

Specifications

Power Supply Consumption	24U =20-28 VAC/DC Relay (SPDT) <17mA de-energized <26mA energized
Setpoint Ranges	< 0.75 VA 20-400A (DC) 17-338A (AC, typical at 60 hertz)
Setpoint Adjust	270° Turn potentiometer (coarse) 270° Turn potentiometer (fine)
Dielectric Resistance	Working Voltage to 1500 VDC
Frequency Range	DC to 400 Hz
Repeatability	0.5%
Hysteresis	5% of setpoint
Sensing Aperture	1.31" (33.3 mm)
Case	UL 94-V0 Flammability Rated

Output Rating & Environmental

SDTA (Automatic Reset)	SPDT (Form C) Relay 2A General Purpose @ 125 VAC 2A @ 30 VDC
SDTL (Latching Reset)	SPDT (Form C) Relay 2A General Purpose @ 125 VAC 2A @ 30 VDC
Operating and Storage	-20 to 50 DegC (-4 to 122 DegF) 0-95% RH, Non Condensing
Approvals	Designed For UL/cUL, CE

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

The DS1-FD 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

DS1 - SDTA - 24U - FD

Housing Type

FD Solid Core, DIN or panel mtg.

Power Supply

24U 24VAC/DC

OUTPUT:

SDTA Single Pole Double Throw (SPDT or Form C) relay, Auto Reset

SDTL Single Pole Double Throw (SPDT or Form C) relay, Latching

SENSOR TYPE:

DS1 DC current sensing switch with range 20-400 ADC and adjustable setpoint

Switching Response Time

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



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INSTRUCTIONS



DS1-FD SERIES DC Current Operated Switch

Quick "How To" Guide

1. Mount the sensor by snapping onto a DIN rail or attaching to a panel using the mounting holes.
2. Run the wire you are monitoring through aperture.
3. Connect power & output wiring.
 - A. Make sure power supply matches specifications.
 - B. Make sure controlled load requires less than the sensor contact capacity.
4. Adjust Setpoint
 - A. Turn the Coarse Adjustment fully clockwise.
 - B. Turn the Fine Adjustment fully counter-clockwise.
 - C. Energize the monitored load, and set the trip point by turning the Coarse Adjustment slowly counter-clockwise until the sensor trips.
 - D. Leave the adjustment tripped to monitor for under current conditions, or use the Fine Adjustment to untrip the output to detect over current conditions.

Description

DS1-FD Series are DC current operated relays. They operate (relay contacts change state) 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 form C relay output (-SDT), either resetting when the monitored current falls below the setpoint, or latching in the tripped condition until an external button closes between the “reset” terminals.

Installation

Mount the sensor to a DIN rail or secure to a panel with screws through the mounting holes. Run wire to be monitored through opening in the sensor.

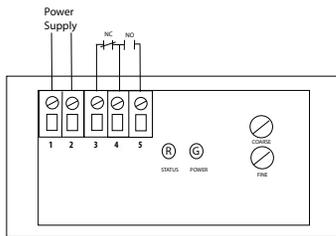
DS1-FD switches work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures. They can be mounted in any position or hung directly on wires with a wire tie. Just leave at least one inch distance between sensor and other magnetic devices.

Power Wiring

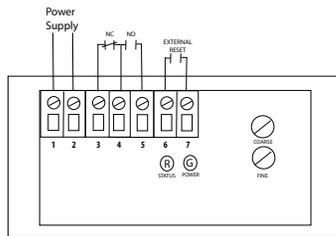
Connect 24 VAC or DC power to Terminals 1 and 2. Tighten to 5-7 In-Lb torque. The connection is not polarity sensitive. The Green LED will light when the sensor is energized.

Output Wiring

Connect control or monitoring wires to the sensor. Use up to 14-22 AWG copper wire and tighten terminals to 5-7 In-Lb torque. Be sure the output load does not exceed the relay contact rating. Note that the NO contact closes on current rise, and the NC contact opens on current rise.



Connection-Auto Reset



Connection-Latching

Note: reset is not isolated from sensor power. Do Not add voltage to the reset button, shorting action only

Setpoint Adjustment

Setpoint Adjustment

DS1-FD switches have two setpoint adjustment mechanisms:

1. Turn the setpoint Coarse Adjustment (CA) fully CW to set the trip point at the maximum (400 ADC).
DO NOT OVERTURN!
2. Turn the Fine Adjustment (FA) fully CCW .
3. Slowly turn the CA CCW until the sensor trips.
4. Slowly turn FA CW until the sensor untrips.
5. The adjustment can be left at this point and the output will **change on current increase**.
6. Turning the FA CCW will cause the sensor output to trip. This setting will **detect a current decrease** and the relay contacts will revert to original condition when current falls below the set point.
7. If turning FA CW in step 4 does not allow the output to untrip, return to step 1, and readjust using CA.

Adjustment Notes:

1. Relay output contacts are mechanical, and can be tested with an ohmmeter if the controlled circuit is not energized.
2. If the controlled circuit is energized, testing can be done with a volt meter. A closed contact will show no potential and an open contact will show full controlled circuit voltage.
3. We recommend adjusting setpoint to allow for normal voltage variations.
5. Hysteresis (deadband) is 5% of the setpoint. During set point adjustment, the hysteresis will be tighter than in normal operation to make adjustment easier.
6. When adjusting the latching version models, remember to short between terminals 6 and 7 to allow the output to reset.

Contact and LED Action:

MONITORED CIRCUIT AMPS	OUTPUT CONTACT		RED STATUS LED
	NO	NC	
None or < 20ADC	OPEN	CLOSED	OFF
Lower Than Set Point	OPEN	CLOSED	OFF
Higher Than Set Point	CLOSED	OPEN	ON

Trouble Shooting

1. Sensor is always tripped

- A. Current may be higher than 400 ADC.
- B. The setpoint may be too low. *Turn Coarse Adjustment pot CW to increase setpoint.*
- C. Sensor output has been overloaded and contacts are burned out. *Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).*

2. Sensor will not trip

- A. Unit is not powered. *Check power supply and power wiring, confirm Green LED is on.*
- B. The current may be lower than the 20 amp minimum needed to operate the sensor output. *Loop the conductor through the sensing aperture twice or more to increase the current “seen” by the sensor.*
- C. The setpoint may be too high. *Turn pot CCW to decrease setpoint.*
- D. Switch has been overloaded and contacts are burned out. *Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).*