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Valefod VA-0190

Valefod DC 6-30V Programmable Delay Relay Module User Manual

Model: VA-0190

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1. INTRODUCTION

The Valefod DC 6-30V Programmable Delay Relay Module is a versatile control unit designed for various timing and control applications. It features an LED digital display for clear time indication and supports a wide operating voltage range, including Micro USB 5V power supply. This module is suitable for smart home automation, industrial control systems, automatic irrigation, and protection equipment, offering multiple programmable delay modes to meet diverse operational requirements.

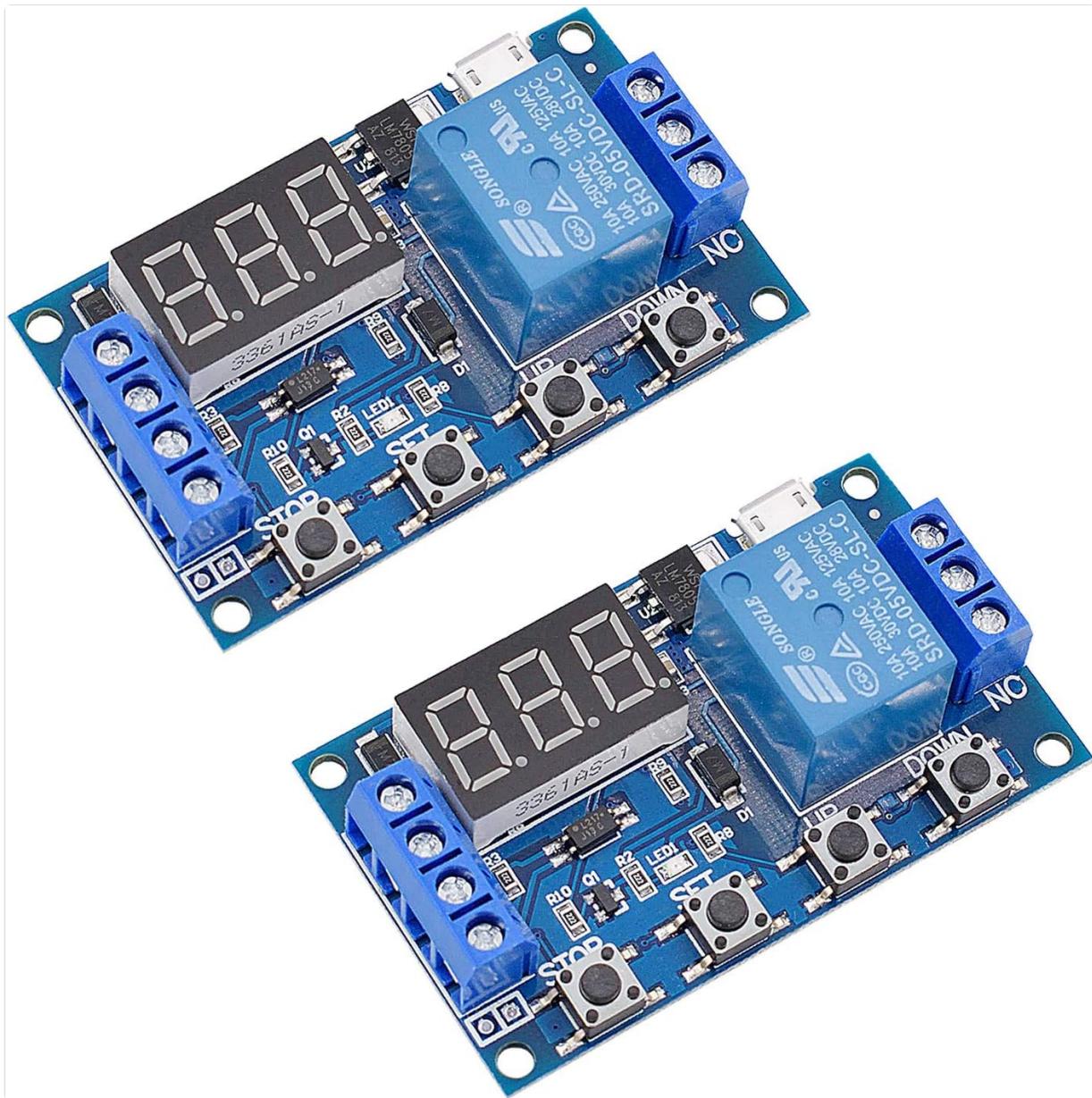


Figure 1: An overview of two Valefod programmable delay relay modules, showcasing their compact design and LED digital displays.

2. SPECIFICATIONS

Parameter	Value
Operating Voltage	DC 6V - 30V (supports Micro USB 5V)
Operating Current	50mA (Static current: 20mA)
Working Temperature	-20°C to 60°C
NO Maximum Load	< AC 250V/10A, < DC 30V/10A
High Level Trigger	3V - 24V
Timing Range	0.1 seconds (min.) ~ 999 minutes (max.)
Dimensions	6.4 cm x 3.8 cm x 1.7 cm (2.52 x 1.5 x 0.67 inches)
Item Weight	2.39 ounces

Parameter	Value
Connector Type	USB
Contact Material	Silver Nickel
Contact Type	Normally Open (NO)
Mounting Type	PCB Mount

3. PRODUCT FEATURES

- Multifunction Timer Relay:** Programmable delay modes enable precise control over relay timings, suitable for various applications including smart homes, industrial control, and automatic systems.
- Wide Load Range:** Operates with DC 6V - 30V input, with an option for 5V Micro USB power. Handles loads up to AC 250V/10A or DC 30V/10A.
- Reverse Polarity Protection:** Incorporates a built-in diode to safeguard the circuit against accidental reverse power connections.
- Sleep Mode:** The digital display automatically turns off after 5 minutes of inactivity to conserve power. Any button press will reactivate the display.
- Persistent Parameter Settings:** OP (conduction time), CL (off time), and LOP (cycle times) can be set independently. All configured parameters are permanently saved even after power loss and can be reviewed or modified at any time.

4. COMPONENT IDENTIFICATION

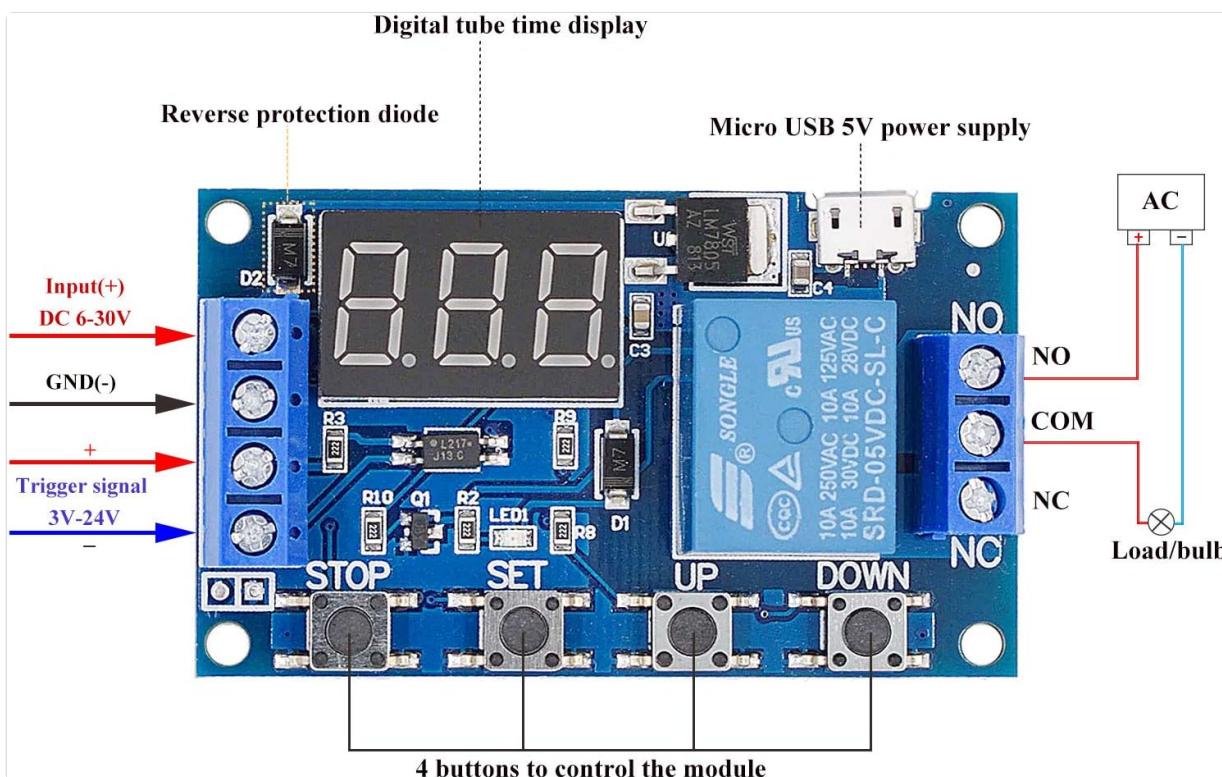


Figure 2: This diagram identifies key components of the timer relay module, including the digital tube time display, reverse protection diode, Micro USB 5V power supply port, relay, and the four control buttons (STOP, SET, UP, DOWN).

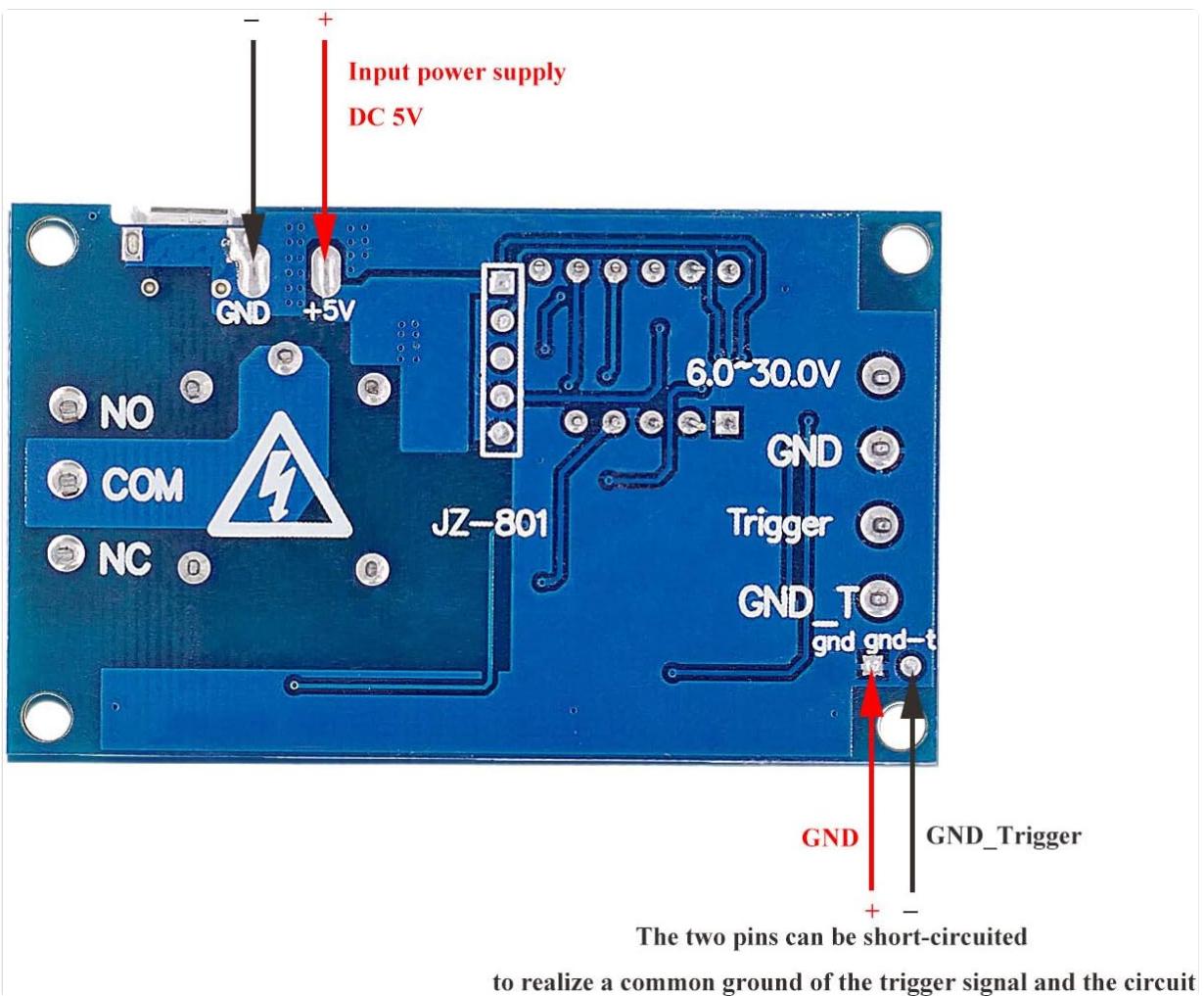


Figure 3: The underside of the module reveals the input power supply (GND, +5V) and trigger signal connections (GND_Trigger, Trigger). It also indicates how to short-circuit the two trigger pins for a common ground.

5. SETUP AND WIRING

5.1 Power Supply

The module can be powered by a DC 6V to 30V source via the screw terminals or by a 5V Micro USB power supply. Ensure the correct polarity when connecting the DC power source to prevent damage, although the module includes reverse polarity protection.

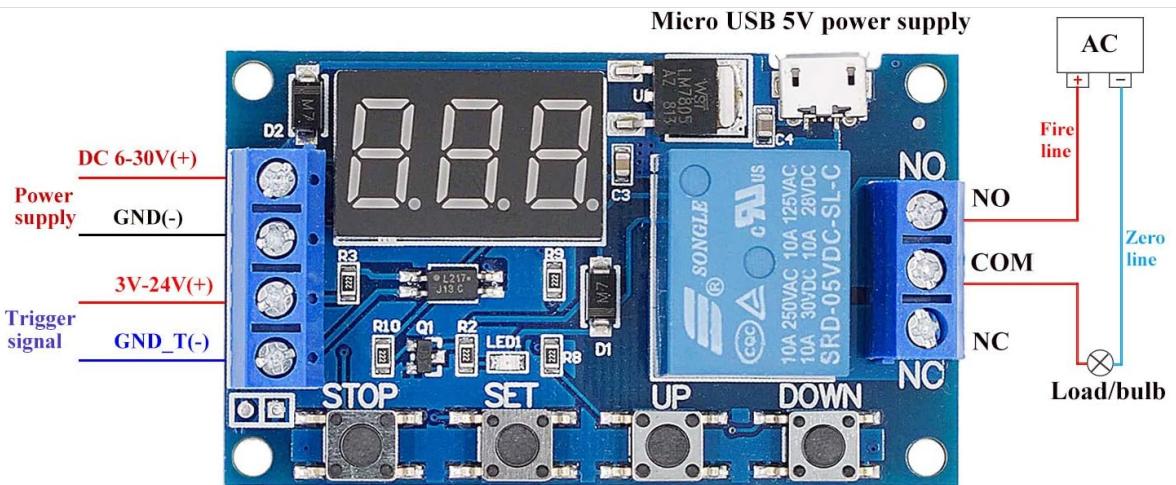
5.2 Trigger Signal

The trigger signal input accepts a high-level signal between 3V and 24V. The trigger input terminals are labeled 'Trigger' and 'GND_T'.

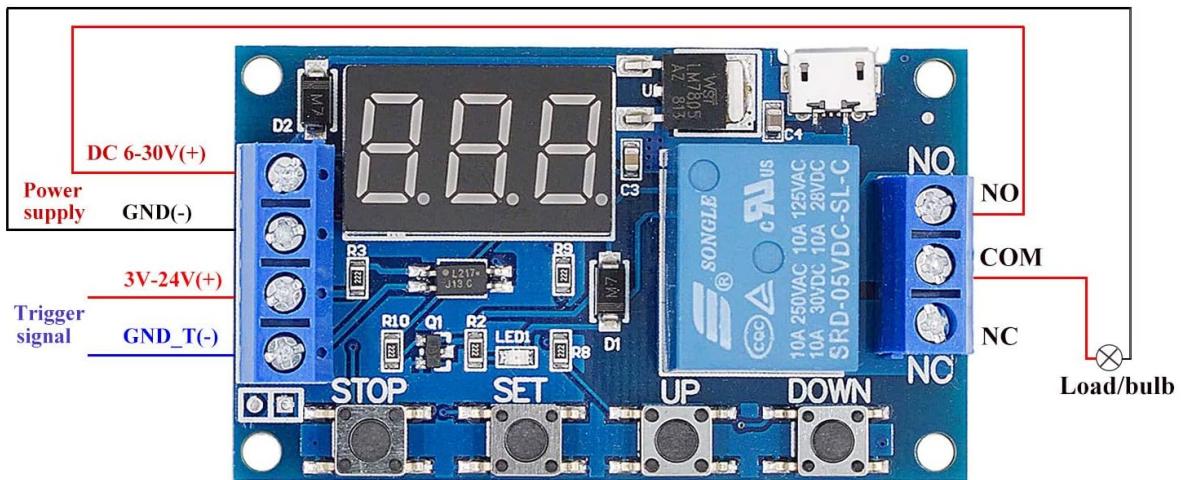
5.3 Relay Output

The relay provides Normally Open (NO), Common (COM), and Normally Closed (NC) contacts. The maximum load capacity is AC 250V/10A or DC 30V/10A. Connect your load to the NO and COM terminals for typical switching applications.

5.4 Wiring Diagrams



Wiring diagram of weak current controlling strong current



Wiring diagram of sharing one power supply

Figure 4: This diagram illustrates how to wire the timer relay module to control a load (e.g., a bulb) using a weak current trigger. It shows connections for DC 6-30V power supply, trigger signal (3V-24V), and the relay's NO (Normally Open) and COM terminals connected to the load and AC power source.

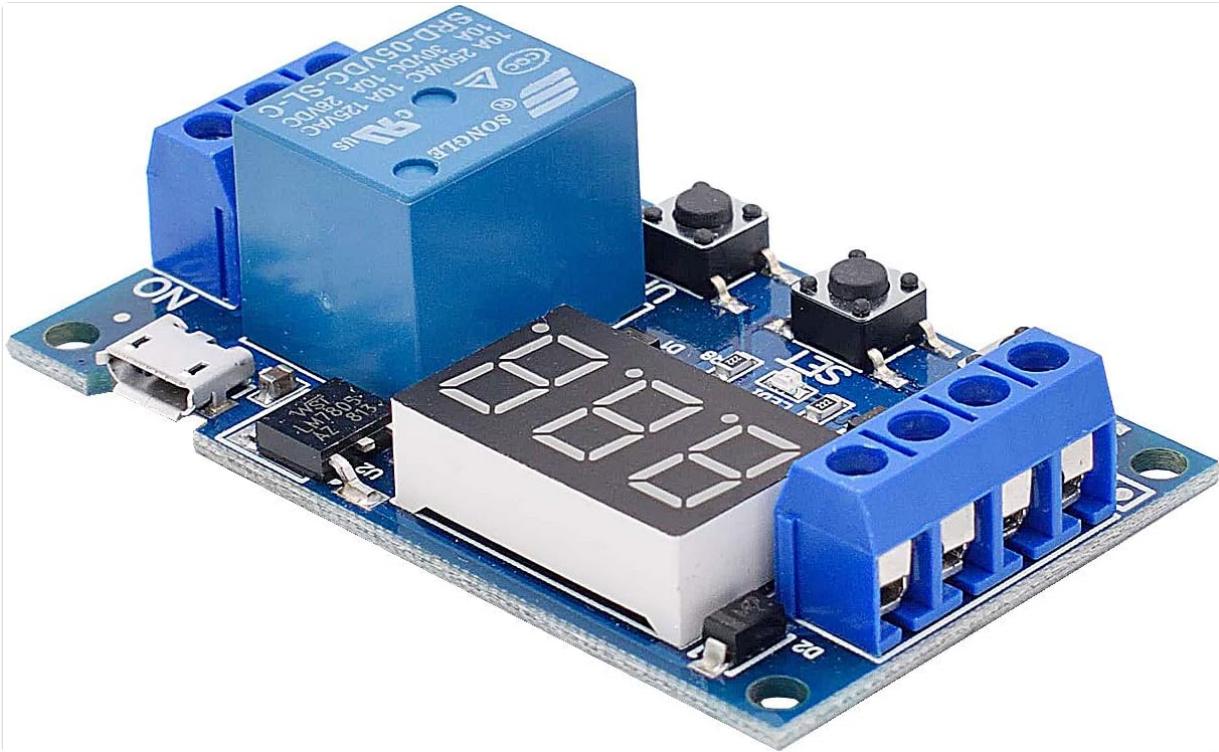


Figure 5: This diagram demonstrates a wiring configuration where the timer relay module and the controlled load share a single DC 6-30V power supply. It details connections for power, trigger signal, and the load connected to the relay's NO and COM terminals.

6. OPERATION AND PROGRAMMING

6.1 Parameter Explanation

- **OP:** On-time (conduction time) of the relay.
- **CL:** Off-time (delay time before conduction or after conduction) of the relay.
- **LOP:** Cycle times (number of repetitions for a cycle mode). Can be set from 1 to 999 times, or "—" for infinite cycles.

These parameters are independent but shared across all operation modes. For example, if OP is set to 5 seconds in P1.1, it will remain 5 seconds when switching to P1.2 unless explicitly changed.

6.2 Timing Range Selection

To select the timing range, short press the **STOP** button while in the parameter setting interface. The decimal point position on the digital display indicates the timing unit:

- **XXX.** (Decimal point at single digit): Timing range = 1 second ~ 999 seconds.
- **XX.X** (Decimal point at tens digit): Timing range = 0.1 second ~ 99.9 seconds.
- **X.X.X.** (All decimal points appear): Timing range = 1 minute ~ 999 minutes.

For example, to set OP to 3.2 seconds, select the XX.X timing range, and the display will show "03.2".

6.3 Operation Modes

The module offers several programmable modes:

1. **P1:** Upon signal is triggered (application of input voltage), the relay remains on for OP time, then turns off. Operate within the OP period as follows:

- **P1.1:** Signal being re-triggered is ignored.
- **P1.2:** Signal being re-triggered resets the timer (reclock).
- **P1.3:** Signal being re-triggered resets the timer, disconnects the relay contact, and stops timing.
- **P1.4 (Random Mode):** The relay conducts for OP time only once when power is applied.

2. P2: Feed trigger signal, the relay remains off for CL time, then conducts for OP time. After timing, the relay turns off.

- **P2.1 (or P2):** Standard operation as described above.
- **P2.2 (Random Mode):** Feed trigger signal, the relay remains off for CL time, then conducts for OP time. If the signal is re-triggered, the relay remains off for CL time and conducts for OP time again.

3. P3: Cycle Mode.

- **P3.1:** Feed trigger signal, the relay conducts for OP time, then remains off for CL time, then repeats these actions. If a re-trigger signal is received within the timing cycle, the relay contact disconnects, and timing stops. The number of cycles (LOP) can be set.
- **P3.2:** No trigger signal is needed upon power-on. The relay conducts for OP time, then remains off for CL time, then repeats these actions. The number of cycles (LOP) can be set.

4. P4: Signal Holding Function. The timing will be reset upon signal trigger, and relay contacts stay connected. When no signal is present, the relay turns off after timing for OP. During the timing period, if the signal is re-triggered, the timing will be reset.

6.4 Programming Steps

1. From the main interface (digital display shows "000"), short press the **SET** button to enter the parameter setting mode.
2. The display will show the first parameter (e.g., OP) and its current value.
3. Use the **UP** and **DOWN** buttons to adjust the parameter value.
4. Short press the **STOP** button to select the timing range (XXX., XX.X, X.X.X.).
5. Short press the **SET** button again to move to the next parameter (e.g., CL, then LOP, if applicable for the selected mode).
6. Repeat steps 3-5 for all parameters.
7. After setting all parameters, long press the **SET** button (for approximately 3 seconds) to save the settings and exit the programming mode. The module will return to the main interface.

7. MAINTENANCE

7.1 General Care

- Keep the module in a clean, dry environment, away from excessive dust, moisture, and corrosive substances.
- Avoid exposing the module to extreme temperatures or direct sunlight.
- Ensure proper ventilation if enclosing the module in a case to prevent overheating.
- Periodically check wiring connections for tightness and integrity.

7.2 Sleep Mode

The module features an automatic sleep mode. If no button operation occurs within 5 minutes, the digital

display will turn off to save power. Pressing any button will wake up the display without affecting the ongoing timing operation.

8. TROUBLESHOOTING

- **Module does not power on:**

- Verify the power supply voltage is within the DC 6-30V range or 5V for Micro USB.
- Check power connections for correct polarity and secure contact.
- Ensure the power source can provide sufficient current (static current 20mA, operating current 50mA).

- **Relay does not activate/deactivate as expected:**

- Confirm the selected operating mode (P1.x, P2.x, P3.x, P4) matches the desired behavior.
- Check the OP, CL, and LOP parameter settings and their timing ranges.
- Ensure the trigger signal is correctly applied and within the 3V-24V range for modes requiring a trigger.
- Verify the load connections to the NO and COM terminals are correct and secure.
- If using a common ground for trigger and power, ensure it is correctly configured.

- **Display is off:**

- The module might be in sleep mode. Press any button to reactivate the display.
- If not in sleep mode, check power supply as described above.

- **Parameters do not save:**

- Ensure you long-press the **SET** button for approximately 3 seconds to save settings and exit programming mode. A short press will only cycle through parameters.

9. WARRANTY AND SUPPORT

Specific warranty information for this product is not provided in the available documentation. For technical support, further assistance, or inquiries regarding your Valefod DC 6-30V Programmable Delay Relay Module, please contact Valefod customer service through your purchase channel.