizard* will appear. Click *Next* to begin installing the software drivers that some computer devices need in order to work.

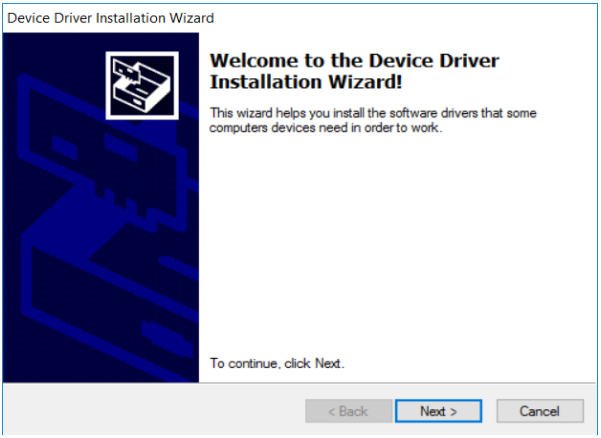


Figure 5–4 Device Driver Installation Wizard Window

6. If prompted by Windows Security, select *Install*.

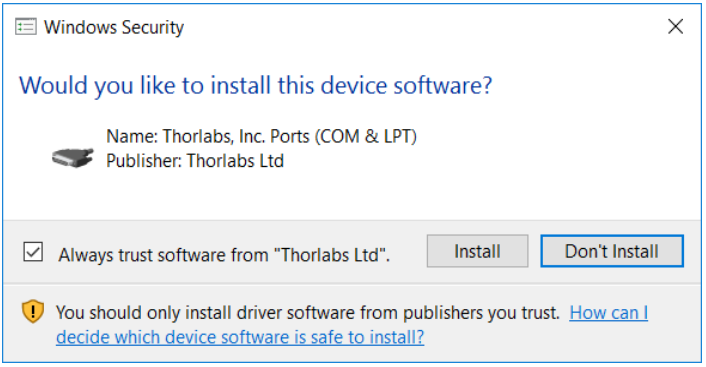


Figure 5–5 Windows Security Prompt

7. Once drivers are installed, click *Finish* to continue.

Figure 5–6 Device Driver Installation Wizard

8. The installer will automatically search your computer for *Microsoft Visual C++ Redistributable (x64) - 11.0.61030*. It will download and install it if it's not found on your computer.

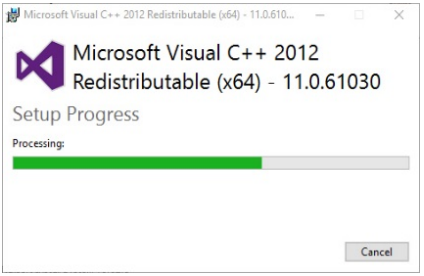


Figure 5–7 Microsoft Visual C++ 2012 Redistributable Window

9. Click *Finish* to complete the installation.

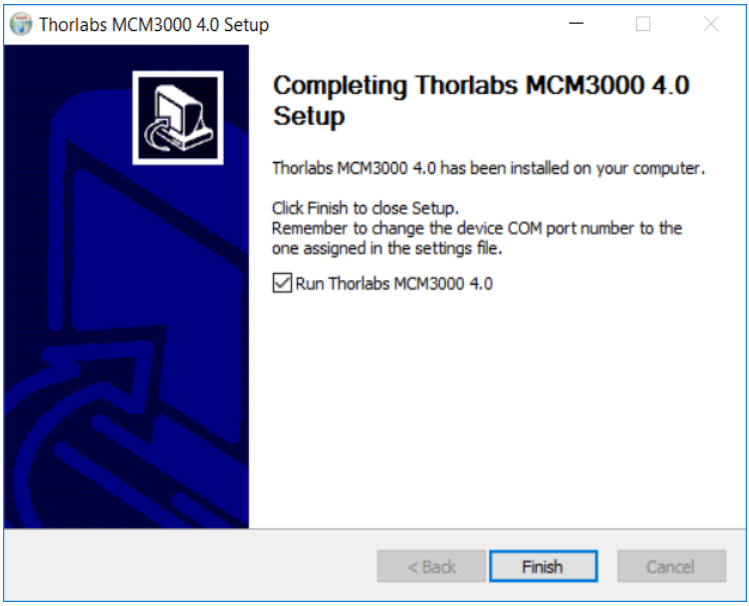


Figure 5–8 Completing the Thorlabs MCM3000 4.0 Setup Window

10. MCM3000 software installation is now complete and a new Windows shortcut is added to the desktop.

Figure 5–9 MCM3000 Shortcut Icon

11. Check *Device Manager>Port(COM&LPT)* on your computer to verify the COM port of MCM3000 driver. Make sure the COM Port Number is set to COM32.

To change the COM Port Number to COM32:

a. Right click on MCM3000 driver, and click on *Properties* to open the *MCM3000 Properties* window.

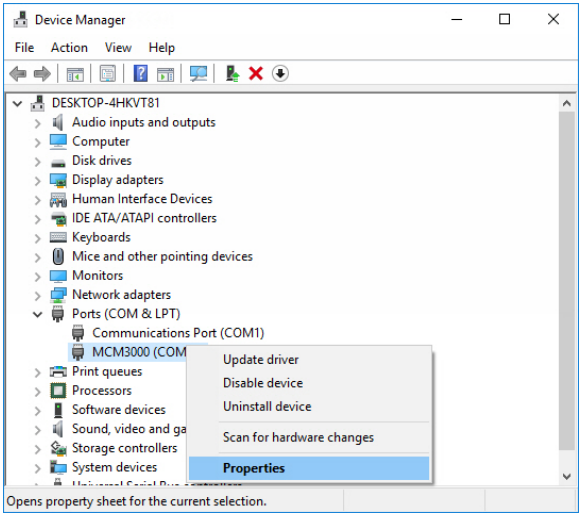


Figure 5–10 Device Manager

b. On the *Port Settings* tab, click *Advanced* to open the *Advanced Settings* window.

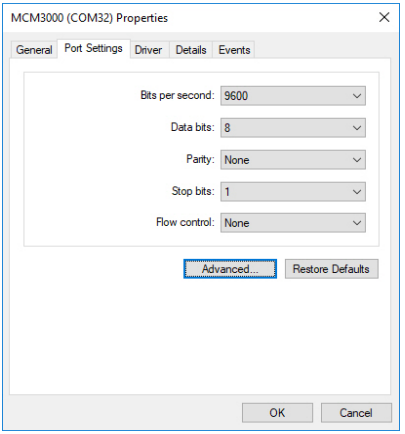


Figure 5–11 MCM3000 (COMx) Properties Window

c. Select COM32 from the drop-down menu next to COM Port Number, and click *OK*.

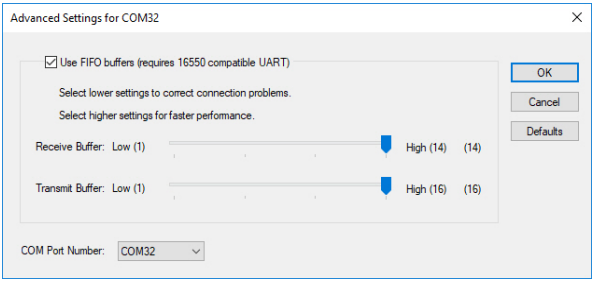


Figure 5–12 Advanced Settings Window

12. Slide the Power switch on the Controller Box to Off position, and then switch it on again.

The Com Port Number for MCM3000 must appear as COM32.

Note: The COM Port Number changes if you connect the USB cable to a different USB port each time you connect to the computer. You must assign COM32 as the COM Port Number for MCM3000.

5.2. Software Startup

The MCM3000 software can control up to three modules. Before opening the software, verify that the unit is powered on. Look for green LED indicator lights on both the knob box and controller box.

1. Double click the *MCM3000*shortcut on the desktop.
The *MCM3000 Com Port Selection* window appears.

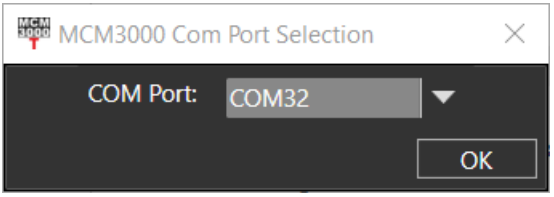


Figure 5–13 MCM3000 Com Port Selection Window

2. Select *COM32* from the drop-down menu and click OK.

The *MCM3000 Control* window appears. Before using the software to control the stages, it is necessary to configure the axes for the appropriate motor type. Verify that each stage is connected to the appropriate port depending on the axis of motion it controls.

The *MCM3000 Control* window appears. Before using the software to control the stages, it is necessary to configure the axes for the appropriate motor type. Verify that each stage is connected to the appropriate port depending on the axis of motion it controls.

The following table shows the axes that correspond to the Controller Box Ports:

Axis	Controller Box Port
X	Stage 1
Y	Stage 2
Z	Stage 3

1. In the *MCM3000 Control* window, click *File>Configure Axes* to configure the axes to the required stages.
   The *Configure Axes* window appears.

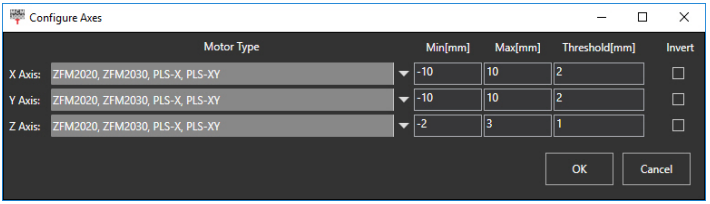


Figure 5–14 Configure Axes Window

CAUTION

Make sure to configure the correct Motor Type to each axis. Failure to do so may result in damage to the stage due to overtravel.

1. In the *Configure Axes* window, select the Motor Type for each axis from the drop-down menu.
2. Next, define the *Min* and *Max* values. These define the range of positions that can be commanded via the software interface. They will also correspond to the *Min* and *Max* values of the slider in the control window.
   Note: The 3-axis Knob Box does not observe the limits defined in the software, and instead allows users to adjust the stage position within

the full range of the configured stage's travel. When a stage has reached the absolute limit of its travel, the respective green LED on the Knob Box will blink.

The *Threshold* value exists to prevent accidental commands that are larger than intended. If a movement command exceeds the *Threshold* value, it will prompt a warning message to appear asking to confirm the large stage move.

The *Invert* checkbox will reverse the sliding axis orientation.

3. After entering all the parameters, click *OK* to confirm the settings. They will be saved automatically and do not need to be re-entered each time the software is opened.

5.3. MCM3000 GUI (Graphical User Interface)

The MCM3000 GUI consists of the menu and display area.

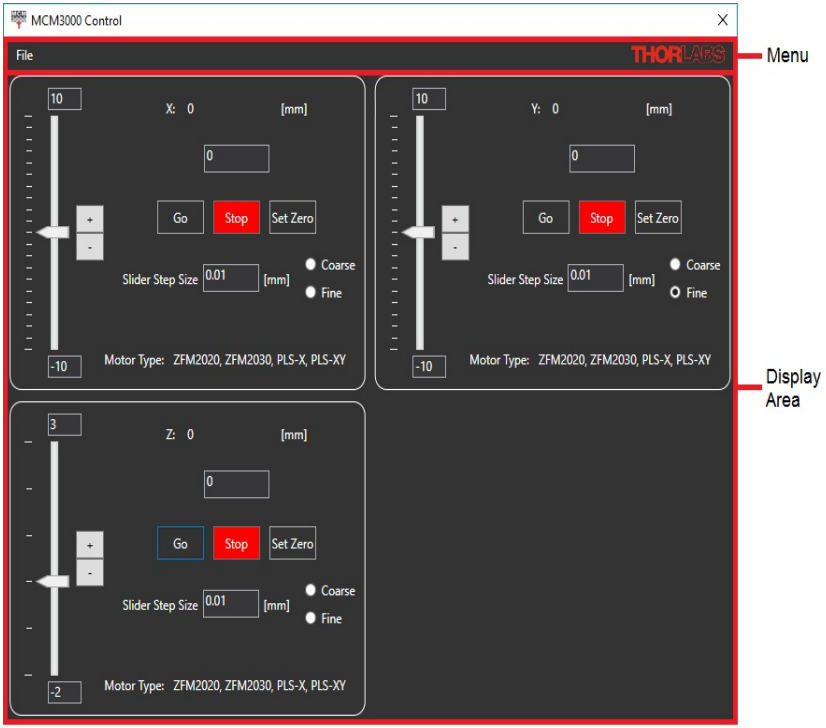


Figure 5–15 MCM3000 Control Window

5.3.1. Display Area

The display area controls the movement of the modules, which are connected to the Controller Box.

- **Slider:** use the mouse wheel or ± buttons to change the X/Y/Z position. The application does not allow any movement through the software if the current position of the module is outside the slider's limits. You must set a new zero value or set the module within the allowable range of movement. To change the slider's limits, see ***Page 16*** for details.
- **X/Y/Z:** enter a value within the respective text box, and click *Go*. The stage will move to this new position as long as it is between the *Min* and *Max* values. Click *Set Zero* to define the current position of the stage as zero. This button does not reset

the position of the stage to its state of minimum displacement. Click *Stop* to stop the module.

- **Slider Step Size:** defines the increment of travel associated with clicking the plus or minus buttons on the interface. The Coarse adjustment setting is always automatically 10 times larger than the Fine adjustment setting. When either the Coarse or Fine setting is defined, the corresponding value will adjust accordingly.
- **Motor Type:** shows the type of motor configured to the axis via the *Configure Axes* window.

Note: The MCM3000 software has a safety feature to prevent large, unintended movements of the stages through the GUI. Accordingly, the software does not allow movement beyond the hardware configured limits presented at the end of the X/Y/Z slider. In addition, if you attempt to move the X/Y/Z position at a distance greater than the threshold value in the *Configure Axes* window, a message appears to request confirmation of the movement.

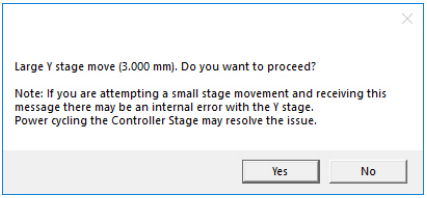


Figure 5–16 Software Warning Message

5.3.2. Menu

The Menu consists of the File menu. Use the File menu to configure the axes to the modules or to exit from the application.

- Click *File>Configure Axes* to open the *Configure Axes* window.

  *See **page 16** for a description of the settings.*

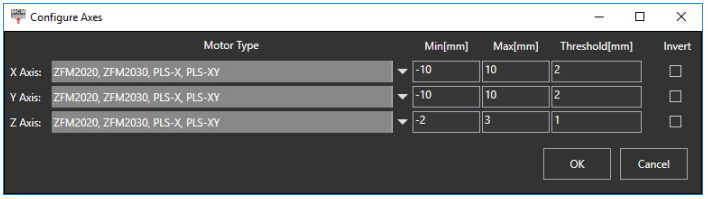


Figure 5–17 Configure Axes Window

- Click *File>Exit* to close the *MCM3000 Control* window.

5.4. Firmware

Note: It is only necessary to update the firmware if your device was purchased before 2017. If your device is using the old firmware, it will not run the new software.

1. Check that power and USB are connected to the control box. Confirm that the power switch is in the OFF position.
2. Locate a small hole under the power switch on the control box.

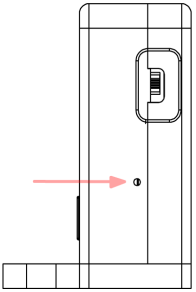


Figure 5–18 Location of Reset Button on Controller Box

3. Insert a 1.5 mm (or smaller) allen wrench into the opening until the internal reset button is depressed. Hold down the button by maintaining pressure on the wrench. While holding down the button, flip on the power. A window labeled *CRP DISABLD* should automatically appear showing a single file labeled *firmware.bin*. Release the pressure on the reset button and remove the wrench.

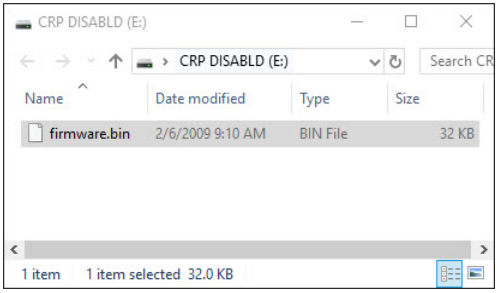


Figure 5–19 CRP DISABLD window

4. Delete the file. If prompted by Windows, confirm deletion.

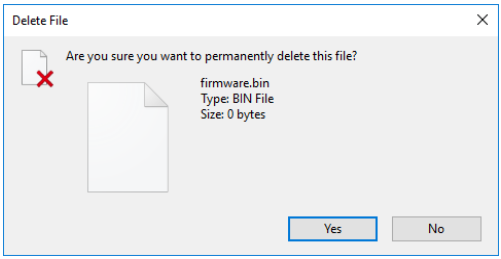


Figure 5–20 Confirm Deletion Window

5. Replace it with the *firmware.bin* file found on the installation CD within the folder labeled *70-0012-1.3 MCM3000 Controller Firmware*. The latest firmware can also be downloaded from www.thorlabs.com.

6. Power cycle the controller box. Firmware installation is complete.

Note: When the reset button is depressed during power-up, the controller box will revert to factory settings (using the original firmware it shipped with). Although there is no way to see which version of the firmware is currently installed, it is easy to verify that the correct version is loaded: if the device is compatible with the latest software, it is using the correct firmware.

Chapter 6 Maintaining the MCM3000 Series

Protect the MCM3000 Series from adverse weather conditions. The MCM3000 Series is not water resistant.

The unit does not need regular maintenance. If you suspect a problem with the MCM3000 Series, please contact our nearest office (see ***Thorlabs Worldwide Contacts Chapter on Page 31*** for details) for assistance from an applications engineer.

CAUTION

DO NOT open or tamper the unit. No part of this unit is customer serviceable.

6.1. Cleaning

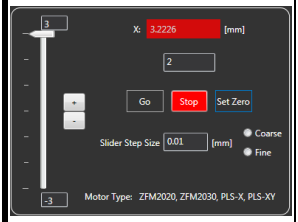
Use a damp lint-free cloth to clean the unit.

CAUTION

DO NOT expose the unit to spray, liquids, or solvents. This may damage the unit.

6.2. Troubleshooting

Problem	Solution
	-Check the cable connections. -Unplug and replug the power and USB connections. -Check *Device Manager>Port (COM & LPT)* on your computer. Make sure the COM port for the MCM3000 is set to 32. -Ensure that the firmware is up to date by following the instructions found on ***page 20***
Software Not Responding	-Check the cable connections. If the software is still not responding, please call Thorlabs' Technical Support.

Problem	Solution
Stage Moving Too Slow	-Check the Speed Control knob on the 3-Axis Controller Knob. Software cannot control the speed of the stage.
Stage Not Moving	-Check if the push-button corresponding to the stage on the 3-Axis Controller Knob has been enabled. This prevents the movement of the stage.
Push-Button Switch Does Not Turn Green	-Check the Joystick cable connection. -Unplug and replug the power and USB connections. -Press and release the push-button switch a couple of times.
Push-Button Switch Flashing Green	-Make sure the stage connected to the respective axis is not at the end of its travel limit. Rotate the knob in either direction to move the stage. **Note:** Do not use the software to move the stage when the push-button switch flashes green. -Check the cable connection from the stage to the Controller Box.
X/Y/Z Value Flashing Red 	- Check if the stage connected to the respective axis has traveled beyond the configured limit (Min/Max value) on the slider. To move the stage back to its position: -Rotate the knob of the respective stage in either direction to move the stage to its zero position. -Click *Set Zero* on the *MCM3000 Control* window. **Note:** Do not use the software to move the stage when the X/Y/Z value is flashing red. The software cannot move the stage to its zero position if it has traveled beyond the configured limit.

Chapter 7 Specifications

7.1. Controller Specifications

Specification	Value		
Item #	**MCM3001**	**MCM3002**	**MCM3003**
Motor Output			
Motor Drive Voltage	24 V		
Motor Drive Current	7.0 A (Peak) 3.0 A (RMS)		
Motor Drive Type	12-Bit PWM Control		
Control Algorithm	Open-Loop Microstepping		
Stepping	64 Microsteps per Full Step	128 Microsteps per Full Step	128 Microsteps per Full Step
Encoder Resolution	0.212 µm	0.5 µm	N/A
Total Steps per Revolution	12800	25600	25600
Maximum Stepping Velocity	4577 steps/s	793 steps/s	793 steps/s
Position Feedback	Quadrature Encoder (QEP) Input: 5 V		
Encoder Feedback Bandwidth	16 MHz		
Position Counter	32-Bit		
Operating Modes	Position and Velocity		
Velocity Profile	Trapezoid		
Motor Drive Connector			
Mechanical Specifications	15 Position D-Type, Micro-D Plug, Male Pin Connector		
Motor Drive Outputs	200		
Quadrature Encoder (QEP) Input	Single Ended		
Limit Switch Inputs	Forward, Reverse, Index		
Encoder Supply	5 V		
Input Power Requirements			
Voltage	24 VDC		
Current	3.75 A (Peak)		
General			
Computer Connection	USB 2.0		
Housing Dimensions	97.3 mm x 50.8 mm x 73.6 mm (3.82" x 2.00" x 2.90")		

7.2. Compatible Motor Specifications

Specification	Value
Motor Type	2-Phase Bi-Polar Stepper
Rated Phase Current	Up to 7 A Peak
Step Angle Range	1.8° to 20°
Motor Drive Mode	Current
Coil Resistance (Nominal)	5 to 20 Ω
Coil Inductance (Nominal)	2 to 5.5 mH
Position Control	Open or Closed loop

Chapter 8 Mechanical Drawing

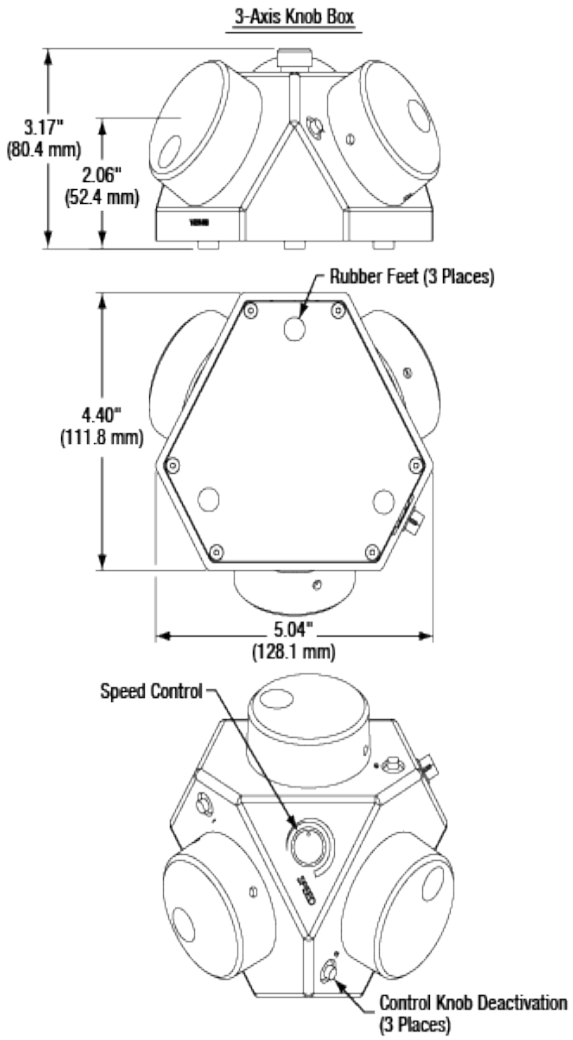


Figure 8–1 3-Axis Knob Box

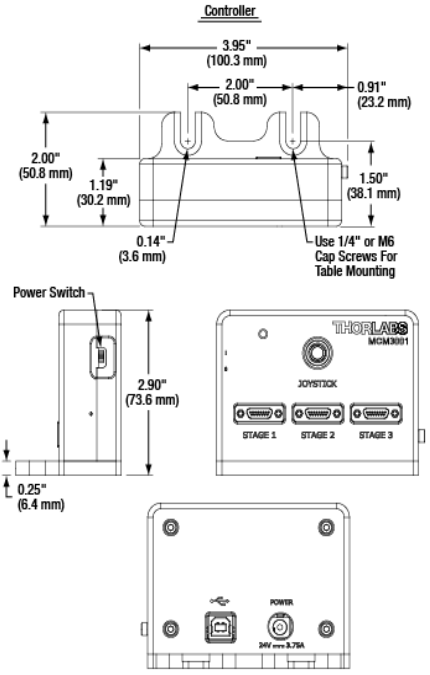
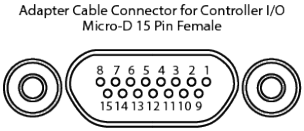
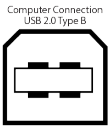


Figure 8–2 Controller Box

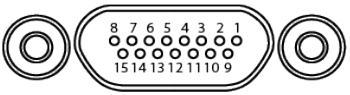




Pin	Description	Pin	Description
1	Stepper Motor Phase A+	9	Stepper Motor Phase B+
2	Stepper Motor Phase A-	10	Stepper Motor Phase B-
3	Not Used	11	Not Used
4	Not Used	12	Ground
5	5 V	13	5 V
6	Ground	14	LL
7	UL	15	Encoder Phase A+
8	Encoder Phase B+	-	-

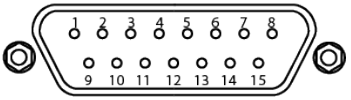
Figure 8–3 MCM3001 Pin Diagram

Adapter Cable Connector for Controller I/O
Micro-D 15 Pin Female



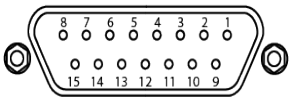
Pin	Description
1	Stepper Motor Phase A+
2	Stepper Motor Phase A-
3	Not Used
4	Not Used
5	5 V
6	Ground
7	UL
8	Encoder Phase B+
9	Stepper Motor Phase B+
10	Stepper Motor Phase B-
11	Not Used
12	Ground
13	5 V
14	LL
15	Encoder Phase A+

Adapter Cable Connector for Motor Drive
D-Sub 15 Pin Male

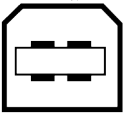


Pin	Description
1–6	Not Used
7	Stepper Motor Phase A+
8	Stepper Motor Phase B+
9–13	Not Used
14	Stepper Motor Phase A-
15	Stepper Motor Phase B-

Adapter Cable Connector for Encoder Drive
D-Sub 15 Pin Female



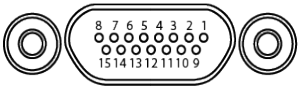
Computer Connection
USB 2.0 Type B



Pin	Description	Pin	Description
1	Not Used	9	Ground
2	Ground	10	LL
3	Not Used	11	UL
4	Not Used	12	Not Used
5	Encoder Phase B-	13	Encoder Phase B+
6	Encoder Phase A-	14	Encoder Phase A+
7	5 V	15	Not Used
8	5 V	-	-

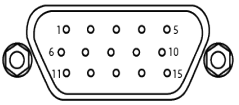
Figure 8–4 MCM3002 Pin Diagram

Adapter Cable Connector for Controller I/O
Micro-D 15 Pin Female



Pin	Description
1	Stepper Motor Phase A+
2	Stepper Motor Phase A-
3	Not Used
4	Not Used
5	5 V
6	Ground
7	UL
8	Encoder Phase B+
9	Stepper Motor Phase B+
10	Stepper Motor Phase B-
11	Not Used
12	Not Used
13	5 V
14	LL
15	Encoder Phase A+

Adapter Cable Connector for Motor Drive
HD15 D-Sub Female



Pin	Description
1	Ground
2	Counter-Clockwise Limit Switch Output
3	Clockwise Limit Switch Output
4	Stepper Motor Phase B-
5	Stepper Motor Phase B+
6	Stepper Motor Phase A-
7	Stepper Motor Phase A+
8–14	Not Used
15	Not Used

Computer Connection
USB 2.0 Type B

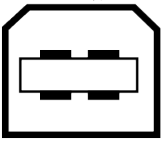


Figure 8–5 MCM3003 Pin Diagram

Chapter 9 Regulatory

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

This offer is valid for Thorlabs electrical and electronic equipment:

- Sold after August 13, 2005
- Marked correspondingly with the crossed out “wheelie bin” logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC
- Still complete, not disassembled and not contaminated

Wheelie Bin Logo

As the WEEE directive applies to self-contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e. g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB’s, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

Waste Treatment is Your Own Responsibility

If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

Ecological Background

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of life products will thereby avoid negative impacts on the environment.

Chapter 10 Thorlabs Worldwide Contacts

USA, Canada, and South America
Thorlabs, Inc.
56 Sparta Avenue
Newton, NJ 07860
USA
Tel: 973-300-3000
Fax: 973-300-3600
www.thorlabs.com
www.thorlabs.us (West Coast)
Email: sales@thorlabs.com
Support: techsupport@thorlabs.com

UK and Ireland
Thorlabs Ltd.
1 Saint Thomas Place,
Ely CB7 4EX
Great Britain
Tel: +44 (0)1353-654440
Fax: +44 (0)1353-654444
www.thorlabs.com
Email: sales.uk@thorlabs.com
Support: techsupport.uk@thorlabs.com

Europe
Thorlabs GmbH
Hans-Böckler-Str. 6
85221 Dachau
Germany
Tel: +49-(0)8131-5956-0
Fax: +49-(0)8131-5956-99
www.thorlabs.de
Email: europe@thorlabs.com

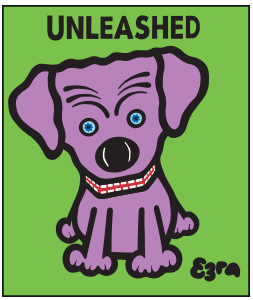
Scandinavia
Thorlabs Sweden AB
Bergfotsgatan 7
431 35 Mölndal
Sweden
Tel: +46-31-733-30-00
Fax: +46-31-703-40-45
www.thorlabs.com
Email: scandinavia@thorlabs.com

France
Thorlabs SAS
109, rue des Côtes
78600 Maisons-Laffitte
France
Tel: +33 (0) 970 444 844
Fax: +33 (0) 825 744 800
www.thorlabs.com
Email: sales.fr@thorlabs.com

Brazil
Thorlabs Vendas de Fotônicos Ltda.
Rua Riachuelo, 171
São Carlos, SP 13560-110
Brazil
Tel: +55-16-3413 7062
Fax: +55-16-3413 7064
www.thorlabs.com
Email: brasil@thorlabs.com

Japan
Thorlabs Japan, Inc.
3-6-3 Kitamachi,
Nerima-ku,Tokyo 179-0081
Japan
Tel: +81-3-6915-7701
Fax: +81-3-6915-7716
www.thorlabs.co.jp
Email: sales@thorlabs.jp

China
Thorlabs China
Room A101, No. 100, Lane 2891
South Qilianshan Road
Putuo District
Shanghai 200331
China
Tel: +86 (0) 21-60561122
Fax: +86 (0)21-32513480
www.thorlabschina.cn
Email: chinasales@thorlabs.com



THORLABS

www.thorlabs.com