



## SmartLink SL-2-DC-002 Operating Manual

### Disclaimer

OutdoorLink recommends all electrical codes are studied and adhered to during the installation of SmartLink controllers and assumes no liability for injury or death incurred during the process.

### Questions

Contact OutdoorLink's support team at (256) 885-9768 ext. 1 or [support@outdoorlinkinc.com](mailto:support@outdoorlinkinc.com).

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## Product Overview

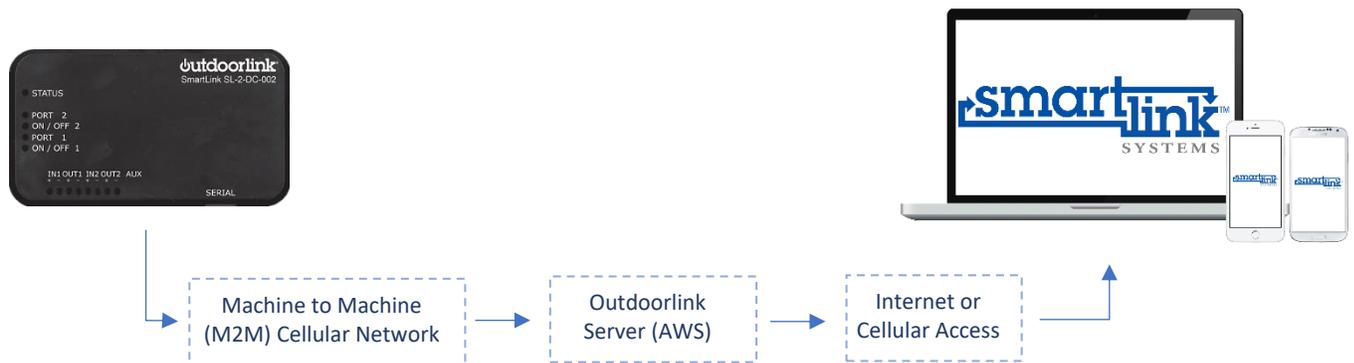
SL-2-DC-002 controllers remotely monitor, control and schedule devices through an independent cellular-based management system. It has two independently controlled inputs and outputs so two devices can be managed from one controller and operate at different voltages. The SL-2-DC-002 controller is useful in a variety of applications including:

- Digital Advertising and Real-time Displays
- IT and Networking
- Lighting Systems
- Solar Systems

SmartLink controllers are hardwired to devices in the field and communicate through an independent Machine to Machine cellular connection. From there, data passes through Outdoorlink’s AWS server and is available to users in the SmartLink portal through cellular or internet access.

Every SmartLink controller can be accessed from a desktop or mobile device, enabling users to remotely react to issues before customers are aware and resolve downtime without making a site visit.

Figure 1. SmartLink Communication Process Flow



## Controller Interface

The SL-2-DC controller can manage up to two DC devices that are either AC or DC (solar) powered. Below is a summary of interface options, however not all features apply to all installations.

Figure 2. SL-2-DC-002 Controller



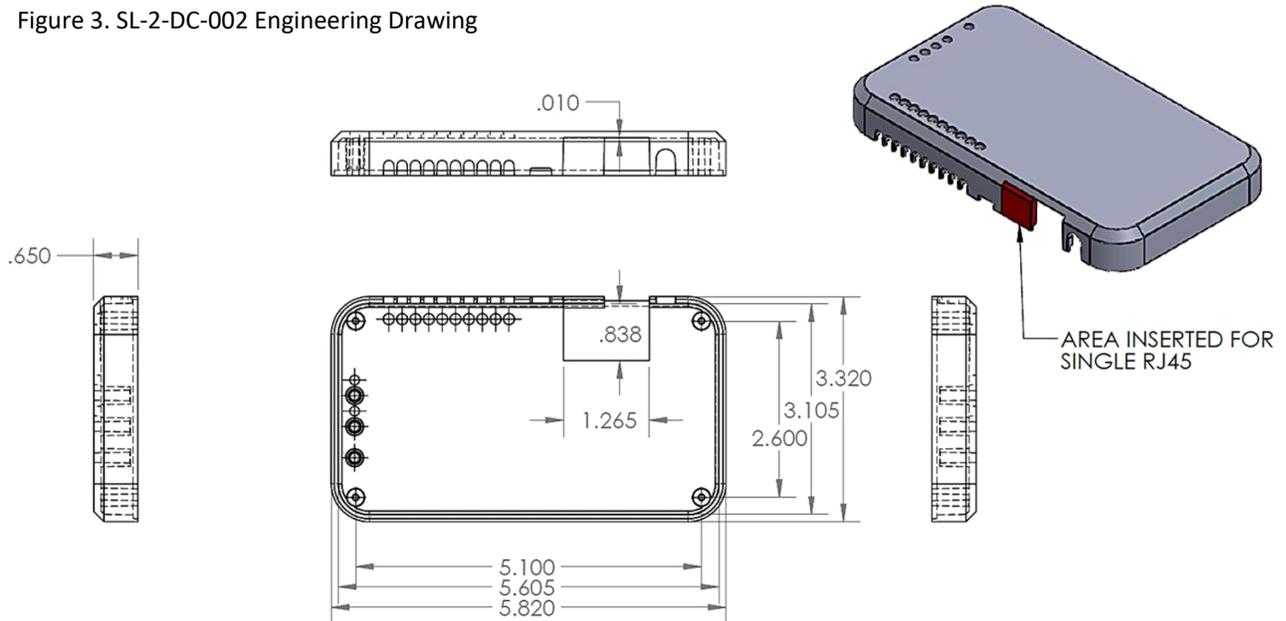
### Interface Index

1	STATUS	Cellular connectivity status
2	PORT 2	Confirmation that power is passing through to Port 2
3	ON / OFF 2	Manual push button to turn port 2 on or off
4	PORT 1	Confirmation that power is passing through to Port 2
5	ON / OFF 1	Manual push button to turn port 1 on or off
6	IN1	DC power IN to Port / Device 1
7	OUT1	DC power OUT to Port / Device 1
8	IN2	DC power IN to Port / Device 2
9	OUT2	DC power OUT to Port / Device 2
10	AUX	Auxiliary device connection (i.e. battery thermistor)
11	USB 2.0 Micro B	USB connection for troubleshooting device
12	RJ45	Serial port for network connection
13	SERIAL	External antenna connection (SMA/F)

## Hardware Specifications

The SL-2-DC controller can manage up to two DC devices that operate between 5-30Vdc. Below is a summary of other technical specifications to know for integrating with devices.

Figure 3. SL-2-DC-002 Engineering Drawing



### Specifications

Device Outputs	Two
Weight	5.8 oz.
Enclosure Material	Black polycarbonate ABS UL94
Dimensions	5.82" L x 3.60" W x 0.95" H
Input Voltage	4A max @ 5-30Vdc per relay
Output Voltage	4A max @ 5-30Vdc per relay
Power Consumption	0.15 W or ~0.01 A
Connectivity	LTE Cat-M1 with integrated antenna with external antenna option
Smart Weather	Devices activate outside of scheduled run-times per NOAA forecast maps
Operating Temp.	0°C to 65°C
Environmental	0-95% humidity, non-condensing, RoHS
Wiring Connection	Terminal block, 18AWG supply and load wires
Alarms	Loss of Power, Low Voltage, High Voltage, Power Restore, Offline
Manufacturing Origin	Huntsville, AL, USA (Buy America Compliant)

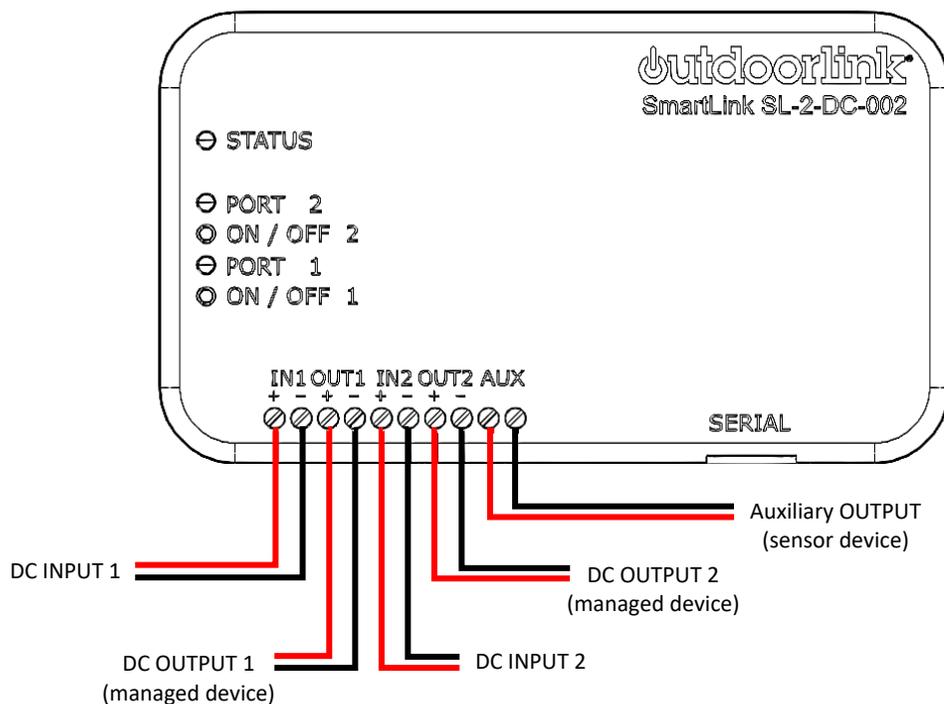
## Split Power Supply Wiring Diagram

The Split Supply wiring diagram shows two separate DC input supplies and two separate DC outputs. This configuration is ideal for managing two devices operating at different voltages, such as a 12V supply and a 12V device can be placed on one input and output while a 19V supply and device can be placed on the other.

This configuration is common for installations with:

- 12V LEDs
- 12V WIFI routers
- 12V Digital Displays
- 12V / 19V Media Players
- Kiosks and Digital Advertising

Figure 4. Wiring diagram for split power supply



## Single Supply Wiring Diagram

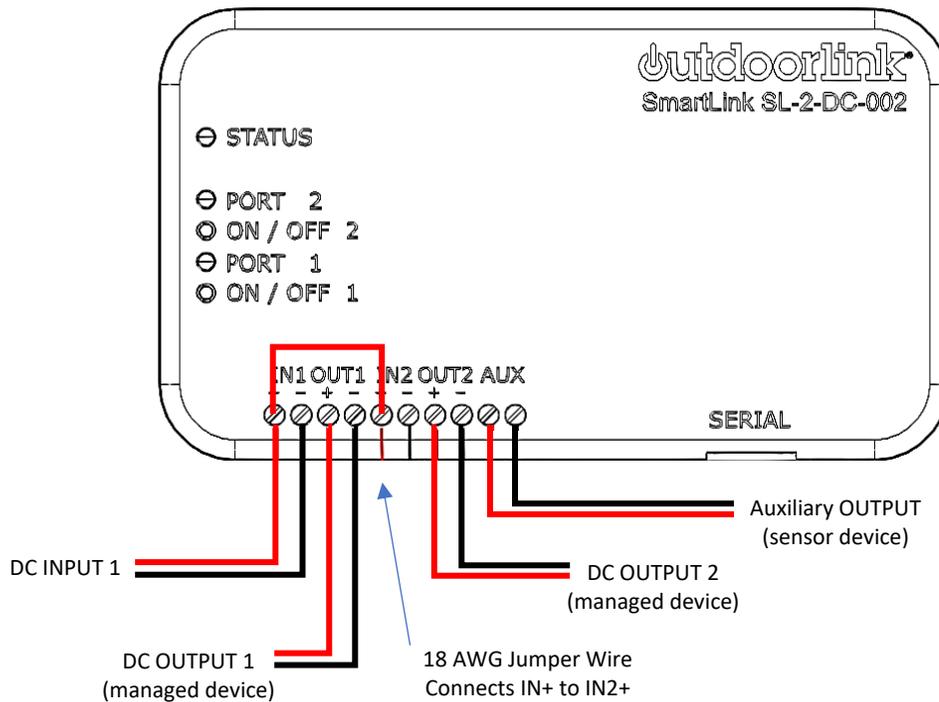
The Single Supply wiring diagram shows a single DC input for powering two devices on separate ports. This configuration is ideal for managing two separate devices at the same voltage using a single DC input.

For example, a 12V supply can power two separate 12V devices in this configuration, and a jumper wire is used to connect the IN1+ and IN2+.

This configuration is common for installations including:

- 12V LEDs
- 12V WIFI routers
- 12V Digital Displays
- 12V Media Players
- Solar Packages

Figure 5. Wiring diagram for single power supply



## Installation Guidelines

OutdoorLink technical support can be reached at (256) 885-9768 ext. 1 or [support@outdoorlinkinc.com](mailto:support@outdoorlinkinc.com).

### Tools & Materials Needed (not provided)

- Wire crimpers
- Mini standard screwdriver to secure terminal connections
- 3M two-sided adhesive tape or two-sided Velcro for mounting

### Installation Tips

1. Avoid placing the SL-2-DC in fully enclosed indoor spaces unless necessary. An external antenna is recommended when the device must be placed in an enclosed area such as a hardware cabinet.
2. When mounting external antennas, orientation and plane are important factors to consider. Verify with Outdoorlink on the ideal mounting position per each installation.
3. Place the SL-2-DC with as much free space as possible from other electronic devices for optimal connectivity
4. Do not allow water to directly enter the controller, as it is rated for damp conditions but is not waterproof.

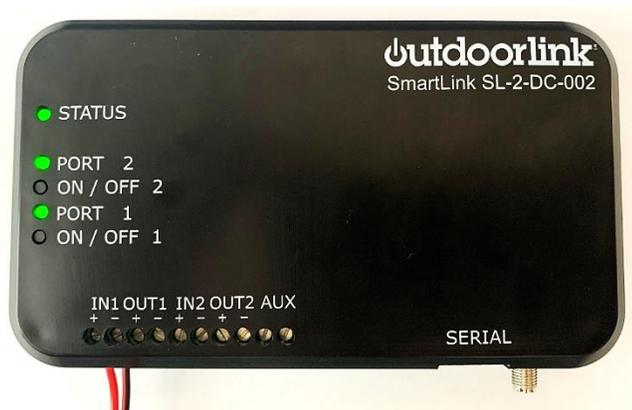
### Installation Steps

1. Choose installation placement and confirm cable lengths are sufficient for making all device connections. The SmartLink should be facing outward and upward for optimal cellular connectivity. Locate the SL-2-DC controller away from direct sunlight.
2. Place the SmartLink on the chosen location and use double-sided tape or Velcro to secure the unit.
3. The SL-2-DC controller requires 18 AWG wiring for both input and output connections. For devices with barrel jack connectors, OutdoorLink can provide a Connector Kit with female and male barrel connectors for 12V and 19V DC devices, upon request.
4. The SL-2-DC-002 operates between 5-30Vdc input voltage at 4A per port. A supply line within this range is needed for the input power.
5. Wiring
  - a. Connect the POS and NEG power supply lines to the IN1 terminal block with 18AWG wire.
  - b. If using an AC power supply, then a wiring harness should be supplied to connect the female and male barrel connectors of the adapter.
  - c. If using a **split DC supply**, install one POS and NEG power supply to the IN2 POS and NEG and the second power supply to the POS and NEG for IN2 (see Figure 4, page 5).
  - d. If using a **single DC supply**, install the POS and NEG supply to the IN1 POS and NEG, and add a jumper wire from the IN1 POS to the IN2 POS to supply power to both outputs (see Figure 5, page 6).
6. Cellular Connection
  - a. Once power is connected to the controller, a green light should start flashing quickly. If the light is flashing slowly, then the SIM card is still reconnecting to its cellular carrier.

- b. The SL-2-DC includes an integrated cellular modem to enable communication between the device and OutdoorLink’s servers and uses LTE CAT M1 cellular technology, which is designed for IoT devices. The SL-2-DC has two antenna modes – internal and external – and is configured to internal mode when shipped.

**It is critical that the SL-2-DC is configured for the proper antenna mode. A user may change antenna mode by pressing the “ON/OFF 2” or “ON/OFF 1” push buttons for 5 seconds. The Status LED provides visual confirmation of what antenna mode the SL-2-DC is set to.**

Figure 6. SL-2-DC-002 with power supply and status lights on



### STATUS LED

1. Slow Blink: One blink per second continuously indicates that the device is searching for the cellular network while in **internal** antenna mode.
2. Slow Blink with Two Second Pause: One blink per second for two seconds followed by two second pause indicates that the device is searching for the cellular network while in **external** antenna mode.
3. Rapid Blink: Multiple blinks per second confirms the device is connected to the cellular network **AND** configured for **internal** antenna mode.
4. Rapid Blink with One Second Pause: Rapid blink for five seconds followed by a one second pause confirms that the device is connected to the cellular network **AND** configured for **external** antenna mode.

### PORT 1 and 2 LED

1. A solid LED indicates Port 1,2 is powered with a load connected.
2. A rapid blink LED light Port 1,2 is powered without a load connected.
3. No LED indicates Port 1,2 is not powered.

### ON/OFF 1 and 2

1. Push button to toggle Port 1,2 to ON or OFF position.

7. Device Outputs

- a. Connect the chosen devices to OUT 1 and OUT 2. Do this by either directly hardwiring the devices with 18AWG POS and NEG wire or use an OutdoorLink supplied wiring harness with barrel connectors.

8. Device Activation

- a. Devices will not turn on unless the schedules are assigned to be ON at the time of installation in the SmartLink portal. To do this, login to the portal: <https://portal.outdoorlinkinc.com/login>, search for the last 4 digits of the ICCID number on the SmartLink controller and go to the unit’s Dashboard.
- b. If the schedule is set for *Always On*, or the Relay is scheduled to be on at the time, the device should power up once the controller receives power and connects to its cellular carrier. If the schedule is not set to be on at the time, then push the Power Button located on the blue header of each Relay.

9. Confirm System Health

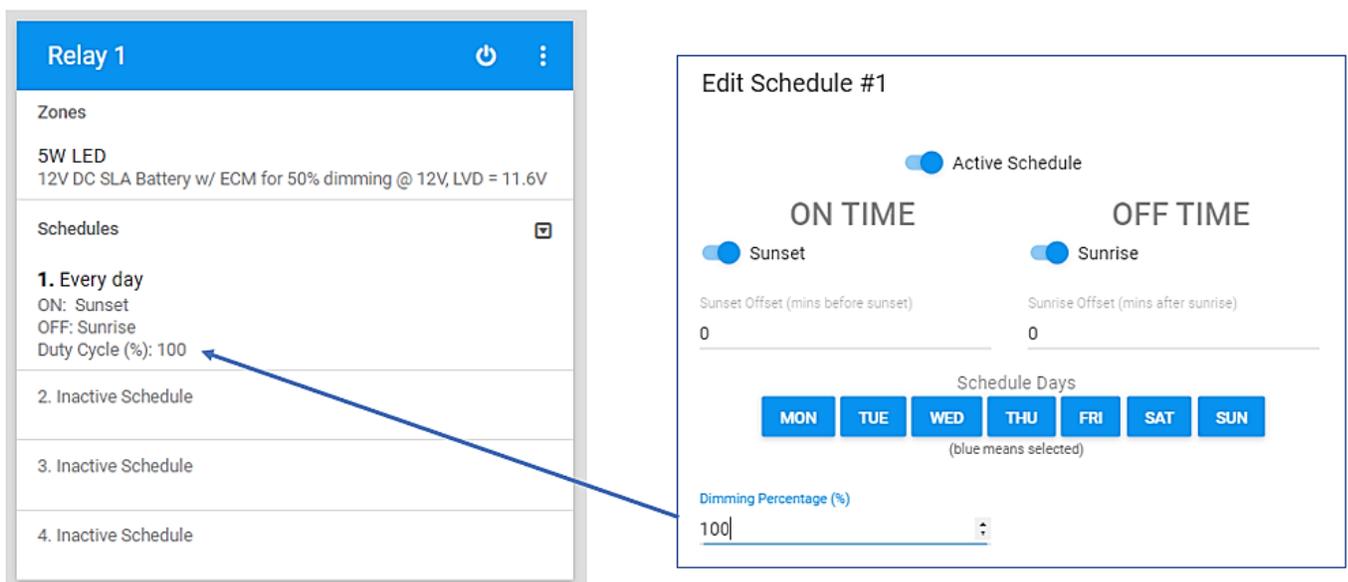
- a. Confirm incoming voltage and each Relays load by clicking on the three vertical dots on the header of the OutdoorLink Control Box and select “Get Unit Status.” Then check the Power Readings for battery voltage and output loads.

## SL-2-DC-002 Special Features

### Variable Dimming

This feature allows a user to remotely set and schedule the intensity of lighting. A user can set the dimming percentage along with the scheduled on – off period. This is especially important for solar applications where reduced light intensity equates to reduced power consumption.

Figure 7. Screenshot of diming options per each schedule in the SmartLink portal



### Voltage Threshold Actions (VTA)

The VTA monitors the input voltage and as a function of its level invokes certain actions. There are two thresholds provided, each with six selectable actions that can be assigned and executed once the threshold is met.

The thresholds are setup as high and low levels. This allows an action to be taken when the input voltage exceeds the high level and an action to be taken when the input voltage is less than the low level. Combining the associated actions allows for optimal control of batteries and overall power management.

The input voltage threshold levels are common between the two outputs. However, the output actions are independent of one another. For example, once a threshold has been met, output 1's action may be to remain idle and do nothing while output 2's action may be to open / turn off.

The six action selections for each of the voltage thresholds are outlined the table below. Only one action may be assigned to a relay threshold at a time. VTA is configurable by users with administrative access.

### VTA Settings

Action	Description
None/Idle	No action is taken.
Follow Schedules	Relay follows the assigned schedules. If a schedule on time is valid the relay will close.
Open Relay	Relay is opened and remains open until the next schedule on time. This functionality is equivalent to a manual off from the web portal.
Open Relay, Ignore Schedules	Relay is opened and its associated schedules are ignored. The relay schedules will continue to be ignored until another relay action is taken or a manual relay on or off is issued from the web portal.
Close Relay	Relay is closed and remains closed until the next schedule off time following a scheduled-on time. This functionality is equivalent to a manual on from the web portal.
Close Relay, Ignore Schedules	Relay is closed and its associated schedules are ignored. The relay schedules will continue to be ignored until another relay action is taken or a manual relay on or off is issued from the web portal.