Monitoring low current with CurrentWatch

Introduction

CurrentWatch™ current switches and sensors are designed to meet the sensing requirements of as many applications as possible, while keeping the number of stocked sensors to a minimum. This is achieved by offering products with field-selectable current sensing ranges, and smart technology such as the self-calibrating current ranges of the ECSJ Series.

Low current applications

Occasionally, an application requires a sensor to monitor a circuit that draws current lower than the range of the switch or the sensor. For example, if the load draws 500 mA, there will not be enough sensing current to operate the ECSJ400SC, which requires a minimum current sensing range of 1A (1000 mA). However, by looping the current conductor (monitored wire) through the sensor aperture more than once (twice, as shown in **Figure 1**), the sensor will "see" current over the minimum set point and will operate correctly.

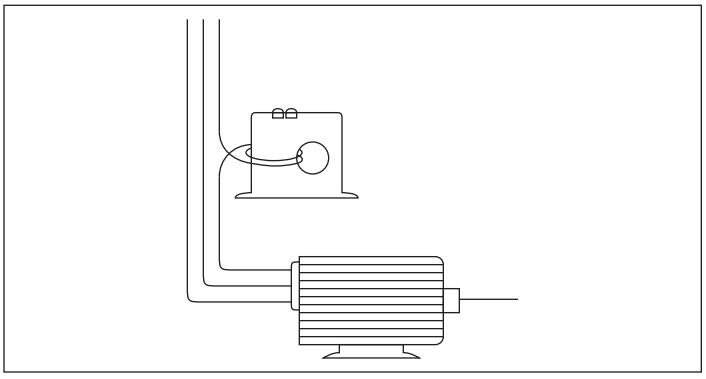

Figure 1. Conductor Wire Looped Two Times Through Current Sensor Aperture

Another way this "wrapping" approach can be useful is when the monitored current rises above the range maximum, but also falls below that level. For example, a 1.5 hp, 208 Vac fan runs at 5.5A under normal conditions, but the full load ampere rating is 6.6A, and needs to de-energize the coil of a relay connected to an alarm system. The ECSJ401SC will work properly for this application, but if the installer passes the conductor wire through the sensor two times or more, the current will remain within the range of 6 to 40A (the midrange for this particular current switch model). The switch will be sensing 11A at normal operation with two passes of the conductor (5.5 x 2) or 16.5A with three passes through the switch.

In another case, a 50 hp, 460 Vac motor draws 65A at full load. The EAC2420SP current sensor has a low range of 0 to 100A, so the resolution will be nearly half at full load. If the conductor passes through the sensor twice, the sensor will see 130A at full load, which will provide higher resolution when the sensor is set to the 0 to 150A midrange.

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