

# Hawkeye™ 421/421SP

**Split-Core Current Transducer,  
High Current, 4-20mA Output**



## **⚡ ⚠ DANGER**

### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Use a properly rated voltage sensing device to confirm power is off.  
**DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION**
- Only install this product on insulated conductors.

**Failure to follow these instructions will result in death or serious injury.**

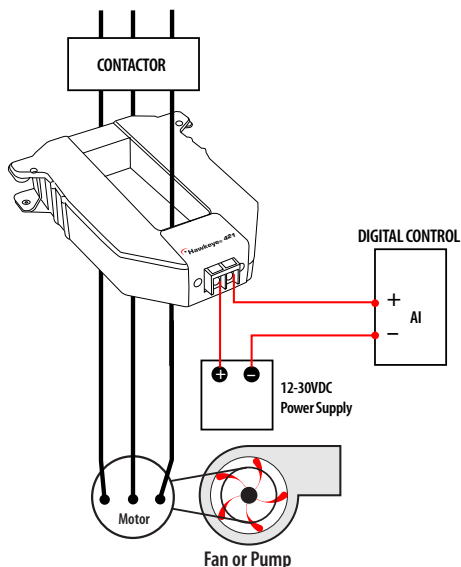
A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved. NEC2009 Article 100

No responsibility is assumed by Veris Industries for any consequences arising out of the use of this material.

## **NOTICE**

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- The installer is responsible for conformance to all applicable codes.
- Mount this product inside a suitable fire and electrical enclosure.

## **WIRING EXAMPLE**



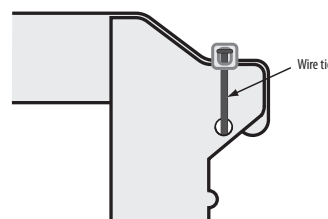
## **SPECIFICATIONS**

|                          |                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor Power             | 30mA (max.) @12-30VDC                                                                                                                                          |
| Amperage Range           | H421: 0-1000A to 0-2400A (scalable)<br>H421SP: Factory-set at a customer-specified upper limit (1000, 1200, 1400, 1600, 1800, 2000, 2200, and 2400A available) |
| Sensor Output            | 4-20mA                                                                                                                                                         |
| Insulation Class         | 600VAC RMS, insulated conductors only                                                                                                                          |
| Frequency                | 50/60 Hz                                                                                                                                                       |
| Temperature Range        | -15° to 60°C (5° to 140°F)                                                                                                                                     |
| Humidity Range           | 10-90% RH non-condensing                                                                                                                                       |
| Accuracy                 | ±2% F.S. from 10% to 100% of selected current range                                                                                                            |
| Response Time            | 2 sec.                                                                                                                                                         |
| Zero Adjustment          | nominal output@0A: 4mA ± 0.5                                                                                                                                   |
| Terminal Block Wire Size | 12 to 22 AWG (3.3 to 0.3 mm <sup>2</sup> )                                                                                                                     |
| Terminal Block Torque    | 3.5 to 4.4 in-lb (0.4 to 0.5 N-m)                                                                                                                              |
| Installation Category    | Cat. III, pollution degree 2                                                                                                                                   |

*This product provides for basic insulation only.*

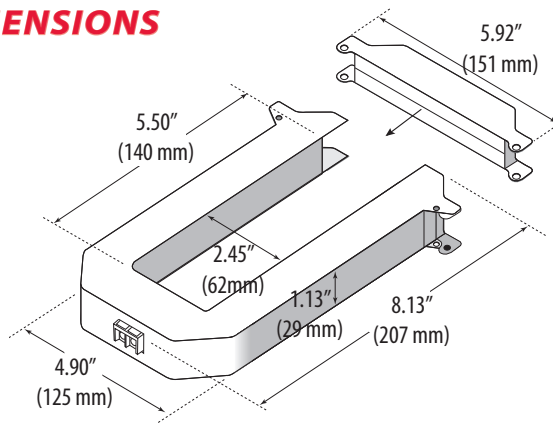
## **INSTALLATION**

- Disconnect and lock out power to the enclosure containing the conductor to be monitored.
- Choose a location for the sensor. The monitored conductor must pass through the center window, and the sensor must be at least ½" (13 mm) from any uninsulated conductors. Determine cable routing for the controller connection, allowing the sensor to reach the conductor.
- Wire the output connections between the sensor and the controller (4-20mA).
- Snap the sensor over the conductor to be monitored.
- Secure I-bar to main body of sensor with wire ties or other securing method.



- Secure the enclosure and reconnect power.
- Scale the sensor range, then scale the controller software to match the sensor's output (see Scaling section).

## **DIMENSIONS**



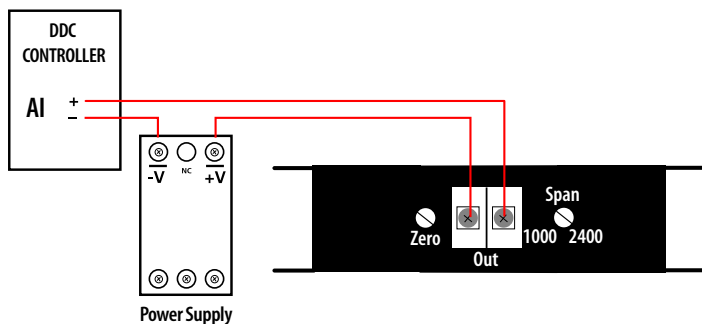
## OPERATION

The H421 and the H421SP are current transducers that sense current (amperage) in the monitored conductor. The H421 amperage range is field-adjustable, with ranges of 0-1000A thru 0-2400A possible. The H421SP is factory-set at a range with an upper limit specified by the customer upon ordering (1000A, 1200A, 1400A, 1600A, 1800A, 2000A, 2200, 2400A, and 2400A options available for upper limits). Both devices transform the monitored current into 4-20mA DC output, suitable for connection to building controllers or other appropriate data acquisition equipment. The H421 and H421SP require a 12-30 VDC external power supply to generate their output.

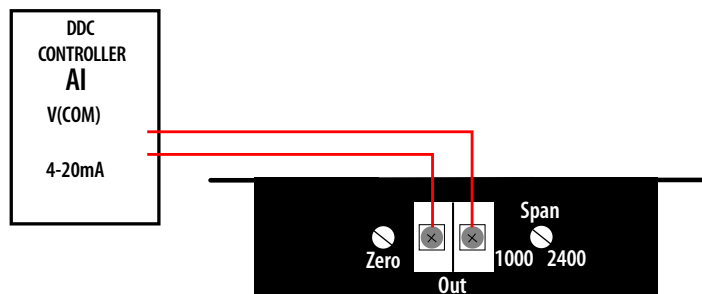
## WIRING

Output is not polarity sensitive. 12-30 VDC external power needed.

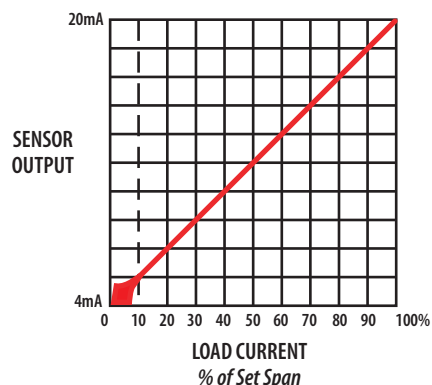
### External Power



### Sinking or Sourcing Panel



## SCALING

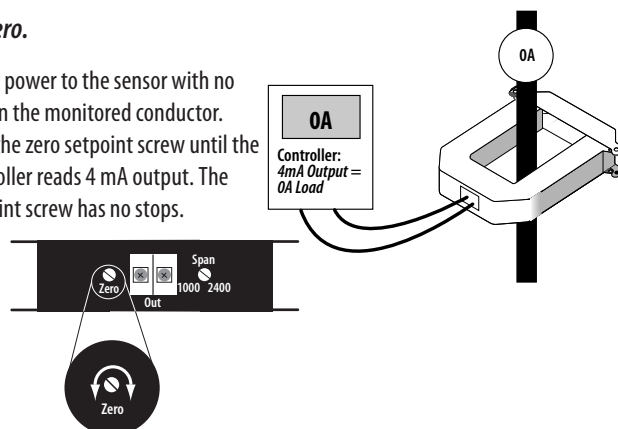


## CALIBRATION (H421 ONLY)

**Note: The H421SP is factory-calibrated.**

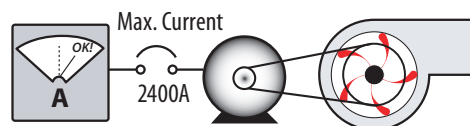
### 1. Set Zero.

Apply power to the sensor with no load in the monitored conductor. Turn the zero setpoint screw until the controller reads 4 mA output. The setpoint screw has no stops.

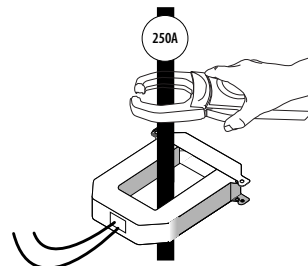


### 2. Calculate the maximum and target readings.

A. Determine the maximum current to be measured.



B. Find the actual current using an external measurement device, such as a portable amp clamp.



C. Calculate target output:

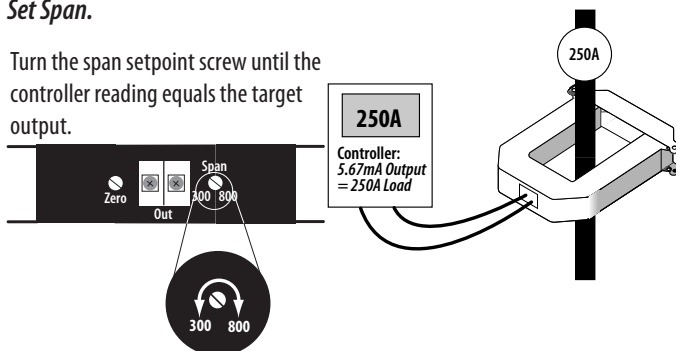
If A = the max. current, and B = the reading from the amp clamp, then:

$$\text{target output} = 16 \text{ mA} \times \frac{B}{A} + 4 \text{ mA}$$

$$\text{e.g. target output} = 16 \text{ mA} \times \frac{250}{2400} + 4 \text{ mA} = 5.67 \text{ mA}$$

### 3. Set Span.

Turn the span setpoint screw until the controller reading equals the target output.



## TROUBLESHOOTING

| Problem                  | Solution                                                                                                                                                                                                                                                                                     |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No Reading at Controller | <ul style="list-style-type: none"> <li>Confirm that a 12-30 VDC power supply is in series with the sensor output terminals and the control panel analog input terminals.</li> <li>Assure that sensor core mating surfaces are clean and that the core clamp is completely closed.</li> </ul> |