# C4 LIVE & C4 EXTENDED MANUAL
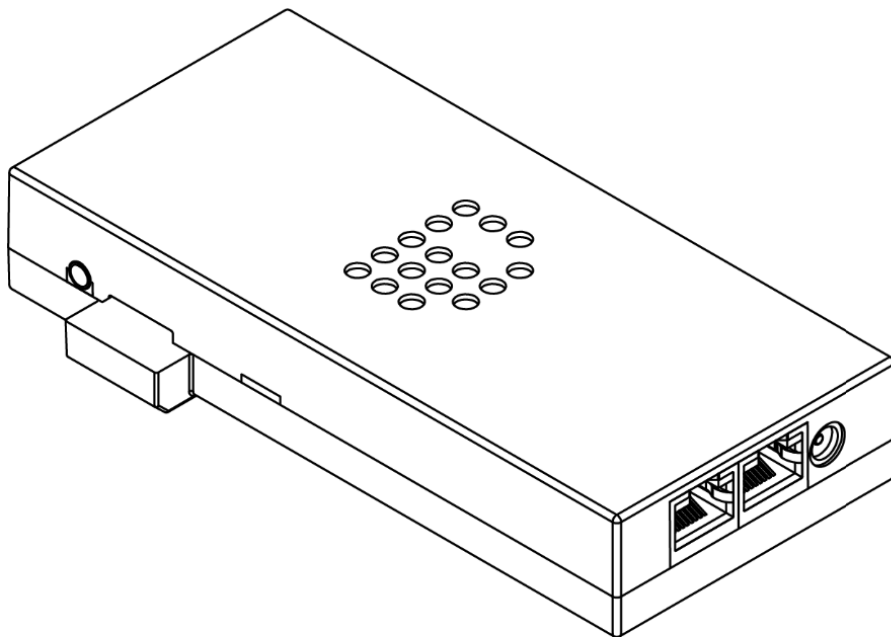


CTRLPIXELLIVE, CTRLPIXEL

# THANK YOU FOR CHOOSING ACOLYTE AND DIGIDOT!

We strive to offer the latest technology in LED lighting control and we're constantly innovating and expanding our control platform. We're convinced that you have everything you need to create a truly mesmerizing, innovative piece of light art. Are you proud of the result? Then please share it with us. We love to see what you can do with our products!

**The Acolyte and DiGidot teams**

# INDEX

# INTRODUCTION

The DiGidot C4 is a unique and powerful LED controller that allows you to program Acolyte pixel-controlled LED products through Art-Net, sACN or DMX signals that are converted to various SPI protocols. C4 products have a huge controlling capacity (up to 8,192 individual channels, depending on the license). A built-in web-based user interface allows C4 controllers to be configured by computer, smart phone or tablet through an app. C4 Extended and C4 Live controllers can work together to create a massive network that easily manages any large-scale pixel project.

# PRODUCT INFORMATION

Box content

## C4 Live

- C4 Live
- Output terminal connector
- Quick-start guide
- USB power cable
- RJ45 network cable

## C4 Extended

- C4 Extended
- Output terminal connector
- Quick-start guide
- 8 GB microSD card
- USB power cable
- RJ45 network cable
- TRRS trigger cable

**NOTE**: We put great care into our products and have high standards of quality control. Nonetheless, please double check for damaged or missing items. If any items are damaged or missing, please contact your supplier immediately. Never use damaged products!

# TECHNICAL SPECIFICATIONS

**Electrical**

| | |
|---|---|
| Input Voltage: | 5-24 V DC |
| Max. power consumption: | 5 W |
| Insulation class: | III |

**Mechanical**

| | |
|---|---|
| Housing material: | Self-extinguishing Acrylonitril-Butadieen-Styreen (ABS) |
| Dimensions: | 153 x 74 x 28 mm | 6.02 x 2.91 x 1.10 in. (L x W x H) |
| Net device weight: | 140 g | 4.93 oz |
| C4 Live package weight: | 265 g | 9.34 oz |
| C4 Extended package weight: | 280 g | 19.87 oz |
| Mounting: | DIN-rail or surface mounted |

**Environmental**

| | |
|---|---|
| Operation Temperature (Tc): | 32 to 122°F (0 to 50°C) |
| Max. ambient Temp. (Ta max): | 104°F (40°C) |
| Storage temperature: | -4 to 122°F (-20 to 50°C) |
| Max. operating relative humidity: | 90% (indoor use only) |

**Protection**

| | |
|---|---|
| IP rating: | IP20 (indoor use only) |
| Power: | Reverse polarity |
| Digital input / output: | Overvoltage protection (max. 24VDC) |
| Analog input: | Overvoltage protection (max. 12 V DC) |

**Control**

| | |
|---|---|
| Input Protocols: | Art-Net 1, 2, 3 & 4 |
| | sACN |
| | DMX512 (2 inputs) |
| Output Protocols: | Art-Net 1, 2, 3 & 4 (out/through) |
| | DMX512 (2 outputs) |
| | DMX TTL (4 outputs) |
| | RDM |
| | 60+ SPI protocols (check supported ICs list online) |
| | UDP (C4 Extended only) |
| | OSC (C4 Extended only) |
| Output channels (of 4 I/O ports): | Up to 8,192 Art-Net or sACN channels or 1,024 DMX channels (license dependent). Physical port limit: 4,096 channels |
| Ethernet: | RJ45 compatible, for 10/100 Base-TX Ethernet |
| Wi-Fi: | 10/100 Base Ethernet with static IP address or DHCP |

| | |
|---|---|
| Wi-Fi protocols: | 802.11 b/g/n (HT20) |
| Frequency range: | 2.4 GHz (2400M ~ 2483.5M) |
| TX Power: | Max. +20 dBm |
| Antenna: | Onboard |
| Wi-Fi Mode: | Client + AP |
| Wi-Fi security: | WPA, WPA2 |
| Encryption: | WEP/TKIP/AES |
| Trigger options: | max. 3 dry contacts |
| | max. 3 analog inputs (0-10 V DC, 1-10 V DC, potentiometer 50 ff Lin) |
| | Onboard button |
| | Power up |
| | Internal clock |
| | Sunset/sunrise |
| | Art-Net, sACN / DMX |
| | HTTP-Get |
| | UDP |
| | JSON |
| | OSC |
| | Internal tasks (presence/absence of incoming signal or when a scene is/is not playing) |
| | DiGidot C4 web-based user interface |
| | DiGidot C4 app |
| Programming & Control: | DiGidot C4 web-based user interface |
| | DiGidot C4 app |
| | Any type of Art-Net or sACN Software/Device (visit digidot.eu for a complete list of supported software) |

**Connectivity**

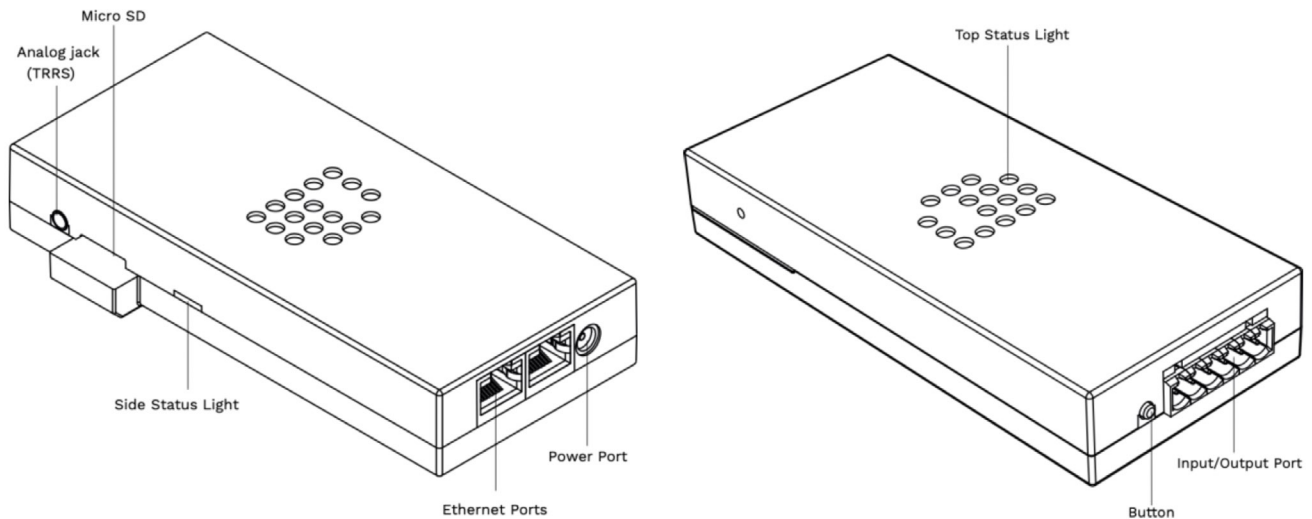| | |
|---|---|
| Terminal wiring: | max. 14 AWG (2.5 mm$^2$) |
| Connectors: | Power: 5-24 V DC power jack |
| | Network: 2x RJ45 bus |
| | IO port: 6-pin Input/Output terminal connector |
| | Trigger input: 4-pin 3.5 mm TRRS mini jack |

**Quality**

| | |
|---|---|
| Warranty: | 5-year factory warranty |
| Compliances: | CE, listed under No. 2016/119-1 |
| | cETL US, listed under No. 5010008 |
| | RoHS |

# TECHNICAL DRAWINGS

6 in.
(152.90 mm)

5.54 in.
(140.86 mm)

2.92 in.
(74.37 mm)

2.56 in.
(65.17 mm)

0.98 in.
(25 mm)
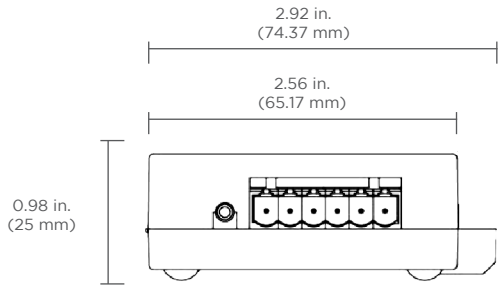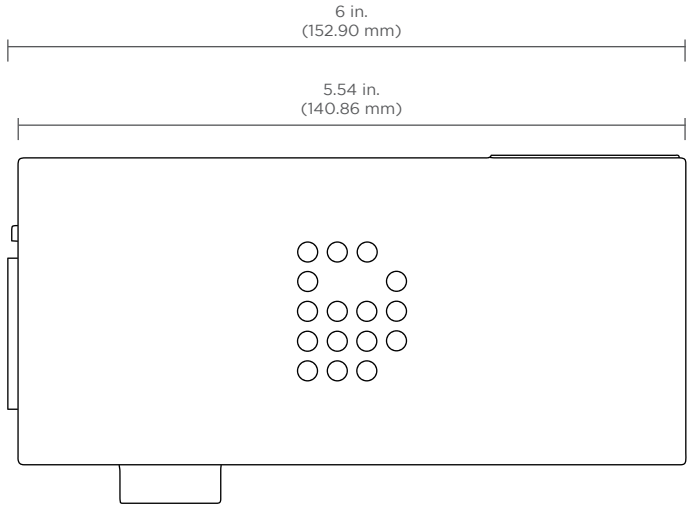
# THE C4 EXPLAINED



## DMX, Art-Net or sACN source required

A third-party console or Art-Net, sACN or DMX software is required for the C4 to work in a live system setup or to be able to record scenes (C4 Extended only). C4 controllers work with various professional grade consoles and software, such as: MADRIX, Pharos, ArKaos, Resolume Arena, MadMapper, POET, grandMA and many more. If the control software or console uses industry standard Art-Net, sACN or DMX protocols, you can direct the C4 controller.

## Control software: DMX, sACN and Art-Net control platforms

When the setup process has been completed, the C4 controller is ready to be used with any type of DMX, Art-Net or sACN software or console. The C4 will be automatically detected as an Art-Net or sACN device, depending on the software or console. To do so, an Input/Output configuration must be completed first. Each DiGidot C4 needs to be configured with a unique IP address for unicasting. Assign a device name to the DiGidot C4 for easier recognition (see: Configuring the DiGidot C4).

## Supported protocols (ICs)

C4 controllers support more than 60 'Data' and 'Clock+Data' SPI protocols. All supported protocols can be found in the C4 user interface. Go to Home > Settings > In/out configuration > Select a port drop down menu to open the protocol list.

Please visit digidot.eu/digidot-c4 for the latest overview of all supported protocols/ICs.

For a more technical overview of protocols and their functions, please visit digidot.eu/support/documentation to see the C4 Performance Guide.

# KEY FEATURES EXPLAINED

C4 controllers have many powerful features. In this chapter, we will explain what these key features do.

## More than 60 supported protocols

The C4 supports more than 60 control protocols. New ICs are frequently added.

## SPI conversion of up to 16 universes*

Depending on your C4 version and license, you can output up to 16 universes, equaling 8192 control channels.
* The C4 Live can handle up to 24 universes, with advanced knowledge of SPI and frame rates.

## Onboard 100Mbit switch

The onboard 100Mbit switch allows for Art-Net or sACN input and output.

## DMX In/Out

The four I/O ports can be configured as one or two DMX inputs or outputs. It's also possible to use one input and one output. The I/O ports can also be configured as 4 x DMX TTL which can be converted to four balanced DMX outputs when a PxLNet Controller is connected to the C4.

## IP address filter

With this feature, you can configure the C4 to listen to a specific IP address as an input. Signals from other IP addresses will be ignored.

## Art-Net routing

You can route any incoming Art-Net universes to DMX, Art-Net outputs or SPI.

## HTP merge signal inputs

It is possible to merge various input signals such as DMX and/or Art-Net according to the HTP (Highest Takes Precedence) principle.

## Incoming and outgoing signal monitor

The monitor is a powerful tool to monitor all incoming and outgoing data as well as frame rate and network status.

### Create segments

Create simple chase effects for a large number of pixels by creating segments of channels or LEDs and reduce the amount of input channels.

### Daisy chain

The two port ethernet switch with RJ45 bus allows the C4 to be daisy chained. Daisy chaining more than 5 devices can cause network delays. Therefore, we recommend using a professional grade gigabit network switch to split the network load.

### Build-in scene generator (C4 Extended only)

Generate simple static or color scroll scenes in the user interface, store them and activate them with any trigger option.

### Scene recording from Art-Net sACN or DMX (C4 Extended only)

Record Art-Net, sACN or DMX streams and store them as recorded scenes.

### Scene triggering by various digital or analogue control inputs (C4 Extended only)

Recorded scenes can be triggered by analog and digital triggers, such as 0-10V, dry contacts, onboard buttons, built-in timers, HTTP Get, UDP, OSC, Art-Net, sACN, DMX, etc.

### On board Wi-Fi

C4 controllers feature onboard Wi-Fi for convenient wireless access through the free DiGidot app or the web interface. Wi-Fi can also be used for triggering. (While it is possible, we discourage sending Art-Net or sACN over Wi-Fi, because it can be unstable and unreliable.)

### Gamma correction

This function corrects input brightness. Gamma correction also changes the ratios of red, green and blue. We recommend enabling this option if your input is a video or image file, or if you're using 16 bit LED ICs to make the dimming curve smoother if the brightness is low.

### Adjustable fallback color

In case of absence or loss of the control signal, a fallback color can be set for every C4 controller. You can also set a delay time before the fallback activates.

### Online/offline firmware updates

We offer easy online updates within the user interface and offline updates in case your C4 controllers are not connected to the internet. You can download C4 firmware at digidot. eu/support/updates. Use the download link to get the file. You can upload new firmware at http://10.254.254.254/fwupdate.htm. You can also change the '10.254.254.254' in the URL to the IP address of your C4 device. It is possible to upgrade or downgrade multiple devices simultaneously.

### Output limiter

You can limit the output power to a pre-set brightness in two ways:

#### Brightness limiter

This option limits the individual channels to a specific percentage. This means every channel or LED will never exceed this percentage. E.g.: Limiting brightness to 50% means that all individual channels can never exceed 50% but the control range per channel will remain the same. Effectively, the percentage is applied to the input value for each channel.

#### Adaptive power limiter

This option limits the total average output of all channels combined to a specific percentage in order to decrease total power consumption. Individual channels may still output up to 100%. E.g.: Limiting power to 50% means that half of the channels can output 100% and the other half 0%, or all channels at 50%, etc. In case you try to output all channels at 75%, the output of all channels would automatically be limited to a total or 50% but will maintain ratios relative to each other.

WARNING: When you enable the brightness limiter, the number of dimming steps will decrease.
E.g.: An 8-bit protocol has 256 steps to dim. If the brightness limiter is set to 50% there will only be 128 steps left to dim.

### 16 bit dimming output
Whenever high-resolution dimming is required and supported by your IC, two input channels can be combined to one output channel to convert 8 bit to 16 bit dimming.

### Configure LED color order

In case an LED product has an alternative order of LED ICs or dyes, you can easily change the order of control channels in the user interface. The interface uses the default color order of the selected IC.

# BEFORE INSTALLATION

Before installing C4 controllers, please consider the following safety instructions:

SAFETY INSTRUCTIONS

- Carefully read this manual before installation and use of these products.

- Make sure these instructions are given to those responsible for installation (electricians, contractors, etc.) and use (designers, end-users) of this product.

- Local electrical and safety rules and guidelines always overrule this manual.

- DiGidot Technologies B.V. and Acolyte cannot be held liable for improper handling, product installation, usage or storage.

- Installation should only be carried out by a professional, certified installer that is qualified to work on electrical installations.

- Do not conduct any repairs of the device (there are no user serviceable parts inside). Any unapproved repairs and/or product modifications will void the product warranty. DiGidot Technologies B.V. and Acolyte cannot be held liable for any consequences.

- Repairs of this product may only be carried out by DiGidot Technologies B.V. and Acolyte.

- Repairs and maintenance of the installation may only be carried out by qualified technicians.

- Always disconnect the mains power when working on high voltage electrical installations. Failure to do so may result in product damage or personal injury.

- Do not connect or modify this product other than the ways described in this manual.

- Never use the product when it is damaged or does not work correctly. Never use the product if the product starts to smoke, or if a crackling/sizzling noise is audible. If this is the case in any way, turn off the power to the devices and contact your supplier immediately.

- C4 controllers are designed for indoor use (dry locations) only. Exposure to rain or moisture may cause fatal damage to the controller and increase the risk of electrical shock.

# REGISTER YOUR PRODUCT

Registering your product(s) is easy. We recommend registering your product to facilitate device management and ensure fast technical support.
Register your product at digidot.eu > 'My account' > 'My Devices' or in the user interface to receive helpful tips, news, updates and to ease license management. This page will recognize products by their MAC address and/or by scanning the QR code using a webcam or smart device camera.

- To register your product, you will require a DiGidot account.
- If you have created or signed into your DiGidot account with the User Interface of your C4 controller, your product may already be registered. To verify your registration, please log in and check your profile.

# MOUNTING OPTIONS

Install C4 controllers properly in a safe environment and protect the devices from direct sunlight, rain and moisture. Make sure the devices are installed and properly secured so they do not move. If you have any doubts regarding the environmental circumstances of your application, please contact your Acolyte or DiGidot Technologies B.V. prior to installation for consultation.
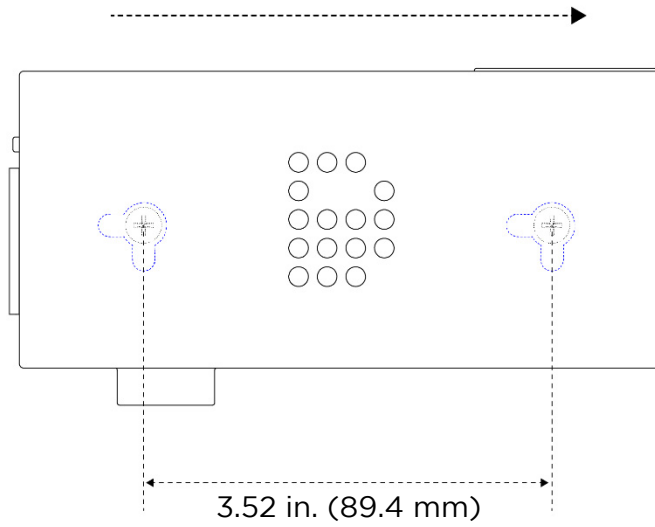
### Wall mounting

Use the mounting holes on the underside of the housing to mount the C4 controller. Install the device vertically or horizontally (screws not included).
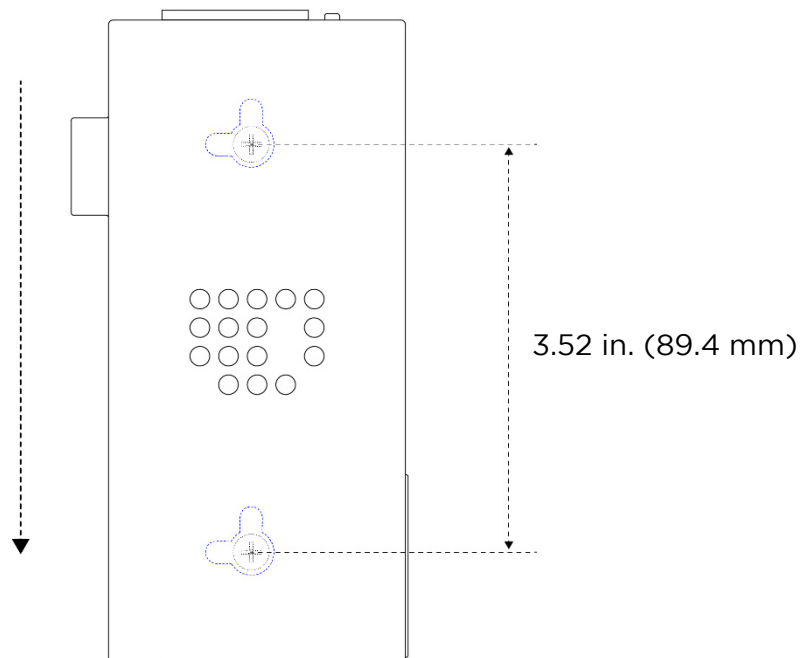


3.52 in. (89.4 mm)
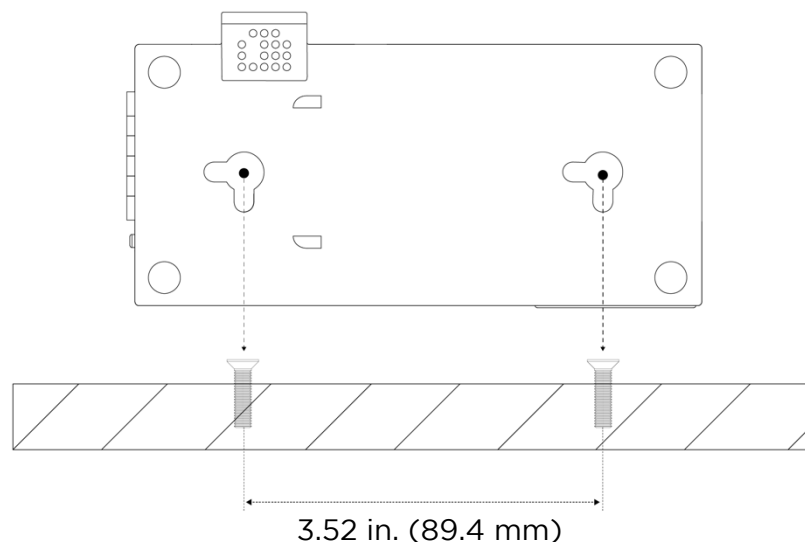
## Horizontal:
Slide into place

3.52 in. (89.4 mm)

## Vertical:
Slide into place

3.52 in. (89.4 mm)

## DIN-rail mounting

For 1.38 in. (35 mm) DIN-rail mounting, use the DIN-rail clip (Part # XXXXXXX, not included). Place the DIN-rail clip against the DIN-rail alignment marker on the C4 housing and align both mounting holes (photo 1).

Install the clip with the included 0.12 x 0.47 in. (3 x 12 mm) screw. When the DIN-rail clip is secured properly, you can easily install the device on a DIN-rail (photo 2).

SAFETY NOTE: Do not butt devices directly against each other. Leave at least 0.4 in. (10 mm) of space between units to allow sufficient air circulation around the device.

### Installing DIN-rail clip
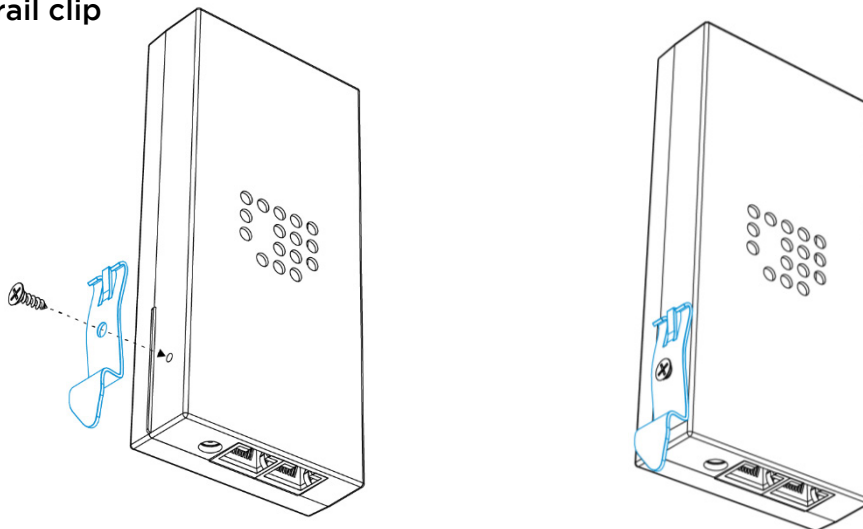


### Mounting C4 to DIN-rail
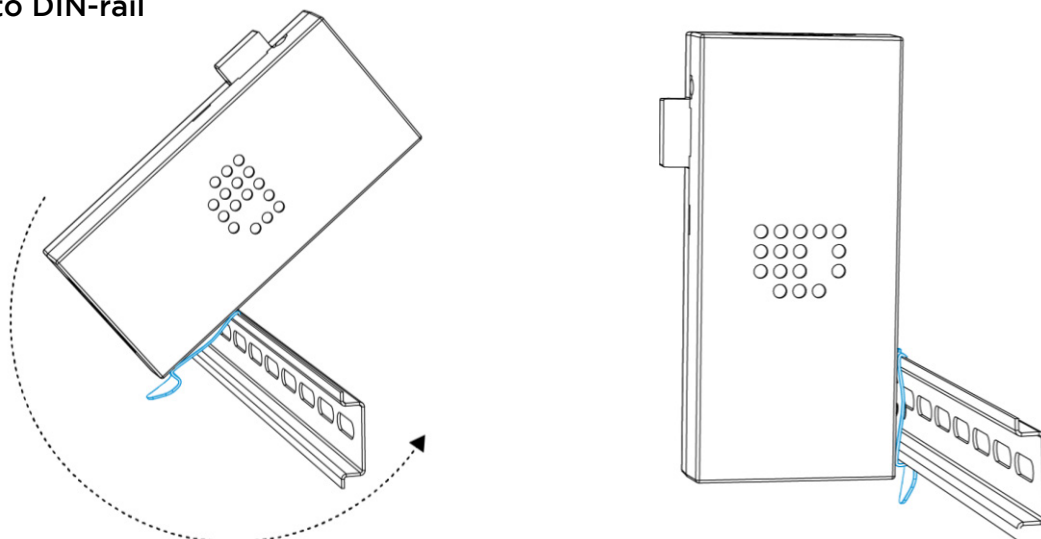
## Removing C4 from a DIN-rail
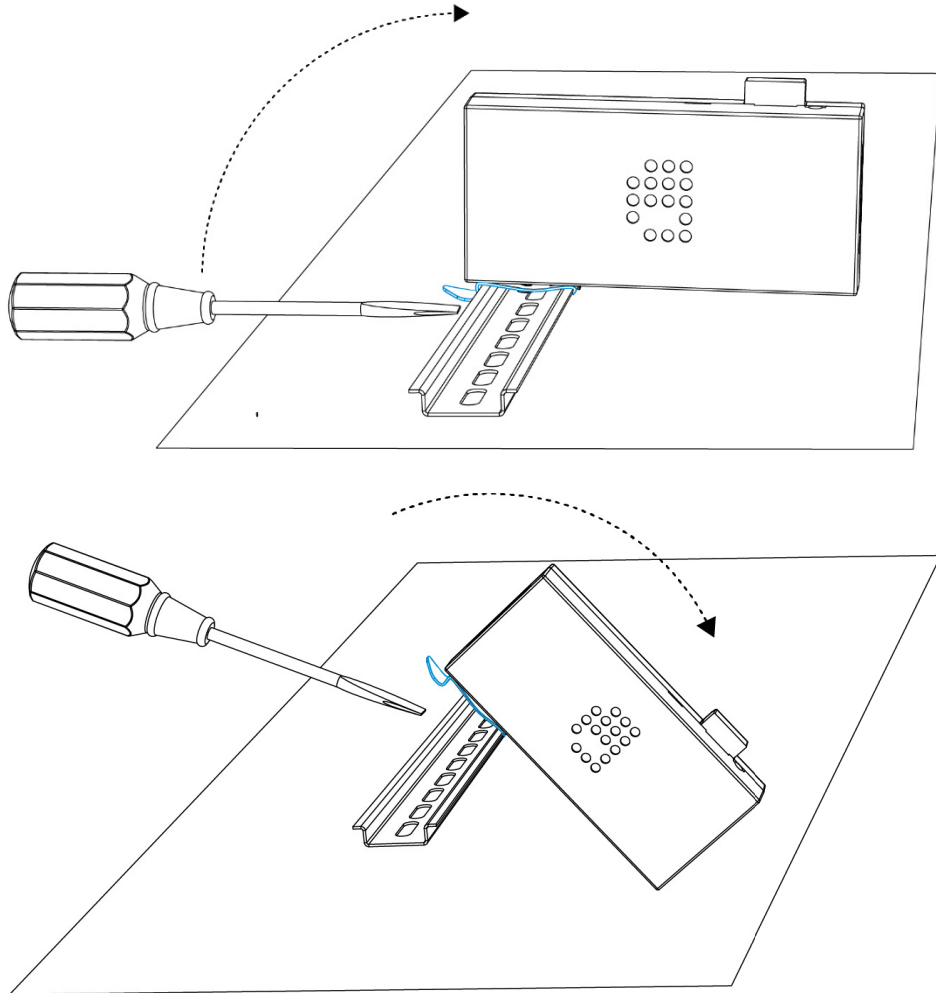
C4 controllers should not be subjected to extremely low air pressure (risk of component gas/liquid leakage). Keep C4 controllers away from direct sunlight, rain or other moisture (short-circuit risk).

Do not use C4 controllers outdoors or in humid environments (short-circuit risk). Provide enough air circulation around the devices for cooling. Devices rigged overhead must include an appropriately rated safety cable.

# INSTALLATION AND WIRING

C4 controllers are not designed to power the LED lights, but only to transmit signals and data to the LED lights and control ICs. An additional external power supply with properly rated output capacity is required to power LED lighting.

Data inputs/outputs

In this section, we explain various wiring diagrams, depending on the Input/Output (I/O) configuration.

C4 controllers can send different SPI protocols (only one protocol simultaneously per bay). The input /output ports can also be configured as DMX outputs. This means that there are many ways of connecting to the I/O ports. You can always verify your wiring in the 'How to connect' box of the input/output configuration page in the user interface.

In the user interface or app, go to Home > Settings > In/out configuration

**TIP:** Make sure to select the correct device if you're using multiple devices and different I/O setups. You can use the highlight ☼ button to identify your device.

**NOTE:** There are some important principles when working with SPI signals. To minimize the risk of data failure and assure proper system functionality, data cables/wires between the output port (D1-D4) and the first LED luminaire/IC should be no longer than 6.5 ft (2 m).

In the case of longer distances, we advise using range extending accessories (visit AcolyteLED.com to see transmitters and transceivers). To avoid timing and synchronization issues, the SPI signal and ground wires that run from the C4 controller to the LEDs must be equal in length per port. It's always best to treat SPI signal and ground wires as a paired cable.

To maintain good signal integrity, keep the wiring capacity as low as possible. Data wiring gauges for the D1-D4 output ports should be kept between 20-24 AWG (0.3-0.5 mm).

## 4 x SPI OUT
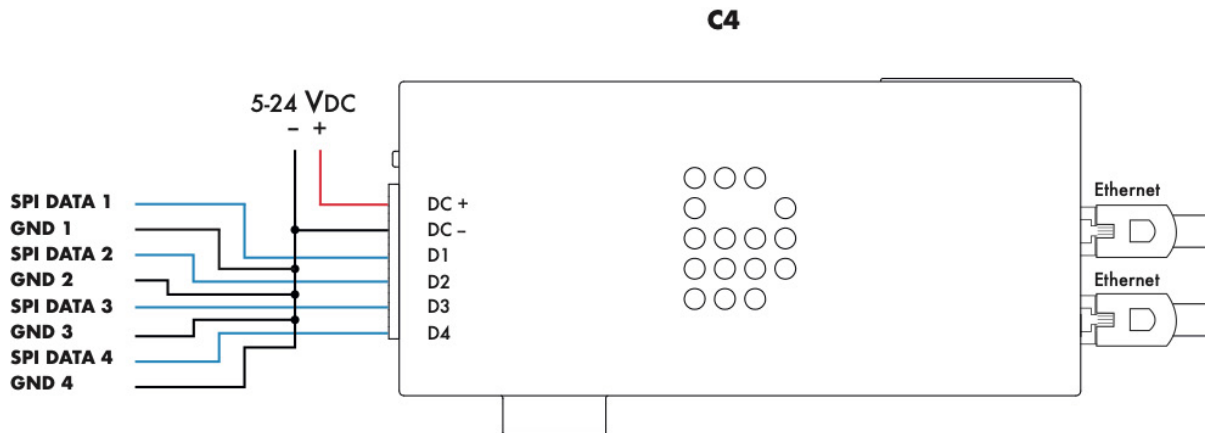


*The Average recommendation is a maximum of 3 SPI universes per port (check the C4 performance guide for maximum load per IC) and an SPI cable length maximum of 6 ft 7 in. (2 m).*

This option shows four SPI Data only outputs. Each SPI ground wire should be the same length as the data wires per output to prevent timing issues.
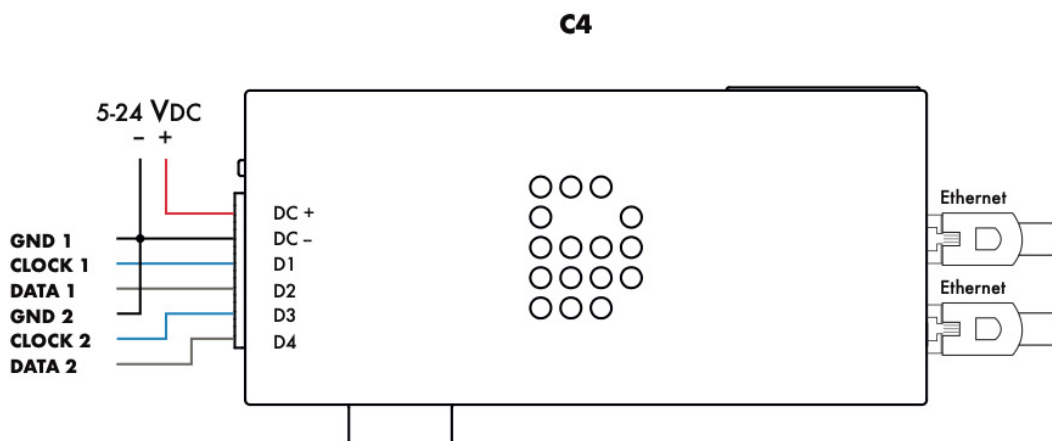
## 2 x SPI DATA + CLOCK OUT



*The average recommendation is a maximum of 6 SPI universes per port (check the C4 performance guide for maximum load per IC) and an SPI cable length maximum of 6 ft 7 in. (2 m).*

This option shows two SPI Data + Clock signals. Please note that all grounds must be connected.

## 1 x DMX IN/OUT + 1 x SPI OUT
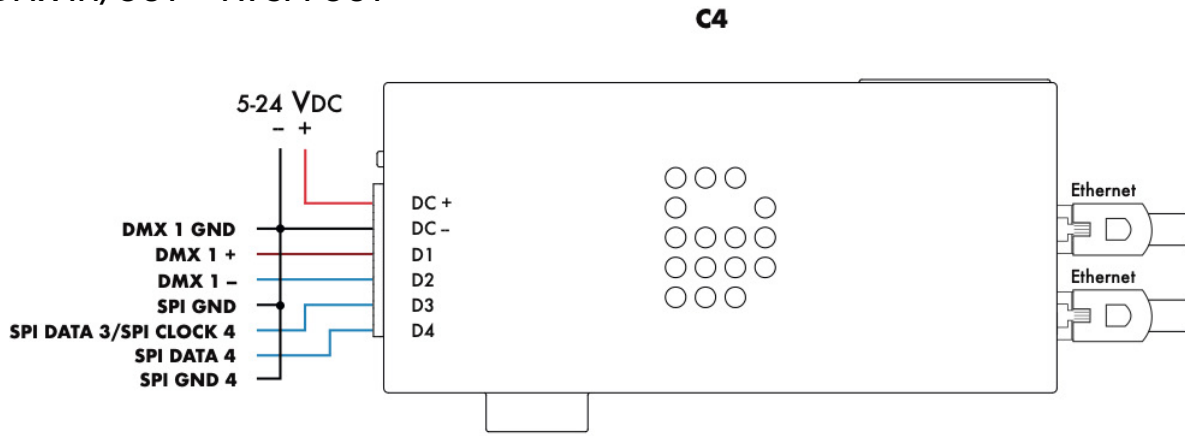


*Maximum 512 channels per combined DMX port, maximum DMX cable length 1640 ft (500 m) and maximum SPI cable length 6 ft 7 in. (2 m).*

This option shows a combined output of SPI and DMX in or out. Please note that the SPI type (Data only or Data + Clock) determines how you need to connect the SPI signal(s). A Data + Clock signal always requires two outputs of the C4 controller. The cable should be DMX cable with an impedance of 110 Ohm or CAT5 or higher.

## 2 x DMX IN/OUT
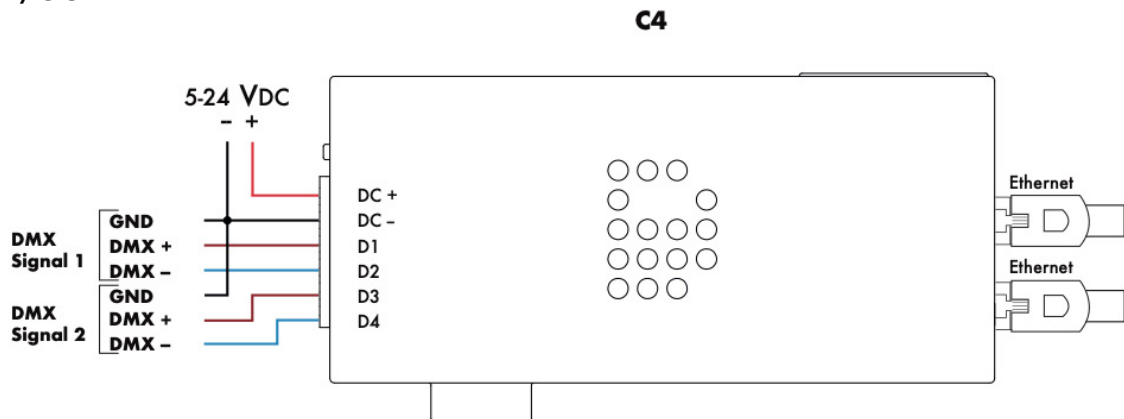


*Maximum 512 channels per combined DMX port and maximum DMX cable 1640 ft (500 m).*

This option shows two DMX inputs or outputs. Every DMX signal requires a connected ground as indicated above. The cable should be DMX cable with an impedance of 110 Ohm or CAT5 or higher.

# ETHERNET CONNECTION

The C4 controller has a built-in two port ethernet switch that allows multiple units to be daisy chained. For syncing, latency and performance reliability, limit the number of daisy chained devices. Depending on the overall network data load, the number of daisy chainable devices may vary but we recommend not exceeding 5 daisy chained devices to ensure reliable performance. To avoid latency issues, we recommend minimizing the number of daisy chained devices and adding Gigabit Ethernet Switches to the network. When using Art-Net, we recommend unicasting to lower the network load and increase performance.

**1-2 DMX IN / 1-2 DMX OUT / SPI OUT (DAISY CHAINED)**
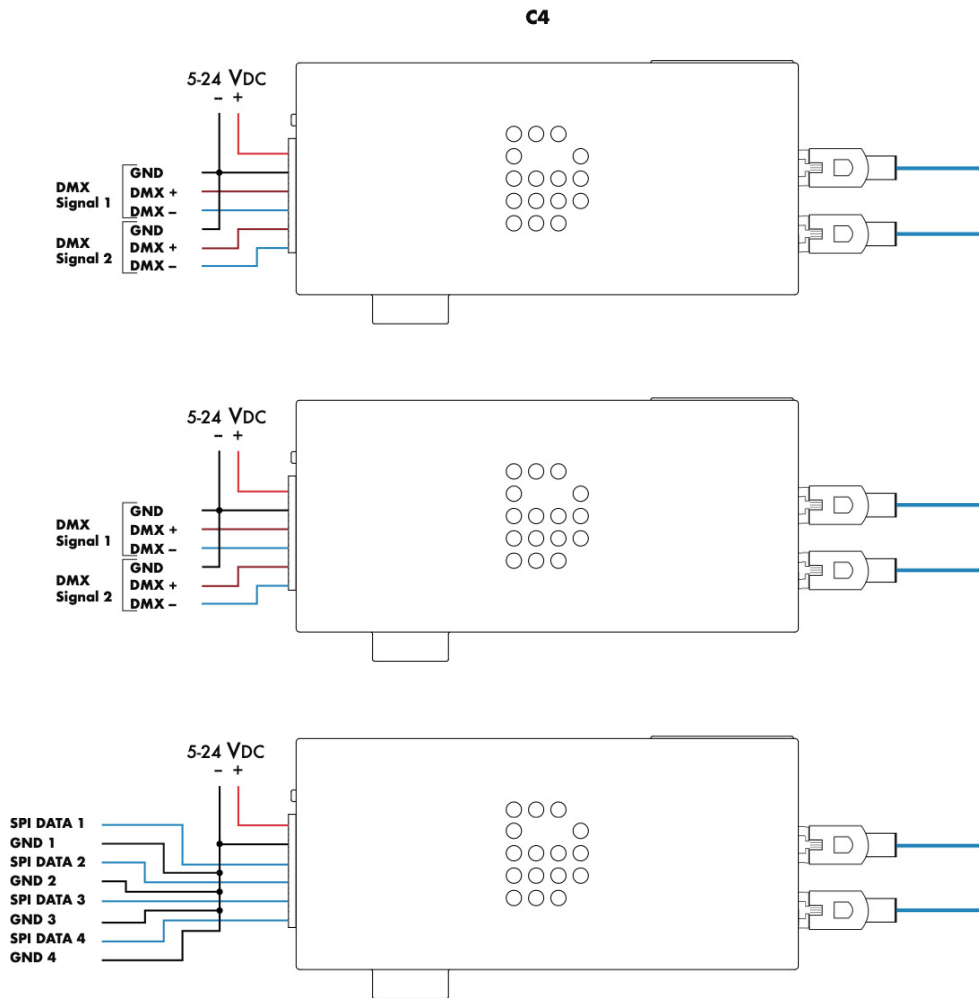


*Average recommendation is a maximum of 3 SPI universes per port (check the C4 performance guide for max. load per IC) with a cable maximum of 6 ft 7 in. (2m). DMX maximum of 512 channels per combined DMX port with DMX cable maximum 1640 ft (500 m).*

This is an example of multiple C4 controllers with different configured ports in a network. The network cable length between C4 controllers, between Art-Net source and a C4 controller or between a network switch and a C4 controller should be a maximum of 328 ft (100 m) CAT5E or higher. It is recommended to use a Gigabit Ethernet switch when connecting more than five C4 controllers.

# CONNECTING POWER

Before connecting power, make sure that the outputs are wired properly to avoid short circuits.

**IMPORTANT:** When using different power supplies to power the C4 controller and the LEDs, it is of utmost importance to equalize the ground potentials. Always connect grounds (DC-) of the C4 controller and every power supply connected to every product that is controlled by a single C4 controller. If the grounds are not connected, the products will malfunction.

# POWER SUPPLY

Only use a stabilized SELV rated power supply or any USB charging port that provides 5 Watts at 5 V DC to power the C4 controller. Note that electronic switched power supplies usually have high inrush currents. Please make sure to check all specifications carefully and design your infrastructure accordingly. We recommend the following power supply models to power the C4:

- Mean Well APV-8-5 Constant Voltage AC-DC, Input 90-264 VAC, Output 8 Watt, 1,4A, 5 VDC
- Mean Well APV-8-12 Constant Voltage AC-DC, Input 90-264 VAC, Output 8 Watt, 0,67A, 12 VDC
- Mean Well APV-8-24 Constant Voltage AC-DC, Input 90-264 VAC, Output 8 Watt, 0,34A, 24 VDC

When connecting multiple C4 controllers with or without PxLNet Controllers, we recommend connecting a maximum of 5 controllers. Due to inrush currents, we recommend the following power supplies:

- Mean Well APV-35-5 Constant Voltage AC-DC, Input 90-264 VAC, Output 35 Watt, 5A, 5 VDC
- Mean Well LPV-60-12 Constant Voltage AC-DC, Input 90-264 VAC, Output 60 Watt, 5A, 12 VDC
- Mean Well LPV-100-5 Constant Voltage AC-DC, Input 90-264 VAC, Output 100 Watt, 12A, 5 VDC
- Mean Well LPV-100-12 Constant Voltage AC-DC, Input 90-264 VAC, Output 100 Watt, 8,5A, 12 VDC
- Mean Well ELG-150-24 Constant Voltage AC-DC, Input 100-305 VAC, Output 150 Watt, 8,5A, 24 VDC
- Mean Well ELG-240-24 Constant Voltage AC-DC, Input 100-305 VAC, Output 240 Watt, 10A, 24 VDC

# WIRING SCHEMES

### WIRING SCHEME 1

If the DC Jack is connected to power the C4 controller, the grounds between the PSU and the C4 need to be connected.
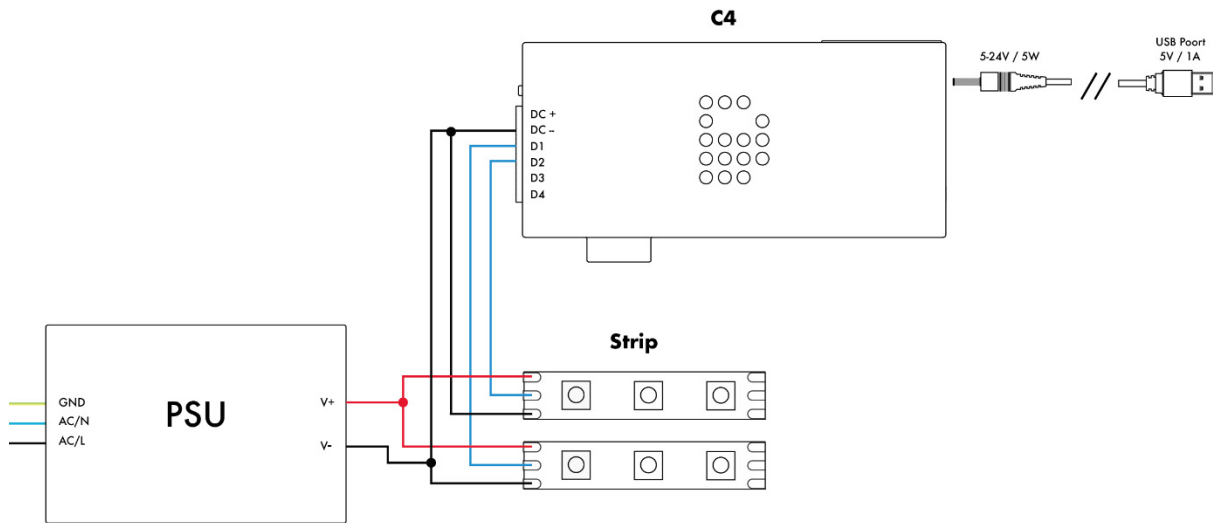


### WIRING SCHEME 2

Each SPI ground wire must be the same length as the data wire per output to prevent timing issues. This is automatically taken care of when these wires are recombined in a single cable. Minor differences in length due to uneven stripping of the wires should not cause any problems.
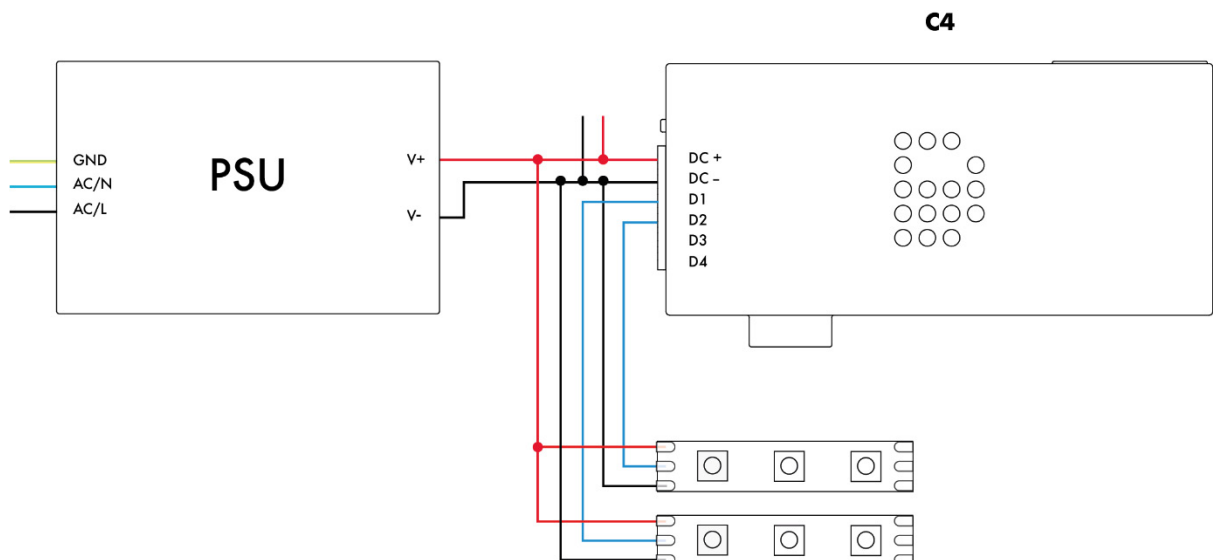
## WIRING SCHEME 3

Each SPI ground wire must be the same length as the data wire per output to prevent timing issues. In this case, the power supply grounds do not need to be connected because they share the ground through the LED product.
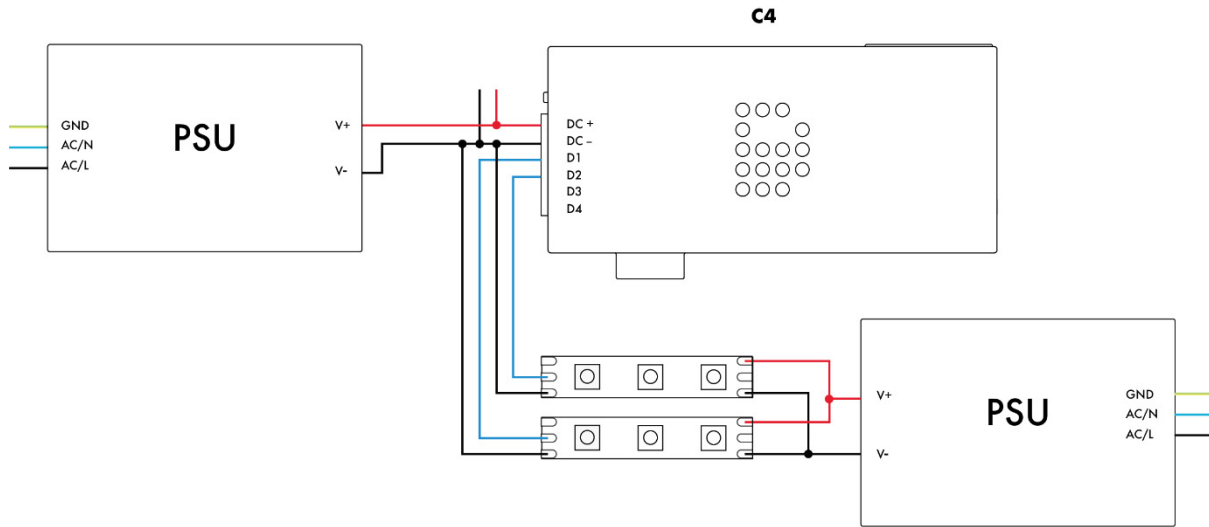


## WIRING SCHEME 4

Grounds are not connected and not the same length as the data wires.

**DON'T DO THIS**
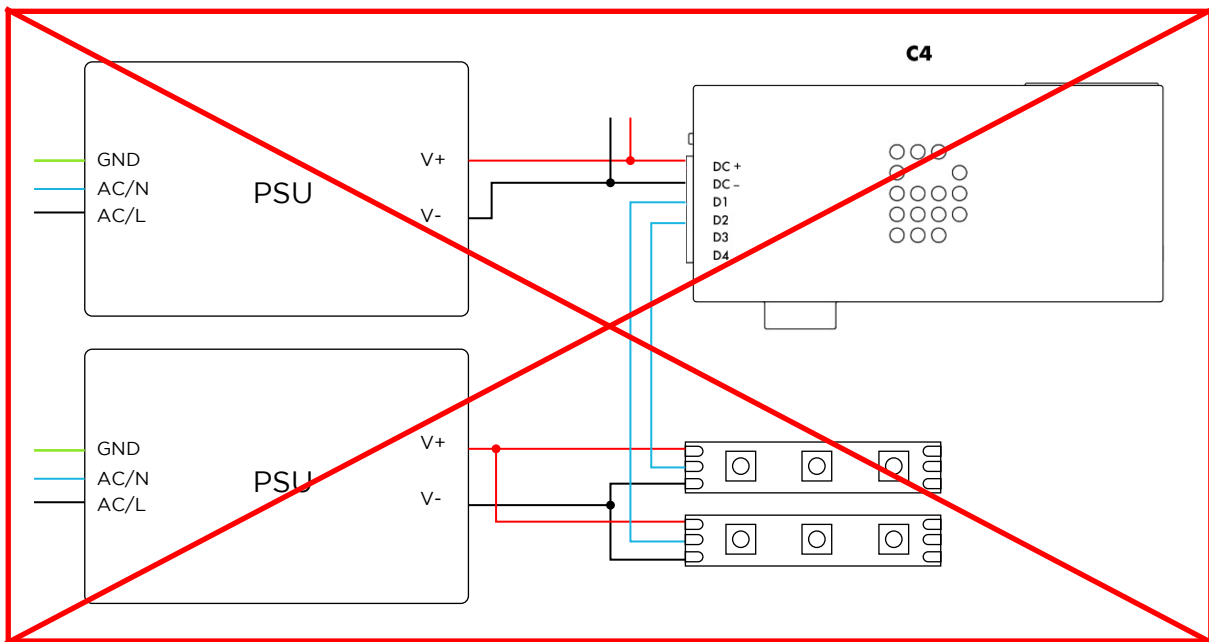
# TRIGGER INPUTS (EXTENDED LICENSE ONLY)

Analog trigger inputs can be used for normally open (NO) push buttons, switches, 0-10 VDC dimmers, 0-10 VDC control signals from external devices (such as building management systems), or with 50k Ohm linear potentiometers connected to the trigger inputs (see photo below).

The C4 Trigger input has the following pinout:

1. Analog trigger 3
2. Analog trigger 2
3. Analog trigger 1
4. Ground

The C4 TRRS Trigger cable has the following corresponding wires:

1. Red = Analog 1
2. White = Analog 2
3. Green = Analog 3
4. Black = Ground



Analog 1/Tip
Analog 2/Ring 1
Analog 3/Ring 2

N.O. Switch / Dry Contacts

Potentiometers

50 kΩ    50 kΩ    50 kΩ

Active Control Voltage

+ 0-10 Vdc
+ 0-10 Vdc
+ 0-10 Vdc
GND
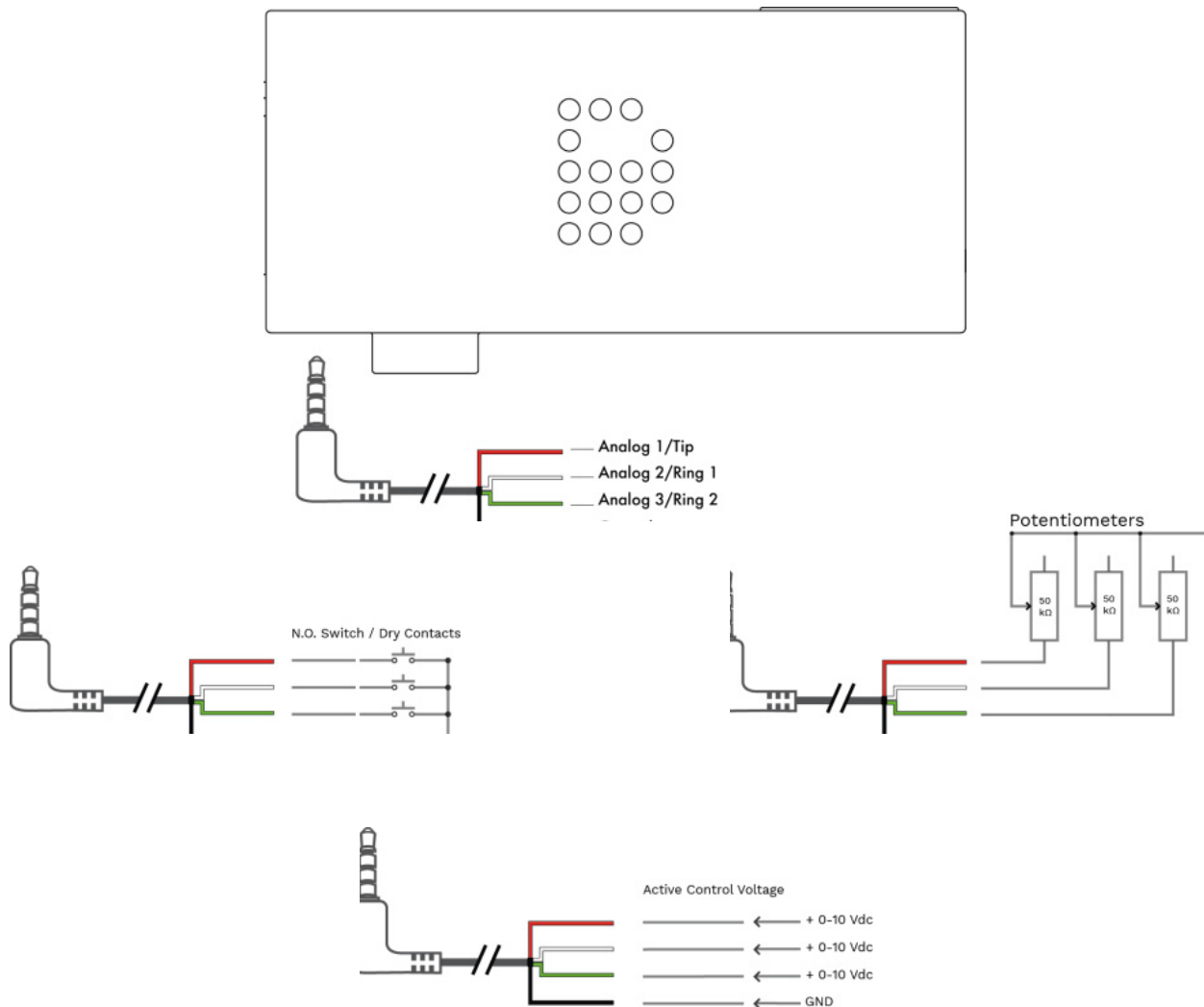
# CONFIGURATION

### Accessing the C4

You can connect to C4 controllers with a wired Ethernet connection or Wi-Fi. The DiGidot C4 app is available for mobile devices in the App Store and Google Play.

### Wired quick start

C4 controllers have a built-in Smart DHCP server. This will automatically set up a connection when the C4 controller and a device are connected with Ethernet (wired) directly to a computer. Accessing C4 controller works as follows:

1. Connect the C4 to a power source. Read the 'Connecting power' section or choose one of following options:

    Option 1: Connect DC+ and DC- to a switching power supply (5 VDC up to 24 VDC) that can output at least 5 Watts

    Option 2: Connect the 5-24 VDC barrel jack socket (located next to the Ethernet ports) to an appropriate power source (USB port).

2. Use an Ethernet (Cat5E or better) network cable (a short network cable is supplied with every C4) to connect the C4 controller to a network port of a computer.

3. Open your internet browser and go to *http://10.254.254.254.*

**TIP:** You can also go to interface.digidot.eu to access your device(s), but this requires an active internet connection.

If an account has been created to access the C4 controller, the same username and password must be used in the app.

### Configuring a computer with a fixed IP address

This setup method can be skipped if you only want to access the C4 web interface because the Smart DHCP server is enabled by default (you can follow the steps in the previous section). A fixed IP address may be required if you want to connect the C4 controller to a control system such as a computer with MADRIX software. To set up a wired computer connection, power up the C4 controller and plug the network cable into one of the C4 controller RJ45 network ports and the computer's Ethernet/UTP port.

**NOTE:** Changing your Ethernet settings can prevent you from reaching the Internet and/or other    devices in your network. To stay connected to the Internet and use the online update and upgrade functions, it is required to use a computer with multiple network connections (LAN or Wi-Fi). We recommend you note your current network configuration in order to restore these settings after you finish the configuration process if necessary. Some laptops switch between Wi-Fi or Ethernet; in these cases, you can't simultaneously maintain both connections. This can be solved by using a third-party Ethernet dongle.

## On Windows computers go to:

*Control Panel > Network and Internet > Network and Sharing Center > Ethernet > Properties > Internet Protocol Version 4 (TCP/IPv4) > Use the following network settings:*
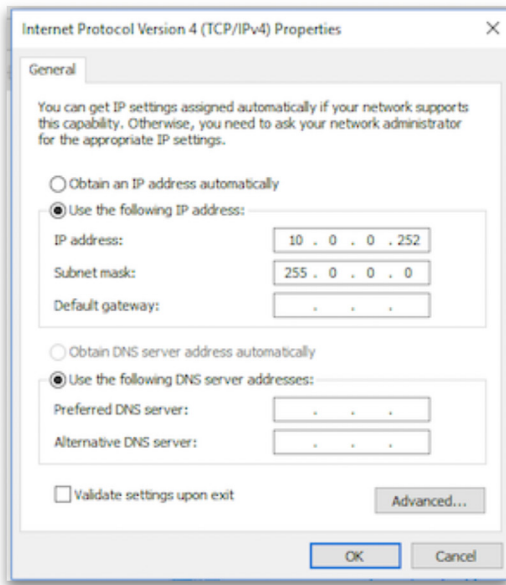


**Network Settings example:**

**IP address**                                    10.0.0.1

*The static IP address of your computer*

**Subnet mask**                                  255.0.0.0

*Network range of your computer*

**Default Gateway**                          (empty)

*Router for Internet access*

## On Mac computers go to:

*System Preferences > Network > Ethernet > Configure IPv4 > Manually > Use the following network settings:*



**Network Settings example:**

**IP address**                                    10.0.0.1

*The static IP address of your computer*

**Subnet mask**                                  255.0.0.0

*Network range of your computer*

**Router**                                          (empty)

*Router for Internet access*

Your computer is now ready to access the C4 controller. Open your web browser and go to *http://10.254.254.254.*

## Configuring Wi-Fi for app access

You can easily get wireless access to the C4 controller by following these 5 steps. There's no special configuration required for your mobile device; this option works straight out of the box.

## Wireless quick start

1. Connect the C4 controller to a power source. Read 'Connecting power' section or choose one of following options:

Option 1: Connect DC+ and DC- to a switching power supply (rated 5 VDC up to 24 VDC) that is able to output at least 5 Watts.

Option 2: Connect the DC socket (located next to the Ethernet ports) to a 5 VDC power source (USB port).

2. Press and hold the onboard button for 10 seconds to turn on the Wi-Fi. This will automatically set up your C4 controller as a temporary access point. The status LEDs of the C4 controller will turn blue-white when the access point is activated. The access point will be closed again after startup/reboot, unless you configure it permanently on the Wi-Fi settings page. Go to: Home > Settings > Network > Wi-Fi tab.

3. Install the free DiGidot app on your mobile device (this is optional) or go to step 4.

4. Connect your mobile device or computer to the DiGidot C4 Wi-Fi Network. Available C4 controller networks are listed with their MAC addresses, as shown on the C4 controller product label for easy identification, e.g., "DiGidot C4 - 13:5C".

5. Start the DiGidot C4 app or open your internet browser and access your device(s) by browsing to *http://172.16.0.1.*

### Device network settings for Art-Net and sACN

The device network settings can be changed in the C4 user interface. This is required in case you want to communicate with an Art-Net or sACN control device.

### 1. Log into user interface

The C4 controller has a built-in web-based user interface that you can access by using a web browser. Once you have configured the IP settings on your computer, you can access the C4 interface. Open your web browser, type *http://10.254.254.254* in the address bar and press enter.

### 2. Configure device name and network settings

*Home > Settings > Network*

You can change the IP address and subnet mask of the C4 controller. The IP address needs to be unique in your network to avoid IP conflicts. If you're using Art-Net, we recommend the subnet-mask be identical on both the computer and the controller side. The device name that will be shown in the network can be changed on the device page.

Example of Network settings:

Device name:  My C4 controller

IP address: 10.0.0.2

Subnet-mask: 255.0.0.0

**NOTE:** These settings are an example to get the C4 controller to work. Alternatively, the C4 can be integrated into an existing network (be sure to change your C4 network settings to match your local network). For network integration questions, consult a local IT or network specialist.

### 3. Wi-Fi settings (optional)

*Home > Settings > Network settings > set Wi-Fi mode to 'Access Point' or 'Connect to Wi-Fi'*

Before configuring the internal Wi-Fi of the C4 controller, note that sending Art-Net or sACN over Wi-Fi is strongly discouraged because of the instability, unreliability and varied speed of wireless networks. Wi-Fi is intended for configuring the C4 controller, playback and triggering. The Wi-Fi IP address range cannot be the same as the range for Ethernet.

# INTERFACE

The C4 controller has a built-in web interface for configuration. The interface can be accessed through a web browser with a wired Ethernet or Wi-Fi connection using the IP address of the C4 controller (default Ethernet IP address: 10.254.254.254). You can also use the free DiGidot app for mobile devices with the same functionalities as the built-in web interface.

This map shows the internal menu structure of the C4 controllers. (Some menu items are only visible in the C4 Extended.)

Getting started

Scenes — Scene details

Create scenes — Record — Record settings
Create scenes — Generate scenes

Playlists — New Playlist
Playlists — Edit playlist
Playlists — Playlist details

Triggers — New Trigger
Triggers — Edit trigger
Triggers — Trigger Watcher
Triggers — UDP/HTTP/OSC info
Triggers — Calibrate analog

Groups — New group
Groups — Edit group
Groups — Group settings

Home

In/output configuration — Autocomplete configuration
In/output configuration — Global settings
In/output configuration — IO-config details
In/output configuration — Limit outputs
In/output configuration — Input watcher
In/output configuration — Output watcher

Settings — Network — Global settings
Settings — Device — Global Settings
Settings — RDM — Update RDM devices
Settings — License
Settings — Account — New account
Settings — Account — Edit account
Settings — Account — Account details
Settings — Interface
Settings — Update
Settings — File browser
Settings — Backup and restore
Settings — Debug Environment (developer mode only)

Monitor

Support — Manual
Support — F.A.Q.
Support — Create ticket

Console (developer mode only)

## Getting started

*Home > Getting started*

To get started quickly or if you're new to using the C4 controller, we recommend using the 'Getting Started' wizard from the 'Home' menu. This wizard will guide you through the following essential steps to get the C4 controller up and running:

>    1. Device and network settings
>
>    2. Device positioning (in case of multiple devices)
>
>    3. Input/Output (IO) configuration
>
>    4. Security (Trigger security settings can be changed in the 'HTTP, UDP and OSC' sub menu on the 'Triggers' page)

Open the user interface and go to the 'Getting started' wizard. Follow the instructions carefully and complete the wizard in order to get your system up and running quickly. In case you need more information about a certain subject, you can open the information windows by clicking the blue 'i ' icons. When the 'Getting started' wizard has been completed, your C4 controller is ready to use.

## Scenes (C4 Extended only)

*Home > Scenes*

A scene is a generated or recorded effect that can be played and triggered. This page contains an overview of all scenes. Click on the scenes to start or stop playing. Select the pop over menu (3 dots in the top right) to play, download edit or delete scenes. When playing a scene, the player bar will appear. The player bar will show the current selected scene. Expand the player bar by clicking the icon at the bottom right to make it possible to set the speed, hue and brightness of a scene.

There are two ways to create a scene in the C4 interface.

### 1. Recording a scene

*Home > Create scenes*

The record button will become active when an incoming signal is detected. The FPS (frame per second) monitor on the record page will indicate if the incoming signal is good for recording. Click the FPS monitor to show the incoming signal for each C4 device. This can help to check which device is getting a low FPS signal. To improve the incoming signal, try to set the software that is sending the signal to a higher FPS output rate. We recommend sending Art-Net or sACN at 60 FPS. To start recording, click the red record button on the bottom of the page. A timer will start running until the record/stop button is clicked again. When the recording is completed, you can play and stop the recorded scene. A trimming slider can be used to adjust the beginning and end point of the recording. You can choose multiple options before saving the recording. Below you can find all the Record options:

### Time based

Adjust the start and end time to trim the recording to its desired length.

### Frame based

Adjust the start and end frame to trim the recording to its desired length.

### Find loop

This option detects if there is a loop in the recording (within the trimmed section) and automatically creates a looped record.

### Trim black

This option detects if there are any black frames at the beginning and end of the trimmed selection and trims the length of the entire recording.

### No effect

This keeps the original trimmed recording.

### Fade

This option creates a fading transition from the end to the start of the recording. You can manually adjust the fading time before the recording is saved. (This option only appears when the recording is long enough to generate a fade effect.)

### Ping-Pong

This option replays the trimmed recording from beginning to the end and then from the end to the beginning again.

### 2. Recording DMX

*Go to Home > Settings > In/out configuration > Select a port and choose 'DMX Input'*

To record from DMX, you must configure one or two DMX Input(s) in the I/O configuration.

Go to Home > Settings > In/out configuration > Select a port and choose 'DMX Input'

To record from DMX, you must configure one or two DMX Input(s) in the I/O configuration.

### Record settings

*Home > Create scenes > Record settings*

On this page you can select and deselect the incoming universes that can be recorded. It will also show the FPS (frame per second) of the incoming signal for each C4 controller.

### Use Art-Net to start, stop and save recordings

This option allows you to trigger the following record functions: prepare record buffers, start, stop and save records with an Art-Net signal.

To create an Art-Net trigger, you need to specify a universe number, a channel number and a minimum and maximum DMX/channel value between 0 and 255, to determine when the event should be triggered. These triggers can also be created manually on the 'Home > Triggers' page.

Prepare buffers: This is required before starting to record to prepare the C4 controller. We recommend preparing record buffers one second before starting to record.

Start record: This will start recording. The status LED will become white/blue.

Stop record: This will stop recording. The status LED will stop being white/blue.

Save record: This will save the record and create a scene. The scene name will be generated automatically.

**NOTE:** Art-Net triggers can be used without the C4 interface or DiGidot app.

### Fixed frame rate

If 'fixed frame rate' is enabled (default) the C4 controller will record at 62 fps. If the option is disabled, the C4 will create a frame for each Art-Net, sACN or DMX message. This can be useful when your software is sending at a fixed frame rate, for example. Please note that higher fps rates result in larger scene files, which affects available memory. In most cases, we recommend using the fixed frame rate.

### Select/deselect all

This option allows you to select or deselect all available input universes.

### Select inputs to record

Choose the universes that you want to record in your next recording.

### Generate Scene (C4 Extended only)

*Home > Create scene > Generate scene*

Scenes are generated based on one universe and are being copied to following universes and outputs, depending on your I/O configuration. You can generate three types of scenes, such as:

### Static color

This will generate a static color scene. Enter an RGB(W) value from 0-255 or click on the color picker button to open the color picker page. As soon as the color picker is selected, the current color value will be displayed on all output ports (this can be switched off by unchecking the preview checkbox). Press and hold the color wheel and move around until you've found the desired color; release the color picker to set the color.

Adjust the saturation to add white to the RGB color. When RGBW LEDs are configured, there will be an extra fader to control the white LEDs separately. Five color presets can be stored or on both sides of the color picker by pressing and holding the preset buttons. When the desired color is selected, press the check button in the middle of the color picker to confirm. Click the 'Generate' button to generate the static color scene, enter a scene name and click save. The new scene will be listed in the scenes page; *Home > Scenes.*

### Colorscroll

This option generates a color scrolling (chase) effect of multiple colors in a user-defined order. The width of a color block is defined by the color width slider. To create black color blocks, set brightness to 0. Change the color block order by dragging and dropping the icon. Delete a color block by pressing the trash can button. Add extra color blocks by pressing the 'Add color' button. The fade checkbox is switched on by default and creates a fade transition starting in the middle of the width of a color block and ending in the middle of the next color block. Uncheck the 'Fade between colors' checkbox to create hard color transitions between color blocks.

Two additional parameters can be set, such as speed of the effect and the direction of movement. Click the 'Generate' button to generate a colorscroll, enter a scene name and click save. The new scene will be listed in the scenes page; *Home > Scenes.*

### Test Scene

This option generates a predefined color scrolling (chase) effect in base colors (red, green, blue, white) which is useful to quickly test your setup. Click the 'Generate' button to generate test scene, enter a scene name and click save. The new scene will be listed in the scenes page; *Home > Scenes.*

## Playlists (C4 Extended only)

*Home > Playlists*

A playlist is a list that contains one or more scenes in a user-defined order that are played according to a set of predefined parameters. Scenes contained in a playlist can also be triggered by "next" and "previous" triggers. The parameters that can be defined are:

### Scene order

When the scenes have been added to the playlist, you can drag and drop scenes in any order with the icon.

### Action output

If there are multiple C4 controllers in your network, you can assign which devices have to play a specific scene.

### Repeat

This is the number of times that a scene is played. Set the repeat or duration to '0' to play the scene infinitely until the 'next' or 'previous' action is called (by interface or trigger).

### Duration

The length of time in which the scene is (re-)played.

### Fade time

This is the transition time of the cross fade between scenes. The simple fade will create a fade using the same fade-in and fade-out time. The fading curve will be linear and there will be no delay. When using the advanced fade, you can control the fade in, fade out, delay and curve of the fade.

### Playlist options

Click the 3 dots icon in the top right blue bar when editing a playlist. A pop-up with the playlist options will show.

### Global settings

These input values will be applied to all scenes inside the playlist. This can be used for fast configuration.

### Playlist settings

By default, a playlist will loop through all scenes and start again at the beginning if the last scene has ended. When you disable the 'repeat infinitely' option, you can set the number of loops of a playlist and you can select an action after the loops are finished.

## Triggers (C4 Extended only)

*Home > Triggers*

The C4 Extended can use a wide variety of triggers to control various events, including: Play scene(s), Play playlist(s), Action list, Stop, Next, Previous, Speed, Brightness, change color, saturation filter, Record, Reset, send UDP message, send OSC message, etc. The configuration is based on an "if this then that logic" where the "if" condition is defined by the input(s) and the "that" condition is defined by one or more actions.

There are two options for triggering.

**Triggers:** This is the standard way of triggering events, based on an 'if this that that' logic.

Example 1: If the circuit of dry contact 1 (analog input 1) is closed, start playlist 1.

Example 2: If channel 10 of Art-Net universe 1 is between value 100 and 255, play scene at brightness 50%.

**Linked triggers:** Link inputs to effects, such as speed, hue, saturation, etc.

Example 1: Link an analog input permanently to control the playback speed.

Example 2: Link an incoming OSC channel to brightness.

### Creating triggers

Click + to create a new trigger and choose from the following "If this…" trigger options.

You need to select the device(s) where the trigger needs to be activated. On the right side of the screen, select the device where the action must be executed by clicking the blue top buttons in the 'If this…' row that will show a list of available devices in the network. After configuring a trigger, click 'SAVE', enter a trigger name and save it. The newly created trigger is then listed in the 'Triggers' overview.

### Trigger inputs

The trigger will be executed when all "if" conditions are fulfilled. Multiple inputs can be selected to create a wide variety of triggering conditions. The following inputs can be created or combined:

### Analog triggers

*Home > Triggers > select '+' to add a trigger > select 'Analog'*

The C4 Extended has three analog inputs that can be used to control or trigger various events. Make sure the analog inputs are properly connected before you start using them. Before creating analog triggers, it's advised to calibrate the analog inputs.

### Analog input calibration

Go to: *Home > Triggers > Click the three dots in the top right blue bar > Calibrate analog*

For the analog input calibration, the analog inputs must be wired properly to the incoming analog signal. Check if the controlling device (if applicable) is powered. Make sure you are working on the correct device or select the right device from the top selection bar. Then follow these steps to calibrate the analog inputs:

1. Send the maximum control value of analog input 1 (e.g.: turn the 0-10V dimmer up to its maximum) and press the 'SET MAXIMUM' button.

2. Send the minimum control value of analog input 1 (e.g.: turn the 0-10V dimmer down to its minimum) and press the 'SET MINIMUM' button.

Repeat these steps for analog inputs 2 and 3 (when they are in use). Use the sliders on the bottom of this window or enter specific values to manually adjust the analog input ranges. When all inputs have been calibrated, press 'SAVE'.

### Creating analog triggers

- There are four different ways to use the analog inputs:
- Push button or switch
- 0-10V dimmer
- 0-10V control signal from an external control system
- Potentiometer (50Ω)

### If this…

This menu shows the available input options.

- Analog channel: Select the analog channel 1-3 that you want to use for triggering.
- Analog type: Select the type of analog trigger. Use a dry contact or analog value.
- Event: Define the trigger event/state and optional delay or duration of the event.

### Art-Net, sACN or DMX triggers

*Home > Triggers > click '+' to add a trigger > select 'Art-Net, sACN or DMX'*

You can use Art-Net, sACN and/or DMX to trigger various actions.

### Art-Net/sACN triggers (default)

**If this...**

- Input universe: Select the input universe of the incoming signal.
- Channel: Select the channel that is used for this trigger.
- Minimum: Define the minimum channel value (0-254).
- Maximum: Define the maximum channel value (1-255).

### DMX triggers

### Configuring ports as DMX inputs

You can configure ports D1-D4 to one or two DMX inputs. If port D1 & D2 and/or D3 & D4 are available (if no SPI protocol has been configured for these ports), you can choose which ports you want to configure as DMX input. If all ports are already in use, you must re-configure the input/output configuration:

*Home > Settings > In/out configuration*

**NOTE:** DMX uses two lines for data (DMX+ and DMX-) so it requires two C4 ports.

**If this...**

- Select DMX port: Select the DMX port where the trigger signal is coming from.
- Channel: Select the channel that is used for this trigger.
- Minimum: Define the minimum channel value (0-254)
- Maximum: Define the maximum channel value (1-255).

### Power up

*Home > Triggers > select '+' to add a trigger > select 'Power up'*

This trigger will perform an action as soon as the C4 controller is booted up or when the device is rebooted after performing a system restart.

**If this...**

- Automatically starts after C4 controller startup

### Onboard button

*Home > Triggers > select '+' to add a trigger > select 'Button'*

The onboard button of the C4 controller can be programmed to trigger various actions. This feature is very useful for portable LED applications and demonstration setups.

**If this...**

- Button event: Select the preferred button event.

- Delay/duration (optional): Add a delay or duration (in seconds) to a button event.

### Time/date

*Home > Triggers > select '+' to add a trigger > select 'Time/date'*

The C4 controller has a built-in clock to trigger various time-based actions.

### Automatic sync time

*Home > Settings > Device > deselect 'Sync time and date' automatically*

Every time the interface is loaded, the browser/app time will be used to synchronize the C4 controller's time and date. Once the time and date are set, the on-board battery will keep the internal clock running. Automatic sync of time and date can be disabled in the device settings to allow for manual date/time override.

### Time-keeping accuracy

Please note: The internal clock (RTC) has a deviation of 0.0038%, which effectively means the clock can get behind up to 320 minutes per year. To resynchronize the RTC, the C4 (network) must be connected to a computer or to the C4 app and the interface must be loaded. The C4 controller will then automatically obtain the local real time and reset its RTC.

**If this...**

Select 'TIME PERIOD' for triggers that must be active during a specific time frame, e.g., a trigger is created with a time frame from 10 a.m.-12 a.m. When the C4 controller is powered within this time frame, it will execute the associated action. The action will not stop at the end of the time frame (12 a.m.). You need to create another trigger to stop the action at 12 a.m. In the time frame it's possible to overwrite the action manually or with another trigger.

**TIME PERIOD:**

- Every: Repeating frequency of this trigger, e.g., every 'day' or every 'week,' etc.

- Start: Define the time that marks the beginning of the time frame.

- End: Define the time that marks the end of the time frame.

- Select 'TIME' for triggers that must be activated at specific times. These triggers will be fired once when the defined time is reached. The C4 controller will not activate the trigger retroactively.

**TIME:**

- Every: Repeating frequency of this trigger, e.g. ,every 'day' or every 'week,' etc.

- Time and period fields: Define a date, time, period, etc. (multiple inputs are possible depending on the chosen frequency).

## Digital trigger commands

You can send specific commands from external systems and devices to trigger various actions. These digital triggers are very useful for system integration and automation. This also allows users to incorporate control over the C4 in other software programs. For detailed API information, please see the C4 API document at digidot.eu/support/documentation. If you need further API information, please contact Acolyte or DiGidot.

## OSC

*Home > Triggers > select '+' to add a trigger > select 'OSC'*

OSC (Open Sound Control) is a protocol that is often used in audio and video applications to send data over a network. Due to the open, easy-to-use standard and various low-cost OSC applications to create user interfaces, this protocol is ideal for use in lighting applications. There are various third party OSC applications that work in combination with the C4 controller. A few apps that we can recommend are TouchOSC from hexler.net, Lemur from Liine, or Ctrl from ON LX Ltd. Please note that Acolyte and DiGidot do not offer any support for third party apps and software. The C4 controller only supports messages with the float type.

## Enable OSC trigger

Before creating OSC triggers, OSC toggles must be enabled. This can be done by creating an OSC trigger and pressing the 'enable' link or through the following steps:

1. Go to Home > Triggers > click on the 3 dots in the top right blue bar > select 'HTTP, UDP and OSC'

2. Enable the OSC triggers option and click the 'save' button.

### Add an OSC trigger

An OSC trigger can be created in two ways:

1. **Learn an incoming OSC Address**

   Press the 'LEARN' button and send the Address from an OSC app or software. Note that the OSC sending application must be connected to the C4 controller network and the correct IP address of the recipient must be set.

2. **Enter an OSC Address manually**

   Enter the same Address that is used by the OSC app or software.

After saving the OSC trigger it will be listed in the Triggers overview. Use the copy button in the trigger item to copy the OSC command and paste it to your software program.

### Address for OSC editor

If an OSC Address has been entered in the trigger first, the same Address needs to be copied in the OSC editors' address field (deselect 'Auto' in TouchOSC). We recommend creating the OSC interface first, then creating the triggers and using the learn function to automatically copy the OSC addresses that are associated with the OSC interface buttons and sliders.

### UDP

*Home > Triggers > select '+' to add a trigger > select 'UDP'*

UDP is a small message sent over the network port. The C4 controller can receive UDP messages. This can be useful if other software needs to control the C4 controller. UDP is mostly used by developers. While UDP has slightly better performance, the downside of using UDP instead of HTTP is that you will not get a confirmation if you send a message.

### Enable a UDP trigger

*Home > Triggers > click on the 3 dots in the top right blue bar > select 'HTTP, UDP and OSC'*

Before creating UDP triggers, UDP toggles must be enabled. This can be done by creating a UDP trigger and pressing the 'enable' link or through the following steps:

1. Go to Home > Triggers > click on the 3 dots in the top right blue bar > select 'HTTP, UDP and OSC'

2. Enable the OSC triggers option and click the 'save' button.

## Add a UDP trigger

*Home > Triggers > select '+' to add a trigger > select 'UDP'*

A UDP trigger can be created in two ways:

1. **Learn an incoming UDP messag**e

    Press the 'LEARN' button and send the message from the UDP app or software. Note that the UDP sending application must be connected to the C4 controller network.

2. **Enter the UDP message manually**

    Enter the same message that is used by the UDP app or software. After the UDP trigger is saved, it will be listed in the Triggers overview. Use the copy button in the trigger bar to copy the UDP command and paste it to the desired destination.


## HTTP

HTTP GET is a message sent over the network port. The C4 controller can receive HTTP Get messages. This can be useful if other software needs to control the C4. HTTP Get is mostly used by developers. The benefit of using HTTP instead of UDP is that you will get a confirmation if you send a message, but UDP offers slightly better performance.

## Enable HTTP trigger

Before creating HTTP triggers, HTTP toggles must be enabled. This can be done by creating an HTTP trigger and selecting 'enable' or through the following steps:

1. Go to *Home > Triggers > click on the 3 dots in the top right blue bar > select 'HTTP, UDP and OSC'*

2. Enable the HTTP triggers option and click the 'save' button.

## Add an HTTP trigger

*Home > Triggers > select '+' to add a trigger > select 'HTTP'*

Give the trigger a name when saving and an HTTP Get URL will be created for triggering. Copy and paste the URL into your browser to test the trigger.

## If this...

Use the IP address of the selected device in order to send the HTTP command to the right device. After saving the HTTP trigger it will be listed in the Triggers overview. Use the copy button in the trigger bar to copy the HTTP command and paste it to the desired destination.

### Internal task

*Home > Triggers > select '+' to add a trigger > Internal task'*

This trigger can be used to trigger events when the C4 controller is in a specific status, such as playing a scene or when in idle state.

### If this...

Define the condition of an internal task upon which a trigger needs to be fired.

- Select an internal task such as 'Scene' or 'Art-Net'

- Select the status of an internal task which triggers the event

- 'Idle status' is defined as ready to execute tasks, not playing a scene and no incoming Art-Net, sACN or DMX Signal detected.

### Sunrise / sunset

*Home > Triggers > select '+' to add a trigger > Sunrise / sunset*

Sunrise and sunset triggers can be used to trigger events when the sun rises or sets. The C4 controller will calculate the precise local sunrise or sunset time, based on GPS coordinates (longitude and latitude) or according to the built-in city list. It is also possible to program an offset to these events in order to start the trigger before or after the sun rises or sets.

### Time-keeping accuracy

**Please note:** The internal clock (RTC) has a deviation of 0.0038%, which effectively means the clock can get behind up to 320 minutes per year. To resynchronize the RTC, the C4 (network) must be connected to a computer or to the C4 app and the interface must be loaded. The C4 controller will then automatically obtain the local real time and reset its RTC.

### If this...

Enter location

There are two ways to enter the location of the project:

Option 1 is the online location finder. Enter the location, city and country, for example, and press enter. The Interface will provide the latitude and longitude and current sunrise and sunset time for this location. (This option requires an internet connection.)

Option 2 is the offline mode where the latitude and longitude can be entered manually or where you can choose from a list of popular cities. This is recommended when no internet access is available or when the Google result is not accurate.

Choose one of the following options for this trigger:

- Sunrise

- Sunset

It is possible to add or subtract time (in minutes) from sunrise or sunset time by entering a positive or negative number of minutes.

NOTE: You can make combinations of multiple triggers to control specific actions. Select 'ADD INPUT' in the 'If this...' menu. (Only the combination of all selected input triggers will trigger the action.) This feature is still in development and not yet fully supported for all combinations, so please make sure you're running the latest firmware. Contact us for further information.

## Counter

*Home > Triggers > select '+' to add a trigger > Counter*

Counter triggers can be used to trigger events when the counter is higher than the entered delay in seconds. The counter will start counting when the controller starts up and all triggers are loaded. This takes about 5 seconds after powering up the C4 controller. The counter can also be reset by trigger action.

### If...

The counter time is higher than the entered delay time.

### Trigger actions

If the trigger condition(s) on the "if" side are positive, one or more actions can be executed. When you've finished your trigger setup, click 'SAVE' to store the trigger settings.

### Then...

This menu shows the available events that can be configured.

- Select the devices that need to perform an action.

- Select the action type and action parameters in the "Event settings" window.

### Play scene

- Scene: Select the desired scene from the drop-down menu.

- Alpha: Set the brightness/alpha for this action.

- Fade time: Set the fade for this action.

- Layer: Set the layer where the scene needs to be played.

### Play playlist

A playlist is a list of scenes with fade times and needs to be created in the main menu item called "Playlists." Select the desired playlist from the drop-down menu.

### Action list

The action list allows multiple actions and sub actions to be triggered in consecutive order, by the same trigger input every time this trigger state is positive. Every step in this list is indicated by a #number and can be ordered with the drag and drop feature. Every action may contain one or multiple sub actions that are triggered at the same time. An action list always loops, meaning it will start at the first step again if you trigger it at the last step of the action list.

Select an action from the drop-down menu. An action will add one or more extra options depending on the action type, e.g., a Scene will add a drop-down menu to select a scene and an option to set a fade time.

Add Subaction: All of the action types described in this section are available as a subaction as well. This allows multiple actions to be executed when triggered by the same single trigger. You can also have an action list with multiple steps. By clicking "Add action," an extra step will be created. Each time the input triggers are 'true' the action list will go to the next step in the action list.

### Pause

This will pause any scene or playlist that is playing.

>   **Effect:** You can add an effect that determines the way a scene is stopped.

>   **No effect (default):** This will instantly pause the scene.

>   **Speed transition:** This will gradually decrease the speed to 0% within the entered time.

>   **Brightness** (fade out) **transition:** This will gradually decrease the brightness to 0% within the entered time.

>   **Speed and brightness** (fade out) **transition:** This will gradually decrease the speed and fade out the brightness to 0% within the entered time.

### Resume

Resumes playing any paused scene or playlist.

### Stop

Stops playing any scene or playlist.

>   Target: Select what needs to be stopped

>   Layer: Select layer number

### Next

Skips to the next scene in the scenes list or playlist.

## Previous

Goes back to the previously played scene.

## Speed

Change the scene speed by adjusting the speed slider. 100 is the default scene speed and represents 100% of the original speed. Values higher than 100 represent a speed increase, values between 1 and 100 represent a decrease in speed, 0 represents a static value with no speed and values smaller than 0 will reverse the movement and will increase in speed when the negative value increases.

> **Transition Time:** This will gradually decrease or increase the speed to the selected value within the entered time.

## Master brightness

This changes the master brightness.

> **Brightness type:** Select how you want to adjust the brightness.
>
> **Static value:** Adjust the brightness with the brightness fader.
>
> **Steps:** Increase or decrease the master brightness level with a percentage of the current master brightness level, e.g., '-8' will result in a decrease of 8%.
>
> **Fade time:** Set the fade time for this brightness adjustment.

## Change color (hue filter)

Shift the color(s) for the playing scene.

> **Offset:** This option shifts all colors throughout the RGB color spectrum.
>
> **Add:** This option adds a color to the default color(s) to create a new mixed color.
>
> **Scene original color:** Select the color of the scene you would like to change.
>
> **Target color:** Select the color that the scene needs to be.

## Saturation filter

A filter to add white for a playing scene.

> **Saturation of scene:** Value 100 represents fully saturated (original scene color) and value 0 represents no color but white.

### Record

This trigger can be used to control various record functions remotely.

**Prepare buffers:** Prepares the buffers for the recording process. This action is required prior to the Start record action.

**Start record:** Starts recording incoming Art-Net, sACN or DMX data. Note that this action must be a new action and cannot be a subaction following the 'Prepare buffers' action. Ensure there is at least 1 second between the 'Prepare buffers' and 'Start record' actions.

**Stop record:** Stops recording.

**Play raw scene:** Plays the unprocessed recording.

**Stop raw scene:** Stops playing the recording.

**Save record:** Saves the unprocessed recording.

### Link to another trigger

You can link to other actions that have already been created. This, for example, also allows you to trigger an action list.

**Select action(s):** Select an action from the pop-up menu.

### Enable/disable other trigger input(s)

This trigger will enable or disable one or more selected trigger inputs.

**Select trigger(s):** Select one or more triggers from the pop-up menu.

**New state:** This is the on/off switch for this trigger input.

### Reset counters

Select one or multiple counters that need to be reset.

### Send UDP message

This trigger can be used to send a UDP message to external devices.

**IP address:** Enter the IP address of the recipient.

**Port:** Enter the port number for the UDP message.

**Message:** Enter the UDP message for your recipient.

### Send OSC message

This trigger can be used to send an OSC message to external devices.

**IP address:** Enter the IP address of the recipient.

**Port:** Enter the port number for the OSC message.

**Address:** Enter the address path where the message needs to be sent within the recipient application.

**Value:** Enter the value for OSC message.

### Restart

This trigger will perform a restart of the C4 controller(s).

### Custom

This trigger opens a note pad where custom trigger code can be entered. This option is usually reserved for developers or custom-made code.

**Action examples:** Select an action from the pop-up window.

**Open editor:** This will open the custom command in a browser editor.

### Creating linked triggers

*Home > Triggers > Linked triggers*

Linked triggers are used to link input triggers to actions with variable values such as linking an analog input to the master brightness. On this page, it's possible to link the trigger input on the left to an action on the right. Simply select an input and an action to permanently connect a trigger. The established link is visualized by a connected line between the two items.

Parameters that can be controlled by linked triggers are:

- Speed
- Hue (color)
- Saturation
- Brightness
- Playlist
- OSC (OSC commands must be send to port 8000)
- UDP (UDP commands must be send to port 6467)

Further information about OSC and UDP triggers can be found here:

*Home > Triggers > click on the 3 dots in the top right blue bar > select 'HTTP, UDP and OSC'*

For some of these parameters, it is possible to define a specific control range by adjusting the sliders. For the analog, Art-Net, sACN and DMX inputs, you must set minimum and maximum input values. Some triggers and some actions require further configuration, such as OSC and UDP, where custom messages can be set.

NOTE: The number of triggers that you can generate is limited due to available memory. Available memory is affected by the license, number of configured universes, number of actions, scenes that are playing, etc. In any case, the maximum number of triggers is around 25. If too many triggers are created, this can result in memory overload and cause a device to crash. In such cases, it's best to remove the microSD card, copy the microSD card, delete the contents of the triggers folder and insert the microSD card again. New triggers can then be created but you should create fewer triggers than before.

## Trigger watcher

*Home > Triggers > Click the three dots in the top right blue bar > Trigger Watcher*

The trigger watcher can be used to monitor trigger activity. There are three tabs, 'ALL TRIGGERS', 'UDP MESSAGES' and 'OSC MESSAGES'. Select the trigger tab you want to monitor and click 'START WATCHING'. All the trigger activities will be listed. If you want to clear the screen, click 'CLEAR LOG' at any time.

## Groups

*Home > Groups*

This function allows you to create specific groups of C4 controllers. This makes the configuration, identification, testing, restarting and organizing of specific parts of your project or installation a lot easier.

## Add a group

*Home > Groups > click the '+' icon Input fields*

**Name:** Enter a name for this group.

**Select devices:** Check all devices that you want to add to this group.

## Group settings

*Home > Groups > submenu: Group settings*

## Auto select group at start-up:

In the group settings you can set up a device or group that is selected at the start-up of the app. This can be useful if you create a "user" account that should only control those devices.

## Hide single devices:

When you enable this option, single devices will be hidden in the "My Devices" overview (select box in the top bar). Groups will not be affected by this option.

### Monitor

*Home > Monitor*

In the Monitor function, you will find relevant information such as Response time, Status, MAC addresses, IP addresses and so forth. This can be helpful when setting up your network, for troubleshooting or live monitoring of a performance.

### Response time

Response time shows the network message response time. When the Response time light is green, the network connection is working. When the Response time light is red, the C4 controller is not responding. Click on the "timeout" text to get more information about the timeout session.

Status Definitions of device statuses:

- Playing [scene name]: Device is playing a scene or playlist
- Scene FPS
- Incoming FPS

### Analog

This shows the incoming values of the analog ports.

### Name

This is the device name.

### MAC address

This shows the MAC addresses of the device.

### IP address

This shows the IP addresses of device.

### Universe(s)

This shows the configured universe(s) that the C4 listens to. There are two statuses:

- Red numbers indicate no incoming signal data is present.
- Green numbers indicate an incoming signal is present.

Click on the device universes to open the Art-Net or sACN watcher window to monitor the incoming channel values.

### Port

This shows which ports have been configured as an output. If you click on a port, it will highlight the C4 controller output until you click again.

### Actions

**Restart:** will restart all devices that are currently displayed on the Monitor page.

**Highlight:** will highlight all configured outputs of all displayed devices on the Monitor page.

To select fewer or more devices, click on the "ALL DEVICES" button (select box in the top bar) and select the preferred device or group.

### Account

*Home > Settings > Account*

This page allows you to create accounts by enabling the accounts option. A popup will appear to create an 'admin' account. These login credentials will be requested if you try to log in to the C4 controller. After the 'admin' account is created, it is possible to create accounts with different access levels. This can be used to restrict access to some parts of the interface for certain users. A 'user,' for example, is only able to playback scenes and playlists. When a user (with 'user' rights) logs in, the user will automatically be redirected to the scene page.

### Settings overview

*Home > Settings*

This page shows all the settings and device configuration.

### Input & output configuration

*Home > Settings > In/out configuration*

On this page you can configure inputs and outputs. Choose the output type (or DMX input) for these ports. Then click the blue + icon of each port to add universes. To edit the output options, click the universe item. The C4 controller can output one unique SPI protocol type simultaneously. If you select an SPI protocol for one port, this protocol will be used for all other output ports. You can, however, make a combination of 'DMX input' or 'DMX output'.

### Combining ports example:

Port D1 is set to DMX out and will automatically be combined with port D2, because two separate data lines a required for a (balanced) DMX signal. You can now select a protocol for D3+D4.

## Art-Net out

This feature can be used to send or redirect incoming Art-Net, DMX and recorded scenes (also scene generator created scenes), to Art-Net.

Click the '+' button to add Art-Net output universes. Select an input source and enter the number of channels that need to be sent.

Select 'Advanced settings' for more universe-specific settings such as the starting address, IP address of the Art-Net source, 16-bit input and other output options.

Art-Net out universes can also be used to record from an Art-Net stream to play back later and send them over Art-Net again. (The C4 controller can also be used as an Art-Net playback recorder.)

Art-Net out channels are considered as output channels and will affect licensed channels.

## Quick edit

The quick edit mode allows you to edit the configuration items and save after all adjustments have been made. This speeds up the process when you must edit the universe number or channel quantity for multiple devices.

**NOTE:** The C4 controller starts to count universes at 0 (zero)! Some software or consoles, such as MADRIX, may start counting at universe 1.

**TIP:** Additional tools are available! In the top right menu, you will often find additional tools under the three dots in the top right blue bar.

## Autocomplete configuration

Use this tool to copy the configuration of the first port of the first device to the selected ports/devices. The interface will show various autocomplete options, depending on your system setup.

## Global configuration

This page offers advanced configuration item options that apply to all selected devices, such as:

- Gamma correction
- Color profile
- Fallback options
- IP address filter

### Input watcher

The input watcher is a useful tool that monitors incoming control signals. You can switch between:

- **Art-Net/sACN:** Enter a specific universe that you want to monitor. You can only watch the selected input protocol at the 'Input and output configuration' page.

- **DMX:** Switch between the inputs if you have configured one or more ports as DMX In.

### Limit outputs

On this page you can set the master brightness, the brightness limiter and the adaptive power limiter.

#### Brightness limiter

This option limits the individual channels to a specific percentage. This means that every channel or LED will never exceed this percentage, e.g., limiting brightness to 50% means that all individual channels can never exceed 50% but the control range per channel will remain the same. Effectively, the percentage is applied to the input value for each channel.

#### Adaptive power limiter

This option limits the total average output of all channels combined to a specific percentage to decrease total power consumption. Individual channels may still output up to 100%, e.g., limiting power to 50% means that half of the channels can output 100% with the other half at 0%, or all channels at 50%, etc. If, for example, you try to output all channels at 75%, the output of all channels would be automatically limited to a total of 50% but will maintain ratios relative to each other.

### Delete configuration

Deletes all IO configuration settings of selected devices.

### In/out configuration item page

*Home > Settings > In/out configuration > Universe item*

Click on Port D1-D4 to select or change the output protocol. Click on the '+' symbol to add a universe to each port. Click on a universe item to change the following settings.

Channels: Define the number of output channels.

Universe: Assign a universe number as input.

Further configuration options will be shown when you expand the 'Show advanced settings' option.

# ADVANCED IO CONFIGURATION

**Start-channel**

This option allows you to enter an offset value of the starting channel that this universe listens to. By entering a start channel (0-511), all channel data before this channel offset will be skipped.

**Example**

Goal: You want to use channel 100 up to channel 200 as output channel 0-100. Configuration settings will be as follows:

• 'Start channel' is set to 100.

• 'Channels' is set to 200.

Explained: First, the start channel will shift 100 channels of the input. This will skip the first 100 channels of the universe. Then set the channels to 200, because 200 channels are required (including the first 100 skipped channels).

**Create segments**

This option combines multiple channels or LEDs to become one pixel/segment. Use this option when the amount of control channels needs to be reduced, if you want to create larger pixel segments or if multiple channels of an IC control the same channel (e.g., sometimes a 3 or 4 channel IC is used to control only white LEDs within one package or module).

**Segment type**

• Select a segment type from the dropdown menu.

• No segments: Disables segments (default)

• Create segments: Allows you to create your own segmentation

• RGB(W) LED segments: Link multiple LEDs together (e.g., channel 1&4&7, 2&5&8, etc.)

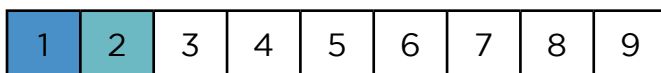• Monochrome segments: Groups channels together (e.g., channel 1-3, 4-6, etc.)

**Examples**

Repeating 3 RGB pixels: Output channels 1,2,3,4,5,6,7,8 and 9 will correspond to input channels 1, 2 and 3.

Number of linked channels
Repeat linked channels: 3
Input Channels                                    Output Channels

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Convert a pixel product into simple '1, 2, 3' chaser for fewer control channels: Copy the input channels 1, 2, 3 in the following order in the output channels.

Number of linked channels

Repeat linked channels: 3

Input Channels                                                    Output Channels

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Increase pixel size/decrease channels: Combine (group) multiple output channels into one to save input channels.

**NOTE:** Combining input channels will not reduce the amount of output channels. The C4 controller is always limited to the total amount of output channels corresponding to the license. The number of input universes is not limited.

### Gamma correction

Gamma correction adjusts the overall brightness of the output. This option is used to display videos and images or with a 16-bit output for finer control if the LED is low in brightness.

### Color profile

Rearrange the LED color order (for example, from RGB to BGR). You can select a few standard conversion profiles or create your own custom profile. (This might be required for some LED products. The C4 controller uses the default color order from the technical documentation of a selected IC/SPI protocol.)

### Fallback color

This function allows you to select a color that will be sent to all output channels as soon as no incoming signal is detected for a specified amount of time.

### Color

Enter an RGB(W) value between 0 and 255 per LED channel or use the color picker to select a color. If you use the color picker, you can also adjust saturation and brightness with the sliders underneath. After selecting the fallback color, hit the    button in the center of the color picker to confirm your selection.

### Timeout

Enter a delay/timeout in seconds when the fallback color becomes active after signal loss.

## Advanced input

Further universe specific settings can be changed:

- **Only accept signal from IP address:** enter a dedicated IP address that this universe listens to.

- **16-bit input:** When sending 16-bit data to the C4 controller, two input channels are used for one color channel. If your IC does not support 16-bit and you want to convert 16-bit to 8-bit, please enable this option. If both your input and IC are 16-bit, it will be done automatically.

- **Second input (HTP merge):** This will merge the selected universes together and transmit the merged signals to the designated output. Enter the desired universe, start channel and the number of channels you want to merge.

## Advanced output

- **Bypass master dimmer:** Enable the bypass if you don't want this output to be dimmed by a master dimmer or brightness trigger.

- **Max time until resend:** When no signal is received within a given time, the current output is resent to the ICs (LEDs). This prevents data issues and IC timeout functions because some ICs will switch to a default color or sequence when no SPI is received for a certain duration. This may also result in a decreased frame rate (FPS). Reset this value to its default by pressing delete and generate a new universe by selecting the blue + button of the specific D port.

When you are finished adjusting the advanced options, click 'save' to store the settings.

**TIP:** To quickly test your outputs, toggle all ports on to full white when clicking the bulb 🔆 icon.

## Network settings

*Home > Settings > Network*

This page shows a tab for both Ethernet (wired) and Wi-Fi (wireless) network-related settings of the C4 controller.

## MAC address

This is the unique device MAC address. This address cannot be changed and is being used for identification and network communication.

# ETHERNET CONFIGURATION

### IP address

This is the ethernet IP address of the C4 controller.

### Subnet-mask

This is the network range of your device.

### Smart ethernet DHCP

This enables or disables the smart DHCP server. When enabled, the C4 controller will assign IP addresses to devices that connect through ethernet. If a DHCP is already present on the network, it will be disabled internally if the DHCP server responds within a certain time window. Click the 'SAVE' button to store any changed ethernet settings.

### Wi-Fi configuration

The C4 controller has a built-in Wi-Fi module which can make different types of wireless connections.

### Wi-Fi mode

There are three options for Wi-Fi mode:

> Off: This disables the internal Wi-Fi module.

> Connect to Wi-Fi: The C4 controller will connect to another Wi-Fi network. If the Wi-Fi network is secured, you need to enter the network password.

> Access Point: Access Point mode will create a Wi-Fi access point that you can access with your mobile device or computer.

### IP address

The Wi-Fi IP address of the C4 controller.

### Subnet-mask

The network broadcast range of your device.

### Gateway

The gateway of the network.

### Wi-Fi name (SSID)

The Wi-Fi network name that will be found by your device when scanning for wireless networks.

### Wi-Fi security

The Wi-Fi security protocol can be set to open or secured (WPA2).

### Password

This is the Wi-Fi password required to connect to the Wi-Fi network (minimum of 8 characters).

### Hide SSID

Hide or show the Wi-Fi network name when devices search for Wi-Fi connections. When hidden, you can only connect to the access point by manually entering the SSID.

### Channel

The Wi-Fi channel can be set between 1 and 14 or choose 'auto'.

### Enable DHCP

Enable or disable the DHCP server. When enabled the C4 controller will assign IP addresses to devices that connect to the access point. The built-in DHCP server is smart and detects and adapts if there is already a DHCP server present in the network.

### DHCP start IP address

This is the starting IP address of the IP address range the C4 controller can assign to other devices in the network.

### DHCP end IP address

This is the last IP address of the IP address range that the C4 controller can assign to other devices in the network.

### Enable BSSID

This enables the use of BSSID.

### Access Point settings example

| | |
|---|---|
| IP address: | 172.16.0.1 |
| Subnet-mask: | 255.0.0.0 |
| Security Wi-Fi: | Secured |
| Wi-Fi password: | 123456789 |
| Wi-Fi name: | DiGidot C4 Wi-Fi |
| Wi-Fi channel: | Auto |
| Hide SSID: | Disabled |
| Enable DHCP: | Enabled |
| DHCP start IP address: | 172.16.0.2 |
| DHCP end IP address: | 172.16.0.30 |
| Enable BSSID: | Disabled |

### Connect to Wi-Fi

The C4 controller will connect to another Wi-Fi network. If the Wi-Fi network is secured, you need to enter the network password.

### Select a network

This shows a list of available Wi-Fi networks found by the C4 controller. After selecting a network, you will be asked to enter the network password in case it is protected.

### Static IP

Enable this option to fill in a static IP address. When disabled, the C4 controller will use DHCP to get an IP address from the network.

### IP address

This is the (static) Wi-Fi IP address of the C4 controller. Make sure it's in the same IP address range as the network you are connecting with.

### Subnet-mask

This is the network broadcast range of your device.

### Connect to Wi-Fi settings example

Select a network:                          Home
Network Password:                       Home
Network Password Static IP:      Disabled

NOTE: Avoid Interference with Wi-Fi. The following items can cause interference with the Wi-Fi signal: Microwave equipment such as ovens; Direct Satellite Service (DSS) radio frequency leakage; electrical installations such as power lines, electrical railroad tracks and power stations; and wireless devices that operate in the 2.4 GHz range. DO NOT install this device in METAL or ALUMINUM cabinets when you want to use direct Wi-Fi communication. If you have problems with your C4 controller communication, change the channel that your device is using for Wi-Fi or switch to Auto-Channel.

In the top right menu, you will find additional tools under the three dots in the top right blue bar.

### Restart all

This will restart all devices in the network.

### Global settings (multiple devices only)

This page offers global settings that will be applied to all selected devices, such as:

- Subnet mask

- Gateway

- Smart DHCP server

### Device settings

*Home > Settings > Device*

This page shows the device settings of the C4 controller.

### Device name

This is the name of the device by which it can be identified.

### Status Lights

The status LEDs can be dimmed in four levels:

- 100%
- 25%
- 10%
- 0% (off)

### Ethernet Lights

Disable/enable the ethernet LEDs.

### Time settings (C4 Extended only)

It is possible to synchronize the time of the computer or smart device with the C4 Extended controller when loading the interface. If disabled, you can manually enter a time and date. The time can be used for triggering scenes. Once the time and date are set, the on-board battery will keep the internal clock running.

### Actions Restart (C4 Extended only)

Restarts the C4 controller.

Formats the microSD card inside the C4 Extended controller.

### Diagnostic

*Home > Settings > Diagnostic*

This page will show relevant information to diagnose how a C4 controller is performing.

# ACTIONS

**Global settings** – This will open a settings page where it is possible to change the refresh interval.

1. File Browser – Will open the file browser page of the C4 controller.

2. Trigger Watcher – Will open the trigger watcher page of the C4 controller.

### Filter

This will open a popup where it is possible to (de-)select views. This will also reduce the network load because fields are not refreshed when deselected.

### Global

This tab will show global information about the C4 controller.

### IO

This tab will show information about the Input and Output configurations of the C4 controller. The items are focused on the refresh timings of the different configured items. The Input will be updated when there is new data available from the Art-Net, sACN or scene stream. The map will be refreshed when all data is available and matches the FPS. The output should always be refreshed within the configured timeout.

### Network

This tab will show additional information about the connected ethernet ports and Wi-Fi.

### Trigger

This tab will show the loaded triggers and if the C4 controller will respond to external trigger calls.

### Playback

The playback tab will show information about scenes and/or playlists playing. This tab will also show information about the FPS, total processed frames and skipped frames of the different input protocols.

### Performance

This tab will show the different cycle durations. This tab can be used to determine the C4 controller performance.

### Memory

The memory tab will show an overview of the used RAM and which managers are using it. It will also show the status of the SD card and, if mounted, the free space of the FAT partition.

### Error

This tab will show the generated errors of the API and error items logged during the current session. These values will be reset after a reboot.

### Remote Device Manager

*Home > Settings > Remote Device Manager*

To use the RDM feature, a compatible protocol must be configured first on the in/output configuration page, such as DMX out, DMX TTL or a PxLNet supported protocol. Note that RDM will only work when all connected devices are RDM ready and or RDM enabled.

### Discover RDM Devices

To discover (new) RDM devices, click the refresh or discover button on top of the device list.

**Discover:** reloads the entire device list.

**Ongoing discover:** looks for new devices and keeps previously discovered devices listed.

### RDM settings

The RDM settings menu shows additional features such as 'Update devices,' which is a firmware update manager for compatible devices.

### Device info

This window shows all available device information:

**General information:** shows the information entered by the manufacturer.

**Configuration:** shows all available configuration settings. The device name is the default device name, but it can be changed on this page.

**Status:** shows the information that is sent back from the device, if it supports this feature.

**Personality:** different device operating modes will be displayed if it supports this feature.

### Highlight functions

**Port Highlight:** will highlight all connected RDM devices on that particular port.

**RDM Device Highlight:** will highlight only that device to locate it.

### License

*Home > Settings > License*

On this page you can view the license(s) of your C4 device(s).

### License upgrade

Click 'Buy license' and follow the instructions.

It is also possible to buy a license upgrade online: Visit digidot.eu, create an account, register your device(s) and upgrade from the 'my devices' tab at my account page. Another quick option to upgrade a C4 controller is to use your smart device camera, scan the QR code on the C4 device label and follow the link to our website.

## Having trouble upgrading your C4 license?

Detailed updating instructions can be found on our website. You will need your device QR code or the MAC-Address, serial number and your customer/company details for the upgrade procedure. If you are having trouble upgrading your C4 controller, please contact us at support@digidot.eu.

NOTE: If an immediate upgrade is required, please choose Credit Card, PayPal, iDeal, SOFORT Banking or Bank contact during the upgrade check out process. Other payment options will take a few days to process after the payment is completed and will delay the upgrade.

## Offline upgrade

The C4 controller can be upgraded at any time, even when it doesn't have internet connection. To upgrade your device(s), follow these steps:

1. Write down the MAC addresses and serial number listed on the product label.

2. Visit our digidot.eu on a computer or smart device with an internet connection.

3. Log in to your account or create an account on our website.

4. Go to 'My devices' and select the devices (based on MAC addresses) that you want to upgrade. If you have not yet added your devices to your account, you can enter the MAC address and Serial Number or Product Key and click the 'Add device' button or the 'Scan QR Code' button if your device has an onboard camera. Another option is to use the camera mode of your smart device to photograph the QR code on the C4 device label and follow the link to our website.

5. Select an upgrade option for your device and complete the checkout. Continue to the next page.

6. After the payment is done, you can view your device at the 'my devices' page again and download the license key. Or copy the license key from the attachment in the 'license key' e-mail.

7. Open the file and copy the license key text.

8. Go to the C4 interface and go to settings > license. Toggle the option for the offline upgrade. A text field will appear. Paste the license key in the field and click 'Apply license key'.

## Interface settings

*Home > Settings > Interface*

This page offers a few user interface-related options. These settings are stored in your browser or the C4 app.

**Theme**

You can choose 'Light' (default) or 'Dark' color mode.

**Developer mode**

This mode adds the 'Console' menu item to the Home page. This option opens a command editor which should only be used by advanced users or if instructed by our support team.

**Update**

*Home > Settings > Update*

When there is an internet connection, the user interface will automatically show if a firmware update is available. Please note that it is possible to update multiple devices at a time. Before updating, make sure that all connected devices have the same firmware version, that all devices are switched on and connected by wired Ethernet. Follow the update instructions from the interface.

**Offline update**

When no internet connection is available, you can download the latest update from our website and manually upload it to the C4 controller. Open your web browser and go to the following address: *http:// <IP address of the C4 controller> /fwupdate.htm.* Click the 'Browse' button and locate the update file. Then Click 'Install' to start the update process (this may take a few minutes). Check the 'Broadcast' checkbox if you want to send the update to every device. Make sure that you're not sending Art-Net or sACN if you choose 'Broadcast'! After the update is completed, the C4 status lights will return to idle state, fading from blue to light blue.

By default, the IP address of the C4 controller is 10.254.254.254. If you have configured a different IP address, you can use that IP address as well.

**Backup and restore**

*Home > Settings > Backup and restore*

The C4 controller has a backup feature that allows you to back-up settings from multiple devices. The backup can save account settings, network settings, device settings, triggers, playlists and scenes. Creating a backup with scenes can take a long time depending on the size and duration of the scenes. A faster way to back up your scenes, triggers and playlists is to remove the microSD card from the C4 controller and copy it manually to a computer.

There are three ways to create a backup:

Save backup: this will save the backup to the application memory in the browser/app. The backup will show as an option in the restore options inside the interface.

Export backup (browser version only): This will create a backup that will be downloaded as a zip file. The zip file can be used at 'Upload backup file'.

Backup on SD card: This will create a backup on the SD card. This backup will be restored every time the C4 controller boots. If you change any settings, those changes will be lost after a reboot. To keep your changed settings, you need to create a new backup on the SD card. (To delete the backup and prevent it from loading at startup, go to 'settings' -> 'File browser' -> 'select C4' -> 'SYSTEM folder' -> 'SETTINGS folder' and delete the files in this folder.)

NOTE: This will only save the network, device and in-/output configuration on the SD card.

## Support overview

*Home > support*

This page shows all support items.

## Manual

*Home > support > Manual*

This page shows the built-in manual for the C4 controller. The manual is always compatible with the connected C4 firmware/interface. No internet connection is required to open this page.

## F.A.Q.

*Home > support > F.A.Q.*

This page will load the F.A.Q. page from the website to help you answer frequently asked questions. This page requires an internet connection.

## Support Ticket

*Home > support > Support ticket*

On the support ticket page, you can fill in a form for any firmware/interface bug, for feature questions or for other improvements for existing features. When reporting a bug, we recommend downloading a bug report (browser only) and selecting it at the 'Bug report file' input. This makes it easier to diagnose your problem. Any screenshot or video of the situation will also help. This page requires an internet connection.

# TIPS & TROUBLESHOOTING

1. Double check all cables and connections.

2. Is the C4 powered correctly? The minimum Voltage is 5VDC.

3. Are the LEDs powered correctly?

4. Are all power supplies connected correctly to your mains power supply?

5. Is your network setup correct?

   5.1. Prevent IP address conflicts (same IP Address across multiple devices).

   5.2. Ensure the subnet mask range is correct and all IP addresses are in the appropriate range.

6. Are the inputs and outputs configured correctly?

   6.1. Ensure the correct IC/SPI protocol is configured.

   6.2. Ensure the Art-net/sACN software patch is correct. See if any fixtures are patched twice.

   6.3. Ensure that input and output match the system setup. Note: Some software starts counting from universe 1 instead of universe 0.

7. Is your ground (DC-) from the C4 controller output terminal connected to all the grounds of the LED products' power supplies?

8. Ensure that no more than one browser session is open and connected to the C4 controller.

9. Clear your browser cache or try incognito mode.

10. Refresh the interface by pulling down the top of the interface page. The pull down-to-refresh action can be executed on the Scenes, Playlist, Account, Triggers, Input & output configuration, Network, License, Update, File browser and Device pages.

11. Perform a factory reset. Disconnect the power from the C4 controller, press and hold the onboard button, apply power and hold the button for at least 10 seconds. Once the status LEDs turn to blinking yellow, the factory reset is initiated. Once the status LEDs turn to solid yellow, you can release the onboard button. Resetting and rebooting will take 3 15 seconds. Please consider that all settings (such as in/out configuration, network, device and account settings) will be lost. Stored files such as scenes, playlists, triggers and backup files saved on the microSD card will remain.

## Status LEDs

There are several states of the device. Different states are shown using both the top and the side status LEDs of the C4 controller. Definition of status light indicators:

| | Light colors | Category | Explanation |
|---|---|---|---|
| ● ● | Fading blue-cyan light | Informative | The controller is idle with a license |
| ● ● | Fading blue-green | Informative | Receiving an incoming signal (Art-Net, sACN or DMX) |
| ● ● | Fading blue-magenta | Informative | The controller is playing a scene |
| ● ○ | Fading blue-white | Informative | The controller is recording or processing a scene |
| ● ● | Fading green-off | Informative | Settings successfully stored or device successfully discovered |
| ○ ● | Fading white-off | Informative | Updating the Wi-Fi firmware |
| ● ● | Fading yellow-off | Informative | Preparing factory reset, keep button pressed until fading stops |
| ○ ● | Blinking white to cyan | Informative | Temporary Wi-Fi access point is activated. |
| ● ● | Blinking red for 3 seconds | Error | General (temporary) unknown error. |
| ● ● | Alternating red | Error | MicroSD card must be formatted |
| ● ● | Alternating blue-red | Error | System is frozen; reset will be performed |
| ● ● | Alternating red-yellow | Error | Internal battery is empty or has a problem |
| ● ○ | Alternating red-white | Error | The controller has crashed, a reset will be performed |
| ● ● | Alternating purple-purple | Error | Self-test failed during startup |

**NOTE:** In case of a battery error: If both the top and side status lights are alternating from yellow to red for 3 seconds, contact DiGidot or Acolyte for further instructions.

## Network status lights

Ethernet left LED (orange or green) - Link established

Ethernet right LED (blinking green) - Data transfer active

Some C4 controller batches may have one color of ethernet lights, but the left and right side represent the same status.

**NOTE:** If the status lights are not lighting up when the device is powered and connected to a network, the status lights may be switched off in the user interface. Open the user interface and go to Home > Settings > Device to check and switch them back on again.

## No output signal from C4 controller

Make sure that:

- The DiGidot C4 is powered.
- Master brightness, port limiters are not set to zero.
- The HSV filter is not set to black.
- The inputs and outputs are configured.
- The scene is compatible with the outputs.
- Your cable is the right length. If the data cable between the C4 controller and your first LED/IC is longer than 6.5 ft (2 m), please reduce this length to an absolute minimum and check if this solves the problem. If the controller(s) now output correctly, the data cable runs were too long for your setup.
- The lighting fixtures/LEDs that need to be controlled are powered.

## C4 controller not receiving signal

Make sure that:

- The C4 controller is powered and properly connected to the Art-Net or sACN console/computer.
- There is an incoming signal on the status lights located on the top and side of the C4 controller. When the status LEDs are fading green and blue it is receiving a signal (see the product explanation and status lights explanation).
- The network, input and output configurations of the C4 device are properly set up.
- The computer/device that is sending a signal is set up to match the network settings.
- The computer/device that is sending a signal is set up to match the universe inputs.
- The incoming signal status can also be checked in the interface on the Monitor page.

## Art-Net software doesn't recognize the C4 controller

Make sure that:

- The C4 controller is powered and properly connected to the Art-Net console/computer.
- The network and one or more output(s) have been configured properly.
- The range is correct. The C4 controller works with most well-known Art-Net consoles and software. Some Art-Net consoles only work in the 2.0.0.255 range. Please configure your device in the same range if necessary.
- The subnet mask of the console/computer is identical to the subnet mask of any connected PxLNet Controller(s).
- In case your console or software continues to fail to discover the C4 controller, you can try to reboot your device(s). If the problem still remains, please contact DiGidot or Acolyte support.

### Wireless connection lost after configuring a trigger

After saving a trigger, the C4 controller automatically performs a reboot to apply and load the new trigger settings. When working wirelessly with the C4 app or OSC, the wireless connection might get lost due to rebooting of the system.

### C4 controllers are not starting up

In case you are using C4 controllers together with PxLNet Transmitters, the C4 controllers may not start up. The C4 and PxLNet Transmitters require a minimum internal operating voltage in order to work properly. Please double check the minimum operating voltages of your products. When connecting multiple devices to the same power supply, the inrush current of all devices combined might exceed the output capability of the power supply, which means that not enough power will be supplied during start-up.

Solution:

- Disconnect power
- Reduce the number of devices that are connected to the same power supply to one.
- Re-power the system and check if the first device boots properly.
- Disconnect power again and restore connection to the next device.
- Repeat this sequence up to the point that controllers start to fail during startup.
- Use another power supply to boot the next devices or use a delayed switch circuit to reduce inrush current.

Make sure that:

- The operating voltage measured at the C4 controller or PxLNet Transmitter is at least as specified.
- Cables do not introduce significant voltage drops

Solution:

- Reduce the number of devices that are connected

## Factory reset

*Some issues require a factory reset if nothing else seems to work. In this case, the C4 device returns to its factory default. The factory reset will reset the input/output configuration, device settings, network settings and user accounts. Recorded scenes, playlists and triggers will not be deleted. After resetting, the device can be accessed through IP address http://10.254.254.254.*

WARNING! Deleted settings cannot be restored. Please make a backup before resetting the device.

### Factory reset procedure:

1. Disconnect the power of the C4 controller.

2. While pressing the onboard button, re-connect the power to the device and hold the button for five seconds. Both top and side status lights will blink yellow five times, then remain on, which indicates that you can release the button. The device will reboot and will then be ready to use.

If you're not able to perform this reset due to accessibility and if the C4 network is/can be connected to a computer with internet access, contact DiGidot support for remote assistance.

## Having trouble with your C4 controller setup?

If you have followed all the steps from the manual and still have problems setting up the C4 controller, visit our online support page digidot.eu/support or send email support@digidot.eu for assistance. Please make a backup file and send it with your email, as this will make trouble shooting for our engineers a lot easier.

If you can't connect to the C4 User Interface, open Google Chrome, type http://10.254.254.254 in the address bar and press enter. When the user interface does not load or seems unresponsive you can reload the page. If reloading doesn't resolve the problem, you need to:

- Ensure the C4 controller is properly connected to a power source according to the wiring instructions.

- Ensure that the device is connected to a computer or mobile device.

- Empty your browser cache.

- Check for IP conflicts.

- Check your network connection and network settings. (You can verify the connection of the network cable with the ethernet status lights of the RJ45 bus.)

- Ensure that the computer network is in the same range as the C4 controller. For example, when your C4 is configured to use the IP address "10.0.0.2" with subnet mask "255.0.0.0" your computer network needs to be in that same "10.x.x.x" range on subnet mask "255.0.0.0". You can test your network connection with the C4 controller.

On Windows

*Click the Start Menu > All Apps > Windows System > Command Prompt.*

You can also find the Windows Command Prompt by right clicking on the Start button > Command Prompt.

**On Mac OS**

Open the *Utilities Folder > Applications folder* and open the Terminal App or use Spotlight by clicking CMD + Spacebar and searching for the Terminal App.

Type 'ping' and the IP address of the C4 controller ('ping 10.254.254.254') and then press the Enter key of your keyboard to ping the C4 device. A timeout will indicate a broken connection.

If you still can't access your C4 controller, the interface page is not loading correctly, or the discovered devices are not added automatically, try to empty your browser cache and re-power and reload the user interface.

**Forgot the username or password for the C4 controller?**

When you have lost your username or password you can perform a factory reset of the PxLNet Controller. The reset function will restore the factory settings. Information on the microSD (such as scenes, playlist and triggers) will not be erased. After resetting, you can access the device on its default IP Address. If you have created a backup, you can restore the device configurations according to the backup & restore instructions.

**Can't find your protocol/IC?**

The C4 controller supports more SPI protocols than any other pixel controllers on the market. However, technology is evolving rapidly and we're not always the first to know when there's a new product or IC chip with a new protocol on the market. If you have or want to use an IC that is not listed in our supported ICs overview, please contact support@digidot.eu. We will do our best to support your IC with a new firmware update soon after.

**Need to cover greater cable distances between the outputs and first LED/IC?**

If the cables between the outputs and LED/IC are longer than 6 ft 7 in. (2 m), we recommend boosting the signal to make sure the system will work properly. Please use range extending equipment such as PxLNet Transmitters and PxLNet Transceivers, which can be found at AcolyteLED.com. With PxLNet range extending equipment, the SPI signal range can be extended up to 820 ft (250 m). Note that this does not apply to DMX. The DMX signal has a standard maximum range of 1640 ft (500 m).

**NOTE:** SPI (Serial Peripheral Interface) protocols are designed for onboard data communication between microcontrollers and other high-speed processing components. Because SPI protocols communicate at extremely high speeds (in the MHz range) and were not designed to leave a PCB (Printed Circuit Board), long cable runs to transfer the data signal are not accounted for. This means that most malfunctions occur when cable lengths are too long.

## Some LEDs/colors are not responding correctly

This is a common issue that occurs when the voltage drops below a certain minimum. Please check the voltage at the end of the LED strip and note that if, for example, you're running a 5 VDC product, the data signal also operates on this level. If the voltage drops to 3.5 VDC, this means that the ICs are not able to work properly and the data packets become corrupted. The LEDs also require a certain minimum voltage (forward voltage), which varies per LED and color.

### Reasons for voltage drops:

- Cable runs between power supply and LED product are too long.

- Use of inappropriate wire gauge between power supply and LED product.

- Design of LED product that does not allow for high enough currents to pass (too small copper lanes and high resistance). Some LED strips, for example, cannot be daisy chained because of this. Contact your LED product manufacturer for technical specifications.

Based on the amount of current drawn (and number of simultaneous LEDs/colors being lit), voltage may fluctuate and cause an intermittent fault. This means that in some cases everything might seem to work fine and sometimes when content or colors change, it might not.

### Solutions:

- Check the voltage with a voltage meter at the beginning of the line. If, compared to the PSU voltage, the voltage has already dropped at the beginning, shorten the supply cables, increase the wire gauge or increase the supply voltage if possible (some power supplies have a voltage adjust potentiometer that can increase output voltage by a small percentage).

**NOTE:** Do not exceed the supply voltage at the beginning of your data line/first LED product.

- Re-supply voltage at some point (where the measured voltage drop is significant) before the faulty LEDs are visible (e.g., in the middle of the line) or at the end of the line.

**NOTE:** Re-supplying power must be done from the same power supply or if another power supply is being used, all grounds of all power supplies must be connected to balance the ground potential.

**TIP:** Do not use excessive wire gauges to transfer data from the C4 controller to the LED products. This will only increase the risk of failures. Typically, we recommend using wire gauges for the data signal of 20-22 AWG (0.3-0.5 mm$^2$).

### No microSD card

The C4 Extended versions require a microSD card. If the microSD card is not present or formatted properly, the status lights will blink alternating red.

**Solution:** (Re-)Formatting the microSD card

- From the User Interface go to 'browser' and find your device in the left column. From the device row you can use the tool icon to open the microSD card information dialog.

- From the microSD card information dialog, choose 'Format SD Card.' This will format the microSD card. **NOTE THAT** all stored information will be lost!

- Confirm to continue the formatting process.

If a microSD card is inserted in a C4 Live controller, both status lights will also blink alternating red.

**Solution:** Please remove the microSD card and restart the device.

### C4 Extended controller crashes

When the C4 Extended controller crashes or if unexpected microSD card errors occur, it is likely that there is a voltage problem. The C4 microSD card drive requires a minimum voltage to operate properly, and in some situations, sudden voltage drops can cause malfunctions. Double check that the supply voltage is always at a minimum of 5 VDC.

### Unknown error

Disconnect and reconnect the C4 controller from its power source to perform a reset. If none of the troubleshooting tips or a reset solves the problem, you might need to open a technical support ticket. Please fill out a support ticket form on our website.

### Interface issues

We are constantly working on new features, improvements and bug fixes. In case you experience any interface issues or if you want to test new features that we're working on, we offer a semi-stable beta interface version. To use a beta version, go to: Home > Settings > Update and select a beta firmware from the firmware version overview. Beta versions are found at the end of the list. In any case, if you encounter any interface issues, we kindly ask that you report it to us by email at support@digidot.eu.

### FAQ

Please visit *digidot.eu/support/faq* for all frequently asked questions and further support.

# ACCESSORIES

We offer various accessories for your installation. Please contact Acolyte to order the following products:

Transmitter and receiver modules

**PxLNet Transmitter**          **Part #: CTRLPIXELTRMR**

- Operating voltage: 12-24 VDC
- Converts up to four unbalanced SPI signals for PxLNet to transmit up to 820 ft (250 m) with transceivers
- Converts four DMX TTL signals to four balanced DMX outputs
- Interconnects all grounds

**PxLNet Transceivers**       **Part #s: CTRLPIXELTRSP, CTRLPIXELTRST, CTRLPIXELTRRJ**

- Operating voltage: 5-48 VDC
- Two operating modes:
    - Receiving mode: Converts PxLNet to SPI protocol
    - Transmitting mode: Converts SPI protocol to PxLNet
- DMX to DMX TTL conversion
- Status LED indicators
- Signal range of 820 ft (250 m)
- Can be soldered to the beginning or end of most SPI-controlled LED strips
- RJ45 bus and solder pads for signal input

**TRRS Trigger Cable**       **Part #: DIGICBLTRRS**

- Spare cable to connect 3 analog trigger inputs to C4 Extended controller
- 3.28 ft (1 m) in length

**RJ45 Network Cable**       **Part #: DIGICBLRJ45**

- Spare RJ45 Network cable for connecting and daisy chaining C4 controllers (included with C4 Extended controller)

**USB Power Cable    Part #: DIGICBLUSB**

- Spare power cable to connect C4 controller to 5 VDC USB port (included with C4 Extended controller)

**DIN-Rail Clip**              **Part #: DIGIDRMC**

- Optional DIN-rail Mounting Clip for C4 controller

**8GB microSD Card**       **Part #: DIGISD**

- Industrial grade spare microSD memory card for C4 Extended controller (included with C4 Extended controller)

**RJ45 DMX Adapter**       **Part #: DIGIRJ45DMXADP**

- Connects to a network cable that runs from a PxLNet Transmitter port and can be plugged into any DMX controlled product with an XLR-3 socket.

For further pixel products, Transceiver kits and accessories visit AcolyteLED.com.

# VARIOUS

### Online resources

For technical specifications, latest documentation, manuals, product information, support and upgrades, please visit *AcolyteLED.com* or *digidot.eu.*

### Remarks

We've taken great care in writing this manual. However, if you encounter any discrepancies or something isn't clear, please contact us. This manual explains specific instructions based on firmware and interface versions mentioned in the 'Manual version' section.

### Terminology

| | |
|---|---|
| SPI | Serial Peripheral Interface: this is an interface bus used to send data between microcontrollers and IC's. |
| IC | Integrated Circuit: this is an electronic component which houses a readymade circuit that is able to perform one specific task. An IC can be placed separately on a PCB or integrated in an LED package to control/drive an LED or a segment/array of LEDs. |
| IC/SPI protocol | A type of control protocol that is used by an IC. |
| Scene | A scene can contain static and dynamic values that control specific channels. |
| Playlist | A playlist can also be referred to as a cue. It consists of multiple scenes that are played in a specific order according to pre-programmed parameters. |
| Action list | A sequence of actions triggered by a single trigger. |
| Universe | Typically, a universe is referred as one DMX control network consisting of 512 control channels, also typically associated with one DMX output. The PxLNet Controller also refers to a universe as one set of 512 control channels that belong to specific Art-Net, sACN or DMX universes. But when we mention more than one universe on one output, for example, we always refer to them as the amount of control channels and not necessarily as DMX universes. |
| I/O configuration | Input/Output configuration determines how and which signals are received by the controller and how the ports of the controllers are configured for sending a specific signal. |
| DMX | Digital MultipleX is a universal lighting control protocol which is standardized by USITT and ESTA/Plasa. |
| RDM | Is the implementation of Remote Device Management based on ANSI E1.20 |
| Art-Net protocol | Is a UDP protocol that allows multiple DMX universes to be sent over an ethernet network and was standardized by Artistic License Holdings Ltd. |
| sACN protocol | Similar to Art-Net, sACN protocol is a UDP protocol that allows multiple DMX universes to be sent over an ethernet network and is standardized by the ANSI Standard E1.17-2006. |

# COMPLIANCES & EU DECLARATION OF CONFORMITY

This product was designed and produced by DiGidot Technologies B.V., Amsterdam, The Netherlands.

Country Of Origin is: The Netherlands. Official Certificates of Origin can be issued upon request.

Hereby, DiGidot Technologies BV declares that the DiGidot C4 controllers comply with and were tested according to essential requirements of all relevant CE directives. Certificate of CE conformity: No. 2016/119-1

cETL US Listed - Intertek 5010008 I.T.E. Conforms to ANSI/ UL 62368-1

Cert. to CAN/CSA C22.2#62368-1

DiGidot Technologies BV is a registered DMX-RDM manufacturer at tsp.esta.org, under ID 00b6h. DiGidot Technologies BV registered Art-Net manufacturer at artisticlicence.com, under ID 0x0fd0.

## WARRANTY

This product is covered by a carry-in manufacturer's warranty of 5 years which covers any design faults, production faults and component failures. Warranty voids if the product was installed or used incorrectly or not in accordance with this manual, and/or if the product was damaged due to external factors, opened, modified or electrically overloaded. Warranty conditions of DiGidot Technologies B.V. apply. Warranty claims have to be issued by email: support@digidot.eu.

## DISPOSAL AND RECYCLING

This product should not be disposed of with other household waste. When you decide to dispose of this product and/or its battery, obey local environmental and recycling regulations.

## FEEDBACK

Tell us all about your experience with DiGidot! The continuous development of this control platform is only possible thanks to feedback from our users. If you have any suggestions, please contact us by email: info@digidot.eu.

## IMPRINT

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**MANUAL VERSION**

This manual version may predate the firmware version of your PxLNet Controller. Some functions may be different and new features may have been added. Please make sure that you're using the manual that matches your firmware version. This manual corresponds to the PxLNet Controller firmware version listed below this page.