

Model PZD350A M/S

Piezo Driver/Amplifier Series



The Trek Model PZD350A M/S Piezo Driver/Amplifier system provides precise voltage control and delivers twice the current of our standard Model PZD350A. The PZD350A M/S is a high-voltage DC power amplifier with an available bipolar voltage range of 0 to ± 350 V and unipolar ranges of 0 to +700 V or 0 to -700 V DC peak AC.

Output current ratings are ± 400 mA for the bipolar range and ± 200 mA for the unipolar ranges. Voltage ranges are customer specified and factory set. The PZD350A M/S signal input is configured as a noninverting amplifier. An inverting amplifier configuration is also available.

Applications for the Model PZD350A 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 500 V/ μ s for the ± 350 volt range, a slew rate greater than 400 V/ μ s for either the 700 V ranges. "DC to greater than" bandwidth capabilities for the ± 350 volt range include **large signal bandwidth of 250 kHz (-3 dB)** and a **small signal bandwidth greater than 350 kHz (-3 dB)**.

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 PZD350A M/S has a Dynamics Adjustment feature which is used to optimize the AC response of the output signal under various load configurations. It is bench top operable, or with optional equipment, in a standard 19-inch rack.

Voltage and Current Ranges:

- **Bipolar**
0 to ± 350 V at
0 to ± 400 mA Current
- **Unipolar Positive**
0 to +700 V at
0 to ± 200 mA Current
- **Unipolar Negative**
0 to -700 V at
0 to ± 200 mA Current

Features:

- **High Slew Rates:**
Greater Than 500 V/ μ s for
 ± 350 V Range
Greater Than 400 V/ μ s for
+700 V or -700 V Range
- **Superior Bandwidth Capabilities**
- **Adjustable Gain Ratio To 150 V/V Gain**
- **DC Accuracy:**
Better Than 0.1% of Full Scale with 100 V/V Gain
- **Precision Monitors: Voltage and Current Monitors**
- **Dynamics Adjustment: Optimizes AC Response**
- **CE Compliant**



Measurement and Power Solutions™

www.trekinc.com

Model PZD350A 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 ± 350 V DC or peak AC

Current

0 to ± 400 mA.

Slew Rate (10% to 90%, typical)

Greater than 500 V/ μ s.

Large Signal Bandwidth (-3 dB)

DC to greater than 250 kHz.

Large Signal Bandwidth (1% distortion)

DC to greater than 90 kHz.

Small Signal Bandwidth (-3 dB)

DC to greater than 350 kHz.

Unipolar Model (Positive)

0 to +700 V DC or peak AC

and

Unipolar Model (Negative)

0 to -700 V DC or peak AC

Current

0 to ± 200 mA.

Slew Rate (10% to 90%, typical)

Greater than 400 V/ μ s.

Large Signal Bandwidth (-3 dB)

DC to greater than 200 kHz.

Large Signal Bandwidth (1% distortion)

DC to greater than 70 kHz.

Small Signal Bandwidth (-3 dB)

DC to greater than 250 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 PZD350A M/S is adjustable to 150 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

An amber indicator warns when the Model PZD350A 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 Factor

1 V/100 V, $\pm 0.1\%$ of full scale.

Current Monitor

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

Scale Factor

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

Performance

DC Voltage Gain

To 150 V/V, adjustable using front panel potentiometer.

DC Voltage Gain Accuracy (input to output)

Better than 0.1% for a set gain of 100 V/V.

Offset Voltage

Less than ± 500 mV.

Output Noise (all ranges)

Measured with the true rms feature of the Hewlett Packard Model 34401A digital multimeter. Less than 100 mV rms to 20 kHz for a 100 pF load. Less than 150 mV rms to 20 kHz with no load.

Stability (with a set gain of 100 V/V)

Drift with Temperature

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

Drift with Time

Less than 50 ppm/hr, noncumulative.

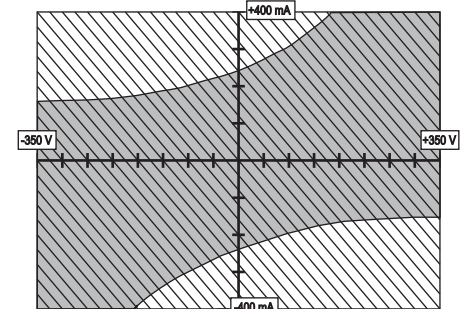
Settling Time to 1%


Less than 30 μ s when critically damped.

Performance (cont.)

Automatic Power Limit

Automatically limits the internal power dissipation to protect the Model PZD350A M/S from overheating. The following graph illustrates the automatic power limit for the ± 350 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.

Model PZD350A M/S Series Ordering Information

Item	Part No.	Included Accessories
Model PZD350A M/S (90 to 127 V AC)	PZD350A-L M/S CE	Operator's Manual 23434 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 PZD350A M/S (180 to 250 V AC)	PZD350A-H M/S CE	

The Model PZD350A M/S comes from the factory with settings for an output voltage of ± 350 V DC or peak AC, a voltage gain ratio of 100 V/V, with a noninverting input. Please specify voltage range (± 350 V, +700 V, or -700 V) and input configuration (inverting or noninverting) when ordering.

Copyright © 2012 TREK, INC.
All specifications are subject to change.
1210/DEC

Also available is the Model PZD350A with half the current capability of the standard PZD350A M/S



TREK, INC. • 11601 Maple Ridge Road • Medina, NY 14103 • USA • 800-FOR TREK
585-798-3140 • 585-798-3106 (fax) • www.trekinc.com • sales@trekinc.com

