

Model PZD700 M/S

Piezo Driver/Amplifier Series



The Trek Model PZD700 M/S amplifier system provides precise voltage control and delivers twice the current of our standard Model PZD700. The PZD700 M/S is a high-voltage DC power amplifier with an available bipolar voltage range of 0 to ± 700 V and unipolar ranges of 0 to +1.4 kV or 0 to -1.4 kV DC or peak AC.

Output current ratings are ± 200 mA for the bipolar range and ± 100 mA for the unipolar ranges. Voltage ranges are customer specified and factory set. The PZD700 M/S signal input is configured as a noninverting amplifier. An inverting amplifier configuration is also available.

Applications for the PZD700 M/S include piezoelectric driving/control, laser modulation, semiconductor research, and ion beam control. Features include an all-solid-state design, a slew rate greater than 200 V/ μ s for the ± 700 volt range, a slew rate greater than 150 V/ μ s for either the 1.4 kV ranges, and a small signal bandwidth of greater than 100 kHz for all voltage ranges.

A four-quadrant active output stage sinks or sources current into reactive or resistive loads throughout the output voltage range. This capability is essential for achieving the accurate output responses and high slew rates demanded by reactive loads.

Precision voltage and current monitors provide buffered low-voltage representations of the high-voltage output and load current for monitoring purposes or for use as feedback signals in a closed-loop system.

The Digital Enable feature provides a connection for a remote device to turn ON and OFF the high voltage of the instrument. The Model PZD700 M/S has a Dynamics Adjustment feature which is used to optimize the AC response of the output signal under various load configurations.

The Model PZD700 M/S is available in all nominal line voltages and can be operated on a bench top, or with optional equipment, in a standard 19-inch rack.

Voltage and Current Ranges:

Bipolar

0 to ± 700 V at

0 to ± 200 mA current

Unipolar Positive

0 to +1.4 kV at

0 to ± 100 mA current

Unipolar Negative

0 to -1.4 kV at

0 to ± 100 mA current

Features:

High Slew Rates:

Greater than 200 V/ μ s for

± 700 V range

Greater than 150 V/ μ s for

+1.4 kV or -1.4 kV range

Adjustable Gain Ratio

To 300 V/V gain

DC Accuracy:

Better than 0.1% of full

scale with 200 V/V gain

Precision Monitors:

Voltage and Current monitors

Dynamics Adjustment:

Optimizes AC response

CE compliant

CONTROL WITHOUT COMPROMISE



Model PZD700 M/S Series Primary Specifications

All specifications are with no load unless otherwise noted.

Output (User Specified)

Factory set per customer requirement:

Bipolar Model

0 to ± 700 V DC or peak AC

Current

0 to ± 200 mA.

Slew Rate (10% to 90%, typical)

Greater than 200 V/ μ s.

Large Signal Bandwidth (1% distortion)

DC to greater than 20 kHz.

Unipolar Model (Positive)

0 to +1.4 kV DC or peak AC

Current

0 to ± 100 mA.

Slew Rate (10% to 90%, typical)

Greater than 150 V/ μ s.

Large Signal Bandwidth (1% distortion)

DC to greater than 12 kHz.

Unipolar Model (Negative)

0 to -1.4 kV DC or peak AC

Current

0 to ± 100 mA.

Slew Rate (10% to 90%, typical)

Greater than 150 V/ μ s.

Large Signal Bandwidth (1% distortion)

DC to greater than 12 kHz.

Amplifier Input

Input Voltage Range

0 to ± 10 V DC or peak AC.

Input Impedance

90 k Ω , nominal (noninverting).

1 M Ω , nominal (inverting).

Features

Digital Enable

A BNC connection for a TTL compatible signal to turn on and off the high-voltage output is provided for each channel. A TTL high (or open) turns off the high-voltage output. A TTL low turns on the high-voltage output.

Gain Control

The DC gain of the Model PZD700 M/S is adjustable to 300 V/V.

Features (cont.)

Dynamics Adjustment

A graduated potentiometer is used to optimize the AC output for various load configurations.

Input Configuration

The input is configured as a noninverting amplifier. An inverting amplifier configuration is available.

Limit Indicator

A yellow indicator warns when the Model PZD700 M/S fails to produce the required high-voltage output.

Voltage Monitor

A buffered output provides a low-voltage replica of the high-voltage output.

Scale

1/200th, $\pm 0.1\%$ of full scale.

Current Monitor

A buffered output provides a low-voltage representation of the load current.

Scale

0.05 V/mA, $\pm 1\%$ of full scale.

Performance

DC Voltage Gain

To 300 V/V, adjustable using front panel potentiometer.

DC Voltage Gain Accuracy (input to output)

Better than 0.1% for a set gain of 200 V/V.

Offset Voltage

Less than ± 500 mV.

Small Signal Bandwidth (-3 dB)

DC to greater than 100 kHz.

Output Noise (all ranges)

Measured with the true rms feature of the Hewlett Packard Model 34401A digital multimeter.

Less than 50 mV rms to 20 kHz for a 1 nF load.

Less than 100 mV rms to 20 kHz with no load.

Stability (with a set gain of 200 V/V)

Drift with Temperature

Less than 100 ppm/ $^{\circ}$ C.

Drift with Time

Less than 50 ppm/hr, noncumulative.

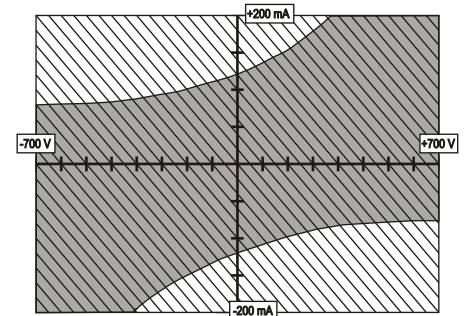
Performance (cont.)

Settling Time to 1%

Less than 50 μ s when critically damped.

Automatic Power Limit

Automatically limits the internal power dissipation to protect the Model PZD700 M/S from overheating. The following graph illustrates the automatic power limit for the ± 700 volt range.



AC Operating Range (frequencies above 50 Hz, 50% duty cycle, and no DC offset)

DC Operating Range

General

Dimensions

110 mm H x 432 mm W x 445 mm D
(4.3" H x 17" W x 17.5" D).

Weight

10 kg (22 lb).

High-Voltage Output Connector

SHV high-voltage connector.

Amplifier Input

BNC connector.

Power Requirements

Line Voltage

Factory set for one of two ranges: 90 to 127 V AC or 180 to 250 V AC, at 48 to 63 Hz (specify when ordering).

Power Consumption

175 VA.

Power Receptacle

Standard three-prong power connector with an integral fuse holder.

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All specifications are subject to change 0501/JNC

Model PZD700 M/S Series Ordering Information

Item	Part No.	Included Accessories
Model PZD700 M/S (90 to 127 V AC)	PZD700-L M/S CE	Operator's Manual 23325 High-Voltage Output Cable Assembly (3 meters) 43874 Line cord (90 to 127 V AC) N5002 Line Cord (180 to 250 V AC) Contact Factory
Model PZD700 M/S (180 to 250 V AC)	PZD700-H M/S CE	

The Model PZD700 M/S comes from the factory with settings for an output voltage of ± 700 V DC or peak AC, a voltage gain ratio of 200 V/V, with a noninverting input. Please specify voltage range (± 700 V, +1.4 kV, or -1.4 kV) and input configuration (inverting or noninverting) when ordering.

Also available is the Model PZD700 with half the current capability of the standard PZD700 M/S



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