# Smartlink™ SL-2-DC (SLi-2-DC) Operations Manual

## Version 2.B

## Table of Contents



# Revision History

| Version | Date | Author | Summary |
|---|---|---|---|
| 0.B | 6/25/21 | C. Weiland | Initial Release |
| 1.B | 7/12/21 | C. Weiland | Updated per ENG, OPS review |
| 2.B | 12/7/21 | C. Weiland | Include status light details while connecting |
| | | | |
| | | | |





(256) 885-9768 | www.Smartlinkcontrol.com

# Smartlink SL-2-DC Introduction

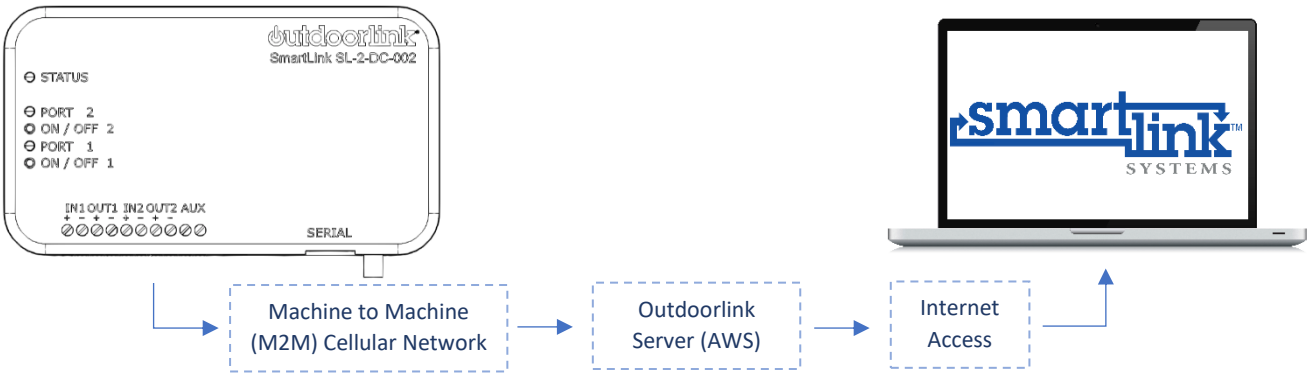
Smartlink SL-2-DC controllers remotely manage devices through a secure, cloud-based management system. The SL-2-DC operates from 8 – 30 volts @ 3A per output and has two independently controlled inputs and outputs. This allows a single SL-2-DC controller to remotely monitor, schedule and reboot two separate devices operating at different voltages.

The versatile controller is useful in a variety of applications and industries including:

- Digital Advertising & Signage
- IT & Networking
- Lighting Systems
- Solar Systems

Every Smartlink SL-2-DC controller can be accessed from a desktop or mobile device, enabling operations teams to manage issues before customers see them and resolve problems in seconds without making a site visit.

**Reboot Devices from Anywhere**
**Schedule up to 2 Devices per Controller**
**Receive Alerts in Real-time**
**24/7 Proof of Performance**
**Reduce Site Visits & Carbon Footprint**
**Management & Performance Reports**




Outdoorlink offers 24/7 technical support via phone or email from its Huntsville-based support team to ensure issues are resolved as soon as possible. Please call (256) 885-9768 or email support@Outdoorlinkinc.com to reach a support representative.

# Setup Guide

## Installation & Activation

**Please read the following instructions prior to installation.**

1. Please refer to example wiring diagrams in this manual and contact customer support if there are any installation questions. Locate the SL-2-DC controller away from direct sunlight and outdoor elements. Do not allow water to enter the controller. Outdoorlink, Inc. recommends that all applicable electrical codes be observed while installing and troubleshooting the units. Please note that electrical codes vary by area. Consult local electrical codes prior to installation.

2. **Once the SL-2-DC unit is installed, contact Outdoorlink customer support at (256) 885-9768 to activate your unit and to ensure the system is operating properly. The device will not operate until this step is complete. In some cases, the SL-2-DC units are pre-loaded so that a call to customer support is not required. Confirm with the appropriate Outdoorlink representative.**

   Please have the following details known or readily available:

   a. Location the SL-2-DC Unit is installed
   b. GPS Coordinates (if applicable)
   c. Devices connected to the SL-2-DC unit
   d. Desired scheduling (device on/off & day of week)
   e. ICCID – Numeric identifier is labeled on the enclosure. Ex. 89014103271407802097

3. If not yet completed, customer support will create a user web account to access the Portal. Portal training will be provided by an Outdoorlink representative when requested. A Portal user manual is also available for a complete review of the system.

4. Once the SL-2-DC unit is powered up and customer support has activated the device, please log in to the Portal at https://portal.Outdoorlinkinc.com/login using the provided credentials to begin remotely managing devices.

# Features and Functions

Outdoorlink's controllers remotely monitor, schedule, and reboot digital inventory through a cloud-based management portal. As a third-party fail-safe, users are alerted in real-time and the Smartlink can remotely reboot the device to restore proper function.

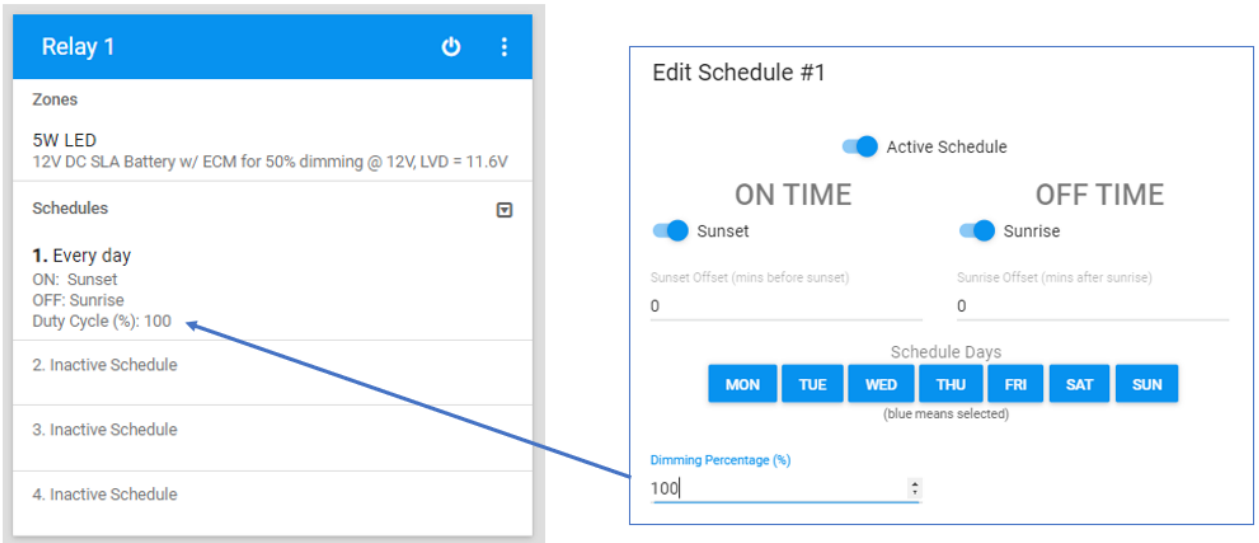
The SL-2-DC enables up to two devices to operate on different run-times with individual day-of-week scheduling capabilities. And with an open API, the Smartlink Management System can integrate with other Content Management Systems and CAD-AVL platforms.

## SL-2-DC Specifications

| | |
|---|---|
| Device Management | Manages up to 2 DC powered devices: security & illumination lighting, digital displays, cameras and more |
| Runtime Settings | Automatic, GPS based sunrise/sunset times and/or manual time scheduling with integrated real-time clock |
| Enclosure | Polycarbonate, 6 in. x 3 in. x 1 in. |
| Input Power | 8-30Vdc |
| Output Power | 8-30Vdc @ 3A per port |
| Connectivity | Cellular LTE CAT M1 cellular connection with internal SIM and integrated or external antenna options |
| Operating Temp. | 0°C to 65°C |
| Environmental | 0-95% humidity, non-condensing, RoHS, indoor applications |
| Wiring Connections | Terminal block (18 AWG) |
| System Reporting | Power Readings, Proof of Performance, Alarm History, Maintenance Log, Temperature Probe |
| Alarm Notifications | Loss of Power, Low Voltage, High Voltage, Power Restore, No current |

## SL-2-DC Advanced Features

**Variable Dimming** 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.



**Voltage Threshold Actions (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 for an action to be taken when the input voltage is less than the low level. Combining the associated actions and levels allows for robust control of the outputs.

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 or 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.

| 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. |

# Cellular Connection

The SL-2-DC includes an integrated cellular modem to enable communication between the device and Outdoorlink's servers. The SL-2-DC 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.**

Installation Tips:

- Avoid placing the SL-2-DC in enclosed spaces unless necessary. An external antenna is recommended when the device must be placed in an enclosed area such as a hardware cabinet.
- When mounting external antennas, orientation and plane are important factors to consider. Verify with Outdoorlink on the ideal mounting position.
- Place the SL-2-DC with as much free space as possible from other electronic devices.

Status LED

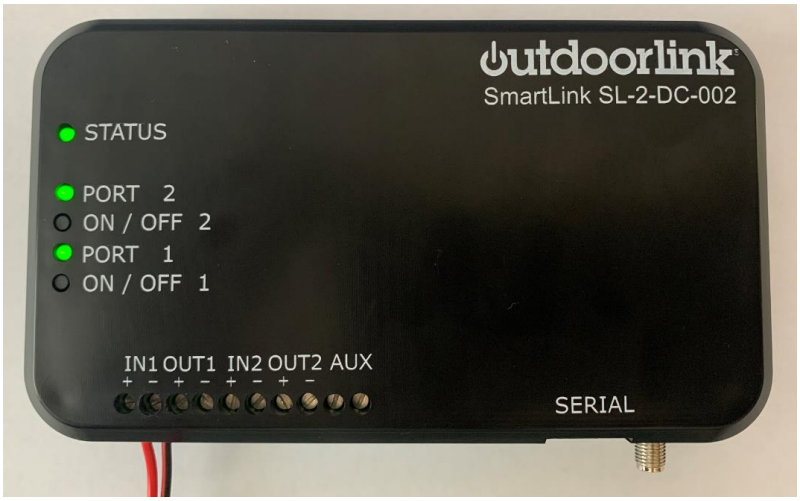
- Slow Blink: One blink per second continuously indicates that the device is searching for the cellular network while in **internal** antenna mode.
- Slow Blink with Two Second Pause: One blink per second for two seconds followed by two second pause indicates that the device is searching for the cellular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

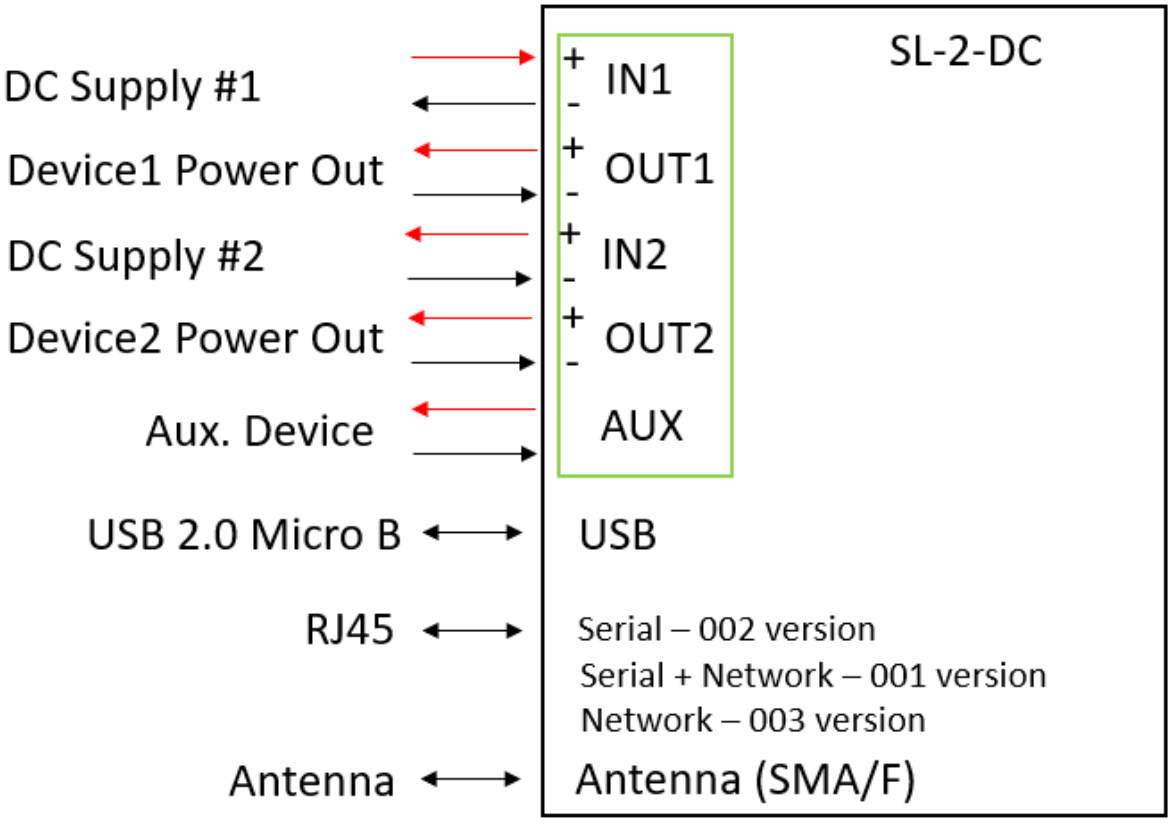
- A solid LED indicates Port 1,2 is powered with a load connected.
- A rapid blink LED light Port 1,2 is powered without a load connected.
- No LED indicates Port 1,2 is not powered.

On/Off 1,2

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




## Block Diagram




Note – An 11mm extended tip Micro B Male is recommended for accessing the micro-USB port.
Amazon ASIN - B07R1Z9HYP

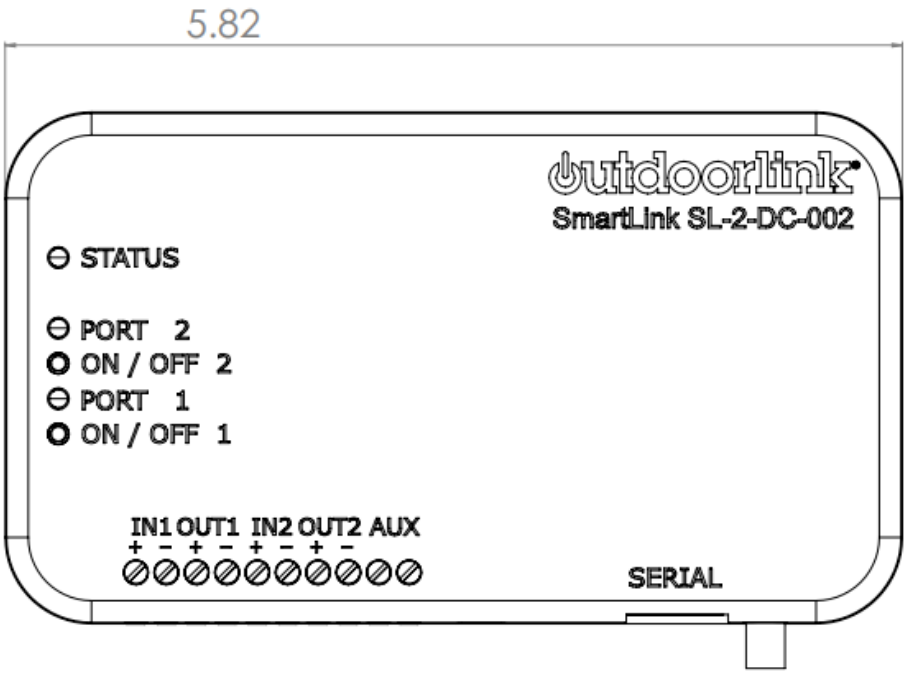
# Interfaces

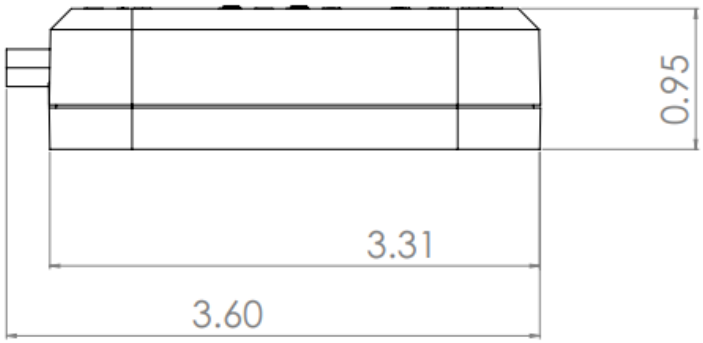


| Interface List | |
|---|---|
| 1 | Terminal Block IN1 (+) |
| 2 | Terminal Block IN1 (-) |
| 3 | Terminal Block OUT1 (+) |
| 4 | Terminal Block OUT1 (-) |
| 5 | Terminal Block IN2 (+) |
| 6 | Terminal Block IN2 (-) |
| 7 | Terminal Block OUT2 (+) |
| 8 | Terminal Block OUT2 (-) |
| 9 | Terminal Block Temp/AUX |
| 10 | Terminal Block Temp/AUX |
| 11 | USB 2.0 Micro-B Female |
| 12 | RJ45 to Serial -002 version<br>Dual RJ45 to Serial + Network -001 version |
| 13 | Antenna Port<br>Internal Antenna – Standard<br>External Antenna - Optional |

# Dimensions

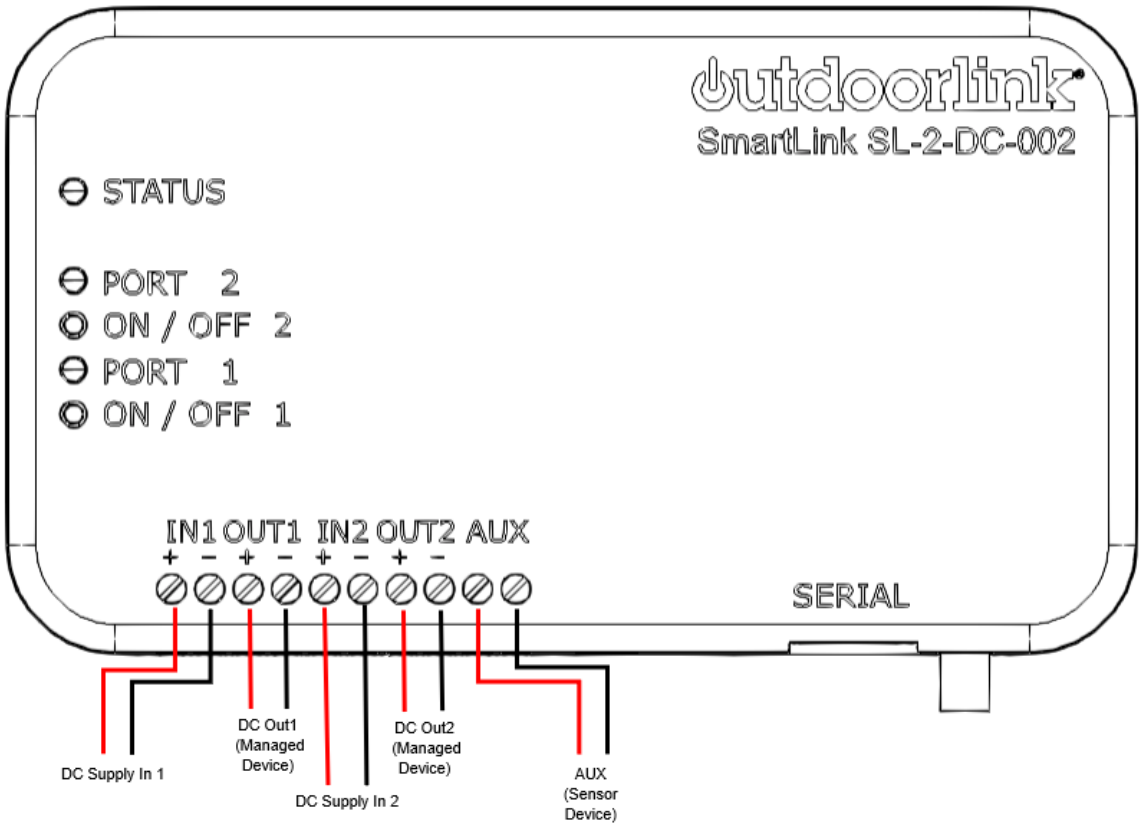
| SL-2-DC Size & Weight Details | |
|---|---|
| **Material** | PC/ABS UL94 |
| **Color** | Black |
| **Weight** | 5.8 oz. |
| **Length** | 5.82 in. |
| **Width** | 3.60 in. |
| **Height** | 0.95 in. |



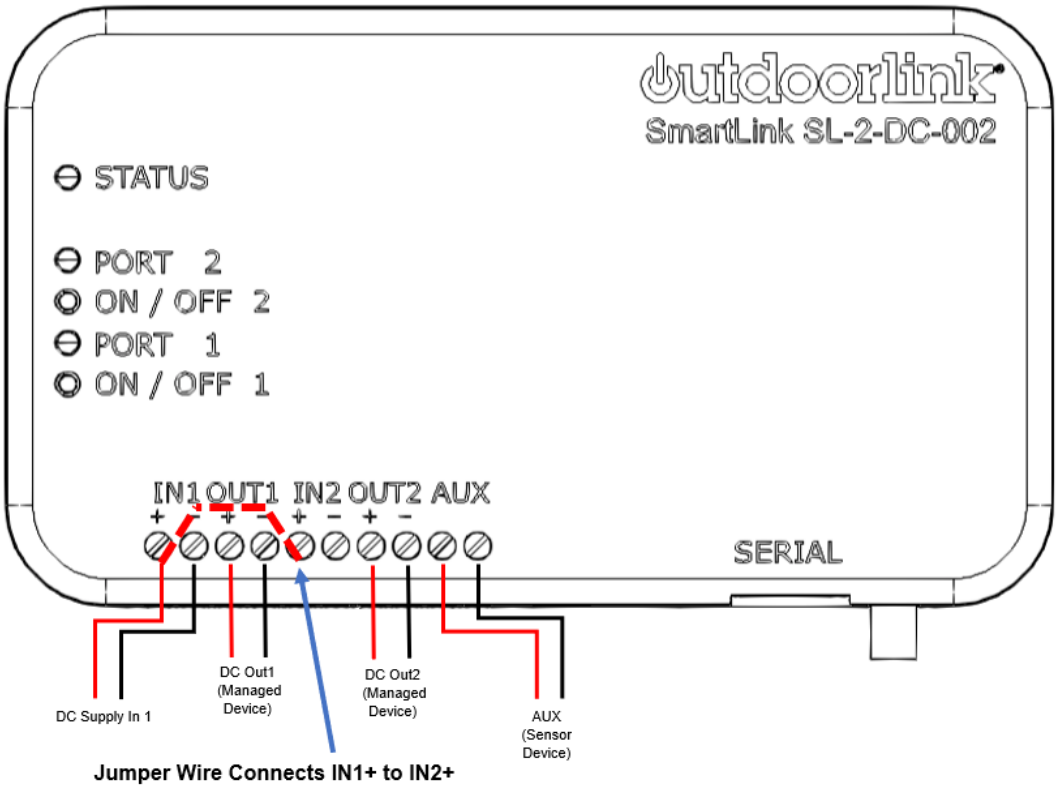
# Wiring Diagram

## Digital System Example – Split Supply

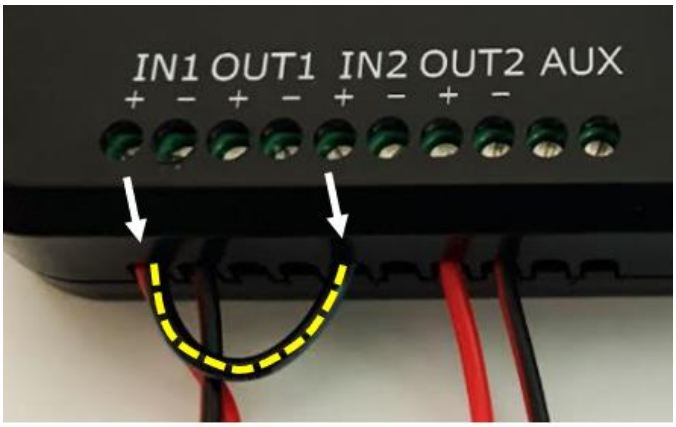



The digital system example (Split Supply) wiring diagram shows two separate DC input supplies and two separate DC outputs. This configuration is ideal for managing two separate devices operating at different voltages. For example, a 12V supply and 12V device can be placed on one input and output while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

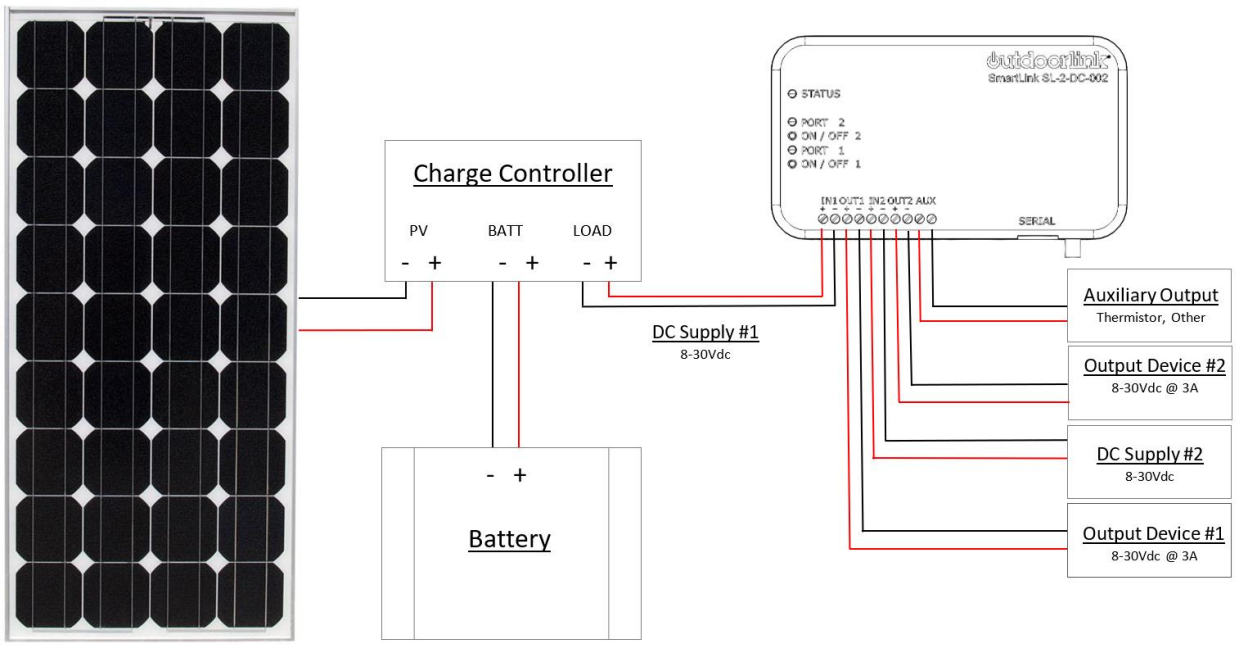
## Digital System Example – Single Supply, Jumper Wire




The digital system example (Single Supply, Jumper Wire) wiring diagram shows a single DC input and two devices. 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. A jumper wire is used to connect the IN1+ and IN2+.



## Solar System Example



# Specification Summary

1. Measurement Capability
    a. Input Voltage/Battery Voltage (supply)
    b. Output Current (per port)
    c. Temperature (thermistor)
2. Multiple Device Management
    a. Ability to remotely manage up to two devices per controller.
    b. Ability to remotely dim lighting through scheduling or on-demand command.
    c. Ability to automatically change relay position based on input voltage levels.
3. Rebooting
    a. Reboot devices individually from any desktop or mobile device.
    b. Verification after a device has been rebooted.
4. Connectivity
    a. LTE CAT M1 cellular connection with internal SIM and integrated antenna with external antenna option.
    b. Utilizes an independent cellular connection. Does not require dependence on a cellular connection of another device's board.
5. Scheduling
    a. Run-time settings defined automatically with GPS based sunrise/sunset times and/or manual time scheduling.
    b. Internal real-time clock provides automatic and accurate daylight savings adjustments.
    c. Schedule up to two devices independently.
    d. Day-of-week scheduling capabilities per output.
    e. Up to four schedules per output.
6. System Notifications
    a. Users notified in real-time via email of system alarms due to loss of power, no power and power restore.
7. Power Management
    a. Input power: 8 to 30Vdc
    b. Output power: 8 to 30Vdc @ 3A per port. Output voltage matches input voltage.
8. Environmental
    a. 0-95% humidity, non-condensing, RoHS.
    b. Operating/Storage Temperature: 0°C to 65°C
    c. Avoid direct sunlight, high temperature and water entry.
9. Installation
    a. 18 AWG terminal block connections.
    b. 24/7 on-call technical support.
10. Software
    a. Cloud based access from any desktop or mobile-friendly browser compatibility.
    b. Hosted by a secure cloud-based Amazon Web Service (AWS).
    c. Open API for integration into third-party content management or CAD-AVL systems.
    d. Provides reports and charting of Power Readings, Proof of Performance, Command Logs, Maintenance Logs and Alarm History.