

# 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
<a href="#">ACTR005-42L-F</a>	AcuAMP AC current transducer, 1-phase, fixed core, 0-2 or 0-5A selectable sensing range, True RMS, 4-20mA output.	1	0.30	\$193.00
<a href="#">ACTR005-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-2 or 0-5A selectable sensing range, True RMS, 4-20mA output.	1	0.36	\$221.00
<a href="#">ACTR050-42L-F</a>	AcuAMP AC current transducer, 1-phase, fixed core, 0-10, 0-20, or 0-50A selectable sensing range, True RMS, 4-20mA output.	1	0.30	\$178.00
<a href="#">ACTR050-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-10, 0-20, or 0-50A selectable sensing range, True RMS, 4-20mA output.	1	0.36	\$223.00
<a href="#">ACTR200-42L-F</a>	AcuAMP AC current transducer, 1-phase, fixed core, 0-100, 0-150, or 0-200A selectable sensing range, True RMS, 4-20mA output.	1	0.30	\$180.00
<a href="#">ACTR200-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-100, 0-150, or 0-200A selectable sensing range, True RMS, 4-20mA output.	1	0.36	\$227.00
<a href="#">ACTR400-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-400A sensing range, True RMS, 4-20mA output.	1	1.22	\$308.00
<a href="#">ACTR500-42L-S</a>	AcuAMP AC current transducer, flexible split core, 0-500A sensing range, True RMS, 4-20mA output.	1	0.60	\$417.00
<a href="#">ACTR600-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-600A sensing range, True RMS, 4-20mA output.	1	1.37	\$308.00
<a href="#">ACTR750-42L-F</a>	AcuAMP AC current transducer, 1-phase, fixed core, 0-375, 0-500, or 0-750A selectable sensing range, True RMS, 4-20mA output.	1	2.00	\$292.00
<a href="#">ACTR800-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-800A sensing range, True RMS, 4-20mA output.	1	1.38	\$308.00
<a href="#">ACTR1000-42L-S</a>	AcuAMP AC current transducer, flexible split core, 0-1000A sensing range, True RMS, 4-20mA output.	1	0.60	\$454.00
<a href="#">ACTR1200-42L-S</a>	AcuAMP AC current transducer, 1-phase, split core, 0-1200A sensing range, True RMS, 4-20mA output.	1	2.61	\$382.00
<a href="#">ACTR2000-42L-F</a>	AcuAMP AC current transducer, 1-phase, fixed core, 0-1000, 0-1333, or 0-2000A selectable sensing range, True RMS, 4-20mA output.	1	2.00	\$380.00
<a href="#">ACTR2000-42L-S</a>	AcuAMP AC current transducer, flexible split core, 0-2000A sensing range, True RMS, 4-20mA output.	1	0.60	\$454.00
Accessories				
<a href="#">DRA-2B</a>	35mm DIN rail adapters, 1.70"x0.45"x0.83" [43.7x11.4x21.0 mm]	2	0.40	\$6.00

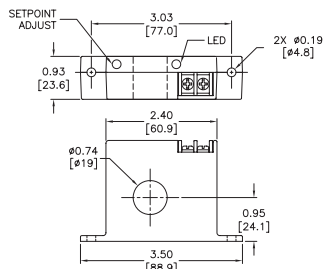
Sensed Current Limits				
Model	Range	Amps		
		Continuous	6 Sec	1 Sec
ACTR005	0 to 2A	80	125	250
	0 to 5A	100	125	250
ACTR050	0 to 10A	80	125	250
	0 to 20A	110	150	300
	0 to 50A	175	215	400
ACTR200	0 to 100A	200	300	600
	0 to 150A	300	450	800
	0 to 200A	400	500	1000
ACTR400	0 to 400A	1600	1920	6400
ACTR500	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

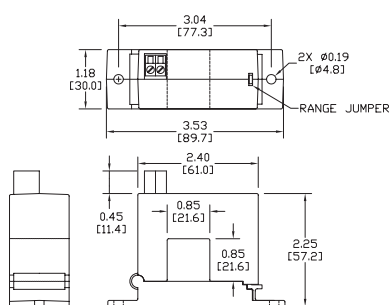
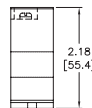
ACTR Series Specifications				
Specifications	-42L- Models up to 200 Amp	-42L-F Models 750 & 2000 Amp	-42L-S Models 500, 1000, 2000 Amp	-42L- Models 400, 600, 800, 1200A
<b>Power Supply</b>	24VDC nominal, (12 to 40 VDC max) loop powered	24VDC nominal, (12 to 40 VDC max) loop powered	24VDC Nominal, 22-36 Volts Use Class 2 power supply or limited power supply only	24VDC nominal, 12 to 32VDC max
<b>Output Signal</b>	4 -20 mA, loop powered, True RMS			
<b>Output Limit</b>	112% of standard output range maximum			
<b>Output Impedance</b>	600Ω @ 24VDC		500Ω maximum	600Ω @ 24VDC
<b>Accuracy</b>	1.0% FS (10-100% of range)			
<b>Response Time</b>	600ms			
<b>Sensing Range</b>	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
<b>Sensing Aperture</b>	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]
<b>Isolation Voltage</b>	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
<b>Frequency Range</b>	10 to 400 Hz		40 to 400 Hz	20 to 400 Hz
<b>Case</b>	UL 94 V-0 flammability rated thermoplastic			
<b>Mounting</b>	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
<b>Environmental</b>	Operating Temperature: -4 to 122°F [-20 to 50°C]			
	Relative Humidity: 0-95% RH, Non-condensing			
	Pollution Degree 2			
	Altitude to 2000 meters			
<b>Certifications</b>	cULus listed (E222847), CE		cULus listed (E197592), CE	

## Dimensions

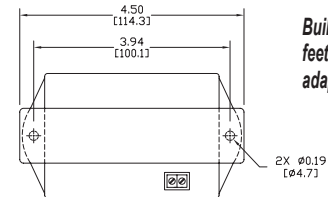
Inches [mm]



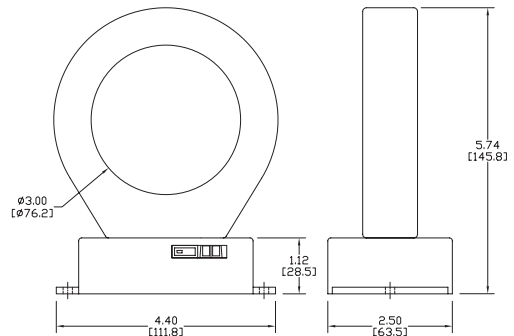
ACTR Series, Up to 200 Amp Fixed Core



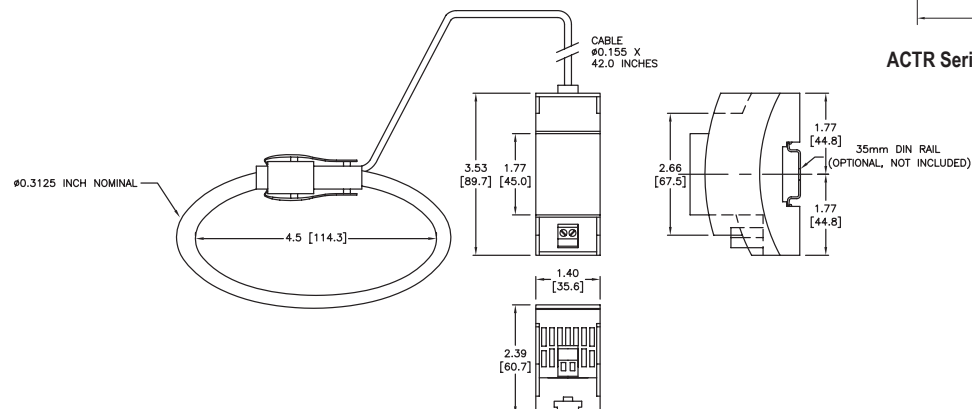
ACTR Series, Up to 200 Amp Split Core



Built-in mounting feet or 35mm DIN rail adapter



ACTR Series, 750 &amp; 2000 Amp Fixed Core Large Aperture



ACTR Series 500, 1000 &amp; 2000 Amp Base &amp; Flexible Split Core Loops

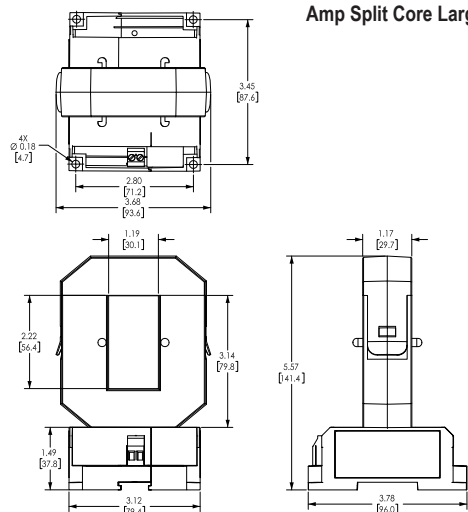
See our website [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete Engineering drawings.

# ACUAMP® ACTR Series AC Current Transducers

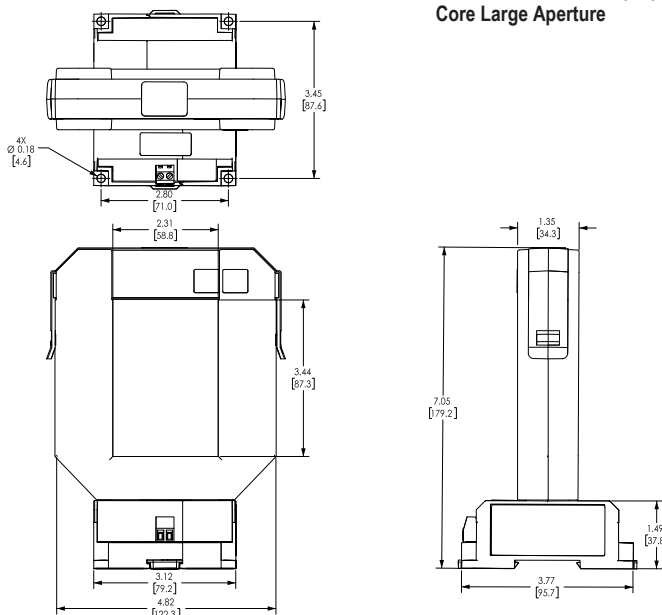
## Dimensions

Inches [mm]

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

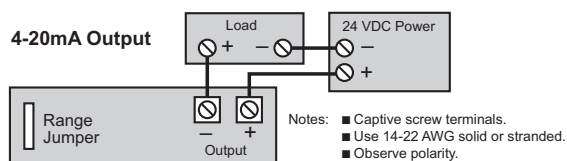


**ACTR Series, 1200 Amp Split  
Core Large Aperture**

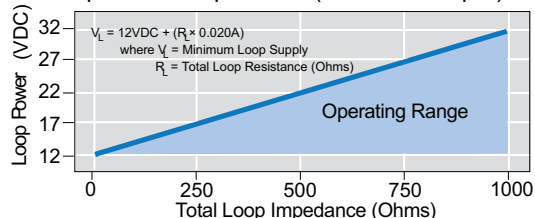


## Wiring

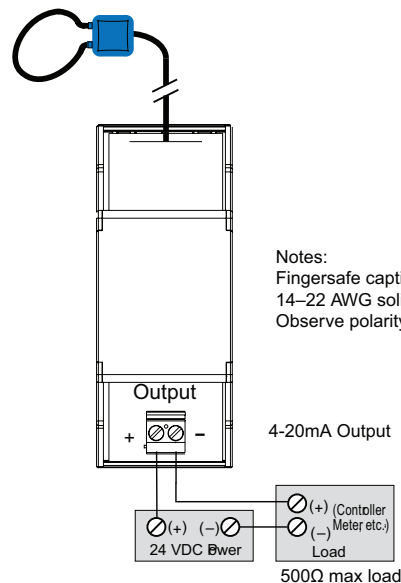
**ACTR Series, Up to 200 Amp**



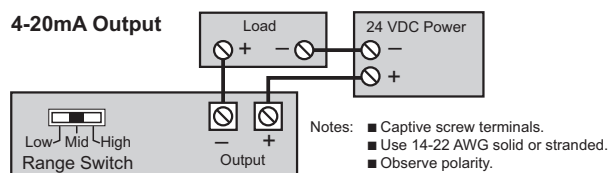
**Output Load Impedance (4–20 mA output)**



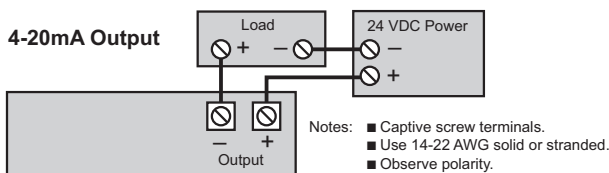
**ACTR Series, Flexible Split Core 500, 1000 & 2000  
Amp**



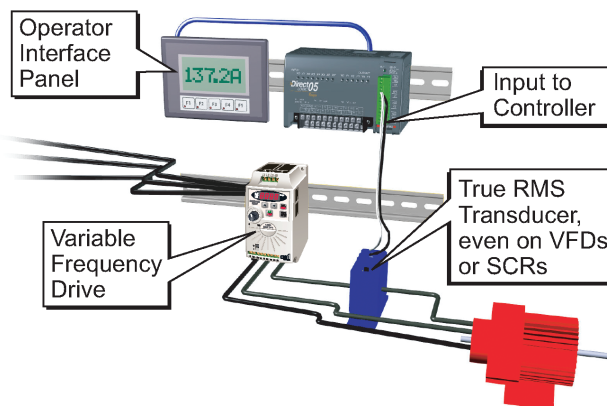
**ACTR Series, 750 & 2000 Amp**



**ACTR Series, 400, 600, 800, 1200 Amp**



## Application Example





# 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.



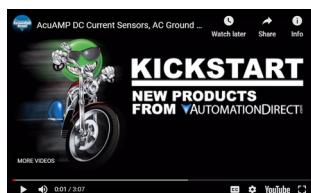
# AC Current Switches, Transducers and Indicators

AcuAMP AC Current Switch Selection Guide								
Specifications	AC Current Switches							
Series	ACSN100	ACSN250	ACS150	ACSL	ACS200	ACS050/ACS200	ACS035/ACS400	ACSX
<b>Sensing Range</b>	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
<b>Setpoint (Trip Point)</b>	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
<b>Output</b>	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
<b>Frequency Range</b>	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
<b>Response Time</b>	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
<b>Sensing Aperture</b>	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 Indicators

AcuAMP AC Current Transducer/Switch and Indicator Selection Guide			
Specifications	AC Current Transducer	AC Current Transducer/Switch	Indicator
Series	ACTH	ACTS	ACL1
<b>Sensing Range</b>	0 to 50A	1 to 200A	0 to 100A
<b>Setpoint (Trip Point)</b>	Not Applicable	Adjustable: (Single turn potentiometer):  ACTS050: 1-50A  ACTS200: 4-200A	Non-adjustable: 0.5 A
<b>Output</b>	4 -20 mA, loop-powered adaptive True RMS	4-20mA analog output and isolated solid state: Normally Open  1A @ 240VAC	LED Only (flashing, red)
<b>Frequency Range</b>	40 to 400 Hz	40 to 400 Hz	50 to 400 Hz
<b>Response Time</b>	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
<b>Sensing Aperture</b>	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





# AC Current Sensors, Switches and Transducers Application Guide

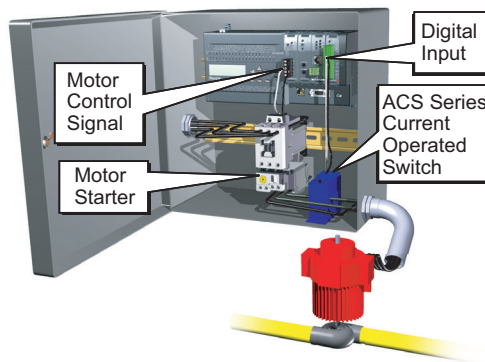
## Application Guide

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

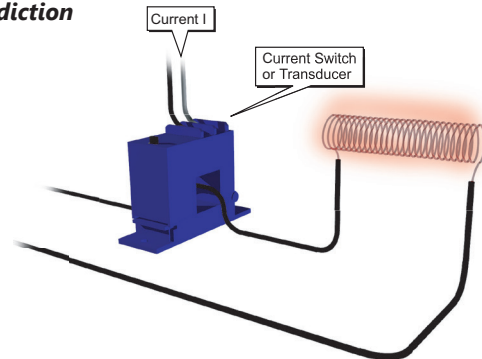
valuable data for processes ranging from monitoring loads to preventive maintenance. Models with the ability to read True RMS non-sinusoidal waveforms make it easy to monitor applications using variable frequency drives.

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

### Pump Jam & Suction Loss Protection



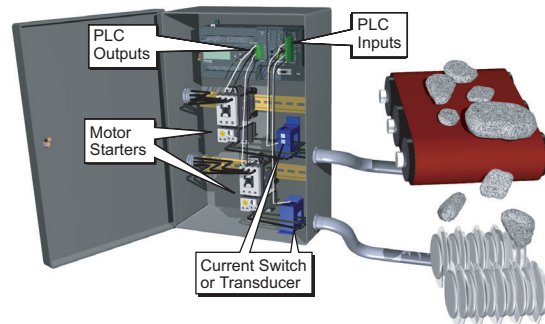
### Heater Life Prediction



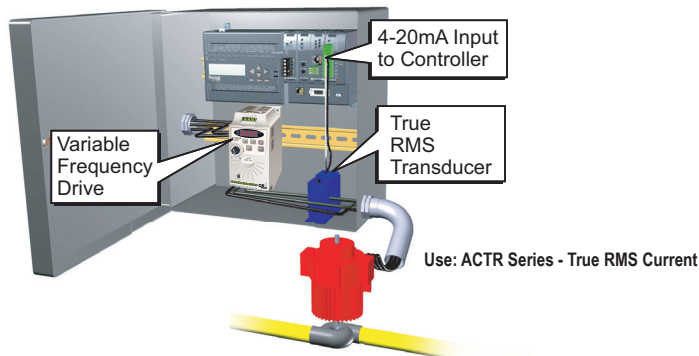
### Crusher/Grinder/Shredder Motor Interlocks

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

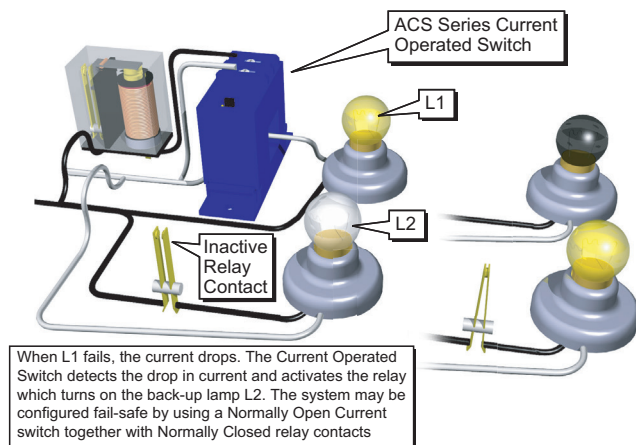
- Help prevent jamming
- Improve the uniformity of the resultant product
- Enhance overall production efficiency



### Pump Load Monitoring



### Lamp Failure Detection



### Electric Motor Load Status

