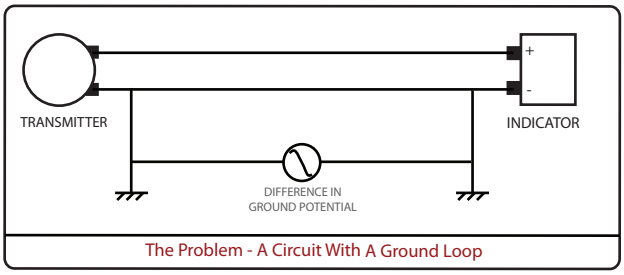
# iii Isolation Guide

## Ground Loops

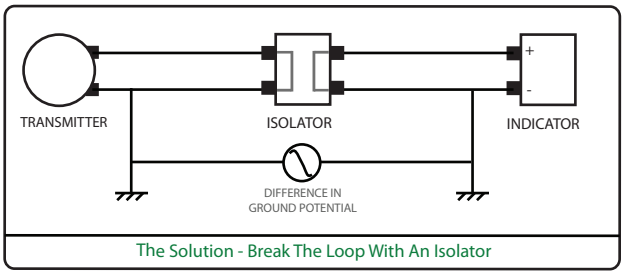
Ground loops occur when your circuit is grounded at two or more points.

The connection between the points creates a circuit that can have potentially quite high currents flowing from across it.

By isolating your signal between those points, you eliminate the interference completely.



The Problem - A Circuit With A Ground Loop



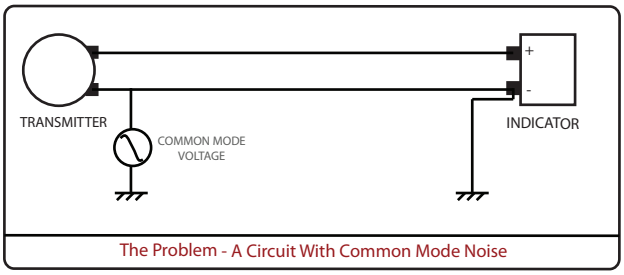
The Solution - Break The Loop With An Isolator

## Common Mode Noise

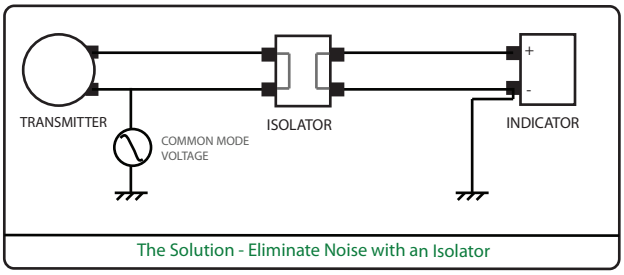
Common mode noise occurs where your cabling picks up noise from high-energy devices, such as variable speed drives, motors, contactors and switches.

Because signals are often electrically quite small, this noise can distort or completely destroy the signal.

By isolating, you can eliminate this noise even if it is considerable.



The Problem - A Circuit With Common Mode Noise



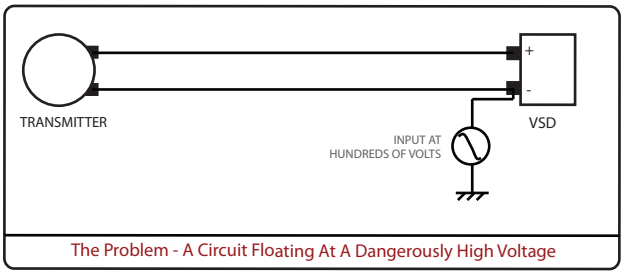
The Solution - Eliminate Noise with an Isolator

## Plant Safety

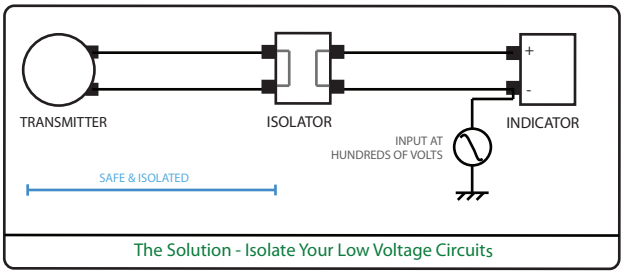
Sometimes, signals must be sent to equipment - such as variable speed drives or motors - that may be floating at several hundred volts relative to ground.

To ensure the safety of plant and personnel, you should isolate your sensors to make your individual loops safe to work on.

Note that the side of the isolator still connected to your high-energy equipment remains unsafe.



The Problem - A Circuit Floating At A Dangerously High Voltage



The Solution - Isolate Your Low Voltage Circuits

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