ACS035/ACS400 Series AC Current Switches

Applications

Electronic Proof of Operation
- Current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electromechanical pressure or flow switches.

Conveyors
- Detect jams and overloads.
- Interlocks with safety equipment.

Pump Control
- Output contact is adjusted so it is closed during normal operation, opening if the pump runs dry or there is a loss of head pressure for any reason.

Cooling Towers
- Monitor for overcurrent conditions caused by open duct access doors or undercurrent from a broken drive belt or coupling.

Features

- Two Electromechanical Relay Outputs
- Access to both the N.O. and N.C. contacts at independent setpoints.
- Because relay outputs are floating they can be wired in parallel or in series for a two-wire over/under switch.
- Easily Adjustable and Precise Setpoint
- Single turn potentiometer: point the arrow at the current value where you need the output to change
- Improves the safety by allowing the trip point adjustment with no setpoint power through the sensing window.
- Fixed core Case
- Sensing window provides ample space for bus bar, single or multiple conductors.
- Snap onto DIN rail using integral mounting clips or attach with screws to a panel for secure mounting.
- Five-year warranty

The ACS035/ACS400 Series Current Sensing Switches allow two separate trip points to detect overcurrent and undercurrent conditions. The sensor outputs are dual, single-pole, double-throw relays, so they can control either AC or DC circuits and provide an alarm if the monitored circuit draws too little or too much current. One sensor means less installation time and less panel space required. The Status LEDs indicate if the monitored circuit current is under or over each of the trip points.

ACS035/ACS400 Series AC Current Switches

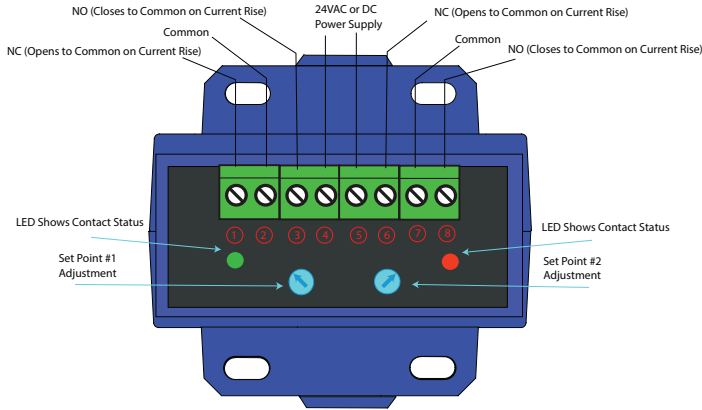| Part Number	Description	Pcs/Pkg	Wt (lb)	Price
ACS035-2C-24-F	AcuAMP AC current switch, fixed core, 2-35A sensing range, (2) 2-35A adjustable trip point, (2) single-turn potentiometers, (2) SPDT relays output, 1A @ 120 VAC, 2A @ 30 VDC output rating.	1	0.8	
ACS400-2C-24-F	AcuAMP AC current switch, fixed core, 25-400A sensing range, (2) 25-400A adjustable trip point, (2) single-turn potentiometers, (2) SPDT relays output, 1A @ 120 VAC, 2A @ 30 VDC output rating.	1	0.8	

Specifications

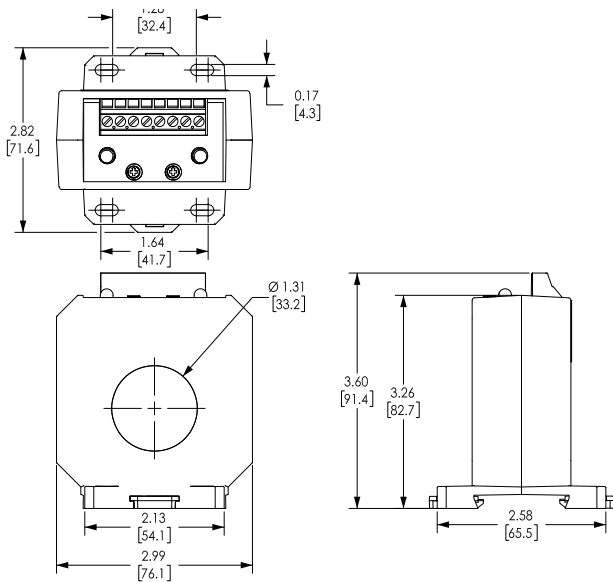|	
Power Supply	24VAC/DC (+/- 8.3%)
Power Consumption	< 2VA
Output	(2) Independent Single Pole, Double Throw mechanical Relays
Contact Rating	1A @ 120VAC, 2A 30VDC
Response Time	40 - 120ms
Hysteresis	4% of setpoint
Setpoint Ranges	2-35 Amps (ACS035) 25-400 Amps (ACS400)
Setpoint Adjust	Two 3/4-turn potentiometers
Sensed Current Limit	1.1x range continuous 3x range for 6 seconds 5x range for 1 second
Isolation Voltage	UL508, UL tested to 1240VAC
Frequency Range	40-65 Hz
Sensing Aperture	1.31 in (33.3 mm) dia.
Environmental	-Temp -4 to 122°F (-20 to 50°C) -Humidity 0-95% RH, Non-condensing -Pollution degree 2 -Altitude 2000 meters
Case	UL 94V-0 Flammability rated thermoplastic
Certifications	cULus listed E222847 CE

ACUAMP ACS035/ACS400 Series AC Current Switches

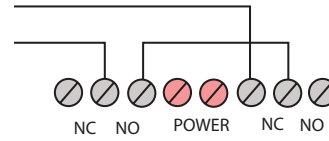## Wiring

ACS035/ACS400 Series

NO (Closes to Common on Current Rise)
Common
NC (Opens to Common on Current Rise)
24VAC or DC Power Supply
NC (Opens to Common on Current Rise)
Common
NO (Closes to Common on Current Rise)

LED Shows Contact Status
Set Point #1 Adjustment
LED Shows Contact Status
Set Point #2 Adjustment

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Dimensions
Inches [mm]

1.28 [32.4]
0.17 [4.3]
2.82 [71.6]
1.64 [41.7]
Ø 1.31 [33.2]
3.60 [91.4]   3.26 [82.7]
2.13 [54.1]
2.99 [76.1]
2.58 [65.5]

See our website _____ for complete Engineering drawings.
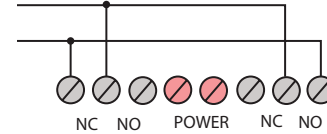
Application Examples

Series Over/Under Current Window (AND wiring) Example
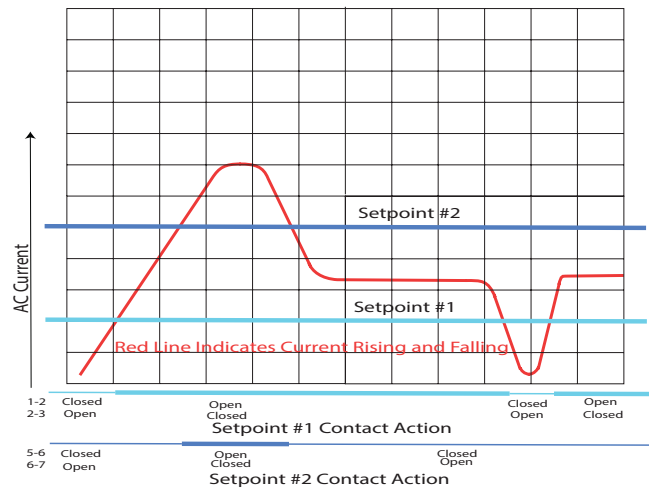
NC   NO   POWER   NC   NO

Closed at Normal
Open at Low Current

Closed at Normal
Open at High Current

Control circuit is open at either over or under normal current conditions.

Parallel Connection Current Alarm (OR wiring) Example

NC   NO   POWER   NC   NO

Open at Normal
Closed at Low Current

Open at Normal
Closed at High Current

Control circuit is closed at either over or under current conditions.

AC Current

Setpoint #2

Setpoint #1

Red Line Indicates Current Rising and Falling

| 1-2 | Closed | Open | Closed | Open |
| 2-3 | Open | Closed | Open | Closed |

Setpoint #1 Contact Action

| 5-6 | Closed | Open | Closed | |
| 6-7 | Open | Closed | Open | |

Setpoint #2 Contact Action

AC Current Switches, Transducers and Indicators

°**AcuAMP**®

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.

AcuAMP AC Current Switches, Transducers and Indicators

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 Indicators

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:///VID-CT-0001 for a short introductory video on the AcuAmp Current Switches, Transducers and Indicators

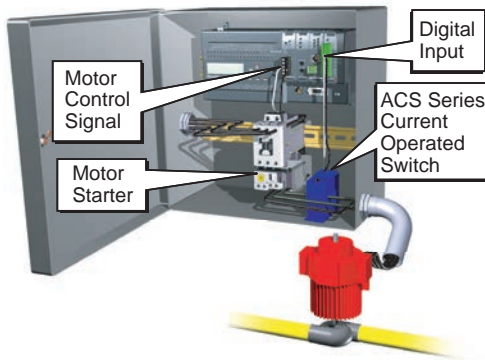# AC Current Sensors, Switches and Transducers Application Guide

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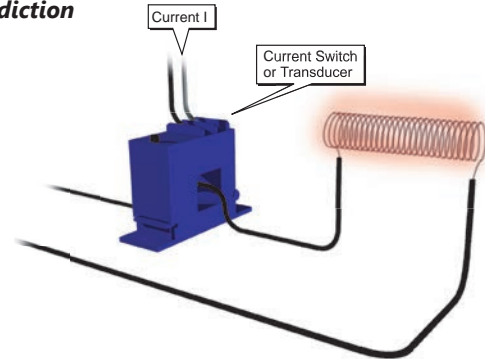s, this sensor family gives you valuable data for processes ranging from monitoring loads to preventive maintenance. Models with the ability to read True RMS non-sinusoidal waveforms make it easy to monitor applications using variable frequency drives.

Use the application examples to help choose the best sensor model for your application.
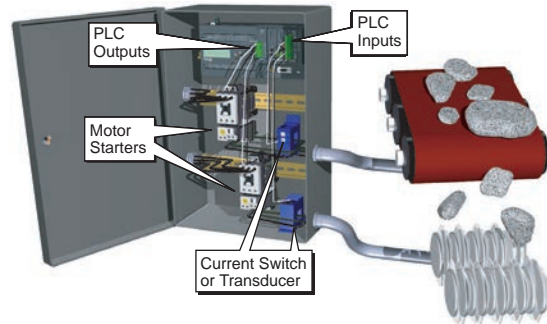
Pump Jam & Suction Loss Protection

Digital Input

Motor Control Signal

ACS Series Current Operated Switch

Motor Starter

Pump Load Monitoring

4-20mA Input to Controller

Variable Frequency Drive

True RMS Transducer

Use: ACTR Series - True RMS Current

Lamp Failure Detection

ACS Series Current Operated Switch

L1

L2

Inactive Relay Contact

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

Heater Life Prediction

Current I
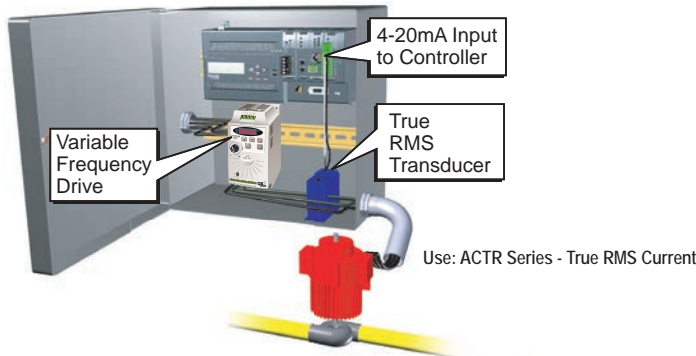
Current Switch or Transducer

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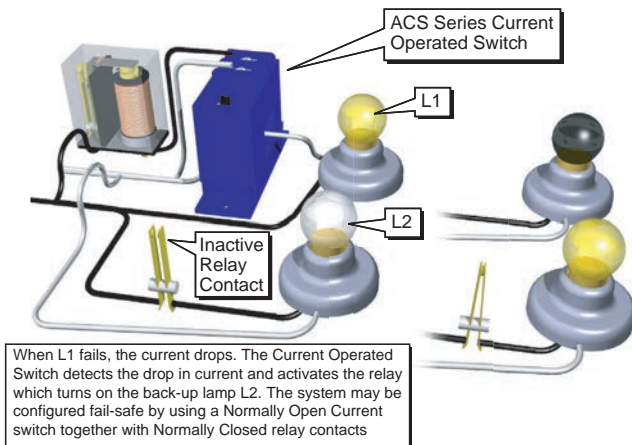
• Help prevent jamming
• Improve the uniformity of the resultant product
• Enhance overall production efficiency

PLC Outputs

PLC Inputs

Motor Starters

Current Switch or Transducer

Electric Motor Load Status

Digital Output

FAN ON

Motor Starter

ACL1 Current Indicator