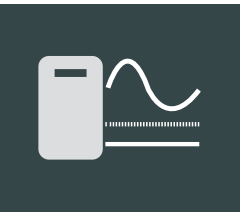
2017 Environmental Sensors & Energy Management Solutions

VERIS INDUSTRIES™



CURRENT MONITORING

The Hawkeye line of current sensors is widely known as the industry standard for proof of flow. Unlike mechanical switches, Hawkeye current sensors are solid-state, minimizing failures caused by the wear and tear of moving parts. Veris offers a full range of analog and digital current sensing devices.

CURRENT SENSOR SELECTION GUIDE

CURRENT STATUS SWITCHES (DIGITAL OUTPUT)

	MICRO SPLIT-CORE (BEST ON RETROFITS)	MINI SOLID-CORE (COST EFFECTIVE FOR NEW INSTALLATIONS)	MINI SPLIT-CORE (BEST ON RETROFITS)	STANDARD SOLID CORE (COST EFFECTIVE FOR NEW INSTALLATIONS)	STANDARD SPLIT-CORE (BEST ON RETROFITS)
Detect Status (Digital On/Off)	H300 — 60A page 243	H800* — 200A page 243	H600 — 200A page 243		H900 — 200A page 243
Detect Belt Loss and Mechanical Failure (Adjustable Threshold)	H308 — 50A page 245	H808 — 50A page 245 H806 — 50A page 249 H809 — 50A page 247	H608 — 175A page 245 H606 — 50A page 249 H609 — 50A page 247	H708 — 135A page 245 H706 — 135A page 249 H709* — 135A page 247	H908 - 135A page 245 H906 - 135A page 249 H909* - 135A page 247
Self-Calibrating Switch			H10F — 100A page 253		H11D — 200A page 251
VFD Model - Patented Technology			H614 — 150A page 255		H904 — 135A/20-75Hz page 257
VFD Model - Patented Technology (Onboard Relay)					H934 — 135A/20-75Hz page 257
Veris Exclusive Patented Technology Status & Control (Onboard Pilot Duty Relay)				H730* — 200A page 261 H738* — 135A page 263 H739* — 135A page 265	H930* — 200A page 261 H938* — 135A page 263 H939* — 135A page 265

FLYING LEADS AND JUNCTION BOX MOUNTING

High Voltage/Low Voltage Split		
Power Duty Status and Control	H120* — to 20A/2HP page 283	H5xx* — to 15A/1.5HP page 281

** Indicates a series of products.*

CURRENT TRANSDUCERS (Analog Output)

Load Trending 4-20mA Output		H721LC: 10-40A page 267	H921: 30-120A page 267	H721HC: 50-200A page 267	H221/321/421: 300/800/2400A page 269
Load Trending 0-5V Output	H822*: 10/20A page 271	H722LC: 10-40A page 271	H922*: 30-120A page 271	H722HC: 50-200A page 271	
Load Trending 0-10V Output		H723LC: 10-40A page 273	H923: 20-150A page 273	H723HC: 50-200A page 273	
Load Trending with Relay 4-20mA Output			H931: 30-120A page 275		
Load Trending with Relay 0-5V Output			H932/H952: 30-120A page 277		
DC Current 4-20mA Output				H971/EA20: 10-200A page 279	

** Indicates a series of products.*

Adaptable, Viewable, and Cost Competitive

H11D Current Switch

Eliminate Guesswork
View real-time amperage in the conductor, and know the exact trip current limits.

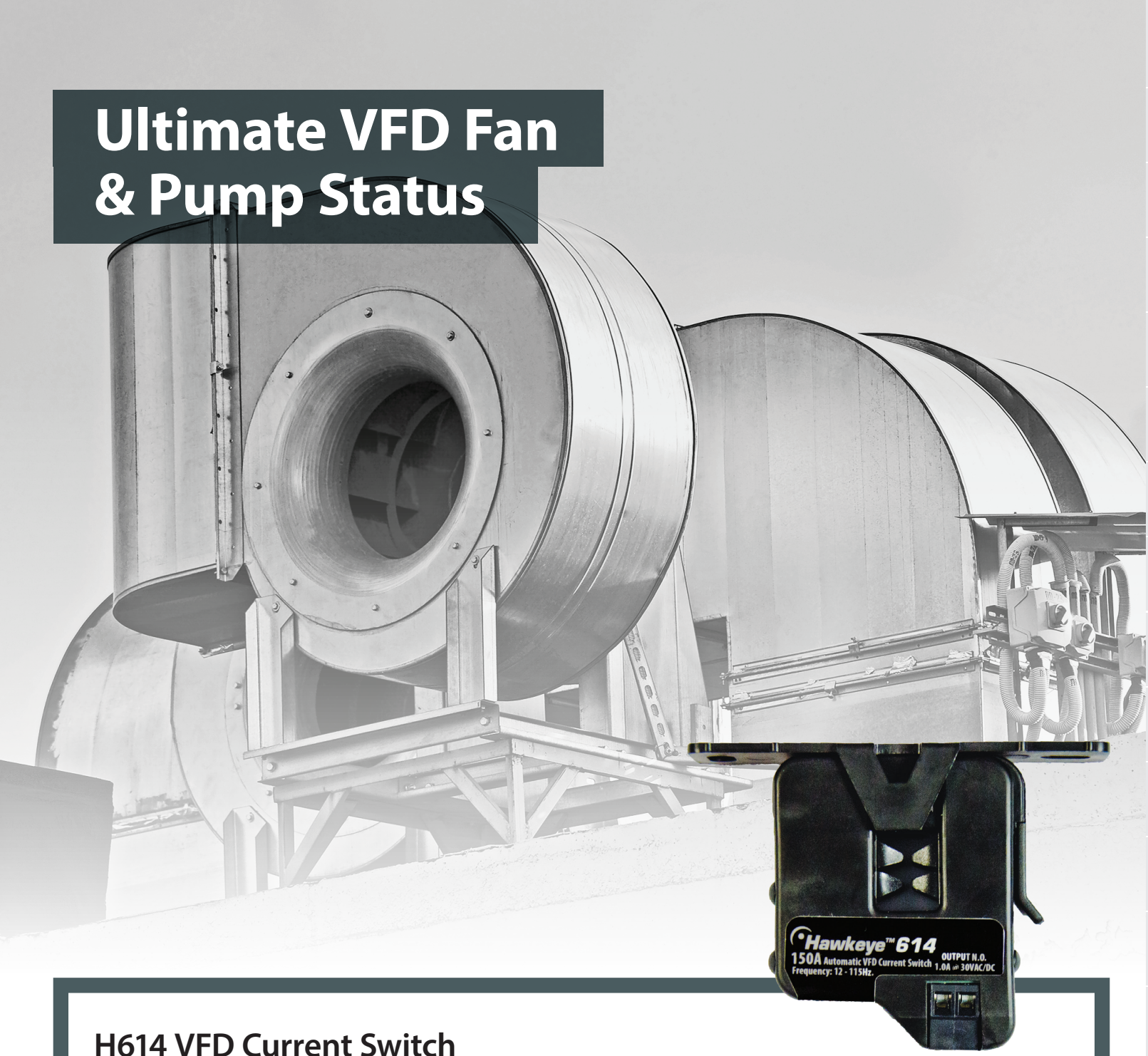
Adjust to an Application on the Fly
Slide-switch selectable normal, wide range, and on/off trip points.

Exceptional Labor Savings
Self-calibrating, self-learning: snap on and complete.

Interested in learning more about the innovative H11D design?
Contact a Current Monitoring Specialist today: 800.354.8556 or at sales@veris.com
See Product Specifications on 251

VERIS INDUSTRIES™

Ultimate VFD Fan & Pump Status



H614 VFD Current Switch

Greater Intelligence
Industry's most reliable self-learning, self-calibrating current switch

Increased Knowledge
Up to 40 trip points are spanned across 12-115 Hz, providing the industry's largest monitoring range.

Simplified Installation
Auto configures up to 40 trip points for fault detection on VFD fan/pump motors.

Interested in learning more about the innovative H614 design?
Contact a Current Monitoring Specialist today: 800.354.8556 or at sales@veris.com
See Product Specifications on page 255

VERIS INDUSTRIES™

HX00 SERIES

On/Off Status Current Switches

H800

H900

H300

H600

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Reliable

More reliable for status than relays across auxiliary contacts

Installation flexibility

Removable mounting bracket provides installation flexibility

Ideal for direct-drive units

Ideal for direct-drive units, unit vents, fan coil units, exhaust fans, and other fixed loads

Flexibility

Bracket on H900 can be installed in three different configurations

Low setpoint

Minimum trip point as low as 0.5 A (H608)…avoids the need for multiple wraps of the conductor through the sensor even on loads as small as 1/5 HP

Quick installation

Split-core H300, H600 and H900 for fast retrofit installation

Hawkeye x00 on/off current switches provide a cost-effective solution for monitoring status on unit vents, exhaust fans, recirculation pumps, and other fixed loads where belt loss is not a concern.

Veris has applied new technology to the H300, H600, and H800 models to achieve impressive improvement in turn-on levels. The Hawkeye H300 and H600 have the lowest turn-on current in the industry at a mere 0.15 A!

APPLICATIONS

- Electrical load status
- Direct-drive units, exhaust fans, process motors, and other fixed loads
- Lighting run times and status
- VFD output On/Off status
- Direct-Drive units, unit vents, fan coil units, exhaust fans, and other fixed loads

SPECIFICATIONS

Sensor Power	N.O models: Induced from monitored current; H800NC: 5 to 30 Vdc, permanently connected
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE*)
Frequency Range	50/60 Hz, On/Off status for Variable Frequency Drive (VFD) outputs at 12 to 115 Hz (a)
Temperature Range: H800NC, H300, H900 H600 H800, H800HV	 -15 to 60 °C (5 to 140 °F) -15 to 40 °C (5 to 104 °F) (to 200 A); -15 to 60 °C (5 to 140 °F) (to 150 A) -40 to 50 °C (-40 to 122 °F) (to 200 A); -40 to 75 °C (-40 to 167 °F) (to 100 A, and 0.25 A status output)
Humidity Range	10 to 90% RH non-condensing
Off State Leakage (H800NC Only)	34 µA @ 5 Vdc, 200 µA @ 30 Vdc
On State Voltage Drop (H800NC Only)	1.9 Vdc (max.) @ 0.1 A

Terminal Block Wire Size H600, H800, H900 H300	 24 to 14 AWG (0.2 to 2.1 mm^2); 22 to 16 AWG (0.3 to 1.3 mm^2)
Terminal Block Torque H600, H800, H900 H300	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m); 7 in-lbs (0.8 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

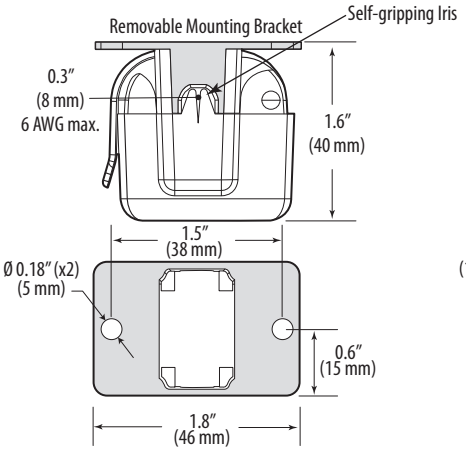
CE c UL us LISTED E150462

*The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

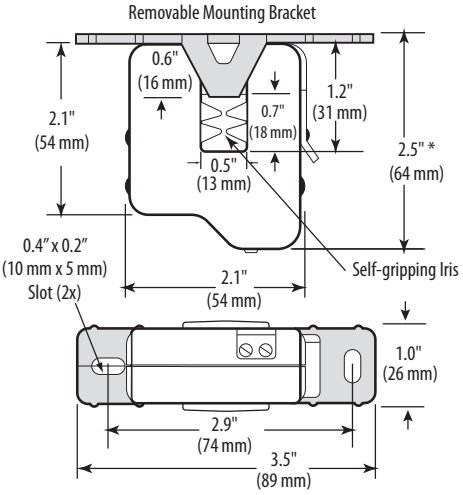
Note: Do not use the LED status indicators as evidence of applied voltage.

(a) VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.

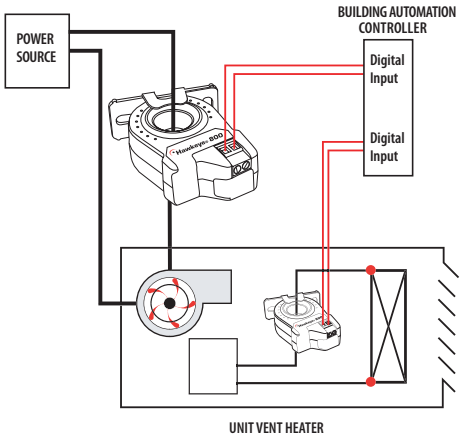
H300
Dimensional Drawing



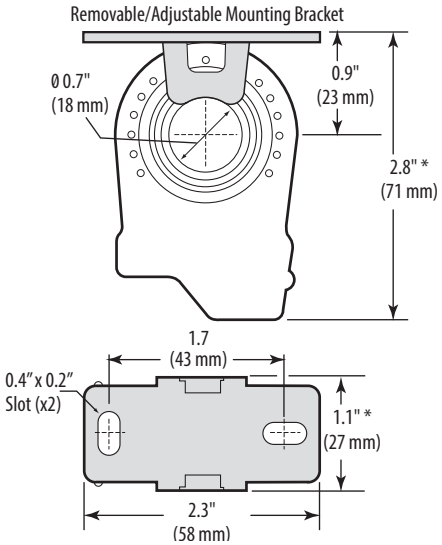
H600
Dimensional Drawing



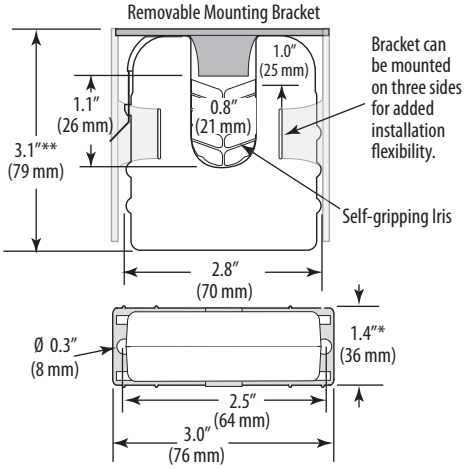
UNIT VENT HEATER CONTROL
Wiring Diagram



H800, H800HV, H800NC
Dimensional Drawing



H900
Dimensional Drawing



* Terminal block may extend up to 1/8″ over the height dimensions shown.
** Slide switch may extend up to 1/4″ over the height dimensions shown.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE @ 50/60 HZ ONLY	STATUS OUTPUT (MAX.)	TRIP POINT	HOUSING	UL	CE	LEAD FREE
H300	0.15 to 60 A	N.O. 1.0 A @ 30 Vac/dc	0.15 A or less	Split-core	•[2]	•	
H600	0.15 to 200 A	N.O. 1.0 A @ 30 Vac/dc	0.15 A or less	Split-core	•[1]	•	
H800	0.25 to 200 A	N.O. 1.0 A @ 30 Vac/dc	0.25 A or less	Solid-core	•[1]	•	
H800NC	0.5 to 200 A	N.C. 0.1 A @ 30 Vdc	0.5 A or less	Solid-core	•[1]		•
H800HV	0.75 to 200 A	N.O. 0.5 A @ 250 Vac/dc	0.75 A or less	Solid-core	•[3]		
H900	1.5 to 200 A	N.O. 1.0 A @ 30 Vac/dc	1.5 A or less	Split-core	•	•	

1. Listed for use on 75°C insulated conductors.
2. Product provides functional insulation only.
3. Listed for use on 90°C insulated conductors.

800.354.8556 | +1 503.598.4564 | sales@veris.com | intl@veris.com | www.veris.com

HX08 SERIES & H701

Detect Belt Loss, Coupling Shear, and Mechanical Failure


H908


H708


H608


H808

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability Minimize Installed Cost


H308

Hx08 Series and H701 adjustable current switches offer high performance, with a wide array of amperage range options. These products can accurately detect belt loss, coupling shear, or other mechanical failure on unit vents, exhaust fans, recirculation pumps, and other fixed loads down to as little as 1/5 HP.

Retrofit or new construction

High performance devices in split- and solid-core housings

Small size

Fits easily inside small enclosures

Adjustable trip point

Precise current trip point setting

Self-gripping iris

Self-gripping iris on split-core housings for easy installation

Low setpoint

Minimum trip point as low as 0.5 A (H608)…no need for multiple wraps of the conductor through the sensor, even on loads as small as 1/5 HP

Status LEDs

Status LEDs available for easy setup and local indication

APPLICATIONS

- Detecting belt loss, coupling shear, and mechanical failure
- Verifying lighting circuit and other electrical service run times
- Monitoring status of industrial process equipment
- Monitoring status of critical motors (compressor, fuel, etc.)
- VFD output on/off status

SPECIFICATIONS

Hx08 Series & H701

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS (UL), 300VAC RMS (CE*)
Frequency Range [2]	50/60 Hz, On/Off status for Variable Frequency Drive (VFD) outputs at 12 to 115 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% (typical)
Terminal Block Wire Size	H308: 22-16 AWG (0.3 to 1.3 mm²) Others: 24-14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	H308: 3.5 to 7 in-lbs (0.8 N-m) Others: 3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

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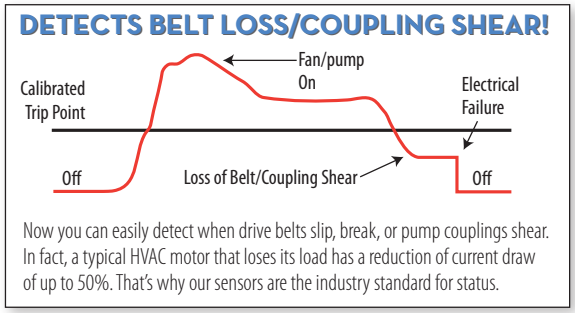


Now you can easily detect when drive belts slip, break, or pump couplings shear. In fact, a typical HVAC motor that loses its load has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status.

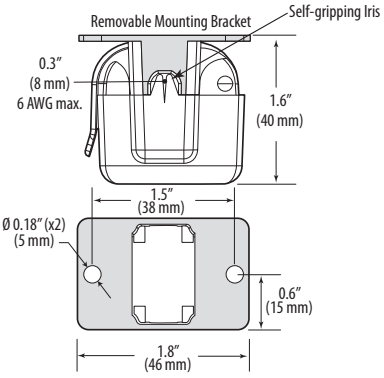
*The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

Notes: Do not use the LED status indicators as evidence of applied voltage.

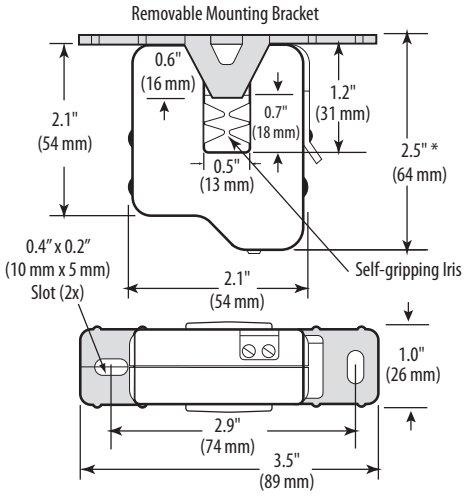
If using this switch in an application that includes an electronically commutated motor (ECM), see Veris Application Note VN61, at www.veris.com.

VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.

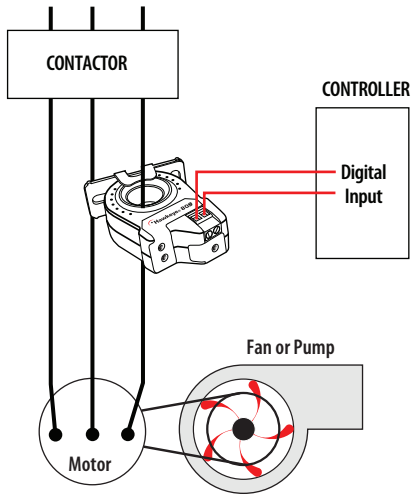
H308
Dimensional Drawing



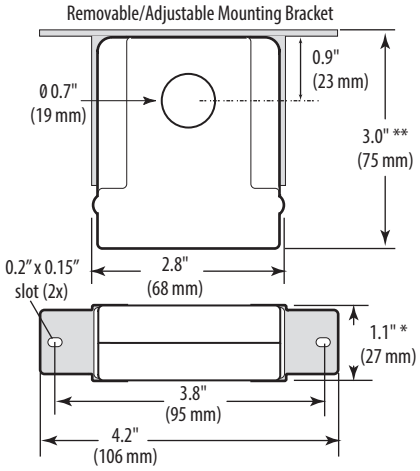
H608
Dimensional Drawing



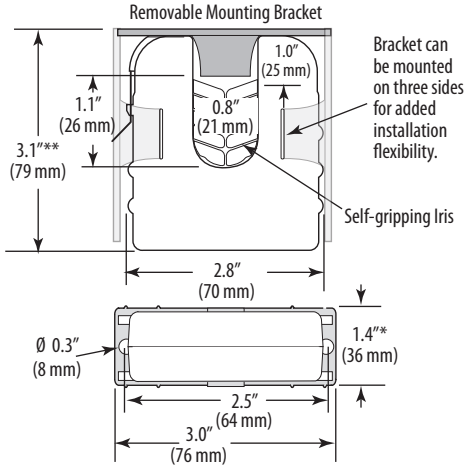
MONITORING FAN /PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



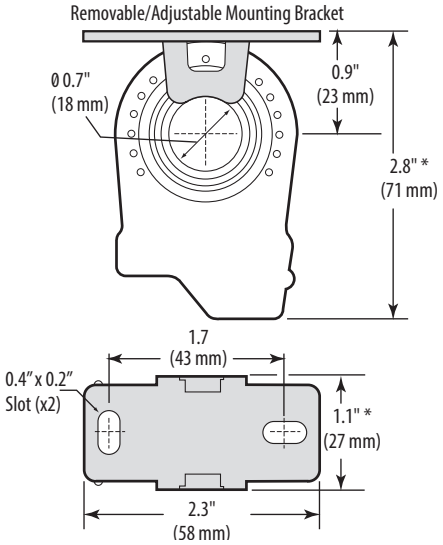
H708/701
Dimensional Drawing



H908
Dimensional Drawing



H808
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE @ 50/60 HZ ONLY	STATUS OUTPUT (MAX.)	MIN. TRIP POINT	HOUSING	STATUS LED	UL	CE
H308	0.75 to 50 A	N.O. 1.0 A @ 30 Vac/dc	0.75 A or less	Split-Core	•	•[2]	•
H608	0.5 to 175 A		0.5 A or less	Split-Core	•	•[1]	•
H701	1 to 135 A		1.0 A or less	Solid-Core		•	
H708	1 to 135 A		1.0 A or less	Solid-Core	•	•	
H808	0.75 to 50 A		0.75 A or less	Solid-Core	•	•	•
H908	2.5 to 135 A		2.5 A or less	Split-Core	•	•	•

1. Listed for use on 75 °C insulated conductors.
2. Product provides functional insulation only.

HX09 SERIES

Detect Belt Loss, Coupling Shear, and Mechanical Failure

H709

H909

H809

H609

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye x09 Series are high performance current switches, ideal for line voltage loads. The devices are powered by the current being monitored. They are ideal for monitoring performance on unit vents, exhaust fans, recirculation pumps, and other fixed loads.

Low setpoint

The H809 has a low (0.75 A) minimum setpoint…no need for multiple wraps of the conductor through the sensor, even on loads as small as 1/5 HP

Adjustable trip point

Precise current trip point setting

Small in size

H609 and H809 are small in size to fit easily inside small starter enclosures

Status LEDs

For easy setup and local indication

Versatility

Removable mounting bracket optimizes field versatility

Flexibility

Bracket on H909 can be installed in three different configurations

APPLICATIONS

- Detecting belt loss, coupling shear, mechanical failure, and interlocking loads
- Verifying lighting circuit and other electrical service run times
- Monitoring status of industrial process equipment
- Monitoring status of critical motors (compressor, fuel, etc.)
- VFD output On/Off status
- Fan/pump status monitoring

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE[1])
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% (typical)
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

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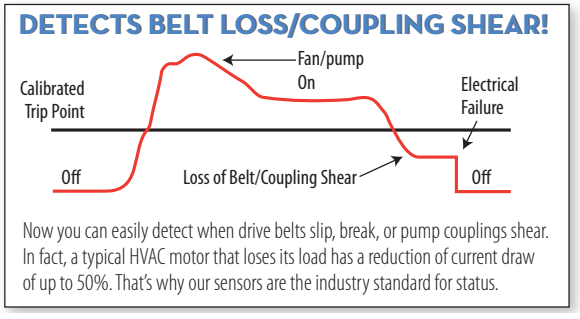
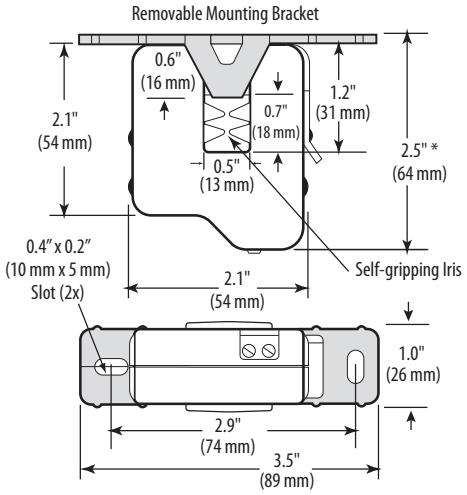


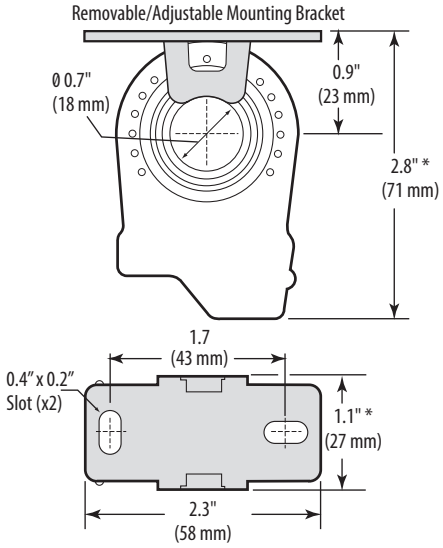
1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

Note: Do not use the LED status indicators as evidence of applied voltage.
If using this switch in an application that includes an electronically commutated motor (ECM), see Veris Application Note VN61, at www.veris.com.

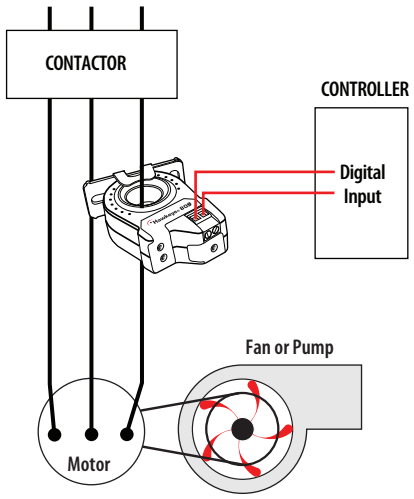
H609
Dimensional Drawing



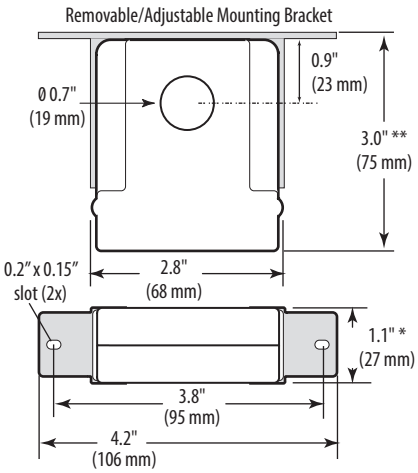
H809
Dimensional Drawing



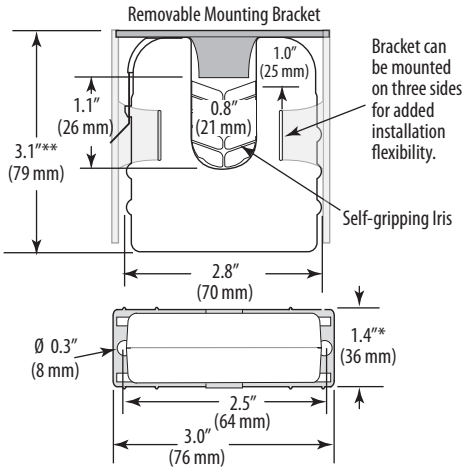
MONITORING FAN /PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



H709/H709HV
Dimensional Drawing



H909/H909HV
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE @ 50/60 HZ ONLY	STATUS OUTPUT (MAX.)	MIN. TRIP POINT	STATUS LED	HOUSING	UL	CE	LEAD FREE
H609	1.25 to 50 A	N.O. 0.2 A @ 120 Vac/dc	1.25 A or less	•	Split-core	•[1]		•
H709	1 to 135 A	N.O. 0.2 A @ 120 Vac/dc	1.0 A or less	•	Solid-core	•		
H709HV	1 to 135 A	N.O. 1.0 A @ 250 Vac	1.0 A or less		Solid-core		•	
H809	0.75 to 50 A	N.O. 0.2A @ 120 Vac/dc	0.75 A or less	•	Solid-core	•[1]		•
H909	2.5 to 135 A	N.O. 0.2 A @ 120 Vac/dc	2.5 A or less	•	Split-core	•		
H909HV	2.5 to 135 A	N.O. 1.0A @ 250 Vac	2.5 A or less		Split-core		•	

1. Listed for use on 75°C insulated conductors.

HX06 SERIES

Detect Belt Loss, Coupling Shear, and Mechanical Failure

H706

H906

H606

H806

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye x06 Series solid- and split-core current switches provide accurate, reliable, and maintenance-free fan and pump status indication where an NC output is needed.

Adjustable trip point

Versatility with four available amperage ranges

Status LEDs

Output status LEDs for fast set up

No tubing needed

Easier to install than differential pressure switches

Easy placement

Adjustable mounting bracket on the solid-core housing

100% solid-state

No moving parts to fail

Self-gripping iris

Self-gripping iris on split-core housings for easy installation

APPLICATIONS

- Monitoring fans, pumps, motors, and other electrical loads for proper operation
- Detecting belt loss and motor failure…ideal for fan and pump status
- Verifying lighting circuit loads
- Monitoring critical motors (compressor, fuel, etc.)
- Monitoring industrial process equipment status (OEM)

SPECIFICATIONS

Sensor Power	5 to 30 Vdc
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE[1])
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% Typical
Off State Leakage	34 µA @ 5 Vdc, 200 µA @ 30 Vdc
On State Voltage Drop	1.9 Vdc max@ 0.1 A
Terminal Block Wire Size	H300: 22 to 16 AWG (0.3 to 1.3 mm²) Others: 24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	H300: 7 in-lbs (0.8 N-m) Others: 3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

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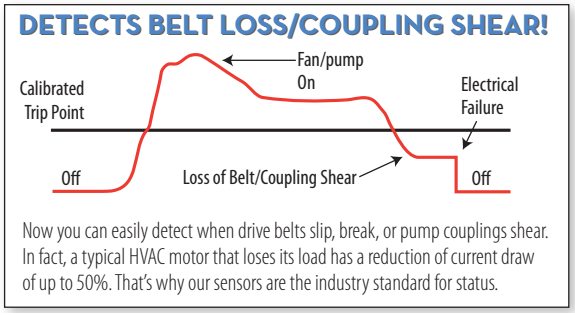
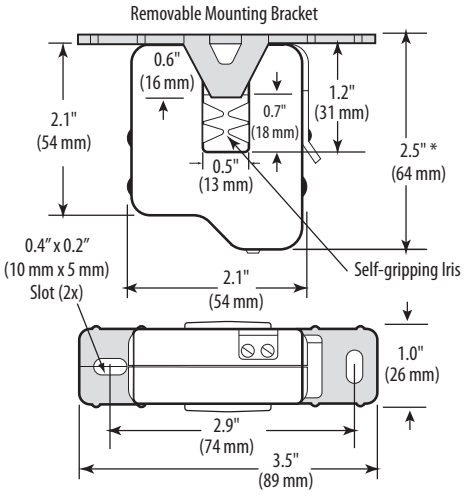


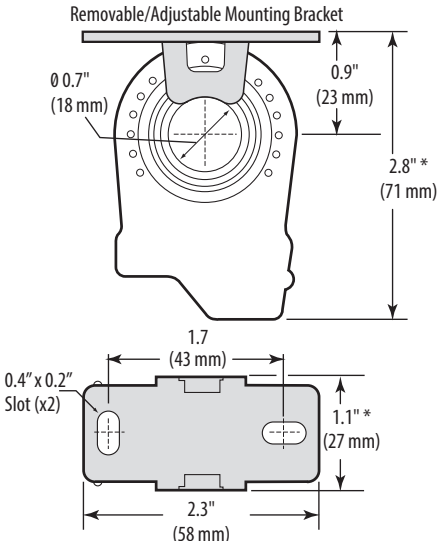
1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

Note: Do not use the LED status indicators as evidence of applied voltage. (a) VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.

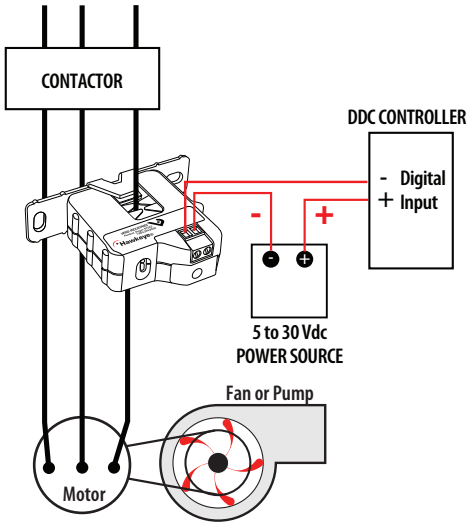
H606
Dimensional Drawing



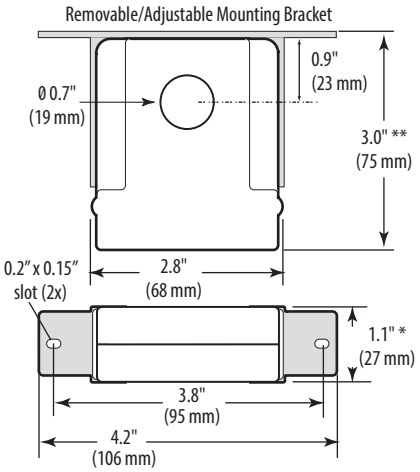
H806
Dimensional Drawing



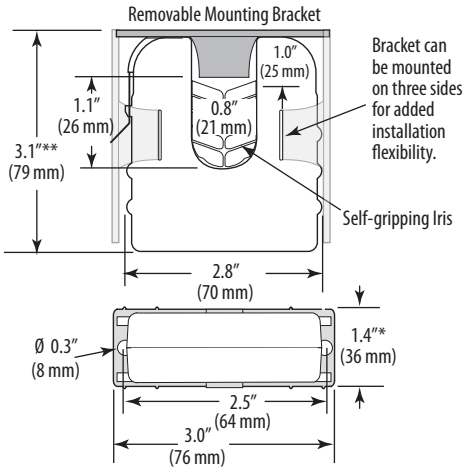
MONITORING FAN/PUMP MOTORS FOR POSITIVE PROOF OF FLOW (H606 & H806)
Wiring Diagram



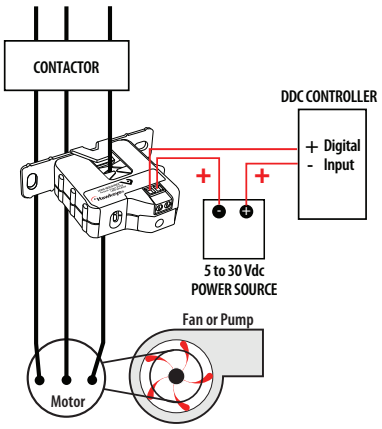
H706
Dimensional Drawing



H906
Dimensional Drawing



MONITORING FAN/PUMP MOTORS FOR POSITIVE PROOF OF FLOW (H706 & H906)
Wiring Diagram



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT (MAX.)	MIN. TRIP POINT	HOUSING	STATUS LED	UL	CE
H606	1.25 to 50 A	N.C. 0.1 A @ 30 Vdc	1.25 A or less	Split-Core	•	•[1]	•
H706	1 to 135 A		1.0 A or less	Solid-Core	•	•	•
H806	0.75 to 50 A		0.75 A or less	Solid-Core	•	•	•
H906	2.5 to 135 A		2.5 A or less	Split-Core	•	•	•

1. Listed for use on 75°C insulated conductors.

H11D

LCD Display

H11D

Hawkeye™

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

The Hawkeye TruStat H11D is a microprocessor based, self-learning, self-calibrating current switch. It is designed for user ease, providing calibration-free status for both under and overcurrent, an LCD display, and slide-switch selectable trip point limits. At initial power-up, the H11D 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 the selected range.

Backlit LCD

View the monitored current (up to 200 A)…no need for expensive handheld meters and offers easy visibility in dark enclosures

Versatility

Slide-switch selectable trip point limits

Simplified troubleshooting

Records and displays the amperage level that trips the alarm

Automatic calibration

Reduced errors and installation costs

Microcontroller-based learning technology

Automatically learns load upon initial power-up…minimizes calibration labor

Reset function

Reset function can be used when unpowered…reduces the possibility of an arc flash incident

APPLICATIONS

- HVAC fans, pumps, and blowers
- Monitoring status of industrial process equipment

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Response Time	1 sec.
Accuracy	±2% of full scale
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
LCD Backlight	Off at low currents; illuminates when monitored current exceeds 4.5 A; flashes during an alarm state while current remains above 4.5 A
On-State Resistance	≤1.0 Ω
Off-State Resistance	≥1.0 MΩ
Setpoint Target Range, Switch Setting A[1]	±40% of learned nominal current; max. learned current of 142 A to enable an upper trip limit at or below 200 A
Setpoint Target Range, Switch Setting B[1]	±60% of learned nominal current;max. learned current of 125 A to enable an upper trip limit at or below 200 A
Switch Setting C[1]	On/Off Status; contacts are closed while amperage is above 2.5 A
Alarm Reset Range[2]	±5% of learned nominal current
Setpoint Calibration Learn Period	30 sec.; self-learning, pushbutton reset
Normal-to-Alarm Output Delay	1 sec. maximum
Alarm-to-Normal Output Delay	30 sec. nominal
Insulation Class	600 Vac RMS (UL); 300 Vac RMS (CE[3])
Hysteresis	10% (typical)
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

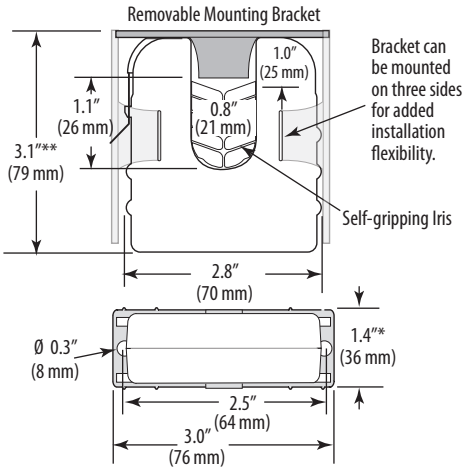
CE c UL us LISTED

1. Trip point switch positions A and B are not for use in applications where the current will fluctuate by more than 40% (A) or 60% (B) of the nominal current. If the current will fluctuate by more than 60%, use the H11D for on/off status (position C) only.
2. The upper trip limit alarm resets when the current drops by 5% of the learned nominal current limit. The lower trip limit alarm resets when the current rises by 5% of learned nominal current limit.
3. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

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

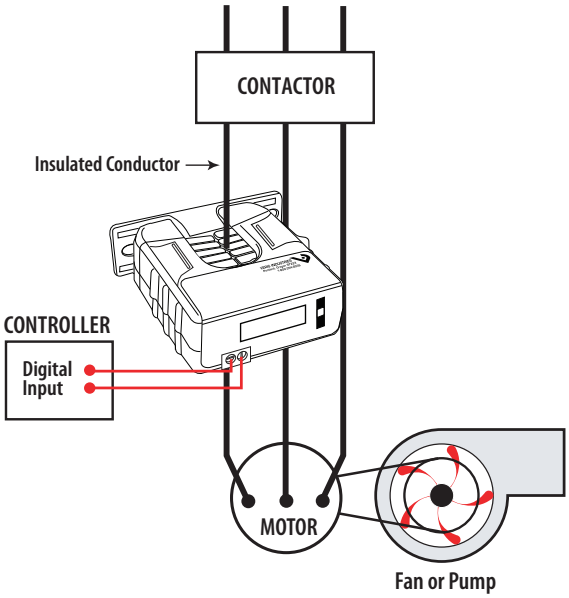
Do not use the LCD as evidence of applied voltage.

DIMENSIONAL DRAWING

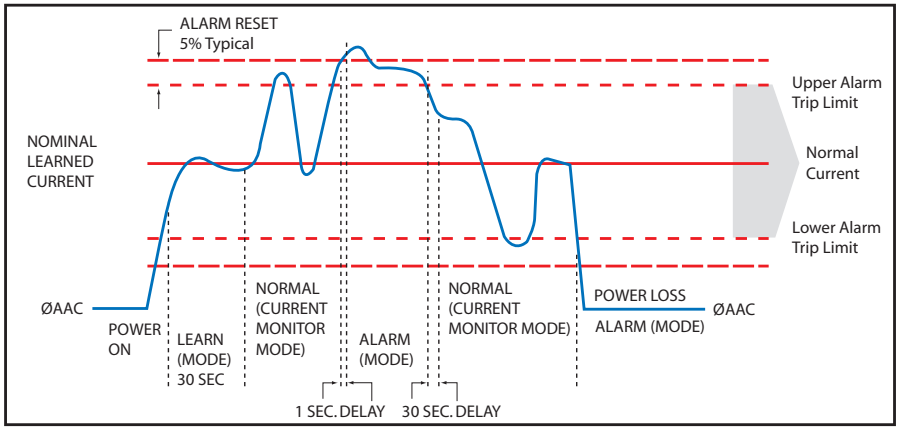


* Terminal block may extend up to 1/8″ over the height dimensions shown.

WIRING DIAGRAM



FUNCTIONAL DRAWING



ORDERING INFORMATION

MODEL	AMPERAGE RANGE[1]	STATUS OUTPUT	NOMINAL TRIP POINT TARGET RANGE	HOUSING	STATUS LED	UL	CE
H11D	2.5 to 200 A @ 60 Hz 3.0 to 200 A @ 50 Hz	N.O. 1.0 A @ 30 Vac/dc	±40%, ±60%, or on/off (user selectable)	Split-core	•	•[2]	•

1. To enable the upper trip limit alarm, the max. learned current for switch setting "A" is 142 A, and the max. learned current for switch setting "B" is 125 A. Switch setting "C" is for on/off status only, so the upper trip limit alarm does not apply.
2. Listed for use on 75 °C insulated conductors.

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H10F

Automatically Learns at Initial Power-Up

H10F

Hawkeye™

CURRENT SENSING THE ULTIMATE PROOF OF FLOW
Maximize Reliability
Minimize Installed Cost

The Hawkeye TruStat H10F is a microprocessor based, self-learning, self-calibrating current switch. It provides calibration-free status, for both under-current and over-current conditions. At initial power-up, the H10F 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 ±20% of the learned load.

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Isolation	600 Vac RMS (UL); 300 Vac RMS (CE[1])
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Frequency Range	50/60 Hz
Trip Point Calibration Learn Period	30 sec. learn period
Normal-to-Alarm Status Output Delay	1 second max.
Alarm-to-Normal Status Output Delay	30 sec. nominal[2]
Status Output	±20% of learned current to trigger alarm; ±15% of learned current to release alarm (see graph)
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

CE c UL us LISTED

Adjustable trip point

Automatic adjustable trip point (3.5 to 100 A)…precise control of current trip point

Reduced costs

Automatic calibration…reduced errors and installation costs

100% solid state

No moving parts to fail

Flexibility

Removable mounting bracket for installation flexibility

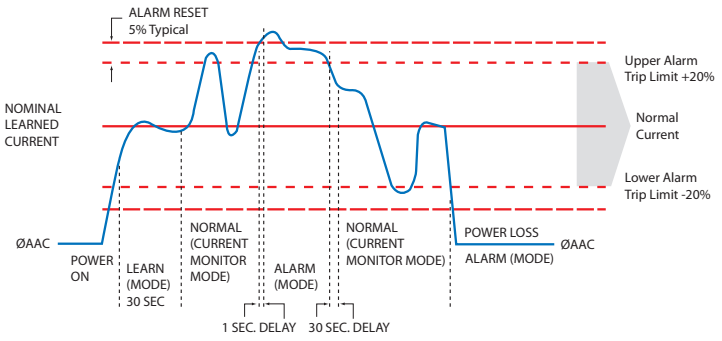
Microcontroller based learning technology

Automatically learns load upon initial power-up…minimizes calibration labor

APPLICATIONS

- Monitoring fans, pumps, motors, and other electrical loads for proper operation
- Detecting belt loss and motor failure…ideal for fan and pump status
- Verifying lighting circuit loads
- Monitoring critical motors (compressor, fuel, etc.)
- Monitoring industrial process equipment status (OEM)

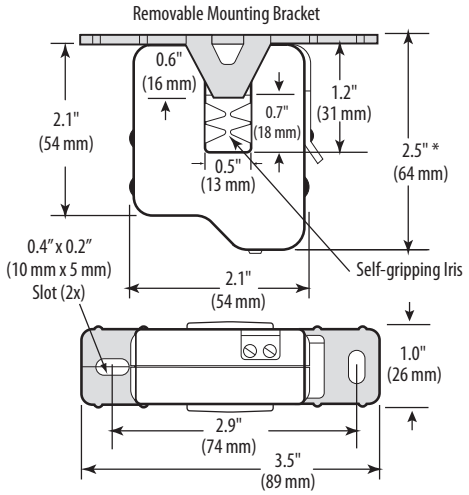
PRODUCT FUNCTIONS



1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.
2. If current switch experiences a momentary loss of power, 30 second delay may or may not apply.

Note: Do not use the LED status indicators as evidence of applied voltage.

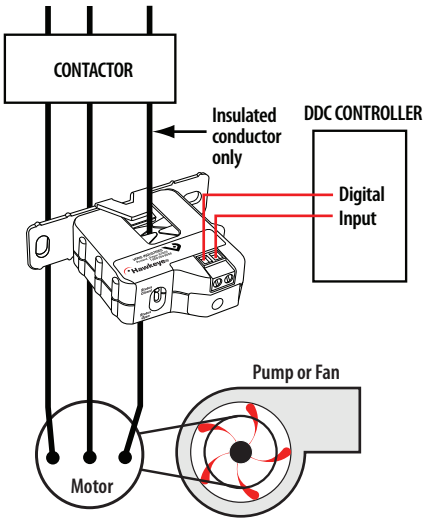
DIMENSIONAL DRAWING



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

MONITORING FAN/PUMP MOTORS FOR POSITIVE PROOF OF FLOW (H11D)

Wiring Diagram



HOW IT WORKS

The compact split-core H10F current switch monitors a learned load current to detect power loss and electrical overload. The push-button initiated LEARN MODE allows resetting of the monitored current when the load changes due to system alterations.

Learn Mode

- Unit automatically enters LEARN MODE upon initial power-up
- Auto-calibration is achieved by averaging the load current for 30 seconds
- During this stage, green and red LEDs alternately blink on/off
- STATUS OUTPUT contacts are closed
- LEARN MODE may be initiated manually

Normal Mode

- Initiated after the 30-second learning period, or immediately upon power-up if sensor has already learned a load
- The red LED is off, and the green LED is blinking
- STATUS OUTPUT contacts are closed

Alarm Mode

- The ALARM state signals low current, high current, or power loss conditions
- Initiated within 1 second when any load current excursion exceeds a nominal ±20%
- ALARM will persist until the load current returns to within a nominal ±15% of the learned current value, or when power is restored to normal
- The 5% ALARM-to-NORMAL MODE reentry margin prevents alarm signal oscillations. This feature is enhanced by a 30 second delay, to insure true nominal load current conditions when returning to NORMAL MODE from an ALARM state
- The green LED is off, and the red LED blinks
- STATUS OUTPUT contacts are open

OPERATING MODES	STATUS LEDS		STATUS OUTPUT
	GREEN	RED	
LEARN (30 secs)	Alternating Blink On/Off		Contacts Closed
NORMAL	Blink	Off	Contacts Closed
ALARM*	Off	Blink	Contacts Open

* 1 sec maximum after detection.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT	NOMINAL TRIP POINT TARGET RANGE[1]	NOMINAL ALARM RESET RANGE[1]	HOUSING	STATUS LED	UL	CE
H10F	3.5 to 100 A	N.O.1.0 A @ 30 Vac/dc	±20%	±15%	Split-core	•	•[2]	•

1. For best performance, monitor 5 A or more current. At currents less than 5A, these ranges are approximate. 2. Listed for use on 75°C insulated conductors.

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H614

Automatically Learns At Initial Power-Up

H614

CURRENT SENSING THE ULTIMATE PROOF OF FLOW
Maximize Reliability
Minimize Installed Cost

Hawkeye™

The Hawkeye H614 is a microprocessor based, self-learning, self-calibrating current-sensitive switching device designed for use with VFD systems. 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 ±20% of the learned load. When calibrated for a given VFD system, the H614 is tolerant of gradual drifts in frequency due to expected conditions, such as an accumulation of debris in a filter, while still detecting a sudden drop due to a potential abnormal system condition (e.g., belt loss or other mechanical failure).

Microcontroller based learning technology

Automatically learns load upon initial power-up…minimizes calibration labor

Saves space

Small size fits easily inside small starter enclosures

Automatic trip point

Automatic trip point (1.5 to 150 Amps, 12 to 115 Hz)…detect abnormal events

100% solid state

100% solid state…no moving parts to fail

Under- and over-load

Microcontroller based learning technology…automatically learns load

Flexibility

Removable mounting bracket for installation flexibility

APPLICATIONS

- Monitoring fans, pumps, motors, and other electrical loads for proper operation
- Detecting belt loss and motor failure…ideal for fan and pump status
- Verifying lighting circuit loads
- Monitoring critical motors (compressor, fuel, etc.)
- Monitoring industrial process equipment status (OEM)

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Response Time	1 sec.
Learn Time	15 sec. learn period after frequency stabilizes
Frequency Range in Conductor	12 to 115 Hz[1]
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Alarm Limits	±20% of learned current in every 5 Hz freq. band[2]
Normal-to-Alarm Status Output Delay	Approx. 7 sec.
Alarm-to-Normal Status Output Delay	1 sec. nominal[3]
Off Delay	<30 sec. nominal
Contact Ratings	30 Vac/dc, 1 A
Insulation Class	600 Vac (UL); 300 Vac RMS (CE[4])
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)

WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL508 open device, CE: EN61010-1, CAT III, Pollution Degree 2

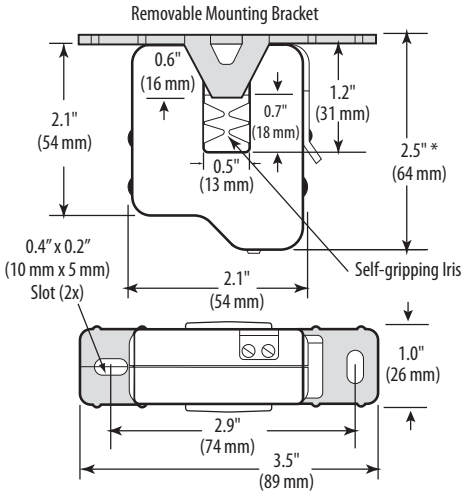
CE c UL us LISTED

1. VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.
2. The H614 is not intended for use in applications where the current is expected to fluctuate by more than 20% due to acceptable causes other than VFD driven changes.
3. If the H614 experiences a momentary loss of power, the Alarm-to-Normal output delay may exceed 1 sec.
4. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

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

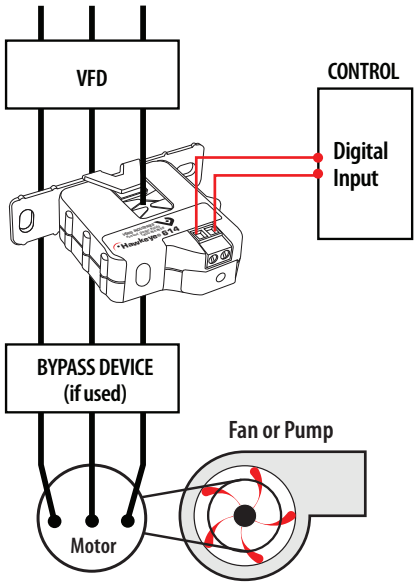
The product design provides for basic insulation only. Use wire with minimum 75°C rated insulation. Do not use the LED status indicators as evidence of applied voltage.
This sensor detects abnormal operation by looking for sudden changes in current across the entire frequency range. In Learn mode, the 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



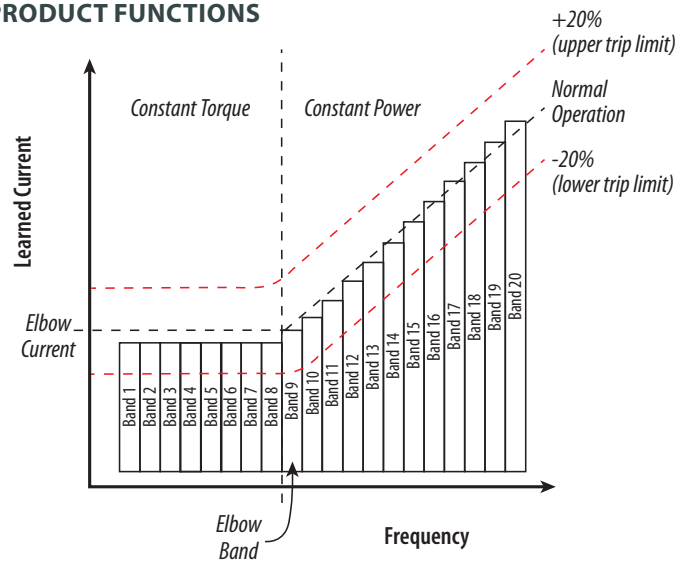
* Terminal block may extend up to 1/8" over the height dimensions shown.

WIRING DIAGRAM



NOTE: The H614 is not intended for use in staged pump, variable inlet vane, and other applications in which the amperage changes under normal operation, independent of frequency.
NOTE: (Optional) For added sensitivity in detecting amperage changes, use H614 devices on all three phases of the VFD

PRODUCT FUNCTIONS



SENSOR MODE		STATUS LED BLINK PATTERN	CONTACTS
Learning Mode (first 15 sec of operation after frequency stabilizes)		Alternating Red/Green (1 per sec.)	Closed
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)	Closed
	Current is not adequate for the device to detect abnormal conditions	No LED	Closed
Status OK		Green blink (1 per sec.)	Closed
Alarm		Red blink (1 per sec.)	Open

HOW IT WORKS

During setup, the H614 automatically determines the normal amperage and frequency profile and stores it in memory. Then the microprocessor monitors for amperage changes greater than ±20% of this learned curve, indicating a potential system failure.

USAGE EXAMPLE

The H614 is designed for HVAC fan and blower systems, as well as some single stage 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.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	FREQUENCY RANGE	STATUS OUTPUT	NOMINAL TRIP POINT TARGET RANGE	HOUSING	STATUS LED	UL	CE
H614	1.5 to 150 A[1]	12 to 115 Hz	N.O. 1.0 A @ 30 Vac/dc	±20% in each of 20 bands	Split-core	•	•[2]	•

1. If the current is above 1.5 A, but neither LED is illuminated, the H614 is considered to be in on/off status mode.
2. Listed for use on 75°C insulated conductors.

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H720, H904 & H934

Variable Frequency Drive Monitoring and Control

Also see H614.


H904


H720


H934

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye™

U.S. Patent No. 5,705,989

Hawkeye 720, 904 and 934 current monitoring devices provide unique solutions for accurately monitoring status of motors controlled by variable frequency drives.

The microprocessor-based H904 and H934 store the sensed amperage values for normal operation at various frequency ranges in non-volatile memory. This information allows the device to distinguish between a reduced amp draw due to normal changes in the frequency and an abnormal amp drop due to belt loss or other mechanical failures. The relay on the H934 is isolated from the current switch, and all relay connections are externally accessible on the device.

The H720 analog output corresponds to current in the monitored conductor from 10 to 80 Hz.

Load side monitoring

Suitable for llad side monitoring of VFDs (H720)

Automatically compensates

Automatically compensates for the effects of frequency and amperage changes in monitored conductor associated with VFDs (H901/934)

Precise scaling

Adjustable zero and span for precise scaling (H720)

Nuisance reduction

Provides a secondary setpoint option of 50% of the originally measured current (H901/934)

0.5% accuracy

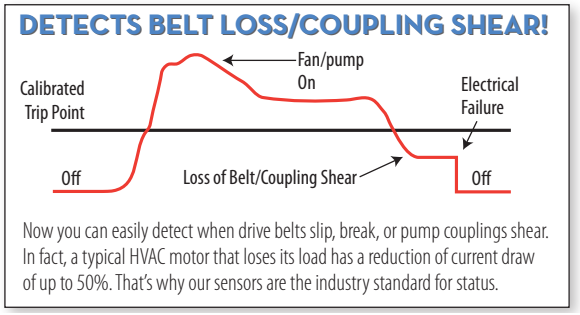
Accurate to 0.5% of full scale (H720)

Rapid troubleshooting

LED indicates normal and alarm conditions (H901/934)

APPLICATIONS

- Monitoring positive status on motors controlled by variable frequency drives
- Replacing pressure switches
- Measuring current and load trending



Now you can easily detect when drive belts slip, break, or pump couplings shear. In fact, a typical HVAC motor that loses its load has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status.

SPECIFICATIONS

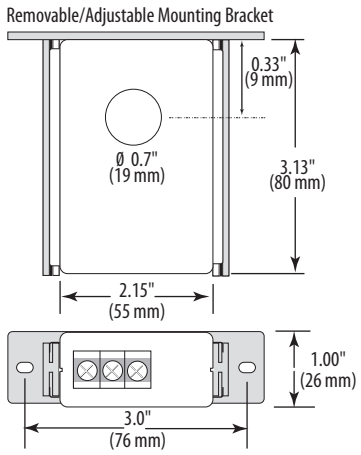
Sensor Power	H904/H934: Induced from monitored conductor; H720: 12 to 30 Vdc
Insulation Class	600 Vac RMS
Frequency Range: H720 H904/H934	 10 to 80 Hz; 20 to 34 Hz for on/off status, 34 to 75 Hz for belt loss indication On/Off status for Variable Frequency Drive (VFD) outputs[1]
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Off Delay (H904/H934)	0 sec to 2 min.
Accuracy (H720)	0.5% of 200 A (combined linearity, hysteresis, and repeatability)
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing CAT III, Pollution Degree 2, basic insulation

c UL us LISTED
E150462

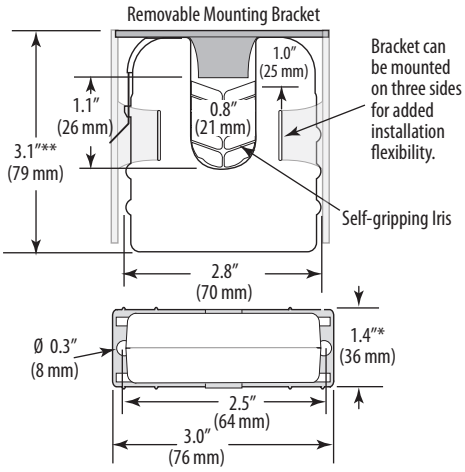
Note: Do not use the LED status indicators as evidence of applied voltage.

1. VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.

H720
Dimensional Drawing

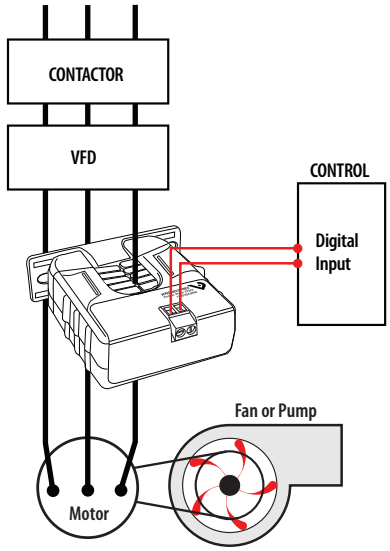


H904/934
Dimensional Drawing



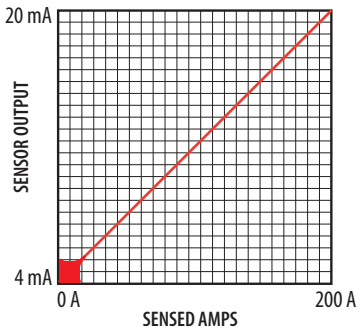
* Terminal block may extend up to 1/8" over the height dimensions shown.

MONITORING FAN /PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



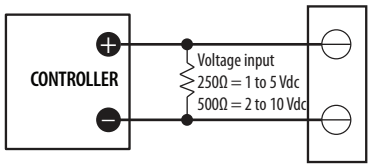
Note: The H904 is not intended for use in staged pump or variable inlet vane applications.

EXAMPLE LINEAR OUTPUT (H720)
Scale software as shown
Requires 12 to 30 Vdc for sensor power



H934 Relay Contact Ratings		
Resistive - 5A @ 250 Vac, 30 Vdc		
Typical Coil Performance		
Voltage	AC	DC
24V	10 mA	10 mA

Voltage Output



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT	MIN. TRIP POINT	RELAY TYPE	HOUSING	STATUS LED	RELAY POWER LED	UL
H720	Lower limit: 0 A Upper limit: 20 to 200 A	4 to 20mA	n/a	none	Solid-core	•	•	•
H904	3.5 to 135 A, 20 to 75 Hz	Max. N.O. 0.1 A @ 30 Vac/dc	3.5 A or less	none	Split-core	•	•	•
H934				SPST, N.O.		•	•	•

Note: For auto-calibrating model see H614.

800.354.8556 | +1 503.598.4564 | sales@veris.com | intl@veris.com | www.veris.com

H6ECM

Split-core Current Switch, Proof of Rotation (Flow) for ECM Systems

H6ECM05

Hawkeye™

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

High performance

High performance device, split-core housing

Self-gripping iris

Self-gripping iris for easy installation

Precise

Precise current trip point setting

Status LEDs

Status LEDs for easy setup and local indication

Small size

Fits easily inside small enclosures

Up to 1 Amp status output

Increased application flexibility

The H6ECM is a current-sensitive switching device that monitors current (amperage) in the conductor passing through it. A change in amperage in the monitored conductor that crosses the switch (setpoint) causes 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 V. The product requires no external power supply to generate its output.

Electrically Commutated Motors (ECMs) are increasingly common as more energy conservation measures are implemented. The ECM is a brushless DC motor that is supplied AC power, converts that power to DC current and uses electronic switching to control the motor rotation. The ECM motor shaft speed can be reduced to save energy, resulting in lower cost and less component wear. The H6ECM is optimized to provide meaningful proof of rotation which verifies that the ECM motor is operating as expected.

APPLICATIONS

- Systems with Electrically Commutated Motors such as cooling fans or compressor motors with off-state (keep alive) current less than 0.5 A

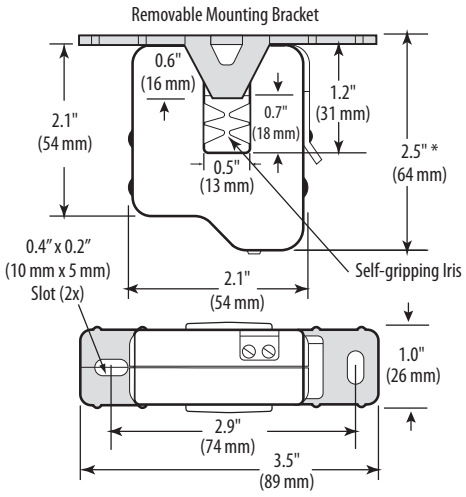
SPECIFICATIONS

Sensor Power	Induced from the monitored conductor
Insulation Class	600 Vac RMS
Frequency Range	60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% typical
Accuracy	±10%
Amperage Range	0.5 to 175 A continuous
Status Output Ratings	N.O. 1.0A @ 30 Vac/dc, not polarity sensitive
Setpoint	0.5 A (keep alive current < 0.5 A)
Off State Resistance	Open switch represents > 1 MΩ
On State Resistance	Closed switch represents < 200 mΩ
Terminal Block Max. Wire Size	24 to 14 AWG (0.2 to 2.1mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL508 open device listing
Installation Category	CAT III, Pollution Degree 2

c UL us LISTED

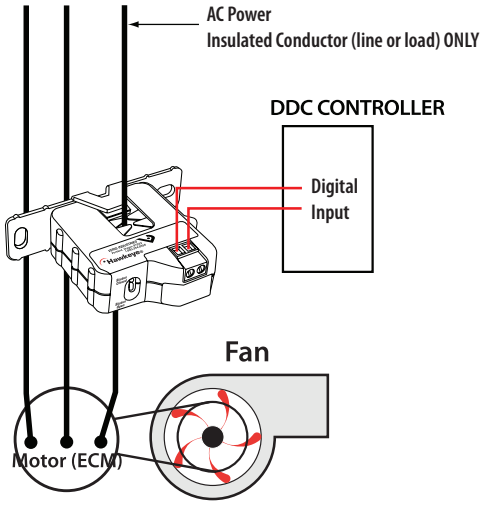
Notes: For applications requiring double or reinforced insulation, please contact the factory.
The product design provides basic insulation only.
Do not use the LED indicators as evidence of applied voltage.

DIMENSIONAL DRAWING



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

WIRING DIAGRAM



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT	TRIP POINT	STATUS LED	UL
H6ECM05	0.5 to 175 A	N.O. 1.0 A @ 30 Vac/dc	0.5 A	•	•

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HX30/40/50 SERIES

On/Off Status and Control in One Package

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

On/off status

On/off status and command relay in a single labor and space saving device

SPDT command relay

H740 and H940 feature a SPDT command relay

Detect belt loss

Cost-effectively monitor start/stop, unit vents, fan coils, exhaust fans, and other loads where belt loss is not a concern

No tubing necessary

Easier to install than differential pressure switches

Easy setup

No calibration required…easy setup and operation

The Hawkeye Relay Combination Series combines an on/off status sensor and command relay in one package, saving the labor, wire runs, and space required to mount a separate relay. The switch and relay (not electrically connected) are in the same housing, saving space and cost. It is ideal for monitoring and controlling motors where belt loss is not a concern.

APPLICATIONS

- Monitoring direct drive units, exhaust fans, and other fixed loads
- Monitoring on/off status of electrical loads
- Starting/stopping motors

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing, CAT III, Pollution Degree 2, basic insulation

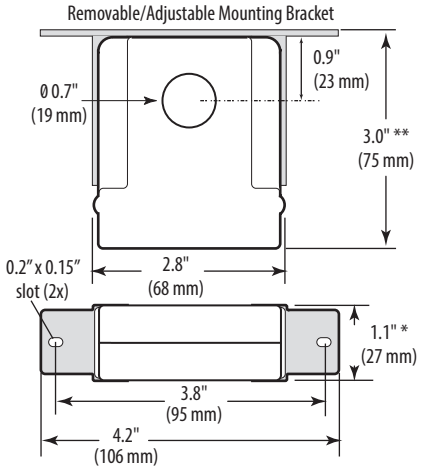
c UL us LISTED

Note: Do not use the LED status indicators as evidence of applied voltage.

RELAY CONTACT RATINGS	
Hx30, Hx50 (SPST, N.O.)	
Resistive	10 A @ 250 Vac, 30 Vdc
Inductive	5 A @ 250 Vac, 30 Vdc
Hx40 (SPDT)	
Resistive	8 A @ 250 Vac, 30 Vdc
Inductive	3.5 A @ 250 Vac, 30 Vdc

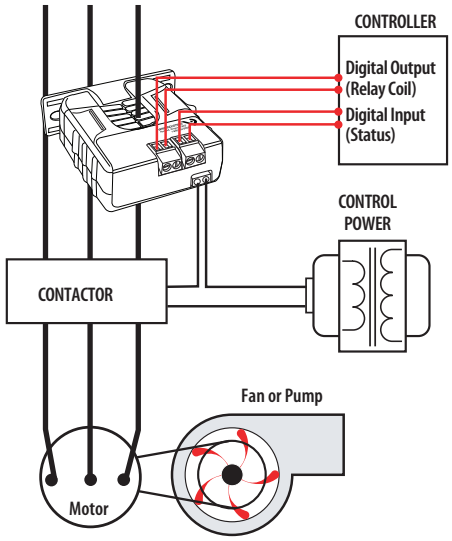
TYPICAL COIL PERFORMANCE		
Voltage	AC	DC
24V	10 mA	10 mA
Pull In Voltage		
Hx30		20.1 Vdc
Hx40		20.1 Vdc
Hx50		8.4 Vdc
Drop Out Voltage		
Hx30		5.2 Vdc
Hx40		5.2 Vdc
Hx50		3.0 Vdc

H730/740/750
Dimensional Drawing

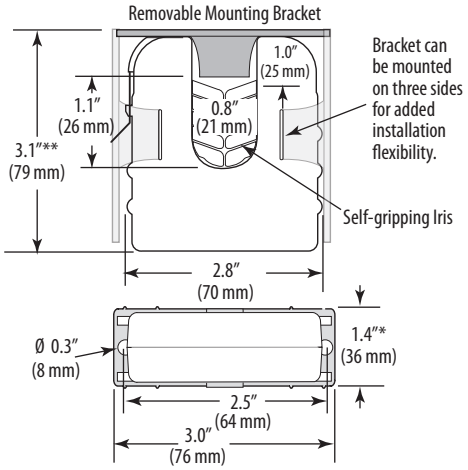


* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

START/STOP MONITORING OF FAN/PUMP MOTORS
Wiring Diagram

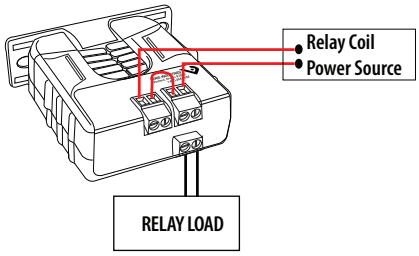


H930/940/950
Dimensional Drawing



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

RELAY CONTROLLED DIRECTLY BY STATUS CONTACTS
Wiring Diagram



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT (MAX.)	TRIP POINT	RELAY	RELAY COIL	HOUSING	RELAY POWER LED	UL
H730	0.5 to 200 A	N.O. 1.0 A @ 30 Vac/dc	0.5 A or less	SPST, N.O.	24 Vac/dc	Solid-core	•	•
H740	0.5 to 200 A		0.5 A or less	SPDT	24 Vac/dc	Solid-core	•	•
H750	0.5 to 200 A		0.5 A or less	SPST, N.O.	12 Vdc nom.	Solid-core	•	•
H930	1.5 to 200 A		1.5 A or less	SPST, N.O.	24 Vac/dc	Split-core	•	•
H940	1.5 to 200 A		1.5 A or less	SPDT	24 Vac/dc	Split-core	•	•
H950	1.5 to 200 A		1.5 A or less	SPST, N.O.	12 Vdc nom.	Split-core	•	•

H735, HX38,HX48, HX58 SERIES

Status and Control in One Package

H938

Hawkeye™

H738

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

The Hawkeye Relay Combination Series is the ideal solution for the automation installer. These units combine a current switch and relay into a single package, reducing the space required for total control of fans and pumps. The current switch and relay operate independently of one another. These devices allow start/stop control and status monitoring with one device instead of two.

Combined relay & status

Combines command relay and fan/pump status sensor in a single, easy-to-install unit

Two outputs

H748 and H948 feature a SPDT command relay…control two outputs with a single relay

Fan & pump status

Detect belt loss and motor failure…ideal for fan and pump status

Added flexibility

Bracket on H938, H948, and H958 can be installed in three different configurations

Polarity insensitive

Polarity insensitive status outputs…fast and easy installation

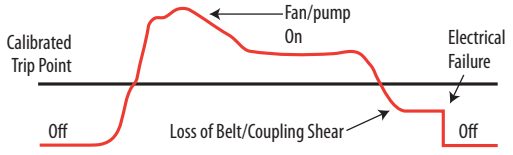
Easy setup

Relay and status LEDs

APPLICATIONS

- Starting/stopping and monitoring positive status of motors
- Detecting belt loss and coupling shear

DETECTS BELT LOSS/COUPLING SHEAR!



Now you can easily detect when drive belts slip, break, or pump couplings shear. In fact, a typical HVAC motor that loses its load has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status.

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% Typical
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing, CAT III, Pollution Degree 2, basic insulation

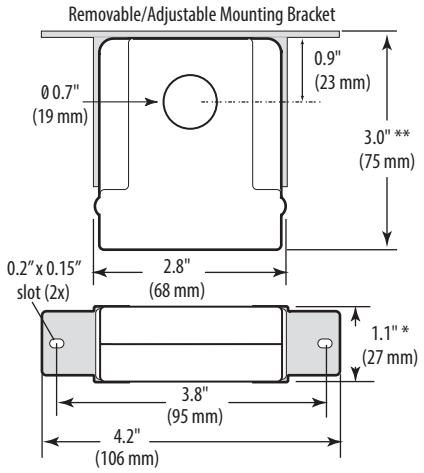
c UL us LISTED
E150462

Note: Do not use the LED status indicators as evidence of applied voltage.

RELAY CONTACT RATINGS	
H735 (SPST, N.O.)	
Resistive	5 A @ 250 Vac, 30 Vdc
Inductive	3 A @ 250 Vac, 30 Vdc
Hx38, Hx58 (SPDT N.O.)	
Resistive	10 A @ 250 Vac, 30 Vdc
Inductive	5 A @ 250 Vac, 30 Vdc
Hx48 (SPDT)	
Resistive	8 A @ 250 Vac, 30 Vdc
Inductive	3.5 A @ 250 Vac, 30 Vdc

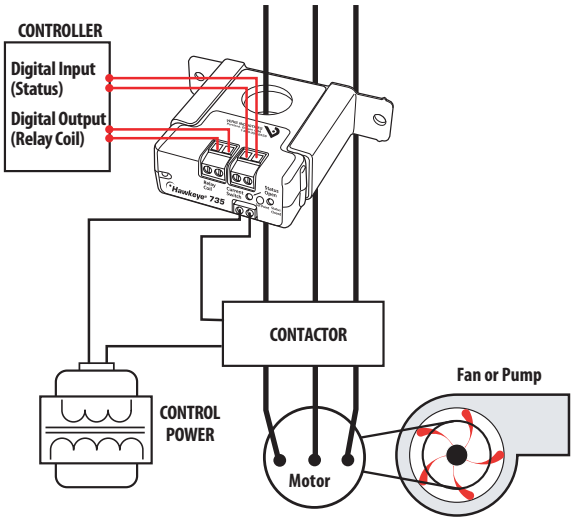
TYPICAL COIL PERFORMANCE		
Voltage	AC	DC
24V	10 mA	10 mA
12V (Hx58)		20 mA
Pull-in Voltage		
Hx3x		20.1 Vdc
Hx48		20.1 Vdc
Hx58		8.4 Vdc
Drop-out Voltage		
Hx3x		5.2 Vdc
Hx48		5.2 Vdc
Hx58		3.0 Vdc

H735/738/748/758
Dimensional Drawing

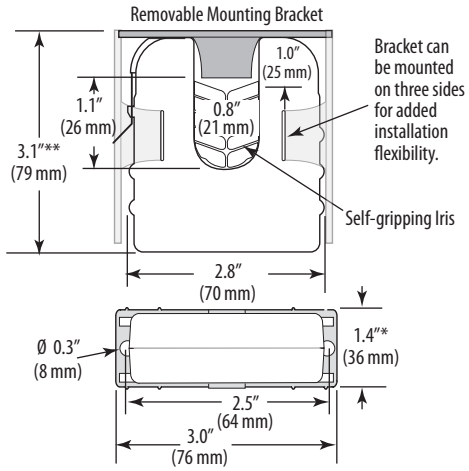


* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

START/STOP MONITORING OF FAN /PUMP MOTORS
Wiring Diagram



H938/948/958
Dimensional Drawing



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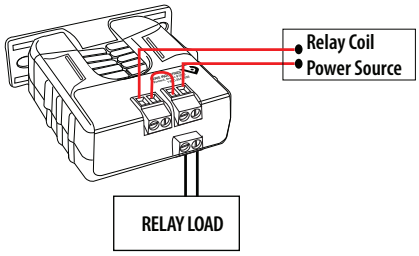
RELAY CONTROLLED DIRECTLY BY STATUS CONTACTS
Wiring Diagram



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT (MAX.)	MIN. TRIP POINT	RELAY	COIL VOLTAGE	HOUSING	STATUS LED	RELAY POWER LED	UL
H735	1 to 135 A	0.1 A @ 30 Vac/dc	1 A or less	SPST, N.O.	24 Vac/dc	Solid-core	•	•	•
H738	1 to 135 A	1.0 A @ 30 Vac/dc	1 A or less	SPST, N.O.	24 Vac/dc	Solid-core	•	•	•
H748	1 to 135 A		1 A or less	SPDT	24 Vac/dc	Solid-core	•	•	•
H758	1 to 135 A		1 A or less	SPST, N.O.	12 Vdc nom.	Solid-core	•	•	•
H938	2.5 to 135 A		2.5 A or less	SPST, N.O.	24 Vac/dc	Split-core	•	•	•
H948	2.5 to 135 A		2.5 A or less	SPDT	24 Vac/dc	Split-core	•	•	•
H958	2.5 to 135 A		2.5 A or less	SPST, N.O.	12 Vdc nom.	Split-core	•	•	•

HX39, HX49 & HX59 SERIES

Status and Control in One Package

H939

H739

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye Relay Combination Series high voltage output current switches are the ideal solution for the automation installer. These units combine a current switch and relay into a single package, reducing the space required for total control of fans and pumps. The integrated current switch and relay operate independently of one another. All relay connections are externally available for maximum flexibility.

These products perform the functions of start/stop and status monitoring with one device instead of two.

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Hysteresis	10% Typical
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Agency Approvals	UL 508 open device listing, CAT III, Pollution Degree 2, basic insulation
AGENCY APPROVALS	
Limited Warranty	5 years

c UL us LISTED

Do not use the LED status indicators as evidence of applied voltage.

Combined relay & status

Combines command relay and fan/pump status sensor in a single, easy-to-install unit

No tubing

Easier to install than differential pressure switches…no tubing needed

Polarity insensitive

Polarity insensitive status outputs…fast and easy installation

Detect belt loss

Detect belt loss & motor failure... ideal for fan and pump status

Easy setup

Relay and status LEDs

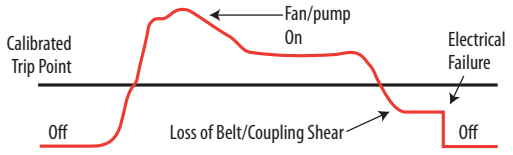
Added flexibility

Bracket on H939, H949, and H959 can be installed in three different configurations

APPLICATIONS

- Starting/stopping and monitoring positive status of motors
- Detecting belt loss and coupling shear

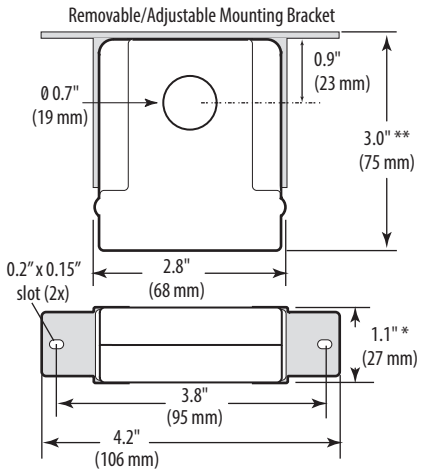
DETECTS BELT LOSS/COUPLING SHEAR!



Now you can easily detect when drive belts slip, break, or pump couplings shear. In fact, a typical HVAC motor that loses its load has a reduction of current draw of up to 50%. That's why our sensors are the industry standard for status.

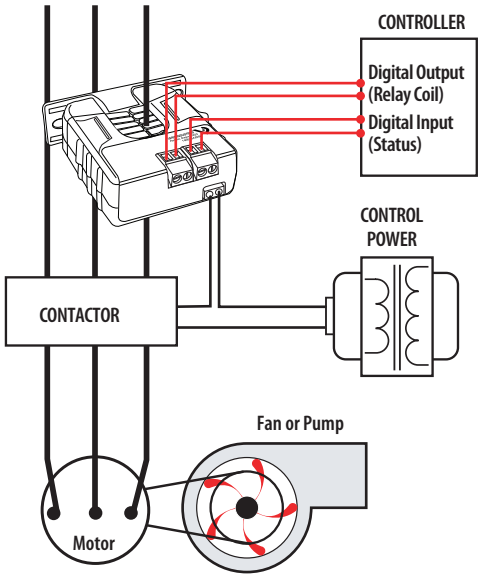
Relay Contact Ratings		
Hx39, Hx59 (SPST, N.O.)		
Resistive	10 A @ 250 Vac, 30 Vdc	
Inductive	5 A @ 250 Vac, 30 Vdc	
Hx38, Hx58 (SPDT)		
Resistive	8 A @ 250 Vac, 30 Vdc	
Inductive	3.5 A @ 250 Vac, 30 Vdc	
Typical Coil Performance		
Voltage	AC	DC
24V	10 mA	10 mA
12V (Hx58)		20 mA
Pull-in Voltage		
Hx39		20.1 Vdc
Hx49		20.1 Vdc
Hx59		8.4 Vdc
Drop-out Voltage		
Hx39		5.2 Vdc
Hx49		5.2 Vdc
Hx59		3.0 Vdc

H739/H749
Dimensional Drawing

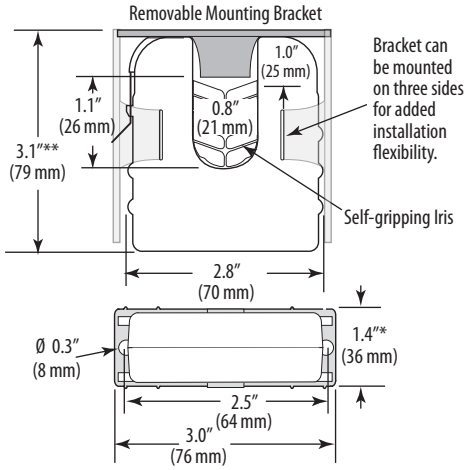


* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

START/STOP MONITORING OF FAN /PUMP MOTORS
Wiring Diagram

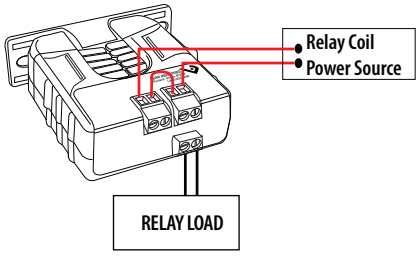


H939/H949/H959
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

RELAY CONTROLLED DIRECTLY BY STATUS CONTACTS
Wiring Diagram



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT (MAX.)	MIN. TRIP POINT	RELAY TYPE	RELAY COIL	HOUSING	STATUS LED	RELAY POWER LED	UL
H739	1 to 135 A	N.O. 0.2 A @ 120 Vac/dc	1 A or less	SPST, N.O.	24 Vac/dc	Solid-core	•	•	•
H749	1 to 135 A		1 A or less	SPDT	24 Vac/dc	Solid-core	•	•	•
H939	2.5 to 135 A		2.5 A or less	SPST, N.O.	24 Vac/dc	Split-core	•	•	•
H949	2.5 to 135 A		2.5 A or less	SPDT	24 Vac/dc	Split-core	•	•	•
H959	2.5 to 135 A		2.5 A or less	SPST, N.O.	12 Vdc nom.	Split-core	•	•	•

H721XC SERIES & H921

Load Trending with 4 to 20 mA Output

H721HC

H921

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye™

Lower costs

Power the sensor, and receive the signal with only two wires...lower cabling and commissioning costs than with traditional 3-wire sensors

Factory calibrated

Factory calibrated switch-selectable ranges for high resolution and installation ease

Retrofit

Self-gripping, split-core design for fast retrofit installation…no need to remove conductor (H921)

3 field-selectable

Three field-selectable ranges per unit…fewer versions to choose from, stock, and install

New construction

Economical solid-core features adjustable bracket for easy alignment (H721 Series)

Installation flexibility

Removable mounting bracket for installation flexibility

Hawkeye Relay Combination Series high voltage output current switches are the ideal solution for the automation installer. These units combine a current switch and relay into a single package, reducing the space required for total control of fans and pumps. The integrated current switch and relay operate independently of one another. All relay connections are externally available for maximum flexibility.

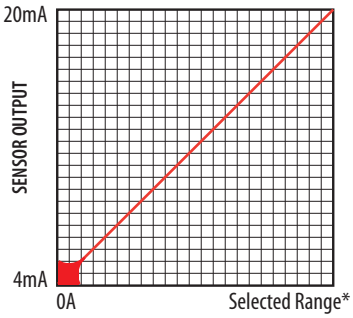
These products perform the functions of start/stop and status monitoring with one device instead of two.

APPLICATIONS

- Load trending
- Motor control
- Fan/pump status

EXAMPLE LINEAR OUTPUT

Scale software as shown



SENSED AMPS

**Factory calibrated ranges selected with the amperage range switch*

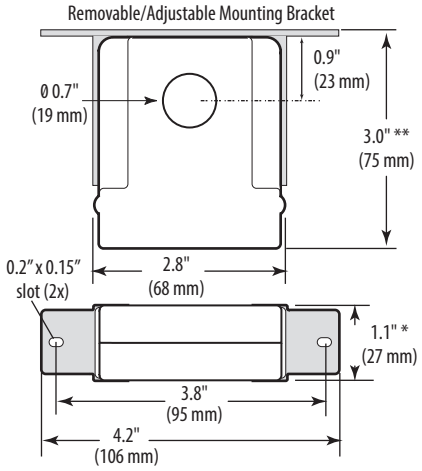
SPECIFICATIONS

Sensor Power	30 mA (max) @ 12 to 30 Vdc
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE[1])
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Accuracy	±2% F.S. from 10% to 100% of selected range, but not less than ±0.4 A
Response Time	2 sec.
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

CE c UL us LISTED

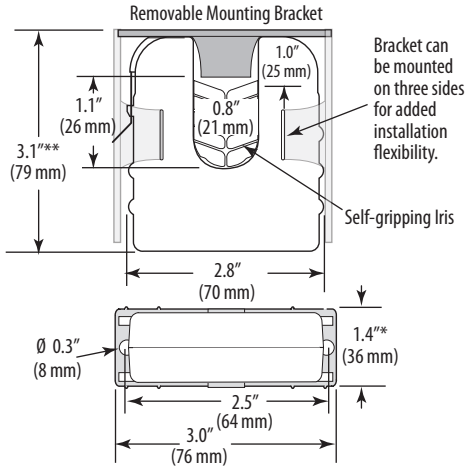
1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

H721LC/H721HC
Dimensional Drawing



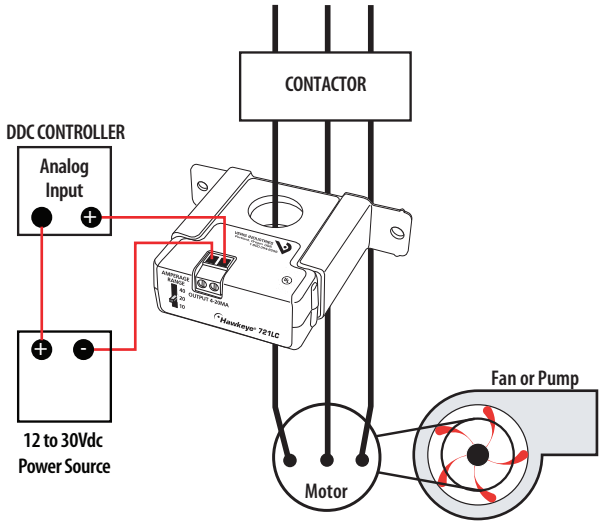
* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

H921
Dimensional Drawing

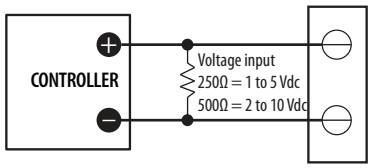


* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

MONITORING FAN /PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



Voltage Output



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	SENSOR OUTPUT	HOUSING	UL	CE
H721LC	0 to 10/20/40 A	4 to 20 mA DC	Solid-Core	•	•
H721HC	0 to 50/100/200 A		Solid-Core	•	•
H921	0 to 30/60/120 A		Split-Core	•[1]	•

1. Listed for use on 75 °C insulated conductors.
Note: For 10 to 80 Hz applications, see the H720 VFD sensor.

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HX21 & HX21SP SERIES

Large Load Trending with 4 to 20 mA Output

H321

CURRENT SENSING THE ULTIMATE PROOF OF FLOW
Maximize Reliability
Minimize Installed Cost

Hawkeye™

Split-core design

Split-core design for easy installation and fast retrofits

Loop powered

Loop powered 4 to 20 mA output

No need for external CTs

No need for external CTs on large conductors

Two-wire design

Two-wire design reduces wiring cost

Large openings

Large openings for heavy conductors

Field flexibility

Hx21 models offer zero and span adjustments for field flexibility

Hawkeye x21/x21SP analog current transducers provide reliable load trending information for large motor loads (up to 2400 A), with a proportional 4 to 20 mA signal. Three devices are available, each with a different amperage range. The Hx21 versions include a span potentiometer that allows each sensor to be calibrated for maximum resolution. The Hx21SP versions are factory-calibrated at a range specified by the customer.

SPECIFICATIONS

Sensor Power	30 mA (max) @ 12 to 30 Vdc
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE[1])
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH, non-condensing
Accuracy	±2% from 10 to 100% of full scale
Response Time	2 sec.
Terminal Block Wire Size	12 AWG (3.3 mm^2) - 22 AWG (0.33 mm^2)
Terminal Block Torque	7 to 8 in-lbs (0.8 to 0.9 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing, CE: EN61010-1, (H221, H321 only)CAT III, Pollution Degree 2, basic insulation

CE c UL us LISTED

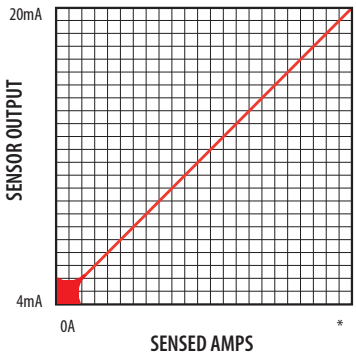
1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

APPLICATIONS

- Load trending of large motors and other loads up to 2400 A
- Monitor critical motors (compressor, fuel, etc.)

EXAMPLE LINEAR OUTPUT

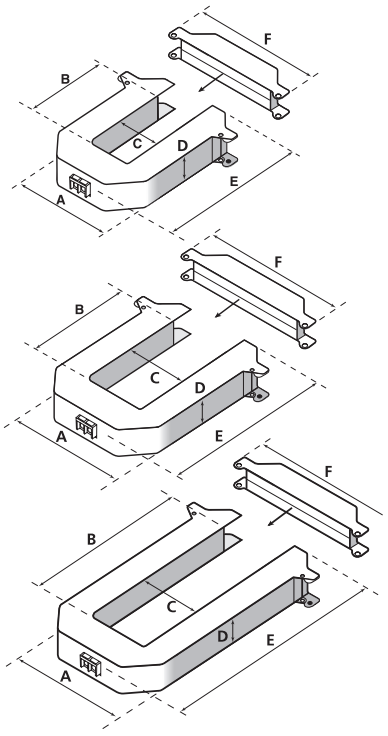
Scale software as shown



**Adjusted with Span Potentiometer for Hx21 models; Factory-set per customer specification for Hx21SP models*

100 to 300A (H221/H221SP)
300 to 800A (H321/H321SP)
1000 to 2400A (H421/H421SP)

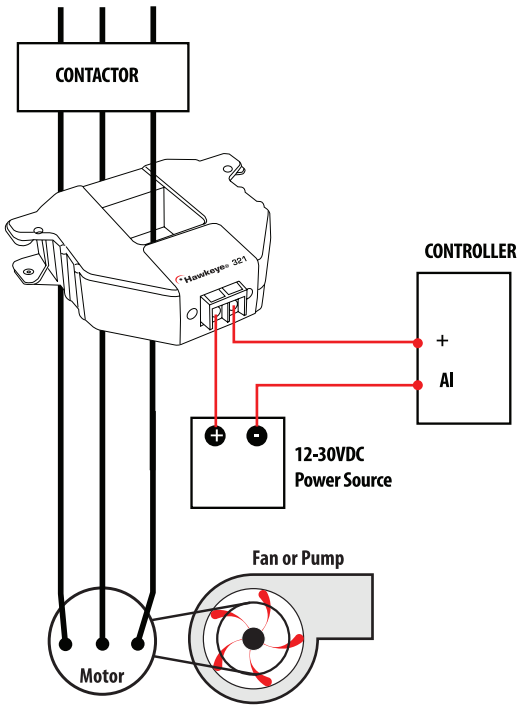
DIMENSIONAL DRAWING



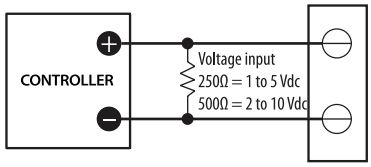
H221			H321			H421		
A =	3.7"	(94 mm)	A =	4.9"	(124 mm)	A =	4.9"	(124 mm)
B =	1.6"	(40 mm)	B =	2.9"	(75 mm)	B =	5.5"	(141 mm)
C =	1.4"	(35 mm)	C =	2.5"	(63 mm)	C =	2.5"	(65 mm)
D =	1.1"	(29 mm)	D =	1.2"	(29 mm)	D =	1.1"	(29 mm)
E =	4.2"	(106 mm)	E =	5.5"	(140 mm)	E =	8.1"	(206 mm)
F =	4.7"	(120 mm)	F =	6.0"	(151 mm)	F =	6.0"	(151 mm)

MONITORING FAN /PUMP MOTORS LOADS

Wiring Diagram



Voltage Output



ORDERING INFORMATION

MODEL	AMPERAGE RANGE		SENSOR OUTPUT	HOUSING	UL	CE	LEAD FREE
	4 mA (Lower Limit)	20 mA (Upper Limit)					
H221	0 A	100 to 300 A	4 to 20 mA DC	Split-core	•[1]	•	
H221SP		100, 150, 200, 250, or 300 A[2]			•[1]	•	
H321		300 to 800 A			•[1]	•	
H321SP		300, 400, 500, 600, 700, or 800 A[2]			•[1]	•	
H421		1000 to 2400 A					•
H421SP		1000, 1200, 1400, 1600, 1800, 2000, 2200, or 2400 A[2]					•

1. Listed for use on 75 °C insulated conductors.
2. Factory calibrated - not field adjustable.

Note: When ordering HxxxSP versions, specify upper current limit for factory calibration (device is not field adjustable).

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HX22 SERIES

Load Trending with 0 to 5 Vdc Output

H722 LC

H922

H822

H622-xx

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye™

Self-powered analog

Self-powered analog current sensor simplifies installation

New construction

Economical solid-core models feature adjustable bracket for easy alignment (H722xC)

No external power required

No external power required for sensor

Factory calibrated

Factory calibrated ranges for increased flexibility and resolution

Retrofit

Self-gripping, split-core design for fast retrofit installation…no need to remove conductor (H622-xx, H922)

No jumpers

No jumpers on unit…reduces installation error

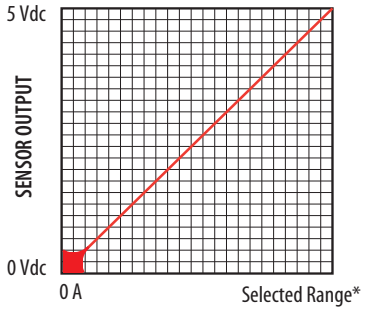
The Hawkeye 622-xx, 722, 822, and 922 provide accurate load trending information with a proportional 0 to 5 Vdc output signal. Slide-switches provide easy field selection of monitored amperage range without jumpers (available on some models).

APPLICATIONS

- Load trending
- Motor control
- Positive proof of flow

EXAMPLE LINEAR OUTPUT

Scale software as shown



SENSED AMPS

**Factory calibrated ranges selected with the amperage range switch*

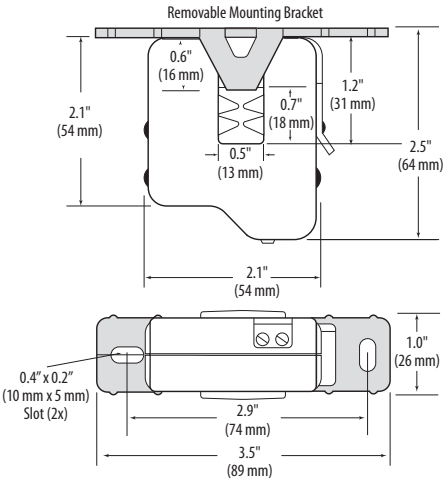
SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS (UL), 300 Vac RMS (CE[1])
Frequency Range	50/60 Hz nominal
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Accuracy	±2% F.S. from 10% to 100% (range)
Response Time	2 sec.
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, Pollution Degree 2, basic insulation

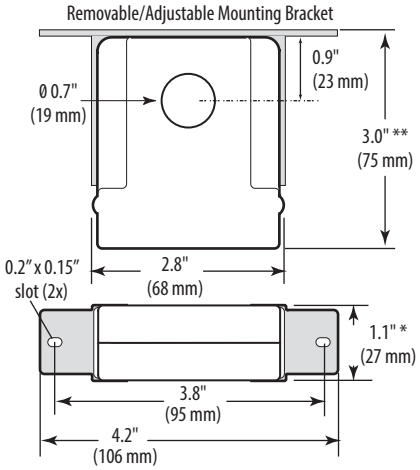
CE c UL us LISTED

1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

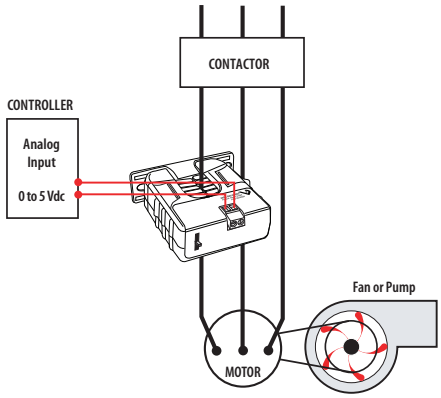
H622-XX
Dimensional Drawing



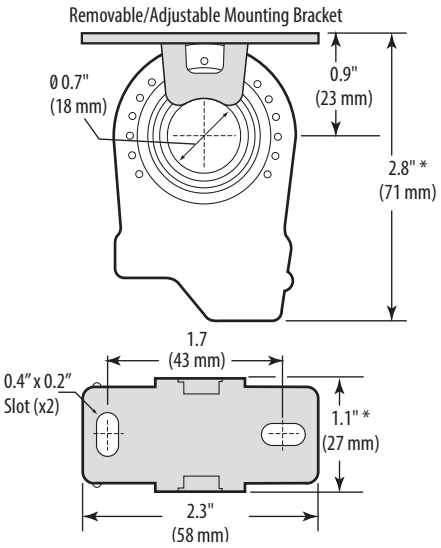
H722LC/H722HC
Dimensional Drawing



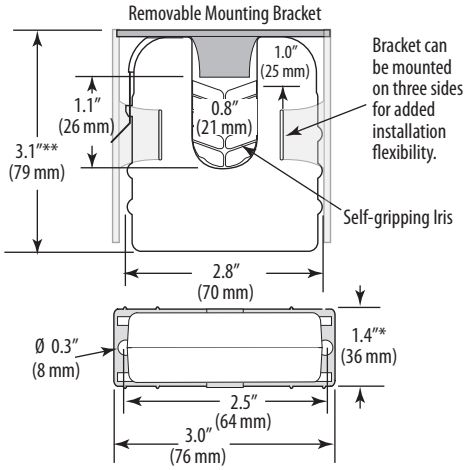
MONITORING FAN /PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



H822/H822-20
Dimensional Drawing



H922
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	SENSOR OUTPUT	HOUSING	UL	CE	LEAD FREE
H622-10	0 to 10 A	0 to 5 Vdc	Split-core	•	•	
H622-20	0 to 20 A		Split-core	•	•	
H722LC	0 to 10/20/40 A		Solid-core	•	•	
H722HC	0 to 50/100/200 A		Solid-core	•	•	
H822	0 to 10 A		Solid-core	•		•
H822-20	0 to 20 A		Solid-core	•		•
H922	0 to 30/60/120 A		Split-core	•[1]	•	
H922030A	0 to 30 A		Split-core		•	
H922060A	0 to 60 A		Split-core		•	
H922120A	0 to 120 A		Split-core		•	

1. Listed for use on 75°C insulated conductors.

HX23 SERIES

Load Trending with 0 to 10 Vdc Output

H923

H723

H623-xx

CURRENT SENSING THE ULTIMATE PROOF OF FLOW
Maximize Reliability
Minimize Installed Cost

Hawkeye™

The Hawkeye 623-xx, 723LC, 723HC, and 923 Series provide accurate load trending information with a proportional 0 to 10 Vdc output signal. Devices offer three amperage range options, with slide-switch selection for easy field adjustment – no need for jumpers.

Self-powered analog

Self-powered analog current transducer 0 to 10 Vdc output

No external power required

No external power required for sensor

Retrofit

Self-gripping, split-core design for fast retrofit installation…no need to remove conductor (H623-xx and H923)

Factory calibrated

Factory calibrated ranges for high resolution and installation ease

No jumpers

No jumpers on unit…reduces installation error

Field-selectable ranges

Some models available with field-selectable ranges

SPECIFICATIONS

Sensor Power	Induced from monitored current
Insulation Class	600 Vac RMS (UL) (H623-xx) 300 Vac RMS (CE) (H623-xx , H723, H923)
Frequency Range	50/60 Hz nominal
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH, non-condensing
Accuracy	±2% F.S. from 10% to 100% (range)
Response Time	2 sec.
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing (H623-xx only); CE[1]: EN61010-1, CAT III, Pollution Degree 2, basic insulation

CE c UL us LISTED

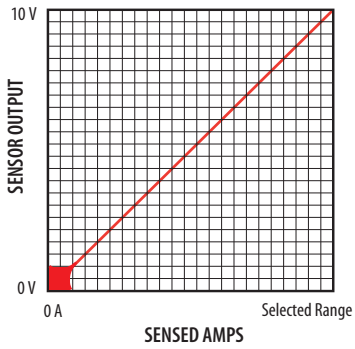
1. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.

APPLICATIONS

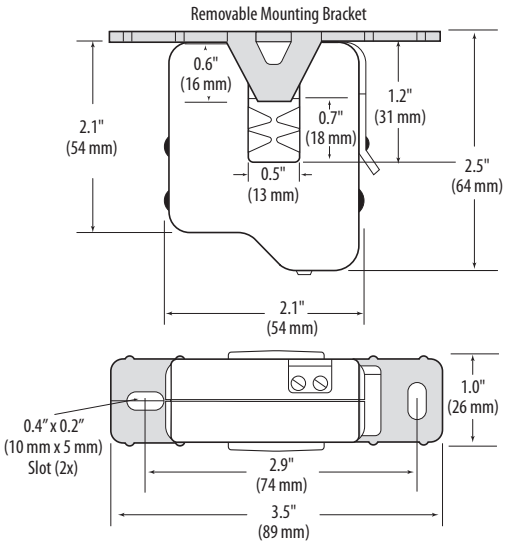
- Load trending
- Motor control
- Fan/pump status

EXAMPLE LINEAR OUTPUT

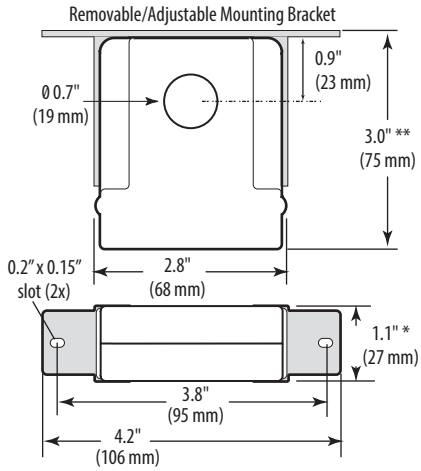
Scale software as shown



H623-XX
Dimensional Drawing

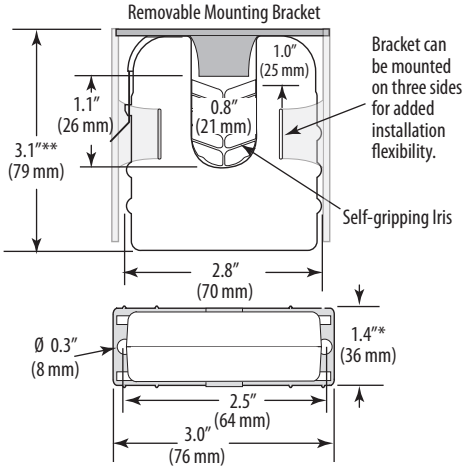


H723LC/H723HC
Dimensional Drawing



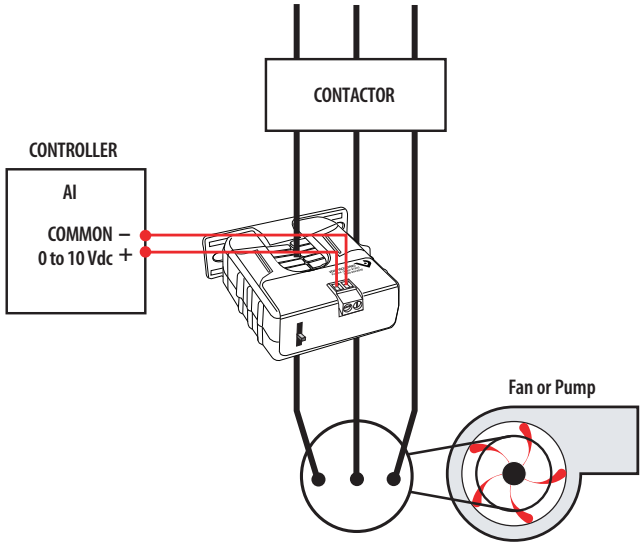
* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

H923
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

MONITORING FAN/PUMP MOTORS FOR POSITIVE PROOF OF FLOW
Wiring Diagram



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	SENSOR OUTPUT	HOUSING	UL	CE
H623-10	0 to 10 A	0 to 10 Vdc	Split-core	•	•
H623-20	0 to 20 A		Split-core	•	•
H723LC	0 to 10/20/40 A		Solid-core		•
H723HC	0 to 50/100/200 A		Solid-core		•
H923	0 to 20/100/150 A		Split-core		•

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H931

Load Trending and Control Relay in One Package

H931

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye™

Loop-powered

Loop-powered analog current transducer with integral start/stop command relay

Reduces installation charges

One device to install for start/stop and status

Saves time

Reduces the number of installed components…saves time and space

Fewer wires

Power the current sensor and receive the 4 to 20 mA signal with only two wires

Retrofit

Self-gripping, split-core design for fast retrofit installation…no need to remove conductor

Factory calibrated

Selectable factory calibrated ranges up to 120 A for increased flexibility and resolution

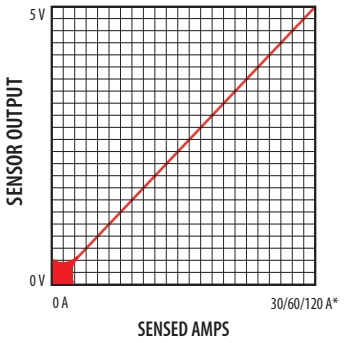
The Hawkeye 931 provides accurate load trending information with a proportional 4 to 20 mA output signal. These devices offer three amperage ranges for versatility, with easy slide-switch selection. The command relay is fully integrated in the device, but it is isolated from the current transducer. This combination makes these products ideal for start/stop control and status monitoring of motors, using one device instead of two.

APPLICATIONS

- Load trending
- Motor control
- Positive proof of flow

EXAMPLE LINEAR OUTPUT

Scale software as shown



**Factory calibrated ranges selected with the amperage range switch*

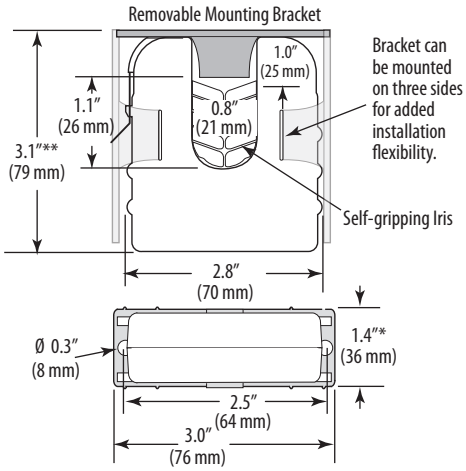
SPECIFICATIONS

Sensor Power	30 mA (max.) @ 12 to 30 Vdc
Insulation Class	600 Vac RMS
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Accuracy	±2% F.S. from 10% to 100% (selected range)
Response Time	2 sec.
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing, CAT III, Pollution Degree 2, basic insulation

c UL us LISTED

Note: Do not use LED status indicators as evidence of applied voltage

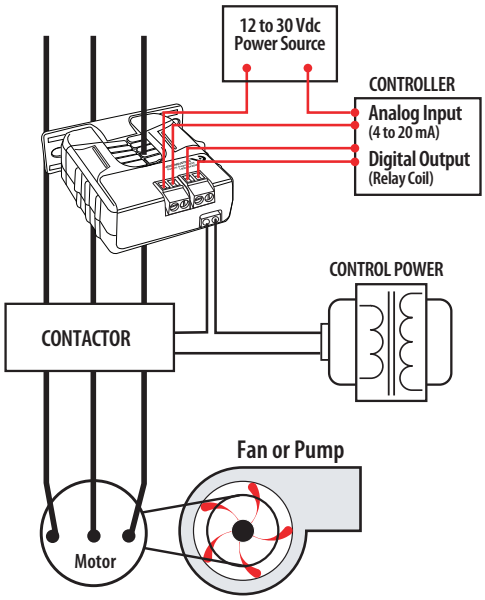
DIMENSIONAL DRAWING



* Terminal block may extend up to 1/8″ over the height dimensions shown.
** Slide switch may extend up to 1/4″ over the height dimensions shown.

TRENDING & CONTROLLING MOTOR LOADS

Wiring Diagram



RELAY CONTACT RATINGS (N.O.)	
Resistive	5 A @ 250 Vac, 30 Vdc
	5 A @ 30 Vac, 30 Vdc
Inductive	2 A @ 250 Vac, 30 Vdc
	2 A @ 30 Vac, 30 Vdc

TYPICAL COIL PERFORMANCE		
Voltage	AC	DC
24	15	15

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	SENSOR OUTPUT	RELAY TYPE	RELAY COIL	RELAY	RELAY POWER LED	UL
H931	0 to 30/60/120 A	4 to 20 mA	SPST, N.O.	24 Vac/dc	•	•	•

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H932 & H952

Load Trending and Control Relay in One Package

H932

CURRENT SENSING THE ULTIMATE PROOF OF FLOW

Maximize Reliability
Minimize Installed Cost

Hawkeye™

The Hawkeye 932 and 952 Series provide accurate load trending information with a proportional 0 to 5 Vdc output signal. This feature combined with an integrated command relay makes these products ideal for start/stop and status monitoring of motors.

The relay is fully isolated from the current sensor, and all relay connections are externally available for maximum flexibility.

SPECIFICATIONS

Sensor Power	Induced from monitored conductor
Insulation Class	600 Vac RMS
Frequency Range	50/60 Hz
Temperature Range	-15 to 60 °C (5 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Accuracy	±2% F.S. from 10% to 100% (selected range)
Response Time	2 sec.
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 open device listing, CAT III, Pollution Degree 2, basic insulation

c UL us LISTED

Note: Do not use LED status indicators as evidence of applied voltage

Self-powered

Self-powered analog current transducer with integral start/stop command relay

Reduces installation

One device to install for start/stop and status

Saves time

Reduces the number of installed components…saves time and space

No external power

No external power required for current sensor

Retrofit

Self-gripping, split-core design for fast retrofit installation…no need to remove conductor

Increased flexibility

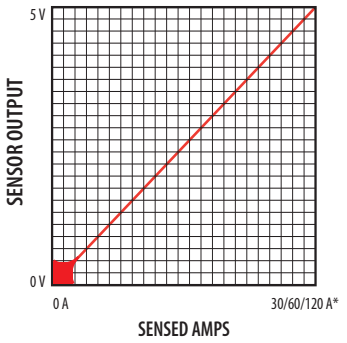
Selectable factory calibrated ranges up to 120 A for increased flexibility and resolution

APPLICATIONS

- Load trending
- Motor control
- Fan/pump status

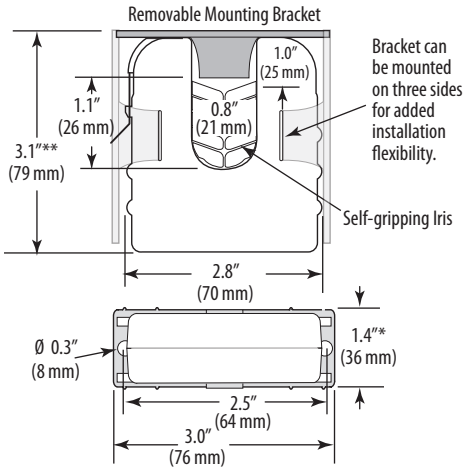
EXAMPLE LINEAR OUTPUT

Scale software as shown



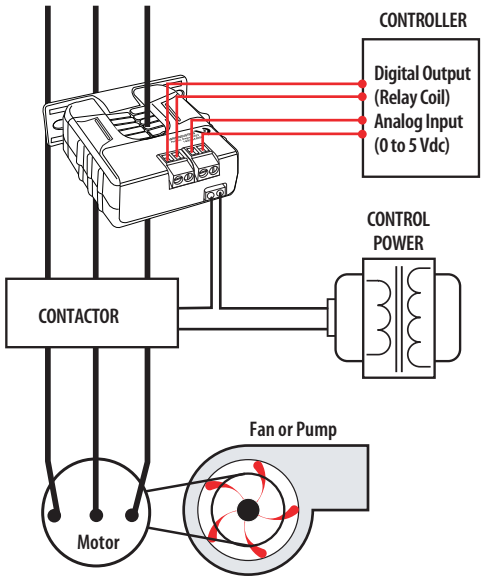
**Factory calibrated ranges selected with the amperage range switch*

H932/H952
Dimensional Drawing



* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

TRENDING & CONTROLLING MOTOR LOADS WITH THE HAWKEYE 932
Wiring Diagram



RELAY CONTACT RATINGS (N.O.)	
Resistive	5 A @ 250 Vac, 30 Vdc
	5 A @ 30 Vac, 30 Vdc
Inductive	2 A @ 250 Vac, 30 Vdc
	2 A @ 30 Vac, 30 Vdc

TYPICAL COIL PERFORMANCE		
Voltage	AC	DC
24 (H932)	15	15
12 (H952)		20
Pull In Voltage (H952 only)		
12 Vdc		8.4 Vdc
Drop Out Voltage (H952 only)		
12 Vdc		3.0 Vdc

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	SENSOR OUTPUT	RELAY TYPE	RELAY COIL	HOUSING	UL
H932	0 to 30/60/120 A	0 to 5 Vdc	SPST, N.O.	24 Vac/dc	Split-core	•
H952				12 Vdc		•

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H971 & EA20 SERIES

DC Applications

pulse reset technology™
U.S. Pat. #6,160,697; 6,522,517; 7,242,157

Hawkeye™

H971

Hawkeye DC Transducers provide accurate load level monitoring of DC loads. The H971 and EA20 use Pulse Reset Technology™ with field proven circuitry to provide a superior solution for DC applications with minimal risk of permanent magnetization, providing longer life and better accuracy.

The EA20 and the H971 have 4 to 20 mA output only. The H971 also offers bi-directional sensing capability and a user-adjustable span to allow greater application flexibility.

Retrofit

Self-gripping iris for easy installation

HOA

Bi-directional model…user-adjustable span from ±20 to ±200 A (H971)

Flexibility

Bracket can be installed in three different configurations

Status LED

Status LED ensures proper wiring

Pulse Reset Technology™

Patented Pulse Reset Technology significantly increases accuracy… sensor is not affected by stray magnetic fields, minimize magnetization from over-current faults

100, 150 and 200 Amp span

100, 150, and 200 A versions available…application flexibility (EA20 uni-directional model)

APPLICATIONS

- Battery chargers
- Motor armature current
- Motor field current
- Automotive loads
- Marine equipment
- Solar energy applications
- Telecom
- Electroplating

SPECIFICATIONS

System Technology	Exclusive Pulse Reset Technology™
Amperage Range	H971: ±200 ADC; EA20: 0 to 100 ADC/0 to 150 ADC/0 to 200 ADC
Sensor Supply Voltage	12 to 24 Vdc[1]
Supply Current	35 mA[2]
Insulation Class	H971: 600 Vdc, EA20: 1000 Vdc
Temperature Range	-30 to 60 °C (-22 to 140 °F)
Humidity Range	10 to 90% RH non-condensing
Output	H971: Bidirectional 4 to 20mA (adjust. span)[3]; EA20: Unidirectional 4 to 20 mA
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm^2)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
Response Time	Less than 150 msec
ACCURACY	
Accuracy at Ranges Below 100 A	±0.5 A (combined linearity, hysteresis, and repeatability)[5]
Accuracy at Ranges Above 100 A	±0.5% full scale (combined linearity, hysteresis, and repeatability)[5]
Withstand Current	25,000 ADC
WARRANTY	
Limited Warranty	5 years

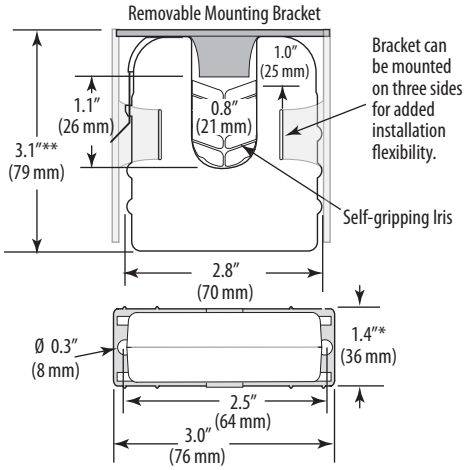
AGENCY APPROVALS

Agency Approvals	CE 4: EN61010-1, CAT III, Pollution Degree 2, basic insulation

Note: Do not use the LED status indicators as evidence of applied voltage.

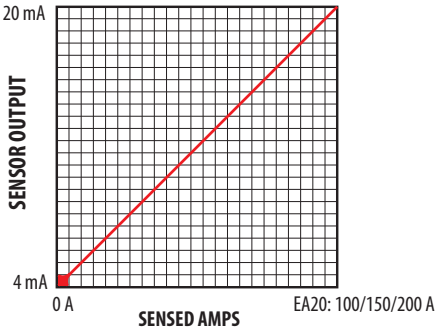
1. For currents over 120A, supply voltage must be at least 15V.
2. For H971, at zero monitored current: 35mA max.; at 200A monitored current: 55mA to 100mA depending on supply voltage and current polarity.
3. Unless factory set per customer specifications (H971SP only).
4. The CE mark indicates RoHS2 compliance. Please refer to the CE Declaration of Conformity for additional details.
5. For single conductor through product (no wraps).

H932/H952
Dimensional Drawing

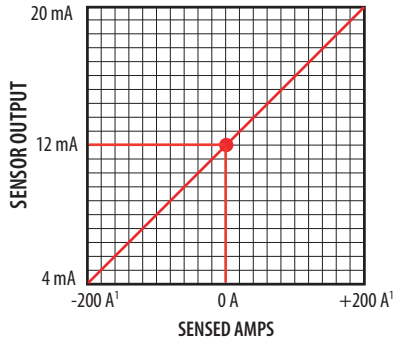


* Terminal block may extend up to 1/8" over the height dimensions shown.
** Slide switch may extend up to 1/4" over the height dimensions shown.

EA20 LINEAR OUTPUT
Scale software as shown

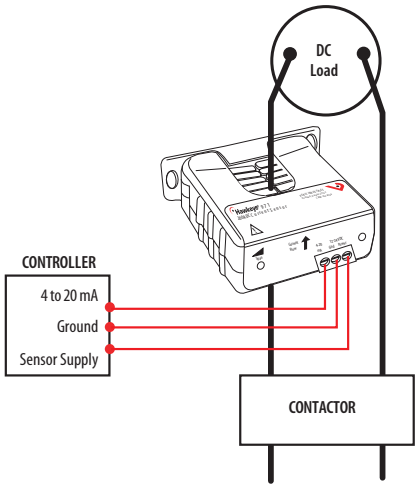


H971 BIDIRECTIONAL OUTPUT
Scale software as shown



1. Field Adjustable from ±20 A to ±200 A
(not applicable to customer-specified factory scaled models)

H971/EA20
Wiring Diagram



ORDERING INFORMATION

MODEL	PULSE RESET TECHNOLOGY	AMPERAGE RANGE (DC)	SENSOR OUTPUT	HOUSING	STATUS LED	UL	CE	ROHS
Hawkeye Series								
H971	•	0 to 200 A	Bidirectional 4 to 20 mA	Split-core	•	•	•	•
H971SP	•	0 to 200 A1	Bidirectional 4 to 20 mA	Split-core	•	•	•	•
EA Series								
EA20BB010	•	0 to 100 A	Unidirectional 4 to 20 mA	Split-core	•	•[2]	•	•
EA20BB015	•	0 to 150A	Unidirectional 4 to 20 mA	Split-core	•	•[2]	•	•
EA20BB020	•	0 to 200A	Unidirectional 4 to 20 mA	Split-core	•	•[2]	•	•

1. Range set in factory per customer specified value from 0 to ±20 A through 0 to ±199 A.
2. UL Recognized.

H5XX SERIES

Combination Switching Relay, Current Status Switch, and HOA Switch*

Remote mounted

Remote mounted current status sensor* and command relay with or without HOA switch

HOA

HOA provides true relay control… ideal for troubleshooting control wiring

Status sensor

Combines status sensor,* command relay, and HOA switch in a single series circuit…one line connection for three devices

SPST

SPST relay is field-selectable for N.O. or N.C. operation

Gang box mounting

Mounts directly onto gang box, flush to existing enclosures and standalone

Up to 1 HP

All models rated up to 1 HP @ 120 Vac, NS Versions 1 HP @ 120 Vac and 1.5 HP @ 277 Vac…one product for all fractional HP motor control and status applications

The Hawkeye 5xx Series combines an industrial grade load-switching relay, current status switch*, and Hand-Off-Auto (HOA) switch* in an easy-to-install remote enclosure, making the series ideal for monitoring, directly controlling, and troubleshooting the control wiring of fractional horsepower motors.

In some models, the relay, current sensor, and HOA switch are combined in a series circuit. Once an H5xx is wired in series between the power source and motor, all three components are installed. The housing provides physical separation and multiple wiring exits to isolate control and high voltage wiring. An H5xx can be mounted directly on 2- or 4-gang junction boxes, nippled to a field enclosure, or stand alone.

APPLICATIONS

- Monitoring status and controlling small motor loads that are not driven by a motor starter or contactor
- Exhaust fans
- Unit ventilators
- Fan terminal units
- Fan coil units
- Recirculating pumps

SPECIFICATIONS

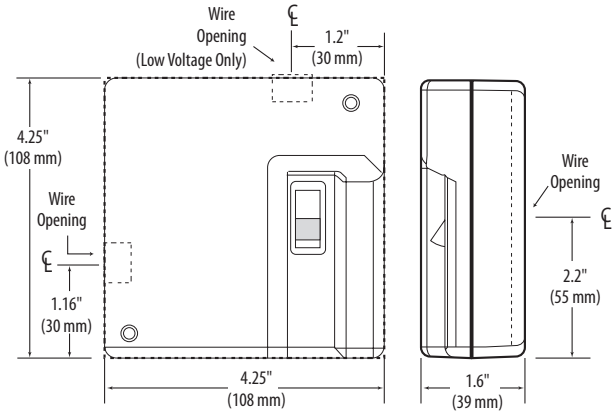
Sensor Power	Induced from monitored conductor
Frequency Range	50/60 Hz
Humidity Range	10 to 90% RH non-condensing
Temperature Range	-15 to 50 °C (5 to 122 °F)
Terminal Block Wire Size	24 to 14 AWG (0.2 to 2.1 mm²)
Terminal Block Torque	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m)
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 closed type device listing, CAT III, Pollution Degree 2, basic insulation

c UL us LISTED

*Some models

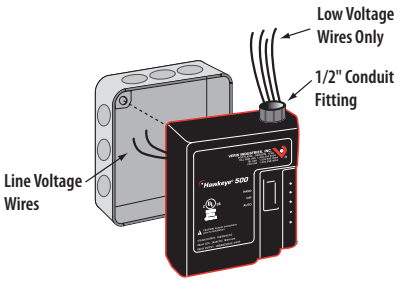
RELAY CONTACT RATINGS		
SPDT (NS) Models		
Resistive	15 A @ 277 Vac	
Motor	1 HP @ 120 Vac	
	2 1.5 HP @ 277 Vac	
SPST (HOA) Models		
Resistive	15 A @ 250 Vac	
Motor	1 HP @ 120 Vac	
TYPICAL COIL PERFORMANCE		
Voltage	AC	DC
24 V	36 mA	36 mA

DIMENSIONAL DRAWING



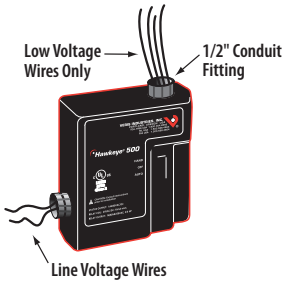
MOUNTS DIRECTLY ON 4-GANG JUNCTION BOX

Mounting Options

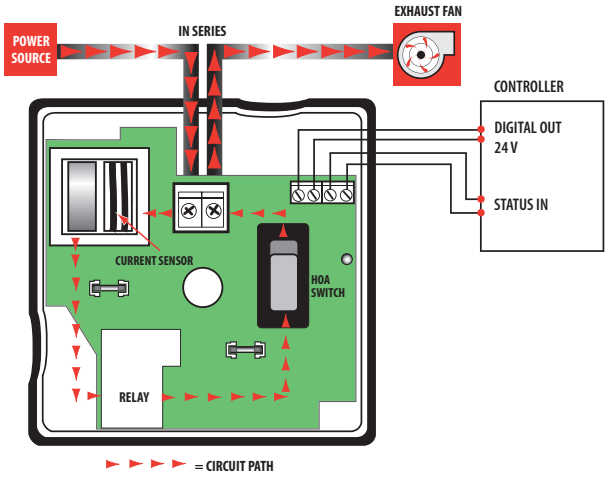


MOUNTS DIRECTLY ON WALL OR PANEL

Mounting Options

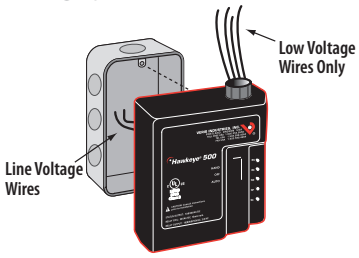


WIRING DIAGRAM

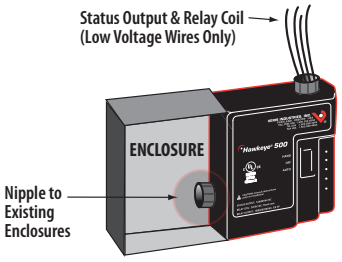


MOUNTS DIRECTLY ON 2-GANG JUNCTION BOX

Mounting Options



ENCLOSURE MOUNT



ORDERING INFORMATION

MODEL	AMPERAGE RANGE	STATUS OUTPUT	TRIP POINT	RELAY	RELAY COIL	HOA SWITCH	STATUS LEDS	RELAY POWER LED	UL
H535	0.25 to 15A	Relay Only		SPST, Field-Selectable N.O/N.C.	24 Vac/dc	•		•	•
H535NS	0.25 to 15 A	Relay Only		SPDT				•	•
H540	0.25 to 15 A	N. O., 1.0 A @ 30 Vac/dc	0.25 A or Less, Fixed	SPST, Field-Selectable N.O/N.C		•		•	•
H540NS	0.25 to 15 A	N. O., 1.0A @ 30 Vac/dc	0.25 A or Less, Fixed	SPDT				•	•
H548	0.5 to 15 A	N. O., 1.0A @ 30 Vac/dc	0.5 A or Less, Adjustable	SPST, Field-Selectable N.O/N.C		•	•	•	•
H548NS	0.5 to 15 A	N. O., 1.0 A @ 30 Vac/dc	0.5 A or Less, Adjustable	SPDT			•	•	•

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H120 SERIES

SPST Status Relay with Integral Current Switch

2-in-1

Current switch and relay are in series…connect the contacts to the load and your current switch is automatically installed

HP ratings

HP ratings make the H120 ideal for control and status of fractional HP motors

Nipple mount

The nipple mount housing can be connected to any 1/2" conduit knockout for installation versatility

0.1A turn-on

Easily monitors the smallest loads

Relay coil LED

Relay coil LED streamlines job commissioning and check out

NEMA 1 rated

NEMA 1 rated housing may be used in plenum spaces

The H120 and H120NC offer a fixed current switch and SPST relay in a single externally mounted housing. Combining the current sensor and relay in one easy-to-install package eliminates the need to fit multiple devices into small electrical enclosures and simplifies the installation. Remove the labor associated with installing a separate current sensor.

APPLICATIONS

- Unit ventilators
- Fan coil units
- Exhaust fans
- Fan terminal units
- Fractional HP motors
- Light resistive loads

SPECIFICATIONS

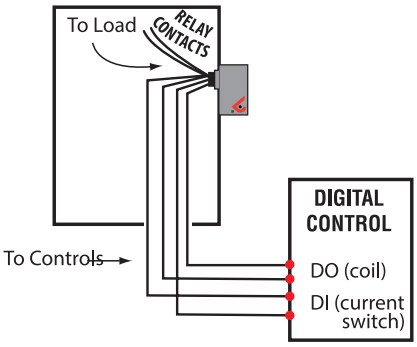
Sensor Power	Induced from relay coil power
Operating Temperature	-15 to 60 °C (5 to 140 °F) (13.8 A max.), -15 to 50 °C (5 to 12 °F) (2 A max.)
Operating Humidity	10 to 90% RH non-condensing
Expected Relay Life (mechanical)	10 million cycles
Relay Status	LED ON=energized
LEAD WIRE SPECIFICATIONS	
Lead Length	14" (356 mm) min.
Style and Gauge	UL1015; Coil: 18 AWG; Contacts: 12 AWG; Status: 16 AWG
WARRANTY	
Limited Warranty	5 years
AGENCY APPROVALS	
Agency Approvals	UL 508 closed type device listing, CAT III, Pollution Degree 2, basic insulation

c UL us LISTED

Note: Do not use the LED status indicators as evidence of applied voltage.

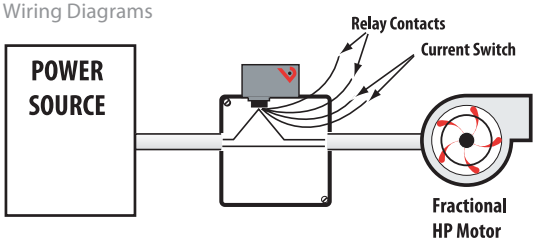
NIPPLE MOUNT DIRECTLY TO A PANEL

Wiring Diagrams

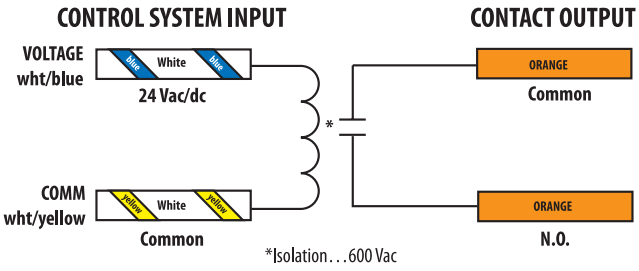


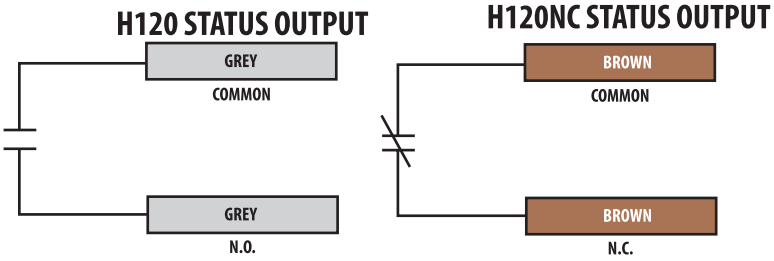
NIPPLE MOUNT TO 4X ELECTRICAL BOX

Wiring Diagrams

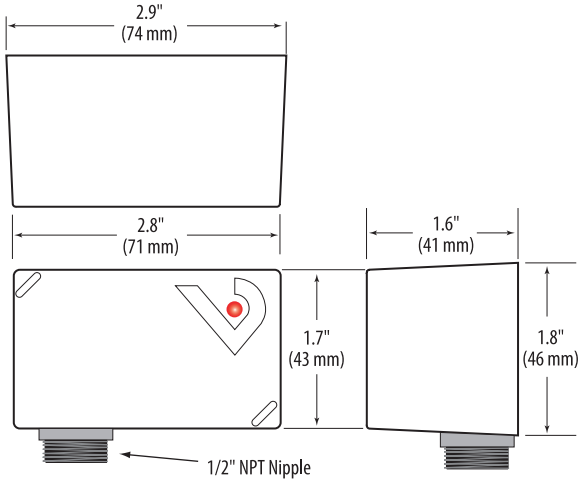


WIRE COLOR CODES





DIMENSIONAL DRAWING



RELAY CONTACT RATINGS		
Resistive	20 A (r)· @ 277 Vac/28Vdc	
	(250,00 Cycles)	
Motor	120 Vac, 1HP	
	208 Vac, 1HP	
	250 Vac, 2HP	
	277 Vac, 2HP	
Ballast	277 Vac, 20 A	
Tungsten	120 Vac, 10 A	

TYPICAL COIL PERFORMANCE		
Voltage	Coil Current	
	AC	DC
24V	75 mA	32 mA

*See operating temperature specifications

ORDERING INFORMATION

MODEL	AMPERAGE RANGE	COIL	RELAY	STATUS OUTPUT	TRIP POINT	HOUSING	RELAY POWER LED	UL
H120	0.1 to 20 A	24 Vac/dc	SPST, N.O.	N.O. 100 mA @ 30 Vac/dc	0.1 A or Less	Nipple Mount	•	•
H120NC				N.C. 100 mA @ 30 Vac/dc			•	•

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