

H971/971SP

U.S. Pat. #6,160,697; 6,522,517; 7,242,157



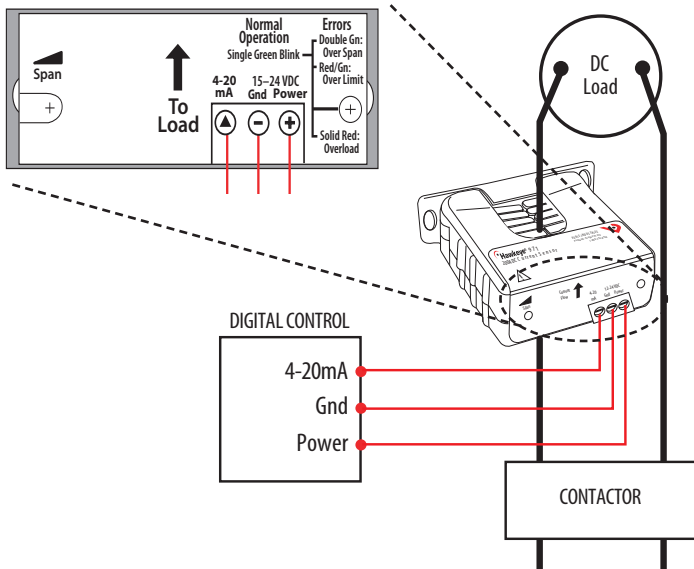
Measurement Category III

⚠ DANGER ⚡**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

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

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

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

WIRING EXAMPLE**Hawkeye® 971/971SP****Split-Core Bi-Polar 4-20mA Output
DC Current Transducer****Installer's Specifications**

Technology	Exclusive Pulse Reset Technology™
Amperage Range	±200 ADC
Sensor Supply Voltage	12 to 24VDC*
Supply Current	35mA max.**
Insulation Class	600VDC
Temperature Range	-30° to 60°C (-22° to 140°F)
Humidity Range	10-90% RH non-condensing
Output	Bi-polar 4-20mA (adjustable span)***
Accuracy Below 100A Span	±0.5A, combined linearity, hysteresis, and repeatability****
Accuracy Above 100A Span	±0.5% full scale, combined linearity, hysteresis, and repeatability***
Withstand Current	25,000ADC
Rated Altitude	2000m
Pollution Degree	2

* For currents over 120A, supply voltage must be at least 15V.

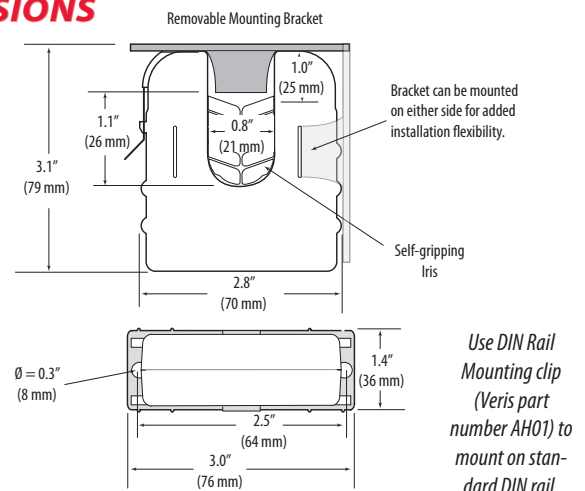
** At zero load current: 35mA max.; at 200A load current: 55mA to 110mA, depending on supply voltage and current polarity.

*** Unless factory set per customer specifications.

**** For single conductor through product (no wraps).

QUICK INSTALL

- Disconnect and lock out power to the conductor to be monitored.
- Choose a location for the sensor. The monitored conductor must pass through the iris, and the sensor must be at least ½" from any conductors as enclosure can reach 87°C during operation (at 60°C ambient temperature).
- Install the adjustable mounting bracket to the back of the enclosure using the included screws.
- Connect 12-24VDC to the terminals marked Power (+) and Gnd (-).
- Wire the mA output connections between the sensor and the controller.
- Snap the sensor over the conductor to be monitored and clip the assembly to the mounting bracket.
- H971 only: Set the span set potentiometer to the desired amperage level (see page 2).

DIMENSIONS

7505413-02, 01-05-1, ©2000 Veris Industries, Inc. HCA-000-251-0556, 1/01/03-500-1561/1, 10/03/03

OPERATION

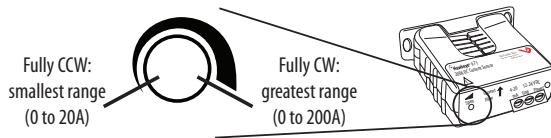
The H971 is a current-sensitive device that monitors DC current (amperage) in the conductor passing through it. The unit uses Pulse Reset Technology™ with proven transducer circuitry to produce a status output suitable for connection to building controllers or other appropriate data acquisition equipment. The H971 requires 12-24VDC to generate its output. The H971 has a user-adjustable span to allow flexibility. The H971SP comes factory calibrated at a fixed span for maximum accuracy.

The H971 is ideal for DC current monitoring where accuracy must be maintained in the presence of magnetic fields, current spikes, and high fault currents (e.g. solar panels, electroplating equipment).

The H971 housing offers unprecedented mounting flexibility. The mounting bracket can be attached in three different places. Additionally, the bracket is compatible with the Veris AH01 DIN Rail clip, allowing DIN mounting.

SPAN SETTING (not applicable to the H971SP models)

The H971 comes preset at the maximum (0-200A) span. To adjust the H971 to a different span, locate the potentiometer on the top of the device. This potentiometer is a multi-turn device, taking about 23 turns to adjust the span from $\pm 20A$ to $\pm 200A$. Use the potentiometer to adjust the maximum amperage range used by the sensor. The smallest amperage range (0 to $\pm 20 A$) is set by turning the potentiometer fully counterclockwise; the greatest amperage range (0 to $\pm 200 A$) is set by turning the potentiometer fully clockwise.



To determine the best amperage range for an application, first set the load to the maximum amperage that will be used. Use the LED as a guide to adjust the potentiometer to its optimum setting. Verify the measured output current matches the load current using a current clamp meter.

LED Activity	Potentiometer Adjustment
Steady green blink	Turn CCW until LED blinks rapidly, then slowly turn CW just until blink returns to steady rate.
Rapid green blink	Turn CW until LED blinks at a steady rate.

An alternate adjustment method that does not require a current clamp meter can also be used, provided the amperage flowing in the conductor is steady for the duration of the adjustment. In this example, it is assumed that the H971 is initially set to the maximum 0-200A span, but the installer has decided to reduce the span to 0-120A. Sample numbers are provided to illustrate the calculations.

Action	Example
Determine the device output using a portable multimeter or the automation controller.	15
The H971 is bi-directional, so a 12mA output corresponds to a 0A load in the conductor. Determine the output above the 0 level by subtracting 12mA.	$15 - 12 = 3$
Multiply by the initial maximum span setting before adjustment.	$3 \times 200 = 600$
Divide by the desired maximum span.	$600 / 120 = 5$
Add 12 to this value to get the new output value.	$5 + 12 = 17$
Turn the potentiometer counterclockwise until the output reads 17mA. This is the output for the amperage load at a span of 0-120A.	17

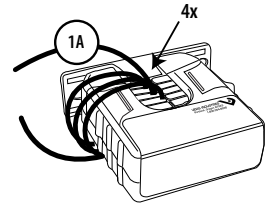
NOTES

For load currents less than 2A:

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

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

Accuracy may be reduced if wraps are used.



CAUTION

RISK OF EQUIPMENT DAMAGE

- Derate the product's maximum current for the number of turns through the sensing window using the following formula.

Rated Max. Amps $\div$ Number of Turns = Max. monitored Amps

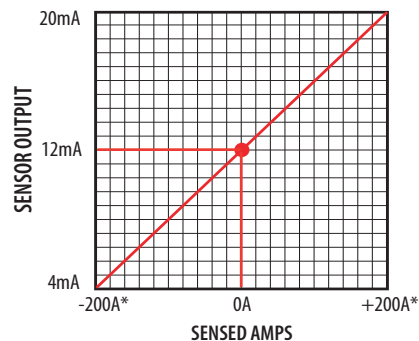
e.g. : $100A \div 4 \text{ Turns} = 25 \text{ Amps max. in monitored conductor}$

- Failure to follow these instructions can result in overheating and permanent equipment damage.

Failure to observe the following can result in incorrect output readings:

- Observe the arrow on the H971 showing positive current direction so that the output will have proper polarity for the application.
- Do not expose the H971 to continuous current levels greater than 200A RMS (brief current surges and fault currents should not adversely affect the H971).

SCALING



*Field Adjustable from $\pm 20A$ to $\pm 200A$

(not applicable to customer-specified factory scaled models)

LED INDICATOR BLINK CODES

LED Activity	Status Description
Single green	Normal operation
Double green	Over span
Red/green	Over limit
Solid red	Overload

TROUBLESHOOTING

Problem	Solution
The LED is off and no signal is produced	Verify that at least 12V supply voltage is applied to PWR (+) and GND (-) terminals.
The LED is on solid and the output is at maximum	Verify that the unit is not attempting to monitor more than $\pm 200A$.