Product Application **AP05311004E**
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Supersedes May 2007

Power supply options for CurrentWatch

Introduction

CurrentWatch™ sensors and switch models are available in three power supply options: self-powered, loop-powered, and auxiliary-powered. Understanding how to wire and install each type will help in choosing the best product for the application.

Self-powered models

Self-powered refers to the sensor or the switch generating its own power needs—no external power is required. Instead of requiring an input voltage, these sensors derive power from the monitored conductor wire running through the sensor aperture. This results in an easier installation, as the installer does not have to find a power source and run additional wiring. Only the output is wired to a control or alarming device.

Self-powered models are available in the following families: ECS, ECSJ, ECS7, ECSTD, and EAC Series.

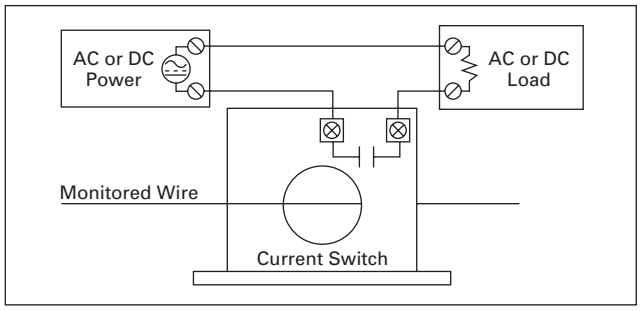

Figure 1. Wiring Diagram for Self-Powered Sensor

Loop-powered models

Loop-powered, or two-wire connection, indicates that the sensor derives its power from the loop. Analog outputs are commonly found in loop-powered sensors. The most common supply voltage is +24 Vdc. A key benefit of loop power is that the voltage drop in the wiring does not affect the accuracy of the signal.

Loop-powered models are available in the following families: EAC, EACR, and EPRM Series.

Note: Figure 2 shows the most common output configuration.

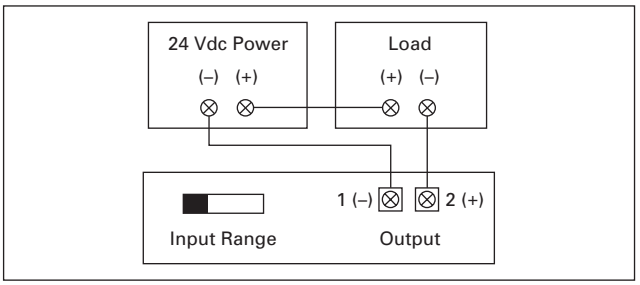

Figure 2. Wiring Diagram for Loop-Powered Sensor

Note: Figure 3 shows a polarity-sensitive sensor. If the connections are reversed, the sensor is protected from internal damage. (This does not mean the load is protected, so proper wiring must be observed.)

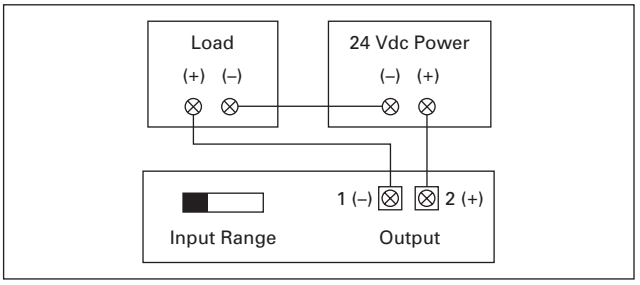

Figure 3. Alternate Wiring Diagram for Loop-Powered Sensor

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Auxiliary-powered models

Auxiliary-powered, or four-wire connection, indicates that the sensor requires an external power supply to be connected to the sensor to allow the internal electronics to function. Auxiliary-powered units can be connected to 120 Vac or 24 Vac/Vdc, depending on the model type. Polarity and load connections require proper connections to ensure correct functionality.

Auxiliary-powered models are available in the following families: EAC, EDC, EPRM, and EGF Series.

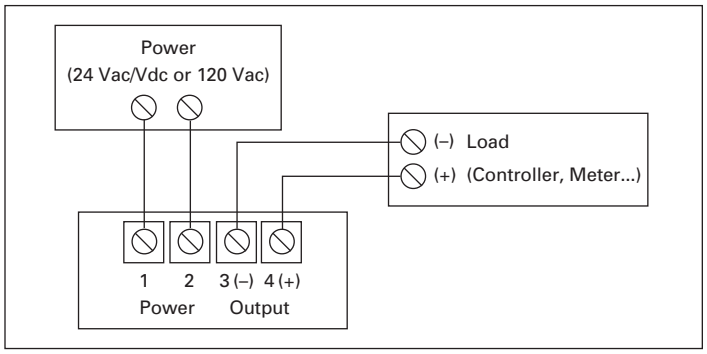

Figure 4. Wiring Diagram for Auxiliary-Powered Sensor

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