

## User Guide for Piezo Control Unit CU 30

# Control Unit CU 30 with USB-Interface

**Firmware Version x.xx**

**Date: 27.03.2007**

## **Piezo-control unit CU 30**

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## 1. Driver installation

**You have three folders on the CD directory:**

- 1.) CU30-0
- 2.) CU30\_20050724
- 3.) mechanics\_open\_loop\_labview\_lib
- 4.) Set EEPROM-ID

Please copy these folders to the hard disk of your PC.

Then connect the piezocontroller CU 30 with the USB connection cable to USB port.

Install USB driver (ezusb.sys and ezusbw2k.inf) when you are starting the first time (folder "Software Controller CU 30"). (Please ignore the appearing Microsoft certification warnings!)

Start the „CU30-0.exe“ (folder "CU30-0") by double clicking on the file.

## 2. Description of the control unit

### 2.0 The CU30 control program

Connect the CU30 controller to an USB-Port on your PC and open the "**CU30-0.exe**" ("0" indicates the current EEPROM-ID of the CU30 controller – by default it is "0") in the folder "**CU30**". You should see the following window:

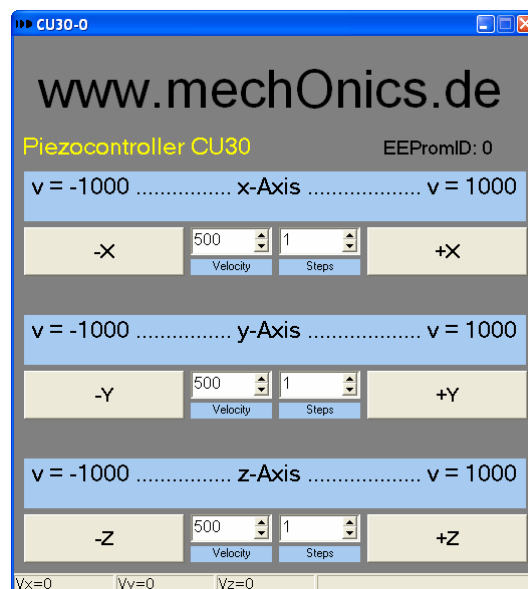


figure 2.0: Piezocontroller CU30 control program

In the upper left corner you should see the correct program name (figure 1.0: in this example "CU30-0"). As well you should see the correct ID-value on the right side behind "**EEPROMID:**" (figure 1.0: in this example "0").

#### **Remark:**

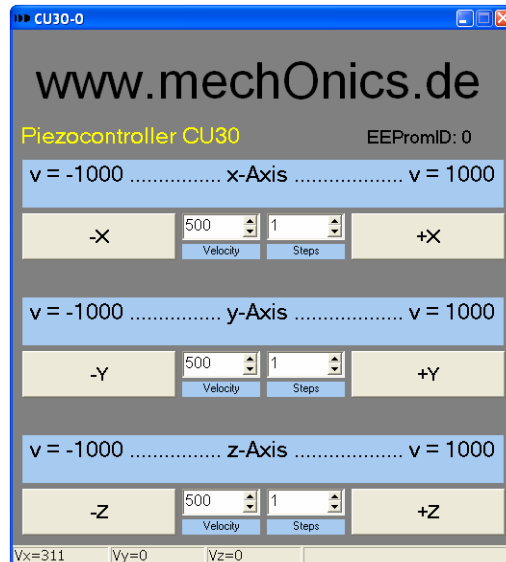
For changing the EEPROMID please see the folder "Set EEPROM-ID". The values of the EEPROMID can be chosen from 0 up to 15. This gives you the possibility to run up to 16 devices CU 30 at with one PC (an active USB-hub will be needed to supply the necessary voltage).

For driving a controller CU 30 with EEPROMID xx please rename the "CU30-0.exe" with "CU30-xx.exe". For example you have chosen the EEPROMID "10" you have to rename the "CU30-0.exe" with "CU30-10.exe" and start this program to run the connected piezo stage.

## 2.1 Sliding moves

The blue underlayed fields for the three axes (x-, y-, z-axis) have the same functions as a slider. If the mouse-pointer goes over a field he will transform in a double-arrow.

This transforming represents the possibility to slide the mouse-pointer even along the field and change thereby the velocity of the connected piezocontrolled unit (x-, y-, z-axis). The current adjusted velocity by moving the mouse-pointer is shown in the lower left corner of the window (*figure 1.1*:  $V_x=311$ , velocity = 1 ~ 1  $\mu\text{m/s}$ , velocity = 1000 ~ 1.2 mm/s).



*figure 2.1:* Velocity change by moving the mouse-pointer over the blue underlayed axes-fields. *Example:* x-Axis  $V_x=311$

By pressing and holding the left mouse button the connected piezocontrolled unit will move with the current velocity in the direction you pretend. In the middle position of the field the velocity is "0". As shown, the maximum velocity in positive and negative direction is +/- 1000. At the left and right end of the fields the maximum velocity is reached. During the operation of the piezocontrolled unit you can slide along the field by holding the mouse button so that the unit will follow your new settings.

## 2.2 Predefined moves

Under the sliding fields for the three axes there are the buttons and input fields for a predefined move. By default the velocity of the axes is set to "500". You can change this value by clicking into the input field and change it directly with your keyboard or you can use the up and down arrows to increase or decrease the value. The minimum value is "1" and the maximum value is "1000".

After you have changed the inputs the piezocontrolled unit will move with the adjusted velocity after you have clicked the button for the axis you want to move. The steps value range from "1" to "999,999" steps (Step = 1 ~ 25 nm). Depending on your choice of the direction you want to move the unit, you have to click the negative or positive ("- or +") button of the axes. If you click the button again the piezocontrolled unit will move again with the adjusted settings in the same direction.

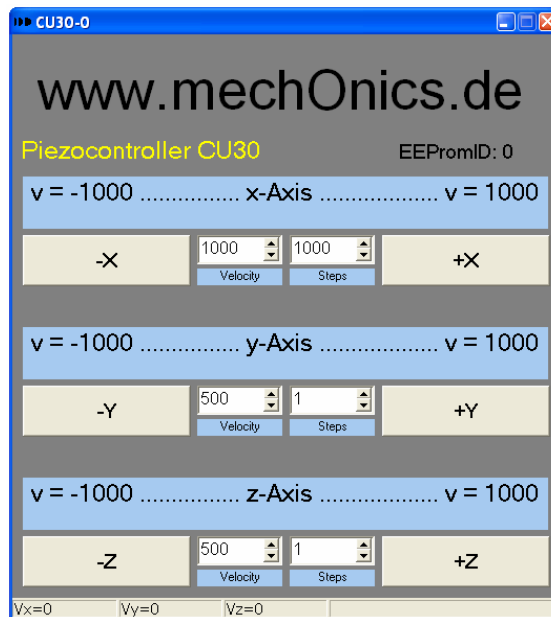


figure 2.2: Example of an adjusted velocity of “1000” and steps of “1000” for the x-axis

### 2.3. Technical Data of the control unit

Power supply:	only the USB-connection is needed
Connection:	9pin SubMin-D-connector (female) maximum three positioners can be connected Pin-order: Pin 1 = X, Pin 2 = Y, Pin 3 = Z, Pin 5 = GND
Translation Speed: (without load)	FAST     about 1 mm/s (depends on the positioner) SLOW     about 0.5 mm/s (depends on the positioner) STEP     about 20 nm/step ( <b>depends on load and friction</b> )
Dimensions:	118 x 86 x 26 mm (L x W x H)
Interface:	USB-Interface 1.1 with standard USB-A-connector
Notice:	The max. output voltage is about ca. 50V. The control unit connected to the positioner is in agreement with all corresponding EU-recommendations (CE-conform): <ul style="list-style-type: none"> <li>• EN55011 / 07.1992, Class B</li> <li>• EN50082-2 / 02.1996</li> </ul>

You can get customized control units and software on request.

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