

## MARSTEK SP-001

# MARSTEK SP-001 Adjustable Voltage Protector User Manual

Model: SP-001

## 1. INTRODUCTION

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The MARSTEK SP-001 Adjustable Voltage Protector is designed to safeguard your valuable electrical equipment and appliances. This smart device provides comprehensive protection against over-current, over-voltage, and undervoltage conditions. It features real-time monitoring of voltage, current, and power levels, ensuring your electrical systems operate within safe parameters. With its automatic reset function, power is restored once conditions return to normal, minimizing downtime and protecting against potential hazards.

## 2. SAFETY INFORMATION

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- **Professional Installation Recommended:** Installation should be performed by a qualified electrician to ensure proper wiring and safety.
- **Power Disconnection:** Always disconnect power before installation, maintenance, or any wiring adjustments.
- **Operating Environment:** Do not expose the device to moisture, extreme temperatures, or corrosive environments.
- **Load Capacity:** Ensure the connected load does not exceed the device's maximum current rating of 63 Amps.
- **Fire Resistant Material:** The housing is made of fire-resistant PC material, but proper ventilation is still important.

## 3. PRODUCT FEATURES AND PANEL INTRODUCTION

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The SP-001 features a high-definition digital display for real-time monitoring and intuitive controls for setup.

# Panel Introduction

High Definition Digital Display



Fault: Malfunction Indicator

R/T: Delay Indicator

OUT: Output Indicator

1000imp: 1000 Pulses Per kWh



**Setup Menu**



**Digit+**



**Power On/Off**



**Digit+**

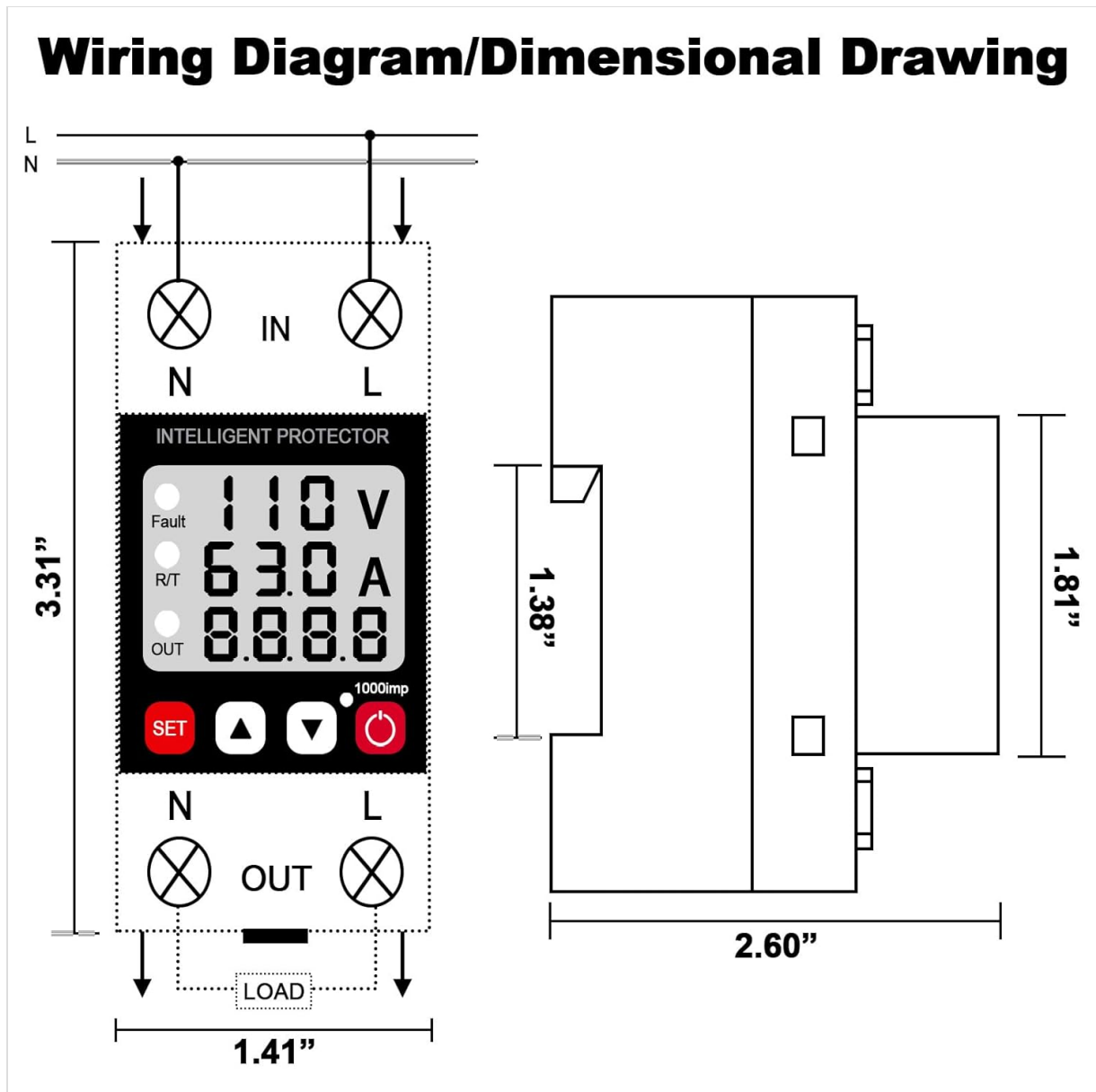
**Image:** Front panel of the MARSTEK SP-001 showing the digital display, indicators, and control buttons. The display shows real-time voltage, current, and energy consumption. Indicators include 'Fault', 'R/T' (Delay), and 'OUT' (Output). Buttons are 'SET' for menu, 'Up Arrow' for digit increase, 'Down Arrow' for digit decrease, and 'Power On/Off'.

- **Digital Display:** Shows real-time voltage (V), current (A), and energy consumption (kWh).
- **Fault Indicator:** Illuminates to indicate a malfunction or protection trip.
- **R/T (Delay) Indicator:** Shows when a delay is active, such as during automatic reset.
- **OUT (Output) Indicator:** Indicates the output is active and power is being supplied.
- **SET Button:** Used to enter the setup menu and confirm settings.
- **Up/Down Arrow Buttons:** Used to navigate menu options and adjust numerical values.
- **Power On/Off Button:** Controls the power supply to the connected load.

## 4. SETUP AND INSTALLATION

The SP-001 is designed for DIN rail mounting, allowing for flexible and straightforward installation in electrical panels.

# Wiring Diagram/Dimensional Drawing



**Image:** A detailed wiring diagram for the MARSTEK SP-001, showing input (IN) and output (OUT) terminals for Neutral (N) and Live (L) wires. The diagram illustrates how to connect the device in series with the load. Also included is a dimensional drawing showing the device's physical measurements (e.g., 3.31 inches height, 2.60 inches width, 1.81 inches depth).

1. **Mounting:** Securely attach the SP-001 to a standard DIN rail within your electrical panel.
2. **Wiring:** Refer to the wiring diagram provided. Connect the incoming neutral (N) and live (L) wires to the 'IN' terminals. Connect the outgoing neutral (N) and live (L) wires to the 'OUT' terminals, leading to your protected load. Ensure all connections are tight and secure.
3. **Power On:** Once wiring is complete and verified, restore power to the circuit. The device will power on and display real-time readings.

## 5. OPERATION

### 5.1 Real-Time Monitoring

The device continuously displays voltage, current, and energy consumption, allowing you to monitor your electrical system's performance.



**Image:** The MARSTEK SP-001 Intelligent Protector displaying real-time values for voltage (V), current (A), and energy consumption (kWh) on its digital screen. The image also illustrates the device's application in various household settings, protecting appliances.

## 5.2 Protection Functions

The SP-001 provides robust protection:

- **Over-Voltage Protection:** Automatically disconnects power if voltage exceeds the preset upper limit.
- **Under-Voltage Protection:** Automatically disconnects power if voltage drops below the preset lower limit.
- **Over-Current Protection:** Automatically disconnects power if current exceeds the preset maximum.

## 5.3 Automatic Reset Function

When a protection event occurs (e.g., over-voltage), the device will cut off power. After a default delay time (typically 30 seconds), it will automatically reset and restore power once the voltage and current return to normal levels.

# Automatic Reset

When The Circuit Is Cut Off Abnormally, The Default Delay Time Is 30s Before Resetting To Restore Power



**Image:** A flowchart illustrating the automatic reset process of the MARSTEK SP-001. Steps include: 1. Circuit abnormality cuts off power. 2. Default delay wait of 30 seconds. 3. Circuit resets automatically after 30 seconds. 4. If abnormality persists after 30 seconds, the device continues to wait for normal conditions before resetting.

## 5.4 Setting Parameters

Use the 'SET' button to enter the configuration menu. The Up/Down arrow buttons allow you to adjust parameters such as over-voltage limit, under-voltage limit, over-current limit, and recovery delay time. Refer to the detailed parameter settings in the specifications section for default and adjustable ranges.

## 6. MAINTENANCE

- **Cleaning:** Keep the device clean and free from dust. Use a dry, soft cloth for cleaning. Do not use liquid cleaners.
- **Inspection:** Periodically inspect the wiring connections to ensure they remain secure.
- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges.

## 7. TROUBLESHOOTING

- **Device Not Powering On:** Check the main power supply and ensure all wiring connections are correct and secure.
- **Power Cut Off Unexpectedly:** Check the display for fault indicators. This usually means an over-voltage, under-voltage, or over-current event has occurred. Verify the input voltage and current are within normal operating parameters.
- **Device Not Resetting:** If the device does not reset after the delay, ensure the abnormal conditions (e.g., high voltage) have truly resolved. If the issue persists, manually power cycle the device.
- **Incorrect Readings:** Ensure the device is correctly wired and the load is within its specified range.

## 8. SPECIFICATIONS

Detailed technical parameters for the MARSTEK SP-001.

# Product Parameter

<b>Supply Terminals</b>	<b>N , L</b>
<b>Rated Supply Voltage</b>	<b>AC 110V ;DC 85-300V</b>
<b>Rated Frequency</b>	<b>40/50/60/70Hz</b>
<b>&gt;U Setting Range</b>	<b>AC130-300V ; DC130-300V</b>
<b>&lt;U Setting Range</b>	<b>AC80-210V ; DC85-210V</b>
<b>Voltage Hysteresis</b>	<b>5V</b>
<b>Overvoltage Trip Delay</b>	<b>0.5s</b>
<b>Voltage Accuracy</b>	<b>&lt;1%</b>
<b>Max.Operating Phase Voltage</b>	<b>350V</b>
<b>Max.Operating Current</b>	<b>40A/63A</b>
<b>Altitude</b>	<b>≤2000m</b>
<b>Function</b>	<b>Lightning Protection</b>
<b>Permissible Relative Humidity</b>	<b>≤50%at40°C (Without Condensation)</b>
<b>Ambient Temperature</b>	<b>-25°C~+55°C</b>
<b>Net Weight</b>	<b>159g</b>
<b>Size</b>	<b>81*36*66mm</b>

**Image:** A table detailing the product parameters of the MARSTEK SP-001. Key specifications include: Supply Terminals (N, L), Rated Supply Voltage (AC 110V; DC 85-300V), Rated Frequency (40/50/60/70Hz), Over-Voltage Setting Range (>U Setting Range: AC130-300V; DC130-300V), Under-Voltage Setting Range (<U Setting Range: AC80-210V; DC85-210V), Voltage Hysteresis (5V), Overvoltage Trip Delay (0.5s), Voltage Accuracy (<1%), Max. Operating Phase Voltage (350V), Max. Operating Current (40A/63A), Altitude (≤2000m), Function (Lightning Protection), Permissible Relative Humidity (≤50% at 40°C without condensation), Ambient Temperature (-25°C ~ +55°C), Net Weight (159g), and Size (81\*36\*66mm).

Parameter	Value
Supply Terminals	N, L
Rated Supply Voltage	AC 110V; DC 85-300V
Rated Frequency	40/50/60/70Hz
Over-Voltage Setting Range	AC130-300V; DC130-300V
Under-Voltage Setting Range	AC80-210V; DC85-210V
Voltage Hysteresis	5V
Overvoltage Trip Delay	0.5s
Voltage Accuracy	<1%
Max. Operating Phase Voltage	350V
Max. Operating Current	40A/63A
Altitude	≤2000m
Function	Lightning Protection
Permissible Relative Humidity	≤50% at 40°C (Without Condensation)
Ambient Temperature	-25°C ~ +55°C
Net Weight	159g
Size	81*36*66mm

## 9. COMPARISON WITH STANDARD CIRCUIT BREAKER

The MARSTEK SP-001 offers advanced protection features beyond a standard circuit breaker.



**Intelligent Protector**

**Circuit Breaker**

	<b>Intelligent Protector</b>	<b>Circuit Breaker</b>
<b>Display</b>	<b>Voltage Current And kWh Display</b>	<b>No</b>
<b>Overvoltage Protection</b>	<b>Yes(less than 1second)</b>	<b>No</b>
<b>Undervoltage Protection</b>	<b>Yes(less than 1second)</b>	<b>No</b>
<b>Automatic Recovery</b>	<b>Yes</b>	<b>No</b>
<b>Off Mode</b>	<b>Automatic/Manual</b>	<b>Manual</b>
<b>Intelligent Regulation</b>	<b>Current/Voltage/Recovery Time</b>	<b>No</b>

**Image:** A comparison table highlighting the differences between an 'Intelligent Protector' (MARSTEK SP-001) and a 'Circuit Breaker'. The Intelligent Protector offers Voltage Current and kWh Display, Overvoltage Protection (less than 1 second), Undervoltage Protection (less than 1 second), Automatic Recovery, Automatic/Manual Off Mode, and Intelligent Regulation (Current/Voltage/Recovery Time). A standard Circuit Breaker offers 'No' for all these features except for a 'Manual' Off Mode.

## 10. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the product packaging or contact MARSTEK customer service directly. Keep your purchase receipt as proof of purchase.