

# E-500 - E-501

## Modular Piezo Control Systems (HVPZT & LVPZT)



Configuration example: E-501 chassis with optional E-505 LVPZT amplifier, E-509.C1A piezo servo-controller for capacitive sensors and E-516.i3 20-bit DAC interface/display.



Configuration example: E-500 chassis with three optional E-507 HVPZT amplifiers, E-509.L3 piezo servo-controller for LVDT sensors and E-516.i3 20-bit DAC interface/display.

- For High- and Low-Voltage Piezo Systems
- 19- and 9.5-Inch Chassis
- Optional Position Servo-Control Modules
- Optional Display and RS-232 & IEEE 488 Interface Module

The E-500 is a modular, 19" rackmount chassis for piezo amplifiers and position servo-controllers. An integrated multi-function power supply (E-530.00) provides operating voltages for all available mod-

ules including amplifiers, servo-controllers, display and interface modules (see system configuration, p. 6-19 ff.

A more-compact 9.5-inch version of the system is available

as the E-501. That chassis can hold one amplifier module (1- or 3-channel units available), one servo-control module (1- or 3-channel) and one display/interface module (1- or 3-channel).

E-500 and E-501 systems are assembled to order, tested, and, if a servo-controller is present, calibrated with the associated piezo mechanics.

A modified E-500 chassis for up to 6 channels is available on request. For systems with up to 12 channels, the E-500.621 chassis with E-621 amplifier/controller modules can be used (see p. 6-36).

### Ordering Information

**E-500.00**  
Piezo Amplifier & Position Servo-Controller, up to 3 Channels, Basic Chassis, 19"

**E-501.00**  
Piezo Amplifier & Position Servo-Controller, up to 3 Channels, Basic Chassis, 9.5"

**Ask about custom designs!**



30-channel controller consisting of 3 E-500.621 chassis, each of which can accommodate up to 12 E-621 modules.

### Technical Data

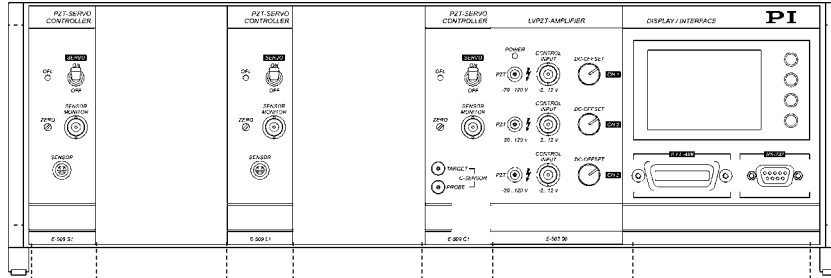
Models	E-500.00	E-501.00
Function	19" chassis for piezo electronics: amplifier modules, sensor modules, position servo-control modules, display/interface modules	9.5" chassis for piezo electronics: amplifier modules, sensor modules, position servo-control modules, display/interface modules
Channels	1, 2, 3	1, 3
Dimensions	450 x 132 x 296 mm + handles (see p. 6-10)	236 x 132 x 296 mm + handles (see p. 6-10)
Integrated power supply	E-530.00	E-531.00
Operating voltage	90-264 VAC, 50-60 Hz, E-530.00 primary switching P/S;	90-120 / 220-264 VAC, 50-60 Hz, E-531.00 linear P/S

# E-500 - E-501

## System Configuration

E-500, 19" Chassis Models

E-501, 9.5" Chassis



E-500 chassis with the following optional modules: E-503 LVPZT amplifier, three E-509 piezo servo-controllers (E-509.S1: strain gauge; E-509.L1: LVDT; E-509.C1A: capacitive sensor) and E-516.i3 20-bit DAC interface/display.

	Contr. Slot 3	Amplifier Slot 3	Contr. Slot 2	Amplifier Slot 2	Contr. Slot 1	Amplifier Slot 1	Display/Interface Slot
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**Installable Amplifier Modules**

E-503.00 (LV, 3 ch) / E-503.00S*							
E-505.00 (LV, 1 ch) / E-505.00S*							
E-507.XX (HV, 1 ch)							

**Installable Sensor & Position Servo-Control Modules**

E-509.C1A (Capacitive, 1 ch)							
E-509.L1 (LVDT, 1 ch)							
E-509.S1 (SGS, 1 ch)							
E-509.C2A (Capacitive, 2 ch)							
E-509.C3A (Capacitive, 3 ch)							
E-509.L3 (LVDT, 3 ch)							
E-509.S3 (SGS, 3 ch)							

**Installable Display/Interface Modules**

E-515 (1 / 3 ch)							
E-516 (1 / 3 ch)							

**Minimal Configuration, PZT Amplifier Function only**

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**Extended Configuration, PZT Amplifier with additional Position Servo-Controller**

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**Extended Configuration, PZT Amplifier with additional Display (and interface, no Servo-Controller)**

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**Extended Configuration, PZT Amplifier with additional Servo-Controller and Display (and interface)**

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Can be installed in E-500

Can be installed in E-501 or E-500

HV: High Voltage      LV: Low Voltage

\* For differential tip/tilt systems with one fixed voltage of +100 V.

Piezo Actuators

Nanopositioning & Scanning Systems

Active Optics / Steering Mirrors

Tutorial: Piezo-electrics in Positioning

Capacitive Position Sensors

Piezo Drivers & Nanopositioning Controllers

Hexapods / Micropositioning

Photonics Alignment Solutions

Motion Controllers

Ceramic Linear Motors & Stages

Index

# E-500 - E-501

## Module Survey & Ordering Examples

The following modules can be installed in E-500 / E-501 chassis:

■ **Amplifier modules**  
(see page 6-23 ff.)

**E-503.00 (E-503.00S)**  
LVPZT Amplifier Module,  
3 Channels, -20 to +120 V,  
3 x 14 W

**E-505.00 (E-505.00S)**  
LVPZT Amplifier Module,  
-20 to +120 V, 200 W, 1 Channel

**E-507.00 (E-507.36)**  
HVPZT Amplifier Module,  
-3 to -1100 V, 50 W, 1 Channel  
or  $\pm 250$  V for Shear Actuators

■ **Display & DAC-Interface**  
**Modules** (see page 6-26 ff.)

**E-516.i1 / E-516.i3**  
20-bit DAC Interface/Display  
Module, IEEE 488/RS-232, 1 or  
3 Channels

**E-515.01**  
Display Module for Piezo Vol-  
tage/Displacement, 1 Channel

**E-515.03**  
Display Module for Piezo Vol-  
tage/Displacement, 3 Channels

■ **Sensor & Servo-Controller**  
**Modules** (see page 6-22)

**E-509.C1A**  
Piezo Sensor/Controller  
Module, Capacitive Sensor,  
1 Channel

**E-509.C2A**  
Piezo Sensor/Controller  
Module, Capacitive Sensor,  
2 Channels

**E-509.C3A**  
Piezo Sensor/Controller  
Module, Capacitive Sensor,  
3 Channels

**E-509.S1**  
Piezo Sensor/Controller  
Module, Strain Gauge Sensor,  
1 Channel

**E-509.S3**  
Piezo Sensor/Controller  
Module, Strain Gauge Sensor,  
3 Channels

**E-509.L1**  
Piezo Sensor/Controller  
Module, LVDT Sensor,  
1 Channel

**E-509.L3**  
Piezo Sensor/Controller  
Module, LVDT Sensor,  
3 Channels



E-507, p. 6-23



E-505, p. 6-25



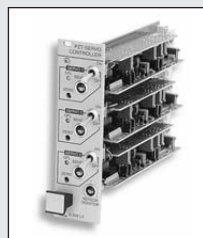
E-503, p. 6-24



E-515, p. 6-28



E-516, p. 6-26



E-509, p. 6-22

## Configuration Examples

### ■ LVPZT Amplifier, 3 Channels, (14 W) without Display:

**1 x E-501.00 (E-500.00)**  
Modular Piezo Control System, 19" Basic Chassis

**1 x E-503.00**  
LVPZT Amplifier Module, 3 Channels, 3 x 14 W

### ■ HVPZT Amplifier, 3 Channels, with DAC Interface & Display:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis

**3 x E-507.00**  
HVPZT Amplifier Module, 50 W

**1 x E-516.i3**  
20-bit DAC Interface/Display Module, IEEE 488/RS-232, 3 Channels

### ■ HVPZT Amplifier & Position Servo-Controller (LVDT Sensors), 3 Channels, with Display & DAC Interface:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis

**3 x E-507.00**  
HVPZT Amplifier Module, 50 W

**1 x E-509.L3**  
Piezo Sensor/Controller Module, LVDT Sensor, 3 Channels

**1 x E-516.i3**  
20-bit DAC Interface/Display Module, IEEE 488/RS-232, 3 Channels

### ■ Closed-loop operation of P-733.2CL XY piezo stage (capacitive sensors) fastest possible step response, computer control:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis

**2 x E-505.00**  
LVPZT Amplifier Module, 200 W

**1 x E-509.C2A**  
Piezo Sensor/Controller Module, Capacitive Sensor, 2 Channels

**1 x E-516.i3**  
20-bit DAC Interface/Display Module, IEEE 488/RS-232, 3 Channels

### ■ Closed-loop operation of the P-733.2CL XY piezo stage (capacitive sensors) and P-721.CLQ PIFOC® objective positioner (capacitive sensor), static and/or slow operation, computer control, 9.5" chassis:

**1 x E-501.00**  
Modular Piezo Control System, 9.5" Basic Chassis

**1 x E-503.00**  
LVPZT Amplifier Module, 3 Channels, 3 x 14 W

**1 x E-509.C3A**  
Piezo Sensor/Controller Module, Capacitive Sensors, 3 Channels

**1 x E-516.i3**  
20-bit DAC Interface/Display Module, IEEE 488/RS-232, 3 Channels

### ■ Closed-loop operation of S-340 tip/tilt platform (LVDT sensors), shortest possible step response, external analog control:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis

**2 x E-505.00**  
LVPZT Amplifier Module, 200 W

**1 x E-505.00S**  
LVPZT Driver Module, 100 V

**1 x E-509.L3**  
Piezo Sensor/Controller Module, LVDT Sensor, 3 Channels

### ■ Closed-loop operation of P-733.2CL XY stage (capacitive sensors) and P-721.LLQ PIFOC® objective positioner (LVDT sensor), shortest possible step response, computer control:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis

**3 x E-505.00**  
LVPZT Amplifier Module, 200 W

**2 x E-509.C1A**  
Piezo Sensor/Controller Module, Capacitive Sensor

**1 x E-509.L1**  
Piezo Sensor/Controller Module, LVDT Sensor

**1 x E-516.i3**  
20-bit DAC Interface/Display Module, IEEE 488/RS-232, 3 Channels

### ■ Closed-loop operation of 3 P-841.10 LVPZT translators (strain gauge sensors) static and medium dynamics operation, external analog control, future upgrade for high dynamics operation possible:

**1 x E-500.00**  
Modular Piezo Control System, 19" Basic Chassis (can accommodate 3 x E-505, 200 W amplifiers)

**1 x E-503.00**  
LVPZT Amplifier Module, 3 Channels, 3 x 14 W

**1 x E-509.S3**  
Piezo Sensor/Controller Module, Strain Gauge Sensor, 3 Channels

#### Optional:

**1 x E-515.03**  
Display Module for Piezo Voltage/Displacement, 3 Channels

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