METRIX

Best Practices for RFI Immunity on Vibration Transmitters
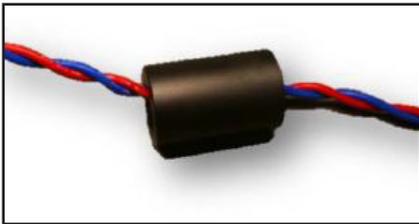
Application Note

Metrix vibration transmitters are case isolated from the loop power connection to PLC, DCS, SCADA, or other +24VDC alarm systems. With the correct grounding scheme, this type of isolation avoids ground loops and results in good RF immunity. However, in situations with interference from high-powered transmitters, especially spread-spectrum type radios, vibration transmitters may become vulnerable to RF noise.

Since it is often difficult to identify these situations in advance, Metrix recommends the following Best Practices when installing vibration transmitters in the field:

1. Twist the sensor leads together (at least 10 twists per foot).
2. Slide the twisted leads through a ferrite core, twice, and position it **as close to the sensor as practical**. Refer to Figures 1 and 2.
3. If possible, cut the leads short and use a shielded twisted pair. Follow step 2 in this application as well.

As shown in Figure 2, ferrite core "chokes" that attenuate different frequencies can be created by looping a different number of wire turns through a ferrite core. More turns increase inductance and attenuate progressively lower frequencies. **Multiple "chokes" can be created in this manner and placed in series on the wire leads to cover a broad frequency band. Always locate the choke covering the higher frequency band closest to the sensor.**

NOTE: Ferrite bead along with a copy of these instructions is available to order from Metrix as a kit. Order part number 100458 (kit contains one ferrite bead). Additional ferrite beads can be ordered with nominal charge. The instruction is free downloadable from Metrix website.

Figure 1: Leads may be simply fed straight through the ferrite core.
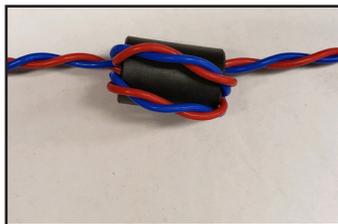
Figure 2: Leads may also be looped through the ferrite core to attenuate different frequencies. The optimal number of loops will vary by application and the interfering frequency(ies).