



Precision 28101-EXC-250mA

Single-Channel High-Power Excitation Supply with Remote Sense

The 28101-EXC-250mA is a single-channel plug-in excitation supply for the 28000 signal conditioning system. The 28101 provides constant voltage excitation to a Wheatstone bridge or to multiple bridges connected in parallel and sharing a common excitation supply. The 28101 supplies bipolar excitation centered about the analog supply ground of the 28000 system. Bipolar excitation results in bridge corners near zero volts, assuring optimal performance for an attached bipolar amplifier system.

The 28101 has four selectable excitation levels: 0, 2.5, 5, and 10 V, with traceable accuracy of 0.01% $\pm 100 \mu\text{V}$. A high degree of temperature stability is given by ultra low drift regulation circuitry.

The 28101 can provide up to 250 mA of load current continuously and has programmable current limit levels of 50, 100, 150, 200, 250, or 300 mA to protect sensitive bridge-based sensors. Excitation voltage, current, and sensor load resistance are all monitored continuously and reported on the 28000 GUI.

With the push of a button, the excitation supply can be calibrated in situ at ambient test temperatures. Performance of the 28101 can be verified at any time by the traceable 28000-7-TEST Test Subsystem.

Some applications call for a single excitation power supply to power multiple bridge based sensors. In the case of wind tunnel research, it is sometimes desirable to wire multiple force and moment balances to a single common excitation to minimize penetrations and cabling in the most sensitive areas of the tunnel. As shown in the insert on the next page, the 28101 is used to power an eight element Wheatstone bridge based balance. Remote sense is used to control the common excitation to 0.01% at the common connection point of the balance.

28000 System Overview

The Precision 28000 signal conditioning system provides the flexibility you need to manage your test measurements.



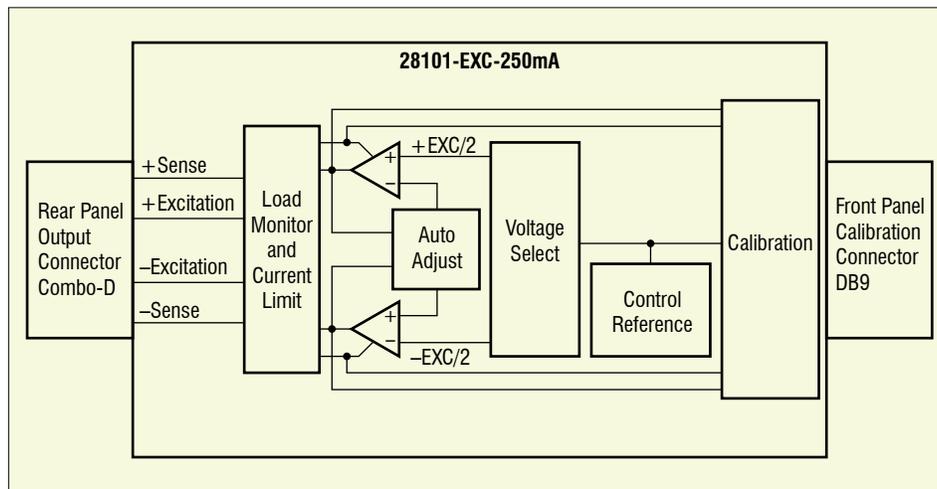
The Precision 28000 system makes it easy to manage a test with hundreds of channels and a mix of transducers. Choose charge, IEPE w/TEDS, voltage (filter amplifier), strain, thermocouple, RTD, potentiometer, current, frequency, or other transducers.

The built-in test hardware and software (optional) provide quick go/no-go tests, which can be run before each test, and rigorous factory acceptance tests to assure you that the 28000 meets your most stringent requirements for critical applications. It won't be long before these tests earn a permanent place in your maintenance routine. And since they are traceable to NIST, the tests eliminate the need for off-site calibration.

In every phase of your testing—record keeping, installation, design, set-up, operation, maintenance, and upgrading—the Precision 28000 can help you save time and money over the life of the system.

28000 System Features

- Graphical user interface (GUI) and Ethernet network interface for system control
- Intelligent gain and system scaling algorithms
- Test input and output monitor busses
- Go/no-go test with diagnostics to be used before tests
- Rigorous factory acceptance test for maintenance
- Field-swappable AC power supplies
- Built-in temperature and power supply monitoring with alarms



28101-EXC-250mA Block Diagram

Precision 28101 Specifications

Specifications

Type:

Bipolar programmable constant voltage excitation supply with remote sense

Connector:

7W2 combo D-type connector

Programmable Excitation Voltage Settings:

10, 5, 2.5 V or OFF

Initial Accuracy:

$\pm 0.01\%$ $\pm 100 \mu\text{V}$ of programmed setting

Temperature Drift:

$\pm 0.001\%/^{\circ}\text{C}$ of setting $\pm 20 \mu\text{V}/^{\circ}\text{C}$

Line regulation:

$\pm 0.0005\%$ $\pm 10 \mu\text{V}$ for 10% line variation

Load Regulation:

$\pm 0.001\%$ $\pm 50 \mu\text{V}$ no load to full load

Sense Line input Current:

$< 1 \mu\text{A}$

Maximum Excitation Boost:

Excitation sense compatible with up to 3 V drop in excitation cable

Programmable Current Limit:

50, 100, 150, 200, 250 or 300 mA

Current Limit Accuracy:

$\pm 5 \text{ mA}$ Typical

Transient recovery time:

Any transient caused by an instantaneous change in load resistance will settle according to regulation circuit time constant of 22 μSec .

Noise:

30 μV RMS 3 Hz to 100kHz

Protection:

$\pm 24 \text{ V}$ @ 100 mA

Monitor Bus:

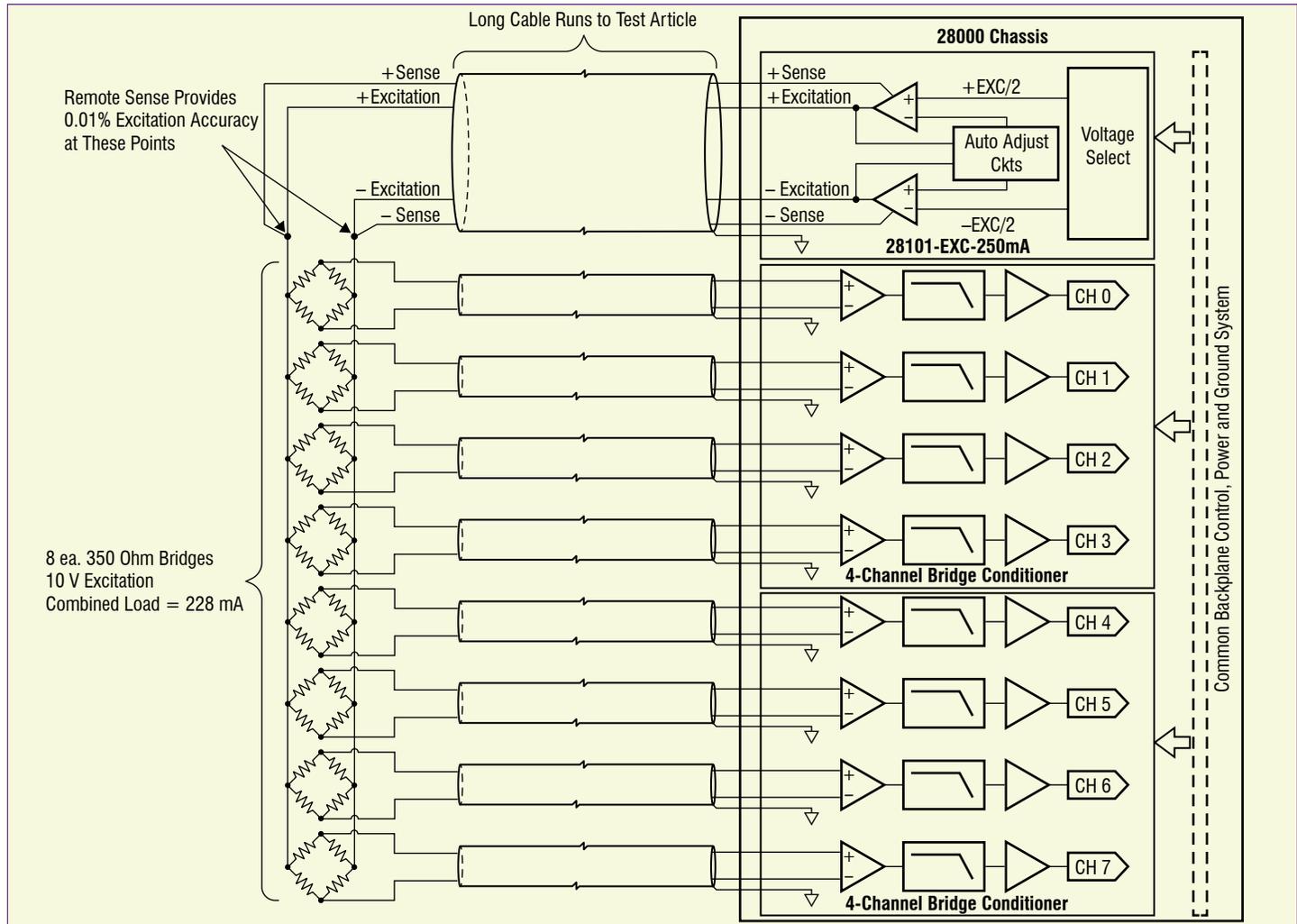
Excitation Sense Lines may be measured via 28000 Monitor Bus

Sensor Excitation and Health Monitor:

On-the-fly monitor of sensor excitation current, voltage, current limit, gage open, gage short, load resistance

Calibration:

Automatically calibrated for gain and offset. Calibration initiated at the GUI panel. Calibration requires the 28000-7-TEST Test Subsystem with 3458A DMM.



28101 Used as a Common Excitation to Eight Wheatstone Bridges