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Interfacing the Current Loop Function of the INST/INSR-3001

This application note shows several ways that the INST/INSR-3001 current loop function may be interfaced with various sensors and power supplies.

INST-3001 Transmitter

The current-loop input to the INST-3001 is a 50 ohm resistor. As a result loop power must be provided from an external source. Figure 1 shows the use of the INST-3001 with a passive sensor and a separate current-loop power supply. Figure 2 shows the use of the INST-3001 and a self-powered sensor (one that has a built-in loop-power supply) while figure 3 shows the use of the INST-3001 to provide loop supply for a passive sensor from its own internal power. Note that any external power supply used to power the loop must always be a DC supply for proper operation. It must also be high enough in voltage to assure that the desired current can be produced.

INSR-3001 Receiver

The current-loop output from the INSR-3001 is a variable impedance that determines the amount of current that can flow through it based on signals from the INST-3001. Figure 4 shows the use of the INSR-3001 with a passive current indicator and a separate current-loop power supply. Figure 5 shows the use of the INSR-3001 to provide loop power for a passive current indicator from its own internal power. Note that any external power supply used to power the loop must always be a DC supply for proper operation. It must also be high enough in voltage to assure that the desired current can be produced.

General

When connecting any type of external power supply to either the INST-3001 or the INSR-3001 it is important to remember that position 3 on the signal terminal block, position 3 on the power terminal block and the housing of the unit are all connected together.

Please refer to the INST/INSR-3001 Instruction Manual for additional details and specifications.

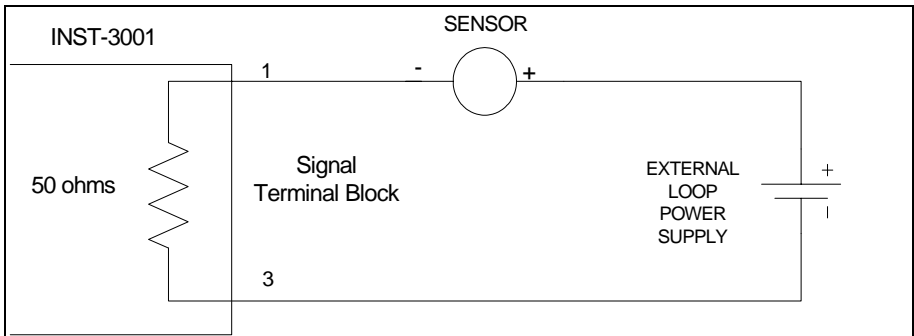


Figure 1, Using a Separate Loop Power Supply

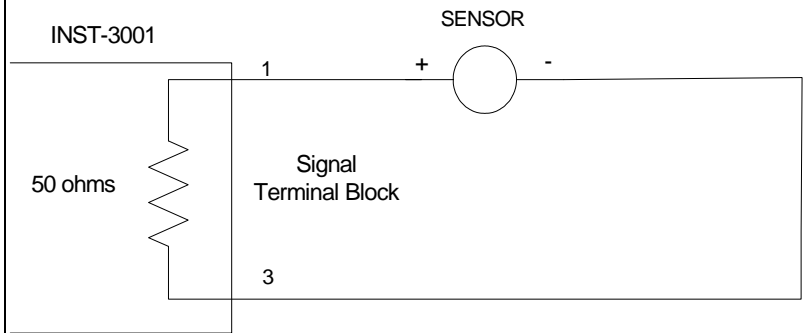


Figure 2, Using a Self Powered Sensor

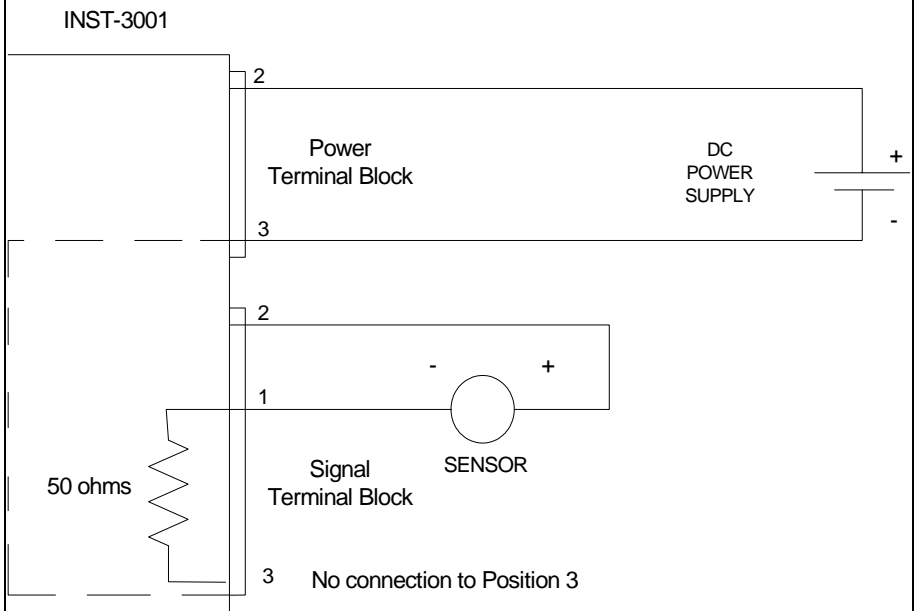


Figure 3, Using the INST-3001 Internal Power Supply for a Passive Sensor

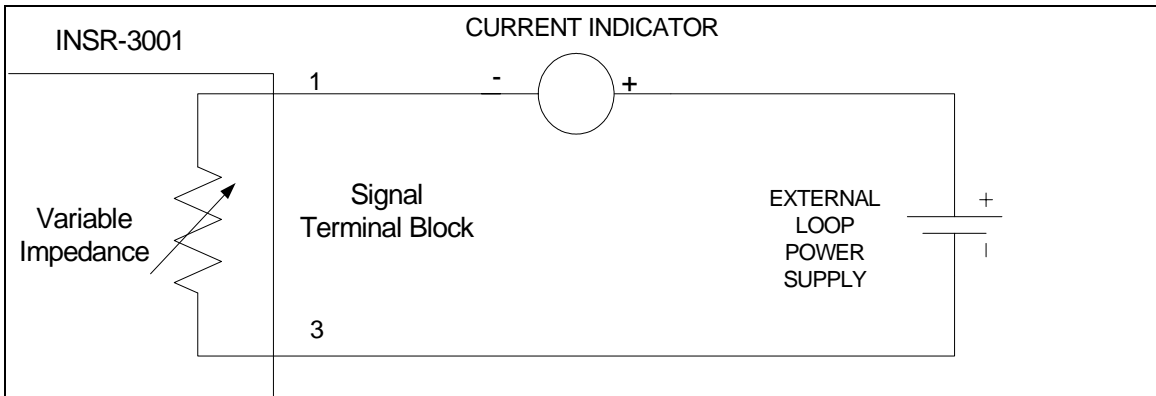


Figure 4, Using a Separate Loop Power Supply

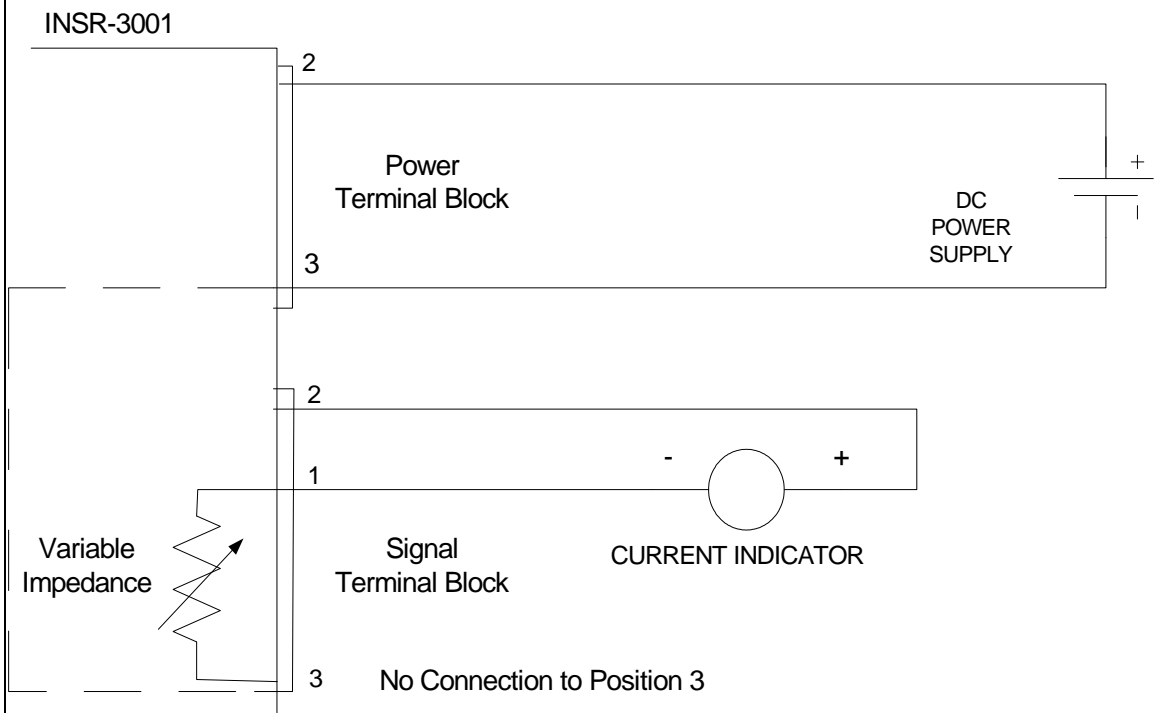


Figure 5, Using the INSR-3001 Internal Power Supply for a Passive Current Indicator