CONNECTION TECHNOLOGY CENTER, INC.

WIRING

Connecting & Powering Accelerometers

CONNECT TO CONFIDENCE

CONNECTION TECHNOLOGY CENTER, INC.
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Our Unconditional Lifetime Warranty

If any CTC Vibration Analysis Hardware product should ever fail, we will repair or replace it at no charge.

IEPE Power:

Integrated **E**lectronic **P**iezo **E**lectric (IEPE) power supplies are an integral part of today's modern data collectors, dynamic signal analyzers, and on-line condition monitoring systems used for vibration analysis. **The IEPE platform is a two wire technology where Pin A is positive and Pin B is negative.** The power and signal for the accelerometer or Piezo velocity sensor is found on the positive wire (Pin A), and the circuit common is found on the negative wire (Pin B).

The IEPE power supply provides a constant current source of 2 to 10 mA with a supply voltage of 18 to 30 volts. Internally, the accelerometer or Piezo velocity sensor uses the supply current and voltage to power the integrated circuit that converts the charge output of the PZT ceramic element to a voltage and amplifies the output of the accelerometer, or integrates and amplifies the output of the Piezo velocity sensor.

Located inside of the data collector, dynamic signal analyzer, and on-line condition monitoring systems, the IEPE power supply also plays an important role in separating the AC vibration signal from the DC operating (bias) voltage. By using a de-coupling capacitor, the IEPE circuit can provide the AC vibration signal for processing by the data collector, dynamic signal analyzer, or on-line condition monitoring system without the large DC voltage component. This provides a very clean vibration signal for analysis in the time waveform and FFT.

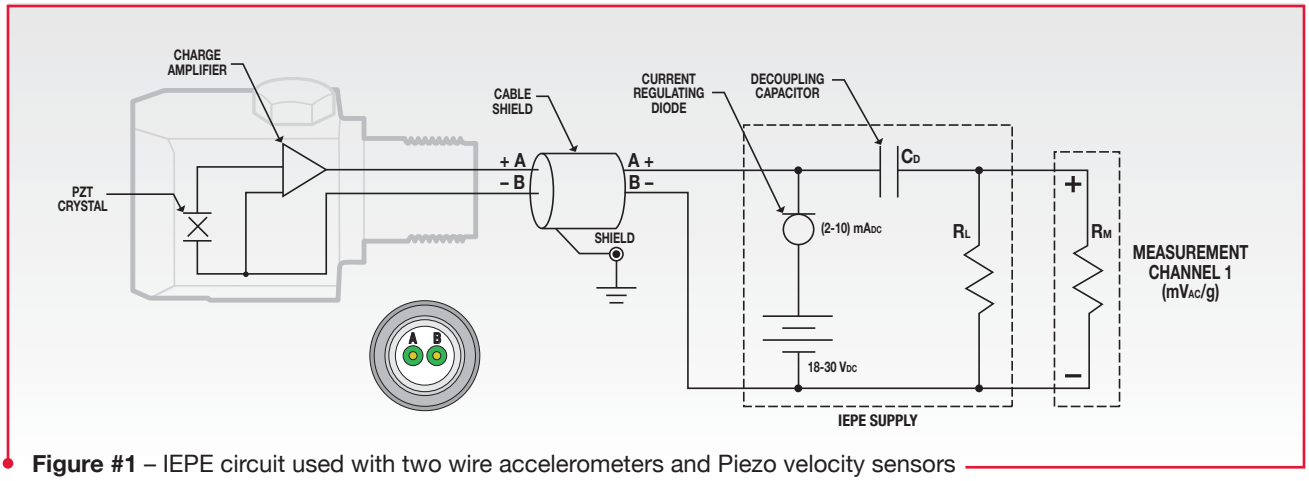

Figure #1 – IEPE circuit used with two wire accelerometers and Piezo velocity sensors

IEPE Sensor Wiring:

Relative to **Figure #1**, for a two wire accelerometer or Piezo velocity sensor, the positive wire would be connected to Pin A and the negative wire would be connected to Pin B.

Dual Output Vibration and Temperature Sensors:

Dual output vibration and temperature sensors also employ the IEPE technology and an integrated circuit to measure the temperature. **Dual output vibration and temperature sensors are a three wire technology where Pin A is positive vibration, Pin B is a shared common, and Pin C is positive temperature.** Dual output vibration and temperature sensors are available in Centigrade and Kelvin temperature scales.

Centigrade Sensors:

The TA102 (100 mV/g), TA104 (100 mV/g), TA131 (10 mV/g), TA133 (500 mV/g), and TA135 (500 mV/g) series provide a mV/g vibration output and a 10 mV/°C temperature output. IEPE power must be applied to the vibration circuit in order to measure the temperature. Please reference **Figure #2**.

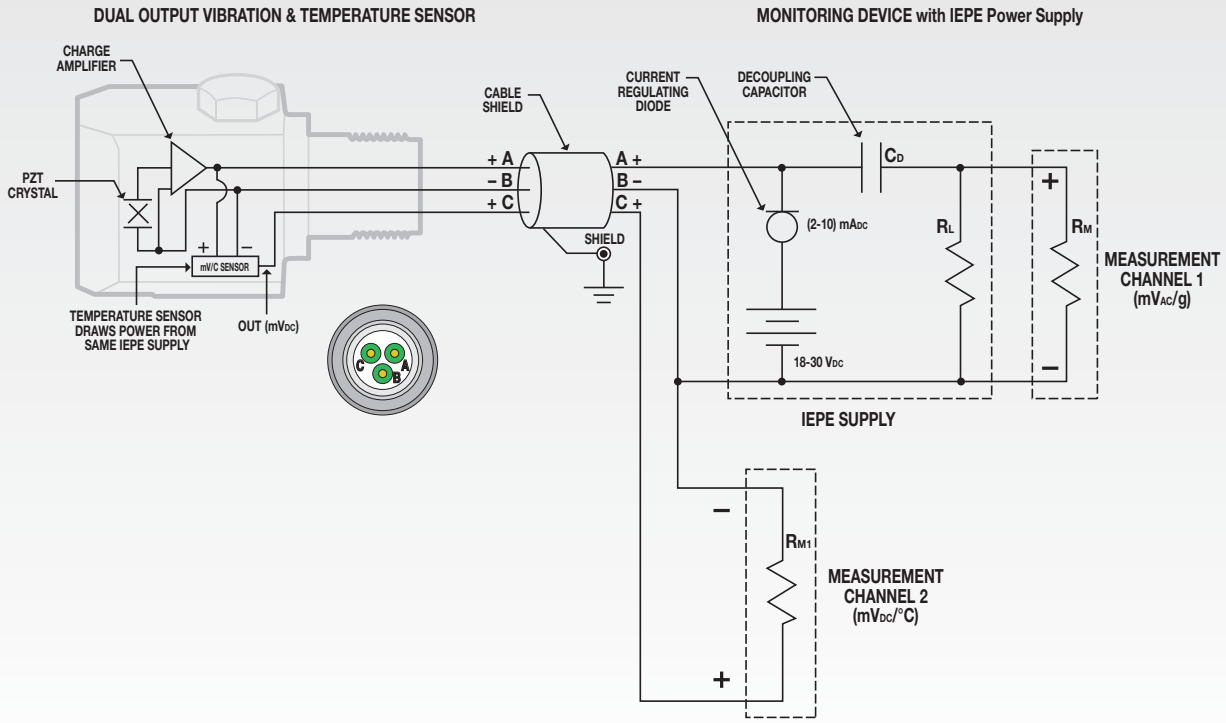

Figure #2 – Dual output vibration and temperature sensor (10 mV/°C)

Centigrade Wiring:

Relative to **Figure #2**, for a three wire vibration and centigrade temperature sensor, the positive vibration wire would be connected to Pin A, the negative wire would act as a shared common and be connected to Pin B, and the positive temperature output would be connected to Pin C. In this configuration, the temperature output will be directly measured as a DC voltage across Pin C (positive) and Pin B (negative).

Kelvin Sensors:

The TA172 (100 mV/g), TA174 (100 mV/g), and TA178 (100 mV/g) series provide a mV/g vibration output and a 10 mV/K temperature output. IEPE power must be applied to the vibration circuit and temperature circuit in order to measure the temperature. This will require two channels in the data collector, dynamic signal analyzer, or on-line condition monitoring system with two IEPE power supplies. Note that the temperature output is DC coupled (de-coupling capacitor removed from circuit) Please reference **Figure #3**.

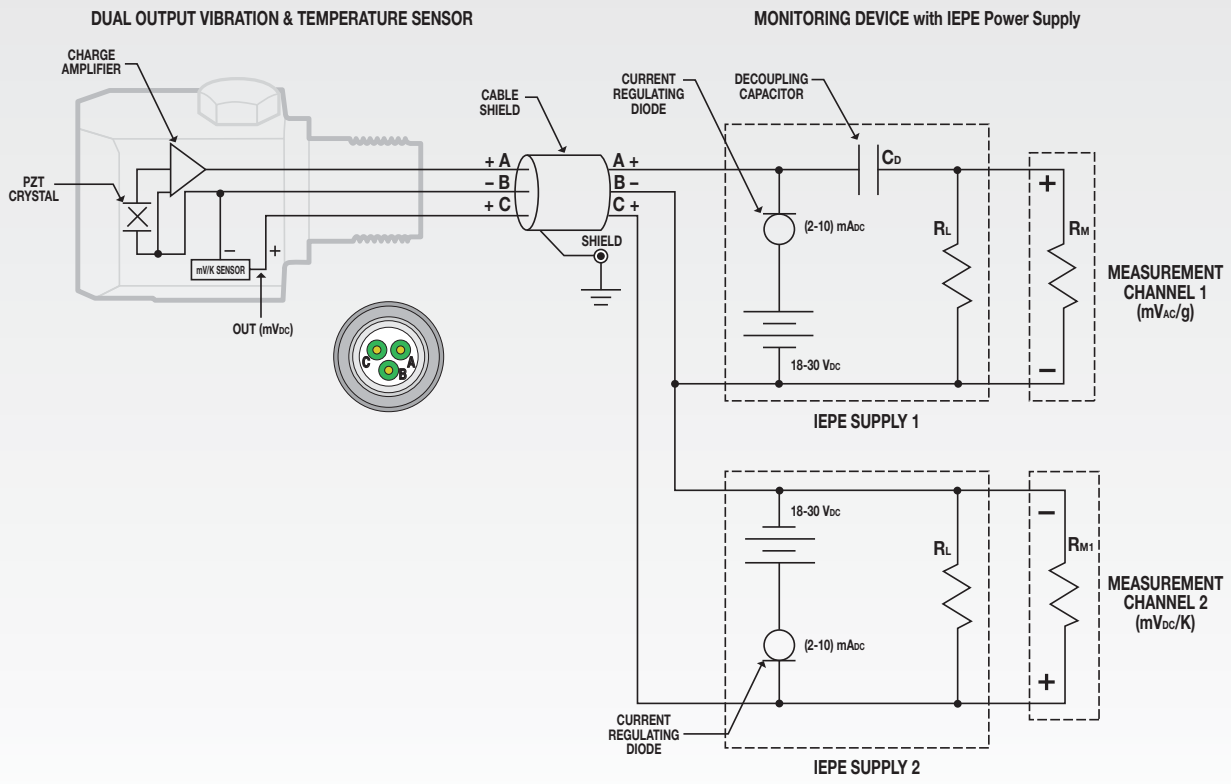

Figure #3 – Dual output vibration and temperature sensor (10 mV/K)

Kelvin Wiring:

Relative to **Figure #3**, for a three wire vibration and Kelvin temperature sensor, the positive vibration wire would be connected to Pin A, the negative wire would act as a shared common and be connected to Pin B, and the positive temperature wire would be connected to Pin C. In this configuration, the temperature output will be measured as a DC voltage across Pin C (positive) and Pin B (negative) of the IEPE circuit. ***Remember; this will require two channels in the data collector, dynamic signal analyzer, or on-line condition monitoring system with two IEPE power supplies. Note that the temperature output is DC coupled (de-coupling capacitor removed from circuit)***