



E53.B Series Piezo Controller

User Manual

Version: V1.0



This document describes the following products:

- E53.B Servo 1 channel SGS sensor

DECLARATION

Declaration!

This user manual is a integrated user manual of the E53.B 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.B 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.B 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.

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1.Security

1.1 Introduction

- ▶ Please keep surface of E53.B clean and dry.
- ▶ Do not operate in the humid or static environment.
- ▶ E53.B is used to drive capacitive loads (such as piezo actuators).
- ▶ E53.B should not be used in user manuals of other products of the same name.
- ▶ Pay special attention that E53.B cannot be used to drive resistive or inductive loads.
- ▶ E53.B could be used for static and dynamic operating applications.

1.2 Safety Instructions

E53.B 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.

- ▶ Please 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.B 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 E53.B series controller, please disconnect the power plug.
- ▶ Please 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.

- ▶ The latest user manual is available for download on CoreMorrow website.
- ▶ When operating theE53.B, 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 timely add all the information given in the manufacturer's user manual, such as

supplements or technical descriptions.

- ▶ If your user manual is incomplete, it will miss a lot of important information, cause serious or fatal injuries, and cause property damage. Please read and understand the content in the user manual before installing and operating the E53.B.
- ▶ Only professionals who are authorized to meet the technical requirements could install, operate, maintain and clean the E53.B.

2. Introduction

2.1 Features

- ▶ 1 channel small size
- ▶ 24V (20~30V) 1.5A 36W
- ▶ Peak current 1A
- ▶ Ave current 60mA
- ▶ Unload bandwidth 10KHz
- ▶ Output short circuit protection

2.2 Applicaitons

- ▶ Driving piezo actuators
- ▶ Driving piezo objective scanners

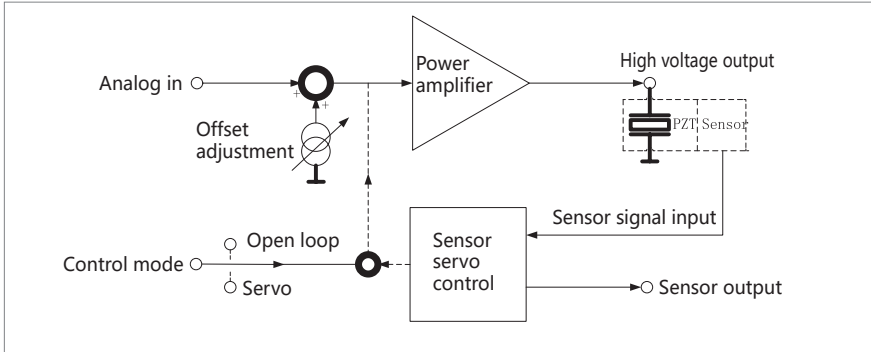
2.3 Order information

- ▶ E53.B——Servo SGS sensor

Accept customized according to requirements:

- ① 12bit gain/-20 ~ 120V output voltage (default)
- ② 15bit gain/-20 ~ 150V output voltage

3. Driving Principle



4. Appearance



5. Power Calculation

- Average output (Sine wave operation mode)

$$P_a \approx U_{pp} \cdot U_s \cdot f \cdot C_{piezo}$$

P_a = Average output [W]

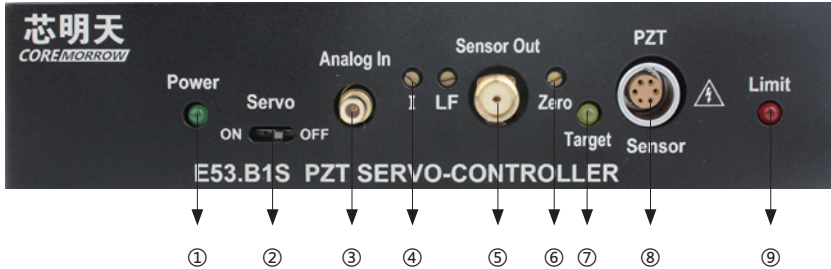
C_{piezo} = Piezo actuator capacitance [F]

U_{pp} = Peak and peak drive voltage [V]

f = Operating frequency of the sine wave [Hz]

U_s = Drive voltage [V] ($(V_{s+}) - (V_{s-})$)

6. Panel Introduction



No.	Function	Description
①	Power indicator	Green, lights when power's on
②	Servo	Open loop/Servo switching
③	Analog input	Analog voltage input interface
④	Integral	Adjustment of deviation integral in Servo
⑤	Sensor monitor	Monitoring output of the position signal returned by the sensor
⑥	Zero	Zero adjustment of sensor signal
⑦	Target	In Servo, yellow light is on when the control amount does not reach target value. Open loop is always on
⑧	PZT&Sensor	PZT&Sensor connector
⑨	Limit	Over-current indicator, red when the average current exceeds the rated value

7. Notes and suggestions

- ▶ E53.B cannot be used to drive inductive loads. If the inductive loads are driven, the product may be damaged.
- ▶ If there is no need, please do not twist the potentiometer easily.

8. Contact us

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