

VFD Current Switch Auto Calibration

Automatically Learns Load At Initial Power-Up



H614

DESCRIPTION

The Hawkeye H614 is a microprocessor based, self-learning, self-calibrating current-sensitive switching device designed for use with VFD systems. 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 (e.g., gradual filter restrictions) and a sudden drop (e.g., belt loss or other mechanical failure). At initial power-up, the H614 automatically learns the average current on the line with no action required by the installer. Once a current is learned, the switch monitors for changes in current greater than $\pm 20\%$ of the learned load.

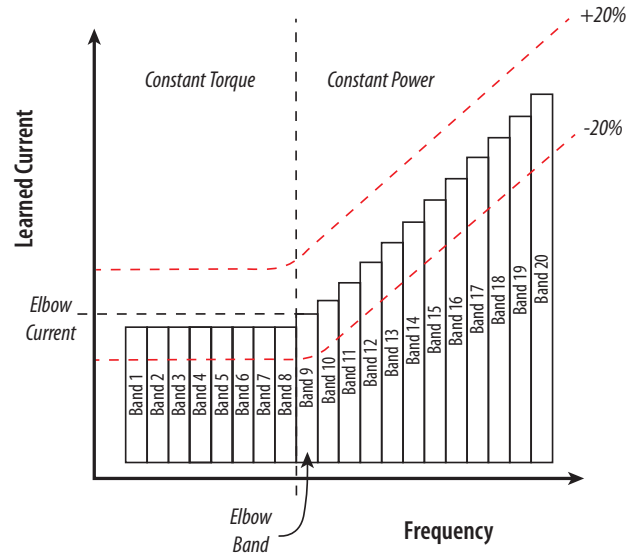
APPLICATIONS

- Detecting belt loss, coupling shear, and mechanical failure
- HVAC fan/blower motor failure
- Detecting unauthorized duct access

FEATURES

- Microcontroller based learning technology...automatically learns load upon initial power-up...eliminates labor associated with calibration
- Automatic trip point (1.5 to 150 Amps, 12 to 115 Hz)...reduced errors
- Monitors current for both under- and over-load in one package
- Small size fits easily inside small starter enclosures...saves space
- 100% solid state...no moving parts to fail
- Removable mounting bracket for installation flexibility
- 5-year warranty

PRODUCT FUNCTIONS



CURRENT MONITORING



SPECIFICATIONS



| | |
|--|---|
| Sensor Power | Induced from monitored conductor |
| Response Time | 1 sec. |
| Learn Time | 15 sec. learn period after frequency stabilizes |
| Frequency Range | 12 to 115 Hz |
| Temperature Range | -15° to 60° C (5° to 140°F) |
| Humidity Range | 10-90% RH non-condensing |
| Alarm Limits | $\pm 20\%$ of learned current in every 5 Hz freq. band |
| NORMAL-to-ALARM Status Output Delay | ~7 second max. |
| ALARM-to-NORMAL Status Output Delay | 1 sec. nominal* |
| Off Delay | <30 sec. nominal |
| Contact Ratings | 30VAC/DC, 1A |
| Insulation Class | 600VAC (UL); 300VAC RMS (CE) |
| Terminal Block Maximum Wire Size | 14 AWG |
| Terminal Block Torque (nominal) | 3.54 to 4.43 in-lbs (0.4 to 0.5 N-m) |
| Agency Approvals | UL508 open device, CE: EN61010-1:2001-02, CAT III, pollution degree 2 |

*If the H614 experiences a momentary loss of power, the Alarm-to-Normal output delay may exceed 1 sec.

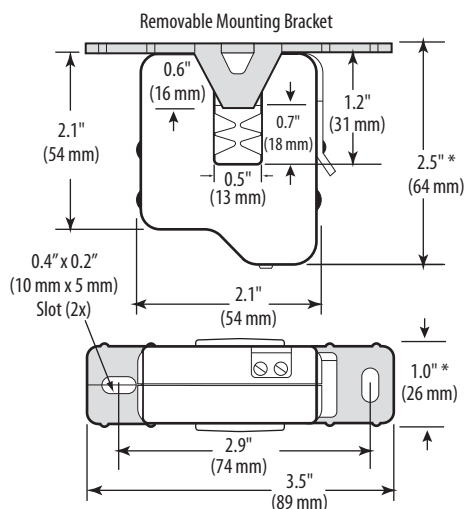
Specification Note: For CE compliance, conductor shall be insulated according to IEC 61010-1:2001.

The product design provides for basic insulation only. Use wire with minimum 75°C rated insulation. Do not use the LED status indicators as evidence of applied voltage.

This sensor detects abnormal operation by looking for sudden changes in current across the entire frequency range. In Learn mode, the sensor calculates a margin 20% above and 20% below the learned frequency curve.

An abnormal condition in the circuit is one that falls outside this margin.

DIMENSIONAL DRAWING

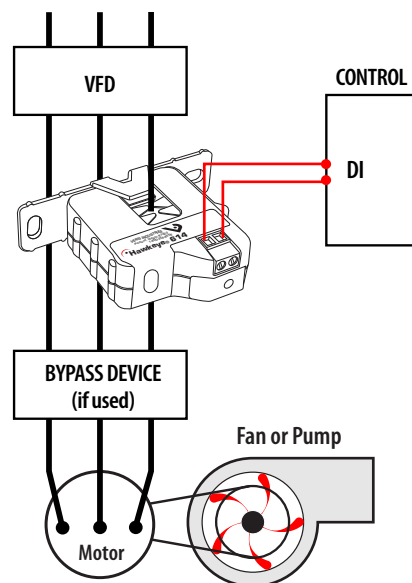


* Terminal block may extend up to 1/8" over the height dimensions shown.

APPLICATION/WIRING DIAGRAM

NOTE: The H614 is not intended for use in staged pump or variable inlet vane applications.

NOTE: (Optional) For added sensitivity in detecting amperage changes, use H614 devices on all three phases of the VFD (see "How It Works" for details).



HOW IT WORKS

The H614 is designed for HVAC fan and blower systems, as well as some pumping systems involving consistent viscosity liquids. If an H614 is installed on one phase of the VFD, it detects changes in that phase that result from the VFD compensating for changes elsewhere in the system. Alternatively, for increased sensitivity, H614s can be used on all three phases for immediate detection of phase balance changes anywhere in the system.

During setup, the H614 automatically determines the normal amperage and frequency profile and stores it in nonvolatile memory. Then the microprocessor monitors for amperage changes greater than $\pm 20\%$ of this learned curve.

| Sensor Mode | Status LED Blink Pattern |
|---|---|
| Learning Mode (first 15 sec of operation after frequency stabilizes) | Alternating Red/Green (1 per sec.) |
| On/Off Status only; Learn mode incomplete. VFD system does not meet abnormal condition detection criteria | Green blink (5 times per sec. after 15 sec of stable frequency) |
| Status OK | Green blink (1 per sec.) |
| Alarm | Red blink (1 per sec.) |

ORDERING INFORMATION



| MODEL | AMPERAGE RANGE | FREQUENCY RANGE | STATUS OUTPUT | NOMINAL TRIP POINT TARGET RANGE | HOUSING | STATUS LED | UL | CE | RoHS |
|-------|----------------|-----------------|--------------------|---------------------------------|------------|------------|----------------|----|------|
| H614 | 1.5 - 150A | 12 - 115 Hz | N.O. 1.0A@30VAC/DC | $\pm 20\%$ | Split-core | ● | ● ¹ | ● | ● |

¹ Listed for use on 75°C insulated conductors.

ACCESSORIES

DIN Rail Clip Set (AH01)
DIN Rail (AV01) and DIN Stop Clip (AV02)

