

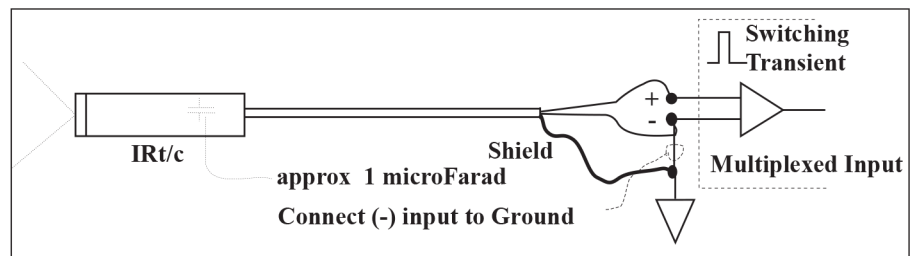
MULTIPLEXED DATALOGGING APPLICATIONS

An occasional problem introduced by switching-type thermocouple dataloggers is signal offset caused by the switching transient. The IRt/c is a completely passive device and produces an electrical signal entirely via thermoelectric effects, but does contain both resistance and capacitance above the levels found with conventional thermocouples. Many interface devices generate a small leakage current, which induces no shift in signal with conventional low impedance (<100 ohm) thermocouples, but may induce an offset with the higher IRt/c impedance (~3K ohm). This type of offset is normally stable and is simply calibrated out by adjusting the device's OFFSET or ZERO adjustment.

However, switching the thermocouple input can also cause offsets in IRt/c readout due to the presence of capacitance, if the signal leads are connected

in a differential fashion to the amplifier input. A switching transient voltage stores a charge in the capacitance, which can cause the equivalent of leakage current offset. This offset could also be calibrated out, but may not be stable. A preferred method is simply to ground the negative side of the t/c input as shown.

The ground provides a path for the charge caused by the switching transient to dissipate, thus eliminating the offset. The twisted shielded pair wire with shield connected to ground will compensate for any loss of noise rejection, and thus provide a clean signal.



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