

ACUAMP[®] ACTR Series AC Current Transducers



Why use ACTR transducers?

The current waveform of a typical linear load is a pure sine wave. However, in VFD and SCR applications the output waveforms are rough approximations of a sine wave and are non-sinusoidal. Each cycle will contain numerous spikes and dips.

The ACTR transducers use a mathematical algorithm called "True RMS," which integrates the actual waveform over time. The output is the amperage component of the true power (heating value) of the AC current waveform. True RMS is the only way to accurately measure distorted AC waveforms. Select ACTR transducers for non-linear loads or in "noisy" power environments.

Applications

VFD Controlled Loads

- VFD output indicates how the motor and attached load are operating.

SCR Controlled Loads

- Accurate measurement of phase angle fired SCRs. Current measurement gives faster response than temperature measurement.

Switching Power Supplies and Electronic Ballasts

- True RMS sensing is the most accurate way to measure power supply or ballast input power.

Features

- 4-20 mA output
- True RMS technology is accurate on distorted waveforms such as VFD or SCR outputs.
- Models with selectable sensing ranges
- Output is magnetically isolated from the input for safety and eliminates voltage drop.
- Built-in mounting feet with optional or integral 35mm DIN rail adapter depending on part number.
- Five-year warranty



| ACTR Series AC Current Transducers | | | | |
|------------------------------------|---|---------|---------|----------|
| Part Number | Description | Pcs/Pkg | Wt (lb) | Price |
| ACTR005-42L-F | AcuAMP AC current transducer, fixed core, 0-2 or 0-5A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.30 | \$143.00 |
| ACTR005-42L-S | AcuAMP AC current transducer, split core, 0-2 or 0-5A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.36 | \$164.00 |
| ACTR050-42L-F | AcuAMP AC current transducer, fixed core, 0-10, 0-20, or 0-50A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.30 | \$133.00 |
| ACTR050-42L-S | AcuAMP AC current transducer, split core, 0-10, 0-20, or 0-50A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.36 | \$166.00 |
| ACTR200-42L-F | AcuAMP AC current transducer, fixed core, 0-100, 0-150, or 0-200A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.30 | \$135.00 |
| ACTR200-42L-S | AcuAMP AC current transducer, split core, 0-100, 0-150, or 0-200A selectable sensing range, True RMS, 4-20mA output. | 1 | 0.36 | \$169.00 |
| ACTR400-42L-S | AcuAMP AC current transducer, split core, 0-400A sensing range, True RMS, 4-20mA output. | 1 | 1.22 | \$229.00 |
| ACTR500-42L-S | AcuAMP AC current transducer, flexible split core, 0-500A sensing range, True RMS, 4-20mA output. | 1 | 0.60 | \$311.00 |
| ACTR600-42L-S | AcuAMP AC current transducer, split core, 0-600A sensing range, True RMS, 4-20mA output. | 1 | 1.36 | \$229.00 |
| ACTR750-42L-F | AcuAMP AC current transducer, fixed core, 0-375, 0-500, or 0-750A selectable sensing range, True RMS, 4-20mA output. | 1 | 2.00 | \$218.00 |
| ACTR800-42L-S | AcuAMP AC current transducer, split core, 0-800A sensing range, True RMS, 4-20mA output. | 1 | 1.37 | \$229.00 |
| ACTR1000-42L-S | AcuAMP AC current transducer, flexible split core, 0-1000A sensing range, True RMS, 4-20mA output. | 1 | 0.60 | \$338.00 |
| ACTR1200-42L-S | AcuAMP AC current transducer, split core, 0-1200A sensing range, True RMS, 4-20mA output. | 1 | 2.61 | \$285.00 |
| ACTR2000-42L-F | AcuAMP AC current transducer, fixed core, 0-1000, 0-1333, or 0-2000A selectable sensing range, True RMS, 4-20mA output. | 1 | 2.00 | \$283.00 |
| ACTR2000-42L-S | AcuAMP AC current transducer, flexible split core, 0-2000A sensing range, True RMS, 4-20mA output. | 1 | 0.60 | \$338.00 |
| Accessories | | | | |
| DRA-2B | 35mm DIN rail adapters, 1.70"x0.45"x0.83" [43.7x11.4x21.0 mm] | 2 | 0.40 | \$3.75 |

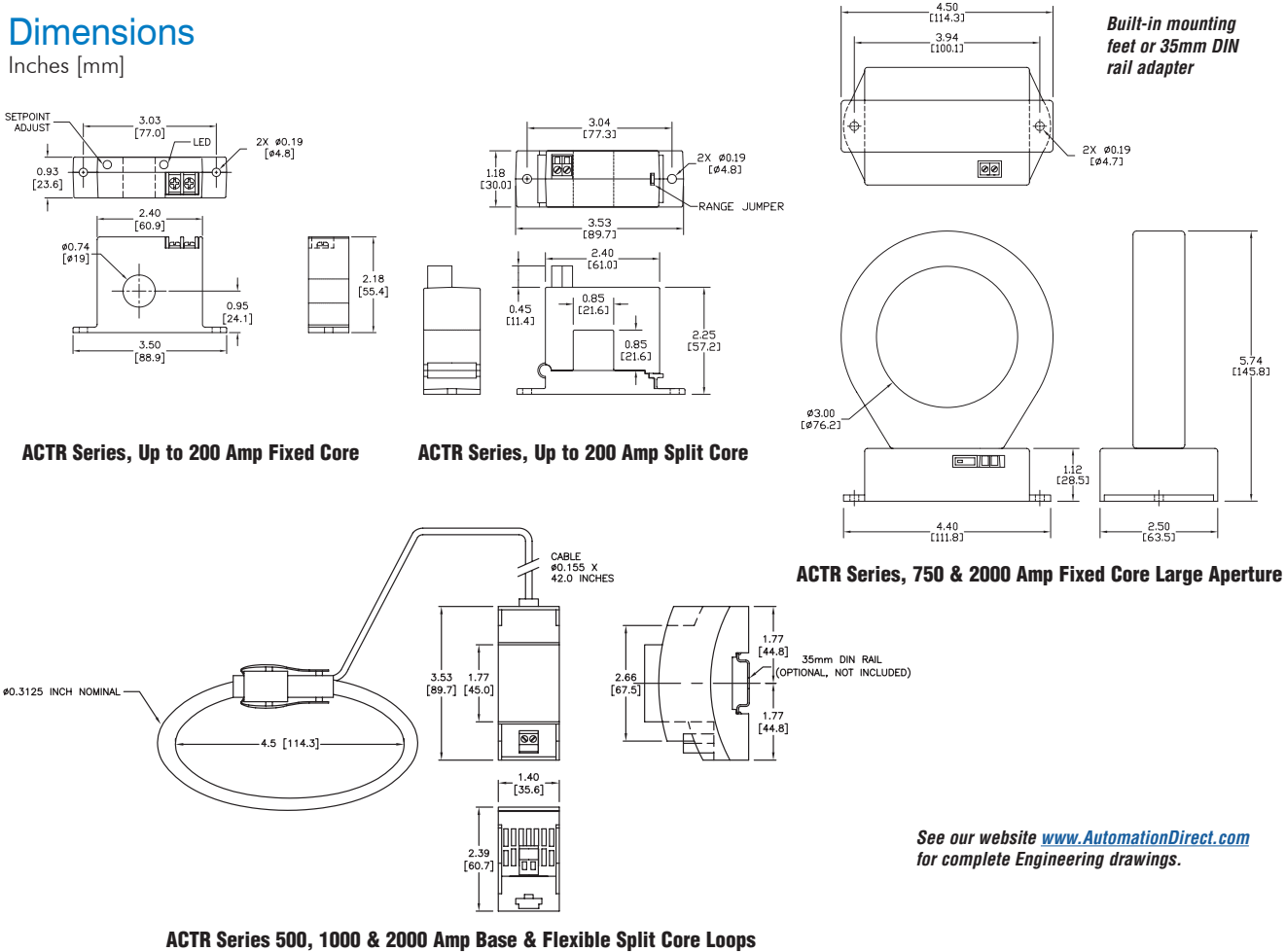
| Sensed Current Limits | | | | |
|------------------------|------------|------------|-------|-------|
| Model | Range | Amps | | |
| | | Continuous | 6 Sec | 1 Sec |
| ACTR005 | 0 to 2A | 80 | 125 | 250 |
| | 0 to 5A | 100 | 125 | 250 |
| ACTR050 | 0 to 10A | 80 | 125 | 250 |
| | 0 to 20A | 110 | 150 | 300 |
| | 0 to 50A | 175 | 215 | 400 |
| ACTR200 | 0 to 100A | 200 | 300 | 600 |
| | 0 to 150A | 300 | 450 | 800 |
| | 0 to 200A | 400 | 500 | 1000 |
| ACTR400 | 0 to 400A | 1600 | 1920 | 6400 |
| ACTR500 | 0 to 500A | 4000 | 4400 | 5000 |
| ACTR600 | 0 to 600A | 1600 | 1920 | 6400 |
| ACTR750 | 0 to 375A | 750 | 1500 | 3750 |
| | 0 to 500A | 750 | | |
| | 0 to 750A | 750 | | |
| ACTR800 | 0 to 800A | 1600 | 1920 | 6400 |
| ACTR1000 | 0 to 1000A | 4000 | 4400 | 5000 |
| ACTR1200 | 0 to 1200A | 1600 | 1920 | 6400 |
| ACTR2000 Fixed core | 0 to 1000A | 2000 | 4000 | 10 k |
| | 0 to 1333A | 2000 | | |
| | 0 to 2000A | 2000 | | |
| ACTR2000 Split core | 0 to 2000A | 4000 | 4400 | 5000 |

ACUAMP[®] ACTR Series AC Current Transducers

| ACTR Series Specifications | | | | |
|----------------------------|--|---|---|--|
| Specifications | -42L- Models up to 200 Amp | -42L-F Models 750 & 2000 Amp | -42L-S Models 500, 1000, 2000 Amp | -42L- Models 400, 600, 800, 1200A |
| Power Supply | 24VDC nominal, (12 to 40 VDC max) loop powered | 24VDC nominal, (12 to 40 VDC max) loop powered | 24VDC Nominal, 22-36 Volts Use Class 2 power supply or limited power supply only | 24VDC nominal, 12 to 32VDC max |
| Output Signal | 4 -20 mA, loop powered, True RMS | | | |
| Output Limit | 112% of standard output range maximum | | | |
| Output Impedance | 600Ω @ 24VDC | | 500Ω maximum | 600Ω @ 24VDC |
| Accuracy | 1.0% FS (10-100% of range) | | | |
| Response Time | 600ms | | | |
| Sensing Range | Selectable from 2 to 200A based on part number | Selectable from 375 to 2000A based on part number | 500, 1000 or 2000A based on part number | 400, 600, 800 or 1200A based on part number |
| Sensing Aperture | Fixed core: 0.74" [19mm] dia. Split core: 0.85" [21.6 mm] sq. | Fixed core: 3.0" [76.2 mm] dia. | 4.5 in [114.3 mm] dia. | 2.22 X 1.19 in [56.3 X 30.2 mm] ACT1200: 3.44 x 2.31 in [87.3 x 58.8 mm] |
| Isolation Voltage | UL listed to 1,270VAC, Tested to 5,000VAC (1 min. max) | UL listed to 600V | UL listed to 3,500VAC | UL tested to 2200VAC |
| Frequency Range | 10 to 400 Hz | | 40 to 400 Hz | 20 to 400 Hz |
| Case | UL 94 V-0 flammability rated thermoplastic | | | |
| Mounting | Built-in mounting feet or optional DRA-2B 35mm DIN rail adapter | | Built-in 35mm DIN rail adapter | Built-in mounting feet or 35mm DIN rail adapter |
| Environmental | Operating Temperature: -4 to 122°F [-20 to 50°C] Relative Humidity: 0-95% RH, Non-condensing Pollution Degree 2 Altitude to 2000 meters | | | |
| Certifications | cULus listed (E222847), CE | | cULus listed (E197592), CE | |

Dimensions

Inches [mm]



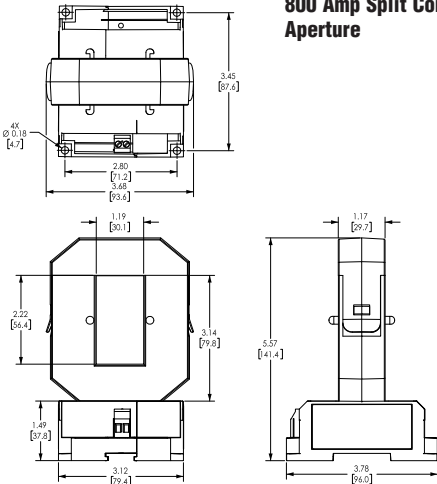
See our website www.AutomationDirect.com for complete Engineering drawings.

ACUAMP[®] ACTR Series AC Current Transducers

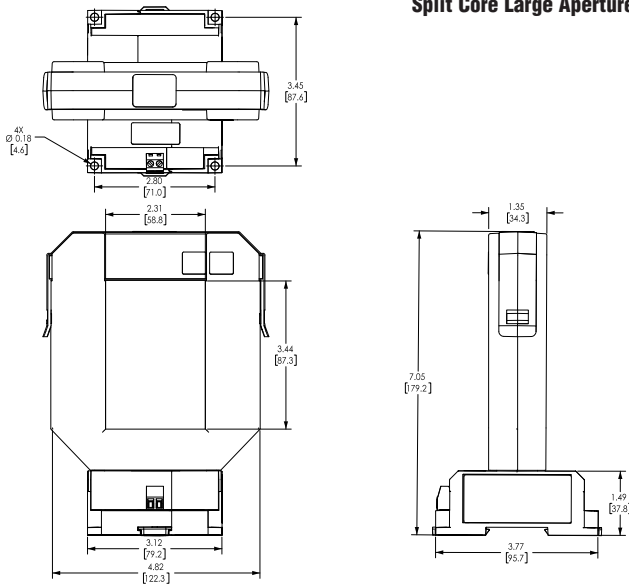
Dimensions

Inches [mm]

ACTR Series, 400, 600, 800 Amp Split Core Large Aperture

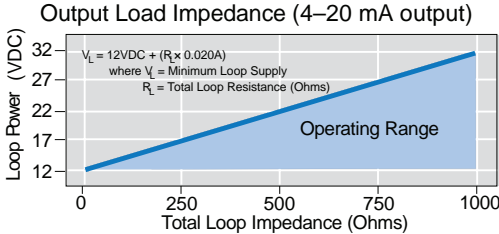
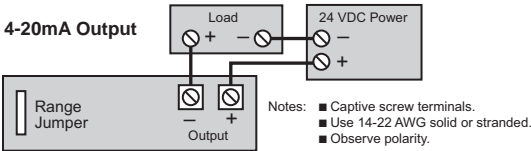


ACTR Series, 1200 Amp Split Core Large Aperture

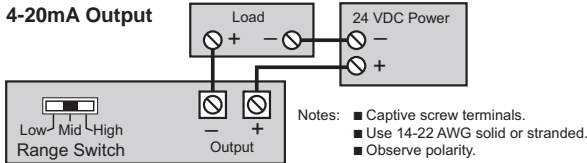


Wiring

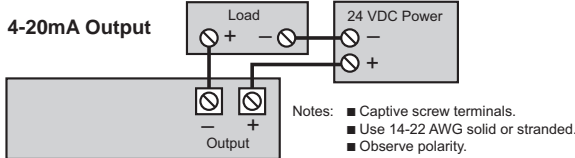
ACTR Series, Up to 200 Amp



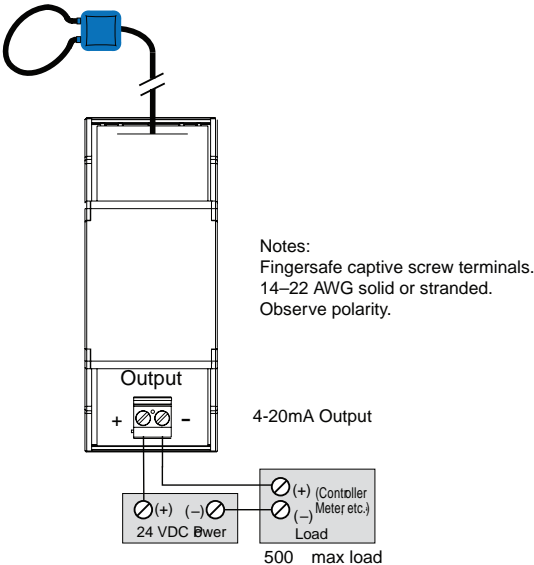
ACTR Series, 750 & 2000 Amp



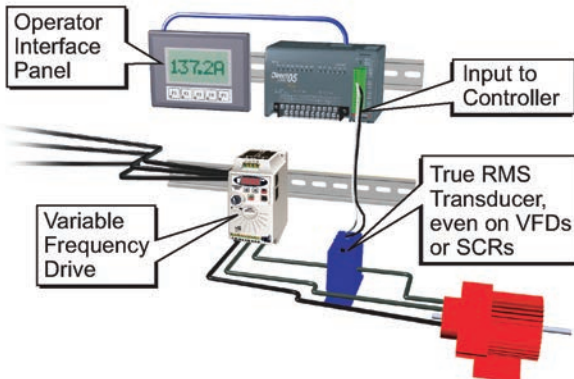
ACTR Series, 400, 600, 800, 1200 Amp



ACTR Series, Flexible Split Core 500, 1000 & 2000 Amp



Application Example



ACUAMP® AC Current Switches, Transducers and Indicators

Overview

The AcuAMP series of AC current sensors is a family of high-performance current sensors offering outstanding features, flexibility, and durability at an incredible Price. Choose from a wide selection of current transducers, switches and indicators, all designed in a rugged industry-standard feed-through package, including both fixed core and split core models.

AcuAMP current sensors are available with a broad selection of input sensing ranges for maximum flexibility across many current ratings. The current transducer output choices include 4-20 mA, 24VDC loop-powered, and 0 to 10 volt self-powered analog outputs. The Current Switch outputs include isolated solid state switches available in Normally Open and Normally Closed configurations or SPDT relays.

Models with output time delay are also offered in the Current Switch series. The ACL1 Current Indicator senses AC current ranging from 0.5 to 100A and requires no power for the indicating LED.

These current sensors can be mounted in a panel or attached to the monitored conductor with a wire tie. Use the Selection Guide below to find the best sensor for your requirements.



AcuAMP AC Current Transducer Selection Guide

| Specifications | Single-Phase Transducer | Single-Phase Transducer (True RMS) | 3-Phase Transducer | 3-Phase Transducer (True RMS) |
|-------------------------|--|---|--|---|
| Series | ACT | ACTR | 3ACT | 3ACTR |
| Sensing Range | Selectable: ACT005: 0 to 2A 0 to 5A ACT050: 0 to 10A 0 to 20A 0 to 50A ACT200: 0 to 100A 0 to 150A 0 to 200A ACT750: 0 to 375A 0 to 500A 0 to 750A ACT2000: 0 to 1000A 0 to 1333A 0 to 2000A Fixed range: ACT400 0 to 400A ACT600 0 to 600A ACT800 0 to 800A ACT1200 0 to 1200A | Selectable: ACTR005: 0 to 2A 0 to 5A ACTR050: 0 to 10A 0 to 20A 0 to 50A ACTR200: 0 to 100A 0 to 150A 0 to 200A ACTR750: 0 to 375A 0 to 500A 0 to 750A ACTR2000: 0 to 1000A 0 to 1333A 0 to 2000A Fixed range: ACTR400: 0 to 400A ACTR500: 0 to 500A ACTR600: 0 to 600A ACTR800: 0 to 800A ACTR1000: 0 to 1000A ACTR1200: 0 to 1200A ACTR2000: 0 to 2000A | Selectable: 3ACT030: 0 to 10A 0 to 15A 0 to 30A 3ACT100: 0 to 30A 0 to 50A 0 to 100A 3ACT200: 0 to 100A 0 to 150A 0 to 200A | Selectable: 3ACTR030: 0 to 10A 0 to 15A 0 to 30A 3ACTR100: 0 to 30A 0 to 50A 0 to 100A 3ACTR200: 0 to 100A 0 to 150A 0 to 200A |
| Output | -10 models: 0-10 VDC, self-powered -42L models: 4-20 mA, loop-powered | 4-20 mA, loop-powered True RMS | 4 -20 mA, loop-powered | 4-20 mA, loop-powered True RMS |
| Frequency Range | -10 models: 50 to 60 Hz -42L models up to 200A: 20 to 100 Hz -42L models 400, 600, 800, 1200A: 50 to 60 Hz sinusoidal waveforms only | 20 to 400 Hz; (40 to 400 Hz flexible split core models) sinusoidal and non-sinusoidal waveforms | 50 to 60 Hz sinusoidal waveforms only | 30 to 100 Hz sinusoidal and non-sinusoidal waveforms |
| Sensing Aperture | ACT005, ACT050, ACT200: Fixed core: 0.75 in [19mm] dia. Split core: 0.85 in [21.6 mm] sq. ACT750, ACT2000: Fixed core: 3.0 in [76.2 mm] dia. ACT400, ACT600, ACT800: Split core: 2.22 X 1.19 in [56.3 X 30.2 mm] ACT1200 Split core: 3.44 X 2.31 in [87.3 X 58.8 mm] | ACTR005, ACTR050, ACTR200: Fixed core: 0.75 in [19mm] dia. Split core: 0.85 in [21.6 mm] sq. ACTR750, ACTR2000: Fixed core: 3.0 in [76.2 mm] dia. ACTR500, ACTR1000, ACTR2000: Flexible split core: 4.5 in [114.3 mm] dia. ACTR400, ACTR600, ACTR800: Split core: 2.22 X 1.19 in [56.3 X 30.2 mm] ACTR1200 Split core: 3.44 X 2.31 in [87.3 X 58.8 mm] | 3x - Fixed core: 0.86 in [21.8 mm] dia. | 3x - Fixed core: 0.86 in [21.8 mm] dia. |



AC Current Switches, Transducers and Indicator

| AcuAMP AC Current Switch Selection Guide | | | | | | | | |
|--|--|--|---|---|--|--|--|---|
| Specifications | AC Current Switches | | | | | | | |
| Series | ACSN100 | ACSN250 | ACS150 | ACSL | ACS200 | ACS050/ ACS200 | ACS035/ ACS400 | ACSX |
| Sensing Range | 0 to 100A | 0 to 250A | Fixed core: 1 to 150A Split core: 1.75 to 150A | 0 to 50A | Jumper Selectable: Fixed core: 1 to 6A 6 to 40A 40 to 175A Split core: 1.75 to 6A 6 to 40A 40 to 200A | 1 to 200A | 2 to 400A | Jumper Selectable: Fixed core: 1.5 to 12A 12 to 55A 55 to 175A Split core: 2 to 12A 12 to 55A 55 to 200A |
| Setpoint (Trip Point) | Non-adjustable: 0.5 A | Non-adjustable: Fixed core: 0.75A Split core: 1.25A | Adjustable: Fixed core: 1-150 A (15-turn potentiometer) Split core: 1.75-150 A (4-turn potentiometer) Monitored load current required to adjust setpoint | Adjustable (3/4-turn potentiometer): ACSL010: 1-10A ACSL020: 2-20A ACSL050: 10-50A Monitored load current not required to adjust setpoint | Adjustable: (4-turn or 15-turn potentiometer) Fixed core: 1-175A Split core: 1.75-200A Monitored load current required to adjust setpoint | Adjustable: (Single turn potentiometer): ACS050: 1-50A ACS200: 4-200A | Adjustable: (3/4-turn potentiometer): ACS035: 2-35A ACS400: 25-400A | Adjustable: Fixed core: 1.5-175A (15-turn potentiometer) Split core: 2-200A (4-turn potentiometer) Monitored load current required to adjust setpoint |
| Output | Isolated solid state: Normally Open 0.15 A @ 120VAC or VDC | Isolated solid state: Normally Open 0.15 A @ 240VAC or VDC | Isolated solid state: Normally Open 0.15 A @ 240VAC or VDC Normally Closed 0.2 A @ 135VAC or VDC | Isolated solid state: Normally Open AC: 0.15 A @ 240VAC | Isolated solid state: Normally Open or Normally Closed AC model: 1A @ 240VAC Normally Open AC model: 3A @ 120VAC Normally Open or Normally Closed DC model: 0.15 A @ 30VDC | Isolated solid state: Normally Open 1A @ 240VAC | Two Independent Single Pole, Double Throw electro-mechanical relays AC: 1A @ 120VAC DC: 2A @ 30VDC | Isolated solid state: Normally Open or Normally Closed AC model: 1A @ 240VAC Normally Open AC/DC model: 0.15 A @ 240 VAC/ VDC Normally Closed AC/DC model: 0.2 A @ 135 VAC/ VDC |
| Frequency Range | 50 to 400 Hz | 6 to 100 Hz | 6 to 100 Hz | 10 to 100 Hz | 6 to 100 Hz | 40 to 100 Hz | 40 to 65 Hz | 50 to 100 Hz |
| Response Time | N/A | 120ms | 120ms | 100ms & 2s inrush delay | 40 to 250 ms | 0.50 sec. 5% over set point 0.20 sec. 50% over set point 0.15 sec. 100% over set point | 40 - 120ms | Field adjustable time delay: 0.12 to 15 seconds |
| Sensing Aperture | 0.30 in [8.13 mm] dia. | Fixed core: 0.75 in [19mm] dia. Split core: 0.85 in [21.7 mm] sq. | Fixed core: 0.75 in [19mm] dia. Split core: 0.85 in [21.7 mm] sq. | Fixed core: 0.55 in [13.97 mm] dia. Split core: 0.85 in [21.7 mm] sq. | Fixed core: 0.55 in [13.97 mm] dia. Split core: 0.85 in [21.7 mm] sq. | 0.75 in [19mm] dia. | 1.31 in [33.3 mm] dia. | Fixed core: 0.75 in [19mm] dia. Split core: 0.85 in [21.7 mm] sq. |



AC Current Switches, Transducers and Indicator

| AcuAMP AC Current Transducer/Switch and Indicator Selection Guide | | | |
|---|---|---|-----------------------------|
| Specifications | AC Current Transducer | AC Current Transducer/ Switch | Indicator |
| Series | ACTH | ACTS | ACL1 |
| Sensing Range | 0 to 50A | 1 to 200A | 0 to 100A |
| Setpoint (Trip Point) | Not Applicable | Adjustable: (Single turn potentiometer): ACTS050: 1-50A ACTS200: 4-200A | Non-adjustable: 0.5 A |
| Output | 4 -20 mA, loop-powered adaptive True RMS | 4-20mA analog output and isolated solid state: Normally Open 1A @ 240VAC | LED Only (flashing, red) |
| Frequency Range | 40 to 400 Hz | 40 to 400 Hz | 50 to 400 Hz |
| Response Time | 400ms at 100% duty cycle, or duty cycle period plus 40ms | Switch: 0.50 sec. 5% over set point 0.20 sec. 50% over set point 0.15 sec. 100% over set point Analog: < 0.30 sec. 90% step change < 0.40 sec. 100% step change | N/A |
| Sensing Aperture | 0.86 in [21.9 mm] sq. | 0.75 in [19mm] dia. | 0.30 in [7.6 mm] dia. |



Click on the thumbnail or go to
<https://www.automationdirect.com/VID-CT-0001>
 for a short introductory video on the AcuAmp
 Current Switches, Transducers and Indicators

ACUAMP® AC Current Sensors, Switches and Transducers Application Guide

Application Guide

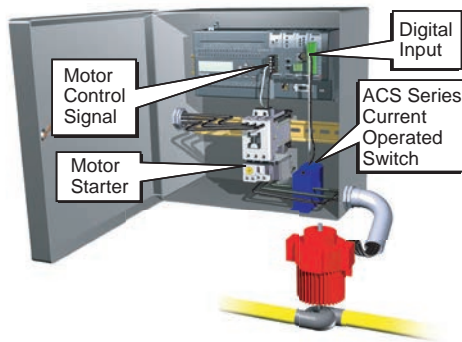
ACUAMP current sensors are a great fit for many applications including material handling, fan and pump applications, and heating systems. With current

transducers, current switches and current indicators, this sensor family gives you valuable data for processes ranging from monitoring loads to preventive maintenance. Models with the ability to read True RMS non-sinusoidal wave-

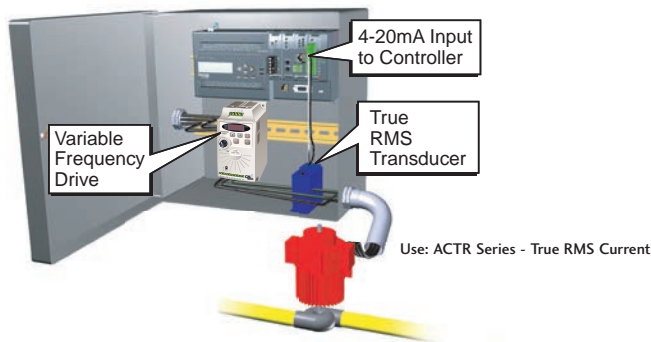
forms make it easy to monitor applications using variable frequency drives.

Use the application examples to help choose the best sensor model for your application.

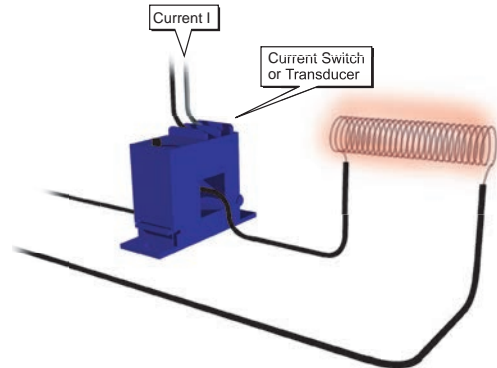
Pump Jam & Suction Loss Protection



Pump Load Monitoring



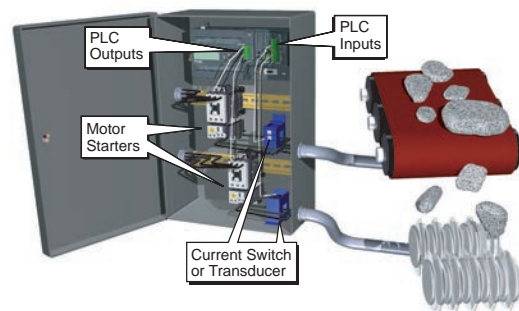
Heater Life Prediction



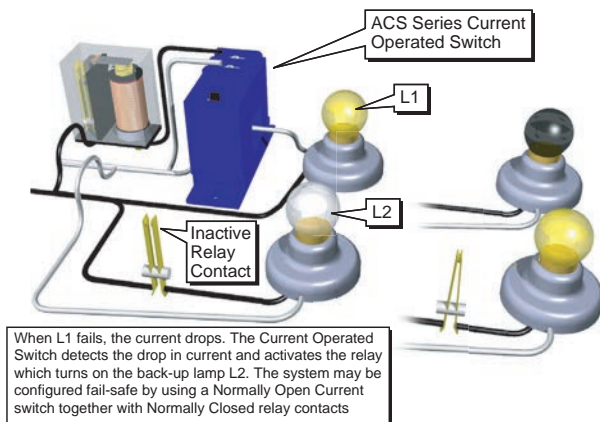
Crusher/Grinder/Shredder Motor Interlocks

The performance of size reduction equipment like crushers or grinders can be optimized by controlling the in-feed in order to:

- Help prevent jamming
- Improve the uniformity of the resultant product
- Enhance overall production efficiency



Lamp Failure Detection



Electric Motor Load Status

