

# DC amplifier

## Model 136



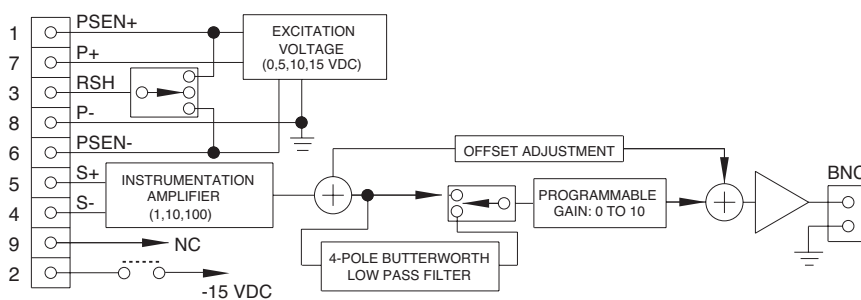
Endevco® model 136 is a three-channel, DC amplifier that is manually or computer programmable. Manual control is accomplished at the front panel by means of a "select channel" push-button, three (3) "channel LEDs", one "select function" push-button, five "function LEDs", a four character LED display, showing the state of each function/channel, and four "edit" push-buttons to change the entries in the LED display. There are three LEDs used as fault status indicators for the auto zero function.

There are two modes of operation, normal and programming/setup. Both modes of operation utilize the front panel LED display. In the normal mode, there are two states, monitoring mode and no-monitoring. In the monitoring mode the LED display indicates the RMS reading of the signal present at the output of the selected channel. The non-monitoring mode turns off the LED display for lower noise applications and to minimize power consumption. In the programming mode, the unit is ready for manual programming or editing of existing channel setups. The unit will automatically return to the normal mode of operation after 20 seconds of inactivity of the front panel or after pressing the "select function" push-button while the "monitoring state" function LED is flashing.

The rear panel contains (on a per-channel basis) a BNC output connector, a 9-pin "D" input connector, the RS-232 connector (RS-232 communication is no longer supported), and the input power connector. Three model 136 units may be configured in a 19-inch rack mount adapter. The standard unit is powered by 90-264 VAC, 50/60 Hz. The -1 option is powered by 9 to 18 VDC, making it ideal for portable use or for automobile test applications.

### Key features

- Three-channel DC differential voltage amplifier
- 200 kHz bandwidth [-3dB corner]
- Auto-zero and shunt calibration
- Gain range 0 to 1000
- Four selectable excitation voltage levels
- 12 VDC power option
- Default 4-pole Butterworth low-pass filter
- Optional low-pass filter module with different corner frequencies



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### Specifications

The following performance specifications conform to ISA-RP-37.2 [1964] and are typical values, referenced at +75°F [+24°C] and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

#### Inputs

Input impedance	1 Meg Ohm minimum
Input range: differential	0 to ±10 VDC or peak VAC, 9 pin "D" connector for each bridge sensor
Common mode	±10 VDC or pk VAC, inclusive of signal 50 Vpk without damage
Common mode rejection	70 dB minimum, 200Ω or less input imbalance, DC to 60 kHz
Input imbalance adjustment	±100 mVDC, 100 ≤ gain ≤ 1000 ±1 VDC, 10 ≤ gain ≤ 100 ±10 VDC, 0 ≤ gain ≤ 10

#### Outputs

AC/DC voltage	Single-ended, short circuit protected
Output impedance	10 ohm typical
Linear output	10 V pk
Current output	10 mA, minimum
Output DC bias stability temp	±5 μV/°C RTI or ±0.1 mV/°C RTO
Output DC bias stability time	±20 μV RTI or ±5 mV RTO, whichever is greater, for 24 hours, after a 1 hour warmup
Excitation voltage	0, 5.0, 10.0, or 15.0 VDC, front panel or computer selected; 1 selection for all 3 channels
Excitation voltage accuracy	±1%
Excitation current	30 mA maximum, short circuit protected
Noise and ripple	1 mV rms maximum, 10 Hz to 50 kHz, with 1 kOhm load

#### Transfer characteristics

Gain	Programmable from 0 to 1000
Range	0.0025, 0 ≤ gain ≤ 10
Resolution	0.025, 10 ≤ gain ≤ 100 0.25, 100 ≤ gain ≤ 1000
Accuracy	±0.5% of full scale maximum, DC to 1kHz, filters disabled
Linearity	0.1% of full scale, best fit straight line at 1 kHz reference
Stability	±0.2% of full scale, 0°C to +50°C
Noise	20 μV rms RTI plus 1 mV rms RTO, whichever is greater, DC to 50 kHz, with a 1 kOhm source resistance unit in Non-monitoring state, 10 kHz internal lowpass filter enabled
Broadband frequency response	±5%, DC to 50 kHz, referenced to 1 kHz; -3 dB at 200 kHz
Filter characteristics/type	4-pole Butterworth
Corner frequency [-3 dB]	10 kHz ±12% [other corners available by changing internal module 31875: 10 Hz to 80 kHz]
Crosstalk between channels	80 dB RTI

#### Power requirements

Voltage	Standard unit: 90-264 VAC 50 to 60 Hz; -1 option: 9-18 VDC
Power dissipation	10 Watts typical
Isolation	No isolation channel to channel or signal ground to caseground

#### Physical characteristics

Dimensions	5.57" x 2.52" x 12"
Weight	4 lbs typical
Case	Black aluminum cover, medium grey plastic bezel

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### Accessories

Product	Description	136
IM136	Instruction manual	Download from website
EW599	Power cord	Included
31875-1000	10 kHz, 4 pole, Butterworth lowpass filter module	Included
31875-XXXX	Lowpass filter modules (see 31875 data sheet)	Optional
31979	Rack mount kit	Optional
EHM1471	Blank panel	Optional
EHM1413	Desktop DC power supply	Optional
EHM1409	Automotive power plug (Supplied with 136-1)	Included
EJ724-U	DB9M connector kit	Optional

### Notes

1. Maintain high levels of precision and accuracy using Endeveco's factory calibration services. Call Endeveco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

### Contact

#### ENDEVCO

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