

# Series AP5101

DIN-Rail Amplifier for Strain Gage Transducers



## Description

The AP5101 Series is a DIN-rail mounted single channel DC amplifier designed to provide variable excitation and signal conditioning for Stellar Technology's strain gaged, mV/V, pressure transducers, load cells, force sensors, and reaction torque sensors. This DIN-rail amplifier provides up to 10V output or 4-20 mA output with transducer signals from 10 mV to 10V. This amplifier accepts both uni-polar or bi-polar input signals and can produce corresponding uni-polar and bi-polar voltage outputs. Current outputs are uni-polar. The AP5101 incorporates a DC-DC converter that ensures the output of the unit is electrically isolated from the supply. The DIN-rail housing is constructed of a high-impact thermoplastics case with recessed screw-clamp terminals for all connections and a 25-turn zero and fine gain adjustment accessible from the front panel. A push switch and the capability to connect remotely to an internal shunt calibration resistor are also located on the front panel. Excitation, coarse gain and switches to filter the output, are internal and easily accessible by disengaging the front panel and board assembly from the housing.

## Standard Features

- Standard DIN-rail Package
- Voltage and Current Output
- Accepts Most Full Bridge Strain Gage Transducers
- Input/Output Isolation
- Broad Range of Inputs (4mV to 10V)
- Selectable Transducer Bridge Excitation of 3-10 Vdc
- Accepts Both Uni-Polar and Bi-Polar Inputs
- Zero and Fine Gain Adjust From Front Panel
- Remote Shunt Calibration From Front Panel
- Internal Coarse Gain Easily Accessible
- Internal Filters Easily Accessible
- Bridge Completion Capable

**AP5101**

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## Specifications

Baseline Configuration Specs Represented.  
Modifications Encouraged - See Below  
Custom Designs Available

### Performance

#### Linearity

0.02% of FSO.

#### Bandwidth

5kHz typical as standard or 500 Hz or 20 Hz with filters ON.

#### Noise

5mV or 20 $\mu$ A rms (less with filter ON) typical.

#### Zero Adjustment

$\pm$ 2V (or 0-10mA) output typical.  
Depends on Fine Gain setting.

#### Sensitivity Range

4mV – 10V input for 5V (or 20mA) output in 6 ranges with 4:1.

#### Fine Gain Control

Gain range x1 to x1250.

#### Shunt Calibration

Push switch operation or R.Cal.  
Connection to R.Cal common connects 59k via relay. Relay current 10mA.

### Mechanical Characteristics

#### Configuration

DIN-rail mounting.

#### Material of Construction

Durable thermoplastics enclosure.

#### Weight

Approximately 4.6 oz.

#### Seals

IP20 Specification. (NEMA ventilated)

#### Dimensions

4.51" deep x 0.89" wide x 3.90" high

### Electrical Characteristics

#### Supply Voltage

9 to 36V dc.

#### Supply Current

120mA typical with 24V supply,  
10V excitation and 350 ohm bridge.  
(80-250mA depending on supply,  
excitation & bridge resistance.)

#### Analog Outputs

0-10Vdc, 5mA (isolated).  
 $\pm$ 10Vdc, 5mA (isolated).  
4-20mA (isolated).  
(Loop resistance 100 ohm - 500 ohm)

#### Transducer Excitation

3 to 10V (user selectable), 100mA max.

#### Regulation

Excitation change = 0.10% typical with  
load change 0-100 mA.

#### Input Impedance

>10M ohm.

### Connections

Supply and output connection are made  
by 4 x 4-way screw-clamp terminals.

- 1 Excitation Hi
- 2 Excitation Lo
- 3 Signal Hi
- 4 Signal Lo
- 5 Screen
- 6 R. Cal com
- 7 R. Cal
- 8 CAL
- 9 Volts Out
- 10 Common
- 11 Common
- 12 Current Out
- 13 Supply +
- 14 Supply -
- 15 Screen
- 16 N/C

### Environmental Characteristics

#### Operating Temperature Range

+14 to +140°F.

#### Temperature Coefficient

$\pm$ 0.003% F.S./°F minimum.  
(Combined zero and span)

#### EMC Specification

When subjected to radiated  
electromagnetic energy (as IEC 801-3)  
an additional error can occur at certain  
frequencies:

Field Strength	Typical Maximum Error
10V/m	5%
3V/m	0.5%



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MODIFICATIONS: We realize amplifier applications vary greatly and as such our designs are flexible. Specifications on this datasheet represent the standard configuration only. Product and company names listed are trademarks of their respective companies. Specifications subject to change without notice.

WARRANTY: Stellar Technology warrants that its product shall be free from defective workmanship and/or material for a twelve month period from the date of shipment, provided that Stellar Technology's obligation hereunder shall be limited to correcting any defective material FOB our factory. No allowance will be made for any expenses incurred for correcting any defective workmanship and/or material without written consent by Stellar Technology. This warranty is in lieu of all other warranties expressed or implied.

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237 Commerce Drive • Amherst, NY 14228 • USA

Tel: 716.250.1900 • Fax: 716.250.1909

Email: [info@stellartech.com](mailto:info@stellartech.com)

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