

EDGE 4X™ AF Stage Evaluation Kit

User Guide



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Introduction

Revision History

The revision history shows the last four revisions to this document. The last revision is shown first.

| Revision | Release date | Details |
|-----------------|---------------------|---|
| 01 | August 2014 | First draft |
| A | April 2019 | Added Encoder Specifications section Added Linear Stage Specifications section |

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Introduction

The ED4A AF Stage™ Evaluation Kit provides a pre-assembled motion module. The motion module includes:

- EDGE 4X-AF Stage – driven by two EDGE 4X Piezo motors
- EDGE 4X Controller/Driver
- Power supply and communication card

The evaluation kit includes the Nanomotion XCD Commander for communication with the Controller/Driver. The user can operate the stage in open loop using the XCD Commander, or write programs in the Nanomotion XMS script for operation in closed loop.

Related Products

| Product | Part Number |
|---------------------------|---------------|
| ED4A AF STAGE AF | EDG450E100-XX |
| EDGE 4X Controller/Driver | S833150200-XX |

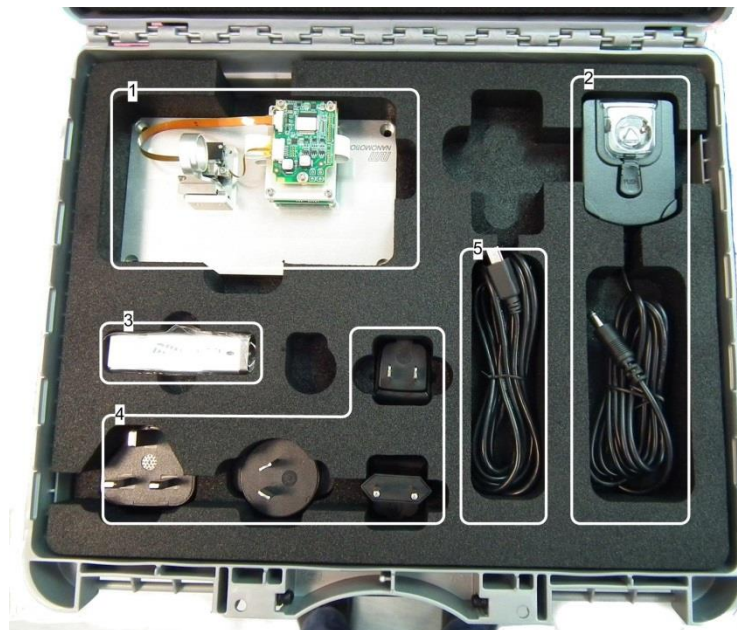
Related Documentation

| Document | Document Number |
|---------------------------------------|-----------------|
| EDGE 4X Controller/Driver User Manual | S833458000-XX |
| XCD FW ver 1.5.0.7 User Manual | XCD0458002-XX |

Overview of the EDGE 4X AF Stage Evaluation Kit

The ED4A AF STAGE™ Evaluation Kit provides the ability to operate and evaluate the Nanomotion AF motor in a closed or open loop. The Evaluation Kit consists of the motor assembled on a Motion Module, an XCD driver board, and a communication board.

The ED4A AF STAGE Evaluation is supplied in a hard plastic case containing all physical equipment and software required to operate the system.



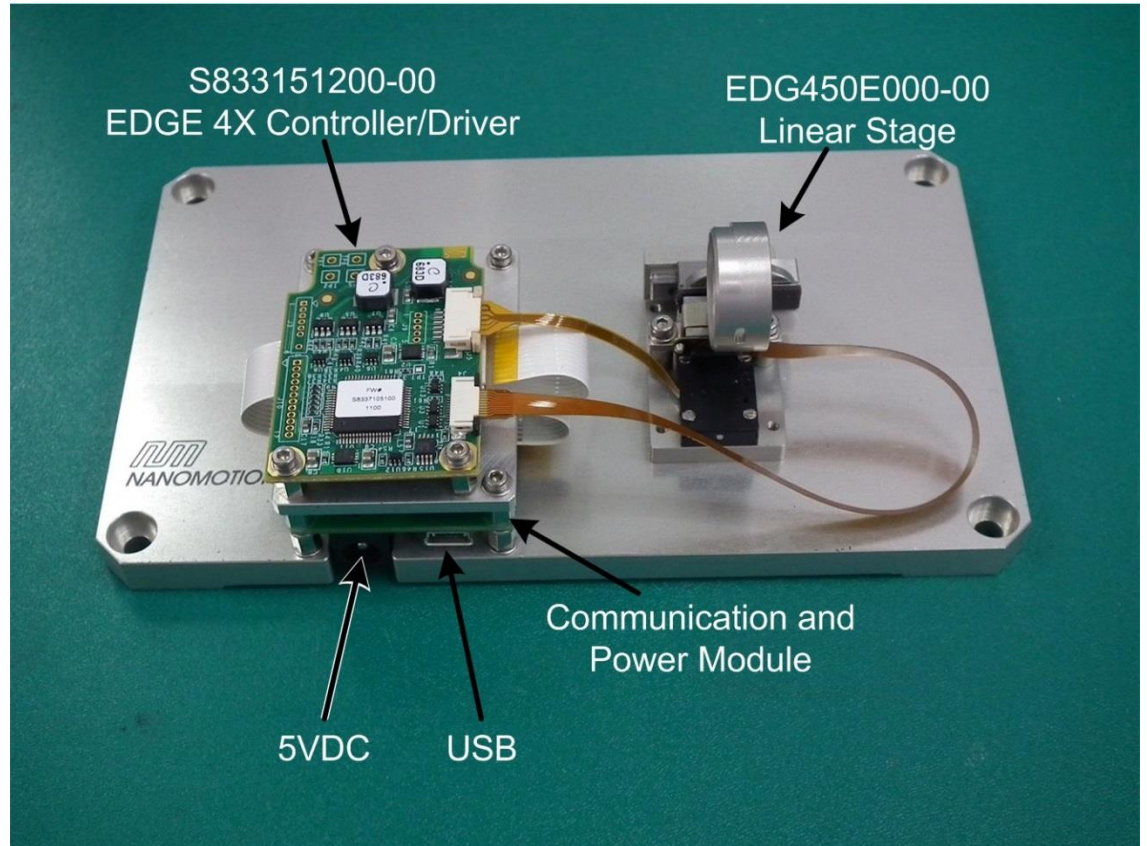
ED4A AF STAGE Evaluation Kit Contents

ED4A AF STAGE Evaluation Kit contents

| | |
|---|---|
| 1 | Motion Module – ED4A AF Stage with Power Supply and Driver |
| 2 | 5 VDC power supply – includes international adapters for 110/220 VAC power |
| 3 | Disk-on-key <ul style="list-style-type: none">• XCD Commander Version 1.5 installer• XCD Software Version 1.5.0.7 User Manual• Scripts – contains a backup of the Config_file.s19 file• S833458000-00 EDGE 4X Controller/Driver UM |
| 4 | International mains power adapters |
| 5 | USB cable - 1.5m length |

ED4A AF STAGE Evaluation Kit Motion Module

The Motion Module is a complete motion control system assembled on a rigid jig. The figure below shows the Evaluation Kit Motion Module and its components.



ED4A AF STAGE Evaluation Kit Motion Module

Evaluating ED4A AF STAGE Operations

The XCD Commander version 1.5.0.7 provides a means of running sample motion control scripts on the motion module. New scripts (*.xms) can be written to test application specific operations.

1. Insert the Evaluation Kit Disc-on-key into a USB connection on the computer.
2. Locate the XCD Software (...\\XCD_1.5\\Nano 1.5.0.7\\InstallationDisk\\) and copy the folder to the computer.
3. In the folder **InstallationDisk** double click on setup.exe to install the XCD Commander.

When the installer finishes it will launch XCD Commander. Because there is no Driver connected at this time a **No Communication Warning** is displayed. XCD Commander must be installed before connecting the Motion Module.

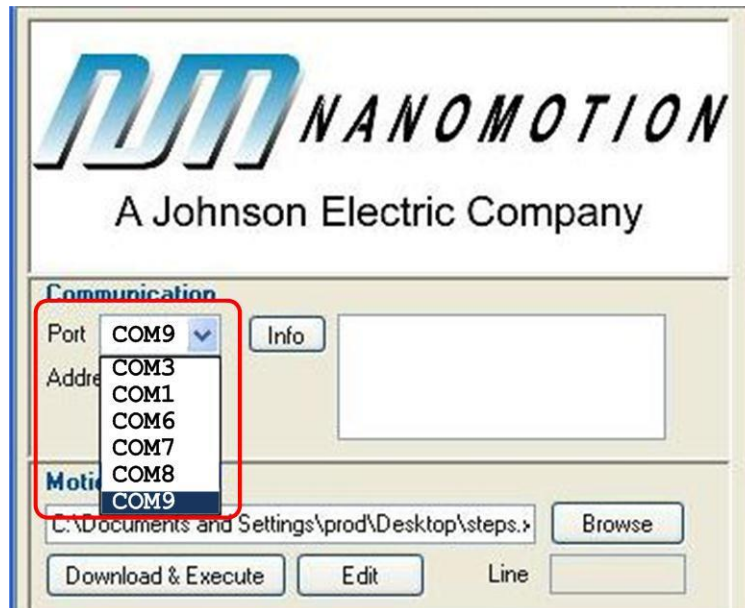
4. Click OK and the XCD Commander window opens. Close the XCD Commander.
5. Place the Motion Module on a flat stable surface.
6. Connect the communication card to a computer with the USB cable. There are two options for connecting.
 - Connecting to a computer with the XCD Commander software, use a communications adapter card.
 - Connecting directly to the end user's Host, direct connection is possible.
7. Connect the communication board to the external +5 VDC power supply.



The external power supply has a set of 110/220 VAC international adapters for connection to mains.

8. Launch XCD Commander.
9. In the Communication pane open the **Port** drop-down menu.
10. Locate a sequence of four consecutive numbers and select the fourth number in the sequence.

The dropdown menu displays many numbers, but only four will be consecutive. In the following figure the four number sequence is COM6, COM7, COM8, and COM9. Select COM9.



Four Number Sequence in Port Dropdown Menu

11. In the **Address** field select **A4**.
12. To confirm successful communication click **Info**.

The **Info** field displays the Controller and application information:

- Controller version and build
- Controller serial number
- Code
- Controller/Driver type and mode



Ensure that the Controller version is the same as the XCD Commander version shown in the window header.
For example, Controller version 1.5.0.7 and XCD Commander 1.4

13. The XCD Commander application is ready for use.

Refer to the **XCD Software 1.5.0.7 User Manual** for additional setup and detailed operating instructions. The manual contains:

- Overview of Nanomotion motor control
- XCD Commander installation, setup, and operating instructions
- XCD Motion Software syntax, commands, parameters, and values
- Communication Protocol description with syntax and command tables



The Controller/Driver supplied with the evaluation kit has a configuration file already programmed in Flash memory. If the configuration file is accidentally deleted copy the file .../Disk-on-Key/Scripts/Config_file.S19 to Flash memory.

Encoder Specifications

ENCODER Manf. P/N: RLM2HDA13BA15C00 Manufacturer: RLS,
 resolution: 0.24um

Linear Stage Specifications

Linear Stage Manf. P/N: MS 5-20.13 Manufacturer: SCHNEEBERGER

Dimensions and Load Ratings

| | | MS 5 - 20.13 |
|---------------------------------|-----------------------------------|---------------------|
| A | System height | 6 |
| B | System width | 10 |
| B1 | Rail width | 5 |
| B2 | Distance to the stop surfaces | 2.5 |
| J | Carriage height | 5.5 |
| J1 | Rail height | 3 |
| H | Stroke | 13 |
| L | System length excluding end parts | 20 |
| L1 | Hole spacing | 12 |
| L2 | Start/finish spacing of holes | 4 |
| N | Hole spacing across carriage | 4 |
| e: | Thread | M2 |
| g: | Usable thread length | 2.35 |
| Weight in grams | | 7.3 |
| Load ratings and forces: | | |
| C [N] | Dynamic load rating | 645 |
| C0[N] | Static load rating | 936 |
| MQ[Nm] | Transverse dynamic moment | 1.81 |
| M0Q[Nm] | Transverse static moment | 2.62 |
| ML[Nm] | Longitudinal dynamic moment | 1.66 |
| M0L[Nm] | Longitudinal static moment | 2.4 |

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Evaluating ED4A AF STAGE Operations

