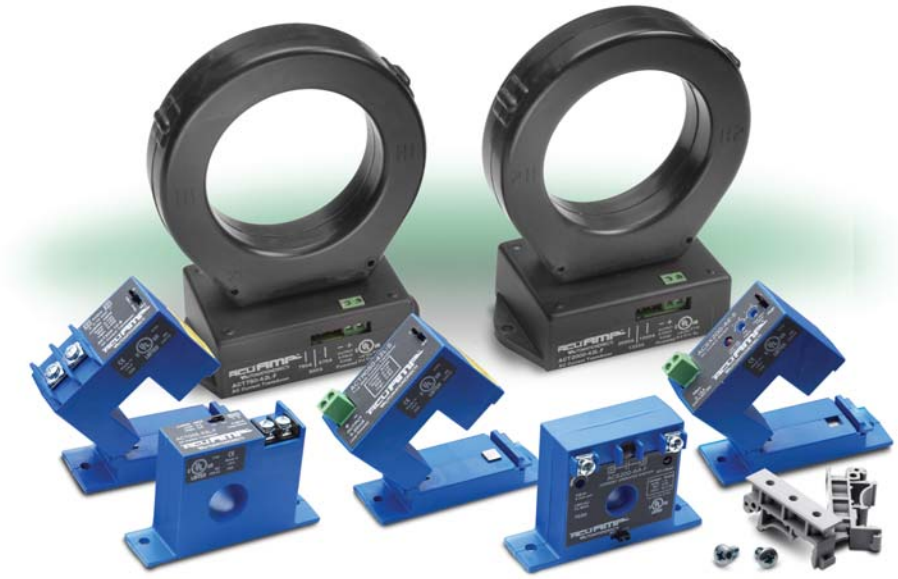
# ACUAMP Switches and Transducers

## Overview

The ACUAMP series 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 Transducer and Current Switch models, all designed in a rugged industry standard feed-through package, consisting of both fixed core and split core models. Each model has multiple input ranges (set by movable jumpers) for maximum flexibility across many current ratings. The current transducer output choices include 4 to 20mA, 24 VDC loop-powered and 0 to 10 volt self-powered analog outputs. The Current Switch outputs are isolated solid state switches and are available in Normally Open configurations. A unit featuring field adjustable time delay is also offered in the Current Switch series . All models are panel-mountable as standard, and convenient DIN-rail adapter accessories are available. Use the selection guide to find the best sensor module for your requirements.



**ACUAMP Specifications by Model Type**

| Specifications | Transducer | Transducer with True RMS | Switch | Switch | Switch |
|---|---|---|---|---|---|
| **Model** | **ACT** | **ACTR** | **ACS150** | **ACS200** | **ACSX** |
| **Input Range** | Jumper selectable:<br>ACT005: 0 to 2 A<br>0 to 5 A<br>ACT050: 0 to 10 A<br>0 to 20 A<br>0 to 50 A<br>ACT200: 0 to 100 A<br>0 to 150 A<br>0 to 200 A<br>ACT750: 0 to 375 A<br>0 to 500 A<br>0 to 750 A<br>ACT2000: 0 to 1000 A<br>0 to 1333 A<br>0 to 2000 A | Jumper selectable:<br>ACTR005: 0 to 2 A<br>0 to 5 A<br>ACTR050: 0 to 10 A<br>0 to 20 A<br>0 to 50 A<br>ACTR200: 0 to 100 A<br>0 to 150 A<br>0 to 200 A<br>ACTR750: 0 to 375 A<br>0 to 500 A<br>0 to 750 A<br>ACTR2000: 0 to 1000 A<br>0 to 1333 A<br>0 to 2000 A | Normally Open:<br>-F core: 1 to 150 A<br>-S core: 1.75 to 150 A<br><br>Normally Closed:<br>-F core: 1 to 150 A<br>-S core: 1.75 to 150 A | Jumper Selectable:<br>Normally Open:<br>-F core: 1 to 6 A<br>6 to 40 A<br>40 to 175 A<br>-S core: 1.75 to 6 A<br>6 to 40 A<br>40 to 200 A<br>Normally Closed:<br>-F core: 1 to 6 A<br>6 to 40 A<br>40 to 175 A<br>-S core: 1.75 to 6 A<br>6 to 40 A<br>40 to 200 A | Jumper Selectable:<br>Normally Open:<br>-F core: 1.5 to 12 A<br>12 to 55 A<br>55 to 175 A<br>-S core: 2 to 12 A<br>12 to 55 A<br>50 to 200 A<br>Normally Closed:<br>-F core: 1.5 to 12 A<br>12 to 55 A<br>55 to 175 A<br>-S core: 1.5 to 12 A<br>12 to 55 A<br>50 to 200 A |
| **Output Range** | -10 models: 0 - 10 VDC<br>-42L models: 4 - 20 mA, loop-powered | 4 - 20 mA,<br>loop-powered true RMS | Normally Open:<br>0.15 A @ 240 VAC or VDC<br><br>Normally Closed:<br>0.2 A @ 135 VAC or VDC | Normally Open/Normally Closed AC model:<br>1A @ 240 VAC<br>Normally Open/Normally Closed DC model:<br>0.15A @ 30 VDC | Normally Open/Normally Closed AC model:<br>1A @ 240 VAC<br>Normally Open/Normally Closed DC model:<br>0.2 A @ 135 VAC/VDC |
| **Frequency Range** | -10 models: 50 to 60 Hz sinusoidal waveforms only<br>-42L models: 20 - 100 Hz | 10 to 400 Hz<br>non-sinusoidal waveforms | 6 to 100 Hz | 6 to 100 Hz | 50 to 100 Hz |
| **Response Time** | -10 models: 100 ms<br>-42L models: 300 ms | 600 ms | 120 ms | 40 to 120 ms | Field adjustable time delay:<br>0.12 to 15 seconds |
| **Sensing Aperture** | ACT005, ACT050, ACT200:<br>-F core: 0.75" (19mm) dia.<br>-S core: 0.85" (21.6mm) sq.<br>ACT750, ACT2000:<br>3.0" (76.2 mm) dia | ACTR005, ACTR050, ACTR200:<br>-F core: 0.75" (19mm) dia.<br>-S core: 0.85" (21.6mm) sq.<br>ACTR750, ACTR2000:<br>3.0" (76.2 mm) dia | -F core: 0.75" (19mm) dia.<br>-S core: 0.85" (21.7mm) sq. | -F core: 0.55" (13.97mm) dia.<br>-S core: 0.85" (21.7mm) sq.. | -F core: 0.75" (19mm) dia.<br>-S core: 0.85" (21.7mm) sq. |

# ACUAMP™ ACTR Series Current Transducers

## Why use ACTR transducers?

The current waveform of a typical linear load is a pure sine wave. In VFD and SCR applications, however, output waveforms are rough approximations of a sine wave, and are non-sinusoidal.

There are numerous spikes and dips in each cycle. 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 nonlinear 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 or burst fired (time proportioned) 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

- Five-year Warranty
- 4-20 mA output only
- True RMS technology is accurate on distorted waveforms like VFD or SCR outputs
- Choice of jumper-selectable ranges reduces inventory and eliminates zero and span pots.
- Output is magnetically isolated from the input for safety and eliminates voltage drop

### Agency Approvals

UL, cUL, CE approvals accepted worldwide

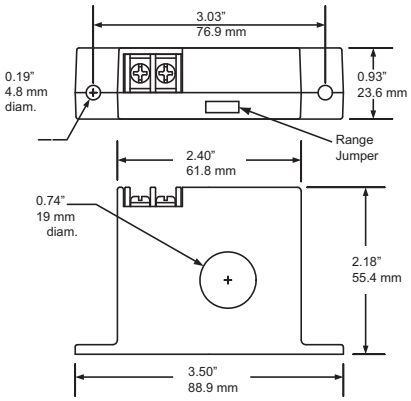
| ACTR Series Current Transducers | | | | |
|---|---|---|---|---|
| **Part Number** | **Description** | **Pcs/Pkg** | **Wt (lb)** | **Price** |
| **ACTR005-42L-F** | AC current transducer with true RMS, 4-20mA output, fixed core | 1 | 0.30 | <---> |
| **ACTR005-42L-S** | AC current transducer with true RMS, 4-20mA output, split core | 1 | 0.36 | <---> |
| **ACTR050-42L-F** | AC current transducer with true RMS, 4-20mA output, fixed core | 1 | 0.30 | <---> |
| **ACTR050-42L-S** | AC current transducer with true RMS, 4-20mA output, split core | 1 | 0.36 | <---> |
| **ACTR200-42L-F** | AC current transducer with true RMS, 4-20mA output, fixed core | 1 | 0.30 | <---> |
| **ACTR200-42L-S** | AC current transducer with true RMS, 4-20mA output, split core | 1 | 0.36 | <---> |
| **ACTR750-42L-F** | AC current transducer with true RMS, 4-20mA output, fixed core | 1 | 2.00 | <---> |
| **ACTR-2000-42L-F** | AC current transducer with true RMS, 4-20mA output, fixed core | 1 | 2.00 | <---> |
| **Accessories** | | | | |
| **DRA-2** | DIN rail adapters, 1.69"x0.39"x0.75" (43x10x19 mm) | 2 | 0.40 | <---> |

| Maximum Input Ranges | | | | |
|---|---|---|---|---|
| **Model** | **Range** | **Maximum Input 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 |
| ACTR750 | 0 to 375A | 750 | 1500 | 3750 |
| | 0 to 500A | 750 | | |
| | 0 to 750A | 750 | | |
| ACTR2000 | 0 to 1000A | 2000 | 4000 | 10 k |
| | 0 to 1333A | 2000 | | |
| | 0 to 2000A | 2000 | | |

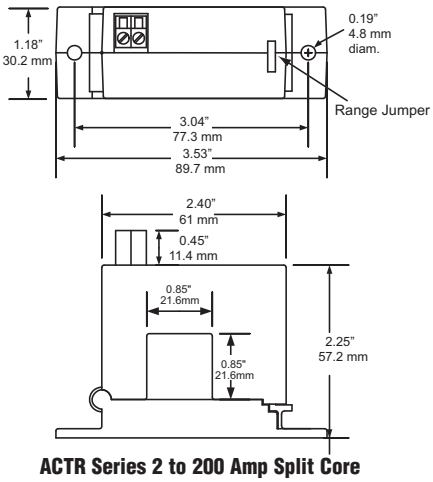
| ACTR Series Specifications | | | |
|---|---|---|---|
| | | **-42L Models up to 200 A** | **-42L Models 200 to 2000A** |
| **Power Supply** | | 24 VDC nominal, (12 to 40 VDC) Loop-powered | 24 VDC nominal, (40 VDC max) Loop-powered |
| **Output Signal** | | 4 -20 mA, loop-powered, true RMS | |
| **Output Limit** | | 23 mA | |
| **Accuracy** | | 1% full scale, true RMS | |
| **Response Time** (10-90% step change) | | 600 ms | |
| **Input Ranges** | | Field selectable from 0 to 200 A | Field selectable from 200 to 2000 A |
| **Sensing Aperture** | | **-F core:** 0.74" (19 mm) dia. **-S core:** 0.85" (21.6 mm) sq. | 3.0" (76.2 mm) dia. |
| **Isolation Voltage** | | UL listed to 1,270VAC. Tested to 5,000 VAC (1 min. max) | UL listed to 600 VAC. |
| **Frequency Range** | | 10 to 400 Hz | |
| **Case** | | UL 94 V-0 flammability rated | |
| **Environmental** | **Temperature** | –4 to 122°F (–20 to 50°C) | |
| | **Humidity** | 0 to 95% RH, non-condensing | |
| **Agency Listings** | | UL listed 508, UL file E222847, CE approved | |

# ACTR Series Current Transducers

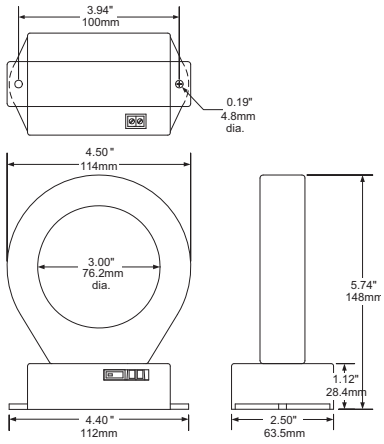
## Dimensions (in/mm)




**ACTR Series 2 to 200 Amp Fixed Core**

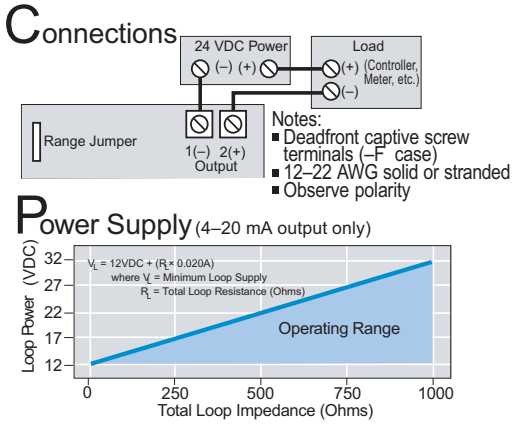



**ACTR Series 2 to 200 Amp Split Core**

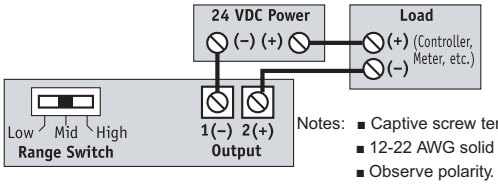



**ACTR Series 200 to 2000 Amp Fixed Core**

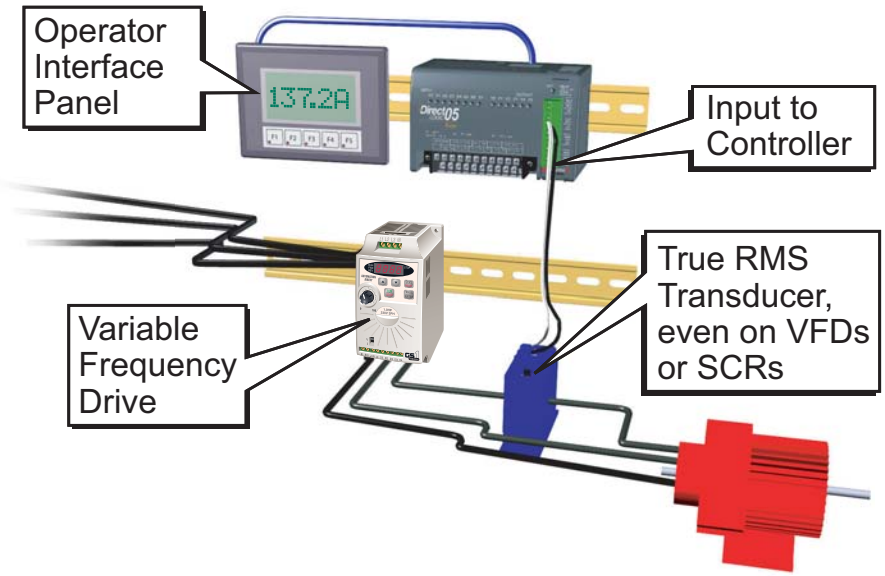
## Connections
## ACTR Series 0 to 200 A




## Connections
## ACTR Series 200 to 2000 A




Notes:
- Captive screw terminals.
- 12-22 AWG solid or stranded.
- Observe polarity.

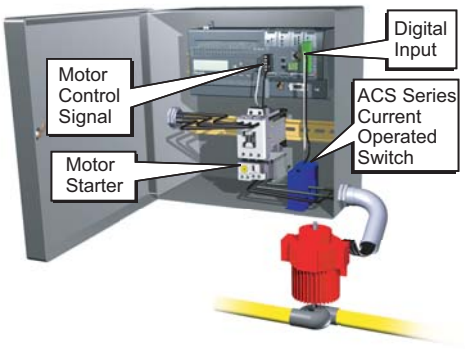


# ACUAMP Switches and Transducers Application Guide

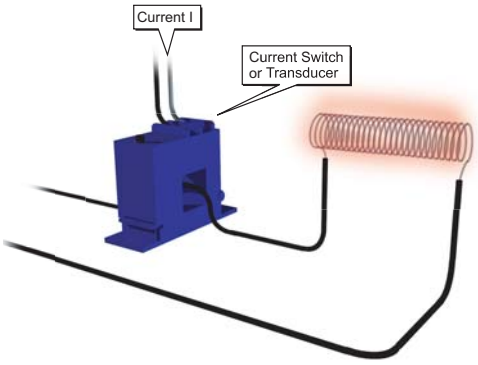
## Application Guide

ACUAMP Current Sensors are a great fit for many applications, including material handling, fan and pump applications, and heating systems. With two basic models, Current Transducers and Current Switches, this sensor family is a great fit for almost any current sensor need, ranging from monitoring loads to preventive maintenance. Models with the ability to read True RMS non-sinusoidal waveforms make it easy to monitor applications containing variable frequency drives. Use the application examples to help choose the best sensor model for your application.

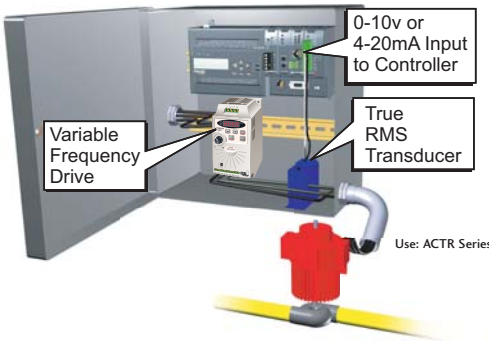
### *Pump Jam & Suction Loss Protection*




### *Heater Life Prediction*



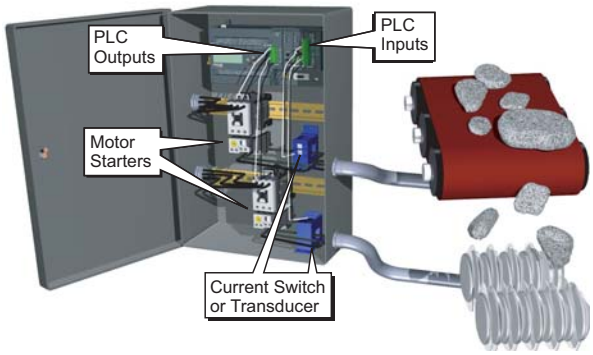

### *Pump Load Monitoring*



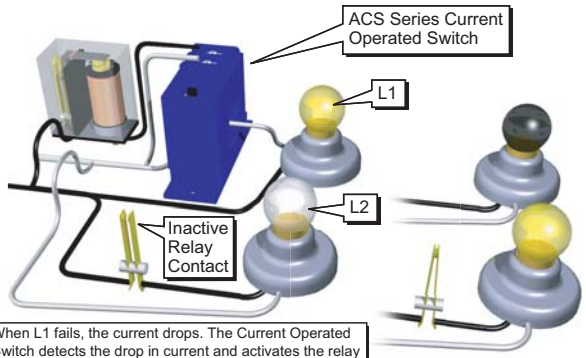

Use: ACTR Series - True RMS Current

### *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*




When L1 fails, the current drops. The Current Operated Switch detects the drop in current and activates the relay which turns on the back-up lamp L2. The system may be configured fail-safe by using a Normally Open Current switch together with Normally Closed relay contacts