



# 1-328

## DIFFERENTIAL CHARGE AMPLIFIER



### Applications

- **Test Cell Instrumentation**
- **Automotive R&D**
- **Aerospace Flight Testing**

### Features

- **Low Impedance Output**
- **Extremely Low Noise**
- **User Selectable Gain**
- **Wide Frequency Response**
- **Acceleration and Velocity Outputs**

### Description

The CEC model 1-328-0XXX is a remote charge converter designed for use with differential piezoelectric transducers. This robust device converts a high impedance charge input to a low impedance AC mV output. Both an acceleration output and a proportional velocity signal are provided.

The 1-328 output is proportional to the pC charge input at a constant gain throughout the specified operating range. The 1-328 features an optional output gain of x2 or x10 and a frequency response of 5Hz<sup>1</sup> to 10 kHz. The 1-328 is powered by a 24 Vdc compliance voltage.

<sup>1</sup>: See table 1 for high-pass filter options



# 1-328 Differential Charge Amplifier

## Performance Specifications

### Inputs

<b>Type:</b>	Differential piezoelectric transducer with shield connected to case
<b>Input Source Resistance:</b>	50 kΩ minimum
<b>Input Source Capacitance:</b>	30,000 pF maximum
<b>Maximum Input Charge</b>	3,750 pC, Peak (X 2 Gain) 750 pC, Peak (X10 Gain)

### Outputs

<b>Type:</b>	Acceleration or Velocity Single-Ended with one side connected to signal ground
<b>Output Impedance:</b>	50 Ω maximum
<b>Capacitance Load:</b>	30,000 pF maximum
<b>DC Output Bias:</b>	Decoupled thru 1uF capacitor
<b>Signal Output:</b>	20 V pk-pk maximum @ 24 Vdc Limited Output 18 V pk-pk with 22 Vdc minimum compliance voltage
<b>Output Current:</b>	20 mA maximum
<b>Linearity:</b>	±1% of reading from the best straight line
<b>Residual Noise:</b>	x2 Gain = 1.0 mV RMS maximum X10Gain = 5 mV RMS maximum

### Transfer Characteristics

<b>Gain Accuracy:</b>	±2.5% at 1000 pF and 100 Hz reference frequency throughout ±1% operating range
<b>Gain Stability:</b>	<1%
<b>Frequency Response</b>	Flat within the pass band frequencies Roll-off -40 dB/octave (reference 100Hz)
<b>High Pass:</b>	±5% corner frequency (see table1)
<b>Low Pass:</b>	±5% corner frequency of 10 kHz

### Power

<b>DC Voltage:</b>	22 Vdc to 31 Vdc
<b>DC Current:</b>	20 mA
<b>Warm Up Time:</b>	10 Seconds

### Enclosure

<b>Dimensions (overall):</b>	Length: 5.50" (139.7mm) Width: 1.66" (42.16mm) Height: 1.805" (45.85mm)
<b>Case:</b>	Aluminum
<b>Transducer Input:</b>	Mating Connector PC06A-8-2P (2 Pin)
<b>Power/Signal Output:</b>	Mating Connector PT06A-10-6S (6 Pin)
<b>Weight:</b>	12 oz
<b>Environmental</b>	
<b>Temperature:</b>	Operating: -15° to +85° C Storage: -65° to +125° C
<b>Reliability:</b>	MTBF = 30,000 hours or greater
<b>Approvals:</b>	CE Industrial Class A
<b>Humidity:</b>	0 - 95 % RH non-condensing
<b>Vibration:</b>	8 g pk from 50 – 2000 Hz
<b>Shock:</b>	100g peak with 3.6msec Haversine Pulse
<b>Radiation:</b>	10 <sup>5</sup> Rads

## Ordering Information

In keeping with CEC's policy of continuing product improvement, specifications may be changed without notice.

Unique configurations of this product are available. Please contact CEC direct for application assistance.

TABLE 1

<b>P/N 1 - 3 2 8 -</b>		<b>A</b>	<b>B</b>	<b>B</b>	<b>B</b>
<b>A</b>	<b>FIXED GAIN</b> 1 = X 2 (Max. Input = 3,750 pC Peak) 2 = X 10 (Max. Input = 750 pC Peak)				
<b>B</b>	<b>HIGH PASS FILTER</b> 0 0 5 = 5 Hz 0 1 0 = 10 Hz 0 1 5 = 15 Hz 0 2 0 = 20 Hz 0 2 5 = 25 Hz 0 5 0 = 50 Hz 0 7 0 = 70 Hz 1 5 0 = 150 Hz				

NOTE: Special configurations can be accommodated. Please consult the factory for assistance.