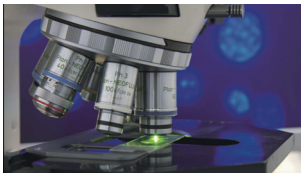
E53 Series Software Control

User Manual

Version: V1.0



DECLARATION

Declaration!

This user manual is a integrated user manual of the E53 series piezoelectric controller. Please read this user manual carefully before using this controller. Follow the instructions in the manual during use. If there is any problem, please contact us for technical support. If you do not follow this manual or disassemble and modify the product yourself, the company will not be liable for any consequences arising therefrom.
Please read the following to avoid personal injury and to prevent damage to this product or any other product connected to it. In order to avoid possible hazards, this product can only be used within the specified range.

Notice!

Do not touch any exposed ends of the product and its accessories.
There is high voltage inside. Do not open the case without permission.
Do not connect or disconnect input, output, or sensor cables with power on.
Please keep surface of E53 clean and dry, don't operate in humid or static environment.
After use, output voltage should be cleared to zero before turning off the controller switch, such as switching the servo state to the open-loop state.

Danger!

The piezoelectric power amplifier described in this manual is a high-voltage device capable of outputting high currents, which can cause serious or even fatal damage if not used properly.
It is strongly recommended that you do not touch any parts that connect to the high voltage output.
Special Note: If you connect it with other products in addition to our company, please follow the general accident prevention procedures.
Operating the high-voltage amplification requires training professional operators.

Warning!

If the voltage exceeds the PZT's tolerable range, it will cause permanent damage to the PZT. Before adding voltage to the PZT poles, it must be ensured that the positive and negative poles of the PZT are connected correctly and the operating voltage is within the allowable range of this PZT.

Cautious!

E53 housing should be installed on a horizontal surface in an area with a 3CM air flow area to prevent internal convection in the vertical direction.
Insufficient airflow can cause equipment to overheat or premature instrument damage.

目录

1. Security

1.1 Introduction

- Keep the surface of piezo controller clean and dry. Do not operate in the humid or static environment.
- Piezo controllers are used to drive capacitive loads (eg piezo actuators).
- It should not be used in user manuals of other products of the same name.
- Pay special attention that it cannot be used to drive resistive or inductive loads.
- Piezo controllers could be used for static and dynamic operating applications.

1.2 Safety instructions

Piezo controller is based on the national safety standard. Improper use may cause personal injury or damage to the piezo controller. The operator is responsible for the correct installation and operation of the piezo controller.

- Read the user manual in detail.
- Please eliminate any faults and potential safety hazards caused by the faults.

If the protective ground wire is not connected or connected incorrectly, there will be a possibility of leakage. If you touch the E53 piezo controller, it may cause serious or even fatal injuries.

If the piezo controller housing is opened without permission, touching the live parts may cause electric shock, resulting in serious or even fatal injury or damage to the piezo controller.

- Only authorized professional technicians with corresponding qualifications could open the piezo controller.
- When opening the piezo controller housing, you need to disconnect the power plug.
- Do not touch any internal parts when operating under bare conditions.

1.3 Notes

- The contents in the user manual are all standard descriptions, and the customized parameters are not explained in detail in this manual.
- Latest user manual could be downloaded on CoreMorrow website.
- When operating the piezo controller, the user manual should be placed near the system for easy reference in time. If the user manual is missing or damaged, please contact CoreMorrow customer service department.
- Please promptly add all the information given in the manufacturer's user manual, such as supplements or technical instructions.
- If your user manual is incomplete, a lot of important information will be missed, causing serious or fatal injury and causing property damage. Please read and understand the content in the user manual before installing and operating the piezo controller.
- Only professionals who are authorized to meet the technical requirements could install, operate, maintain and clean the piezo controllers.

2. E53 Software Applicaiton

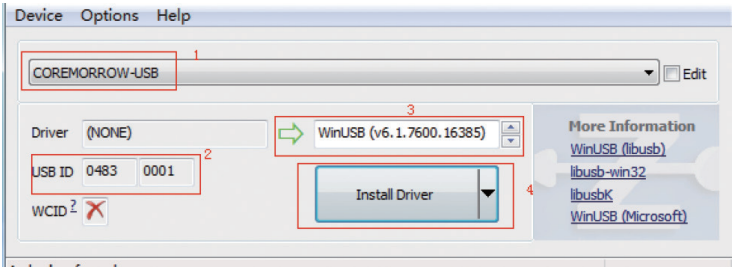
2.1 Designing applicaiton

Using the WINDOWS operating system, through the E53 computer control software to the E53 piezo controller, to achieve visual software control. The software controls the various hardware functions of the E53 through the classic single point, classic waveform, classic configuration, analog array / open loop and servo settings, and phase angle waveform function. To achieve convenient, intuitive and fast control purposes.

3. Installment

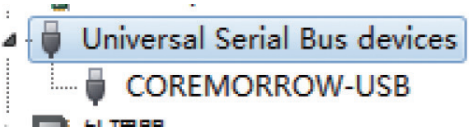
1. Please run "zadig-2.3.exe" as an Administrator.

2. Run the USB driver software "zadig-2.3.exe", refresh the Device Manager, the device to be driven corresponds in the drive list.

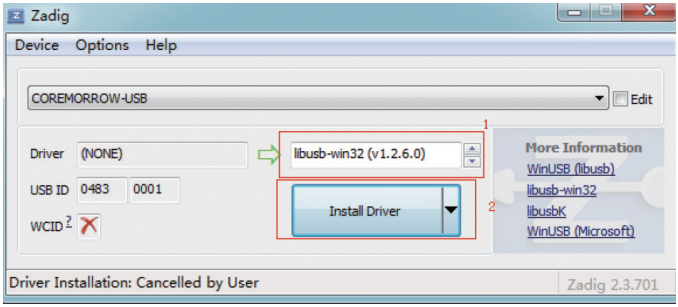


3. Click " Install Driver" to install the driver.

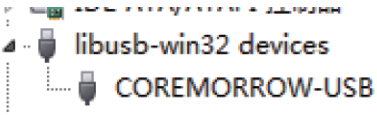
4. Below is displayed after successful installation.



5. Similarly, if you need a C# USB driver, select "libusb-win32 (v1.2.6.0)".

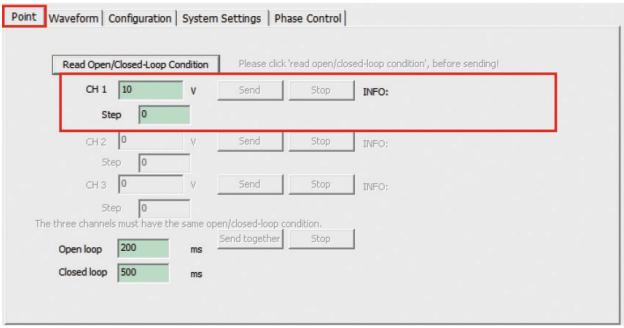


6. Below is displayed after successful installation.



4. E53 Software manual

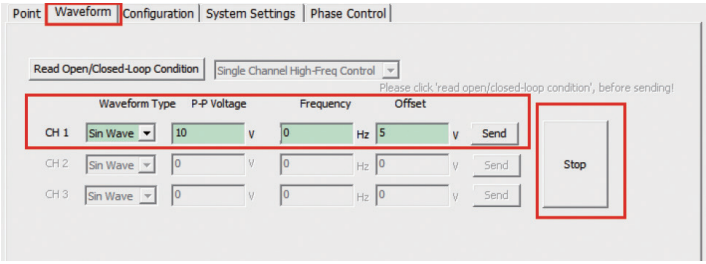
4.1 Classic single point



CH1 sending the single point data:

Select "Classic Single Point", then click "Read Open loop/servo", fill in 10 in the send voltage edit box (when in open loop, it represents 10V, when in servo, it corresponds to 10 represents 10μm), confirm that click "Send" to complete the sending task. Click the "Stop" , the controller stops output.

4.2 Classic waveform

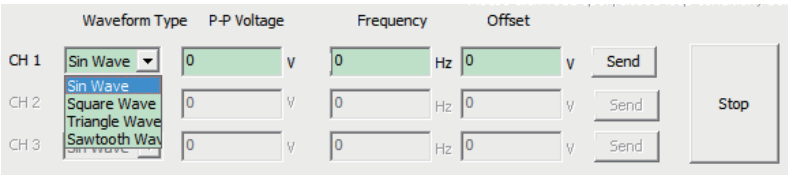


1.Click "Read Open loop/servo" to read the data, which is matched with the piezo controller.

2.Select "single high frequency waveform" or "multiple concurrent waveform" in the drop-down box of the transmitted waveform.

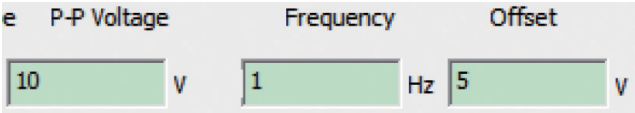
- Single high-frequency waveform with frequency between 1K and 4K Hz
- Multi-channel concurrent waveform, 3 channels could be offset with different frequency amplitude within 1KHz.

3.Click"waveform type", then choose the sending waveform, eg. sine wave, square wave, triangular wave, sawtooth wave.

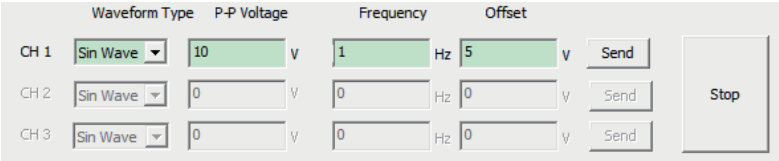


4. Please fill in the Vpp, frequency and offset value(half of Vpp), waveform sending meet $U^2fC<Power$

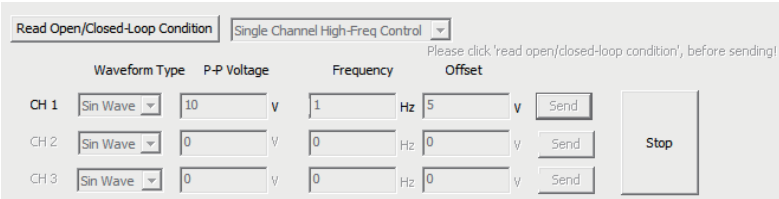
- U- voltage(Volt)
- f- frequency(Hz)
- C- capacitance(F)



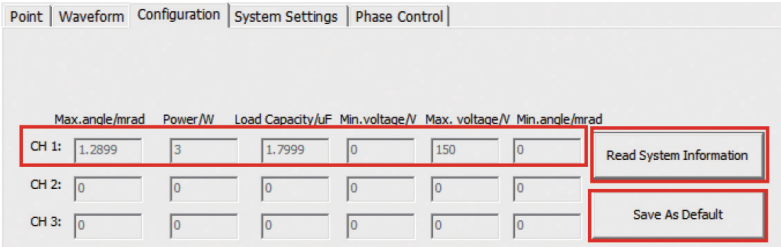
5. Check the filled data, then click"send", finished sending CH1 waveform.



6. Actual operation is shown in the figure below, click the "Stop" to complete the waveform output.

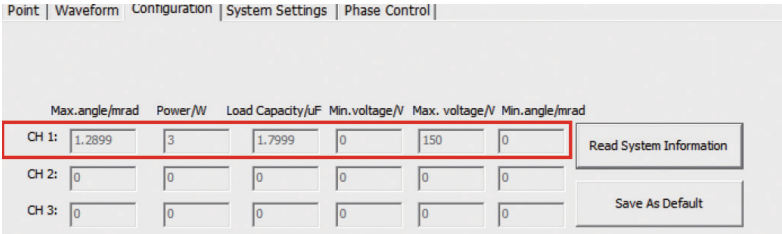


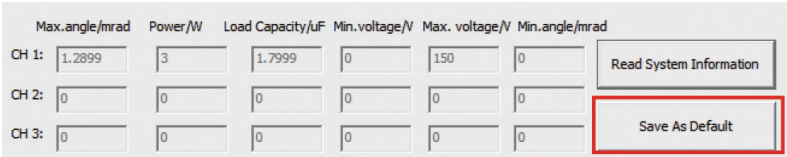
4.3 Classic Configuration



Classic configuration

Click the "Read information" button, after the data is transferred from the piezo controller to the software, click "Save as default" to complete the matching work of the computer's software and controller. (Note: After reading the system information from the same computer and successfully storing it as the default value, you do not need to perform the classic configuration and read the system information again when you use the supporting control software again!)

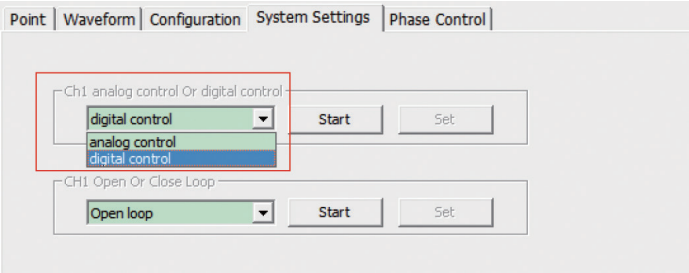


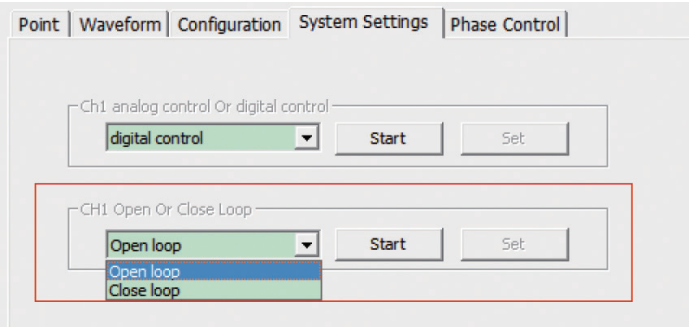


4.4 Analog digital/Open loop servo setting

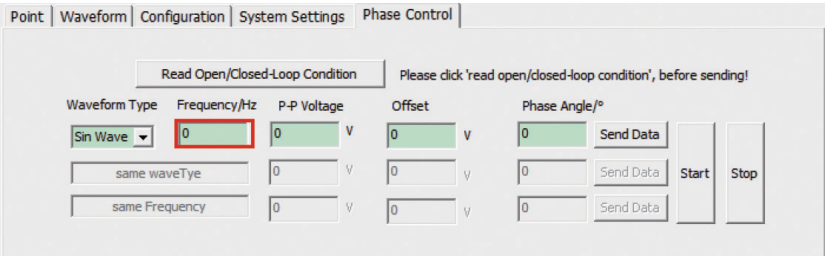
- Analog control: when start external analog signal control and the digital control do not work.
- Digital control: when start digital control and the analog control do not work.

Swith to digital controle: Select the digital control in the drop-down box, then click "Start" button. At this time, the set button lights up. Click "Set" to complete the setting for digital control! As shown below:





4.5 Phase angle waveform-need more than 2channels piezo controller



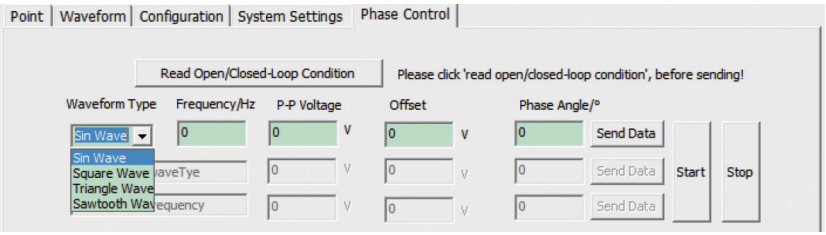
▷ Phase angle waveform : Same waveform and same frequency must be the same. Vpp and offset could be different. Phase angle range is between 0.0 and 360.0 degrees.

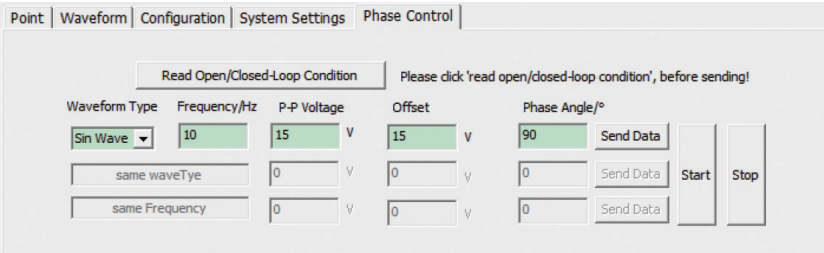
Phase angle waveform control method:

First select the waveform type, then the frequency, peak-to-peak offset, fill in the phase angle, fill in the other channels of related data, and click "send data" (it just store the waveform data value of the data to be sent to the controller), and then click "Start" button, the piezo controller receives the execution waveform sending command of this trigger command.

Stop sending the waveform:

Click the "Stop" button to stop outputting the waveform. Actually as shown in the figure below.




Point
Waveform
Configuration
System Settings
Phase Control
Read Open/Closed-Loop Condition
Please click 'read open/closed-loop condition', before sending!
Waveform Type
Frequency/Hz
P-P Voltage
Offset
Phase Angle/°
Sin Wave
10
15
V
15
V
90
Send Data
same waveTye
0
V
0
V
0
Send Data
Start
Stop
same Frequency
0
V
0
V
0
Send Data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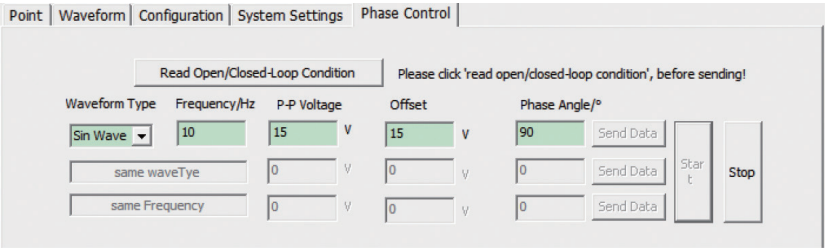
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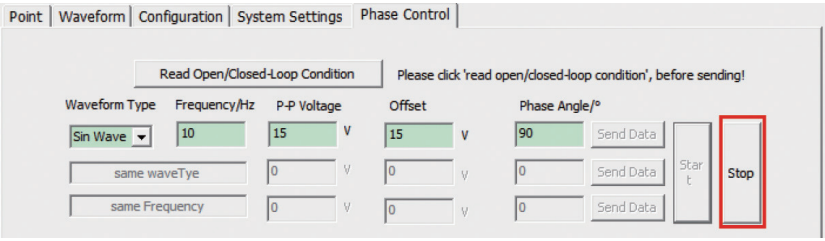
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