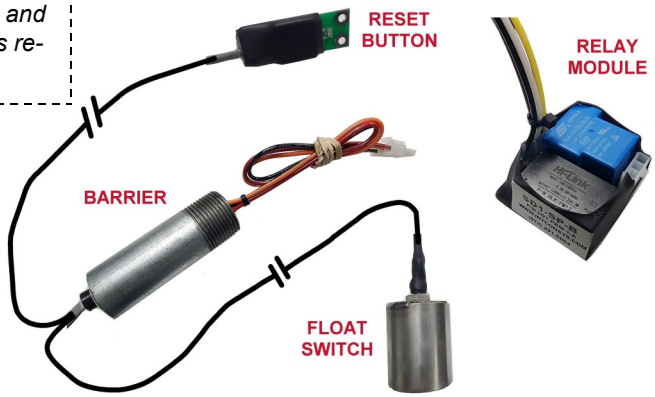
Integrated Control Systems

SD1 Safety Disconnect

SD1-SP, and SD1-DP Installation Instructions
Revision C

Integrated Control Systems

WARNING: *This product MUST be installed by qualified personnel only. It must be installed in compliance with local and national electrical codes and intrinsic safety standards. ICS is not responsible for damages or losses resulting from misuse or incorrect installation of this product.*



The SD1 Safety Disconnect is used in fuel site sumps to automatically disconnect power to equipment and / or sound an alarm in the event of a fuel leak. It contains a chemical resistant 304 stainless steel float switch and housing. An included reset switch allows the service technician to reset the SD1 after the fault condition is corrected. The SD1 can also be reset by cycling power. Read through the instructions completely before beginning installation.

I. PARTS IDENTIFICATION:

1. Open the packaging and verify that the required parts are present. Use the diagram at upper right to identify the SD1 components.

II. INSTALLATION:

1. Disconnect power from the junction box at the circuit breaker. Tag the breaker to prevent accidental power-on.

2. Leave the relay module disconnected from the barrier. Locate an unused 3/4” threaded fitting in the junction box or light box and install the threaded barrier.

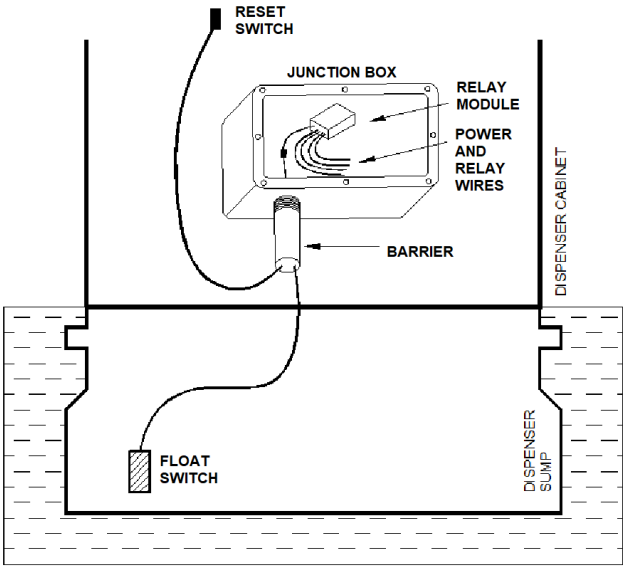
3. Connect the barrier plug to the relay module using the attached connector. Make sure that the connector is oriented the correct direction and is firmly latched. The relay module remains inside the j-box or light box.

4. Route the float switch wire down to the sump. The float switch may sit on the bottom of the sump, or it may hang from the wire. To hang the float switch, use a wire tie to fasten the float switch wire to a pipe or conduit above the sump.

5. Select a location for the reset switch. It should be mounted in a location with easy access from the sump, as it will be used after the technician has corrected the source of the SD1 trigger. Route the reset switch wire to the desired location and fasten it with screws or wire ties.

6. The SD1 can operate from either 110VAC or 220VAC. Connect the AC power supply to the wires as shown in the wiring connections table at right.

7. The relay module contains both normally open and normally closed contacts, allowing power to be disconnected, and an annunciator to be switched on if desired. Connect the relay module wires to the desired load and/or annunciator. The load should be connected to the normally open contacts. SD1-DP models have 2 relay modules and 2 sets of contacts. See attached wiring example. If you are unsure of the correct connection, contact ICS technical support.



Wiring Connections:

1.	Black	110VAC HOT or 220VAC L1
2.	White	110VAC Neutral or 220VAC L2
3.	Brown	Relay Common
4.	Violet	Relay Normally Closed
5.	Yellow	Relay Normally Open

SD1 MODEL NUMBERS	
Model Number:	Description:
SD1-SP	SD1 Safety Disconnect, Single Relay
SD1-DP	SD1 Safety Disconnect, Dual Relay

Integrated Control Systems Inc.
1425 American Way, Cedar Hill, TX. 75104
PH: (972) 291-6064
FAX: (972) 291-5975
WWW.INTCONSYS.COM

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III. TESTING AND OPERATION:

STARTUP MODE: When power is applied to the SD1, it will be in startup mode. The LED on the reset button will flash 10 times per second. The SD1 will remain in startup mode until the float switch is in the DOWN position. It will then switch to NORMAL MODE.

NORMAL MODE: When power is on and the float switch is DOWN, the SD1 will close and maintain the output relay which connects the BROWN and YELLOW wires at the output. The LED on the reset button will flash once per second to indicate normal operation.

ALARM MODE: If the float switch moves to the UP position, the SD1 will switch to ALARM MODE. The LED on the reset switch will be ON SOLID and the output relay will switch OFF, disconnecting BROWN and YELLOW, and connecting BROWN and VIOLET at the output. Once the float switch is reset to the DOWN position, the SD1 can be reset by cycling power, or by pressing the reset switch.

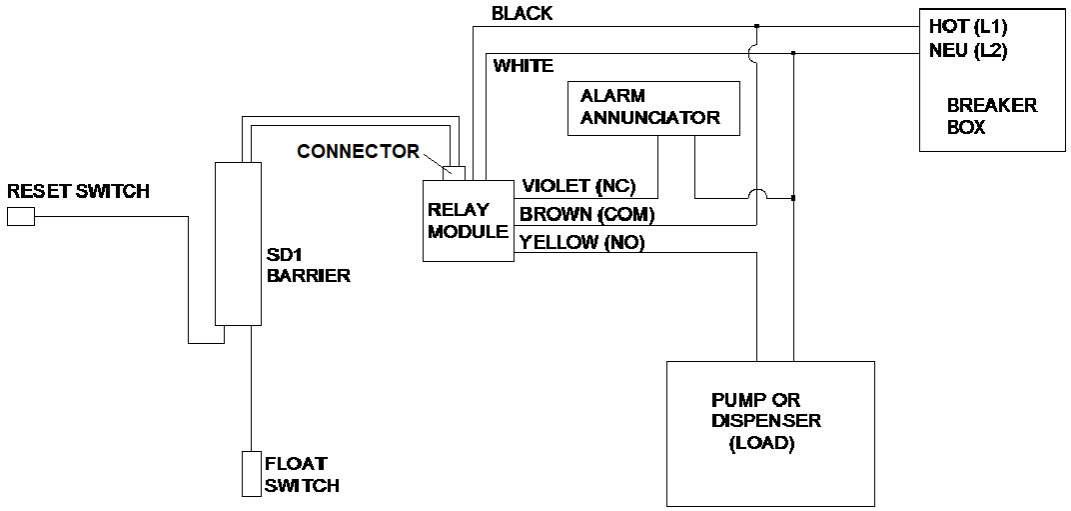
TESTING: (Follow the steps below after installation to test the unit)

1. Manually set the float switch to DOWN. Apply power to the SD1. It will be in startup mode. The reset button LED should flash rapidly for 2 seconds and then it will switch to normal mode. The output relay should activate and the LED should start flashing slowly.

2. Set the float switch to UP. The SD1 will wait 2 seconds and then switch to alarm mode. The reset button LED should be on solid and the output relay will deactivate, disconnecting output power. If an alarm indicator is connected, it should activate.

3. Set the float switch back to DOWN. Note that the SD1 remains in alarm mode. Press the reset button. The SD1 should return to normal mode. The reset button LED should begin flashing slowly and the output relay should activate again. A reset may also be performed by cycling power to the SD1 after the float switch is DOWN.

EXAMPLE WIRING



SD1 SPECIFICATIONS	
Barrier Specification	
AC Input Voltage	90VAC to 280VAC
Operating Current Draw	30mA typical
Operating Temperature	-40 to 150 deg. F
Float Switch wire length	84 inches
Reset Switch wire length	48 inches

Relay Module Specification	
Max. Relay Switching voltage	300VAC
Max Switching Current NC contacts	30A
Max Switching Current NO contacts	15A
Operating Temperature	-40 to 150 deg. F

As defined in article 501 – Class 1, Division 1, Groups C and D Locations of the National Electric Code, this apparatus and its interconnected components are intrinsically safe. Under normal or defined fault conditions this apparatus and its wiring cannot release sufficient energy to ignite a specific ignitable atmospheric mixture by opening, shorting, or grounding.