Walfront Walfront0chnqxu1vo

DC 5-36V Digital LED Relay Board Dual-MOS Cycle Timing Circuit Switch Timer Delay Module User Manual

Brand: Walfront | **Model:** Walfront0chnqxu1vo

1. Introduction

This manual provides detailed instructions for the Walfront DC 5-36V Digital LED Relay Board, a versatile Dual-MOS Cycle Timing Circuit Switch Timer Delay Module. Designed for precise control, this module is suitable for a wide range of applications including controlling DC motors, lights, LED strips, micro-pumps, and solenoid valves.

Key Features:

- **Wide Voltage Input:** Operates with DC 5-36V, offering broad compatibility.
- **Dual-MOS Parallel Active Output:** Ensures lower internal resistance and stronger power output, suitable for most equipment.
- **Emergency Stop Function:** Features a "STOP" button for immediate relay disconnection.
- **Reverse Input Protection:** Enhances safety and durability.
- **Sleep Mode:** Includes "C-P" (sleep) and "O-d" (normal) modes to manage display power.
- **Silent Operation:** No noise, no spark, and no electromagnetic interference.
- **User-Friendly Interface:** Easy to program and operate.

2. Specifications

Parameter	Value
Model Number	Walfront0chnqxu1vo
Manufacturer	Walfront
Input Voltage	DC 5-36V
Output Type	Dual-MOS Parallel Active Output
Current Rating	15 Amps

Parameter	Value
Connector Type	Screw Terminal
Contact Material	Copper Alloy
Contact Type	Normally Open
Mounting Type	Panel Mount

Figure 2.1: Dimensions of the Walfront Digital LED Relay Board. The board measures approximately 60mm in length, 34mm in width, and 12mm in height, making it compact for various installations.

3. Component Overview

The Walfront Digital LED Relay Board features a clear layout for easy identification and operation of its components.

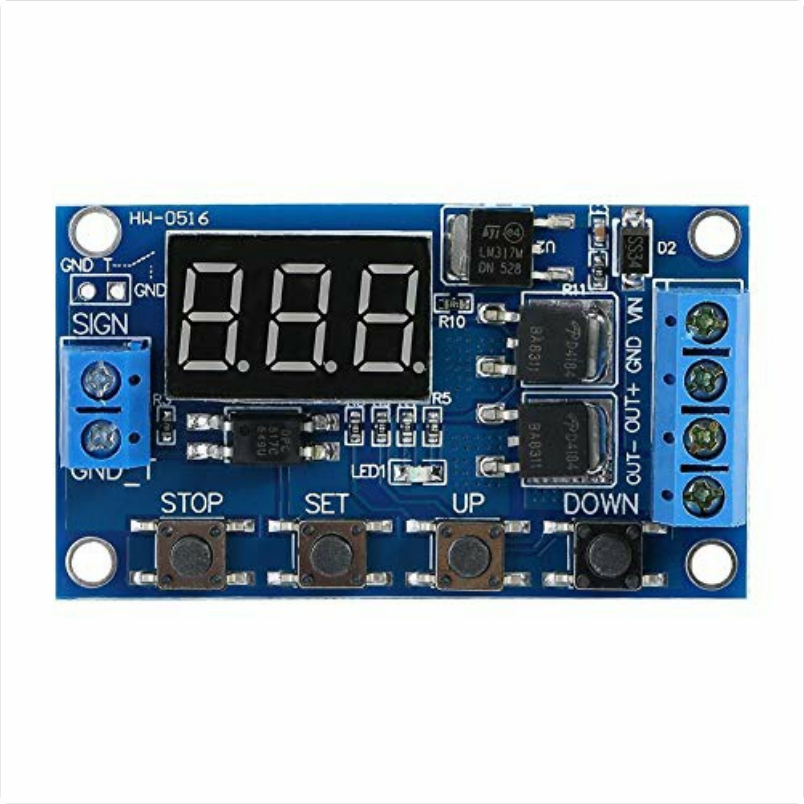

Figure 3.1: Top view of the Walfront Digital LED Relay Board. This image highlights the main components including the 3-digit LED display, four control buttons (STOP, SET, UP, DOWN), and the screw terminals for input, trigger, and output connections.

- **LED Display:** A 3-digit LED display shows current time values, mode settings, and operational status.
- **Control Buttons:**
  - **STOP Button:** Used for emergency stop (disconnects relay) and toggling sleep modes.
  - **SET Button:** Used to enter/exit programming mode and confirm parameter settings.
  - **UP Button:** Used to increase values, navigate through options, and view current settings.
  - **DOWN Button:** Used to decrease values and navigate through options.
- **Input Terminals (GND, V+):** For connecting the DC 5-36V power supply.
- **Trigger Terminal (SIGN):** For connecting an external trigger signal (DC 3-24V).
- **Output Terminals (OUT-, OUT+):** For connecting the load to be controlled.
- **LED1 Indicator:** Illuminates when the output is active (ON).

4. Setup and Wiring

Proper wiring is crucial for the safe and effective operation of the relay module. Ensure all connections are secure before applying power.

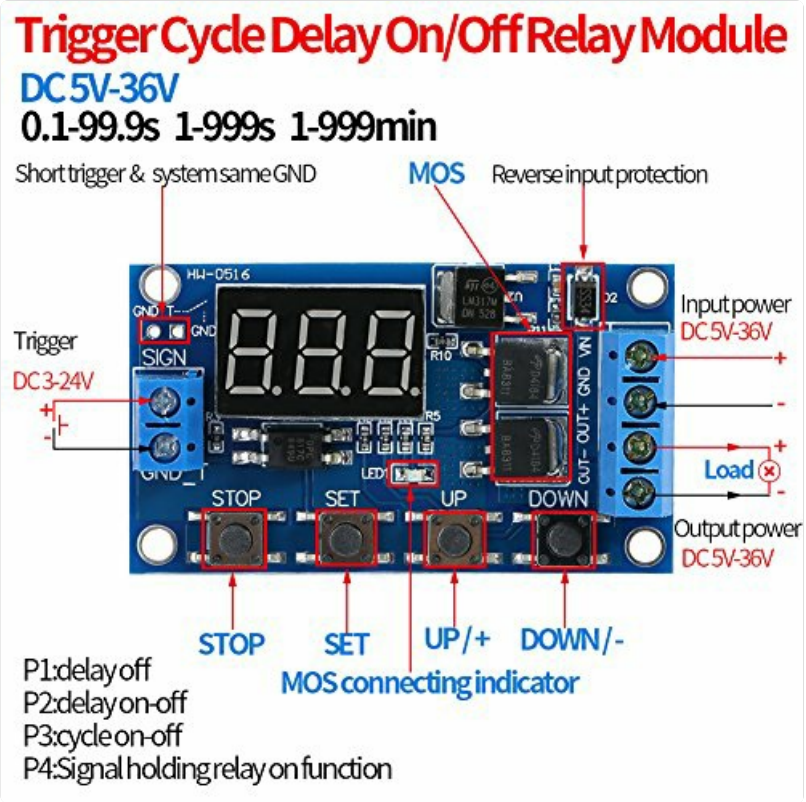

Figure 4.1: Detailed wiring diagram. Connect DC 5-36V input power to the GND and V+ terminals. The trigger signal (DC 3-24V) connects to the SIGN terminal. The load is connected to the OUT- and OUT+ terminals, which provide the switched output power (DC 5-36V).

1. **Power Input:** Connect your DC 5-36V power supply to the **GND** (negative) and **V+** (positive) screw terminals on the right side of the board. The module features reverse input protection.
2. **Trigger Input:** If using an external trigger, connect your DC 3-24V trigger signal to the **SIGN** terminal on the left side. Ensure the trigger signal shares a common ground with the module's power supply if applicable.
3. **Load Connection:** Connect the device you wish to control (e.g., motor, LED strip) to the **OUT-** and **OUT+** screw terminals on the right side. These terminals provide the switched output power (DC 5-36V).
4. **Initial Power On:** Once all connections are made, apply power. The LED display should illuminate, typically showing "000" or the last set mode.

5. Operation and Programming

The module offers various operating modes and settings for flexible timing control. Follow these steps to program the device.

5.1. Entering Setup Interface

- To enter the setup interface, press and hold the **SET** button for more than 2 seconds, then release. The display will show the current operating mode (e.g., P1.1).
- To exit the setup interface at any time, press and hold the **SET** button for more than 2 seconds. The display will flash three times and return to "000", indicating the timer is ready.

5.2. Setting Operating Mode

While in the setup interface, use the **UP** or **DOWN** buttons to cycle through the available operating modes. The trigger is set to detect a change from LOW to HIGH. If the trigger remains ON, it will only time once for modes requiring a trigger.

- **P1.1: Delay OFF**
  - When triggered, the output is ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, there is no effect until the current timing cycle is complete.
- **P1.2: Delay ON-OFF (Restart)**
  - When triggered, the output is ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, the "OP" time restarts from the beginning.
- **P1.3: Delay ON-OFF (Clear)**
  - When triggered, the output is ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, the timer resets to "000" and the output turns OFF immediately.
- **P1.4: Power-On Delay OFF**
  - When the board is powered on, the output is ON for the "OP" time. After "OP" time, the output turns OFF.
  - No external trigger is required for this mode.
- **P2.1: Trigger OFF then ON (No Restart)**
  - When triggered, the output is OFF for the "CL" time, then ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, there is no effect until the current timing cycle is complete.
- **P2.2: Trigger OFF then ON (Restart)**
  - When triggered, the output is OFF for the "CL" time, then ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, the cycle restarts from the "CL" time.
- **P3.1: Cycle ON-OFF (Triggered)**
  - When triggered, the output is ON for "OP" time, then OFF for "CL" time. This cycle repeats for the number of "LOP" times set.
  - If triggered again during the cycle, the output turns OFF and the timer clears.
- **P3.2: Cycle ON-OFF (Power-On)**
  - When the board is powered on, the output is ON for "OP" time, then OFF for "CL" time. This cycle repeats for the number of "LOP" times set.
  - No external trigger is required for this mode.
- **P-4: Signal Holding Relay ON**
  - When triggered, the output is ON for the "OP" time. After "OP" time, the output turns OFF.
  - If triggered again during timing, the timer resets.
  - *Note:* If the trigger signal is held, the timing will stay at the start until the trigger is released.

5.3. Setting Time Parameters (OP, CL, LOP)

After selecting an operating mode, you will set the time parameters. Press the **SET** button to move between parameters.

- **Setting Time Values:**

- Use the **UP** or **DOWN** buttons to adjust the time value. Holding the button will make the value change faster.
- To change the time scale (e.g., seconds, minutes), press the **STOP** button while the time value is flashing.
  - **000.:** Represents seconds (0-999 seconds).
  - **00.0:** Represents 0.1 seconds (0.0-99.9 seconds).
  - **0.0.0:** Represents minutes (0-999 minutes).

- **OP Time:** The "ON" duration. When "OP" time flashes, set the required duration. Press **SET** to confirm.
- **CL Time:** The "OFF" duration. When "CL" time flashes, set the required duration. Press **SET** to confirm.
- **LOP (Loop) Time:** The number of cycles. When "LOP" time flashes, set the required number of loops. Use "---" for infinite looping. Press **SET** to confirm.

5.4. Relay Enable Mode (ON/OFF)

This function acts as an emergency stop or manual override for the relay's conduction state.

- From the main interface (when the timer is in run mode), press the **STOP** button for less than 2 seconds.
- The display will flash the current state:
  - **ON:** Relay allows conduction during the "OP" on-time.
  - **OFF:** Relay prohibits conduction and is always closed (disconnected).
- The state will flash and then return to the main interface. This allows for quick disconnection of the relay.

5.5. Sleep Mode

Manage the LED display's power consumption with sleep modes.

- From the main interface (when the timer is in run mode), press and hold the **STOP** button for 2 seconds.
- The display will flash the current sleep mode:
  - **C-P (Sleep Mode):** If there is no button operation for five minutes, the digital display automatically turns off. The program continues to run as usual. Press any button to wake up the display for another 5 minutes.
  - **O-d (Normal Mode):** The digital display remains on continuously.
- The state will flash and then return to the main interface.

5.6. Viewing Current Settings

- From the main interface (when the timer is in run mode), press the **UP** button for less than 2 seconds.
- The display will cycle through and show the current settings for the selected mode: "P" (mode), "OP" (ON time), "CL" (OFF time), and "LOP" (loop count).

5.7. LED Indicator

- The **LED1** indicator on the board will glow when the output is active (ON).

6. Maintenance

To ensure the longevity and reliable performance of your Walfront Digital LED Relay Board, follow these simple maintenance guidelines:

- **Keep Dry:** Protect the module from moisture and humidity, which can damage electronic components.
- **Cleanliness:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning. Avoid liquid cleaners.
- **Temperature:** Operate and store the module within its specified temperature range to prevent damage. Avoid extreme heat or cold.
- **Secure Connections:** Periodically check all screw terminal connections to ensure they remain tight and secure. Loose connections can lead to intermittent operation or damage.
- **Handle with Care:** Avoid dropping or subjecting the module to strong impacts, as this can damage internal components or solder joints.

7. Troubleshooting

If you encounter issues with your Walfront Digital LED Relay Board, refer to the following common problems and solutions:

- **Module Does Not Power On / Display is Blank:**
  - **Check Power Supply:** Ensure the DC 5-36V power supply is correctly connected to the GND and V+ terminals and is providing the correct voltage.
  - **Check Wiring:** Verify that the power wires are securely connected and there are no short circuits.
  - **Sleep Mode:** The display might be in "C-P" (sleep) mode. Press any button to wake it up.
- **Relay Does Not Activate / Load Does Not Turn On:**
  - **Check Output Wiring:** Ensure the load is correctly connected to the OUT- and OUT+ terminals.
  - **Verify Relay Enable Mode:** Check if the relay is set to "OFF" (prohibits conduction) using the STOP button. Set it to "ON" if necessary.
  - **Review Programming:** Double-check the selected operating mode (P1.x, P2.x, P3.x, P-4) and ensure the "OP" (ON time) is set correctly and is not zero.
  - **Trigger Signal:** If using a trigger-dependent mode, ensure the trigger signal is correctly applied to the SIGN terminal and is within the DC 3-24V range.
  - **Load Compatibility:** Ensure the connected load's current draw does not exceed the module's 15 Amp rating.
- **Timer Does Not Count Down / Behaves Unexpectedly:**
  - **Re-enter Programming:** Go back into the setup interface (hold SET button) and re-verify all parameters (OP, CL, LOP) and the selected operating mode.
  - **Time Scale:** Ensure the time scale (seconds, 0.1 seconds, minutes) is correctly set for your desired timing.
  - **Trigger Behavior:** For trigger-dependent modes, understand how repeated triggers affect the timing (restart, no effect, clear). Refer to Section 5.2.
- **Display Turns Off After 5 Minutes:**
  - This is normal behavior if the module is in "C-P" (sleep) mode. Press any button to reactivate the display. If you prefer the display to stay on, change the sleep mode to "O-d" (Normal Mode) as described in Section 5.5.

8. Warranty Information

Walfront products are manufactured to high-quality standards. For specific warranty terms and conditions, please refer to the documentation provided with your purchase or contact Walfront customer support. Typically, warranty covers defects in materials and workmanship under normal use.

9. Customer Support

If you have any questions, require technical assistance, or need further support regarding your Walfront Digital LED Relay Board, please contact Walfront customer service through the retailer's platform or the official Walfront website. Please have your model number (Walfront0chnqxu1vo) and purchase details ready when contacting support.