

Wiring and Powering up a SPDT 3 Level Switches

This device is a **passive multi-level float switch** used to detect liquid levels. It does not require power to run itself. Instead, it acts like a standard light switch to turn an external circuit or load on or off.

1. Understand the Wiring (Pinout)

Each of the three levels is an **SPDT (Single Pole Double Throw)** switch. This means each level has a common wire, a Normally Open (NO) wire, and a Normally Closed (NC) wire.

- **Black:** Shared Common wire for all levels.
- **Level 1 (Top):** Red and White/Red wires.
- **Level 2 (Middle):** Yellow and White/Yellow wires.
- **Level 3 (Bottom):** Orange and White/Orange wires.

Note: Usually, the solid color is one state (e.g., Normally Open) and the striped color is the opposite state (Normally Closed).

2. How to Wire It into a Circuit

Because these switches are rated for a maximum of **50 Watts (50W)**, you should **never** connect them directly to a high-power device like a large pump or motor, as it will melt the internal contacts. Instead, use them to trigger a low-power control circuit.

Standard Setup: Controlling a Relay or PLC Input

1. **Connect Power Source:** Connect your control voltage power supply (typically 12VDC, 24VDC, or 120VAC) to the **Black (Common) wire**.
2. **Connect to Load:** Connect either the solid or striped wire of your chosen level (e.g., **Red** for Level 1) to the input coil of a control relay or a PLC input card.
3. **Complete the Circuit:** Connect the other side of the relay coil or PLC ground back to the power supply's neutral/negative terminal.
4. **Heavy Load Control:** Use the heavy-duty contacts of that external relay to safely switch your actual pump, valve, or alarm.

How you connect it depends entirely on whether your PLC input card is configured as a Sinking input or a Sourcing input.

Method A: Sinking PLC Inputs (Most Common)

In a sinking configuration, the PLC input terminal expects a **+24 VDC** signal to turn ON.

1. **Power the Switch:** Connect the **Black (Common)** wire of the float switch directly to the **+24 VDC** terminal of your power supply.
2. **Wire the Signal Leads:** Connect the individual level wires to your PLC input points:
 - **Level 1 (Top):** Connect either **Red** (or White/Red) to **PLC Input 1**.
 - **Level 2 (Middle):** Connect either **Yellow** (or White/Yellow) to **PLC Input 2**.
 - **Level 3 (Bottom):** Connect either **Orange** (or White/Orange) to **PLC Input 3**.
3. **Reference the PLC Card:** Ensure the **COM** terminal of your PLC digital input module is connected to the **0 VDC (GND)** of the power supply. This is because it's sinking the current to ground (*not the BLK wire of the switch*)

Method B: Sourcing PLC Inputs

In a sourcing configuration, the PLC input terminal expects a **0 VDC (GND)** signal to turn ON.

1. **Ground the Switch:** Connect the **Black (Common)** wire of the float switch directly to the **0 VDC (GND)** terminal of your power supply.
2. **Wire the Signal Leads:** Connect the individual level wires to your PLC input points:
 - **Level 1 (Top):** Connect either **Red** (or White/Red) to **PLC Input 1**.
 - **Level 2 (Middle):** Connect either **Yellow** (or White/Yellow) to **PLC Input 2**.
 - **Level 3 (Bottom):** Connect either **Orange** (or White/Orange) to **PLC Input 3**.
3. **Reference the PLC Card:** Ensure the **COM** terminal of your PLC digital input module is connected to **+24 VDC**.

Choosing Between Solid or Striped Wires

Because each level is a single-pole double-throw (SPDT) switch, you must pick one wire per level based on your desired logic behavior:

- **Normally Open (NO):** Circuit closes when the liquid level rises. The float also rises to change switch to closed. Use this for high-level alarms or to stop a filling pump.
- **Normally Closed (NC):** Circuit opens when the liquid level rises. Use this for low-level alarms or to stop an emptying pump from running dry.

Tip: Tape off and insulate whichever wire (solid or striped) you do not use on each level to prevent accidental short circuits.