

MicroDataLogger® Technical Bulletin

SUBJECT: Measuring 4-20 mA Current Loops Using a 5 Volt Module
DATE: February 16, 2005

The 5 volt VDC-19-3 signal conditioning module can be adapted for measuring 4-20 mA current loop signals by installing a current to voltage conversion resistor across the input terminal of the module. This resistor converts the 4 to 20 mA current signal flowing through the loop into a 1 to 5 volt signal that the module can accept.

Current loop devices can only operate with a certain amount of loop resistance. The maximum loop resistance that a device can handle depends on the loop excitation voltage. Most current loop devices that are powered from an external excitation power supply, typically 24 Vdc, will work with 250 ohms or more of loop resistance.

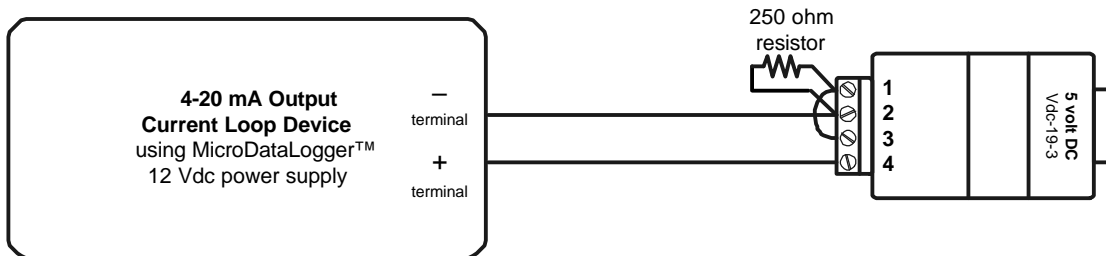
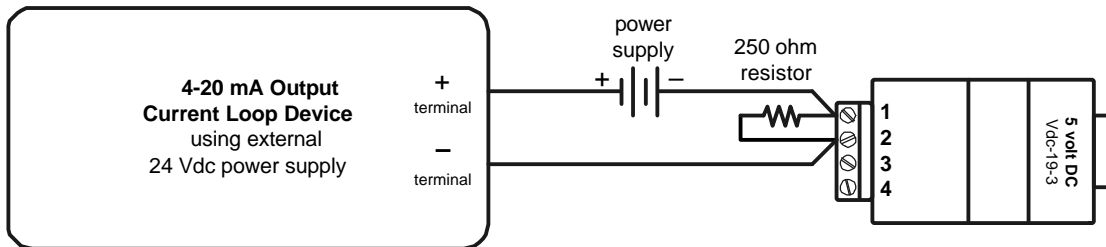
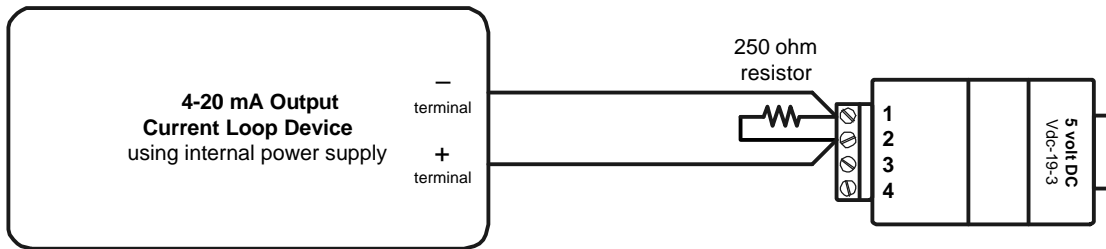
Note that some current loop devices will not work with 250 ohms of loop resistance when powered from the logger's 12 Vdc excitation supply. Check the device's specifications or contact the manufacturer to confirm that the device will work with a loop resistance of 250 at an excitation voltage of 12 Vdc.

When configuring a MicroDataLogger™ unit using the DataManager™ software, the Slope and Offset Wizard, in Step 2, enter five (5) for the Maximum Output Range, and one (1) for the Minimum Output Range. Select an appropriate Units of Measure text label from the drop down list.

The accuracy of the current to voltage conversion resistor will affect the overall measurement accuracy. A precision resistor that is stable over the operating temperature range is generally required. Typical specifications for current to voltage conversion resistors supplied by Architectural Energy Corporation are: 250 ohms, $\pm 0.1\%$, 1 watt, and ± 10 ppm/ $^{\circ}\text{C}$. The part number for this resistor is RES-250

MicroDataLogger®

Wiring Diagrams for Using a 5 Vdc Module to Measure 20 mA Current Loop Signals



Filename: 5 Volt Module Used in 4-20 mA Current Loops 022205 .doc
Directory: P:\I E S\Marketing\ENFORMA -- MDL\Technical Bulletins
Template: C:\Documents and Settings\generic\Application
Data\Microsoft\Templates\NORMAL.DOT
Title: Memorandum
Subject:
Author: John J. Browne
Keywords:
Comments:
Creation Date: 2/16/2005 3:20 PM
Change Number: 13
Last Saved On: 2/22/2005 10:59 AM
Last Saved By: johnb
Total Editing Time: 191 Minutes
Last Printed On: 2/22/2005 12:27 PM
As of Last Complete Printing
Number of Pages: 2
Number of Words: 265 (approx.)
Number of Characters: 1,516 (approx.)