

**H904****Hawkeye™ 904**

**Split-Core Current Switch, Auto Calibrating,  
with Nuisance Reduction Feature  
For VFD Applications**

**Installer's Specifications**

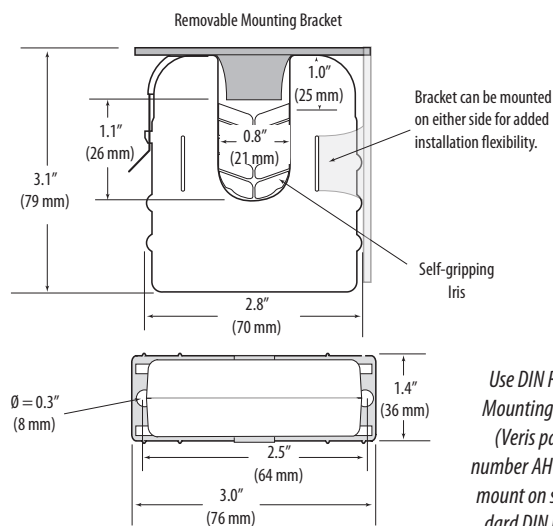
Sensor Power	Induced from monitored current
Amperage Range	3.5 - 135A Continuous
Insulation Class	600VAC RMS (UL)
Frequency	34 to 75 Hz (belt loss indication); 20 to 34 Hz (on/off status)
Temperature Range	-15° to 60°C (5° to 140°F)
Humidity Range	10-90% RH non-condensing
Off Delay	0 sec to 2 min.
Terminal Block Maximum Wire Size	14 AWG
Terminal Block Torque (nominal)	4 in-lbs (0.45 N-m)
Agency Approvals	UL 508 open device listing

*Specification Note: For CE compliance, conductor shall be insulated according to IEC 61010-1:2001, Installation Category III or equivalent.*

*The product design provides for basic insulation only.*

**QUICK INSTALL**

1. Disconnect and lock out power to the conductor to be monitored.
2. Choose a location for the sensor. The monitored conductor must pass through the iris, and the sensor must be at least 1/2" from any conductors as enclosure can reach 87°C during operation (at 60°C ambient temperature).
3. Mount the H904 on the load side output conductor of the Variable Frequency Drive.
4. Install the adjustable mounting bracket to the back of the enclosure using the included screws.
5. Wire the connections between the sensor and the controller.
6. Snap the sensor over the conductor to be monitored and clip the assembly to the mounting bracket on one of the three sides.
7. Perform the Setup (see page 2).

**DIMENSIONS****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.

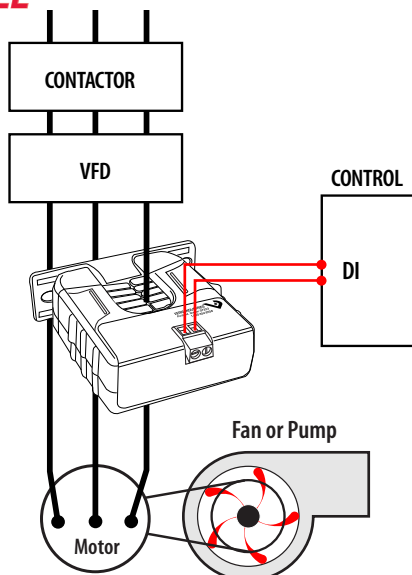
**Failure to follow these instructions will result in death or serious injury.**

**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**

*NOTE: The H904 is not intended for use in staged pump or variable inlet vane applications.*



## OPERATION

The H904 is a current-sensitive switching device designed for use with VFD motors. It is equipped with an auto calibration feature that allows the device to distinguish between a reduced amp draw due to normal changes in frequency and an abnormal drop due to belt loss or other mechanical failures.

A change in amperage in the monitored conductor that crosses the switch (setpoint) threshold plus the hysteresis value will cause the resistance of the FET status output to change state, similar to the action of a mechanical switch. The status output is suitable for connection to building controllers or other appropriate data acquisition equipment operating at up to 30 volts. The H904 requires no external power supply to generate its output.

The H904 housing offers unprecedented mounting flexibility. The mounting bracket can be attached in three different places. Additionally, the bracket is compatible with the Veris AH01 DIN Rail clip, allowing DIN mounting.

## NOTES

### CAUTION

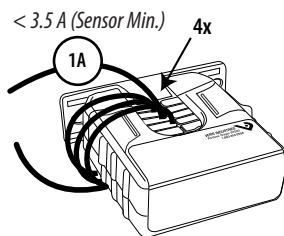
#### RISK OF EQUIPMENT DAMAGE

- Derate the product's maximum current for the number of turns through the sensing window using the following formula.  
$$\text{Rated Max. Amps} \div \text{Number of Turns} = \text{Max. monitored Amps}$$
  
e.g. :  $100\text{A} \div 4 \text{ Turns} = 25 \text{ Amps max. in monitored conductor}$
- Failure to follow these instructions can result in overheating and permanent equipment damage.

#### For load currents less than sensor minimum rating:

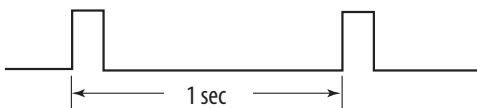
Wrap the monitored conductor through the center hole and around the sensor body to produce multiple turns through the "window." This increases the current measured by the transducer.

Controller must be programmed to account for the extra turns. e.g., if four turns pass through the sensor (as shown) the normal controller reading must be divided by 4.

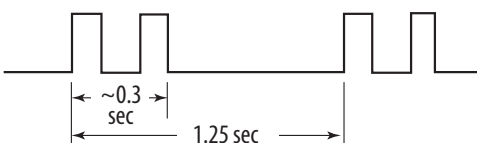


## LED BLINK CODES

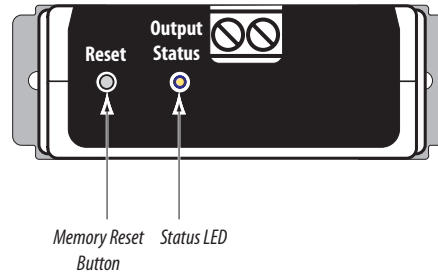
1 pulse per cycle = Normal Operation



2 pulses per cycle = Alarm Status



## SETUP, NORMAL STATE DETECTION



- Establish normal operating conditions (clean filter, normal load)
- Start the motor running at 35 Hz.
- Push and hold the Memory Reset button for approximately 5 seconds (see Nuisance Reduction section, below).
- Let the drive operate at this speed for 1 minute.
- Increase to 42 Hz and run for 1 minute.
- Increase to 49 Hz and run for 1 minute.
- Increase to 56 Hz and run for 1 minute.

The H904 is now ready to monitor current values and detect belt loss from 35-75 Hz. Below 35 Hz, it will detect power on/off states.

## MEMORY RESET

During setup, the H904 automatically determines the setpoint and stores it in nonvolatile memory at 70% of the measured current. The H904 will require a Memory Reset if any of the following conditions occur:

- The sensor is reinstalled on a different motor.
- The motor is re-sheaved.
- The system is air balanced.
- The motor load changes significantly.

To reset the H904, follow the Memory Setup procedure, starting at Step 1.

## NUISANCE REDUCTION FEATURE

The H904 provides a secondary setpoint option of 50% of the originally measured current. To access this feature, follow the Memory Setup procedure, but in Step 2, hold the Reset button for 10 seconds instead of 5.

## TROUBLESHOOTING

Problem	Solution
No Reading at Controller	<ul style="list-style-type: none"><li>Check for amperage in monitored conductor (<math>&gt;3.5\text{A}</math>).</li><li>Check that amperage in the monitored conductor does not exceed sensor max (135A).</li><li>Check to be sure that no more than 30VAC/DC or 1.0A has passed through the contact. Voltages or currents above these levels will damage the unit.</li><li>Assure that sensor core mating surfaces are clean and that the core clamp is completely closed.</li></ul>
False trips	<ul style="list-style-type: none"><li>Use the Nuisance Reduction feature, holding the Reset switch for 10 seconds instead of 5. This will reset the memory and decrease the setpoint from 70% of memorized current to 50%. In this mode, belt loss must cause an amperage reduction of 50% or more to be detected.</li></ul>