GEYA GRT6-S1

GEYA GRT6-S1 10A Asymmetric Cycle ON/Off Repeat Cycle Timer Relay

Model: GRT6-S1 | Brand: GEYA

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1. Introduction

The GEYA GRT6-S1 is a versatile 10A Asymmetric Cycle ON/Off Repeat Cycle Timer Relay designed for DIN rail mounting. It offers precise time control for various electrical applications, including lighting, heating, motors, pumps, and fans. This manual provides comprehensive instructions for installation, operation, and maintenance to ensure safe and efficient use of the device.

2. Key Features

- **Two Functions:** Cycler beginning with pulse (ON first) and Cycler beginning with pause (OFF first).
- **Function Selection:** Choose functions using an external jumper between terminals S-A1.
- **Wide Time Range:** Adjustable from 0.1 seconds to 100 days, divided into 10 distinct ranges for precise control.
- **Relay Status Indication:** An LED indicator clearly displays the working status of the relay.
- **Compact Design:** Ultra-small size with only 18mm width, suitable for 35mm DIN rail mounting.
- **Wide Voltage Range:** Operates on AC/DC 24V-240V.
- **Contact Type:** 1SPDT (1 Normally Open, 1 Normally Closed) output contact.

2.1 Product Details

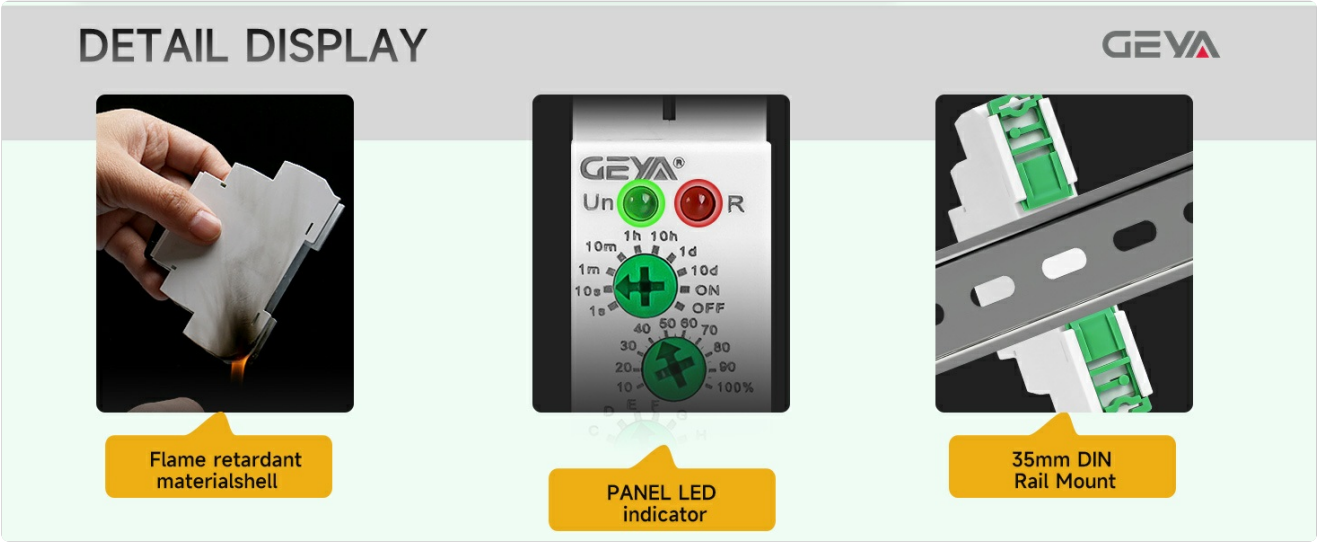

Figure 2.1: Detailed view of the GRT6-S1 highlighting its flame-retardant material shell, panel LED indicators for status, and 35mm DIN rail mounting capability.

3. Product Dimensions

The GEYA GRT6-S1 features a compact design for efficient space utilization on DIN rails. Refer to the diagram below for detailed measurements.

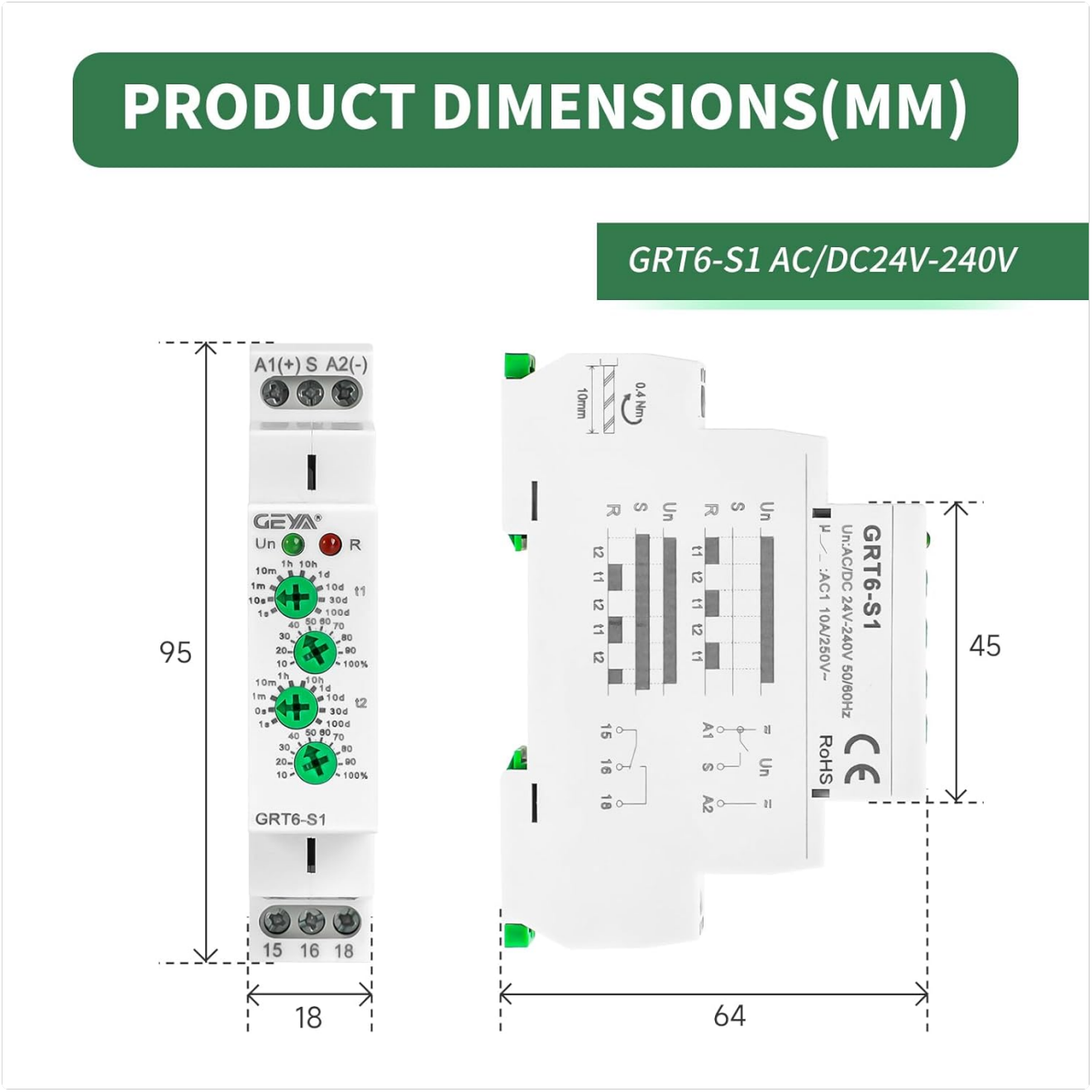

Figure 3.1: GEYA GRT6-S1 dimensions in millimeters. The relay measures 18mm in width, 95mm in height, and 64mm in depth when mounted on a DIN rail.

4. Technical Specifications

Below are the detailed technical parameters for the GEYA GRT6-S1 timer relay.

TECHNICAL PARAMETERS

Technical parameters		GRT6-S1	GRT6-S2
Function		Asymmetric cycler time relay	
Supply terminals		A1-A2	
Voltage range	S240	AC/DC 24-240V(50-60Hz)	
Burden	S240	AC 0.7-3VA/DC 0.5-1.7W	
Voltage range	A230	AC 230V(50-60Hz)	
Power input	A230	AC max.6VA/1.3W	AC max.6VA/1.9W
Supply voltage tolerance		-15%;+10%	
Supply indication		green LED	
Time ranges		0.1s-100days	
Time setting		potentionmeter	
Time deviation		10%-mechanical setting	
Repeat accuracy		0.2%-set value stability	
Temperature coecient		0.05%/°C,at=20°C(0.05%°F，at=68°F)	
Output		1×SPDT	2×SPDT
Current rating		10A/AC1	
Switching voltage		250VAC/24VDC	
Min.breaking capacity DC		500mW	
Output indication		red LED	
Mechanical life		1×10^{7}	
Electrical life(AC1)		1×10^{5}	
Reset time		max.200ms	
Operating temperature		-20°C to +55°C（-4°F to 131°F）	
Storage temperature		-35°C to +75°C（-22°F to 158°F）	
Mounting/DIN rail		Din rail EN/IEC 60715	
Protection degree		IP40 for front panel/IP20 terminals	
Operating position		any	
Overvoltage cathegory		III.	

Figure 4.1: Table of technical parameters for GRT6-S1 and GRT6-S2 models.

Table 4.1: GEYA GRT6-S1 Technical Data

Parameter	Value (GRT6-S1)
Function	Asymmetric cycler time relay
Supply terminals	A1-A2
Voltage range	AC/DC 24-240V (50-60Hz)
Burden	AC 0.7-3VA / DC 0.5-1.7W
Power input	AC max.6VA / 1.3W
Supply voltage tolerance	-15% / +10%
Supply indication	Green LED
Time ranges	0.1s-100days
Time setting	Potentiometer
Time deviation	10% mechanical setting
Repeat accuracy	0.2% set value stability
Temperature coefficient	0.05% / °C, at t=20°C (0.05% / °F, at t=68°F)
Output	1 × SPDT
Current rating	10A / AC1
Switching voltage	250VAC / 24VDC
Min. breaking capacity DC	500mW
Output indication	Red LED
Mechanical life	1×10^7
Electrical life (AC1)	1×10^5
Reset time	max.200ms
Operating temperature	-20°C to +55°C (-4°F to 131°F)
Storage temperature	-35°C to +75°C (-22°F to 158°F)
Mounting/DIN rail	DIN rail EN/IEC 60715
Protection degree	IP40 for front panel / IP20 terminals
Operating position	Any
Overvoltage category	III.

5. Installation and Wiring

Proper installation and wiring are crucial for the safe and correct operation of the GRT6-S1 relay. This device is designed for 35mm DIN rail mounting.

5.1 Wiring Diagram

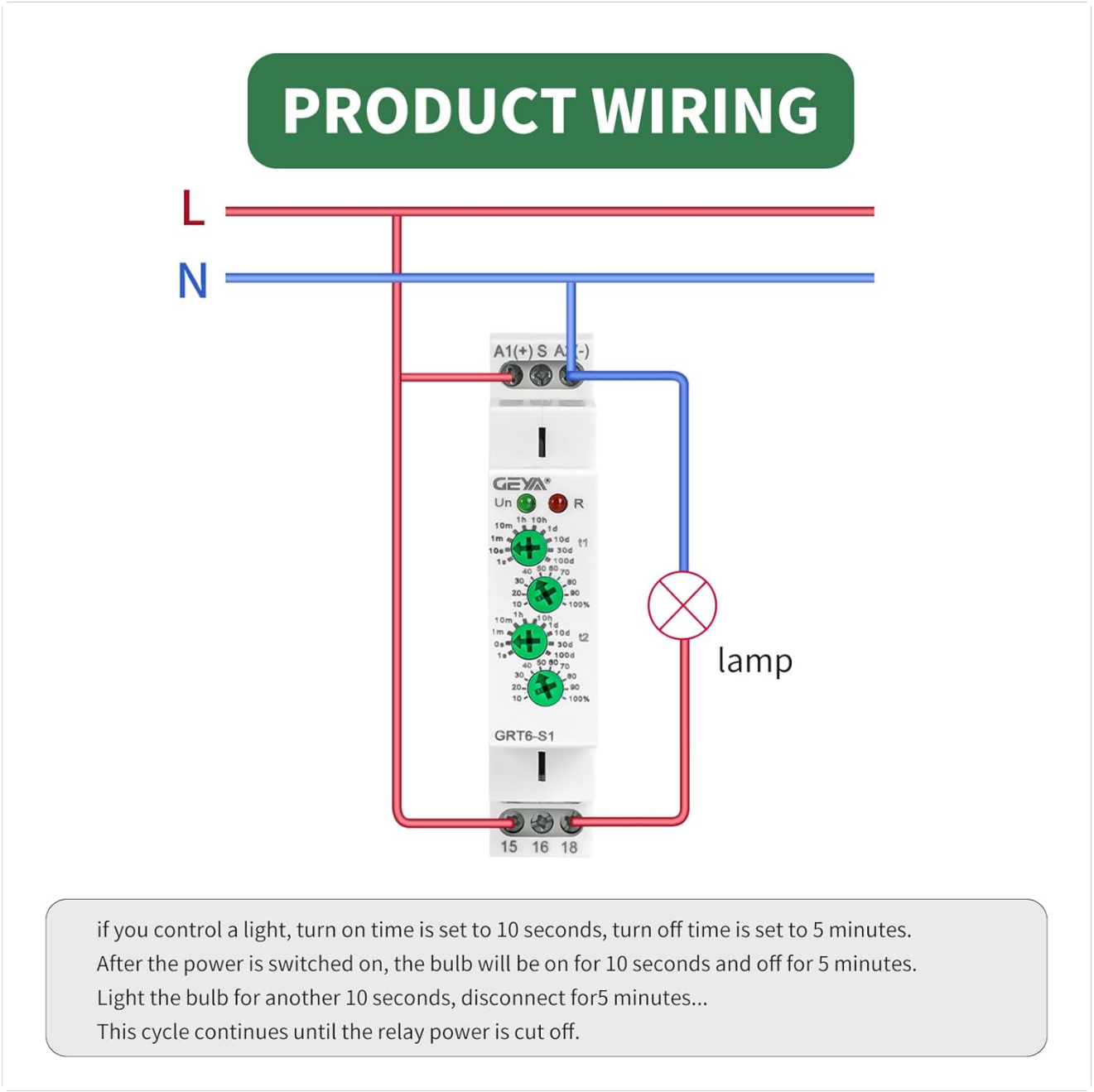

Figure 5.1: Basic wiring diagram for the GRT6-S1 relay controlling a lamp. Connect the Line (L) and Neutral (N) to the appropriate terminals (A1 and A2 for power supply). The output contacts (15, 16, 18) are used to control the load.

Example: If you control a light, set the ON time to 10 seconds and OFF time to 5 minutes. After power is switched on, the bulb will be ON for 10 seconds and OFF for 5 minutes. This cycle continues until the relay power is cut off.

5.2 Connection Steps

Follow these steps to connect the GRT6-S1 relay:

1. Ensure power is disconnected before wiring.
2. Mount the GRT6-S1 onto a 35mm DIN rail.
3. Connect the power supply wires (L and N) to terminals A1 and A2 respectively.
4. Connect the load (e.g., lamp, motor) to the output terminals 15 (common), 16 (normally closed), and 18 (normally open) as required by your application.
5. Use a screwdriver to securely tighten all terminal screws.

5.3 Visual Wiring and Function Demonstration

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Video 5.1: This video demonstrates the physical connection and basic function testing of the GEYA GRT6-S1 timer relay. It shows how to connect power and a load, and how to set and test different timing modes (A and E modes) with a signal light. It also illustrates the effect of short-circuiting the 'S' terminal for function selection.

6. Time Setting

The GRT6-S1 allows for precise time setting using its rotary potentiometers. The time scale ranges from 0.1 seconds to 100 days, divided into 10 selectable ranges.

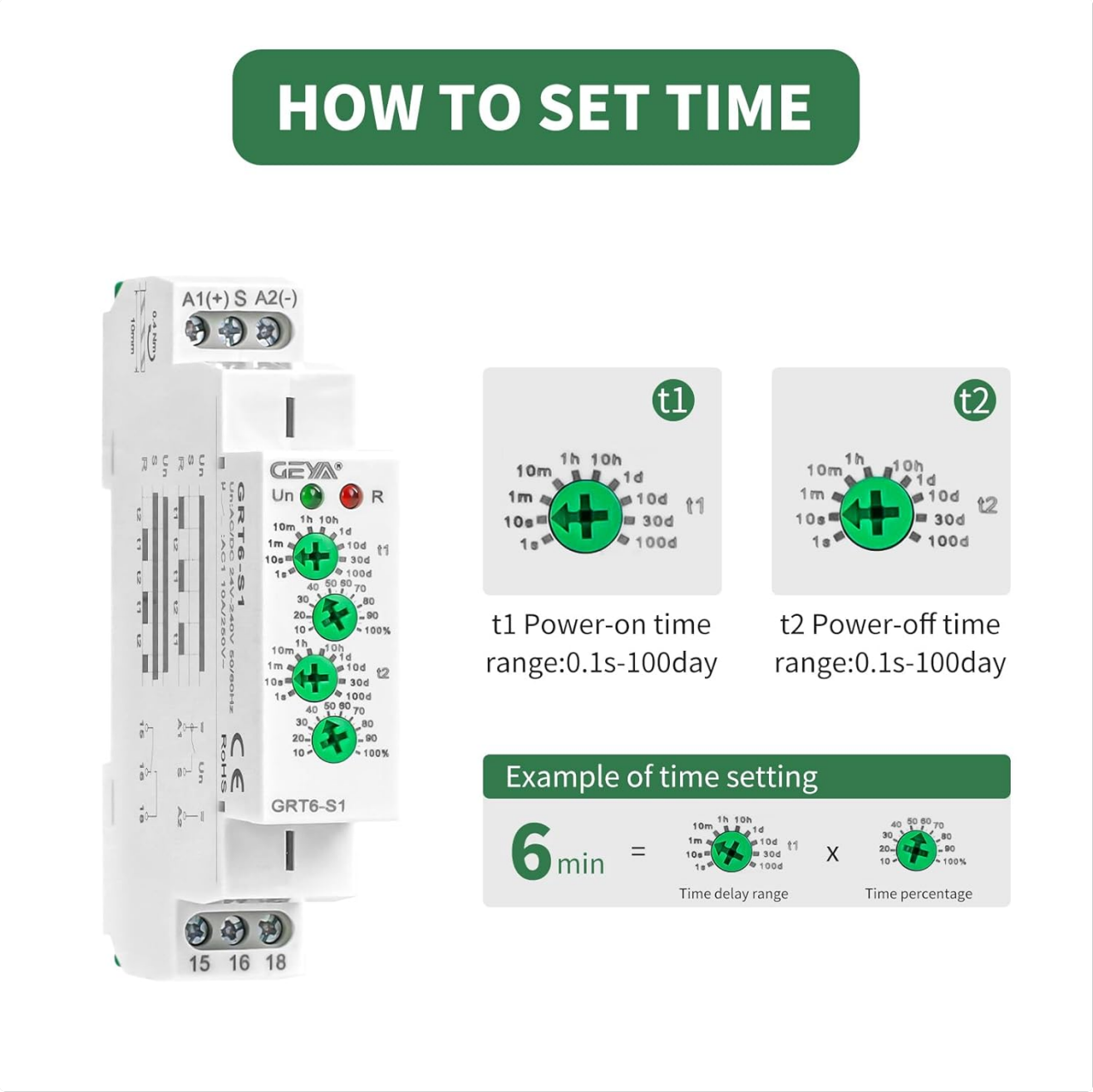

Figure 6.1: Diagram illustrating how to set the ON (t1) and OFF (t2) times. Each time is set by selecting a time delay range (e.g., 1s-10s, 1min-10min) and then a percentage within that range (0-100%). For example, 6 minutes can be set by selecting the 1min-10min range and 60%.

To set the time:

1. Identify the two time setting knobs: one for t1 (ON time) and one for t2 (OFF time).

2. For each knob, first select the desired time range (e.g., 0.1s-1s, 1s-10s, 0.1min-1min, etc.).
3. Then, adjust the percentage dial to fine-tune the time within the selected range.
4. The actual time is calculated as: *(Selected Time Range) × (Selected Percentage)*.

7. Operation Modes

The GRT6-S1 supports two primary asymmetric cycle modes, selectable via an external jumper on terminals S-A1.

7.1 Mode Selection

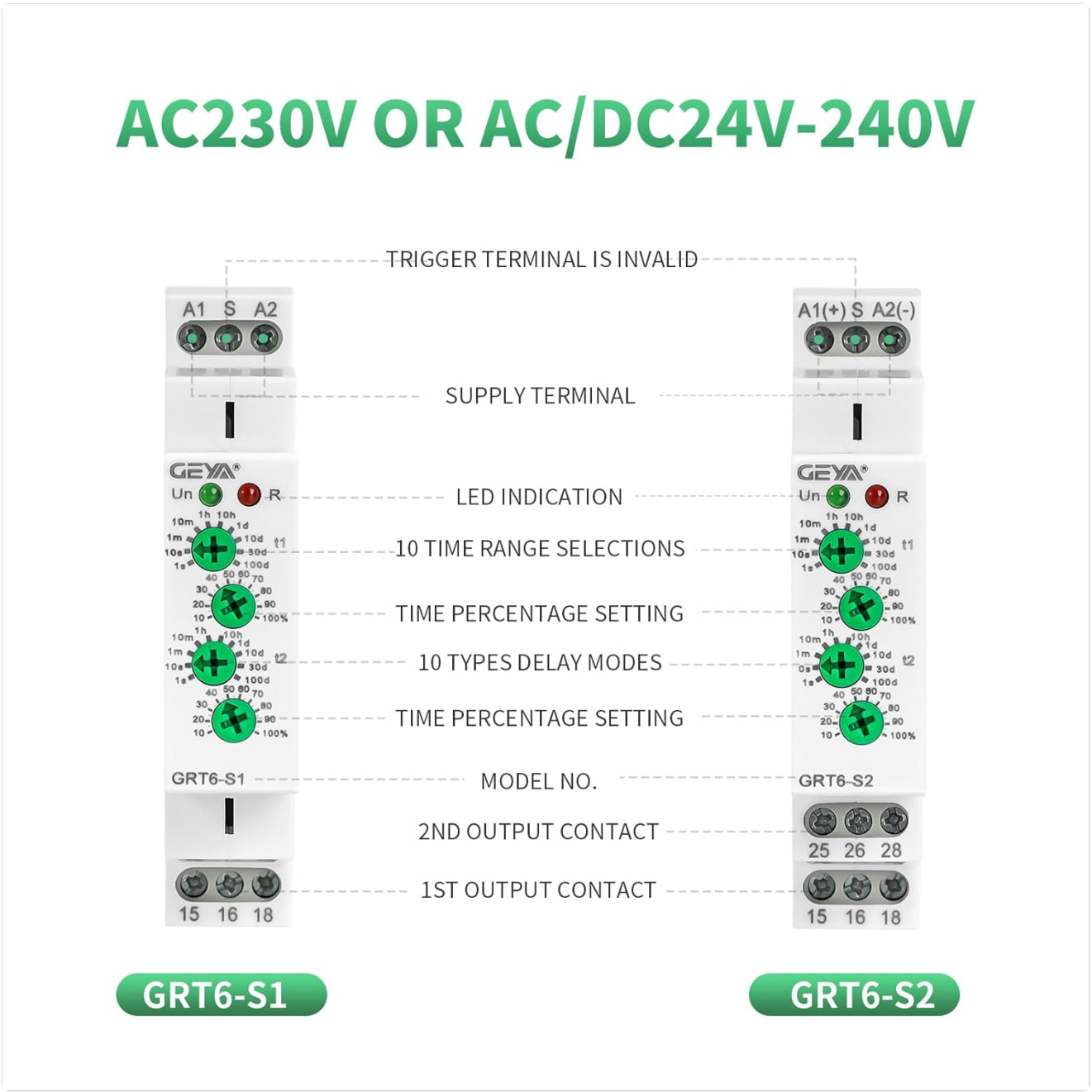

Figure 7.1: Overview of GRT6-S1 and GRT6-S2 models, highlighting LED indications, time range selections, time percentage settings, and delay modes. The GRT6-S1 has 1SPDT output, while GRT6-S2 has 2SPDT output.

The function choice is done by an external jumper of terminals S-A1:

- **Cycler beginning with pulse (ON first):** This is the default mode when no jumper is connected between S and A1. The relay output will turn ON for the set t1 time, then turn OFF for the set t2 time, and repeat.
- **Cycler beginning with pause (OFF first):** Connect an external jumper between terminals S and A1. In this mode, the relay output will turn OFF for the set t1 time, then turn ON for the set t2 time, and repeat.

7.2 Functions Diagram

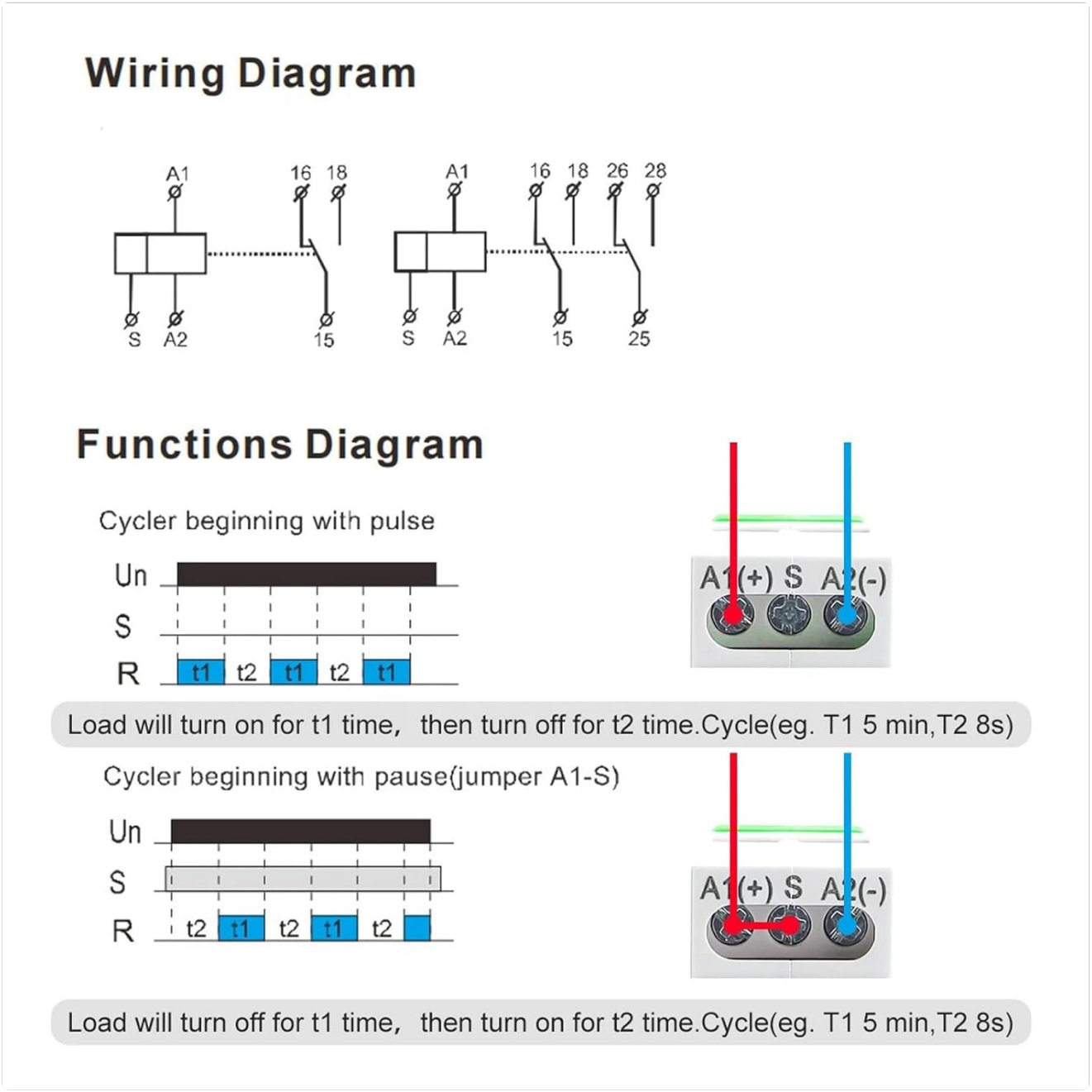

Figure 7.2: Detailed functions diagram showing the timing sequences for "Cycler beginning with pulse" and "Cycler beginning with pause" modes. Un represents the supply voltage, S represents the trigger terminal, and R represents the relay output status.

The relay status is indicated by the LED. A green LED indicates power, and a red LED indicates the output relay status.

8. Typical Applications

The GEYA GRT6-S1 timer relay is suitable for a wide range of applications requiring repetitive ON/OFF cycling, including:

- **Industrial Automation:** Control of machinery, conveyor belts, and process timing.
- **Building Automation:** Lighting control, ventilation systems, and heating/cooling cycles.
- **Agricultural Systems:** Irrigation pump control, feeding systems.
- **Home Automation:** Garden lighting, water features, and other timed electrical devices.

Figure 8.1: Examples of environments where the GRT6-S series relays are widely applied, including family settings, automated equipment, large-scale equipment, and electricity infrastructure.

9. Maintenance

The GEYA GRT6-S1 is designed for reliable, long-term operation with minimal maintenance. However, regular checks can help ensure optimal performance:

- **Visual Inspection:** Periodically inspect the relay for any signs of physical damage, discoloration, or loose connections.
- **Terminal Tightness:** Ensure all wiring terminals remain securely tightened to prevent intermittent operation or overheating.
- **Environmental Conditions:** Verify that the operating environment remains within the specified temperature and humidity ranges to prevent premature wear.
- **Cleaning:** If necessary, gently clean the exterior of the relay with a dry, soft cloth. Do not use abrasive cleaners or solvents.

10. Troubleshooting

If you encounter issues with your GRT6-S1 timer relay, refer to the following common troubleshooting steps:

- **Relay Not Powering On:**
  - Check the power supply voltage to terminals A1 and A2. Ensure it is within the AC/DC 24V-240V range.
  - Verify that the power connections are secure.
- **Output Not Switching:**
  - Confirm that the load is correctly connected to the output terminals (15, 16, 18).
  - Check the load itself to ensure it is functional.
  - Verify the time settings (t1 and t2) are correctly configured and the selected time range is appropriate.
  - Ensure the function selection (jumper on S-A1) is set for the desired operation mode.
  - Observe the LED indicators: Green LED should be ON for power, Red LED should change state according to the timing cycle.
- **Inaccurate Timing:**
  - Recheck the time range and percentage settings on the potentiometers.

- Ensure the potentiometers are not loose or damaged.

If the problem persists after following these steps, contact GEYA customer support for further assistance.

11. Warranty and Support

GEYA products are manufactured to high-quality standards and come with a standard warranty. For specific warranty details, including duration and coverage, please refer to the warranty card included with your product or visit the official GEYA website.

For technical support, product inquiries, or warranty claims, please contact GEYA customer service through the following channels:

- **Website:** Visit the GEYA Store on Amazon
- **Email:** Refer to your product packaging or the official website for contact email.
- **Phone:** Refer to your product packaging or the official website for contact number.

Please have your product model number (GRT6-S1) and purchase information ready when contacting support.