

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) 2-14.14, 10-35.36, 20-70.71AAC)
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

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

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

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

Sensors and Transducers



Other NK Technologies Products Include:

AC & DC Current Transducers
AC & DC Current Operated Switches
1 ϕ & 3 ϕ Power Transducers
Current & Potential Transformers (CTs&PTs)

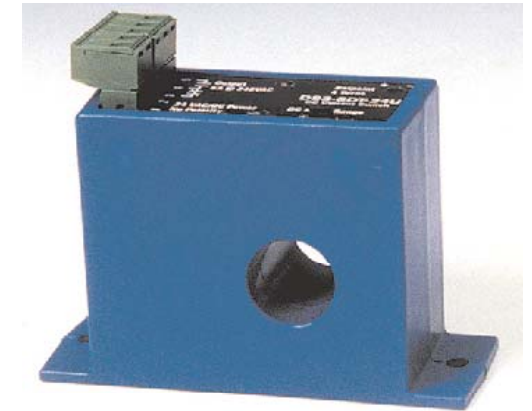


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INSTRUCTIONS



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:

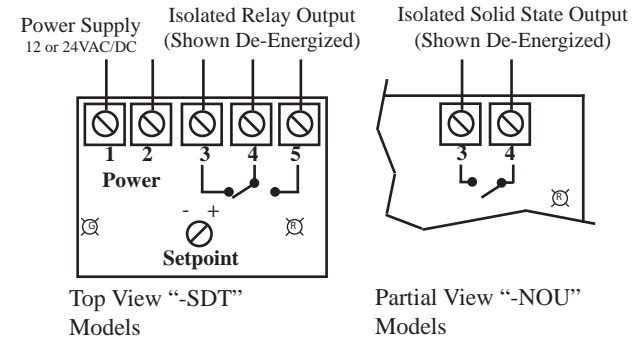
1. NOU output contacts are solid-state. Check output status by applying a small load and reading the voltage drop across the contacts. **An ohmmeter will give misleading results.** SDT output contacts are mechanical, and can be tested with an ohmmeter.
2. We recommend adjusting setpoint to allow for 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.