



INSTALLATION MANUAL

Control Box User Manual & Installation Guide



The A500-WPL1-2P-3FT is a high-performance control unit designed for precision lighting and power management. Engineered for durability and ease of use.

Key Features

- IP67 Waterproof Rating
- Smart Load Balancing
- Thermal Protection System
- Universal Mounting Interface

SAFETY NOTES

Critical Warnings Before Installation



THERMAL MANAGEMENT

The plastic housing is designed to dissipate heat but may become warm during extended operation.

Do not cover the control box with insulating materials. Ensure at least 5cm of clearance around the unit for proper airflow.



POWER LIMITATIONS

Maximum Output: 160W

Ensure the total connected load does not exceed 160 Watts. Overloading may trigger the internal protection circuit or cause permanent damage.

Formula: $P \text{ (Watts)} = V \text{ (Volts)} \times I \text{ (Amps)}$



MOISTURE PROTECTION

While IP67 rated, connections must be properly sealed. Do not submerge connectors unless they are mated and locked.



MODIFICATIONS

Opening the housing voids the warranty. There are no user-serviceable parts inside.

SPECIFICATIONS

Hardware Overview & Package Contents

Technical Data

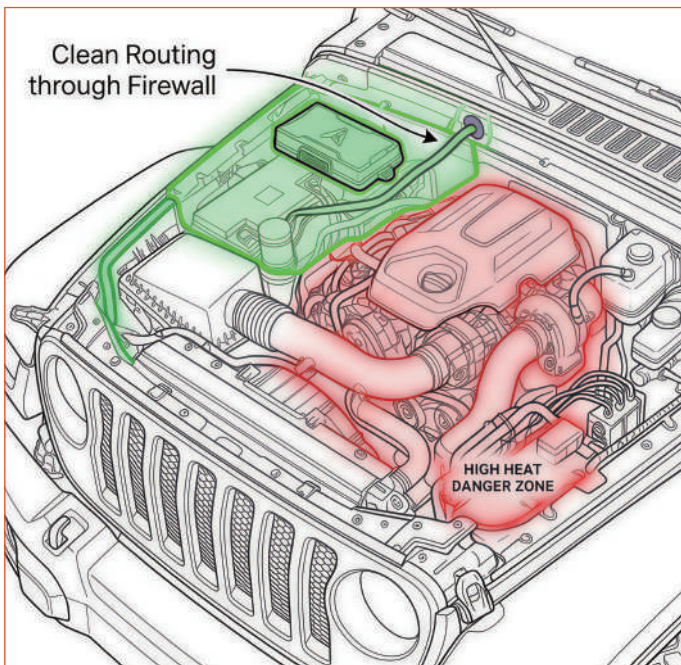
Model Number	A500-WPL1-2P-3FT
Input Voltage	12V DC
Max Power Output	160W Total
Output Channels	2 Independent Channels
IP Rating	IP67 (Dust/Water)
Operating Temp	-20°C to +60°C
Dimensions	145mm × 90mm × 35mm
Weight	320g

In The Box

- 1 × Control Box Unit
- 4 × Extension Cable
- 4 × Waterproof Connector Caps
- 1 × Quick Start Guide

INSTALLATION

Recommended Location & Routing



Mounting Location

- Mount vertically where possible to prevent water pooling on connectors.
- Avoid direct proximity to engine headers or turbochargers.

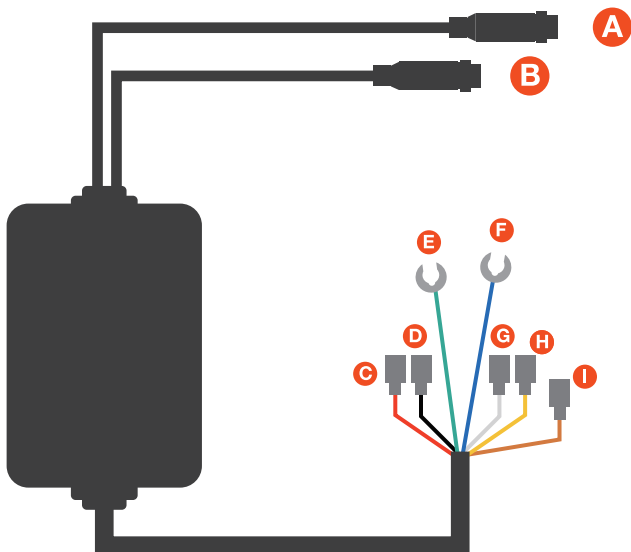
Wiring Requirements

- Route cables away from moving parts and sharp edges.
- Use zip ties every 15cm to secure the harness.
- Connect directly to the battery for optimal performance.

PRODUCT SPECIFICATION

Hardware Overview

- | | |
|-------------------------------|--------------------------|
| A Chassis Lamp Plug -1 | E Positive Wire |
| B Chassis Lamp Plug -2 | F Negative Wire |
| C Brake Line | G Reversing line |
| D Left Turn Line | H Right Turn Line |
| | I ACC Line |



WORKFLOW

Mount, Route, and Connect



Step 1 :

Mount the control box. Do NOT connect to battery yet.



Step 2 :

Plan cable routing. Use included extension cables if needed.



Step 3 :

Drill pilot holes if necessary. Secure the control box using the provided stainless steel screws. Do not overtighten.



Step 4 :

Verify the power limit. Confirm total power per channel is $\leq 80W$.



Step 5 :

Connect power last. Connect to battery, test functions.

PRECAUTIONS

Troubleshooting & Longevity



Cleaning Instructions

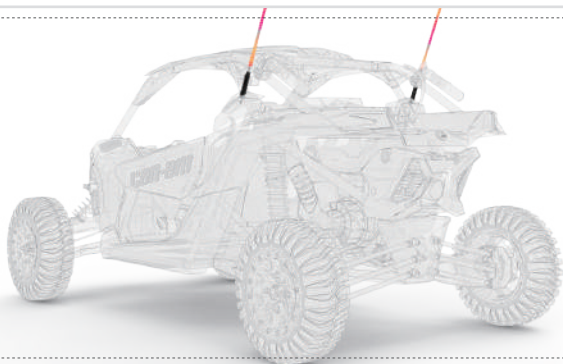
Do not use high-pressure washers directly on the control box or connectors. High pressure can force water past the seals. Clean with a damp cloth and mild soap only.

Troubleshooting Guide



Problem	Possible Cause	Solution
Unit does not power on	Blown fuse or loose battery connection	Check in-line fuse and verify battery terminal tightness.
Channel output failure	Short circuit or overload (per-channel is >80W)	Disconnect load, cycle power, and check accessory wattage.
Intermittent operation	Poor ground connection	Ensure the black wire is connected to a clean, bare metal chassis point or battery negative.

INSTALLATION GUIDE



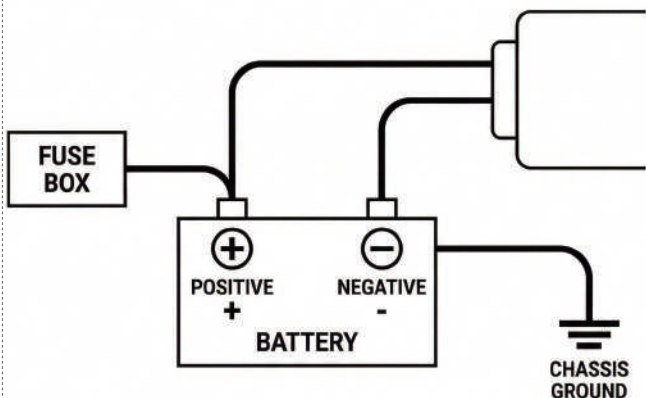
INSTALLATION STEPS

- 01** Choose a suitable mounting position
(recommended: rear or upper frame area)
- 02** Prepare a compatible tube clamp
 **Note:** Clamp is NOT included and must be purchased separately
- 03** Attach the whip base to the clamp
- 04** Secure the clamp to the vehicle's roll bar or tube
- 05** Adjust the whip to a vertical position and tighten all screws firmly

IMPORTANT NOTES

- Ensure power is disconnected before beginning installation.
- Check clearance height to avoid damage from low branches or structures.
- Periodically inspect mounting hardware to ensure it remains tight.

POWER & WIRING INSTRUCTIONS



CONTROL BOX INSTALLATION

Mount the control box in a dry, safe location away from extreme heat sources (e.g., exhaust). Ensure the antenna is not obstructed by metal components for optimal remote and app connectivity.

OPTIONAL SIGNAL TRIGGER WIRES

Connect these wires to corresponding vehicle signals to activate specific light patterns.

- **Left Turn Signal** (When activated, the left whip light flashes yellow)
- **Right Turn Signal** (When activated, the right whip light flashes yellow)
- **Brake Signal** (When activated, both whip lights turn solid red. This function has priority over other lighting effects.)
- **Reverse Signal** (When activated, both whip lights stay solid white)

👉 These connections are optional

OUTPUT WIRING

SIDE	CABLE TYPE	FUNCTION
Left	4-Pin Cable	LED Strip Control
Left	3-Pin Cable	Top Signal Light
Right	4-Pin Cable	LED Strip Control
Right	3-Pin Cable	Top Signal Light

CONNECTION INSTRUCTIONS

Use proper crimp connectors or solder with heat shrink tubing for all connections. Ensure all exposed wires are fully insulated to prevent short circuits.

IMPORTANT NOTES

Do not connect the main power directly to the battery without an inline fuse. A 15A fuse is recommended for optimal protection.

CONTROL INSTRUCTIONS

1 APP CONTROL

- Supports Bluetooth connection
- Adjustable whip lights color, lighting modes, and brightness
- Supports music sync and dynamic lighting effects
- Supports ON/OFF and mode control of the top signal light

2 REMOTE CONTROL

- Quick switching of lighting effects
- Adjust whip lights brightness and color
- Supports ON/OFF and mode control of the top signal light

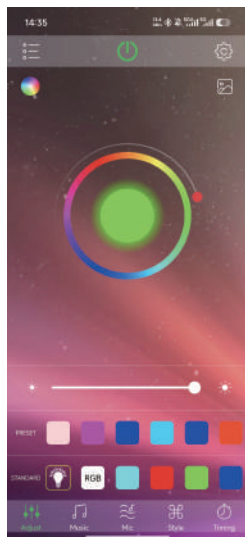
APP & REMOTE UI

REMOTE CONTROL



TOP LIGHT SWITCH / MODE
Tap To Toggle

APP INTERFACE



SAFETY INSTRUCTIONS

- Disconnect power before installation or maintenance.
- Do not modify wiring while vehicle is in operation.
- Stop using immediately if malfunction occurs.
- Professional installation is recommended for safety.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.