

# Quick start guide

## XLA micro actuator - closed loop



### Before you start:

Do **not** lubricate! Please see FAQ.

Do **not** insert or remove ZIF cable while powered! Damage may ensue.

Do **not** touch white ceramic strip with your fingers! If touched, clean with IPA alcohol and let the actuator run in for 2 minutes once it is ready to move (step 8).

The XLA is self-locking but is manually overridable without damage, whether powered on or off. For vertical / inclined use, advanced tuning is necessary for optimal performance. Please contact [support@xeryon.com](mailto:support@xeryon.com) in case of any questions.

### Follow the steps below to get started:

#### Powering up (see schematic overview)

1. Connect ZIF cable (see photos on page 2 for orientation) to the actuator and the controller.
2. Connect USB cable to the controller and your computer.

Using DC power adapter:

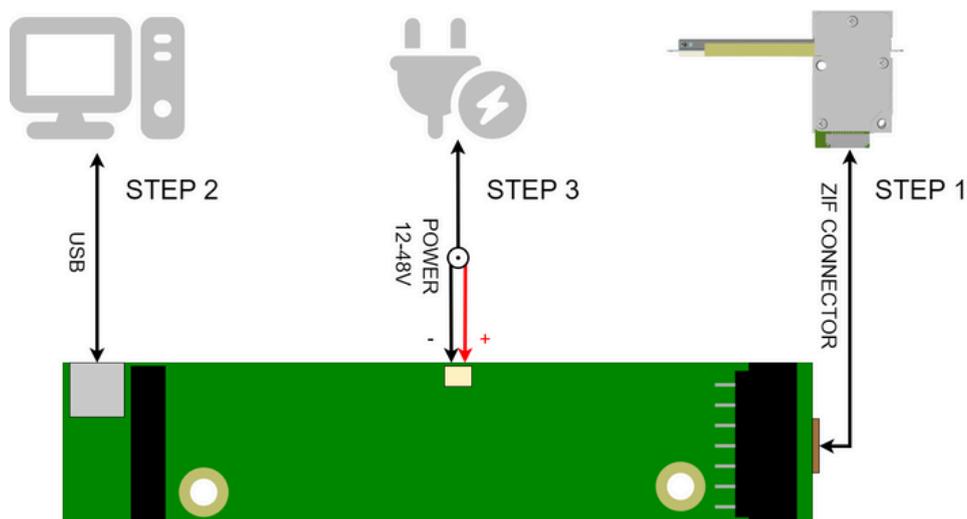
- 3a. Plug the small white connector at the end of the thin power cable into the controller.
- 3b. Plug the other end (5.5mm female jack) into the 5.5mm male jack of the DC adapter.
- 3c. Finally, plug the DC adapter into a power source.

Using your own power source:

- 3d. Plug the small white connector at the end of the thin power cable into the controller.
- 3e. Connect the other ends (white / red) to a power source of your choice.

#### Setting up the interface and moving the actuator

4. Open the Windows Interface from the Xeryon USB stick.
5. Select the correct COM port and click "connect to port".
6. Load settings\_default.txt.
7. Press "find\_index" button.
8. Actuator is now set up and ready to move.
9. Use the buttons to move manually or press "start demo" to initiate the demo program.



Schematic overview of connections (steps 1-3)

# Frequently asked questions

## *XLA - micro actuator - closed loop*

**Q: What am I looking at?**

**A:** You're looking at a Xeryon micro actuator driven by an ultrasonic resonant piezo motor.

**Q: How does it work?**

**A:** The motor uses vibration to move a ceramic tip in an elliptical pattern at a very high frequency (80 kHz - 180 kHz). Spring-loaded against a ceramic strip on the actuator rail, it generates very small but rapid movements, resulting in high-speed motion and silent operation with a long lifetime.

**Q: How does it differ from electromagnetic linear actuators?**

**A:** Xeryon's micro actuators offer a unique combination of high speed, precision, long stroke, and durability in an ultra-compact design, overcoming the limitations of traditional linear actuators where trade-offs have to be made (e.g. stroke length in voice coils and size factor in linear motors). Xeryon's actuators are gearless, self-locking, energy-efficient and operate at low voltages. They don't produce a magnetic field, are back-driveable, and free from drift or play.

**Q: How does it differ from other piezo linear actuators like stick-slip or walking piezo?**

**A:** Xeryon's ultrasonic piezo actuators are much faster, have a much larger stroke, a much (much!) longer lifetime, operate noiselessly, consume less power, and operate at a much lower voltage at the piezo element.

**Q: What voltage should we use?**

**A:** 12 - 48 VDC.

**Q: Why does the rail / rod not move freely?**

**A:** When you manually move the rod, you might sense a 'grinding' feeling. This is normal. The motor is spring-loaded against the actuator rod and is friction-based. The actuator's holding force is equal to the driving force. Manually overriding the motor, whether powered on or off, is completely fine and does not cause motor damage.

**Q: Can I use UART to control the actuator?**

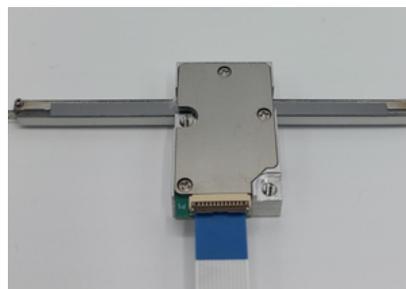
**A:** Yes. After following all steps on page 1, send the following commands: 'UART=9600' followed by 'SAVE'. Make sure to remove the quotes. Afterwards, unplug USB. For easy pin connection / access use the supplied break-out board. Use OUT 6 for Tx and IN 6 for Rx. Don't forget the ground. :)

**Q: How do I orient the ZIF cable?**

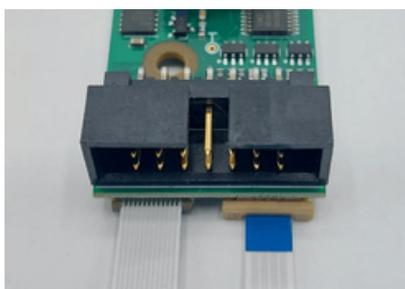
**A:** Please see these pictures below.



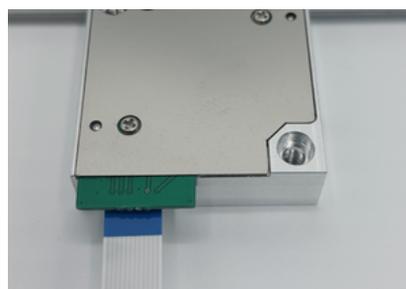
Controller - XLA-1 & XLA-5



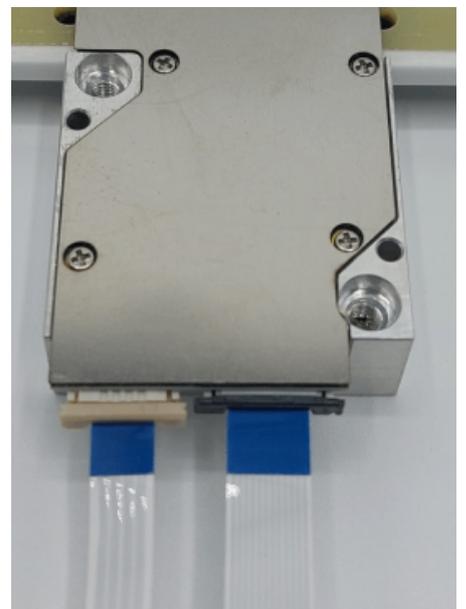
Actuator - XLA-1



Controller - XLA-10



Actuator - XLA-5



Actuator - XLA-10