

## Specifications

Power	24U =15-28 VAC/DC 12U =11.4-20 VAC/DC
Consumption	Relay (SDT) <20mA de-energized <133mA energized Solid State <20mA de-energized <90mA energized
Setpoint Ranges (DC)	2-20A, 10-50A, 20-100A
(AC)	2-17, 10-41, 20-80A
Setpoint Adjust	11 Turn potentiometer
Isolation Voltage	3KV
Frequency Range	DC to 400 Hz
Repeatability	0.5%
Hysteresis	5% of setpoint
Sensing Aperture	0.75" (19mm)
Case	UL 94-V0 Flammability Rated

### Output Rating & Environmental

<b>NOU</b>	Isolated Solid State Switch 0.15A @ 240 VAC/DC
Off State Leakage	NONE
Operating Temp.	-20 to 50°C (-4 to 122°F)
Storage Temp.	-30 to 60°C (-22 to 140°F)
<b>SDT</b>	0-95% RH, Non Condensing SPDT (Form C) Relay 5A General Purpose @ 240 VAC 5A @ 30 VDC
Operating and Storage	-20 to 50°C (-4 to 122°F) 0-95% RH, Non Condensing
Approvals	UL/cUL, CE

### For products intended for the EU market, the following is applicable to the CE compliance of the product:

The DS3 series comply with EN 61010-1 CAT III 300Vrms max. line-to-neutral measurement category. If insulated cable is used for the primary circuit, the voltage rating of the measurement category can be improved according to the insulation characteristics given by the cable manufacturer.

#### Warning! Risk of Danger

Safe operation can only be guaranteed if the current switch is used for the purpose it has been designed for and within the limits of the technical specification. When this symbol is used, it means you must consult all documentation to understand the nature of potential hazards and the action required to avoid them.

#### Warning! Risk of Shock

When operating the current switch, certain parts of the module may carry hazardous live voltage (e.g. primary conductor, controlled load). The switch should not be put into operation if the installation is not complete.



## Model Number Key

**DS3 - SDT - 24U**

### Power Supply

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

### OUTPUT:

NOU Normally Open Solid State Switch, 0.15A @ 240 VAC/VDC  
SDT Single Pole Double Throw (SPDT or Form C) relay

### SENSOR TYPE:

DS3 DC current sensing switch with 3 jumper selectable range and adjustable setpoint

## Ranges & Maximum Amps

RANGE JUMPER	RANGE SOLID CORE	MAX 5 SEC.	MAX CONTINUOUS
LOW	2-20 A	No limit	No limit
MID	10-50 A		
HIGH	20-100 A		

## Switching Response Time

### ALL Ranges

<i>ON Delay</i>	
5% over Setpoint	80 ms max
50% over Setpoint	60 ms max
100% over Setpoint	60 ms max
<i>OFF Delay</i>	60 ms max



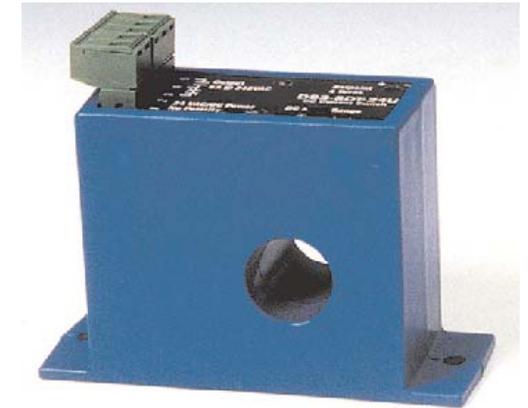
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# INSTRUCTIONS



## DS3 SERIES DC Current Operated Switch

### Quick "How To" Guide

1. Run the wire you are monitoring through aperture.
2. Mount the sensor.
3. Connect power & output wiring.
  - A. Make sure power supply matches specifications.
  - B. Make sure output load matches the output shown on the sensors' label.
4. Adjust Setpoint
  - A. Chose correct range by positioning the Range Jumper
  - B. Use the potentiometer to adjust the setpoint.

## Description

DS3 Series are DC current operated switches. They operate (switch) when the current level through the hole exceeds the adjustable setpoint. They accept 24 VAC or 24 VDC power. The outputs are isolated from the input and the power supply. The sensor can be supplied with solid-state output (-NOU) or with form C relay output (-SDT).

## Installation

Run wire to be monitored through opening in the sensor. DS3 switches work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures. They can be mounted in any position or hung directly on wires with a wire tie. Just leave at least one inch distance between sensor and other magnetic devices.

## Power Wiring

Connect 24 VAC or 24 VDC (or 12 Volts depending on the model) power to Terminals 1 and 2. Tighten to 4.5 In-Lb torque. The connection is not polarity sensitive. Terminals are removable to make wiring easier. Be sure to seat the terminal properly in the location marked "Power"

## Output Wiring

Connect control or monitoring wires to the sensor. Use up to 12-22 AWG copper wire and tighten terminals to 4.5 In-Lb torque. Be sure the output load does not exceed the switch rating.

Incandescent lamps can have "Cold Filament Inrush" current of up to 10 times their rated amperage. Use caution when switching lamps, especially with solid state output sensors.

## Setpoint Adjustment

### Range & Setpoint

DS3 switches have two setpoint adjustment mechanisms:

1. Select the setpoint **RANGE** with the Range Jumper.
2. Fine tune the **SETPOINT** with the 11 turn potentiometer (pot).

The 11 turn pot is shipped from the factory set fully counter clockwise (CCW) to the lowest setpoint. Turning the pot clockwise (CW) will increase the setpoint. The pot has a slip-clutch to prevent damage at either end of its rotation. To determine where the adjustment is, turn the pot at least 11 times CCW. This will return it to the minimum setpoint.

### Adjustment Notes:

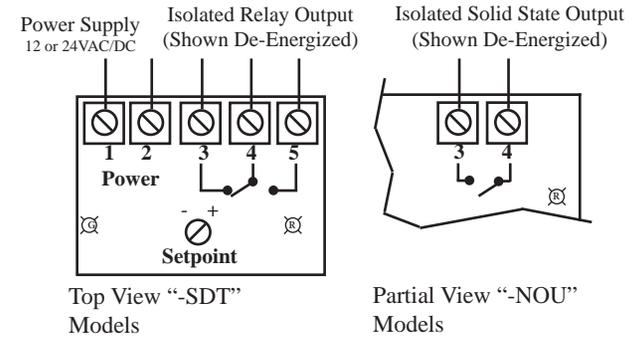
1. NOU output contacts are solid-state. Check output status by applying a small load and reading the voltage drop across the contacts. **An ohmmeter will give misleading results.** SDT output contacts are mechanical, and can be tested with an ohmmeter.
2. We recommend adjusting setpoint to allow for normal voltage variations.
3. Adaptive Hysteresis (deadband) is 5% of the setpoint. This allows sensitivity at low setpoints while eliminating dithering and output chattering at high setpoints.

MONITORED AMPS	OUTPUT TYPE		Output LED
	N.O.	N.C.	
None or below range	OPEN	CLOSED	OFF
Below trip level	OPEN	CLOSED	OFF
Above trip level	CLOSED	OPEN	ON

## Trouble Shooting

### 1. Sensor is always tripped

- A. The jumper may be set in a range that is too low for current being monitored. *Move jumper to the correct range.*
- B. The setpoint may be too low. *Turn pot CW to increase setpoint.*
- C. Switch has been overloaded and contacts are burned out. *Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts)*



### Typical Adjustment

1. Make sure all wiring is correct, all terminals are tight and that power is on (green power LED)
2. Move the jumper to the desired range. Turn the pot to minimum setpoint (11 turns CCW).
3. Have normal operating current running through sensor. The output should be tripped and red output LED "ON".
3. Turn the pot CW until the unit un-trips. This is indicated by the LED going off and by the output switching.
4. Now turn the pot CCW slowly until the unit trips again. It now set at the current level being monitored.
  - A. To Set UNDERLOAD - Turn the pot about 1/8 turn further CCW.
  - B. To Set OVERLOAD - Turn the pot about 1/8 turn further CW.