ACL-SC-DMX Allanson Dmx Spi Master Lighting Controller Series User Manual

December 12, 2025

Allanson - ColorMix

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Wiring Diagram

Allanson - Labels

Note: Wiring diagrams in the following scenarios are for reference only. They are not project specific, and they only show generic wirings scenarios. Components, cable types, and distance could vary depending on project size requirements.

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Scenarios for DMX System

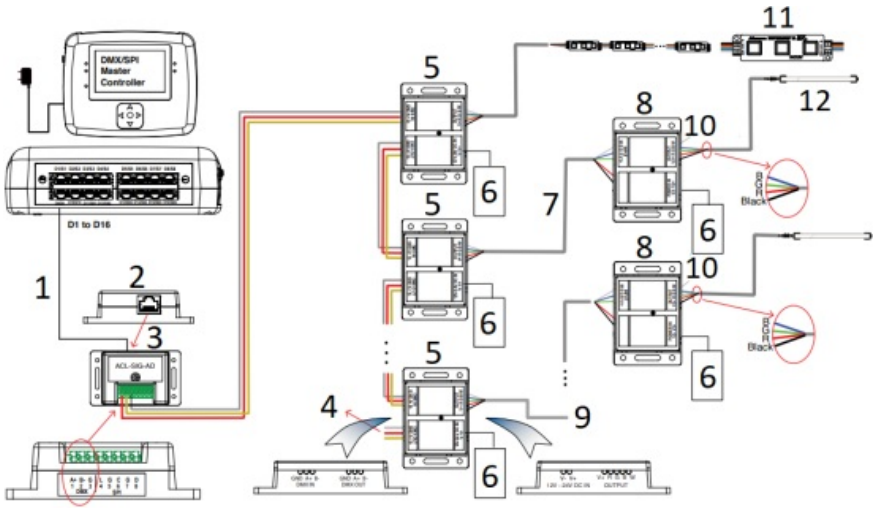
In a DMX system, the Master Controller sends commands to control the colors, or values, of RGB/RGBW components. The Sub-Controller manages a series of RGB/RGBW components that respond to a single command. There can be multiple Sub-Controllers connected to a Master Controller.

The Allanson ACL-SC-DMX Sub-Controller is UL approved, compatible with RGB and RGBW modules. The ACL-SC-DMX also has an IP65 ingress protection rating, making it ideal for a wide range of lighting applications.

When additional RGB/RGBW components need to be connected to a Sub-Controller, the Allanson ACL-PR-4CH-5A Power Repeater can be used.

The ACL-PR-4CH-5A duplicates and boosts the RGB/RGBW signal, allowing more module series to be connected to the same Sub-Controller. The new Power Repeater is also UL approved and IP65 rated.

DMX System Scenario (Different commands given to multiple groups of LEDs)



1. Cat 5/6 Cable
   (1-2 ft recommended, distance as short as possible)
2. **RJ45 Adapter**
   (ACL-SIG-AD)
3. **RJ45 Adapter**
4. **Note:** Add terminator (orange-yellow) to the last sub-controller. At a maximum of 2000ft from the first to last sub-controller
5. **Sub-controller**
   (ACL-SC-DMX)

6. POWER SUPPLY
7. 5 wire 18 GA Cable
8. **Power Repeater**
   (ACL-PR-4CH-5A)
9. RGBW modules / RGB tubings
10. capped wire
11. **RGBW module**
12. **RGB Rigid/Flexible Border Tubing**

Scenarios for SPI System

In the SPI system, a few new components can be used to boost signal strength and extend the range to max 1000ft with cat5e or cat6 cable.

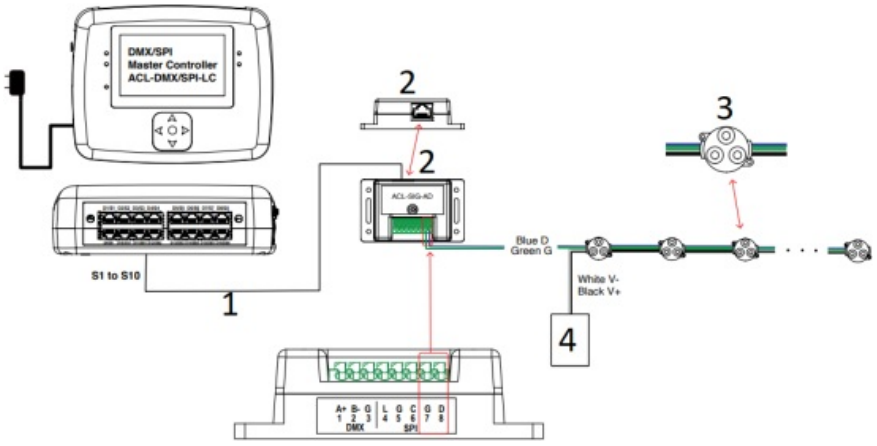
SPI range extender (RX/TX) is a single channel which controls one group of addressable modules.

SPI splitter splits signal from one channel into multiple signals. The same command is being copies and sent to receivers.

4X SPI range extender has 4 channels that controls max 4 different groups of addressable modules in different commands. it also has booster function that can transmit signal over a long distance.

SPI system – Scenario #1

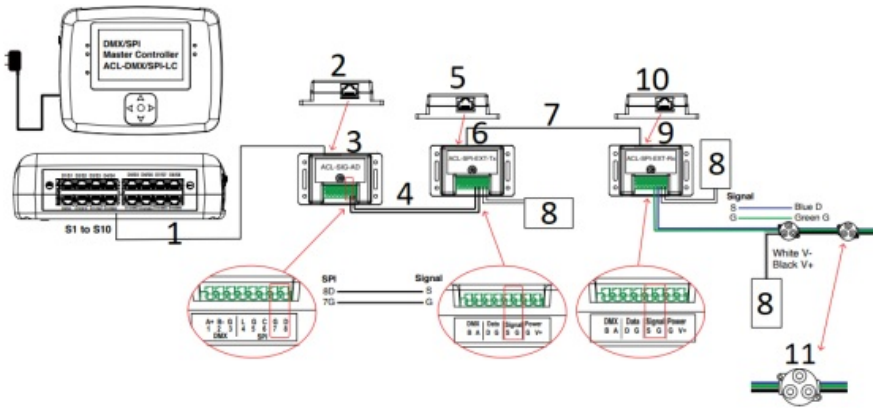
The Master Controller can be connected directly to modules if the distance is shorter than 30 ft, an adaptor is required.



1. Cat 5/6 Cable
   (max. 30 ft)
2. **RJ45 Adapter**
   (ACL-SIG-AD)
3. RGB Addressable Modules
4. POWER SUPPLY

SPI system – Scenario #2

SPI range extenders (transmitter and receiver) are being used as a pair when addressable modules are more than 30ft away.
Single channel only (one group of modules).

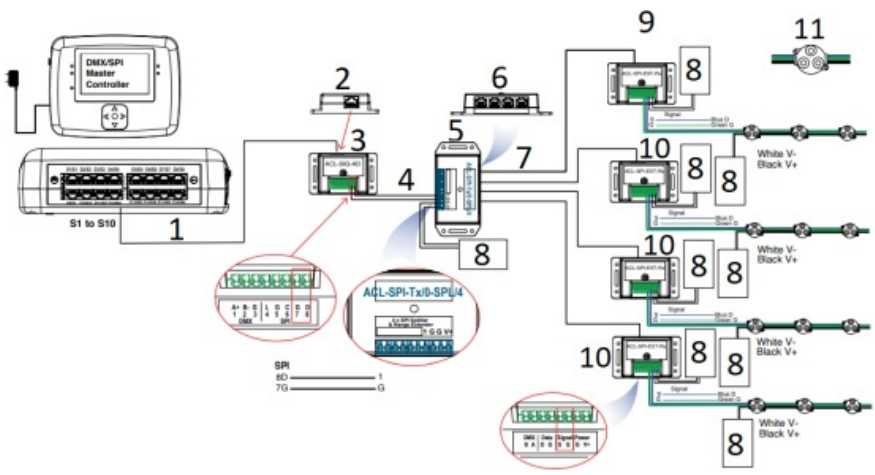


1. Cat 5/6 Cable
   (1-2 ft recommended, distance as short as possible)
2. **RJ45 Adapter**
   (ACL-SIG-AD)
3. **RJ45 Adapter**
4. Keep Minimum Distance

5. **SPI Range Extender Transmitter**
   (ACL-SPI-EXT-Tx)
6. **SPI Range Extender Transmitter**
7. Cat 5/6 Cable
   (Max. 1000ft)
8. POWER SUPPLY
9. **SPI Range Extender Receiver**
10. **SPI Range Extender Receiver**
    (ACL-SPI-EXT-Rx)
11. RGB Addressable Modules

SPI system – Scenario #3

SPI Splitter is being when sending the same command to several groups of RGB addressable modules.



1. Cat 5/6 Cable
   (1-2 ft recommended, distance as short as possible)
2. **RJ45 Adapter**
   (ACL-SIG-AD)
3. **RJ45 Adapter**
4. Keep minimum distance
5. **SPI Splitter**
6. **SPI Splitter**
   (ACL-SPI-Tx/0-SPL/4)
7. Cat 5/6 Cable

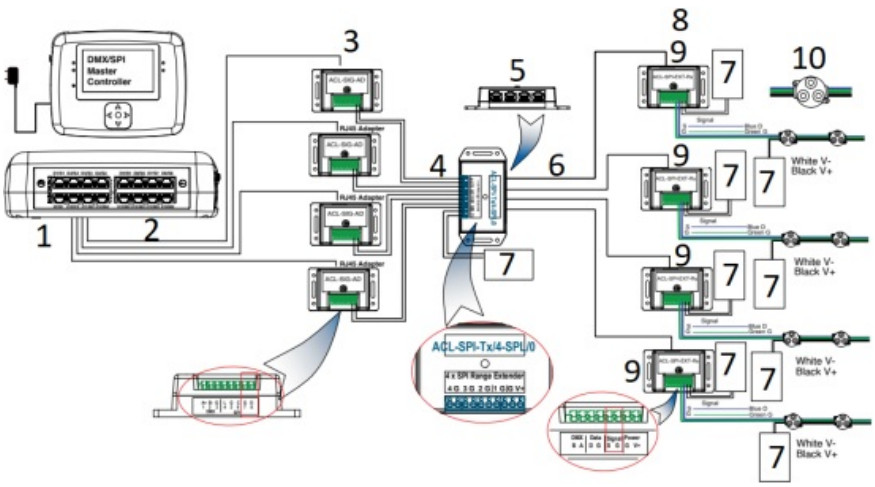
(Max. 1000ft)

8. POWER SUPPLY
9. **SPI Range Extender Receiver**

   (ACL-SPI-EXT-Rx)
10. **Range Extender Receiver**
11. RGB Addressable Modules

SPI system – Scenario #4

4x SPI Range Extender is being used for controlling various group of to several groups of RGB addressable modules that listen to different commands.



1. **S1 to S10**

   (use 4 ports max.)
2. Cat 5/6 Cable

   (1-2 ft recommended, distance as short as possible)
3. **RJ45 Adapter**

   (ACL-SIG-AD)
4. **4xSPI Range Extender**
5. **4xSPI Range Extender**

   (ACL-SPI-EXT-Tx/4-SPL/0)
6. Cat 5/6 Cable

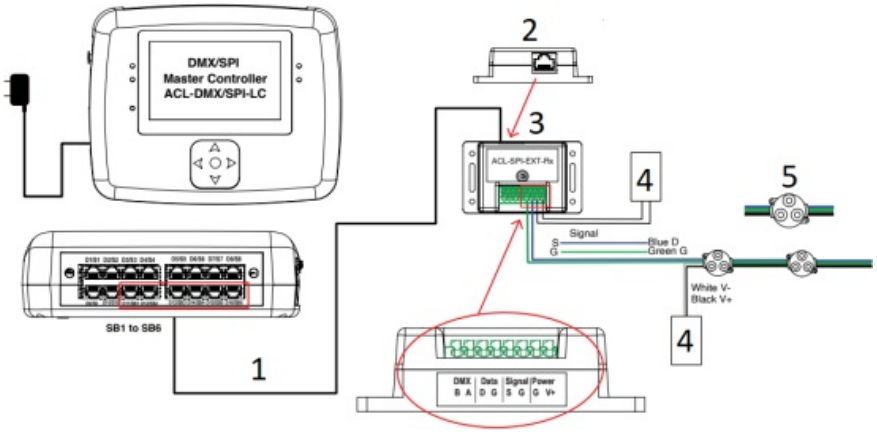
   (Max. 1000ft)
7. POWER SUPPLY
8. **Range Extender Receiver**

   (ACL-SPI-EXT-Rx)

9. **Range Extender Receiver**
10. **RGB Addressable Modules**

SPI system – Scenario #5

The Master Controller can be connected directly to modules from 1000ft away via the Boosted SPI ports. A receiver is required.



1. Cat 5/6 Cable
   (Max. 1000 ft)
2. **SPI Range Extender Receiver**
   (ACL-SPI-EXT-Rx)
3. **SPI Range Extender Receiver**
4. POWER SUPPLY
5. **RGB Addressable Modules**

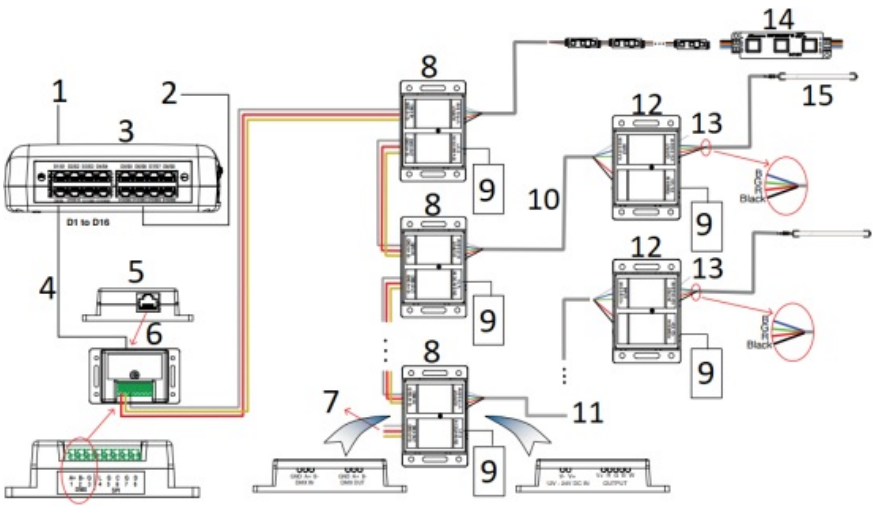
Multi-protocols

For large-scale signage applications, DMX, SPI, and Boosted SPI Systems could co-exist.
The system diagram is distributed across three pages for clarity.

1. Cat 5/6 Cable
   (1-2 ft recommended, distance as short as possible)
2. **DMX System**
3. **SPI Boosted System**

4. **SPI System**

Multi-protocol – DMX System Set-Up



1. **S1 to S10**

   SPI System
2. **SB1 to SB6**

   SPI Boosted System
3. **DMX/SPI Master Controller**
4. Cat 5/6 Cable

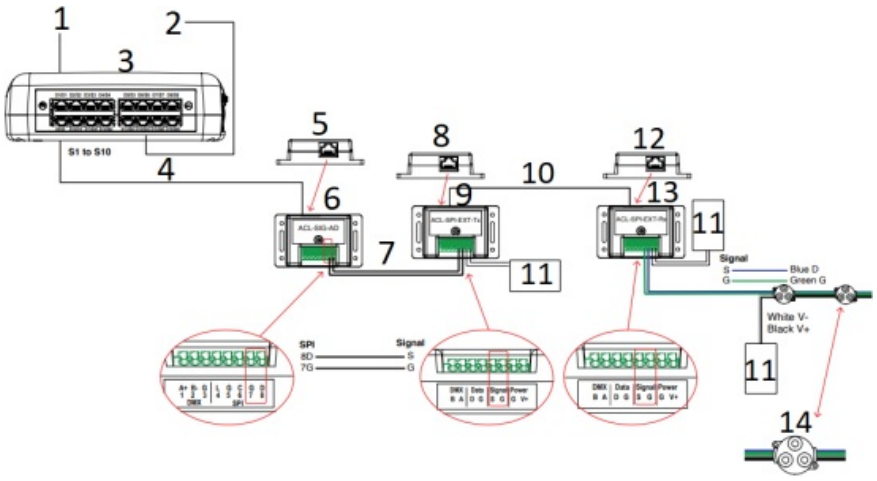
   (1-2 ft recommended, distance as short as possible)
5. **RJ45 Adapter**

   (ACL-SIG-AD)
6. **RJ45 Adapter**
7. **Note:** Add terminator (orange-yellow) to the last sub-controller. At a maximum of 2000ft from the first to last sub-controller
8. **Sub-controller**

   (ACL-SC-DMX)
9. POWER SUPPLY
10. 5 wire 18 GA Cable
11. RGBW modules / RGB tubings
12. **Power Repeater**

    (ACL-PR-4CH-5A)
13. capped wire
14. **RGBW module**
15. **RGB Rigid/Flexible Border Tubing**

Multi-protocol – SPI System Set-Up



1. **D1 to D16**

   DMX System
2. **SB1 to SB6**

   SPI Boosted System
3. **DMX/SPI Master Controller**
4. Cat 5/6 Cable

   (1-2 ft recommended, distance as short as possible)
5. **RJ45 Adapter**

   (ACL-SIG-AD)
6. **RJ45 Adapter**
7. Keep Minimum Distance
8. **SPI Range Extender Transmitter**

   (ACL-SPI-EXT-Tx)
9. **SPI Range Extender Transmitter**
10. Cat 5/6 Cable

    (Max. 1000ft)
11. POWER SUPPLY
12. **SPI Range Extender Receiver**

    (ACL-SPI-EXT-Rx)
13. **SPI Range Extender Receiver**
14. RGB Addressable Modules

Multi-protocol – SPI Boosted System Set-Up

1. **D1 to D16**

   DMX System
2. **DMX/SPI Master Controller**
3. **S1 to S10**

   SPI System
4. **SB1 to SB6**
5. Cat 5/6 Cable

   (1-2 ft recommended, distance as short as possible)
6. **SPI Range Extender Receiver**

   (ACL-SPI-EXT-Rx)
7. **SPI Range Extender Receiver**
8. POWER SUPPLY
9. **RGB Addressable Modules**

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Documents / Resources

	Allanson ACL-SC-DMX Allanson Dmx Spi Master Lighting Controller Series [pdf] User Manual ACL-DMX-SPI-LC, ACL-SC-DMX, ACL-PR-4CH-5A, Allanson Dmx Spi Master Lighting Controller Series, Allanson Dmx Spi Master Lighting Controller Series, Allanson Dmx Spi, Master Lighting, Controller, Series

References

- User Manual

Allanson

ACL-DMX-SPI-LC, ACL-PR-4CH-5A, ACL-SC-DMX, Allanson, Allanson Dmx Spi, Allanson Dmx Spi Master Lighting Controller Series, controller, Master Lighting, Series

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