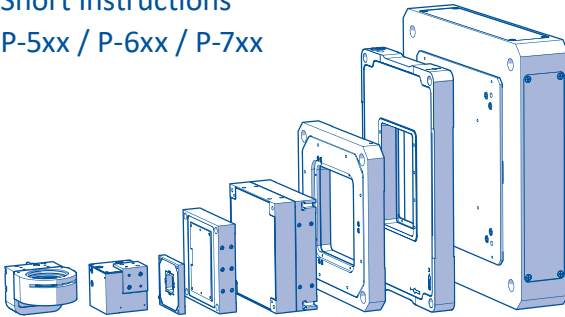


# Piezo Positioners

## Short Instructions

P-5xx / P-6xx / P-7xx



## User Information

These short instructions contain an overview of the most important safety information and handling instructions for installing and operating piezo positioners 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 These short instructions are superseded by any new release.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, startup, operation, and maintenance require additional information from the manuals of the positioner and/or the electronics.

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

### Downloading the Manuals from the Website

1. Open the website **www.pi.ws**.
2. Search the website for the product number (e.g., P-630).
3. Click the corresponding product to open the product detail page.
4. Click the **Downloads** tab.  
The manuals are shown under **Documentation**.
5. Click the **ADD TO LIST** button for the desired manual and then click **REQUEST**.
6. Fill out the request form and click **SEND REQUEST**.

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 Instructions

### Intended Use

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

The positioner is designed for fine positioning as well moving smaller objects quickly and precisely. The positioner is not intended for applications in areas where failure would be a considerable risk for people or the environment.

It is only possible to use the positioner as intended when completely installed and connected, and in conjunction with suitable electronics. The positioner may only be installed, operated, maintained, and cleaned by authorized and appropriately qualified personnel.

### Electrical Dangers

Temperature changes and compressive stress can induce charges in the positioner. After disconnection from the electronics, the piezo actuators can remain charged for several hours. Touching charged parts can result in minor injuries from electric shock.

- ▶ Do not touch the contacts in the connector.
- ▶ Before mounting, connect the positioner to the switched-off electronics for a few seconds to discharge it.
- ▶ Secure the connectors with screws against being pulled out.
- ▶ Do not pull connectors out of the electronics during operation.

If a protective earth conductor is not properly connected, touching the positioner in the case of malfunction can result in minor injuries from electric shock.

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

Moisture, liquids, and electrically conductive materials (e.g., metal dust) that penetrate the positioner can destroy the positioner's piezo actuator.

- ▶ Operate the stage only under the permissible ambient conditions (see manual).
- ▶ Do not operate a vacuum-compatible positioner during evacuation.

Excessively high or wrongly connected operating voltages can cause damage to the positioner.

- ▶ Pay attention to the operating voltage range of the positioner (see manual).
- ▶ Pay attention to the correct pin assignment.

Continuously high voltages can reduce the lifetime of the positioner.

- ▶ Keep the maximum operating voltage as low as possible during operation.
- ▶ Discharge the positioner appropriately when it is not in use.

### Mechanical Dangers

Mechanical forces can destroy the positioner.

- ▶ Avoid shocks and drops.
- ▶ Pay attention to the maximum permissible forces (see manual).
- ▶ Do not pull the connecting cable of the positioner out of the electronics during operation.
- ▶ If the connecting cable is accidentally pulled out of the positioner during operation: Switch off the electronics before you reconnect the positioner.
- ▶ Ship the positioner in the original packaging only.

Incorrectly fitted screws can cause damage.

- ▶ Do not allow screw heads to protrude.
- ▶ Select the screw length according to the depth of the mounting holes.

Collisions can damage the positioner, the load to be moved, and the surroundings.

- ▶ Mount the positioner and the load so that the load cannot get jammed or blocked, or collide with objects in the workspace.

Unsuitable mounting could warp the positioner and reduce the accuracy.

- ▶ Mount the positioner on a flat surface with similar thermal expansion properties (see manual for recommended flatness).

Uncontrolled oscillation can damage your application or the positioner.

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

### Handling Vacuum-Compatible Products

If the positioner is vacuum-compatible, attention must be paid to cleanliness.

- ▶ Touch the positioner only with powder-free gloves.
- ▶ If necessary, wipe the positioner clean.



### Removing the Transport Safeguard



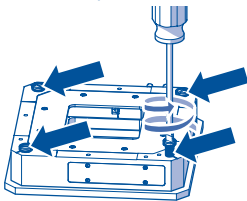
#### NOTICE!

Damage due to improper handling.

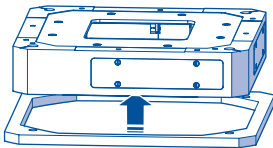
- ▶ Hold the positioner only on the outside of the base body.

If the positioner was delivered with a transport safeguard:

1. Lay the positioner onto a surface with the supporting frame facing downwards.
2. Unscrew the four plastic screws.



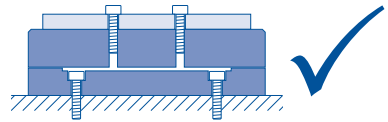
3. Remove the plastic screws and the supporting frame.



### Mounting the Positioner and Load

1. Mount the positioner using the mounting holes provided.
2. Affix the load to the mounting holes provided.
3. Check that the positioner and the load are fixed firmly.

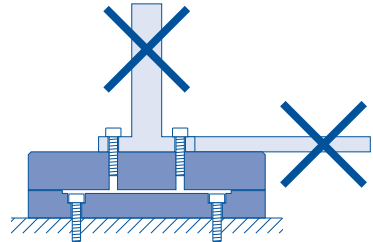
#### Correct Mounting



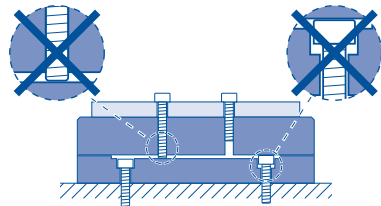
#### Mounting on an Uneven Surface



#### Incorrect Alignment of the Load



#### Incorrect Fitting of the Screws





## Connecting the Positioner to the Protective Earth Conductor



### CAUTION!

If there is no protective earth conductor, there is a danger of minor injuries from electric shock.

- ▶ Operate the stage only with a properly connected protective earth conductor.
- ▶ Pay attention to the applicable standards for attaching the protective earth conductor.

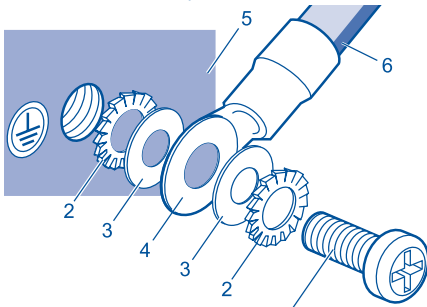
### Suitable Protective Earth Conductor

- Cross section of the protective earth conductor  $\geq 0.75 \text{ mm}^2$ .

### Connecting via Separate Protective Earth Connector

If a separate protective earth connector is available, it must be used.

1. Attach a suitable cable lug to the protective earth conductor.
2. Use the screw set supplied to attach the cable lug of the protective earth conductor to the protective earth connector.
3. Tighten the M4 screw with at least three turns and a torque of 1.2 to 1.5 Nm.

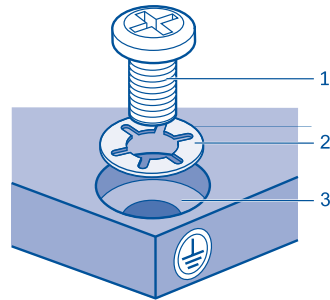


- a Protective earth connector in the base body of the positioner
- b Safety washer
- c Flat washer
- d Cable lug of the protective earth conductor
- e M4 screw

### Connection via Mounting Holes

If a separate protective earth connector is not available, the stage has to be mounted on an electrically conductive surface connected to a protective earth conductor.

1. Place a safety washer on each mounting screw.
2. To fix the stage to underlying surface, use sufficiently conductive screws in all mounting holes.
3. Tighten the mounting screws with at least three turns (for torque, see manual).



- 1 Screw
- 2 Safety washer
- 3 Mounting hole



### Starting and Operating the Positioner

The instructions required for startup and operation are 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.