

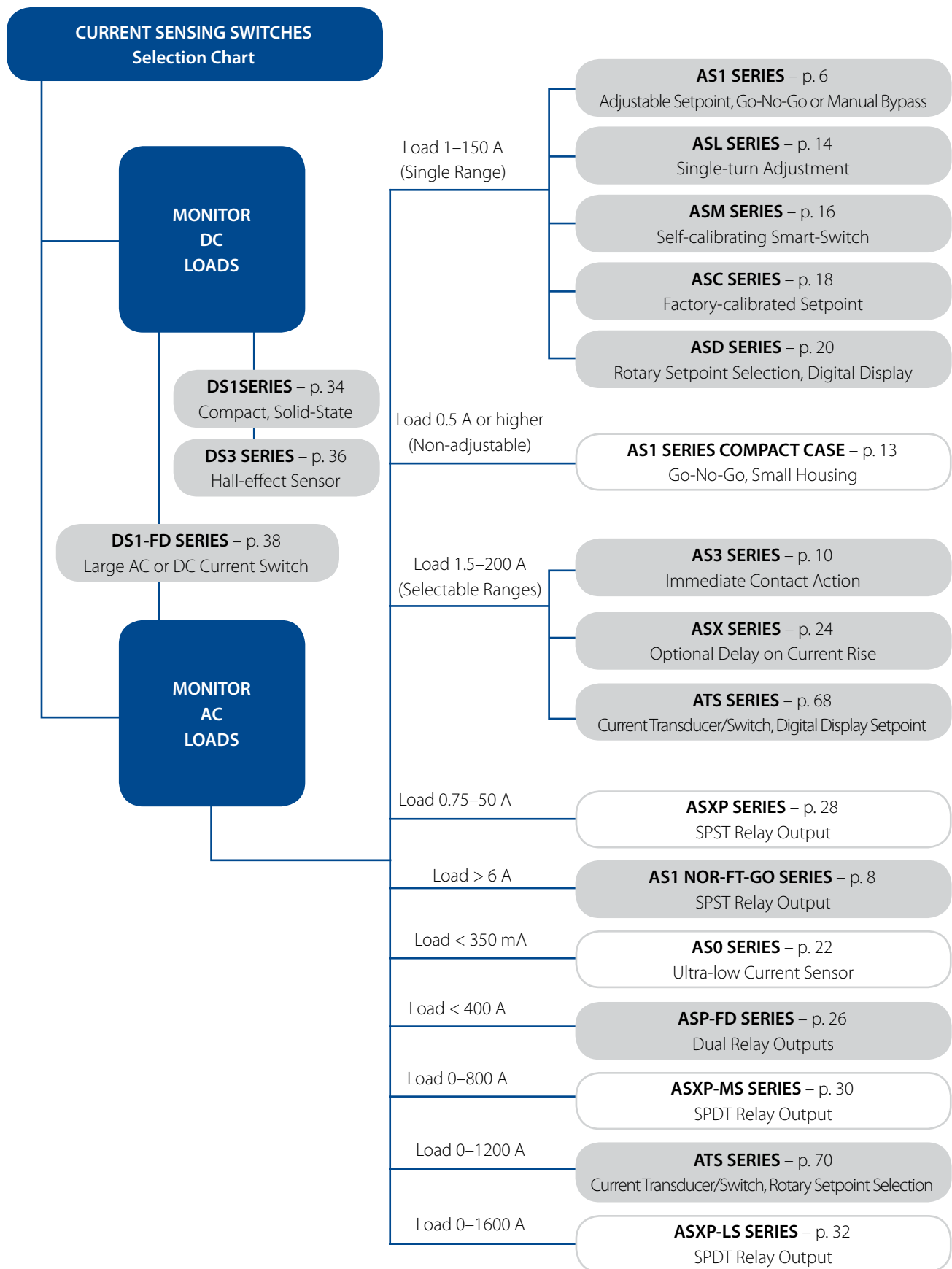
# Current Sensing Switches

*Ideal for off/on status, overload or underload indication, current sensing switches from NK Technologies combine a CT, signal conditioner and output contacts into a single package for use with industrial and factory automation equipment.*

## Features:

- Multiple output ranges
- Adjustable or fixed setpoints
- Models with integral time delay available
- Choice of N.O or N.C., AC or DC contacts
- Self-powered and split-core options

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# AS1 SERIES

## Current Sensing Switches

AS1 Series Current Sensing Switches combine a current transformer, signal conditioner and limit alarm into a single package for use in status monitoring or proof of operation applications. Offering an extended setpoint range of 1–150 A and universal, solid-state outputs, the self-powered AS1 can be tailored to provide accurate and dependable digital indication of overcurrent conditions across a broad range of applications. Available in solid-core case styles or in a split-core case to maximize ease of installation.



### Current Sensing Switch Applications

#### Electronic Proof of Flow

- Current sensing switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electromechanical pressure or flow switches.

#### Conveyors

- Detects jams and overloads.
- Interlocks multiple conveyor sections.

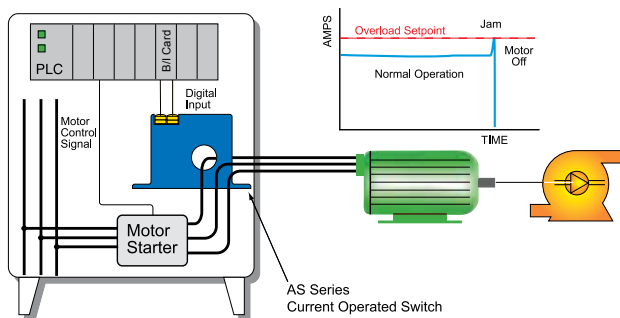
#### Lighting Circuits

- Proof positive that the lamp is energized.

#### Electrical Heaters

- Faster response than temperature sensors.

#### Pump Jam & Suction Loss Protection



For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

### Current Sensing Switch Features

#### Universal Output

- N.O. or N.C. solid-state switch for control circuits up to 240 VAC/DC.
- Compatible with most automation systems.

#### Self-powered

- Cuts installation and operating costs.

#### Easily Adjustable Setpoint

- Speeds startup.

#### Solid or Split-core Case

- Versions tailored for each installation.

#### LED Indication

- Provides quick visual indication of contact status.

#### Built-in Mounting Feet

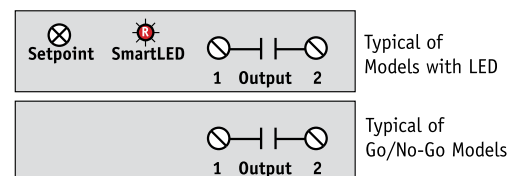
- Simple, two-screw panel mounting or attach with DIN rail brackets (ncluded).\*

#### UL/cUL and CE Approved

- Accepted worldwide.

\*For information on the DIN rail accessories kit, see page 140.

### Current Sensing Switch Connections



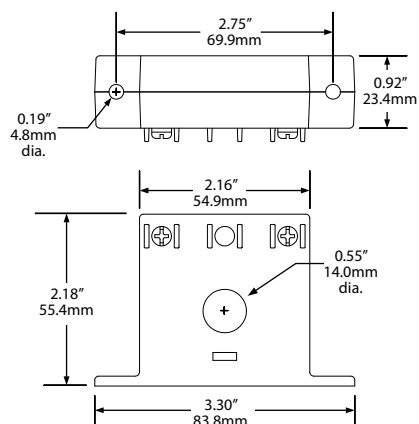
OEMs

#### Test & Evaluation Units for OEMs

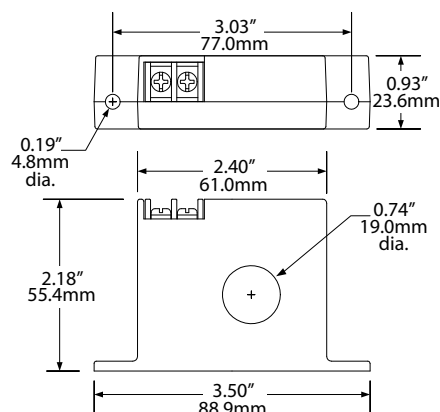
Free program expedites evaluation process. See page 3 for details.

## Current Sensing Switch Dimensions

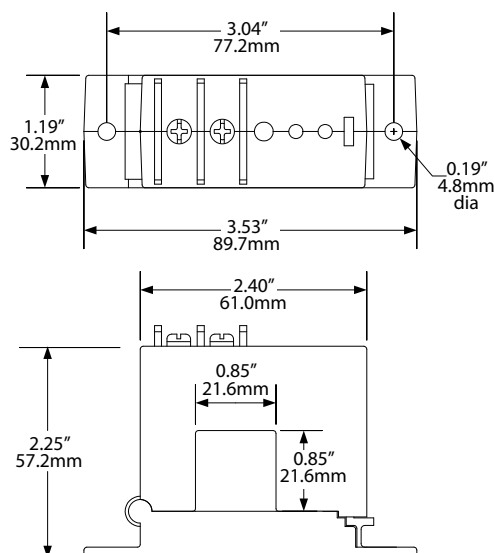
FF Case



FT Case



SP Case



## Current Sensing Switch Specifications



Power Supply	None, self-powered		
Setpoint Range	<ul style="list-style-type: none"><li>• Solid-core: 1–150 A (adjustable-specific models)</li><li>• Split-core: 1.75–150 A (adjustable-specific models)</li></ul>		
Output Description	Isolated solid-state relay		
Output Rating	<ul style="list-style-type: none"><li>• N.O. Version 0.15 A @ 240 VAC or VDC</li><li>• N.C. Version: 0.2 A @ 135 VAC or VDC</li><li>• Not polarity sensitive</li></ul>		
Off-state Leakage	<10 μA		
Response Time	120 ms max.		
Time Delay	None		
Hysteresis	5%		
Overload	MODEL	6 SEC.	1 SEC.
	• -GO (NOU)	• 500 A	• 1000 A
	• -GO (NCU)	• 400 A	• 1000 A
	• All other	• 400 A	• 1000 A
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV		
Frequency Range	6–100 Hz		
Case	UL94 V-0 Flammability Rated		
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing		
Listings	UL /cUL, CE		

## Current Sensing Switch Ordering Information

Sample Model Number: AS1-NOU-SP

Adjustable AC current sensing switch, normally open, split-core case.  
 (DIN rail adapters are included)

AS1 – (1) (2) (3)

## (1) Output Rating

NOU	Normally Open
NCU	Normally Closed

## (2) Case Style

FF	Solid-core, front terminal
FT	Solid-core, top terminal
SP	Split-core

## (3) Options

	Standard, with LED (blank)
GO	Non-adjustable; output changes with min. current present (solid-core 0.75 A, split-core 1.25 A)
NL	No LED
Y39	Output Bypass Switch (not UL listed) – available for FT case only

# AS1 NOR-FT-GO SERIES

## Current Sensing Switches

AS1 NOR-FT-Go Series Current Sensing Switches provide an electromechanical relay contact. The output of this specialized switch allows the sensor to control much more current than other AS1 models. This contact can control loads up to 5 A, AC or DC. Solid-state contacts generally have a much lower capacity, making this sensor much more versatile than most self-powered models. Available in a solid-core case only.



### Current Sensing Switch Applications

#### Electronic Proof of Flow

- Current sensing switches eliminate the need for multiple conduits or duct penetrations and are more reliable than electromechanical pressure or flow switches.

#### Compressor Monitoring

- Detect when the compressor is running.
- Allows for time of use logging; helps maintenance scheduling.

#### Heaters

- Sense system operation.

#### Fan Interlocks

- Sense system operation.
- Use to turn on a duct booster fan when clothes dryer is energized.

### Current Sensing Switch Features

#### Electromechanical Output

- N.O. mechanical output relay for detection of current; closes on current increase.

#### Fixed Setpoint

- Cuts installation and operating costs.

#### Self-powered

- Reduces installation time and costs.

#### Integral Mounting Feet

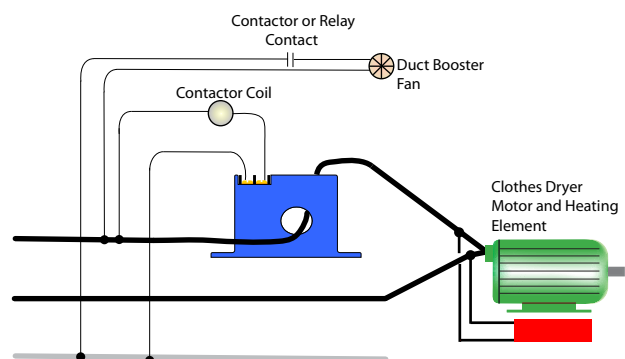
- Built-in feet for direct panel mounting or attachment of DIN rail compatible brackets.\*

#### UL/cUL and CE Approved

- Accepted worldwide.

\*For information on the DIN rail accessories kit, see page 140.

### Current Sensing Switch Monitoring a Fan Load



For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

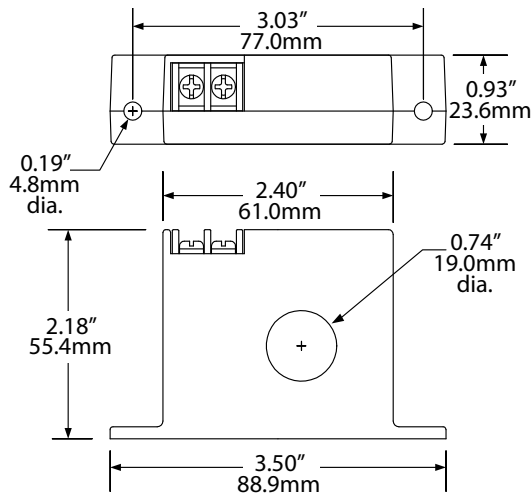
OEMs

Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.

Current Sensing Switch Dimensions

FT Case

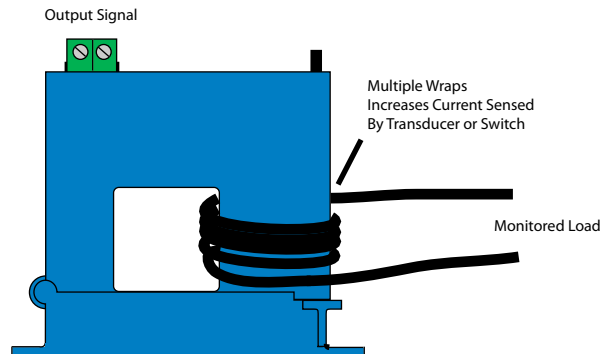
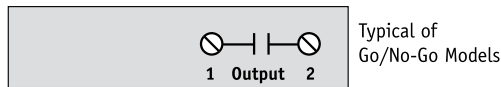


Current Sensing Switch Specifications



Power Supply	None, self-powered
Setpoint Range	Go/No-go 5.8 A (factory set)
Output Description	Electromechanical SPST relay
Output Rating	• 5 A @ 250 VAC • 5 A @ 30 VDC
Response Time	120 ms
Time Delay	None
Hysteresis	8%
Overload	6 sec. @ 400 A, 1 sec. @1000 A
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Frequency Range	6–100 Hz
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL

Current Sensing Switch Connections



Current Sensing Switch Ordering Information

Sample Model Number: AS1-NOR-FT-GO  
AC current operated switch, solid-core, non-adjustable trip point (5.8 A), self-powered, normally open relay contact output rated to 5 A. (DIN rail adapters are included)



(1) Output Rating	NOR Normally Open (mechanical)
(2) Case Style	FT Solid-core, top terminals
(3) Options	GO Go/no-go version (fixed-setpoint)



# AS3 SERIES

## Current Sensing Switches

AS3 Series Current Sensing Switches provide the same dependable indication of status offered by the AS1, but with the added benefit of increased setpoint accuracy. A choice of three, jumper-selectable input ranges allows the AS3 to be tailored to an application, providing more precise control through improved setpoint resolution. Self-powering, isolated solid-state outputs, 1–6 A, 6–40 A and 40–200 A input ranges, and a choice of split- or solid-core case are standard.

### Current Sensing Switch Applications

#### Electronic Proof of Flow

- No need for pipe or duct penetrations.
- More reliable than electromechanical pressure or flow switches.

#### Conveyors

- Detects jams and overloads.
- Interlocks multiple conveyor sections.

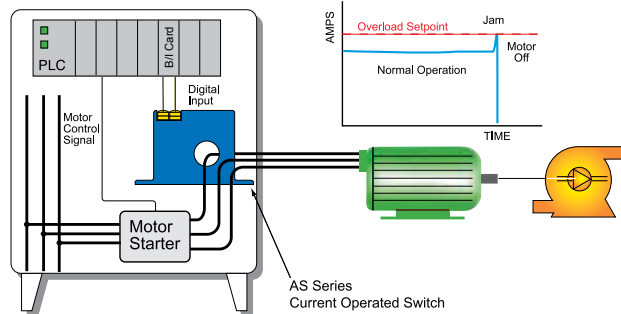
#### Lighting Circuits

- Easier to install and more accurate than photocells.

#### Electrical Heaters

- Faster response than temperature sensors.

### Pump Jam & Suction Loss Protection



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

OEMs

#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



### Current Sensing Switch Features

#### Choice of N.O. or N.C. Solid-state Outputs

- 1 A @ 240 VAC, 0.15 A @ 30 VDC.
- 15 A @ 120 VAC (-15 model).
- 3 A @ 120 VAC (-03 model).

#### Self-powered

- Cuts installation and operating costs.

#### Easily Adjustable Setpoint

- Speeds startup.

#### Solid- or Split-core Case

- Choose the appropriate version for each installation.

#### LED Indication

- Provides quick visual indication of contact status.

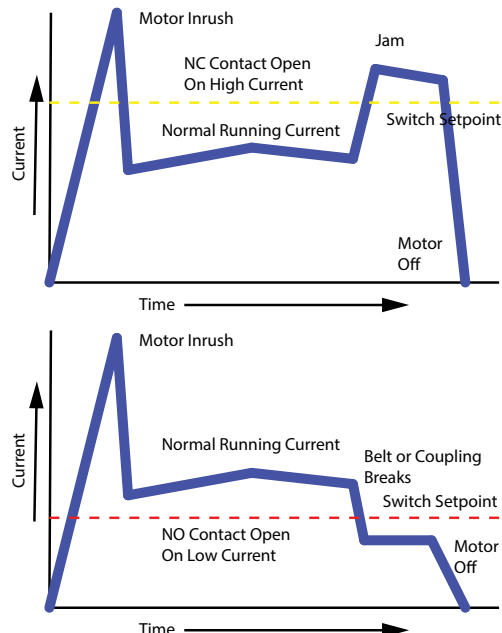
#### Built-in Mounting Feet

- Provides the secure installation inspectors require.

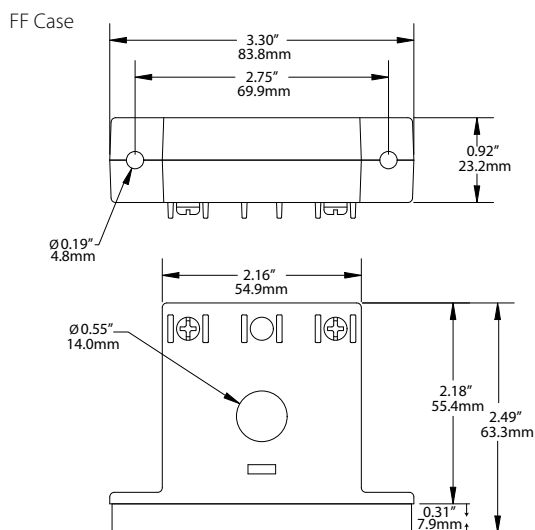
#### UL/cUL and CE Approved

- Accepted worldwide.

### AS1, AS3, ASX, ASXP Series Sample Output

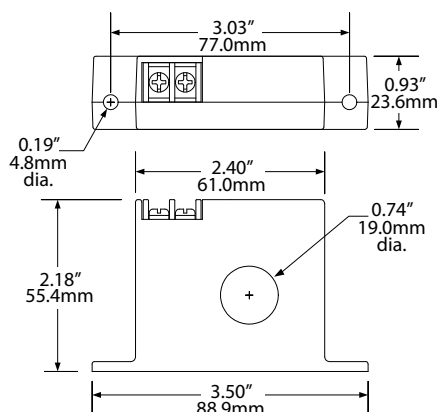


## Current Sensing Switch Dimensions

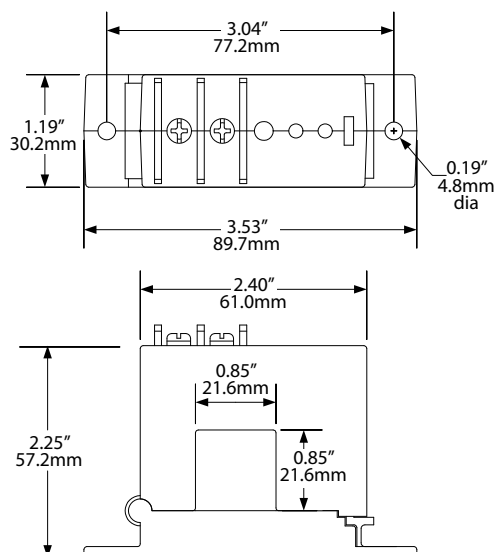


Note: The bottom 0.31" applies to -15 option only.

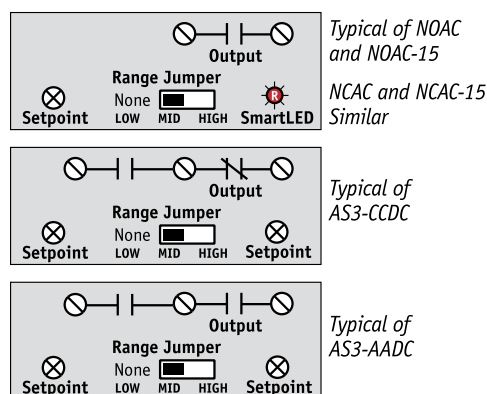
## FT Case



## SP Case



## Current Sensing Switch Connections



Note: Terminals are #6 screws. DC contacts are polarity sensitive.

## Current Sensing Switch Specifications



<b>Power Supply</b>	None, self-powered		
<b>Setpoint Range</b>	<ul style="list-style-type: none"> <li>Solid-core: 1–6, 6–40 &amp; 40–175 A (adjustable)</li> <li>Split-core: 1.75–6, 6–40 &amp; 40–200 A (adjustable)</li> </ul>		
<b>Output Description</b>	Isolated solid-state relay		
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>1.0 A @ 240 VAC (standard AC units)</li> <li>0.15 A @ 30 VDC (standard DC &amp; multi-pole units)</li> <li>3 A @ 120 VAC (-03 option)</li> <li>15 A @ 120 VAC, 10 A @ 240 VAC (-15 option)</li> </ul>		
<b>Off-state Leakage</b>	<ul style="list-style-type: none"> <li>NOAC: &lt;10 <math>\mu</math>A</li> <li>NCAC: 2.5 mA</li> <li>AADC: &lt;10 <math>\mu</math>A</li> <li>NODC: &lt;10 <math>\mu</math>A</li> <li>NCDC: 1.4 mA</li> <li>CCDC: 0.3 mA (N.C. Terminal)</li> </ul>		
<b>Response Time</b>	2.5 sec. max.		
<b>Time Delay</b>	None		
<b>Hysteresis</b>	5%		
<b>Overload</b>	RANGE	6 SEC.	1 SEC.
	• 1–6 A	• 400 A	• 600 A
	• 6–40 A	• 500 A	• 800 A
	• 40–175 A	• 800 A	• 1200 A
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV		
<b>Frequency Range</b>	6–100 Hz		
<b>Case</b>	UL94 V-0 Flammability Rated		
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing		
<b>Listings</b>	UL/cUL, CE		

\*UL listing for -FF and -SP models only.





### Current Sensing Switch Ordering Information

Sample Model Number: AS3-NOAC-FF-NL

Adjustable AC current sensing switch, normally open AC contacts, solid-core case, without indicating LED. (DIN rail adapters are included)

AS3 – (1) – (2) – (3)

#### (1) Output Rating

NOAC	Normally Open, 1 A @ 240 VAC
NCAC	Normally Closed, 1 A @ 240 VAC
NODC	Normally Open, 0.15 A @ 30 VDC
NCDC	Normally Closed, 0.15 A @ 30 VDC
AADC	Dual, Normally Open, 30 VDC (-FF only)
CCDC	1 N.O., 1 N.C. Solid State, 0.15 A @ 30 VDC (-FF only)

#### (2) Case Style

FF	Solid-core, front terminal
SP	Split-core
FT	Solid-core, top terminal

#### (3) Options

NL	No LED
03	3 A @ 120 VAC (-FT only, not UL listed)
15	15 A @ 120 VAC (-FF only)
	(Blank is standard)



The AS3 series current sensing switches are the go-to models for a huge variety of applications. The models designed to control AC circuits can be manufactured with 1, 3 or 15 A capacities. The models with DC capabilities can be manufactured with dual contacts, adjustable between the selected ranges. NK Technologies' original designs are refined to a wide range of application.

# AS1 SERIES COMPACT CASE

## AC Current Sensing Switches

The AS1 Series Compact Case Current Sensing Switches are compact and inexpensive. The easy-to-use ring slips onto the conductor to give a solid-state contact for indication of current flow. Ideal for use in control panels, or wherever confirmation of current flow is desired. AS1 Series-CC current sensing switches are a cost-effective way to detect live conductors and see current flow to fans, heaters, pumps, lighting or other AC powered devices.



### Current Sensing Switch Applications

- Quick reporting of electric motor load status.
- Identify open heater circuit connection.
- Independent verification that the load is energized.
- Confirmation of operation for critical lighting or equipment.
- Low off state leakage is perfect for use as an input to a programmable logic controller.

### Current Sensing Switch Features

#### Low Sensitivity Turn-on Point

- Detect currents as low as 0.5 A with a single conductor pass; eliminates the need to wrap conductors multiple times to increase sensitivity.

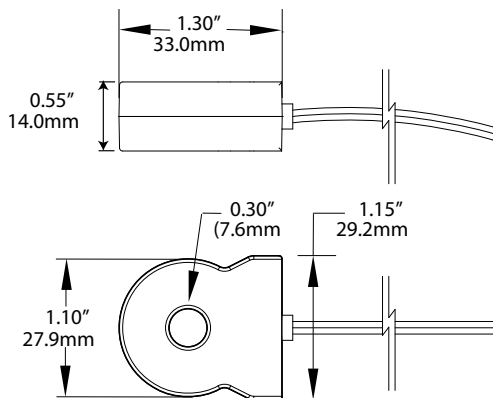
#### Reliable Solid-state Output

- No moving parts provides a nearly unlimited number of operations; powered from the monitored circuit.

#### Choice of Outputs

- Normally Open or Normally Closed connection. Connect the 24" long leads to a local controller or to a terminal block for remote operation.

### Current Sensing Switch Dimensions



### Current Sensing Switch Specifications



<b>Power Supply</b>	None, self-powered
<b>Setpoint Range</b>	0.5 A (factory set)
<b>Output Description</b>	Isolated solid-state relay
<b>Output Rating</b>	• 0.2 A @ 120 VAC/DC (N.O.) • 0.15 A @ 135 VAC/DC (N.C.)
<b>Off-state Leakage</b>	<10 $\mu$ A
<b>Response Time</b>	120 ms
<b>Time Delay</b>	None
<b>Hysteresis</b>	5%
<b>Overload</b>	6 sec. @ 500 A, 1 sec. @ 1000 A
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV
<b>Frequency Range</b>	50–400 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL /cUL, CE

### Current Sensing Switch Ordering Information

Sample Model Number: AS1-NOU-CC

Adjustable AC current sensing switch, normally open, solid-core, compact case.

AS1 – (1) (2) – C C

#### (1) Output Rating

NOU	Normally Open
NCU	Normally Closed

#### (2) Case Style

CC	Compact case
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For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)



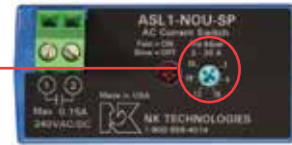
**OEMs** **Test & Evaluation Units for OEMs**  
Free program expedites evaluation process. See page 3 for details.

# ASL SERIES

## AC Current Sensing Switches

The ASL Series Current Sensing Switches provide a current operated solid-state contact powered from the monitored circuit. The trip point adjustment uses a single turn potentiometer. By turning the adjustment arrow to the current magnitude needed, the installer can set the point where the output changes state when the monitored circuit is not energized. With the split-core case option, installation is just a matter of placing the sensor over the conductor. It couldn't be easier.

Features Patented Linear Setpoint Adjustment  
US Patent 9766273



### Current Sensing Switch Applications

#### AC Motor Loads

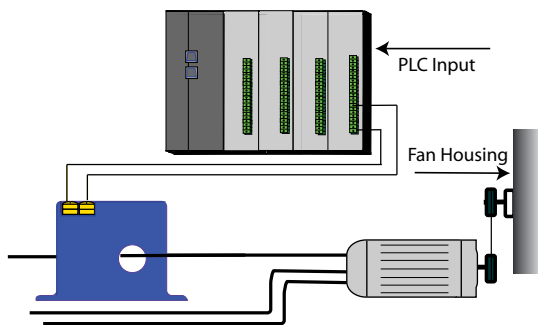
- Set a normally open contact over the normal running current level and it will open if the drive belt breaks or comes off the sheaves.
- Set a normally closed contact below the normal run current level and it will open on overload conditions.
- Monitor up to 150 A loads.

#### Critical Lighting Loads

- Monitor security lighting and water navigational indicators.

#### Heating Loads

- Receive independent verification that an element is working properly.
- Monitor drying and curing processes remotely.



Motor current causes the solid-state contact to close, and if the coupling or drive belt breaks, the current falls and the sensor output opens again.

### Current Sensing Switch Features

#### Easily Established Contact Actuation Point

- Patented potentiometer setpoint selection.
- Trip point indicated on the labeling.
- Trip point can be set without energizing the monitored load, adding a large measure of safety.
- Two-second delay before contact action upon initial energization allows the output to ignore motor inrush current.

#### Isolation

- Output is magnetically isolated from the input for safety.
- Eliminates insertion losses, no added burden.

#### Solid-state Reliability

- No moving components for switching.
- No need for periodic maintenance or calibration.

#### Panel Mounted Solid- or Split-core Case

- Split-core case allows installation without disturbing existing wiring and can be mounted in any position. Either case can be attached to a panel, hung on the conductor or on a DIN rail adapter (included).\*
- Both solid- or split-core cases provide windows large enough for 150 A loads, non-contact design provides complete isolation between monitored load and control circuitry.

#### No External Power Needed

- Sensor is powered from the monitored AC circuit.
- Choose normally open (closing on current increase) or normally closed (opening on current increase).
- Fast action contact reacts quicker than RTD, thermocouples, or bimetallic thermal elements.

\*For information on the DIN rail accessories kit, see page 140.

OEMs

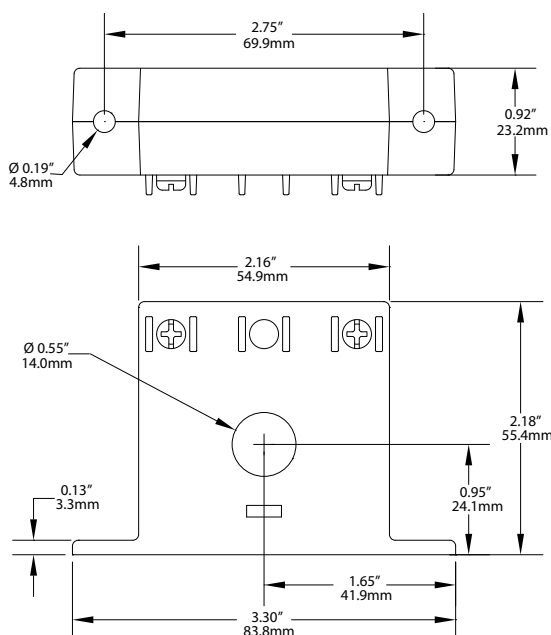
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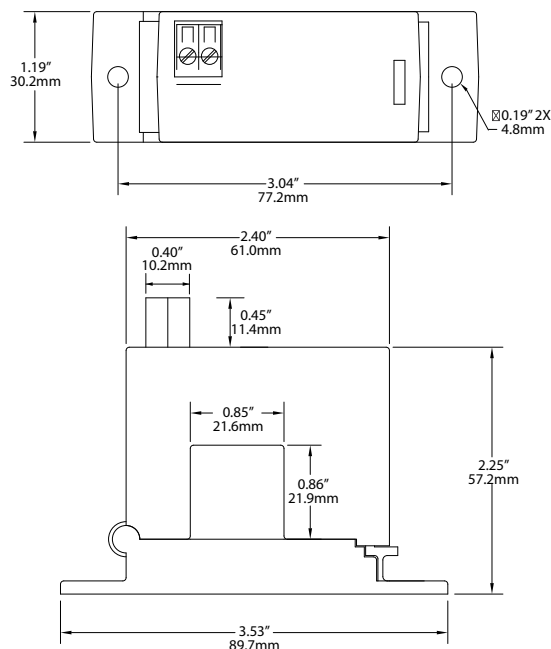


## Current Sensing Switch Dimensions

FF Case



SP Case

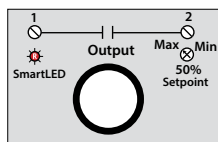


## Current Sensing Switch Connections



### Notes:

Zinc plated screw terminals solid-core case.  
Deadfront enclosed terminals split-core case.  
12–22 AWG solid or stranded.  
Not polarity sensitive.



## Current Sensing Switch Specifications

<b>Power Supply</b>	None, self-powered
<b>Input Range</b>	1–150 A (adjustable)
<b>Output Description</b>	Isolated solid-state relay (AC/DC)
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>150 mA @ 240 VAC/DC N.O.</li> <li>200 mA @ 135 VAC/DC N.C.</li> </ul>
<b>Response Time</b>	100 ms
<b>Time Delay</b>	2 seconds on initial energization
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 kV
<b>Frequency Range</b>	10–100 Hz AC
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE

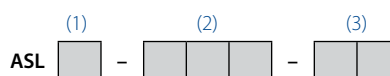
## Current Sensing Switch Output Type

Normally open universal AC or DC solid-state contact, 150 mA to 240 V (maximum load across output contact) or normally closed universal AC or DC solid-state contact, 200 mA to 135 V (maximum load across output contact).

## Current Sensing Switch Ordering Information

Sample Model Number: ASL1-NOU-FF

Solid-core AC current sensing switch with single turn setpoint adjustment, Smart LED standard. (DIN rail adapters are included)



### (1) Full Scale Range

1	1–10 A (solid-core) 2–20 A (split-core)
2	10–50 A (solid-core) 20–50 A (split-core)
3	50–100 A
4	100–150 A

### (2) Output Type

NOU	Normally Open
NCU	Normally Closed

### (3) Case Style

FF	Solid-core, front terminals
SP	Split-core



# ASM SERIES

## Self-calibrating Smart-Switches

The patented design ASM Series Self-calibrating Smart-Switch is more accurate and easier to use than previous models. This Smart-Switch uses the actual load current to set the trip point. It takes just a couple of seconds of steady running conditions before the sensor locks onto the normal current level. The ASM Series is designed for overload, underload or operating window applications. Upon sensing an average operating current, the ASM self-learns and establishes a limit-alarm trip point based on 85–125% of normal current (overload/underload model only). Available in a solid- or split-core case.



US Patent 8698426

### Current Sensing Switch Applications

#### Conveyors (-OL Option)

- Detects jams and overloads.
- Interlocks multiple conveyor sections.

#### Electronic Proof of Flow (-UL Option)

- More reliable than electromechanical pressure or flow switches. No need for pipe or duct penetrations.

#### Pump Protection (-OU Option)

- Provides overload (jams) and underload (suction loss) indication.
- Interlocks multiple conveyor sections.

### Current Sensing Switch Features

#### Self-powered and Self-calibrating

- Speeds startup, cuts installation costs.

#### Status Monitoring, Overload, and Operating Window Options

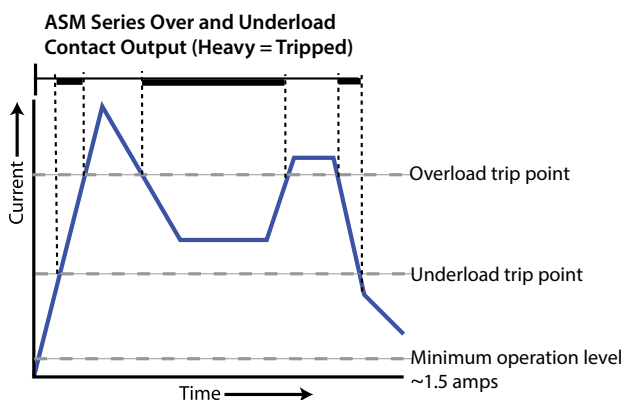
- Choose the operating style that matches your application.

#### Universal Output

- AC or DC compatibility with any automation system.

#### UL/cUL and CE Approved

- Accepted worldwide.



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

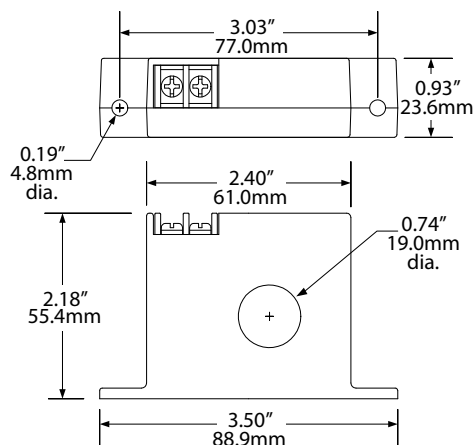
OEMs

**Test & Evaluation Units for OEMs**

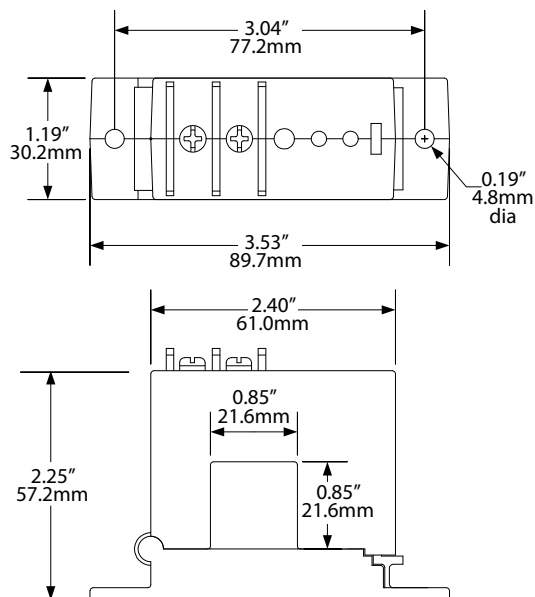
Free program expedites evaluation process. See page 3 for details.

## Current Sensing Switch Dimensions

FT Case



SP Case



## Current Sensing Switch Specifications



<b>Power Supply</b>	None, self-powered
<b>Setpoint Range</b>	<ul style="list-style-type: none"> <li>• Solid-core: 1.5–150 A</li> <li>• Split-core: 2.8–150 A (self-calibrating)</li> </ul>
<b>Output Description</b>	Isolated solid-state relay
<b>Setpoint Calibration</b>	Output changes with AC current between 85% and 125% of normal running current
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>• N.O. Version: 0.30 A @ 135 VAC or VDC</li> <li>• N.C. Version: 0.30 A @ 135 VAC/VDC</li> <li>• Not polarity sensitive</li> </ul>
<b>Off-state Leakage</b>	<10 $\mu$ A
<b>Response Time</b>	200 ms
<b>Time Delay</b>	None
<b>Hysteresis</b>	5%
<b>Overload</b>	500 A @ 6 sec., 1000 A @ 1 sec.
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV
<b>Frequency Range</b>	6–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE

## Current Sensing Switch Ordering Information

Sample Model Number: ASM-NOU-OL-SP  
 AC current sensing switch, normally open, self-calibrating overload operation in a split-core case. (DIN rail adapters are included)

ASM – (1) (2) (3)

### (1) Output Rating

NOU	Normally Open
NCU	Normally Closed

### (2) Operation

OL	Overload
UL	Underload
OU	Over/underload

### (3) Case Style

FT	Solid-core, top terminals
SP	Split-core

# ASC SERIES

## Factory-calibrated Current Operated Switches

ASC Series Current Operated Switches are precision calibrated at the factory per customers' specifications and guaranteed within 1% accuracy. Because the switch is factory calibrated eliminating the need to turn the potentiometer to the correct position in the field, installation time is substantially reduced resulting in a significant cost savings. The ASC combines a current transformer, signal conditioner and limit alarm into a single package for use in status monitoring or proof of operation applications and is perfect for OEM applications where the need for a limit alarm is required. Available in a solid-core or a split-core case to maximize ease of installation.

### Current Sensing Switch Applications

#### Electronic Proof of Flow

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

#### Conveyors

- Detects jams and overloads.
- Interlocks multiple conveyor sections.

#### Lighting Circuits

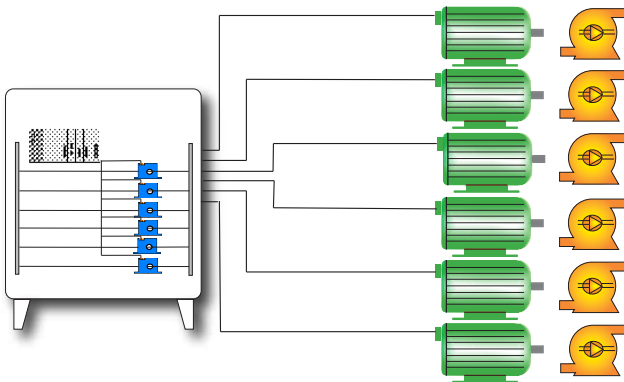
- Easier to install and more accurate than photocells.

#### Electrical Heaters

- Faster response than temperature sensors.

#### Air Handling Fan Protection

Factory-set trip points are ideal when there are several loads, all using the same motor to drive the fan blades.



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

OEMs

#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



US Patent 8698426

### Current Sensing Switch Features

#### Universal Output

- N.O. or N.C. solid-state switch for control circuits up to 135 VAC/DC.
- Compatible with most automation systems.

#### Self-powered

- Cuts installation and operating costs.

#### Precision-calibrated Factory Set Trip Point

- Speeds startup.
- Improves safety.

#### Solid- or Split-core Case

- Versions tailored for each installation.

#### LED Indication

- Provides quick visual indication of contact status.

#### Built-in Mounting Feet

- Simple, two-screw panel mounting or attach with DIN rail adapters (included).\*

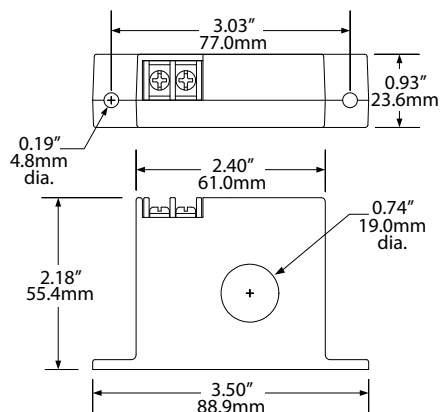
#### Designed for UL/cUL and CE Approval

- Accepted worldwide.

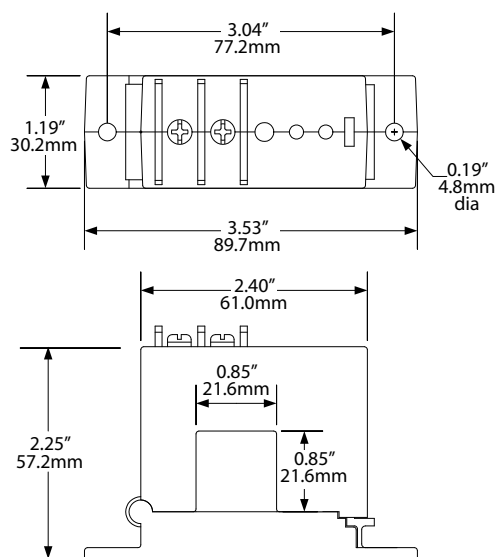
\*For information on the DIN rail accessories kit, see page 140.

## Current Sensing Switch Dimensions

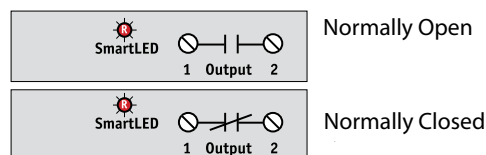
FT Case



SP Case



## Current Sensing Switch Connections



## Current Sensing Switch Specifications

<b>Power Supply</b>	None, self-powered
<b>Setpoint Range</b>	<ul style="list-style-type: none"> <li>• Solid-core: 2–150 A (factory set)</li> <li>• Split-core: 3–150 A (factory set)</li> </ul>
<b>Output Description</b>	Isolated solid-state relay
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>• N.O. Version: 0.3 A @ 135 VAC or VDC</li> <li>• N.C. Version: 0.3 A @ 135 VAC or VDC</li> <li>• Not polarity sensitive</li> </ul>
<b>Off-state Leakage</b>	<10 $\mu$ A
<b>Response Time</b>	120 ms
<b>Time Delay</b>	None
<b>Hysteresis</b>	5%
<b>Overload</b>	400 A @ 6 sec., 1000 A @ 1 sec.
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	Designed for UL/cUL and CE approval

## Current Sensing Switch Ordering Information

Sample Model Number: ASC-NOU-6-SP-090

Factory set AC current operated switch, normally open, 60 Hz frequency, split-core case, 90 A trip point. (DIN rail adapters are included)

ASC- (1) (2) - (3) - (4)

### (1) Output Rating

NOU	Normally Open
NCU	Normally Closed

### (2) Primary Circuit Frequency

6	60 Hz
5	50 Hz

### (3) Case Style

FT	Solid-core, top terminal
SP	Split-core

### (4) Factory Set Trip Point

002 to 150	Solid-core model factory-set trip point in amps.
003 to 150	Split-core model factory-set trip point in amps.



# ASD SERIES

## Current Sensing Switches

ASD series sensors provide a limit alarm contact with the easiest adjustment method ever designed. The single turn potentiometer allows the trip point to be set before the sensor is installed, or before the monitored circuit is energized. The LED display provides a quick visual indication of where the contact changes.



Features a single turn potentiometer and LED display  
US Patent 9747776

### Current Sensing Switch 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

- Detects jams and overloads.
- Interlocks multiple conveyor sections.

#### Pump Control

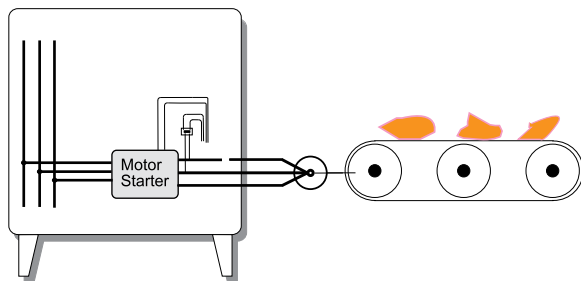
- Output contact is adjusted so it is closed during normal operation, opening if the pump runs dry or there is a loss of head pressure for any reason.

#### Cooling Towers

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

#### Conveyor Protection

If the conveyor jams, the solid-state contact opens to stop the infeed or drive motor.



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

### Current Sensing Switch Features

#### Solid-state Output

- N.O. or N.C. solid-state switch for control circuits up to 240 VAC.
- Compatible with most automation systems.

#### External Powered

- Allows for higher accuracy.

#### Easily Adjustable and Precise Setpoint

- Speeds startup.
- Improves the safety by allowing the trip point adjustment with no power through the sensing window.

#### LED Display

- Provides quick visual indication of where the contact changes. When current exceeds the setpoint, the display flashes on and off.
- Easiest and most accurate setpoint adjustment available.

#### Built-in Mounting Feet

- Simple, two-screw panel mounting or attach with DIN rail adapters (included).\*

#### Designed for UL/cUL and CE Approval

- Accepted worldwide.

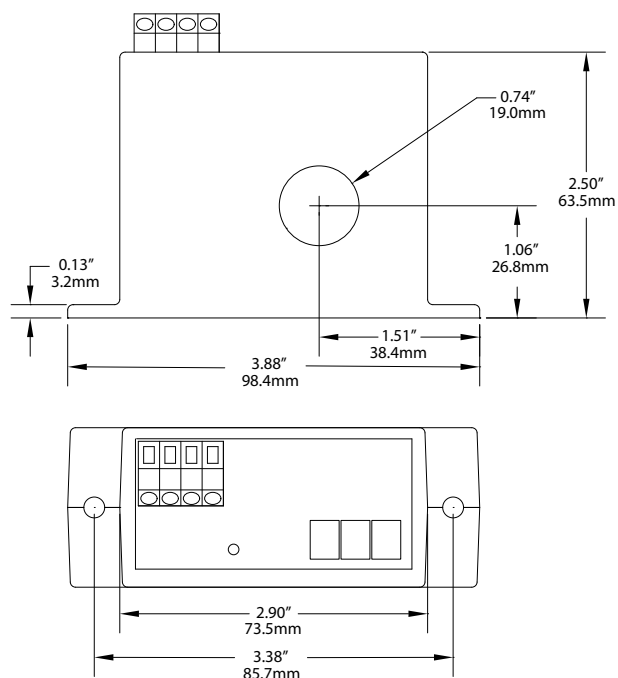
\*For information on the DIN rail accessories kit, see page 140.

OEMs

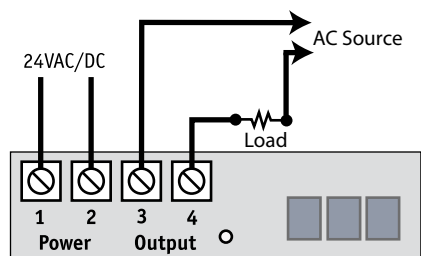
#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.

## Current Sensing Switch Dimensions



## Current Sensing Switch Connections



Display shows trip point in amps  
so 15 A displays 015.

## Current Sensing Switch Specifications

<b>Power Supply</b>	24 VAC/DC (18–28 V)
<b>Power Consumption</b>	70 mA max.
<b>Setpoint Range</b>	<ul style="list-style-type: none"> <li>• ASD1: 1–50 A (adjustable)</li> <li>• ASD2: 4–200 A (adjustable)</li> </ul>
<b>Output Description</b>	Isolated solid-state relay
<b>Output Rating</b>	Max.: 1.0 A @ 240 VAC
<b>Off-state Leakage</b>	<ul style="list-style-type: none"> <li>• &lt;10 <math>\mu</math>A normally open</li> <li>• 2.5 mA normally closed</li> </ul>
<b>Response Time</b>	120 ms max.
<b>Time Delay</b>	None
<b>Hysteresis</b>	5%
<b>Isolation Voltage</b>	Tested to 5 kV
<b>Frequency Range</b>	6–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	Designed for UL/cUL and CE approval

## Current Sensing Switch Ordering Information

Sample Model Number: ASD1-NOAC-24U-FL  
Adjustable AC current operated switch, normally open, solid-core case.  
(DIN rail adapters are included)

ASD (1) - (2) - (3) 2 4 U - (4) F L

### (1) Range

1	1–50 A switch adjustment
2	4–200 A switch adjustment

### (2) Output Contact

NOAC	Normally Open, closes on current rise, AC control only
NCAC	Normally Closed, opens on current rise, AC control only

### (3) Power Supply

24U	24 VAC or DC
-----	--------------

### (4) Case Style

FL	Solid-core
----	------------

# ASO SERIES

## Current Sensing Switches

ASO Series Current Sensing Switches are designed to detect very low AC current, and provide a solid-state contact to open or close at a setpoint adjustable from 3 to 350 mA across two ranges. Useful for signal or lamp status monitoring, detecting low level fault currents or fan status proofing, the ASO Series features solid-state outputs and jumper-selectable ranges, which make it a versatile choice for low-current status indication applications.



### Current Sensing Switch Applications

#### Fan Monitoring

- Fan status in heating and drying applications.
- Identify lamp outages or other malfunctions through changes in current consumption.

#### Fractional HP Motors

- Ideal for monitoring small motors used in critical applications, for example, fan status proofing on a crucial cooling fan.

#### LED Lamp Operation

- Switch can detect LED light sources drawing less than one half watt at 120 VAC.

### Current Sensing Switch Features

#### Wide Range of Output Options

- Dependable, solid-state relay N.O. or N.C. contacts rated at 240 VAC or 30 VDC.
- Compatible with most automation controllers.

#### Isolated Inputs and Outputs

- Inductive sensing eliminates insertion loads on monitored circuits, effectively isolating it from the unit.
- Isolated outputs simplify wiring and enhance safety.

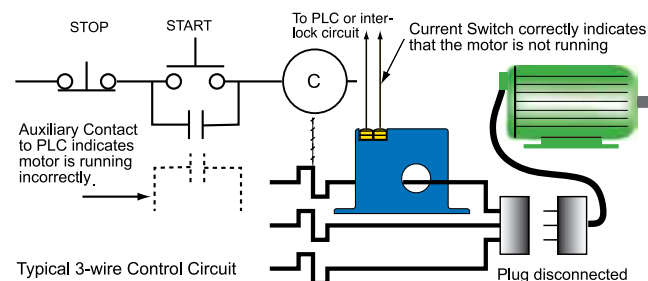
#### Adjustable Setpoints

- Setpoints are field-adjustable from 3 mA to 350 mA, speeding installation and allowing for tailored applications.

#### Designed for UL/cUL, CE Approval

- Accepted worldwide.

#### Status Alarming



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

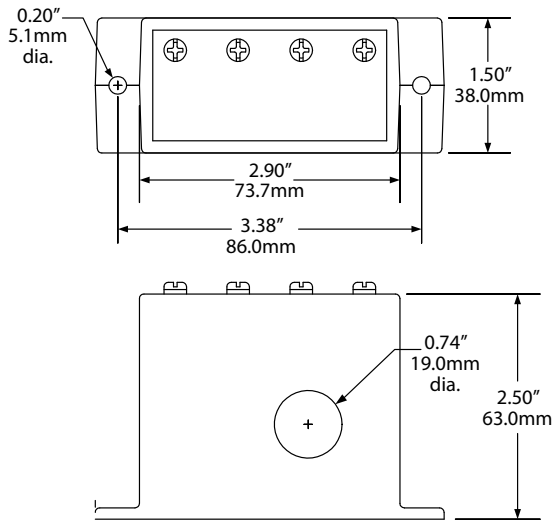
OEMs

#### Test & Evaluation Units for OEMs

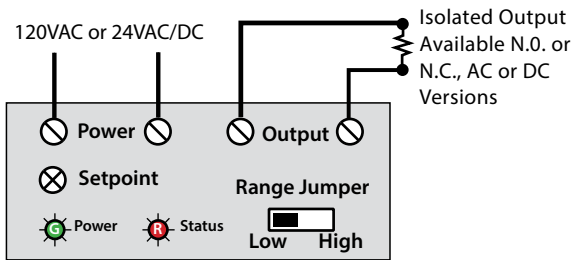
Free program expedites evaluation process. See page 3 for details.

Current Sensing Switch Dimensions

Case



Current Sensing Switch Connections



Notes:  
Terminals are #6 screws.  
Use up to 14 AWG solid or stranded.  
Power connections are not polarity sensitive.  
DC output connections are polarity sensitive.

Current Sensing Switch Specifications

Power Supply	• 120 VAC (96–144 V) • 24 VAC/DC (19–29 V)
Power Consumption	2.5 VA
Setpoint Range	• Low Range: 3–15 mA (adjustable) • High Range: 15–350 mA (adjustable)
Input	10 A max.
Output Rating	• AC Version: 1 A @ 240 VAC • DC Version: 0.15 A @ 30 VDC
Response Time	• 150 ms @ 5% above setpoint • 100 ms @ 50% above setpoint
Time Delay	None
Hysteresis	<5%
Overload	10 A continuous
Isolation Voltage	1270 VAC, tested to 5 KV
Frequency Range	50–400 Hz
Case	UL94 V-0 Flammability Rated
Environmental	–4 to 122°F (–20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL, CE

Current Sensing Switch Ordering Information

Sample Model Number: AS0-NODC-120  
Ultra low current sensing switch, normally open solid-state DC output and 120 VAC power supply. (DIN rail adapters are included)



(1) Output Type	
NCAC	Normally Closed, 1 A @ 240 VAC
NOAC	Normally Open, 1 A @ 240 VAC
NCDC	Normally Closed, 0.15 A @ 30 VDC
NODC	Normally Open, 0.15 A @ 30 VDC

(2) Power Supply	
24U	24 VAC/DC
120	120 VAC

# ASX SERIES

## Current Sensing Switches

ASX Series Current Sensing Switches are high performance current sensing switches with field-adjustable time delay to help minimize nuisance trips during startup and operation. Designed for motor status applications where setpoint accuracy and repeatability are critical, the ASX Series offers a linear setpoint characteristic and constant hysteresis. Standard features include self-powering, jumper-selectable ranges and a choice of outputs and cases.



### Current Sensing Switch Applications

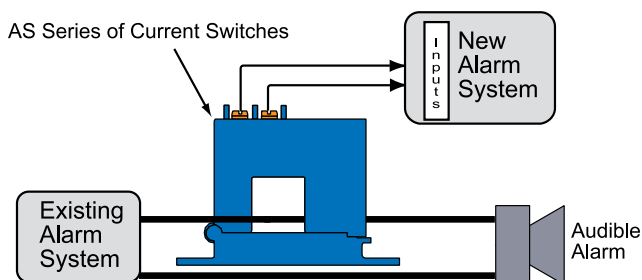
#### Motor Protection

- Serves as an electronic proof-of-operation; detects current draw changes in motors when they encounter problems such as pumps running dry or pending bearing failure.
- Non-intrusive, less expensive to install than differential pressure flow sensors or thermal switches.
- Much quicker response time than Class 10 overload switches.

#### High Inrush or Temporary Overload Current

- Adjustable startup/delay timer allows 0.2–15 second delay to eliminate nuisance trips from high inrush or short overload conditions.

#### Isolated Alarm System Interfacing



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

### Current Sensing Switch Features

#### Adjustable Startup/Delay Timer

- Field-adjustable from 0.12 to 15 seconds to eliminate nuisance alarms due to startup inrush or temporary overcurrent conditions.

#### Choice of N.O./N.C. AC or Universal Outputs

- Contact ratings of 1.0 A @ 240 VAC or universal outputs of 0.15 A @ 240 VAC/DC (N.O. models) and 0.2 A @ 135 VAC/DC (N.C. models) for use with most standard motor control systems.

#### Improved Ease of Installation and Use

- 1.0 A AC rating eliminates need for time delay relay.
- Self-powered, split-core models simplify installation.
- Status LED provides visual indication of setpoint trip and contact action.

#### Industrial Grade Performance

- Constant hysteresis, linear response characteristics enhance setpoint accuracy.

#### UL/cUL Approved, CE Pending

- Accepted worldwide.



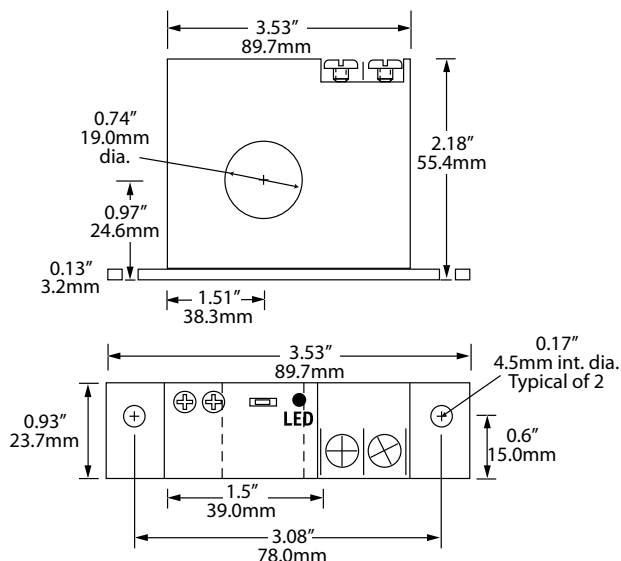
#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.

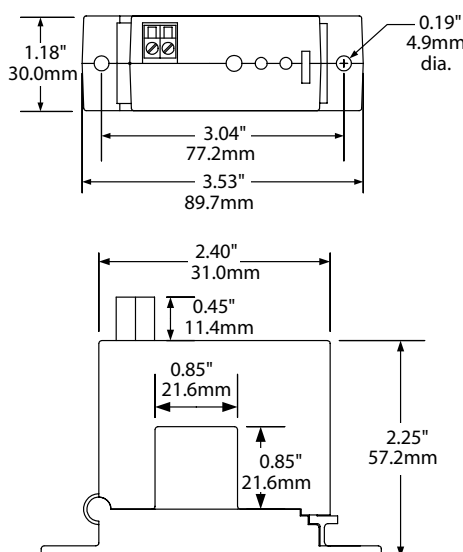


## Current Sensing Switch Dimensions

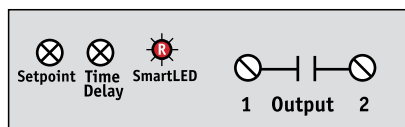
FT Case



SP Case



## Current Sensing Switch Connections



## Current Sensing Switch Specifications

<b>Power Supply</b>	None, self-powered
<b>Setpoint Range</b>	1.5–12 A, 12–55 A, 50–200 A (adjustable)
<b>Output Description</b>	Isolated solid-state relay
<b>Output Rating</b>	<ul style="list-style-type: none"> <li>• NOAC/NCAC: 1 A @ 240 VAC</li> <li>• NOU: 0.15 A @ 240 VAC or VDC</li> <li>• NCU: 0.2 A @ 135 VAC or VDC</li> </ul>
<b>Off-state Leakage</b>	NOU, NCU & NOAC versions: <10 micro A NCAC versions: 2.5 mA
<b>Response Time</b>	0.12 – 15 sec.
<b>Time Delay</b>	Adjustable
<b>Hysteresis</b>	5%
<b>Overload</b>	<ul style="list-style-type: none"> <li>• 1.5–12 A range: 600 A max.</li> <li>• 12–55 A range: 800 A max.</li> <li>• 50–200 A range: 1200 A max.</li> </ul>
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV
<b>Frequency Range</b>	50–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL*, CE pending

\*NOAC/NCAC-FT models are not UL listed.

## Current Sensing Switch Ordering Information

Sample Model Number: ASX-NOAC-SP

Current sensing switch with adjustable time delay, N.O. 1.0 A @ 240 VAC output, jumper-selectable input ranges, split-core case. (DIN rail adapters are included)



### (1) Output Type

NOAC	Normally Open, 1 A @ 240 VAC
NCAC	Normally Closed, 1 A @ 240 VAC
NOU	Normally Open, 0.15 A @ 240 VAC/DC
NCU	Normally Closed, 0.2 A @ 135 VAC/DC

### (2) Case Style

FT	Solid-core
SP	Split-core



# ASP-FD SERIES

## Current Operated Switch

ASP-FD Series sensors 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.



### Current Switch 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.

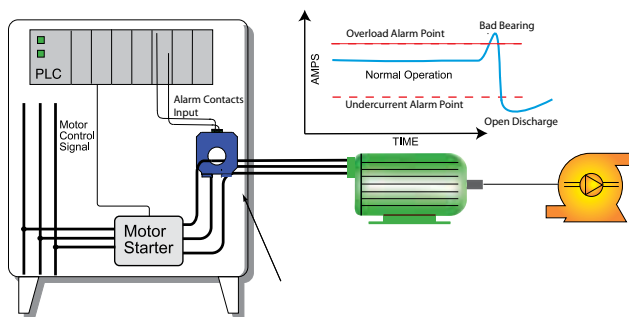
#### Pump Control

- 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 under current from a broken drive belt or coupling.

#### Pump Protection



Pumps draw more current when there are mechanical problems like seizing bearings or obstructed impellers, and draw less current when the intake suction is blocked or the discharge is not connected.

### Current Switch 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.

#### Externally Powered

- Allows for higher accuracy.

#### Easily Adjustable and Precise Setpoint

- Single turn potentiometer: point the arrow at the current value where you need the output to change, and you are done.
- Improves the safety by allowing the trip point adjustment with no setpoint power through the sensing window.
- Easiest setpoint adjustment available.

#### Solid-core Case

- Sensing window provides ample space for bus bar, single or multiple conductors.

#### Mounting Options

- Sensor can snap onto a DIN rail\* or be mounted to a back panel with screws.
- "Finger-safe" terminals are located on the sensor top.

#### Designed for UL/cUL Approval, CE Approved

- Accepted worldwide.

\*For information on the DIN rail accessories kit, see page 140.

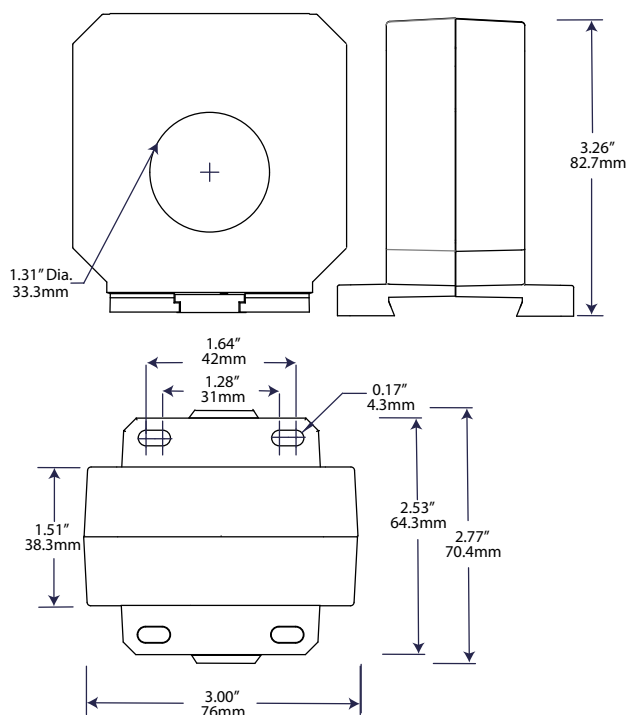
OEMs

#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



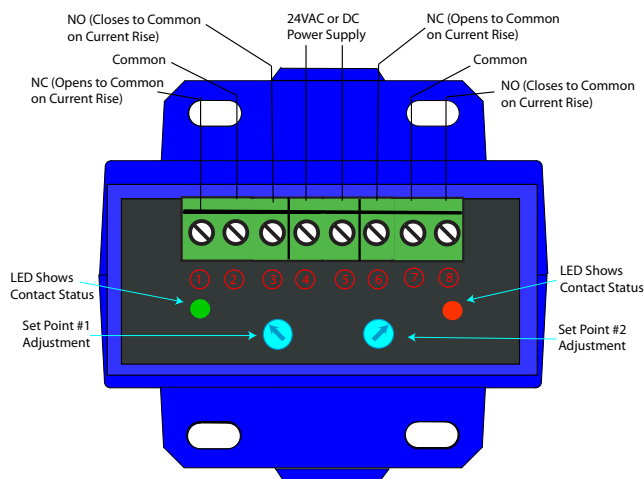
## Current Switch Dimensions



## Current Switch Specifications

<b>Power Supply</b>	24 VAC/DC (<2VA consumption)
<b>Output</b>	Dual Single Pole, Double Throw Relays
<b>Output Rating</b>	Maximums: 1.0 A up to 125 VAC 2A to 30 VDC
<b>Off-State Leakage</b>	None
<b>Response Time</b>	40–120 ms
<b>Setpoint Ranges</b>	ASP1: 1–20 A ASP2: 2–35 A ASP3: 4–65 A ASP4: 8–120 A ASP5: 15–220 A ASP6: 25–400 A
<b>Hysteresis</b>	4% of range
<b>Overload</b>	6 sec: 3 x range 1 sec: 5 x range
<b>Isolation Voltage</b>	Tested to 5000 VAC
<b>Frequency Range</b>	40–65Hz
<b>Case</b>	UL94 V0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	Designed to meet UL 508 Industrial Control Equipment (USA & Canada), CE

## Current Switch Connections



## Current Switch Ordering Information

Sample Model Number: ASP1-DPT-24U-FD

Dual adjustable AC current operated relay, 1–20 A range, 24 VAC or DC power supply, solid-core case.

ASP (1) - (2) D P T - (3) 2 4 U - (4) F D

### (1) Range

1	1–20 A
2	2–35 A
3	4–65 A
4	8–120 A
5	15–220 A
6	25–400 A

### (3) Output Contact

DPT	Two independent SPDT relays
-----	-----------------------------

### (4) Power Supply

24U	24 VAC or DC
-----	--------------

### (3) Case Style

FD	Solid-core, DIN rail or panel mounting
----	--





# ASXP SERIES

## Current Sensing Switches

ASXP Series Current Sensing Switches are powered versions of our popular current switches with integral time delay. A fixed two-second delay upon initial energization of monitored load minimizes nuisance alarms during startup and operation in motor or heater status applications. After startup a separate 0–20 second delay can be set. For use with 24 VAC/DC or 120 VAC supplies, this high performance product offers OEM-caliber accuracy, precision tolerances, low hysteresis and an operation range between 40 and 100 Hz. Available with status LED and solid-core case as standard.



### Current Sensing Switch Applications

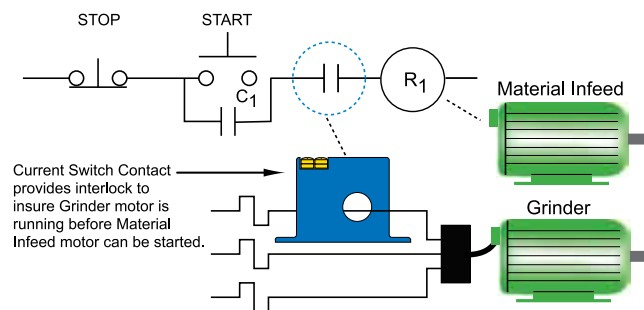
#### Motor Protection

- Serves as an electronic proof-of-operation; detects current draw changes in motors when they encounter problems such as pumps running dry or impending bearing failure.
- Non-intrusive, less expensive to install than differential pressure flow sensors or thermal switches.
- Much quicker response time than Class 10 overload switches.

#### High Inrush or Temporary Overload Current

- Factory-set two-second delay on startup eliminates nuisance trips from high inrush or short overload conditions. After startup, a second 0.2–20 second user-adjustable delay is available.

#### Safety Interlocks



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

### Current Sensing Switch Features

#### Fixed Startup/Delay Timer

- Factory-calibrated trip timer set to 2 seconds to eliminate nuisance alarms due to startup inrush or temporary overcurrent conditions.

#### Form C Electromechanical Relay Output

- Contact rating of 1 A, up to 120 VAC, provides adequate switching capacity for use with most motor control systems.

#### Improved Ease of Installation and Use

- Eliminates need for separate time delay relay.
- Choice of 24 VAC/DC or 120 VAC supply models.
- LED provides indication of trip point contact status.
- Setpoint adjustable from 1–80 A.

#### Industrial Grade Performance

- Repeatable performance, precise time delay setpoint, constant hysteresis and linear trip point adjustment.

#### UL/cUL and CE Approved

- Accepted worldwide.

OEMs

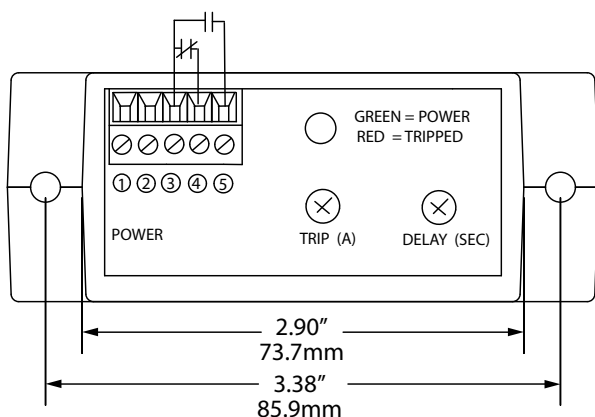
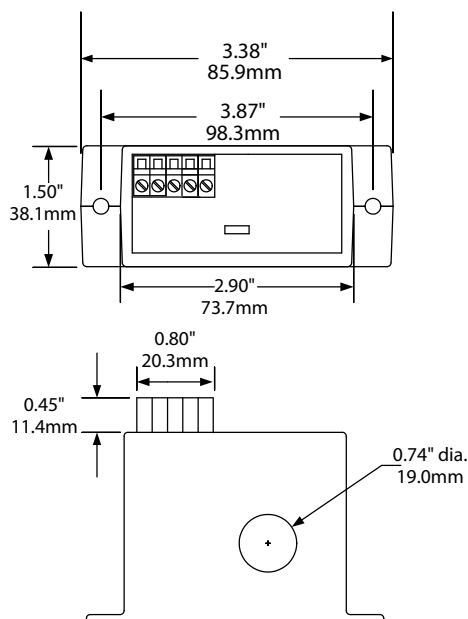
Test &amp; Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



## Current Sensing Switch Dimensions

FL Case



Terminal Identification:

- 1 & 2 - Power Connection
- 3 - Output Common
- 4 - Output Normally Closed Contact
- 5 - Output Normally Open Contact

Use up to 14 AWG copper wire.

Tighten terminals 4.4 to 5.3 lbs.- in. torque.

## Current Sensing Switch Specifications

<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 120 VAC (108–136 V)</li> <li>• 24 VAC/DC (22–26 V)</li> </ul>
<b>Power Consumption</b>	<2 VA
<b>Setpoint Range</b>	<ul style="list-style-type: none"> <li>• ASXP1: 1–20 A (adjustable)</li> <li>• ASXP2: 20–50 A (adjustable)</li> <li>• ASXP3: 50–80 A (adjustable)</li> </ul>
<b>Output Description</b>	Electromechanical SPDT relay
<b>Output Rating</b>	1 A @ 120 VAC; 2 A @ 30 VDC
<b>Time Delay</b>	2.0 sec. (fixed on startup) 0.2–20 sec. (adjustable after startup)
<b>Hysteresis</b>	5%
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 kV
<b>Frequency Range</b>	40–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE

## Current Sensing Switch Ordering Information

Sample Model Number: ASXP1-SDT-120-FL

AC current sensing switch, fixed 2 sec. delay, SPDT 1 A output, 120 VAC supply, solid-core case. (DIN rail adapters are included)

ASXP (1) - (2) S D T - (3) - (4) F L

### (1) Input Range

1	1–20 A
2	20–50 A
3	50–80 A

### (2) Output Type

SDT	SPDT 1 A @ 120 VAC
-----	--------------------

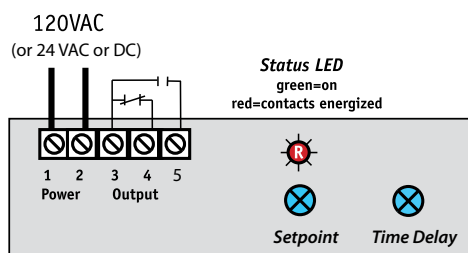
### (3) Power Supply

24U	24 VAC/DC
120	120 VAC

### (4) Case Style

FL	Solid-core
----	------------

## Current Sensing Switch Connections



# ASXP-MS SERIES

## Current Sensing Switches

ASXP-MS Series Current Switches combine a current transformer and signal conditioner into a single package. The large, easy-to-install split-core design allows for installation over existing conductors without the need to disconnect the load, even in applications where there are multiple conductors per phase. For new installations, the installation is just as easy. Just remove the top portion of the sensing ring, place the conductors inside, and snap the top back in place. The output relay energizes when the AC current through the sensing ring exceeds the adjustable setpoint, providing one contact to close and the other to open on current rise.

### Current Sensing Switch Applications

#### Monitor Large Machines

- Detect over or undercurrent conditions before they cause break downs, or interlock one process with another.

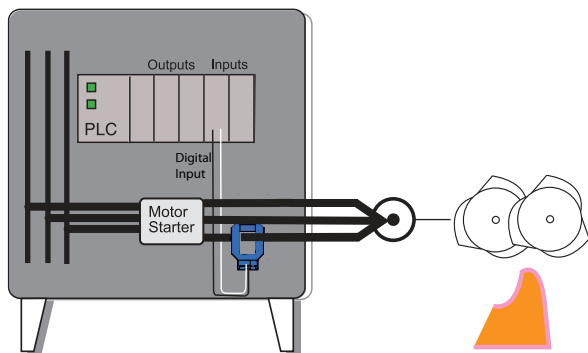
#### Water Delivery and Treatment

- Detect open discharge lines.
- Sense clogged filters or blocked intake to pumps.

#### Generators

- Shed noncritical loads when demand reaches a set level.

#### Crusher Monitoring



If the crusher drive draws too much current, the infeed belt can be stopped automatically, allowing the crusher to clear before restarting. The ASXP-MS also has a set of relay contacts for alarm of over or undercurrent conditions.

- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

OEMs

#### Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



### Current Sensing Switch Features

#### Electromechanical Relay Output

- Provides both normally open and normally closed contacts.
- Compatible with most automation and control systems.

#### Externally Powered

- Complete isolation between the sensor power and the controlled circuit.
- Provides a choice of failsafe\* or standard operation.

#### Simple Field Setpoint Adjustment

- Single turn potentiometer with setpoint shown on label.
- Adjustable start delay to bypass inrush current.

#### Split-core Case

- Sensing window provides ample space for bus bar, single or multiple conductors.

#### DIN Rail\*\* or Panel Mounted Case

- Simply snap onto DIN rail or attach with screws to a panel for secure mounting.

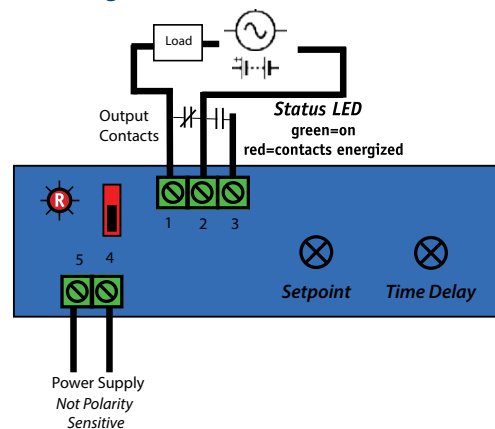
#### UL/cUL and CE Approved

- Accepted worldwide.

\*For a description of failsafe operation, see the installation instructions.

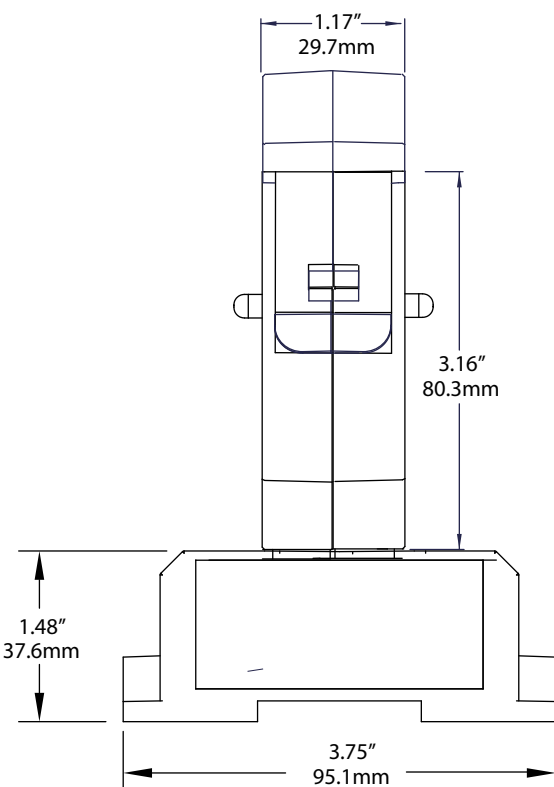
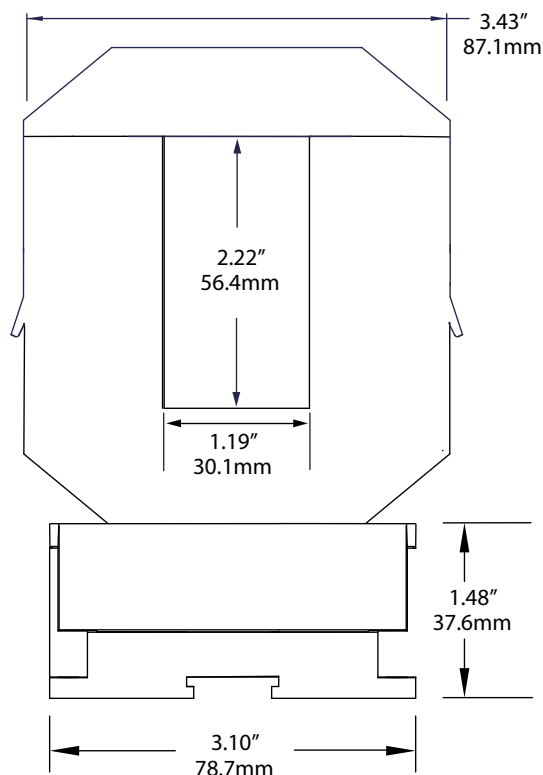
\*\*For information on the DIN rail accessories kit, see page 140.

### Current Sensing Switch Connections



## Current Sensing Switch Dimensions

MS Case



Note: Drawings are not to scale.

## Current Sensing Switch Specifications



<b>Power Supply</b>	120 VAC or 24 VAC/DC (22–36 V)
<b>Power Consumption</b>	<4 VA
<b>Input Range</b>	<ul style="list-style-type: none"> <li>• 2: 50–200 A</li> <li>• 4: 100–400 A</li> <li>• 6: 150–600 A</li> <li>• 8: 200–800 A</li> </ul>
<b>Output Description</b>	Electromechanical SPDT relay
<b>Output Rating</b>	1 A @ 120 VAC, 2 A @ 30 VDC max.
<b>Indicating Bi-color LED</b>	Green: Power on, current within range Red: Power on, current over setpoint Off: Power off or current less than 20% of range
<b>Output Operation</b>	Selectable: Normal or failsafe*
<b>Response Time</b>	900 ms max.
<b>Time Delay</b>	0.5 to 16 sec. (adjustable)
<b>Hysteresis</b>	5%
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 KV
<b>Frequency Range</b>	6–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE

\*For a description of failsafe operation, see the installation instructions.

## Current Sensing Switch Ordering Information

Sample Model Number: AXSP8-SDT-120-MS

AC current switch, 200–800 A range, SPDT relay output, 120 VAC powered, medium split-core case, DIN rail mounting.

AXSP (1) - (2) S D T - (3) - (4) M S

### (1) Range

2	50–200 A
4	100–400 A
6	150–600 A
8	200–800 A

### (3) Output Type

SDT	Single pole, double throw relay
-----	---------------------------------

### (4) Power Supply

24U	24 VAC/DC
120	120 VAC

### (3) Case Style

MS	Split-core, base terminals, DIN rail mounting
----	---



# ASXP-LS SERIES

## Current Sensing Switches

ASXP-LS Series Current Switches combine a current transformer and signal conditioner into a single package. The large, easy-to-install, split-core design allows for installation over existing conductors without the need to disconnect the load, even in applications where there are multiple conductors per phase. For new installations, the installation is just as easy. Just remove the top portion of the sensing ring, place the conductors inside, and snap the top back in place. The switch output is externally powered, and the setpoint is adjustable between a very wide range. The mechanical relay contact provides a trouble free, long lasting, and very durable alarm or interlock, improving safety and overall system reliability.

### Current Sensing Switch Applications

#### Monitor Large Machines

- Detect over or undercurrent conditions before they cause break downs, or interlock one process with another.

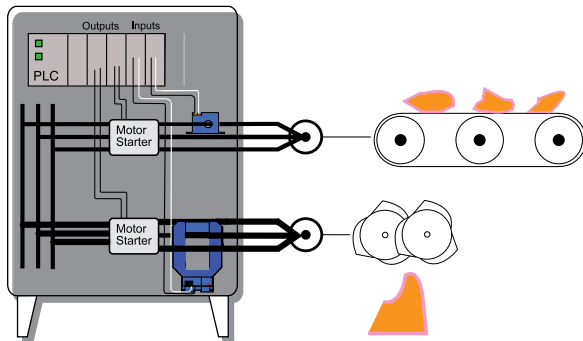
#### Water Delivery and Treatment

- Detect open discharge lines.
- Sense clogged filters or blocked intake to pumps.

#### Generators

- Shed noncritical loads when demand reaches a set level.

Interlock Infeed Conveyor with Main Crusher



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)



### Current Sensing Switch Features

#### Electromechanical Relay Output

- Provides both normally open and normally closed contacts.
- Compatible with most automation and control systems.

#### Externally Powered

- Provides a choice of failsafe\* or standard operation.

#### Simple Field Setpoint Adjustment

- Single turn potentiometer with setpoint shown on label.
- Adjustable start delay to bypass inrush current.

#### Split-core Case

- Sensing window provides ample space for bus bar, single or multiple conductors.

#### DIN Rail\*\* or Panel Mounted Case

- Simple snap onto DIN rail or attach with screws to a panel for secure mounting.

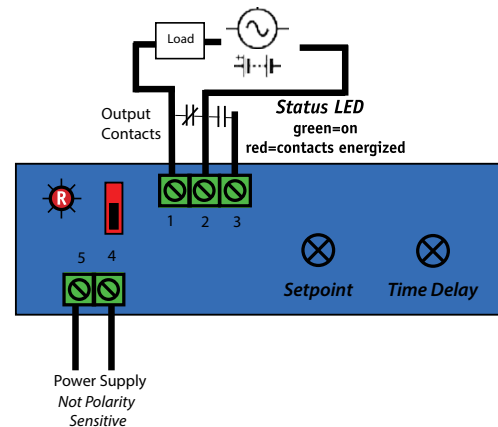
#### UL/cUL and CE Approved

- Accepted worldwide.

\*For a description of failsafe operation, see the installation instructions.

\*\*For information on the DIN rail accessories kit, see page 140.

### Current Sensing Switch Connections



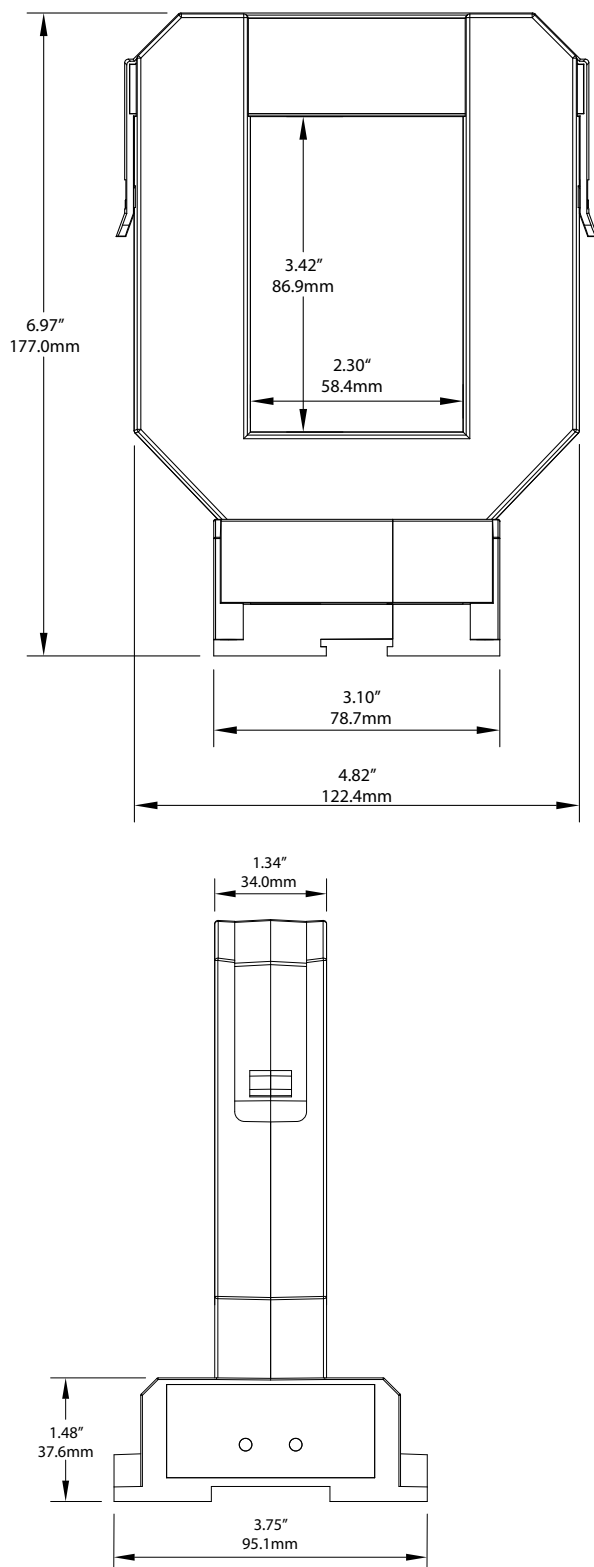
OEMs

Test & Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.

## Current Sensing Switch Dimensions

LS Case



Note: Drawings are not to scale

## Current Sensing Switch Specifications



<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• 120 VAC (108–132 V)</li> <li>• 24 VAC/DC (22–36 V)</li> </ul>
<b>Power Consumption</b>	<4 VA
<b>Input Range</b>	<ul style="list-style-type: none"> <li>• 8: 200–800 A</li> <li>• 10: 400–1000 A</li> <li>• 12: 600–1200 A</li> <li>• 16: 1000–1600 A</li> </ul>
<b>Output Description</b>	Electromechanical SPDT relay
<b>Output Rating</b>	1 A @ 120 VAC, 2 A @ 30 VDC max.
<b>Indicating Bi-color LED</b>	Green: Power on, current within range Red: Power on, current over setpoint Off: Power off or current less than 20% of range
<b>Output Operation</b>	Selectable: Normal or failsafe*
<b>Response Time</b>	900 ms max.
<b>Time Delay</b>	0.5 to 16 sec. (adjustable)
<b>Hysteresis</b>	5%
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 5 kV
<b>Frequency Range</b>	10–100 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE

\*For a description of failsafe operation, see the installation instructions.

## Current Sensing Switch Ordering Information

Sample Model Number: ASXP8-SDT-24U-LS

AC current sensing switch, 200–800 A range, single pole, SDT relay (Form C), 24 VAC/DC, split-core case, DIN rail mounting.

ASXP <sup>(1)</sup>     - <sup>(2)</sup> S D T - <sup>(3)</sup>     - <sup>(4)</sup> L S

## (1) Range

8	200–800 A
10	400–1000 A
12	600–1200 A
16	1000–1600 A

## (2) Output Type

SDT	SPDT Relay (Form C)
-----	---------------------

## (3) Power Supply

24U	24 VAC/DC
120	120 VAC

## (4) Case Style

LS	Split-core, base terminals, DIN rail mounting
----	---

# DS1 SERIES

## DC Current Sensing Switches

The DS1 Series Current Sensing Switches are designed to trip a solid-state contact when there is DC current through the sensor window. The sensor can be used to interlock two operations for safety. When one load is energized, the contact will keep another from also energizing. The power supply voltage and the controlled circuit voltage can be derived from a single source or separate sources. The monitored circuit can be any DC voltage and any amount of current as long as the conductor will pass through the window. The monitored circuit is completely isolated from the control circuit. If there is 3/4 of one amp through the aperture, the output will change state.



### Current Sensing Switch Applications

- As a safety interlock, it is a non-intrusive method to keep personnel safe.
- Alarm contact when a load is operating or when it is not energized.
- Detect PV system earth leakage by monitoring the earth bond conductor.
- Use the contact to turn on a lighting circuit when a load is energized.
- Instant indication of equipment status.

### Current Sensing Switch Features

#### Compact, One-piece Design

- Fits in easily amongst motor starters and power supplies in crowded control cabinets.

#### Input Isolation

- Safer than shunt/relay combinations.

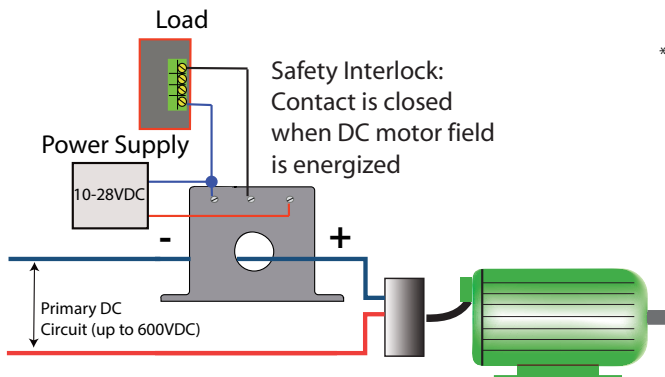
#### Unique Power Supply Connection

- Sensor power and switched load share a common point making installation easy.

#### Built-in Mounting Feet

- Simple, two-screw installation allows for secure mounting, or attach to a DIN rail with the supplied adaptors\*.

\*For information on the DIN rail accessories kit, see page 140.



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

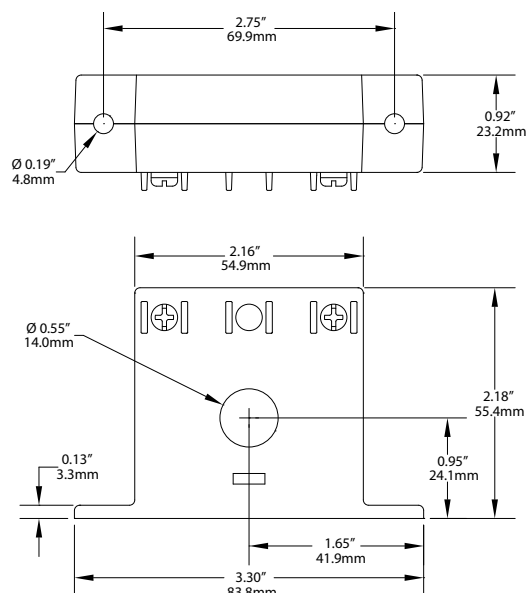
OEMs

#### Test & Evaluation Units for OEMs

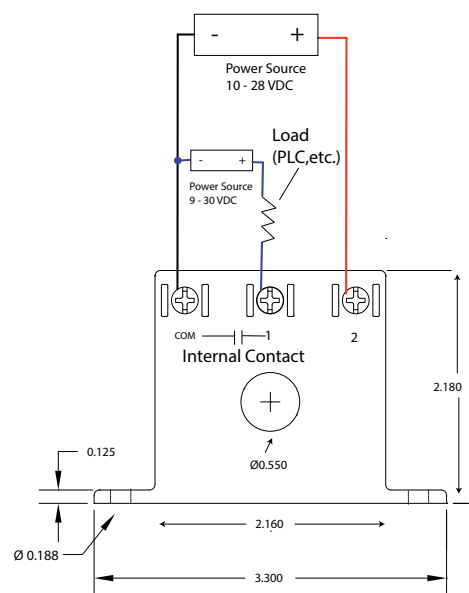
Free program expedites evaluation process. See page 3 for details.

## Current Sensing Switch Dimensions

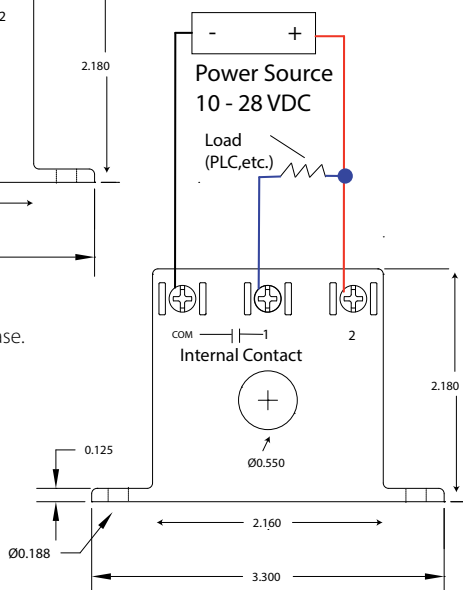
FF Case



## Current Sensing Switch Connections



Notes:  
Zinc plated screw terminals solid-core case.  
Split core versions are not available.  
12-22 AWG solid or stranded.



## Current Sensing Switch Specifications

<b>Power Supply</b>	10-28 VDC
<b>Power Consumption</b>	<2 VA
<b>Setpoint Range</b>	0.75 A (factory set)
<b>Output Description</b>	Isolated solid-state relay
<b>Off-state Leakage</b>	<1 $\mu$ A
<b>Response Time</b>	600 ms max.
<b>Time Delay</b>	None, after 5 seconds when first powered up
<b>Output Rating</b>	1 A up to 30 VDC
<b>Hysteresis</b>	5%
<b>Overload</b>	500 A continuous, 1000 A @ 5 sec.
<b>Isolation Voltage</b>	Tested to 3 KV
<b>Frequency Range</b>	DC
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0-95% RH, non-condensing
<b>Listings</b>	Designed to meet UL/cUL and CE approval

## Current Sensing Switch Ordering Information

Sample Model Number: DS1-NODC-FF

Solid-core DC current sensing switch closes with 0.75 ADC, normally open, front terminal solid-core case. (DIN rail adapters are included)

(1) (2) (3)  
DS 1 - N O D C - F F

(1) Range

1 0.75 ADC

(2) Output Type

NODC Normally Open (1 A @ 28 VDC)

(3) Case Style

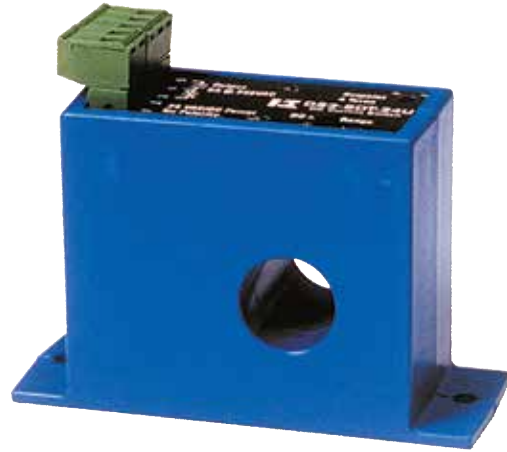
FF Solid-core, front terminals



# DS3 SERIES

## Current Sensing Switches

DS3 Series Current Sensing Switches combine a Hall effect sensor, signal conditioner and a limit alarm into a single package. The DS3 Series offers three jumper-selected current input ranges and frequency response from DC to 400 Hz. Available in a solid-core case with choice of relay or a universal solid-state output.



### Current Sensing Switch Applications

#### Welders and Platers

- Instant indication of equipment status.

#### Large Drive Motors

- Provides enhanced field loss protection.

#### Power Supplies

- Signals overcurrent before equipment fails.

#### Machine Operation

- Instant status of motors, lamps and other loads.

#### Telecom Sites

- Monitors battery output.

### Current Sensing Switch Features

#### Compact, One-piece Design

- Fits in easily amongst motor starters and power supplies in crowded control panels.

#### Input Isolation

- Safer than shunt/relay combinations.

#### Output Installation

- Isolated output greatly simplifies wiring.

#### Pluggable Terminals

- Speed installation.

#### Tough

- Designed to handle a wide range of temperatures found in industrial environments.

#### Adaptive Hysteresis

- Hysteresis is 5% of setpoint, allowing closer control than fixed hysteresis switches.

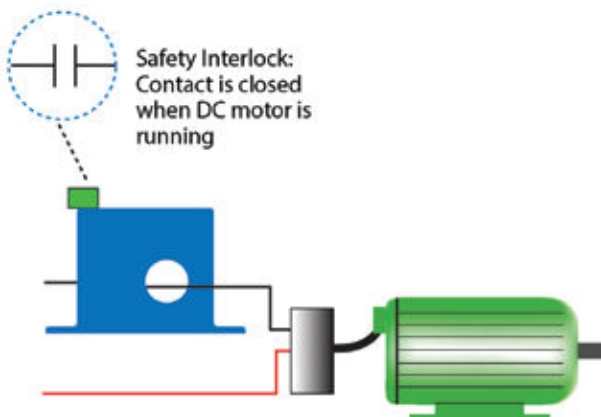
#### Built-in Mounting Feet

- Simple, two-screw installation allows for secure mounting.

#### UL/cUL Approved, CE Pending

- Accepted worldwide.

#### Failure Detection



- For additional Application Examples, go to [www.nktechnologies.com/applications](http://www.nktechnologies.com/applications)

OEMs

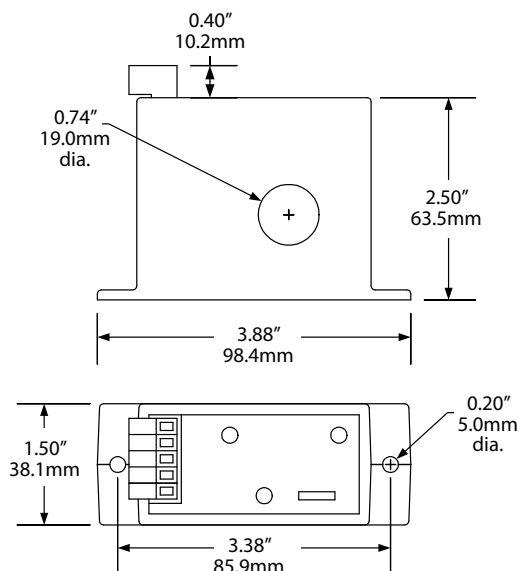
Test &amp; Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.



## Current Sensing Switch Dimensions

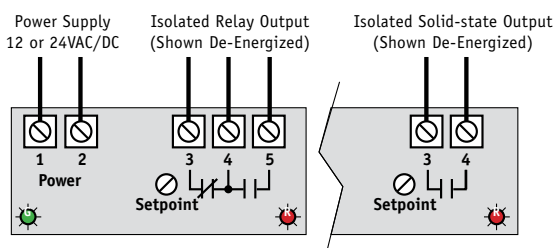
Case



## Current Sensing Switch Specifications

<b>Power Supply</b>	10–28 VDC
<b>Power Consumption</b>	<2 VA
<b>Setpoint Range</b>	2–20, 10–50 and 20–100 A DC adjustable (2–14, 10–35, 20–70 A AC)
<b>Output Description</b>	Isolated solid-state or relay contacts
<b>Output Rating</b>	• Solid-state: 0.15 A @ 240 VAC or VDC (N.O. only) • Relays: 5.0 A @ 240 VAC, 5.0 A @ 30 VDC (SPDT)
<b>Off-state Leakage</b>	<10 $\mu$ A (solid-state), none (relay)
<b>Response Time</b>	80 ms max.
<b>Time Delay</b>	None
<b>Hysteresis</b>	5%
<b>Isolation Voltage</b>	UL listed to 1270 VAC, tested to 3 kV
<b>Frequency Range</b>	DC to 400 Hz
<b>Case</b>	UL94 V-0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	UL/cUL, CE pending

## Current Sensing Switch Connections



Notes:

Pressure plate screw terminals.

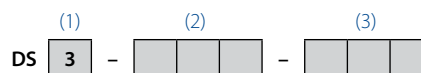
12–22 AWG solid or stranded.

Field-adjustable setpoint.

## Current Sensing Switch Ordering Information

Sample Model Number: DS3-SDT-24U

DS current sensing switch with SPDT relay contacts and 24 VAC/DC power supply. (DIN rail adapters are included)



(1) Setpoint Range

3	2–20, 10–50 and 20–100 A, jumper-selectable
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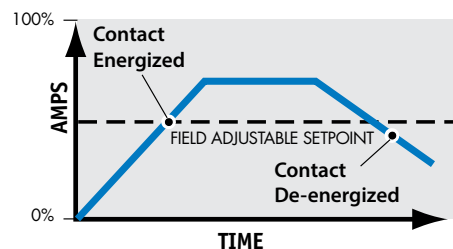
(2) Output Type

SDT	SPDT Relay (Form C)
NOU	Solid-state N.O. AC/DC

(3) Power Supply

24U	+24 VAC/DC
12U	+12 VAC/DC

## DS3 Series Sample Output/Power Supply



# DS1-FD SERIES

## AC or DC Current Relay

DS1-FD Current Relays monitor AC or DC loads: motor, crane, or welding equipment. The relay features a large aperture and solid-core design that allows for quick installation, just thread the conductor through the sensing window (aperture) and reconnect on the other side. The relay output is isolated from the monitored circuit and can switch up to two amps up to 125 VAC, or two amps to 30 VDC. The output contacts can reset to original condition on current fall or latch in the tripped condition. The trip point (where the output relay changes state) can be adjusted between 20 and 400 amps by adjusting two potentiometers. One provides a “coarse” adjustment; the second allows for fine tuning of the trip point. The sensor mounts on a back panel or a DIN rail, and is designed to accommodate wire sizes for loads up to 400 amps or higher. The maximum current is unlimited, so current higher than the highest adjustment point will keep the relay in the tripped condition.



### Current Relay Applications

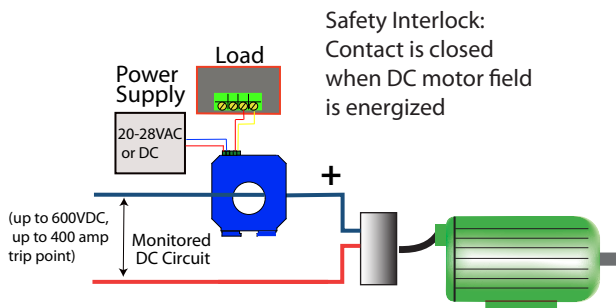
#### Welding Processes

- Detect time of use using the normally open contact, which is closed with DC current over the trip point.

#### Under Current Detection

- If the power to the field of a shunt wound DC motor is lost, the speed will be uncontrollable. The normally closed contact will be open in normal operating conditions and closed to alarm if the field power is lost. Alternatively, the normally open contact could be closed during normal conditions and open the circuit to a contactor coil if the monitored circuit's current fell below the trip point.

#### DC Motors



### Current Relay Features

#### Factory Calibrated and Warranted For Five Years

- Trip point to 400 ADC or 338 AAC.
- Sensor is not polarity sensitive with regard to the monitored circuit.
- Designed for longest life and reliability.

#### Single Pole, Double Throw Relay Output

- Can control an AC or DC circuit.
- Compatible with most automation and control systems.
- Both NO contact for alarm (closing on current rise) and NC contact (opening on current rise) for disconnecting applications.
- Automatic reset or latching output available.
- Dual potentiometers allow for accurate trip point adjustment.

#### Externally Powered

- Simple and reliable connection.

#### Solid-core Case

- Sensing window provides ample space for single or multiple conductors.

#### DIN Rail or Panel Mount

- Simply snap onto a DIN rail\* or attach with screws to a panel for secure mounting.

#### Designed for UL, CUL and CE Approval

- Accepted worldwide.

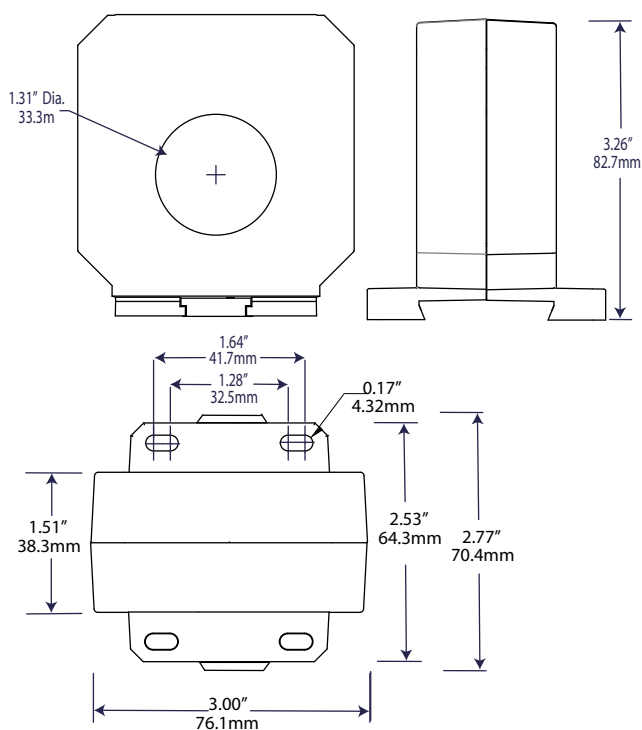
\*For information on the DIN rail accessories kit, see page 140.

OEMs

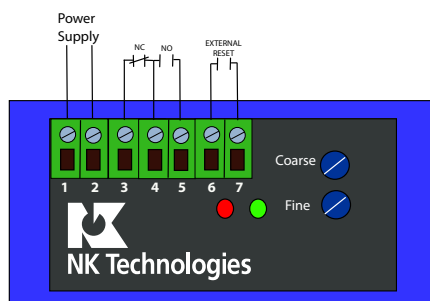
Test &amp; Evaluation Units for OEMs

Free program expedites evaluation process. See page 3 for details.

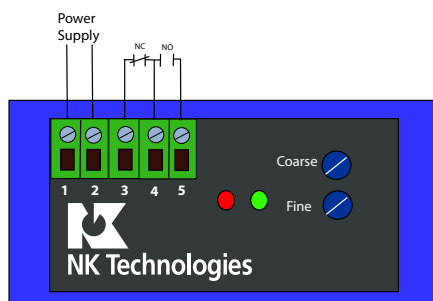
## Current Relay Dimensions



## Current Relay Connections



Latching



Auto Reset

## Current Relay Specifications

<b>Power Supply</b>	24U: 24 VAC/DC (20–28 V)
<b>Consumption</b>	<2 VA
<b>Output</b>	SPDT relay, 2 A @ 125 VAC, 2 A @ 30 VDC (max., general duty)
<b>Maximum Monitored Current</b>	>1000 ADC (unlimited)
<b>Response Time</b>	80 ms (max.)
<b>Range</b>	20–400 ADC (17–338 AAC 60 Hz)
<b>Dielectric Resistance</b>	Working voltage to 1500 VDC
<b>Frequency Range</b>	DC to 400 Hertz
<b>Case</b>	UL94 V0 Flammability Rated
<b>Environmental</b>	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
<b>Listings</b>	Designed for UL/cUL and CE approval

## Current Relay Ordering Information

Sample Model Number: DS1-SDTA-24U-FD

DC current operated relay, 20–400 ADC adjustment range, SPDT relay output, 24 VAC/DC powered, panel or DIN rail mounting.

(1) (2) (3) (4)

DS 1 - - - 2 4 U - F D

## (1) Range

1	Adjustment range 20 to 400 ADC
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## (2) Output

SDTA	Single Pole, double throw relay 2 A @ 120 VAC Auto Reset
SDTL	Single Pole, double throw relay 2 A @ 120 VAC Latching

## (3) Power Supply

24U	24 VAC or DC externally powered
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## (4) Case Style

FD	Solid-core, DIN rail or panel mount
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