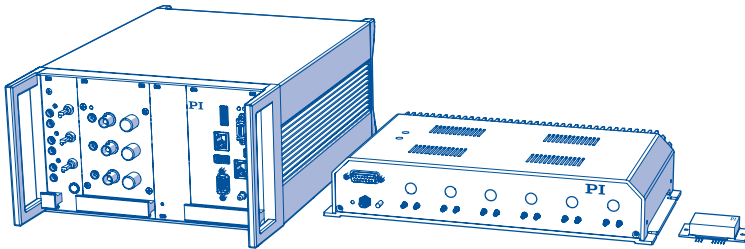


# Housed Analog Piezo Electronics

## Short Instructions

E-4xx, E-5xx, E-6xx, E-8xx



## User Information

These short instructions contain an overview of the most important safety information and handling instructions for installing, starting and operating analog piezo electronics (hereinafter referred to as electronics) with the above-mentioned product numbers (x: any number).

Subject to change. These short instructions are superseded by any new release. The latest respective release is available for download on our website.



## Downloading and Reading the Manual

The actions during installation, starting and operating, adapting the settings, and maintenance require additional information from the manuals for the electronics and/or the positioner.

Manuals may be titled as follows: „User Manual“, „Technical Note“.

### Downloading the Manuals from the Website

If you received an installation medium (e.g., a CD) from PI with the **PI Software Suite**, follow the instructions in the **Manuals/A000T0081-Downloading Manuals from PI.pdf** file.

If the product was supplied without installation medium:

1. Open the website **www.pi.ws**.
2. Search the website for the product number (e.g., C-663.12) or the product family (e.g., PICMA® Bender).
3. Click the corresponding product to open the product detail page.
4. Click **Downloads**.  
The manuals are displayed under **Documentation**.
5. Click the desired manual and fill out the inquiry form.

The download link will then be sent to the email address entered.

If you cannot find the manual you are looking for or if you have any questions: Contact our customer service department via [service@pi.de](mailto:service@pi.de).



## General Safety Information

### Intended Use

The electronics are a laboratory device as defined by DIN EN 61010-1. They are intended for indoor use and use in an environment which is free of dirt, oil, and lubricants.

According to their design, the electronics are intended for operating positioners with piezo drive from PI.

The electronics may only be used in compliance with the technical specifications and instructions in the user manual. The user is responsible for process validation.

The electronics may only be installed, operated, maintained, and cleaned by authorized and appropriately qualified personnel.

### Unpacking

The electronics contain electrostatic-sensitive devices. Improper handling can damage the electronics.

- ▶ Do not touch the contacts in the connectors for the electronics.

### Installing

Touching any conductive parts carrying line voltage can result in serious injury or death from electric shock.

- ▶ Do not open the electronics.
- ▶ Pull the power plug for the electronics out before replacing the fuses of the electronics.

If a protective earth conductor is not or not properly connected, touching the electronics can lead to death from electric shock or to serious injury in the case of a malfunction.

- ▶ Operate the electronics only with a properly connected protective earth conductor.
- ▶ Do not remove the protective earth conductor from the electronics during operation.
- ▶ Pay attention to the applicable standards for the protective earth conductor connection.

Connecting a positioner with an incompatible drive type to the electronics can cause irreparable damage to the positioner or the electronics. Even positioners with mechanically compatible connectors may not be electrically compatible with the electronics.

- ▶ Only connect compatible positioners to the electronics.

Unsuitable cables can cause damage to the electronics and can affect the performance of the positioner.

- ▶ Use original PI parts only.

High temperatures can cause the electronics to overheat.

- ▶ Set up the electronics with a gap of at least 10 cm to the top and rear panels and at least 5 cm to the sides. If this is not possible, make sure that the surroundings are cooled sufficiently.
- ▶ Ensure sufficient ventilation at the place of installation.
- ▶ Keep the ambient temperature at a noncritical level (5 to 40 °C).

Systems consisting of positioners and electronics are calibrated at the factory to achieve optimum performance. Replacing system components will cause a loss in positioning accuracy.

- ▶ Pay attention to each individual channel assignment when connecting several positioners to the electronics.

### Starting and Operating

Thermal instability could reduce the performance of the electronics directly after they are switched on.

- ▶ If possible, switch on the electronics one hour before using the system.



### Installing

- ▶ Make sure that you can disconnect the power plug from the mains at any time.

### Securing the Electronics

#### Requirements

- ✓ The electronics are switched off.

## Securing the Electronics

When the electronics are to be used as a bench-top device:

- ▶ Make sure that the electronics are standing safely and securely.

If the electronics are to be mounted:

1. Bore the required holes into the underlying surface.
2. Insert a suitably sized screw into each hole or recess and tighten to secure the electronics.

## Connecting the Electronics to the Protective Earth Conductor

### Requirements

- ✓ The electronics are switched off.

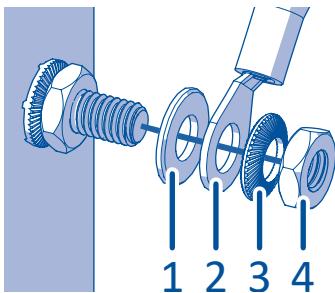
### Tools and Accessories

- Suitable protective earth conductor:
  - Cable cross section  $\geq 0.75 \text{ mm}^2$
  - Contact resistance  $< 0.1 \Omega$  at 25 A at all points relevant for attaching the protective earth conductor
- Mounting hardware for the protective earth conductor; is on the protective earth connector on delivery of the electronics
- Suitable wrench

### Connecting the Protective Earth Conductor

1. Attach a suitable cable lug to the protective earth conductor.
2. Attach the cable lug to the protective earth connector using the mounting hardware supplied.

### Connecting the Protective Earth Conductor with a Threaded Bolt



- 1 Flat washer
- 2 Cable lug with protective earth conductor
- 3 Lock washer
- 4 Nut

## Connecting the Electronics to the Power Supply



### NOTICE

Electronics with integrated power adapter are factory set to the line voltage customary in your country. It may be necessary to install different line power fuses to operate in other countries (see manual).

### Requirements

- ✓ The electronics are switched off.
- ✓ The power cord is not connected to the power socket.

### Tools and Accessories

- If necessary: Power adapter supplied
- If necessary: Adapter supplied for the power adapter connector
- Power cord supplied

### Connecting the Power Adapter to the Electronics using the Cable Adapter

1. Connect the cable adapter to the power adapter connector of the electronics.
2. Connect the power adapter to the cable adapter.
3. Connect the power cord to the power adapter.

### Connecting the Power Adapter to the Electronics without Cable Adapter

1. Connect the power adapter to the power adapter connector on the electronics.
2. Connect the power cord to the power adapter.

### Connecting the Power Cord Directly to the Electronics

- ▶ Connect the power cord to the power socket on the electronics.

## Function Test

If the electronics have a display, a function test is recommended before a positioner is connected.

### Requirements

- ✓ The electronics are switched off.
- ✓ A positioner is not connected to the electronics

### Doing a Function Test

1. Plug the power cord into the power socket.
2. Switch the electronics on.
3. Switch the electronics to open-loop mode (**SERVO** switch in the **OFF** position).
4. Turn the **DC OFFSET** potentiometer.
5. Make sure that the displayed output voltage changes.

### Connecting the Positioner to the Electronics

#### Requirements

- ✓ The electronics are switched off.
- ✓ You have read and understood the user manual for the positioner.

#### Tools and Accessories

- Positioner with compatible drive type
- If necessary: Suitable adapter from PI
- If necessary: Suitable extension cable from PI

#### Connecting the Positioner

1. Plug the positioner's drive connector into the electronics.
2. If necessary: Plug the positioner's sensor connector into the electronics.
3. If possible: Secure the connectors against unintentional removal.



## Starting and Operating



#### NOTICE

Uncontrolled oscillation can damage the positioner or your application.

- ▶ If oscillation occurs, switch off the servo mode or stop the positioner immediately.
- ▶ Check the servo control settings respectively the settings for the operating parameters (see the user manual).

#### Requirements

- ✓ The electronics are switched off.
- ✓ There is no control signal at the **CONTROL INPUT** sockets or it is set to 0 V.
- ✓ The **DC OFFSET** potentiometers are set to 0.

### Operating with Analog Control Signal

#### Amplifier (Open-Loop Operation)

1. Switch the amplifier on.  
If there is a display, the default screen appears.
2. Command the positioner to move:  
Apply a suitable input control signal to the **CONTROL INPUT** (refer to manual) or use the **DC OFFSET** potentiometer.

#### Controller (Closed-Loop Operation)

1. Move the **SERVO** switch for each channel to the **OFF** position (open-loop operation).
2. Switch the controller on. If there is a display, the default screen appears.
3. Move the **SERVO** switch of all channels to the **ON** position (closed-loop operation).
4. Command the positioners to move:  
Apply a suitable input control signal to the **CONTROL INPUT** socket (see manual) or use the **DC OFFSET** potentiometer.
5. If the **Overflow** LED for the channel lights up, adjust the sensor's zero point with the **ZERO** potentiometer until the **Overflow** LED extinguishes.  
Adjusting the sensor's zero point is necessary if it has shifted as a result of temperature changes or mechanical load and the positioner is prevented from covering its full travel range.

#### Operating with a PC

It is possible to control via a PC if the electronics are equipped with a suitable interface such as TCP/IP, USB, RS-232 or IEEE-488.

- ▶ Follow the instructions in the manual for the electronics.



## Old Equipment Disposal

In accordance with EU law, electrical and electronic equipment may not be disposed of in EU member states via the municipal residual waste.

Dispose of your old equipment according to international, national, and local rules and regulations.

PI undertakes environmentally correct and free disposal of all old PI equipment made available to the market after 13 August 2005.

If you have an old device from PI, you can send it to PI free of charge.



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