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Find the *Newport PZC200* at our website: ***Click HERE***

# Ultra-High Resolution Actuators




NEW
FROM NEWPORT

**Preliminary information. Product to be available September 2005. All specifications, drawings and information are still subject of change. For most current information please visit the "New products" section on our website, or contact Newport's technical support group or your Newport representative**

## PZA12 Actuator

**Our NanoPZ ultra-high resolution actuators provide exceptional nanometer-scale remote control for manual-positioning stages and opto-mechanical components over large distances**, in hard to reach spaces and in hazardous hands-off applications - like high-power laser experiments. NanoPZ's non-rotating tip helps prevent contact surface wear and allows for direct load attachments. Newport's exclusive design and the innovative piezo stepping motor allows a range of motion and stability that ensures 30 nm of motion sensitivity with no loss of position when power is removed. And unlike some other piezo based devices, the NanoPZ design does not rely on varying static and dynamic friction forces which can provide inconsistent performance and premature failure. The NanoPZ incorporates an exclusive piezo micro-stepping motor and ergonomic controls which provide consistent results, superior reliability and unmatched ease-of-use. With all this, plus >0.2 mm/s speed, 50 N load capacity and more quite operation, it's easy to see why Newport's NanoPZ outperforms the rest.

NanoPZ is compatible with an array of Newport products including: Ultima series optical mounts, GON series goniometers, and ULTRAlign series of linear stages.

## PZA12 Design Details

| | |
|---|---|
| Base Material | Aluminum |
| Drive Mechanism | Direct-drive non-rotating lead screw, no gear |
| Feedback | Open loop, no encoder |
| Limit Switches | Fixed, jam-nut proof hard stops limit max./min. travel |
| Origin | None |
| Motor | Non-resonant piezo micro-stepping motor |
| Average full-step size | Approx. 160 nm depending on load, speed and other parameters, 16 micro-steps per full-step |
| Cable Length | 3 m |
| Weight [lb (kg)] | 0.29 (0.13) |

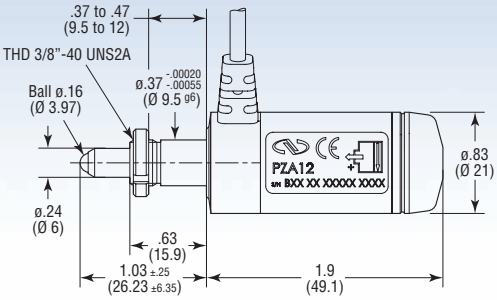
## Key Features

- *Highly reliable operation with 30 nm motion sensitivity over 12.7 mm travel*
- *10x faster speed (> 0.2 mm/s) and 2x higher load capacity (50 N) than other piezo motor devices*
- *Non-rotating tip prevents wear and allows for direct load attachments*
- *User-friendly and highly compatible*
- *No loss of position with removal of power – ideal for set-and-forget applications*

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## PZA12 Specifications

| | |
|---|---|
| Travel Range [in. (mm)] | 0.5 (12.7) |
| Sensitivity | 30 nm |
| Repeatability/Accuracy | Varies depending on application and feedback method |
| Maximum Speed | 0.2 mm/s at full load;<br>Higher speeds possible at lower load |
| Axial Load Capacity | 50 N |

## PZC200 Controller



*PZC200 controller features ergonomic one-hand speed control, up-down buttons for selecting active switchbox channel, RS-485 communication link, and push-button remote control/computer control swap.*

Our PZC200 controller provides convenient and ergonomic one-hand speed-control, and easy to use push button channel control for the PZC-SB switchbox. It comes equipped with a serial RS-485 computer link for computer control of up to 256 units in parallel (RS-485 accessed by using RS-485 to RS-232 converter NSC-CB-485-232-1 plugged into your PC's RS-232 port. For USB use optional SMC-USB RS-232 to USB converter).

## PZC200 Specifications

| | |
|---|---|
| Number of controlled axes | 1 without PZC-SB switchbox<br>8 with PZC-SB switchbox |
| Operating modes | 1. Local (manual) control mode<br>2. Remote (computer) control mode |
| Controls, Local (manual) mode | Rotate knob to adjust speed<br>Select active switchbox channel<br>Toggle between local and remote mode<br>Set current position to zero |
| Controls, Remote (computer) mode | ASCII commands I/O via RS-485 port |
| Motion commands | Micro-steps, 1 micro-step equals approx. 10 nm of linear motion of a PZA12 depending on load, speed and other parameters<br>**Important: Step size is not repeatable** |
| Mechanical Dimensions (W x D x H) [in. (mm)] | 2" x 6" x 2" (50 x 150 x 50) |
| Weight [lb (kg)] | 0.55 (0.250) |



*PZC-SB switchbox allows control of up to 8 actuators with one PZC200 controller.*

## PZC-SB Switchbox

Controls up to 8 NanoPZ actuators from the same PZC200 controller. LEDs indicate which actuator is active, inactive, connected or disabled and two buttons on the PZC200 controller allow you to select the active actuator. (PZC-SB is controllable by PC by using the same RS-485/RS-232 interface of the PZC200).

## PZC-SB Specifications

| | |
|---|---|
| Actuator output channels | 8 (one channel active at a time) |
| Channel status indication | One tri-color LED per channel |
| Case dimensions (H x W x D) [in. (mm)] | 1.4" x 7.2" x 5.9" (35 x 182 x 151) |


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## Ordering Information

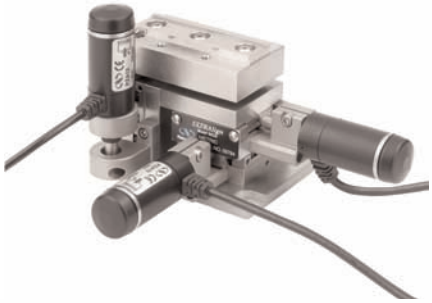
| Model | Description |
|---|---|
| PZA12 | NanoPZ actuator, 12.5 mm travel |
| PZC200 | Hand-held controller for PZA12 |
| NSC-PS25 | AC power supply for PZC200 |
| NSC-PSC1 | 1 meter (3 ft) power supply output cable |
| NSC-PSC3 | 3 meter (10 ft) power supply output cable |
| NSC-485-232-I | RS-485-to-RS-232 converter |
| USB-232 | RS-232-to-USB converter |
| NSC-JB | Junction box to split 1 RS-485 channel into to 5 channels |
| NSC-CB1 | 1 meter (3 ft) RS-485 cable |
| NSC-CB3 | 3 meter (10 ft) RS-485 cable |
| PZC200-KT | Kit including 1 x PZA12 actuator, 1 x PZC200 controller, 1 x NSC-PC25 power supply, and 1 x NSC-PSC3 power supply cable |
| PZC-SB | Switchbox allowing one PZC200 to drive up to 8 actuators. Included cables: P/N 41791-01 1.8 m (6 ft) power cable to controller P/N 15769-02 1.8 m (6 ft) driver cable to controller P/N NSC-CB2 1.8 m (6 ft) RS-485 cable to controller |



M-RS65 *rotation stage equipped with a* PZA12 *actuator.*



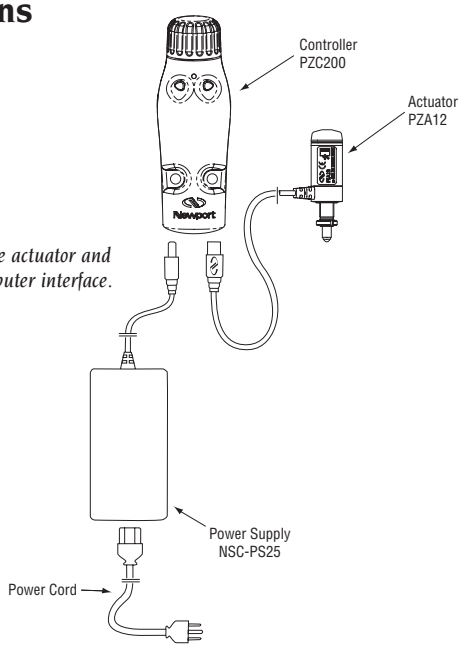
ULTIMA *optical mount equipped with* PZA12 *actuators.*

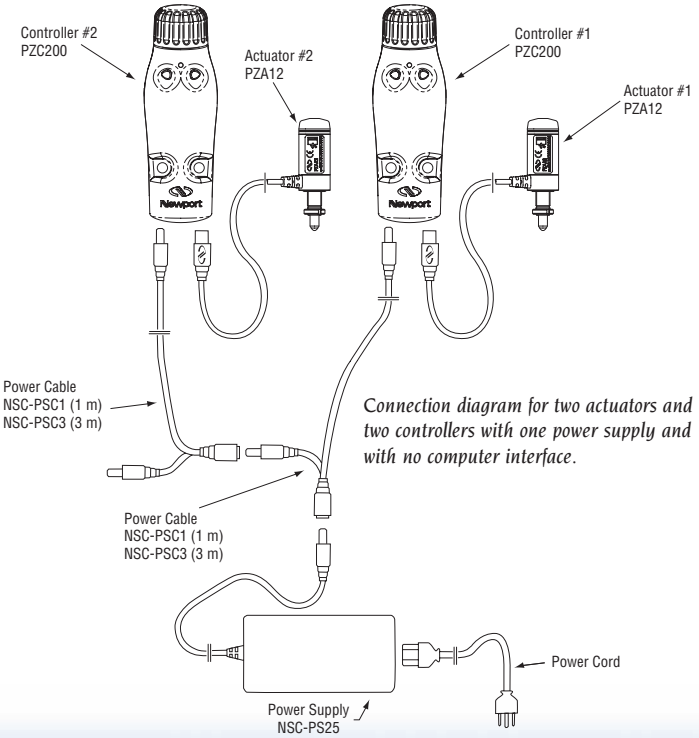


561D-XYZ ULTRA*lign*™ *precision linear stage equipped with* PZA12 *actuators.*

## Configurations

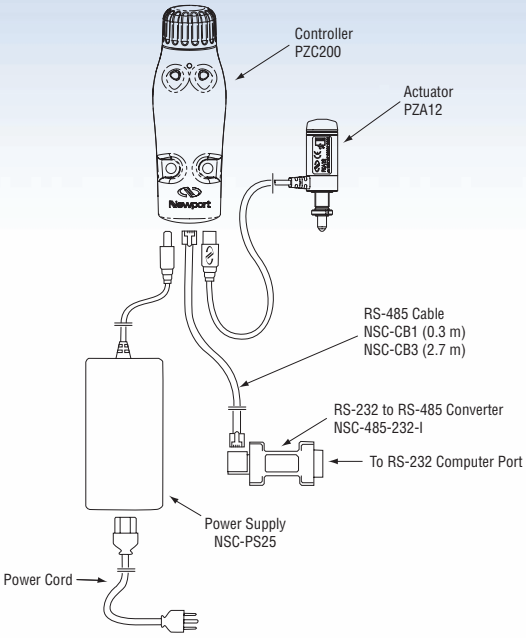
*Connection diagram for one actuator and one controller with no computer interface.*



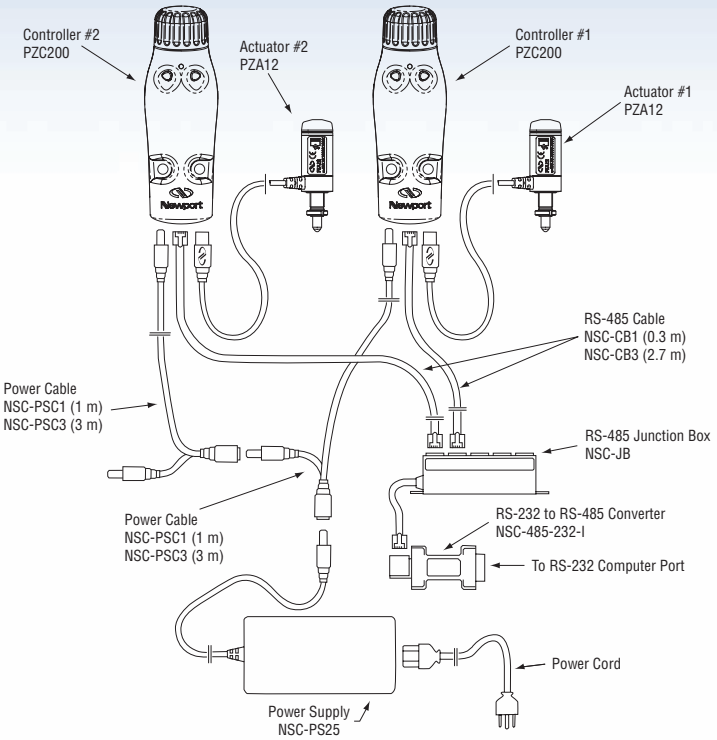

*Connection diagram for two actuators and two controllers with one power supply and with no computer interface.*

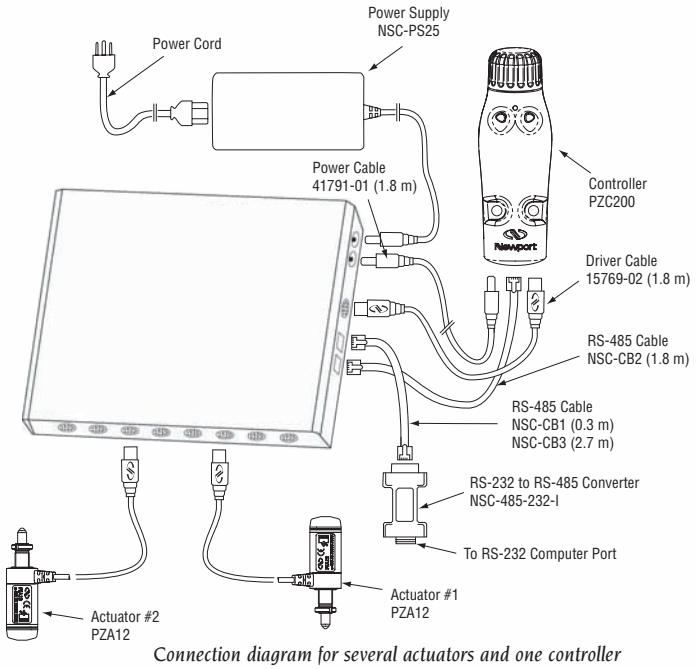

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*Connection diagram for one actuator and one controller with computer interface.*

*Connection diagram for two actuators and two controllers with computer interface.*




*Connection diagram for several actuators and one controller with switchbox and with computer interface.*

ISO 9001
FM 27207

**Newport Corporation, Irvine, California, has been certified compliant with ISO 9001 by the British Standards Institution.**


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