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Model 5840
Differential Airborne Charge Amplifier

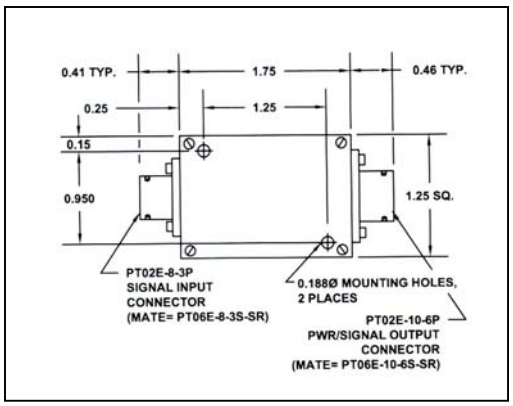
FEATURES

- **Compatible with Differential Piezoelectric Sensors**
- **Unity Gain Charge Converter**
- **Acceleration & Velocity Signal Outputs**
- **Unbiased Signal Outputs**
- **Miniature Electronic Packaging**

Columbia Model 5840 Differential Charge Amplifier has been specifically designed to operate with differential output piezoelectric vibration sensors typically used in aircraft engine condition monitoring systems. It features small package size and extremely low power consumption.

The Model 5840 Differential Charge Amplifier provides both Acceleration and Velocity outputs from an individual signal-conditioning amplifier. Acceleration may be measured from 5 Hz to 2,000 Hz at a fixed gain conversion rate of 1.0 mV/pcmb. The velocity transfer function is 387 mV/pcmb/sec referenced to 1.0 mV/pcmb at 61.4 Hz. The nominal slope is –6 dB/octave over the bandwidth of from 5Hz to 2,000 Hz. ***Consult the factory for customized versions of this instrument.***

Note: Exports from the United States are subject to the licensing requirements of the Export Administration Regulations (EAR) and/or the International Traffic in Arms Regulations (ITAR).



Specifications

INPUT:

Transducer Compatibility	Piezoelectric Differential Capacitive Transducers
Source Impedance	Minimum Input Source Resistance: 10 Megohms
Source Capacity	10,000 pF Max To Meet All Specifications
Overload Recovery	5,000 pcmb 1mS Half-Sine, No Effect
Input Connection	Differential, Referenced to Circuit Ground

OUTPUT:

DC Bias	0.000 +0.050 / -0.000 VDC
Minimum Linear Output Voltage	4.65V Pk/Pk (1.64 VRMS)
Output Limiting	+5.40 ±0.20 VDC, 0 +0.05 VDC
Maximum Linear Output Current	0.500 mA Pk/Pk
Output Impedance	50 Ohms Maximum, Direct Coupled
Residual Noise Level	5.0 mV RMS Max. Ref: Acceleration Output

Input Connector Pin Functions:

Pin	*Function*
A	Input (+)
B	Input (-)
C	Shield / Case

Power Output Pin Functions:

Pin	*Function*
A	+24 To +32 VDC
B	Power / Signal Ground
C	Acceleration Signal Out
D	Velocity Signal Out
E	Case
F	Case

TRANSFER CHARACTERISTICS:

Gain Range	
Velocity	387 mV/pcmb/sec.
Acceleration	1.0 mV/pcmb
Gain Adjustment	Fixed Conversion Gains
Gain Stability vs. Temperature	±2% Max Over Operating Temperature
Gain Stability vs. Input Capacity	Less Than 0.10% / 1000 pF
Frequency Response	
Velocity	-6 dB/Oct, 5 Hz To 2KHz
Acceleration	±5%, 5 Hz To 2KHz
Total Harmonic Distortion	1% Max
Amplitude Linearity	1% Max B.F.S.L.
Warmup Time	30 Seconds Max To Meet All Specifications

POWER REQUIREMENTS:

DC Supply Voltage	+24 To +32 VDC, +28 VDC Nominal
Supply Current	35 mA Max
Power Ground / Signal Ground Isolation	10 Megohms Min. @ 50 VDC
Case Ground Isolation	Circuitry Isolated by 50 Megohms Min. @ 50 VDC

PHYSICAL CONFIGURATION:

Case Material	2024-T4 Aluminum Alloy
Case Finish	Nickel Plate Per MIL-C-26074, Class 3
Input Connector	Bendix PT02E-8-3P, 3-Pin Circular
Output Connector	Bendix PT02E-10-6P, 6-Pin Circular
Case Mounting	(2) #8 Thru Holes for 8-32 Socket Head Cap Screws
Weight	120 Grams Max.

ENVIRONMENTAL LIMITS:

Operating Temperature	-55 To +85 Deg. C
Storage Temperature	-55 To +100 Deg. C
Humidity	Hermetic-Grade Epoxy Seal
Vibration	20 G Pk, 50 Hz To 2KHz
Shock	100 G Pk, 6.5 mS Sawtooth Pulse
Altitude	200,000 Feet Max.

Ordering Information:

Model 5 8 4 0 M

Optional Mating Connectors
Bendix PT06E-8-3S(SR)
Bendix PT06E-10-6S(SR)

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