At CTC, we manufacture a complete line of shear mode, low noise vibration sensors for use in harsh environments. CTC vibration sensors feature all welded construction with hermetically sealed glass to metal connectors or an integral cable, to ensure survivability in coolants, caustic spray or submersible applications. CTC vibration sensors are supplied with a NIST traceable calibration certificate from our ISO 9001:2008 certified factory.

Compare Our Construction Techniques

High Resolution

CTC vibration sensors feature ultra low noise, integral electronics, which allows high resolution of low amplitude vibration signals. CTC low noise vibration sensors provide clean, clear vibration signals at low frequency.

Precision Shear Mode Sensing Structure

CTC vibration sensors feature a precision PZT ceramic shear mode sensing structure to ensure accurate and interference free vibration measurements.

Dual Shielding

CTC vibration sensors feature a dual case design to ensure that EMI and RFI with your vibration signals is minimized.

All Welded Stainless Steel Construction

CTC vibration sensors feature robust stainless steel housings and are welded to ensure a true hermetic seal and survival in your tough factory environment.

Lifetime Calibration Service

CTC will recalibrate any vibration sensor that we manufacture once a year at no charge. Simply call one of our customer service representatives to request a Return Merchandise Authorization number, and send your vibration sensor back for a free NIST traceable recalibration.

Unconditional Lifetime Warranty

CTC vibration sensors are guaranteed for life. If any CTC vibration sensor ever fails, call one of our customer service representatives to request a Return Merchandise Authorization number, and send it back for a repair or replacement.

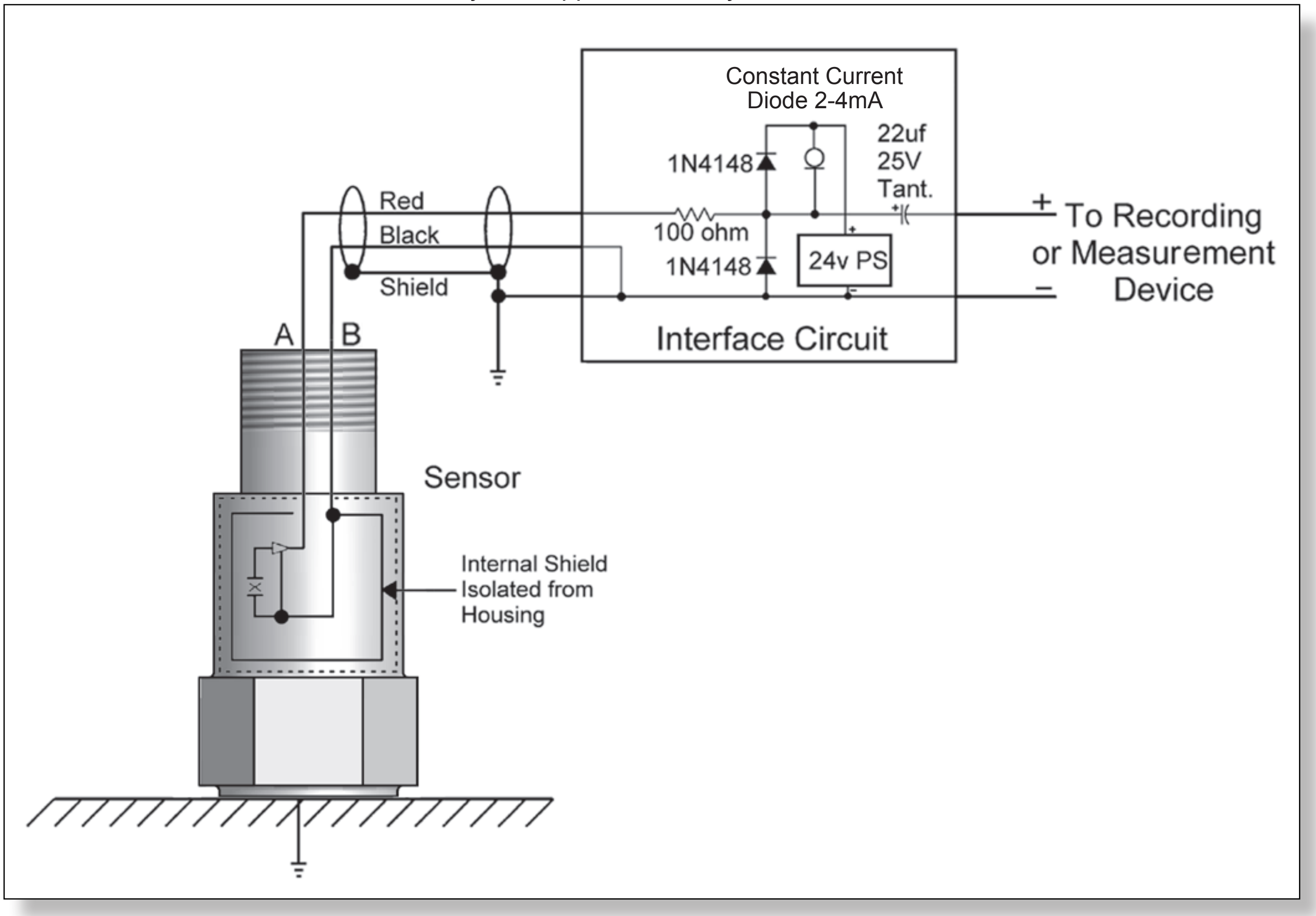
Sensor Power Requirements

CTC sensors will function well with a constant current power unit, which provides 2-10 mA with a DC voltage level between 18 and 30 VDC. We recommend using a current source of 2 mA and 24 VDC. This can be provided by using a data collector or by an interface circuit.

The 100 ohm, 1/4 watt resistor and 1N4148 diodes are used to suppress electrostatic discharge. The CR220 current regulator diode provides the necessary bias current for the sensor. The power supply can be virtually any regulated supply that provides a clean 24 volt DC output. The 22 µf tantalum capacitor removes the DC component from the signal. All parts in this circuit have polarity and must be connected correctly for the circuit to function properly.

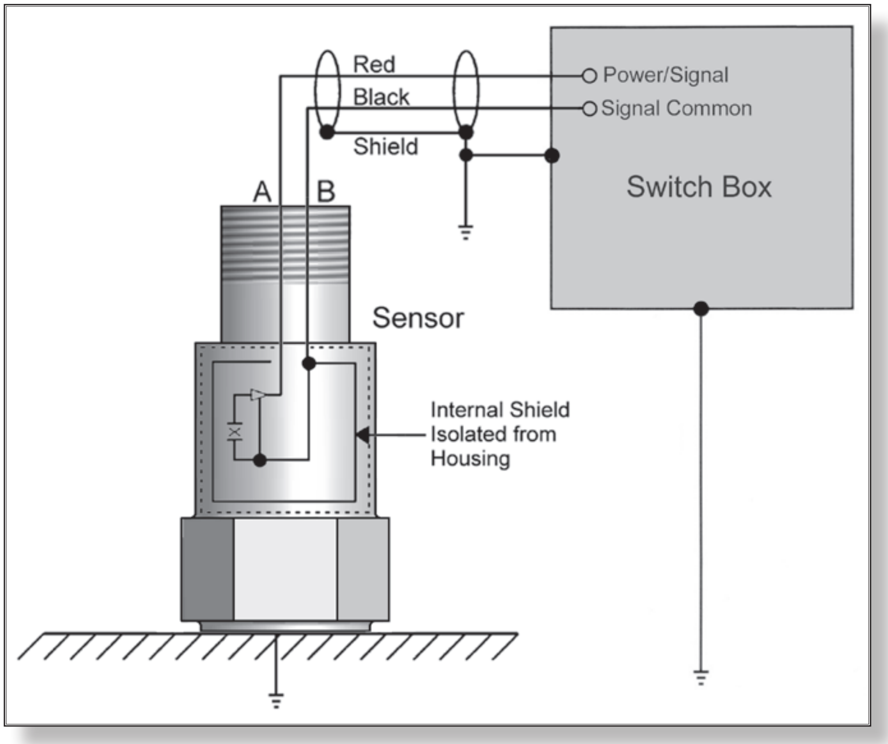
Please note: The cable should be shielded and grounded at the interface end for optimum rejection of external noise. All CTC sensors have an internal shield that is connected to the negative terminal. CTC accelerometer cases are isolated from the circuitry for optimum noise rejection. Each sensor will transmit a signal riding on their specified bias voltage. This is typically +/- 5 volts riding on a 12 volt bias (please refer to the data sheet for each particular sensor).

This circuit is intended for non-intrinsically safe applications only



Sensors

CTC sensors feature all welded stainless steel construction for survival in harsh factory environments. A dual case design shields the sensing element from RFI & EMI interference. PZT ceramic sensing elements are utilized to provide the highest signal to noise ratio available, which is critical for use with data collectors, which often integrate an acceleration signal to velocity. Low frequency noise (Ski Slopes) are avoided by utilizing a sensor with a low noise PZT ceramic sensing element. Shear mode element construction is utilized in all CTC sensors, which virtually eliminates erroneous output due to thermal transient interference. Two pin MIL Spec connectors are generally used to carry the signal output from the sensor, protecting the shielding and hermetic sealing of the sensor. Pin “A” is utilized for the Power/ Signal (+), and Pin “B” is utilized for Signal/Common (-). The case of the sensor is electrically grounded to the machinery that is mounted to and electrically isolated from Pin “A” and Pin “B”. (See illustration)



Cabling

CTC cables are specially manufactured to transmit signals over long distances, while withstanding the rigorous physical demands of harsh factory environments. CTC cables will accurately transmit sensor signals a minimum of 500 feet to a switch box, with no signal loss or distortion. All CTC cables feature twisted, shielded pair construction, for interference rejection. A drain wire is provided with the shield, for quick and professional grounding. For most CTC cabling, the red conductor is utilized for the Signal/Power (+), the black conductor is utilized for the Signal Common (-) and the drain wire/shield should be connected to earth ground (see illustration above). Proper grounding of cable shielding will ensure clean and interference free data. CTC’s permanent installed cables incorporate a strength cord within the construction of the cable. Strength cords relieve the tension of the conductors when a cable is being pulled through conduit or tight spaces.

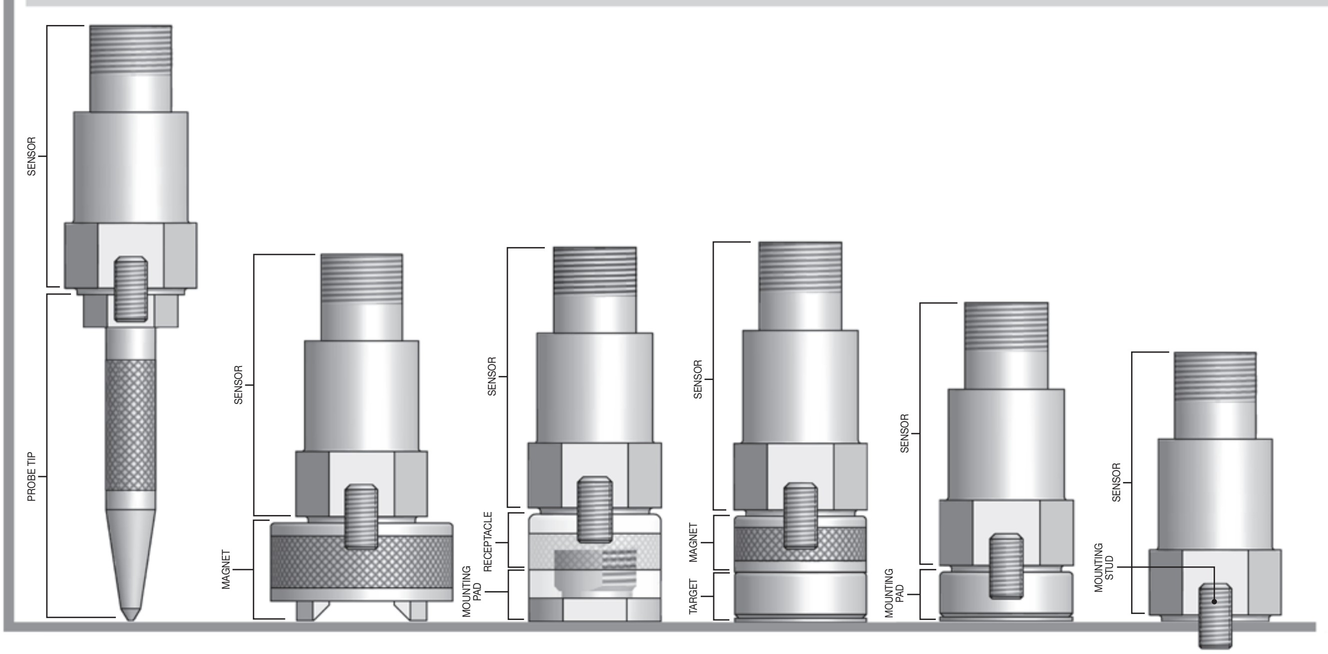
Frequency Response / Mounting Techniques

The accuracy of your high frequency response is directly affected by the mounting technique that you select for the sensor. In general, the greater the mounted surface area contact between the sensor and the machine surface, the more accurate your high frequency response will be. High frequency response is based on the sensor specified as well as the method of attachment (together as a system). Stud mounted (or epoxy mounted) sensors are often able to utilize the entire high frequency measurement capability of a sensor, because this technique will maximize the surface contact of the sensor on the machine. Conversely, a probe tip mounted sensor has very little surface area contact with the machine surface, and offers very little high frequency accuracy above 500 Hz (30,000 CPM).

Low frequency response may be accurately obtained by all of the below illustrated techniques, because low frequency is not based on the mounting system resonance of the sensor and attachment method. The ability to measure low frequency vibrations will be a function of the sensor's specified capability to measure a given low frequency, and not dependent on the mounting technique chosen.

The following chart offers a general guideline for the range of mounting techniques available, and the corresponding high frequency response expectations.*

Probe Tip	Curved Surface Magnet	Quick Disconnect	Flat Magnet with Target	Adhesive Mount	Stud Mount
500 Hz (30,000 CPM)	2000 Hz (120,000 CPM)	6500 Hz (390,000 CPM)	10000 Hz (600,000 CPM)	10000-15000 Hz (600,000-900,000 CPM)	Maximum Response of Sensor



Maximum Frequency Response
(within ±3dB)

**Depending on specified high frequency response of individual sensors.*