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MODEL 560H
DIFFERENTIAL DC AMPLIFIER

SENSOR COMPATIBILITY

- Chromatograph Data
- Conditioned Strain Gages
- Conditioned Pressure Transducers
- Conditioned Load Cells
- Thermocouples with Model 201 T/CMate™
- Accelerometers
- Piezoresistive Sensors



Model E513-2A
Two-channel Enclosure

APPLICATIONS

- Large Centrifuge Systems
- Wind-tunnel Instrumentation
- Railroad-track Analysis
- Flight Testing
- Vehicle Testing
- Dynamic-vibration Analysis



Model R513-16
Sixteen-channel Enclosure

PERFORMANCE HIGHLIGHTS

- Bandwidth dc to 200 kHz
- Optional 5-step Selectable Filter
- Null Indicator LEDs
- Gains from 0.01 to >2500



Model 560HL

The Model 560H is a versatile, differential dc amplifier with excellent accuracy (0.1%), stability (1 μV/°C), frequency response (dc to 200 kHz), and reliability. Its characteristics enable it to be used as a general-purpose amplifier, but its performance allows it to be popular as a dedicated, high-accuracy data-collection amplifier.



Centrifuge

One application of this product is unique. This Ectron amplifier was chosen as the data-collection amplifier that rides at the hub of many of the world's largest centrifuges. The Ectron amplifier was selected because of its accuracy, dc stability, and overall precision even under vibration conditions. It receives data from accelerometers, strain gages, and other sensors used with these huge machines. Up to 90 Model 560H amplifiers are used on each centrifuge.

Of particular importance is the ability of the Ectron Model 560H amplifier to reject EMI signals that emanate from the huge drive motors as well as some of the on-board electronics.

To complete the 500 Series amplifier products, we also offer the Model 563H. This model adds an excitation supply and bridge-completion components to the same amplifier, allowing the Model 563H to provide full support for bridge-type sensors such as strain gages, load cells, and similar transducers.

SPECIFICATIONS

The following specifications are the maximum deviation from the ideal permitted in this Ectron instrument. RTI means referred to input; RTO, referred to output.

INPUT CHARACTERISTICS

Configuration: Differential, direct coupled. May be used inverting, noninverting, or single-ended.

Input Impedance: 50 MΩ in parallel with 300 pF max. 1 MΩ in divided-input mode.

Common-mode Voltage: ±10 V dc or peak ac, operating. ±300 V dc or peak ac in divided-input mode.

Common-mode Rejection, dc to 60 Hz with 350 Ω unbalance: 50 dB + gain in dB.

Maximum Input Overload: ±20 V dc or peak ac. ±300 V in divided-input mode.

Source Current: ±2 nA/200 hours ±0.5 nA/°C.

Zero Stability, 200 hours: ±4 µV RTI ±0.35 mV RTO.

Zero Temperature Coefficient: ±1 µV/°C RTI ±0.35 mV/°C RTO.

RTI Zero Range: More than ±350 µV with a 20-turn potentiometer.

DYNAMIC RESPONSE

Slew Rate: Gain of 1, >1.2 V/µs; Gain of 2, >2.4 V/µs; Gains of 5 to 1000, >6.3 V/µs.

Settling Time: 15 µs to 0.1% of final value.

Overload Recovery: 50 µs to within ±0.1% of final value from 500% overload.

Bandwidth (within 3 dB):

Small Signal, 1 V rms: dc to >200 kHz.

Full Signal, 20 V p-p:
Gain <×1: dc to >100 kHz.
Gain ×1: dc to >20 kHz.
Gain ×2: dc to >50 kHz.
Gain ×5 to ×1000: dc to >100 kHz.

Noise, 0.1 Hz to 200 kHz: 4 µV RTI + 0.5 mV RTO rms.

0.1 Hz to 10 Hz: 0.75 µV RTI + 0.1 mV RTO peak.

OUTPUT CHARACTERISTICS

Output Voltage: ±10 V dc or peak ac.

Output Current: 10 mA, 100 mA available optionally. Short-circuit protected.

Output (RTO) Zero: ±10 V, ±1 V, ±0.1 V switch selectable, 20-turn potentiometer.

Gain Steps: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, plus a board-mounted 100:1 input divider switch.

Gain Accuracy: ±0.1%.

Gain Stability, 90 days: ±0.01%; ±0.005%/°C.

Gain Vernier: ×1 to ×2.5 with 20-turn potentiometer and in-out switch. (Gain continuous from 0.01 to >2500.)

Linearity: ±0.005% of best straight line through zero.

EXCITATION SUPPLY AND BRIDGE CONDITIONING

Not present in the Model 560H. See the Model 563H if these features are needed.

POWER, ENVIRONMENT, DIMENSIONS

Amplifier: ±16 V at 18 mA plus amplifier and excitation load currents. Operating voltage supplied by the enclosure.

Enclosures: 120/240 V ac, 50 Hz to 60 Hz.

Operating Environment: 0°C to 50°C, 90% RH.

Storage Temperature: –25°C to +71°C.

Dimensions (Amplifier): 133 mm (5.25″) H × 23.3 mm (0.9″) W × 203 mm (8″) D.

OPTIONS, ENCLOSURES, AND ACCESSORIES

FILTER AND OUTPUT OPTIONS

(One option, J through N, must be specified.)

OPTION	WIDEBAND OUTPUT	FILTERED OUTPUT
J (Single Output)	10 mA	None
K (Single Output)	100 mA	None
L (Dual Output)	10 mA	10 mA
M (Dual Output)	100 mA	10 mA
N (Dual Output)	10 mA	100 mA

Filter Characteristic: Two-pole Bessel, –3 dB low pass.

Selectable Filter Frequencies: 10 Hz, 100 Hz, 1 kHz, 10 kHz plus a wideband position.

High-current Output: ±10 V, 100 mA, short-circuit protected.

ENCLOSURES

Compatibility: The E513 Series enclosures are designed to work with both Models 560H and 563H. All enclosures include a 120/240 V ac power supply.

E513-2A: Two-unit enclosure. Includes barrier strip for all inputs/outputs.

E513-6A: Six-unit enclosure. Includes rear-panel connectors with mates for all inputs.

R513-16: Rack-mount enclosure accepts up to 16 Model 560H units. Includes rear panel connectors with mates for all inputs.

ACCESSORIES

516-503-40: Single-channel Filler Panel

516-503-55: Four-channel Filler Panel

560-501-01: Extender Board



Model E513-6A
Six-channel Enclosure

(Shown here containing Model 563H units.)

For price and delivery information, please contact the factory or the Ectron representative in your area.

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Ectron CORPORATION

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