



E52.B1S-I Piezo Controller User Manual

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The manual applies to the following products:

- E52.B1S-I Piezo Servo Controller, analog, SGS sensor, 1 channel, -20 to 120V

Declaration!

This user manual is only applicable to the E52.B1S-I small volume piezo controller produced and sold by CoreMorrow Ltd. To avoid potential dangers that may threaten the safety of users' lives and property, please read this user manual carefully before use. If you find any unclear or incorrect descriptions, please provide timely feedback to our company.

This product can only be used within the specified environmental range. Please refer to the instructions during use. If there are any problems, please contact our company for technical support. If the product is not operated according to this manual or disassembled and modified by oneself, CoreMorrow will not be responsible for any consequences arising therefrom.

Notice!

- Please keep the environment clean and dry, and do not operate this product in damp or high static electricity environments.
- Do not touch any exposed ends of the product and its accessories while powered on.
- Do not plug or unplug input, output, or sensor cables with power on.
- During operating, there is high voltage inside the chassis. Please do not open it without authorization.
- After use, the output voltage should be reset to zero before turning off the controller switch. If it is in a closed-loop state, it should be switched to an open-loop state.

Danger!

- The piezo controller described in this manual is a high-voltage equipment capable of outputting high current. Improper operation can cause serious injury or even death. Please strictly follow the instructions in this manual for operation.
- If the user connects to products other than our company's, please follow the general accident prevention regulations.
- For personal safety, please do not touch any part of this product that is connected to the high-voltage output.
- When using the function of high voltage amplification, personnel who have received specialized training are required to operate it.

Warning!

- To prevent damage to PZT part, ensure that the positive and negative terminals of the PZT are correctly connected before applying voltage. Additionally, the operating voltage must remain within the permissible range specified for the PZT to avoid permanent damage caused by overvoltage.
- Modifications or maintenance of the instrument must only be performed by personnel explicitly authorized by our company and must use genuine original components provided by our company. Our company assumes no liability for any damage resulting from improper maintenance or incorrect usage.
- The modification and maintenance of the instrument require the use of our company's corresponding original components.

Caution!

- The housing of the piezo controller acts as a heat dissipation conductor. It must be installed on a horizontal surface with at least 3 cm of airflow clearance or on a plane equipped with a heat dissipation mechanism to prevent controller malfunction.

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Chapter 1 Safety

1.1 Purpose

- E52.B1S-I piezo controller can be used to drive capacitive loads (such as piezo actuators), but cannot be used to drive inductive loads.
- E52.B1S-I piezo controller can operate in servo (closed-loop) mode with piezo motion products with SGS sensor.
- E52.B1S-I piezo controller can be used for both static and dynamic operational applications.
- Special note: The user manual for E52.B1S-I piezo controller must not be used for other products with the same name.

1.2 Safety Instructions

The design and production of the E52.B1S-I piezo controller comply with nationally recognized safety standards. Improper operation by personnel may result in damage to the product and even endanger the safety of users' lives and property.

- Before use, thoroughly read the user manual and follow its instructions to avoid accidents caused by improper handling.
- Only authorized and qualified professional technicians are permitted to install, operate, maintain, or clean the controller.
- When disassembling E52.B1S-I piezo controller, disconnect the power supply to avoid contact with live components, which may cause electric shock.
- Do not touch any internal parts of the device when operating with the housing open.
- Before use, ensure the protective grounding conductor is correctly connected to prevent electrical leakage. Failure to connect or improper connection may lead to electric shock.

1.3 User Manual Instructions

- The contents of this user manual describe standard product specifications. Specific product parameters are not detailed in this manual.
- When using E52.B1S-I piezo controller, keep the user manual near the device for easy reference. If the manual is lost or damaged, contact our customer service department.
- Ensure your user manual is complete to prevent critical information gaps that could lead to unnecessary losses.
- Installation and operation of E52.B1S-I piezo controller are permitted only after reading and fully understanding the manual.
- The latest version of the user manual is available for download on our official website: www.coremorrow.com.
- Only authorized professionals meeting technical requirements may install, operate, maintain, or clean the E52.B1S-I piezo controller.

1.4 User Manual Download

If the manual is lost or there are problems downloading, please contact our customer service department.

Manual download process instructions:

1. Open the website: www.coremorrow.com;
2. Search for product models (such as E52.B1S-I) or product series (such as piezo controller) on the website;
3. Click on the corresponding product to open the product details page;
4. On this page, scroll down to download the dimension diagram, parameter table, and user manual;
5. Click on the desired file and download.

Chapter 2 Overview

2.1 Typical Characteristics

- Servo control
- Combination of active and passive heat dissipation

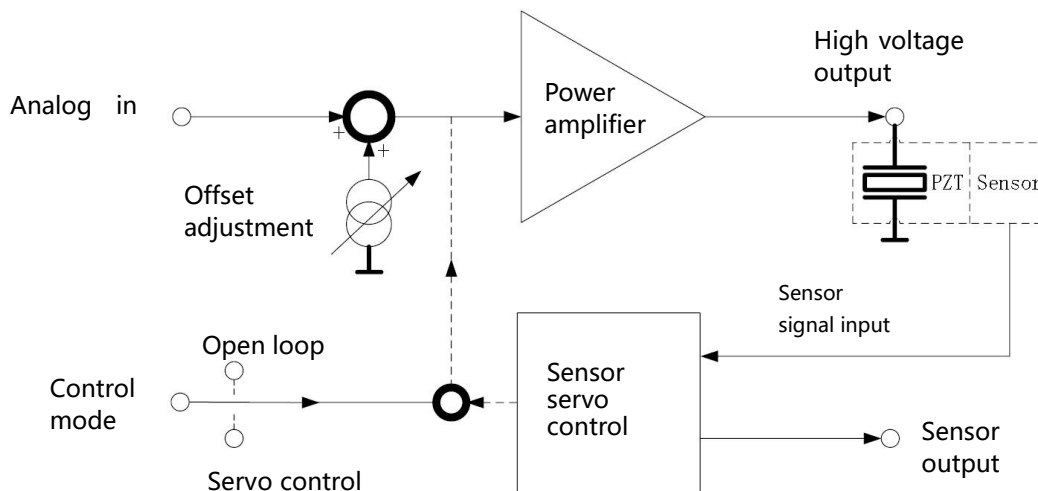
2.2 Typical Applications

- Drive piezo objective scanner, such as P76.Z

2.3 Ordering Information

- E52.B1S-I - SGS sensor servo controller, 1 channel, analog control.
 - Customizable according to user needs:
- ① 12 times gain/-20~120V output (default) ② 15 times gain/-20~150V output

Chapter 3 Driving Principle



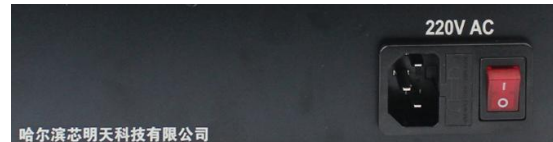
Chapter 4 Appearance and Interface

4.1 Appearance

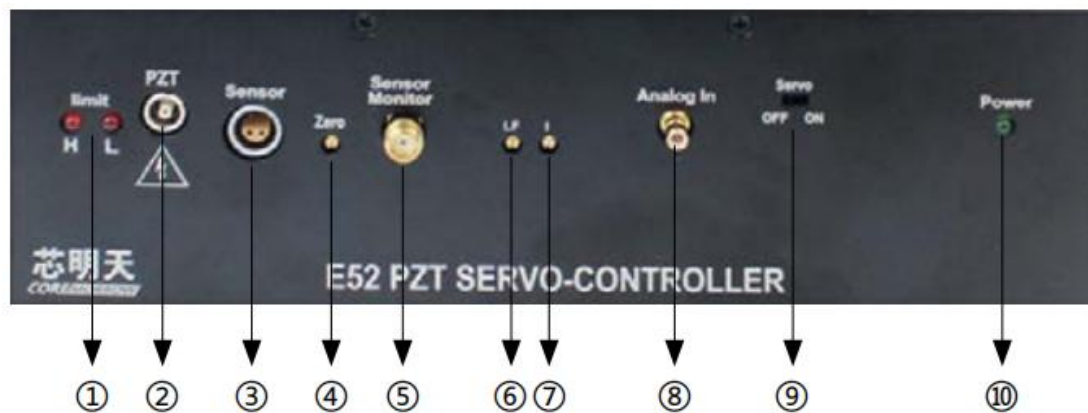
Front panel



Rear panel



4.2 Interface



Functions

NO.	Description
1	Overcurrent Indicator - H lights up for positive overcurrent, L lights up for negative overcurrent
2	Drive Output Connector - Connects to piezo
3	Sensing Input Connector - Connects to displacement sensor of piezo mechanism (used in closed-loop mode)
4	Potentiometers - Adjust: sensor signal zero point
5	Sensing Output Connector - Outputs voltage signal representing position
6	Potentiometers - Adjust: analog input bias
7	Potentiometers - Adjust: analog input gain
8	Analog Input Connector - For analog control signal input
9	Closed-loop/Open-loop Toggle Switch - "On" for closed-loop,servo control, "Off" for open loop
10	Power Indicator - Remains lit when powered on

Chapter 5 Parameters

5.1 Environment Condition

The usage environment must comply with:

Environment condition	Description
Usage environment	Only indoor
Humidity	30% to 70%
Operating temperature	0 °C ~ +50 °C
Storage temperature	-10 °C ~+85 °C

5.2 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] ($(V_{s+}) - (V_{s-})$)

Chapter 6 Precaution and Suggestion

- When operating at high power or in high ambient temperatures, external auxiliary cooling may be considered.
- If overload or a short circuit to ground occurs at the output:
The overcurrent indicator lights up.
The power supply switches to a reduced constant-current output mode.
After removing the short circuit or reducing the load, the indicator turns off, and normal operation resumes.
Avoid prolonged overcurrent conditions.
- Do not adjust the potentiometers unless necessary.
- This product must not drive inductive loads (e.g., coils, motors). Doing so may cause permanent damage.

Chapter 7 Cleaning, Storage, and Transportation

7.1 Cleaning Measures

Caution! The internal PCB is an electrostatic discharge (ESD) - sensitive device. Before handling these devices, take preventive measures to avoid electrostatic buildup and avoid contact with circuit component pins and PCB traces. Before touching any electronic components, discharge static electricity by first touching a grounded conductor. Ensure that no conductive particles (e.g., metal, dust, debris, pencil lead, screws) enter the device. Handle the device with care during cleaning to avoid dropping it or exposing it to mechanical shock.

- Before cleaning, disconnect the power plug of the E52.B1S-I controller.
- Prevent cleaning solutions or any liquids from entering the system module to avoid short circuits.
- Do not use organic solvents to clean the surfaces of the system chassis, front panel, or rear panel.

7.2 Transportation and Storage

The product is packaged in a carton. Transportation must be carried out in its original packaging. During transportation, avoid direct exposure to rain or snow, contact with corrosive gases, and strong vibrations.

The instrument can be transported using standard transportation methods under normal conditions. During transit, ensure it is protected from moisture, excessive weight, impact, compression, improper stacking.

If the instrument will not be used for an extended period, store it in its original packaging. The instrument should be stored in a clean, well-ventilated indoor environment free of corrosive gases.

During transportation, storage, and use, take precautions to: prevent fire, avoid mechanical shock, protect against water ingress, guard against moisture.

Warning: For the E52.B1S-I Series Piezoelectric Controller, frost formation must be checked before powering on in winter to prevent controller damage!

Before powering on: Visually inspect the controller for frost accumulation (common when moving the unit from outdoors to indoors due to temperature differences).

If frost is present:

- Wipe the controller dry or ensure it is properly dried.
- Store the controller indoors for at least two hours before powering on or performing operations.

Chapter 8 Service and Maintenance

8.1 Disposal of Old Equipment

When disposing of old equipment, comply with national regulations and local guidelines. Ensure environmentally responsible disposal of outdated devices. To assist customers with system product disposal, our company provides upgrade and replacement services for obsolete equipment. Contact your sales engineer or customer service department for support.

If you are unable to dispose of old or non-functional equipment, you may return it free of charge to the following address. However, the shipping costs will be borne by the sender. We do not accept freight collect shipments.

Address: I2 building, No.191 Xuefu Road Nangang District Harbin City, Heilongjiang Province, China



8.2 After-Sales Service and Repairs

- This product contains no user-serviceable parts.
- Any servicing of the product requires providing the product serial number and returning the unit to the manufacturer.
- Attempting to disassemble any component of the product system will void the warranty.
- This product is a precision instrument and must be handled with extreme care.
- If issues arise: document the fault details and contact your distributor or manufacturer to arrange repairs by qualified technicians.

Chapter 9 Contact Us

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