Ealing

User Manual

Motor Controller Software

HYLAND
Optical Technologies

1500 Green Hills Road
Scotts Valley, CA 95066-4945
fon 831.461.1101
fax 831.461.1136

Imprint

Hyland Optical Technologies, Corp.

340 El Pueblo Road, Suite E

Scotts Valley, CA 95066

United States

Phone 1-831-461-1930

Internet www.hylandopticaltechnologies.com

E-Mail Info@Hylandopticaltechnologies.com

Images inside this manual may show slight deviation from the actually delivered software.
This does not affect function or operation.
Responsible for the content published: Hyland Optical Technologies, Corp.

The manufacturer keeps the right to change information and technical equipment without notice.

Printed in Germany 3/2015

Safety Rules

WARNING!

Read the safety precautions in this section before installing, powering, operating or servicing this product.

Symbols used in this manual

The following symbols are used to identify important safety information

WARNING! Motorized moveable parts. Assure safety precautions.

CAUTION: Special attention to this point is necessary to meet health regulations and to avoid damage.

An important note to ensure an unproblematic operation.

Important safety information

This manual describes the functionality of the Ealing Motor Controller software only! Before operating a motor system, read the hardware user manual of the controller and motor carefully to prevent injury to humans and animals and damages to integrated or connected devices.

WARNING: This software controls motorized movable parts. Depending on your setup this involves more or less risk of injury.
THIS SOFTWARE IS NOT VERIFIED TO ACT AS SAFETY CONTROL!

If necessary provide a hardware safety shutdown system to meet local regulations.

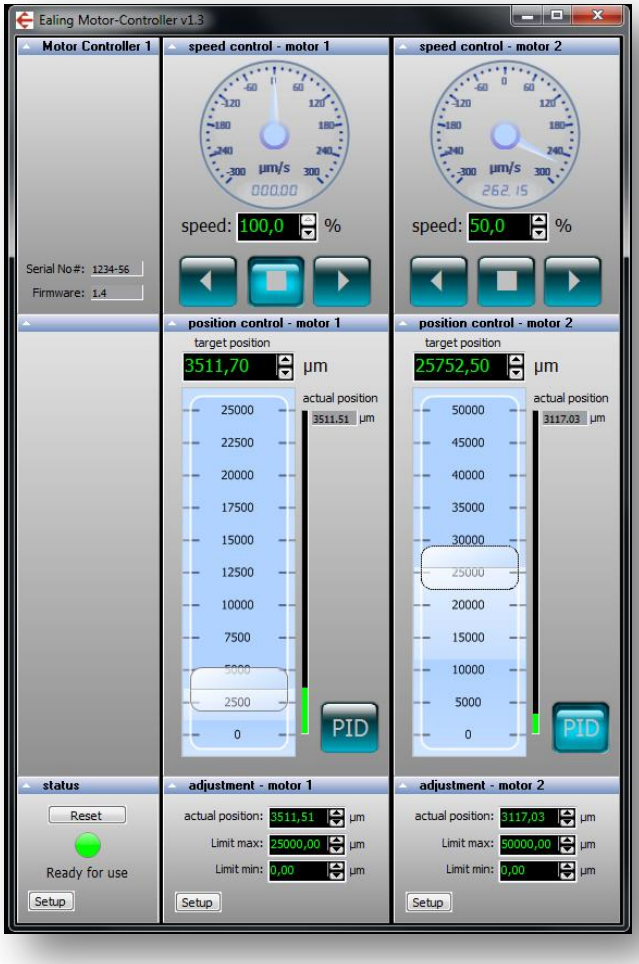
Table of Contents

1. Description

The Ealing Motor Controller Software is designed to control the Ealing USB Motor Controller.

The software is able to handle more than one connected USB-controller.
It offers both the possibility to set basic setup parameters and the easy operation of the system.

The connected motor(s) can be controlled by an open loop speed control or by a closed loop PID position control.



The Ealing Motor-Controller software with one USB-controller and two motors connected

2. Setup

2.1 System Requirements

Hardware:

The Ealing Motor Controller Software runs on all common PCs with USB 2.0 ports (or higher).

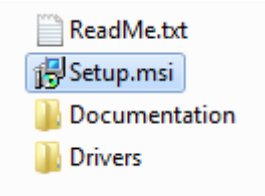
Supported operating systems:

Windows 8 / Windows 8 64bit / Windows 7 / Windows 7 64bit / Windows Vista / Windows Vista 64bit / Windows XP / Windows XP 64bit

2.2 Motor Controller Software Setup

Before running the Motor Controller “setup.msi”, please ensure that you are logged in with administrator privileges.

You will find the setup file at the root directory of the installation disk:

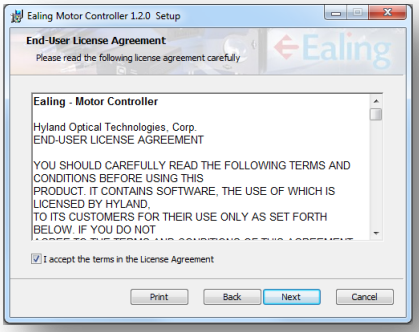


If they are not already on your system, the USB device drivers need to be installed separately. (see chapter 2.3 below for details)

Now, please follow the instructions on the screen:

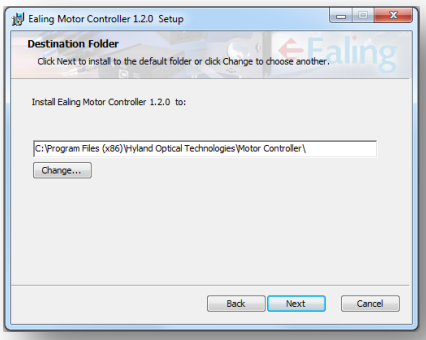
Welcome screen: click Next

1.



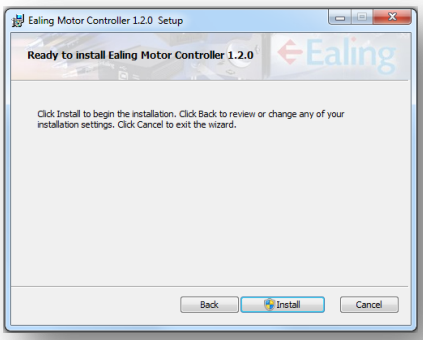
Accept the license agreement

2.



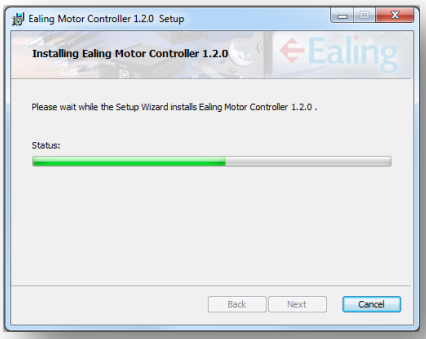
Choose a destination folder

3.



Click Install button

4.



Please wait…

5.

Click Finish button

2.3 USB Driver Installation

The device driver installer is located in a sub folder of the installation-CD called "drivers".

Updating the device drivers may affect other devices on your computer that are based on FTDI communication chips. (e.g. standard USB to RS232 adapter cables)

Please note that if updating the device driver, virtual COM ports may be reassigned to the devices with a new numeration!

This is important especially on machine control PCs where the control software is programmed using COM ports. Updating the device driver may result in editing initialization files on the machine control system to register the new COM port numbers.

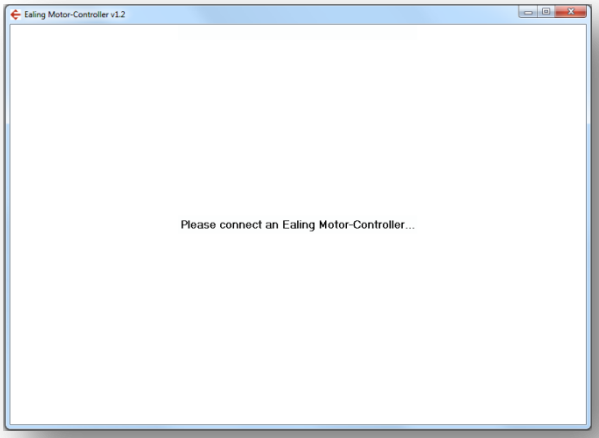
The most recent version of the FTDI device driver installer you will always find at: http://www.ftdichip.com/Drivers/D2XX.htm.

- Before running the installer, please disconnect all USB devices from the PC.
- Ensure that you are logged in with administrator privileges.
- Double-click on the "Driver Installer for Ealing Devices (FTDI CDM20830).exe".
- On Vista and higher confirm the UAC Message.
- Follow the instructions on the screen.

Alternatively, if you are using Windows Vista or above and your computer is connected to the internet you can just connect your device via USB to the computer and wait until windows installs the drivers by Windows Update.

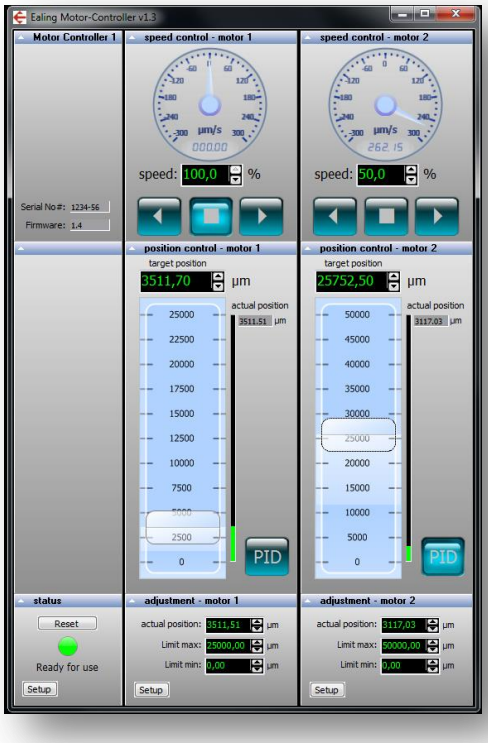
3. Operation

If the software is started without any USB-Motor Controller connected to the PC the software will start-up with a simple note to connect a device.



No USB-Motor Controller connected yet…

If a USB-Controller is connected it will be displayed in the main window:



Each controller will show up as a smaller vertical area left sided to one or two motor control area(s).

3.1 Controller Area

For the controller there are only a few controls in the area.

The controller area

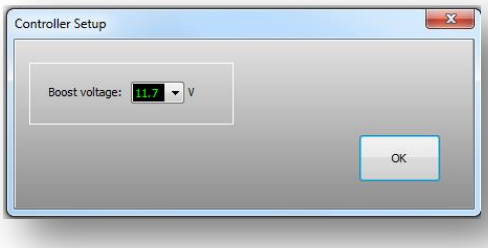
In the upper field the firmware and serial number is displayed.

In the lower field the actual status is displayed. This should be a green Indicator and a “ready to use” message.

If an error occurs like “over current” or “controller fault” this will be displayed here.

Clicking the “reset” button will reset the USB-Controller firmware to clear the fault.

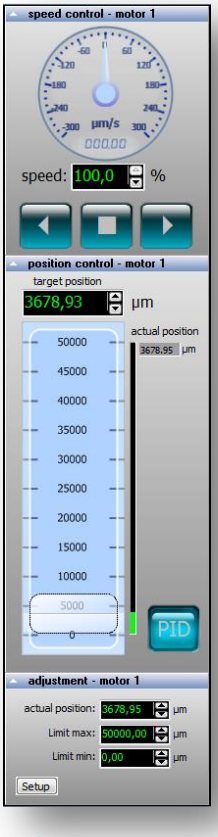
The “setup” button will show up a small window where you can setup the boost voltage of the USB-Controller:



3.2 Motor Area

There are two methods to control a motor:

- open loop speed control
- closed loop PID position control.



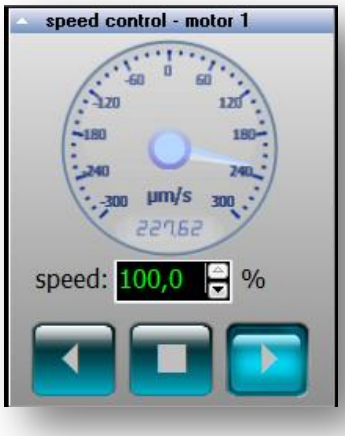
The motor area

3.2.1 Speed control

For speed control there are 3 buttons: forward, backward and stop.

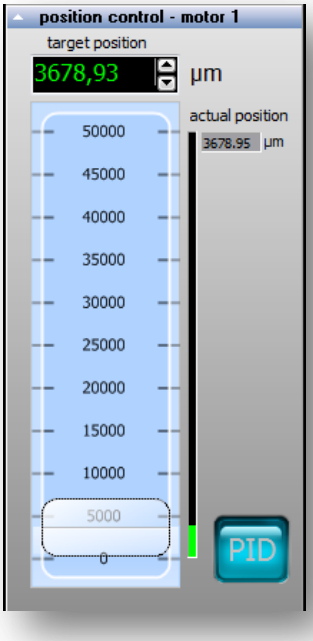
The speed can be adjusted in the field above. The speed is given in percentage since it is not controlled in a closed loop. The given value is just an approximatively value. The actually resulting speed in µm/s is monitored in the speed gauge above.

Any software limits given in the “adjustment” field (see chapter below) are ignored in this mode. The motor will run as long as a hardware limit switch is reached or the gear runs into its end. In this case continuously moving can damage the motor!



3.2.2 Position control

Position control will be activated by clicking the PID Button at the bottom right in the “position control area:

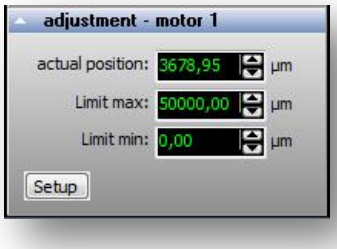


In this case the absolute position can be adjusted with the slider or the number field above it.

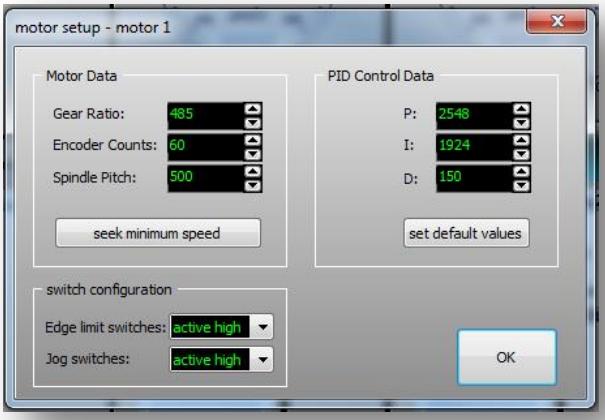
The actual preached position is displayed beside the slider.

For proper functionality of this mode it is important that the limits are correctly adjusted at the “adjustment” area (see next chapter for details)

3.2.3 Adjustment



Clicking on the “setup” button will show up a basic setup window for the given motor:



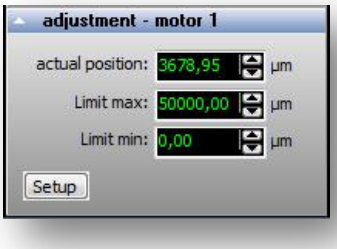
Enter the motor data as given in the data sheet of your motor: gear ratio, encoder counts and spindle pitch. Afterwards click “seek minimum speed” once to calibrate the minimum current for the motor to run.

NOTE: This needs to be done only once after you changed a motor in your setup.

The PID control data should be left at their default values if not mentioned in the motor data sheet.

At “switch configuration” you can select the logic for the optionally connected hardware limit switches from “active high” to “active low” or “disabled”.

Click “OK” to close the window.



Now depending on your motor adjust the min and max limit according to the spindle length.

For example if you have got a motor with a 50mm spindle length it is up to you if you select 0…50000µm, -25000…25000µm or a smaller range like 0…10000µm as the limits for position control. The limits of the slider in the position control area will updated immediately. As the last step you need to edit the true actual position where your spindle position is right now in between the limits. (after adjusting the limits this parameter might show up in red if the actual value is not in between the limits. Just overwrite the value with the true value)

To position the spindle to a reference point just before entering this value use the speed control buttons.

If the adjustment is finished correctly the position control may be used for very precise positioning.

4. Support and Service (Manufacturer identification):

Hyland Optical Technologies, Corp.

340 El Pueblo Road, Suite E
Scotts Valley, CA 95066

United States

Phone	1-831-461-1930
Internet	www.hylandopticaltechnologies.com
E-Mail	Info@Hylandopticaltechnologies.com