CUETY
MANUAL

Revision History

Revision	Date	Author(s)	Description
1	31.03.2015	ME	Initial version.
8	07.01.2019	BZ	Added revision history. Updated website addresses. Updated showfile and personality file location. Clarified sub-fixtures not being supported in Personalities chapter. Clarified wheel limitation. Added Minimal requirements chapter. Added Kiosc section to appendices. Updated API appendix.
9	22.07.2020	BZ	Updated various images. Corrected and Changed API messages to be easier to understand. Added vManager Tablet version. Added Protocols chapter.

Contents

VISUAL
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CE

Declaration of Conformity

We, manufacturer Visual Productions BV, herby declare under sole responsibility, that the following devices:

LPU-1
LPU-2

Is in conformity with the following EC Directives, including all amendments:
EMC Directive 2004/108/EG

And the following harmonized standards have been applied:
NEN-EN-IEC 61000-6-1:2007
NEN-EN-IEC 61000-6-3:2007

Full name and identification of the person responsible for product quality and accordance with standards on behalf of the manufacturer

Date:
December 12th, 2014

Place:
Haarlem, The Netherlands

ing. Maarten Engels
Managing Director
Visual Productions BV

Chapter 1

Introduction

Thank you for choosing the Cuety lighting controller. This manual will discuss setting up the hardware and software as well as programming your light show.

1.1 System

The Cuety system consists of the LPU hardware and the Cuety App. This App is available on iOS and Android, as well as Windows, macOS and Ubuntu Linux. In order for the LPU and the App to communicate you need to provide a Wi-Fi access point yourself. You can expand the system by also running the Remote App on your phone. See figure 1.1.
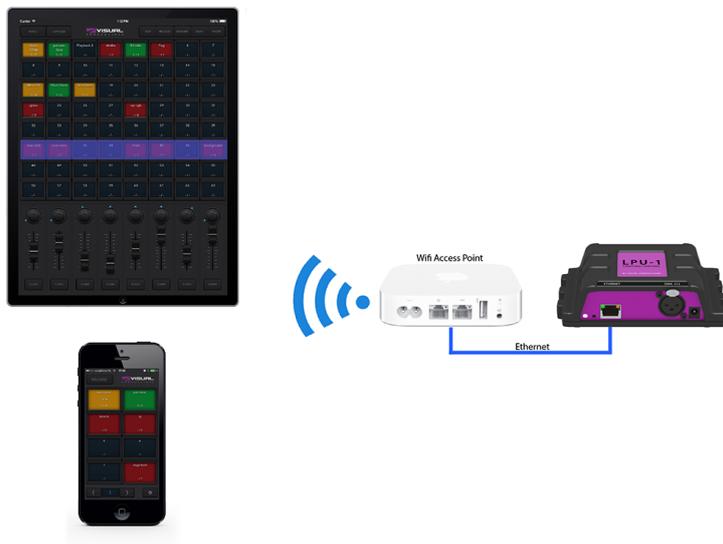
Figure 1.1: System

1.2   Hardware

The LPU hardware device is the brain of your Cuety system. This box takes care of all the calculation of DMX levels, cue timing and FX engine. Therefore, all the information about the patch and cues are stored in this device. In a way, the Apps are just 'user interface'. This means that when the communication between the LPU and the App is interrupted, perhaps because of a Wi-Fi problem, then your show will continue to run.

This also means that when you use the LPU for lighting in a permanent installation then you only need to connect the (Remote) App when you want to change to a different cue. When not connected to an App, the LPU will just continue to run the currently active cues.

1.3   Saving data to memory

This manual will describe how to configure the LPU and program playbacks, cues, etc. The Cuety App is used for editing these kinds of elements. When changes are made, these changes are directly stored in the RAM memory of the LPU and the programming will directly influence the behaviour of the unit. RAM memory is, however, volatile and its content will be lost through a power cycle. For this reason the LPU will copy any changes in the RAM memory to its onboard flash memory. Flash memory retains its data even when not powered. The LPU will load all its data back from the flash memory upon startup.

This memory copy process is conducted automatically by the LPU and should not be of any concern of the user. One point of consideration is, however, that after making a change the unit should be given time to perform the copy to flash. As a rule of thumb, do not disconnect the power from the device within 30 seconds from making a programming change.

1.4   LPU-1 vs LPU-2

The LPU is available in two versions, the LPU-1 and the LPU-2. The difference between the two units is that the LPU-2 has additional options to connect to external systems. Only the LPU-2 has support for OSC, TCP, UDP and HTTP protocols, making it very suitable to be integrated in permanent systems. Appendix A discusses the LPU-2's connectivity in detail.

	LPU-1	LPU-2
Market	Entertainment	Installation
DMX Channels	512	512
Fixtures	64	64
Sub-fixtures	-	-
Playbacks	64	64
Cues per Playback	48	48
FX Generator	yes	yes
Personality Files	3500+	3500+
Art-Net	yes	yes
sACN	yes	yes
OSC	-	yes
UDP	-	yes
TCP	-	yes
HTTP	-	yes
Web-interface	-	yes

The LPU-2 web-interface is read-only. It is useful for checking the device's status and monitoring incoming and outgoing network messages. The web-interface does not allow for modifying the LPU-2.

1.5   Apps

The main App is the Cuety App, designed for tablets. This App allows you to create a patch (the list of fixtures you are controlling), program cues and FX and operate the playbacks like a live lighting console.

Figure 1.2: Cuety and Cuety Remote Apps

In some situations you might not need the ability to modify all the details of your light show; sometimes you just want a simple way of choosing between the pre-programmed cues. In this case you can use the Remote App, designed for phones.

The Remote App is also useful to give to other users of your lighting that have less privileges; the Remote App does not enable the user to make any changes to the patch or cues.
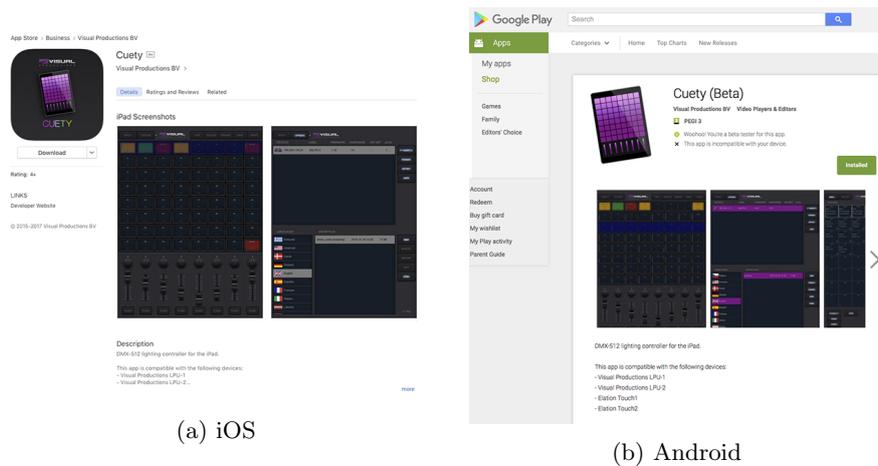
(a) iOS

(b) Android

Figure 1.3: App stores

Both Apps are available for iOS and Android and can be obtained via the Apple App Store and Google Play store. See figure 1.3.
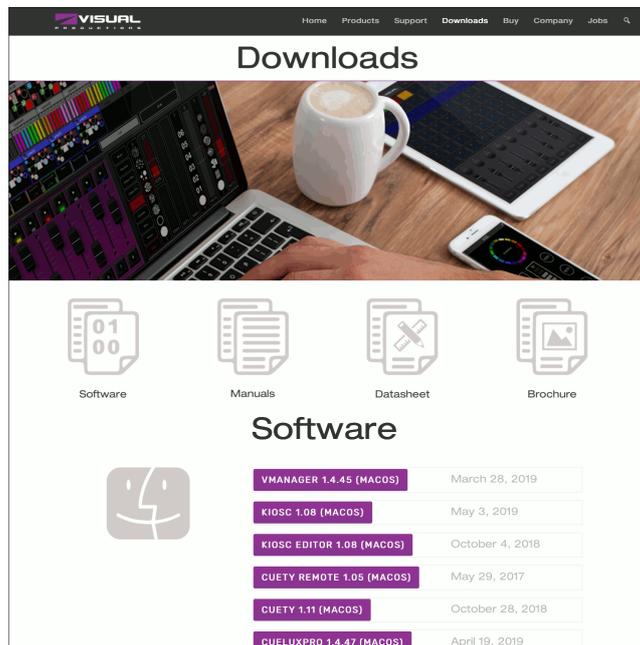
Figure 1.4: Download page

The Cuety and Cuety Remote software is also available on desktop operating systems Windows, macOS and Ubuntu Linux. These releases can be downloaded from `http://www.visualproductions.nl/downloads/` (figure 1.4). Please bear in mind that the Cuety app is designed for a tablet; the portrait view requires a screen with a minimum of 1080 pixels in height.

1.6   What's in the box?

The LPU packaging contains the following items (see figure 1.5):

- LPU

- Ethernet cable

- Power supply

- 4x international plug

- Info card

Figure 1.5: LPU box contents

1.7 Versions

At the time of writing this manual the Cuety App was at version 1.14, the Cuety Remote App was at version 1.09 and the LPU firmware at version 1.25.

1.8 Further Help

We have prepared you several instruction videos on our YouTube channel (figure 1.6) at `http://youtube.com/c/visualproductionsbvhaarlem`. These tutorials address network-setup, programming cues, importing personality files, upgrading firmware, etc.

Figure 1.6: YouTube channel

If you have further questions then please consult the online forum at `http://forum.visualproductions.nl/forum/` for more technical support. See figure 1.7.
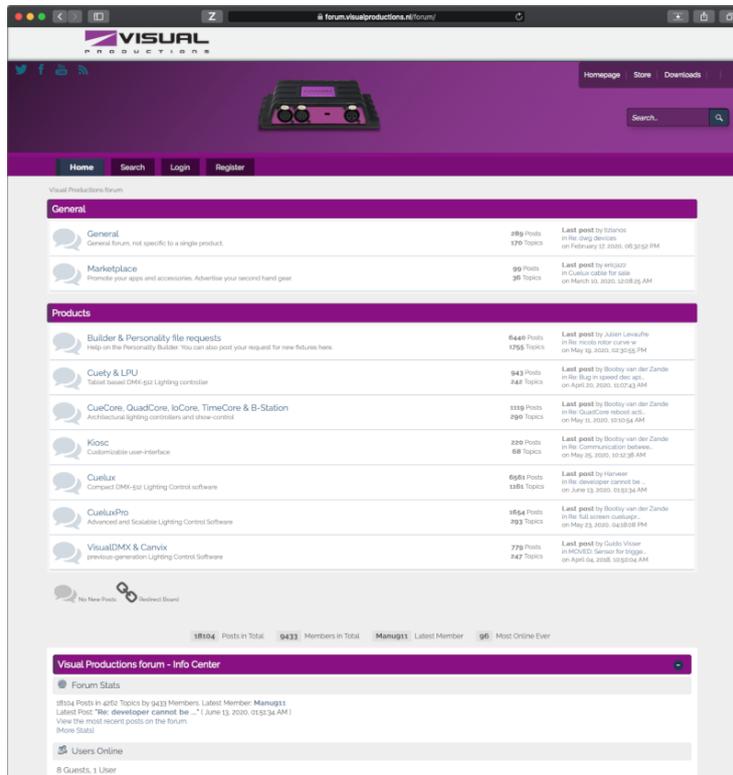
Figure 1.7: Forum

Chapter 2

Protocols

The LPU-1 and LPU-2 support the output of DMX via the 3-pole XLR connector on the device. Art-Net and sACN output can also be enabled to transmit the DMX data over the network. The following chapter will explain what these three protocols are. The LPU-1 and LPU-2 support 1 universe, that can be output simultaneously via DMX, ArtNet and sACN. It is important to note that only output is supported.

2.1   DMX-512

DMX-512 is the standard communication protocol for stage lighting. One DMX network contains 512 channels which is called a 'universe'. Each lighting fixture connected to this universe will use one or more of these channels. On the lighting fixture itself the DMX address can be set. This address corresponds to the first channel that this fixture will listen.

As shown in figure 2.1 a simple RGB light might use 3 channels. Setting this light to DMX address 1 will mean that the first three channels of the universe control the red, green, and blue values of this light. When adding a second RGB light, it would commonly be set to the next free address. In this case, that would be address 4. It will then listen to channels 4, 5 and 6 for red, green and blue.
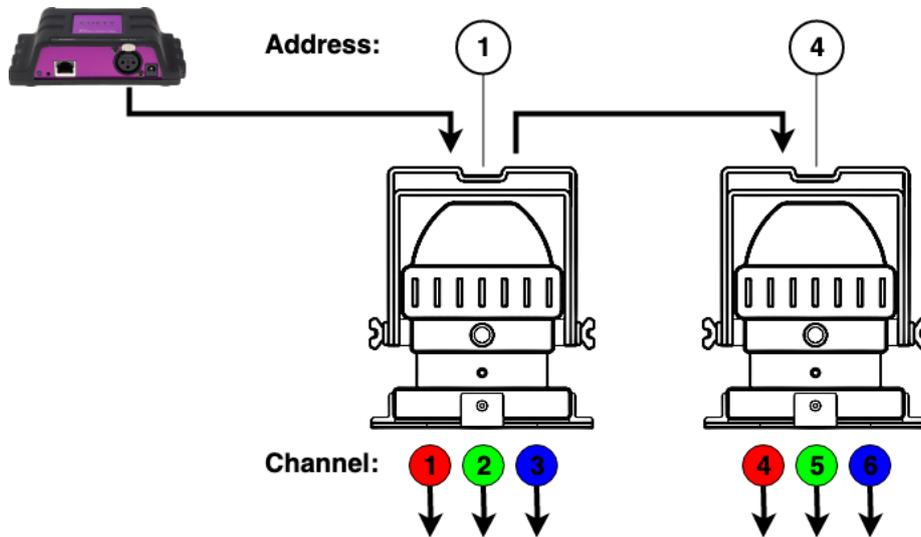
Figure 2.1: DMX example

How many channels a lighting fixture uses will always depend on the manufacturer/model. Often a light can have different operating modes. For example, a simple RGB light can have a 3-channel mode where it uses 3 channels for red, green and blue. But it might have a 4 channel mode for red, green, blue and intensity. Maybe it even has a 5-channel mode, adding a channel for strobe. Information about DMX and operating modes can usually be found in the manual of the lighting fixture.

It is advised to use a shielded twisted pair cable for DMX cabling. The cable should be terminated with an 120 Ohm resistor.

DMX-512 is a very successful protocol with, however, a few limitations. The maximum number of attached devices is limited to 32 and they all have to be connected in bus-topology having one cable running via each device. Furthermore, a DMX-512 cable should not be longer than 300 meters.

2.2 Art-Net

The Art-Net protocol primarily transfers DMX-512 data over Ethernet. The high bandwidth of an Ethernet connection allows Art-Net to transfer up to 256 universes.

The data sent out for Art-Net does put a certain load on the network, therefore it is recommended to disable Art-Net when not in use.

Art-Net output can be enabled or disabled in the Options menu, see section 5.1.

2.3   sACN

The streaming Architecture of Control Networks (sACN) protocol uses a method of transporting DMX-512 information over TCP/IP networks. The protocol is specified in the ANSI E1.31-2009 standard.

The sACN protocol supports multi-cast in order to take efficient use of the network's bandwidth.

sACN output can be enabled or disabled in the Options menu, see section 5.1.

Chapter 3

Quickstart

This chapter offers you a brief step-by-step instructions on how to get your Cuety system up and running. All steps are explained in further detail in the subsequent chapters. In this Quick Start example we are using a simple 3-channel RGB fixture that is set to start-address 1.

1. Connect
   Power up your LPU device with the accompanied PSU. Use the network cable to connect the LPU to your router.

2. DHCP
   We assume here that you have a router that acts as a DHCP server. Make sure your LPU device is also set to DHCP. The LED should be blinking in red. If it's blinking in white (static IP) then please use a pencil to shortly push the reset button.

3. Cuety

We assume you have an iPad that is already connected to your network. Start your Cuety app on your iPad and go to the OPTIONS screen. Select the LPU from the list. There now should be a green LED in the Cuety GUI (right next to the OPTIONS button).
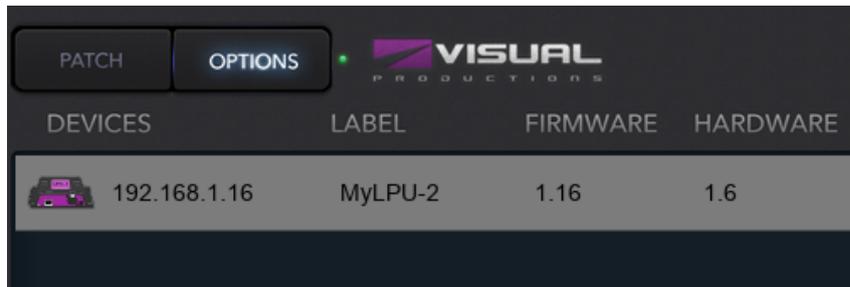
4. Patch

Go to the PATCH screen and select the first fixture cell (top left). Press the PERSONALITY button and go to the 'Generic' manufacturer, where you choose a 'RGB 01x' model.
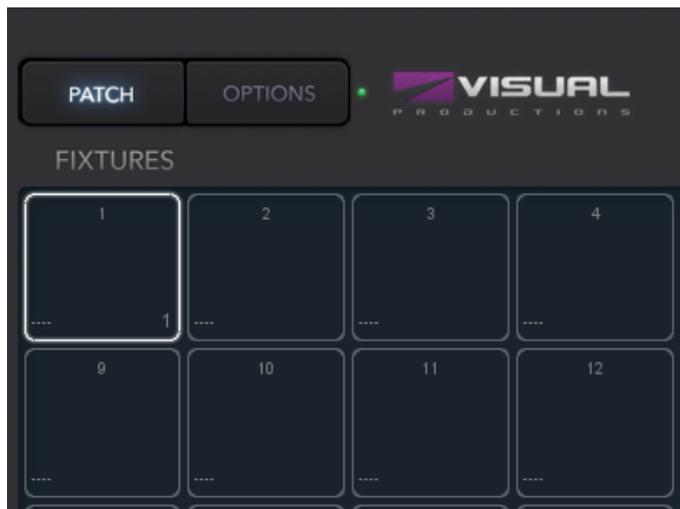
5. Edit

Exit the PATCH screen, you are now back in the main playback screen. Press the EDIT button and then select a playback cell. This opens the EDIT screen. Select the fixture and set some RGB values in the 'programmer' below. Press ADD for >1 second to add a cue to the list and record it immediately. Now set some other RGB values and press ADD again for >1 second to create the second cue.

6. Playback

Press the BACK button to return to the main playback screen. Now you can activate your edited playback by clicking on it. The playback status should indicate a yellow colour and the attached fixture should show our first RGB levels. By clicking the playback button again it will go to the next cue.

You could go back into the EDIT screen to set fade times and change the cues' conditions to make it traverse automatically.
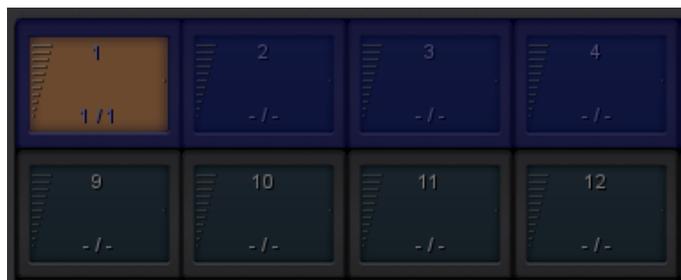
Chapter 4

Setting up

This chapter discusses how to set up the LPU.

4.1 Mounting

The device can be placed desktop or it can be DIN Rail mounted. The device is prepared for DIN Rail mounting by using the 'DIN rail holder TSH 35' from Bopla (Product no. 22035000).
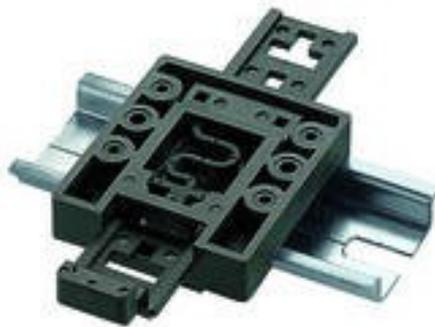
Figure 4.1: Bopla DIN rail adapter

This adapter is - amongst others - available from:

- Farnell / Newark (order code 4189991)
- Conrad (order code 539775 - 89)
- Distrelec (order code 300060)

4.2 Kensington Lock

The device can be secured by using a Kensington style laptop lock.

Figure 4.2: Kensington lock

4.3 Power

The LPU device requires a DC power supply between 9 and 12 Volts with a minimum of 500mA. The 2,1 mm DC is center-positive.

Figure 4.3: Polarity

4.4 Network

Connect the LPU device to a Wi-Fi access point by using the supplied CAT-5 cable. You can either connect it directly to the access point (Figure 4.4a) or via a network switch. The LPU's Ethernet port is auto-sensing so it does not matter whether you use a cross or straight cable.

When running Cuety on a desktop OS (Windows, macOS, Ubuntu) you can also consider making a wired network by omitting the access point (Figure 4.4b).

(a) Wireless

(b) Wired
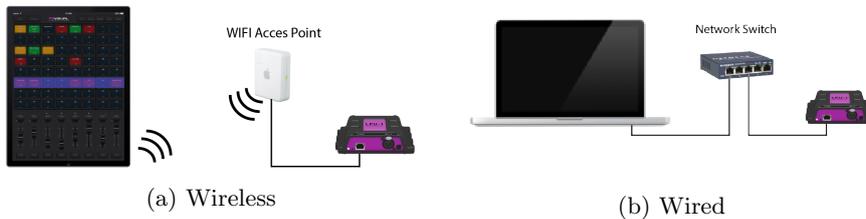
Figure 4.4: Network arrangements

4.4.1 DHCP vs Static IP

Per factory default the LPU is set DHCP. It will be automatically assigned with an IP address by the DHCP server in your network (usually incorporated in your router). When set to DHCP the heartbeat LED on the LPU indicates red.

You switch the LPU to a static IP address by briefly pressing the reset button on the device (Figure 4.5). When set to static, the heartbeat LED on the LPU will indicate white. Static IP addresses are useful when you have no DHCP server in your network, for instance when you make a direct peer-to-peer connection between your LPU and your tablet/computer. It is also useful in case you want to make sure that the IP address of the LPU will never change, e.g. in a permanent installation.

When using static IP addresses you have to make sure that all equipment on your network have unique IP addresses.

You can also change the IP settings from inside the Cuety App.

4.4.2 Reset

By pressing the reset button on the device (Figure 4.5) for 3 seconds or more, you will reconfigure the unit to the factory default IP address and sub-net mask. No other settings will be changed. The default IP address is 192.168.1.10 with the sub-net mask set to 255.255.255.0

Figure 4.5: Reset switch

If you wish to fully erase the patch and playback memory in the LPU then you can perform a 'Factory Defaults' by using the vManager software tool. This tool is discussed on page 39.

Chapter 5

Cuety App

The Cuety App is the main tool to program your light-show and to operate it
live. Please note that you first need to connect to a LPU hardware before you
can create a patch or record cues.

5.1   Options

To connect to your LPU hardware, first open the Options page.
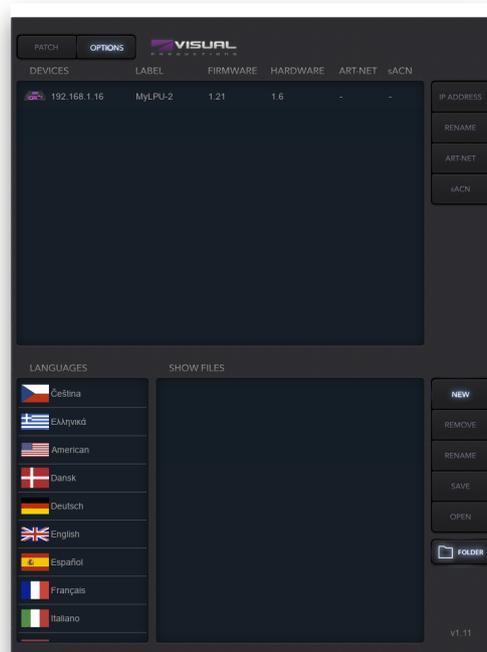
Figure 5.1: Options screen

5.1.1 Devices

Here you can choose your LPU device from the list. Once your LPU is selected it will be possible to change the IP address of the unit. When changing the IP be careful to keep it within the IP range of your tablet. Moving the IP address of your LPU outside this range will result in the device disappearing from the list. In this case press the physical reset button shortly on the LPU to switch back to DHCP (red LED) or press it long to revert back to the default static IP address (white flashing LED) which is 192.168.1.10.

Device Lock

The selection of the device can be locked. The lock prevents accidental deselection of the LPU. Select the device and then press the 'IP Address' button for 10 seconds. A lock icon will appear, see 5.2.
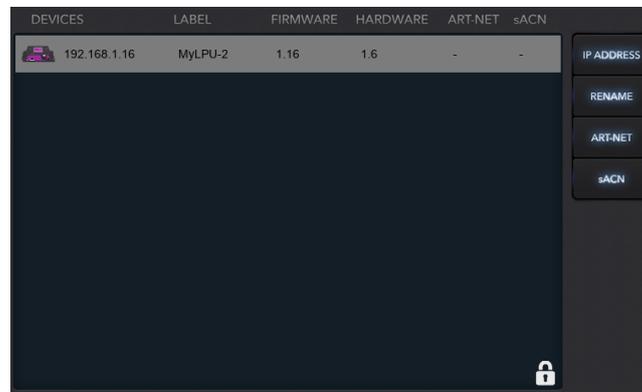
Figure 5.2: Device Lock

Art-Net & sACN

You can also enable the Art-Net and/or sACN protocols. These protocols are not required for normal use of the Cuety system. The protocols will allow you for instance to connect to a 3D visualizer for rendering your lighting rig.

5.1.2 Show files

All the show data is located in the LPU hardware, however, it is possible to create a backup show file on a tablet. This show file can later be read back by the LPU.

Please note that when creating a new show file this file will be empty; you still need to 'save' the file for it to contain the current patch and cue information.

The files will be stored at the following location:

- **Windows:** C:\Users\[username]\Documents\Visual Productions\Programmer\

- **macOS:** Go to the options menu by pressing the OPTIONS button. Then press the folder button to open a file window, showing the appropriate folder.

- **iOS:** Transfer by using iTunes or via Finder

- **Ubuntu linux:** Go to the options menu by pressing the OPTIONS button. Then press the folder button to open a file window, showing the appropriate folder.

- **Android:** Device/Internal storage/Visual Productions/Programmer/App data/

Read-only

A show file can be made read-only as in figure 5.3.
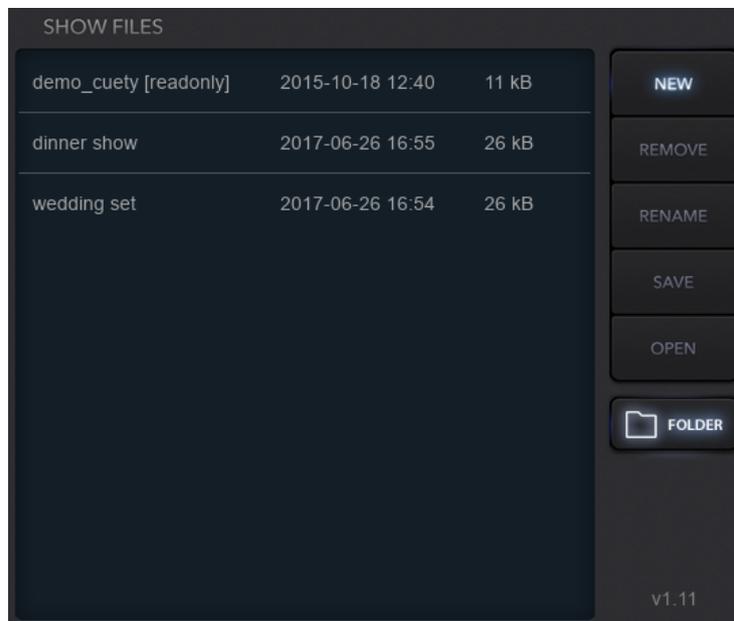
Figure 5.3: Read-only show file

This is done by editing the XML-based show file with a standard text editor. When the `readonly="true"` attribute is added to the `<show>` tag - as seen in figure 5.4 - this file can no longer be removed, renamed or overwritten by the Cuety App.

Figure 5.4: XML show file

Importing from Cuelux

It is possible to import a show file made in Cuelux, another lighting software package made by Visual Productions. After copying the Cuelux show file to the iPad using iTunes it will become visible in the show file listing. The Cuelux show files remain read-only. Opening this file will import the patch and some playback settings. The cues, however, will not be imported as Cuelux saves this information in different style.

5.2 Patch

After successfully connecting to the hardware the logical next step would be to create a patch. A patch is a configuration in which you tell the Cuety which DMX fixtures you are using. Cuety supports a maximum of 64 fixtures. These fixtures can be of many different types and brands.

5.2.1 Adding fixtures

To add fixtures to your patch first select one or more fixture cells. Then press the 'Personality' button. This will popup a dialog (figure 5.5) that lets you traverse through the library of personalities (also known as profiles). Personalities are descriptions of a DMX-512 capable apparatus. Cuety is equipped with a large library of approximately 3.500 personalities. It includes popular and even obscure brands, it ranges from moving lights to special effects.

Figure 5.5: Personality library

A special 'manufacturer' to take into consideration is 'Generic'. This collection contains many typical DMX fixtures with common traits like dimmers and RGB spots. It is likely that some of your DMX equipment will correspond with items from the Generic list. In case you have a DMX fixture that is not represented in the Cuety library then please consult page 37.

5.2.2   Addressing

Each DMX fixture needs to be set to a 'start address'. It is needed to set the addresses on the actual fixtures. Then you need to make sure that the same addresses are set in the patch of Cuety. Please refer to the fixture's documentation on how to set it on the actual fixture. In Cuety, you select one or more fixture cells and press the 'address' button. If you have multiple fixtures selected Cuety will automatically increment the addresses between the consecutive fixtures.

5.2.3 Invert Pan/Tilt

When using moving lights like yokes then depending on the orientation of your fixture you might want to invert the pan and/or tilt movement. This way you can make sure that moving 'left' on your controller in reality also makes the lights to go 'left'. In case you attach your moving head to a vertical truss you might want to use the Swap Pan/Tilt option.

5.2.4 Virtual Dimmer

If the fixture has RGB(AW) colour mixing but no DMX channel for intensity you would need to lower all RGBAW faders identically to reduce the intensity but to keep the colour. This can be quite awkward. You can enable the Virtual Dimmer; this option will give the fixture intensity capability separate from the RGBAW control. The LPU device will calculate the necessary DMX levels internally.

5.2.5 Sub-Fixtures

Cuety does not support sub-fixtures. We use sub-fixtures in our personality files when fixtures have multiple 'parts' like RGB-pixels or dimmer channels. Our other softwares, Cuelux & CueluxPro, take use of that. In Cuety all personality modes with sub-fixtures are ignored. The way how to add a fixture with multiple dimmer channels in Cuety is to add several 'Generic - Dimmer 01x' fixtures. You can control multiple-pixel lights by adding several 'Generic – RGB 01x' fixtures.

5.2.6 Limitation

The Cuety system is designed for entry level lighting control and offers an impressive value for the cost, however, there are some restrictions to the capacity of the system that limit the control of high-end moving lights.

In Cuety, a fixture can have a maximum of 27 channels. One fixed-colour wheel, one gobo wheel and one prism wheel is supported. Any additional wheel is not supported and consequently set at 0.
Alternatively, personality files can be programmed to use any of the two custom faders for controlling additional wheels. E.g. a second gobo wheel.

If your requirement is to control complex moving lights and you are challenged by the restrictions of Cuety, then we recommend choosing the Cuelux control system instead. (For more information, see `http://www.visualproductions.nl/cuelux/`).

5.3 Playback

The Playback view (figure 5.6) presents you with 64 playback buttons. Each Playback can contain one or more cues. Cues are explained in more detail later on.

You can directly access all the playback buttons to start and stop them. To start a playback just hit the playback button one time. To release a playback

(that means to stop it) you can either press the playback button for longer than one second, or first enable the 'Release' button at the top and then choose a playback button. To release all playbacks in the system press the 'Release' button longer than one second.
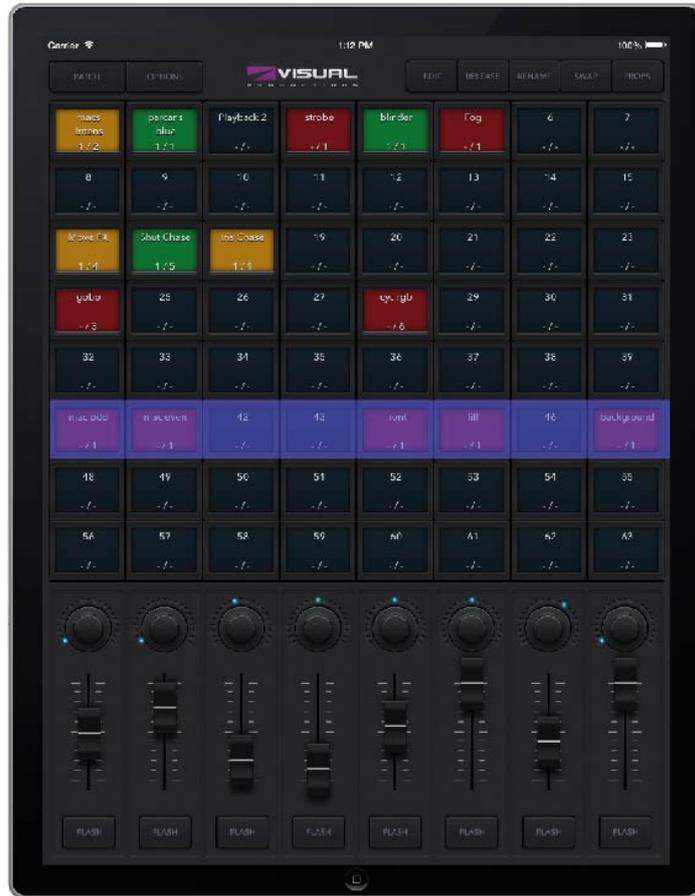
Figure 5.6: Playback screen

To change the intensity and speed of a playback you first need to select the appropriate bank. The blue bar indicates the currently selected bank. You can move the bar around by using three fingers (on a tablet) or by using the mouse wheel or PageUp/PageDown keys (on Windows, macOS & Ubuntu).

5.3.1 Swap

You can move the contents of a playback to another location by enabling the Swap button at the top, then click on the playback you would like to move and then click on the destination playback. The contents of those two playbacks will be swapped.

5.3.2 Properties

Each playback has a few properties. You can change them by enabling the Props button at the top and then choose a playback button.

- By enabling **Background** the playback will start automatically when the LPU device is powered on. Also, the playback will ignore the Release All command (a long press on the 'Release' button). The Background feature is useful for controlling fixtures that should never turn off; e.g. some lights backstage that provide safety to artists coming on stage.

- When you have multiple playbacks on the same bank that have **Exclusive** enabled, then only one of them will be active at the same time. Starting a new exclusive playback will automatically release the other exclusives. Please note that the scope of the Exclusive feature is limited within the bank, i.e. an exclusive playback in one bank will not influence an exclusive playback in another bank. By using Exclusive you can create LTP-like or palette-like behaviour, both features usually found in professional-grade lighting controllers.

- **Go Mode** will change the behaviour of the playback button. By default it is set to Go; the button will send a Go Forward (Go+) command to the playback which then will start, or if it was running already it will progress to the next cue. Pressing the button for a long time will release the playback. The next option is Toggle; in this case pressing the button for the first time will start the playback and pressing it again will release it. The Flash mode will make the playback active while the button is depressed. The Solo mode does the same, however, it will also temporarily blackout all other playbacks.

- **Repeat**. This property determines what the playback does when it finishes the last cue. When set to Loop it will just start over from the beginning. Bounce will make it traverse back to the beginning; it will keep going back and forth. In the Random mode the order of the cues will be random; the playback will continue indefinitely. When set to Off the playback will automatically release when reaching the end of the cues.

5.3.3 Blackout

The blackout function can be enabled by clicking on the 'Visual Productions' logo in the main screen. The purple icon will blink in red to indicate the blackout is active, see figure 5.7.

Figure 5.7: Blackout

5.4 Edit

This page (figure 5.8) allows you to edit the contents of a playback.
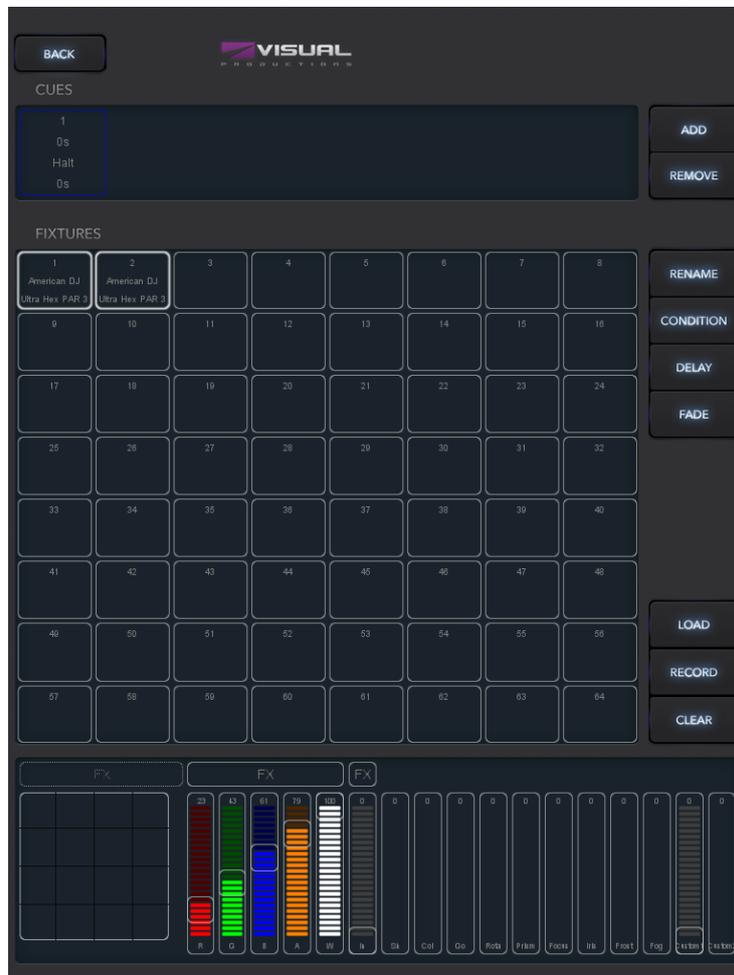
Figure 5.8: Edit screen

5.4.1 Cues

A cue is a step in a lighting sequence. A cue is sometimes also called a scene, it means the same. We, however, prefer to use the word cue. Sometimes you just need a single cue e.g. to create a static lighting 'look'. Sometimes you need multiple cues; perhaps when you created a look for each scene in a theatre play. In this case you step through the cues as each scene starts.

You can also use multiple cues to create a 'chase' for example for a disco party. To build a chase you just make a cue for each step of the chase and tell Cuety to run through the cues automatically.

You can use the 'Add' and 'Remove' buttons change the number of cues inside

this playback. A newly added cue is still empty. Pressing the 'Remove' button for longer than one second will remove all cues. Once you select a cue (it will indicate in blue) you can alter its properties by using the 'Rename', 'Condition', 'Delay' and 'Fade' buttons.

5.4.2 Condition

The Condition property determines whether there is a pause between each cue. When set to 'Halt' the playback will pause after the fading of the cue is finished. It will wait until the user presses the playback button to give a Go command. When receiving the Go command it will start playing the next cue. When set to 'Follow' the playback will automatically continue to the next cue. This condition is useful for creating automatic chases.

5.4.3 Delay

The delay time is only applied when using the Follow condition. In this case, once the cue has finished cross-fading the playback will automatically progress to the next cue. It will then first wait for the time specified by 'Delay' before starting its cross-fading.

5.4.4 Fade

The cue will fade from the current levels to its programmed levels. The time it takes to cross-fade is specified by 'Fade'. When fade is set to 0 then there will be no cross-fade; the values will snap instantly.

5.4.5 Fixtures

This grid enables you to select fixtures. The changes you make in the 'Programmer' area below are applied to the selected fixtures. The fixture cells will indicate in red when one of their attributes are set in this playback.

5.4.6 Programmer

The view at the bottom of the Edit page is called the Programmer. The Programmer contains a lighting 'look' i.e. it can contain levels for various attributes for various fixtures. Basically, you build up your lighting 'look' inside the Programmer and then save it to a cue by using the 'Record' button. This overwrites the contents of the cue by whatever is present in the Programmer. A single cue needs to be selected in order to use the 'Record' button.

When you long-press the 'Add' button it will automatically record the current programmer content in the new cue.

To modify a cue, you first transfer the contents of the cue back to the Programmer by using the 'Load' button. After that the procedure is the same as making a new cue: change the values inside the Programmer and store it in the cue with the 'Record' button.

Use the 'Clear' button to remove values from the Programmer. When you have certain fixtures selected and hit 'Clear' then only the values of those fixtures are reset. When the fixtures have no values set any more or no fixtures are selected when you hit Clear then all values of all fixtures inside the Programmer are cleared. In practice, clicking twice on the Clear button will completely erase the Programmer.

The controls will indicate in red when a certain attribute is set in this playback.

5.4.7 FX

Your playback consists of cues and cues are static lighting 'looks'. To animate your lighting you usually create multiple cues and have the playback chase between them. However, you can use FX to quickly create a dynamic animation in your lighting. For example a smooth circular movement on your moving head or scan would require you to program many steps. With FX you simply used the FX dialog (see figure 5.9) to select the 'Circle' effect for your position attribute, set a few parameter levels and it's done.
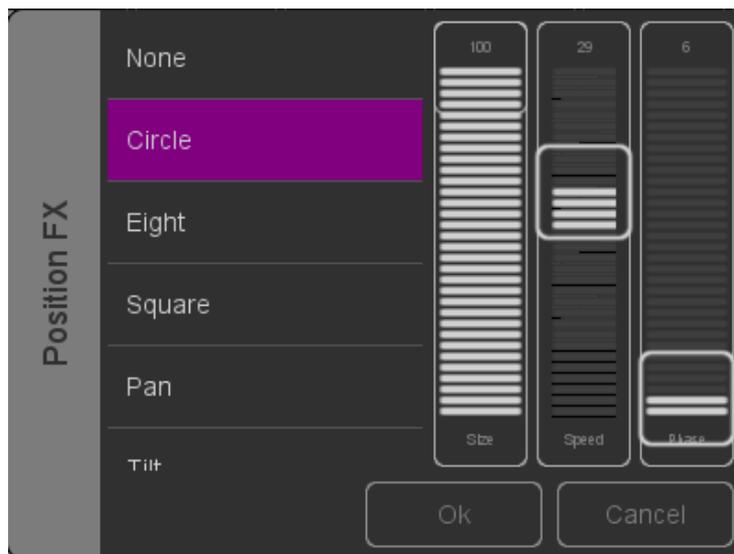
Figure 5.9: FX dialog

There are also FX for RGB colour mixing e.g. a rainbow effect. FX also exists for the intensity attribute. You can use intensity effects for quickly creating some chases by using the 'Phase' parameter.

Chapter 6

Remote App

The Cuety Remote App (figure 6.1) is a small tool for remote controlling the LPU device. The Remote App does not allow you to edit the settings inside the controller. It is assumed that you would have already programmed the contents of the LPU by using the Cuety App.

Figure 6.1: Cuety Remote

The Remote App allows you to trigger playback buttons.
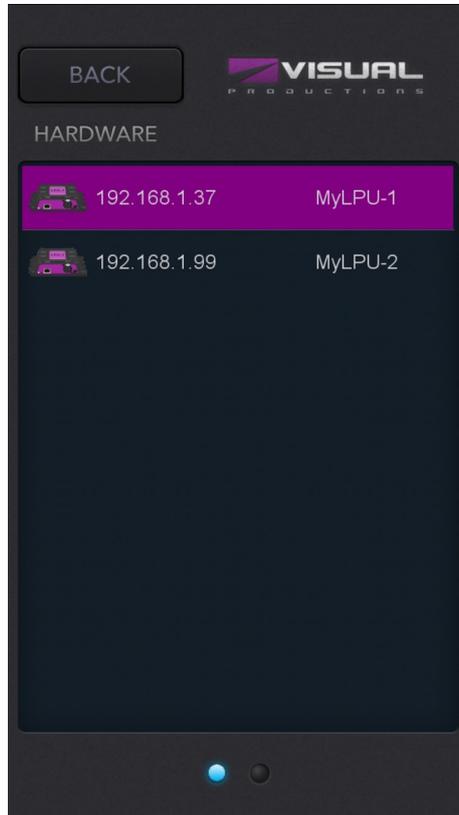
Figure 6.2: Settings

To connect to a LPU device open the settings page (figure 6.2) and choose your device from the list.
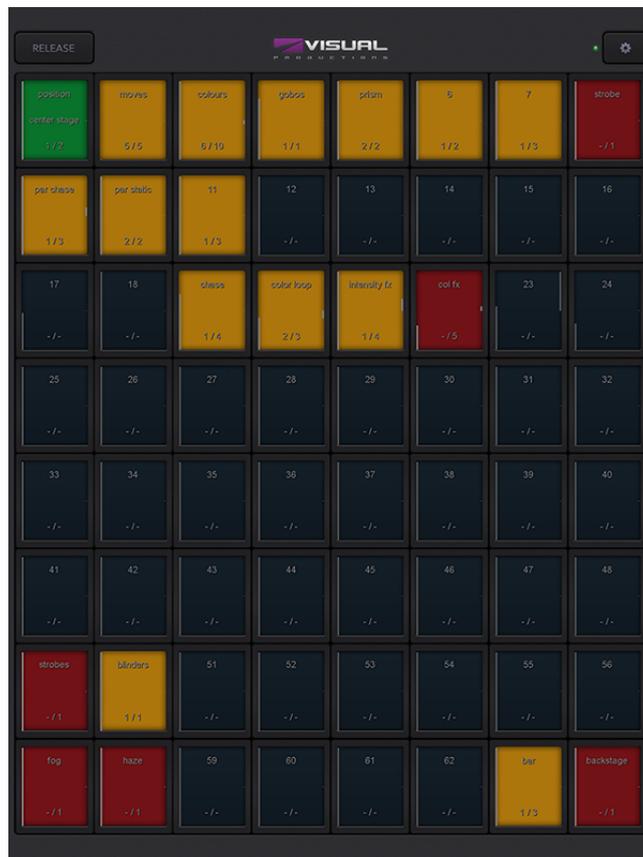
Figure 6.3: Remote App on tablet

The Remote App can also be run on a tablet, see figure 6.3.

6.1 Cuelux

The Remote App can also be used to control the Cuelux lighting control system from Visual Productions. Cuelux is a DMX control system larger and more powerful than Cuety. More information about Cuelux can be found at `http://www.visualproductions.nl/cuelux/`

Chapter 7

Personalities

Cuety has a large library of personality files built in. It is possible, however, that a lighting fixture you wish to control does not yet exist in our library. If you like to add a new personality file to Cuety then you can request via our forum at `http://forum.visualproductions.nl/forum/`. Please make sure you mention that the personality is required for Cuety and include (a link to) the fixture's manual.

Alternatively you can create your own personality file by using the vBuilder software. This tool can be downloaded from our website at `http://www.visualproductions.nl/downloads/`. You will need vBuilder v1.3.88 or higher.
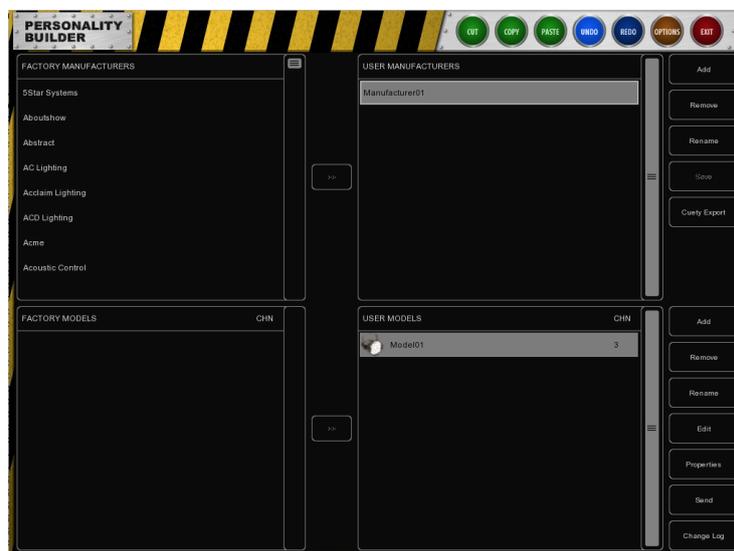
Figure 7.1: vBuilder

In order to create the personality and use it in Cuety you have to make the following steps:

- Create the personality file by adding all the channels needed for your fixture. A detailed explanation can be found in the vBuilder user manual Please note that Cuety does not support sub-fixtures.

- Press the "Cuety Export" button.

- Go to the folder User/Visual Productions/vBuilder.

- Copy the file "user.personality" to your Cuety App:

    -iOS: Transfer by using iTunes or via Finder

    -MacOS: Go to the options menu by pressing the OPTIONS button. Then press the folder button to open a file window, showing the appropriate folder.

    -Linux: Go to the options menu by pressing the OPTIONS button. Then press the folder button to open a file window, showing the appropriate folder.

    -Windows: C:\Users\[username]\Documents\Visual Productions\Programmer\

    -Android: Device/Internal storage/Visual Productions/Programmer/App_data/

- Shut down and restart the Cuety app

Now you can select the personality from the top of the listing in Cuety's patch menu. Custom manufacturers in the patch library are surrounded by square brackets like [this].

Chapter 8

vManager

A special software tool called vManager (figure 8.1) has been developed to manage the various network-based lighting controllers supplied by Visual Productions. This tool is available for desktops on Microsoft Windows, MacOS and Ubuntu Linux and is available via our website, free of charge. It is also available for tablets in the Apple App Store and the Google Play store.

vManager allows you to perform a firmware upgrade on your LPU device. The firmwares are contained in the vManager software. Downloading a new vManager version might give you a new firmware for your LPU device.
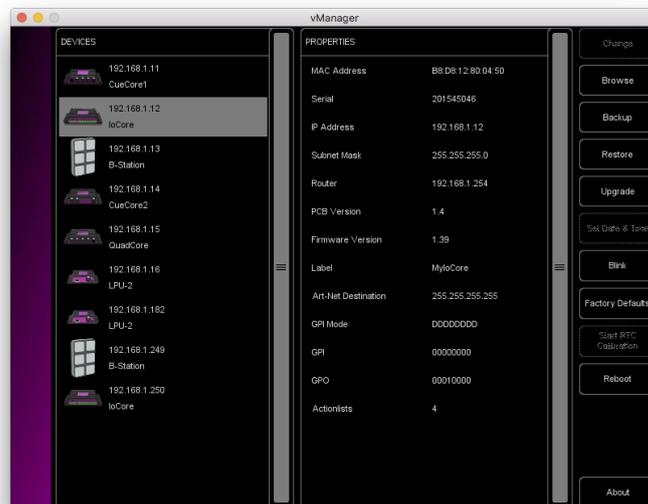
Figure 8.1: vManager

Please note that vManager has more features that are dedicated to other equipment from Visual Productions such as the CueCore and IoCore. Some buttons

will be disabled while working with a LPU device because they do not apply to this piece of hardware.

8.1 Blink

You can set the device's LED to blink fast for identifying a particular unit amongst multiple devices. The blinking is enabled by double-clicking on a device in the 'Devices' list or by selecting a device and then clicking the 'Blink' button.

8.2 Upgrade Firmware

To upgrade the firmware, first select the device and press the Upgrade Firmware button. The dialogue in figure 8.2 allows for selecting from the list of firmware versions available.

Figure 8.2: Firmware upgrade

Warning: Make sure the power to the device is not interrupted during the upgrade process.

8.3 Factory Defaults

The memory containing all user data like patch and playbacks is completely erased and all settings are reverted to their defaults by pressing the 'Factory Defaults' button. This action does not affect the device's IP settings.

Chapter 9

Minimum Requirements

This chapter discusses the minimum system requirements for running Cuety.

9.1 Mobile devices

For Cuety the minimum screen size is 7 inch, with a resolution of at least 768x1024. Alternatively, Cuety Remote can be used for devices that don't fit the minimum requirements of Cuety.

Current OS requirements as of Cuety version 1.14

Operating System	Minimum
iOS	13
Android	7

9.2 Desktop computers

Although Cuety is designed for tablets, there are versions available that run on Windows, macOS and Ubuntu Linux. These programs are fully functional and can be used to program and operate the LPU-1 and LPU-2. Please note that the Cuety program is designed for a tablet screen resolution in portrait mode. The desktop monitor requires a minimum of 1080 pixels in height.

Current OS requirements as of Cuety version 1.14

Operating System	Minimum
Windows	10
macOS	10.14
Ubuntu	18.04

Appendices

Appendix A

API

The following functionality is only supported by the LPU-2, not by the LPU-1.
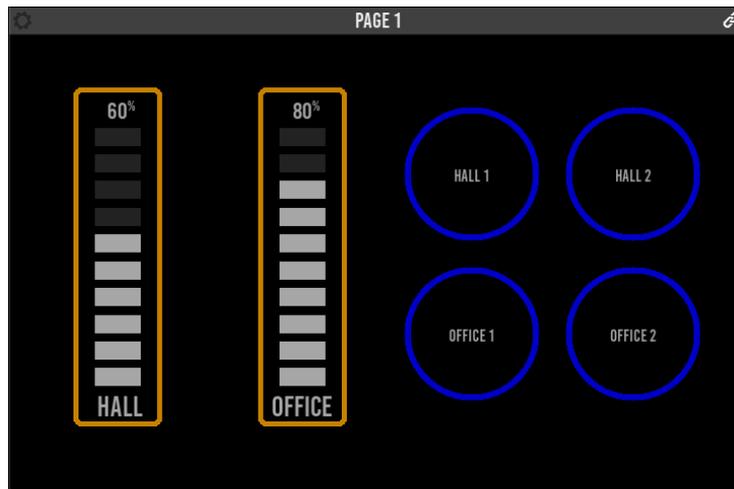
Figure A.1: Kiosc

A.1 Kiosc

The LPU-2 can be controlled through the OSC and UDP protocols. There are various apps available for this purpose. We recommend using Visual Productions' Kiosc.

Kiosc is available on desktop and mobile operating systems. You can download Kiosc for Windows, MacOS, Ubuntu Linux, iOS and Android via the corresponding App stores.

See `http://www.visualproductions.nl/kiosc/` for more information about Kiosc.

A.2 OSC

OSC (Open Sound Control) is a protocol for communicating between computers, software and various multi-media type devices. OSC uses the network to send and receive messages, it can contain MIDI and custom information.

The LPU-2 uses port 8000 for receiving the OSC messages.

OSC is also integrated in the CueCore, IoCore and B-Station from Visual Productions. It is the preferred way of connecting equipment like the B-Station to a LPU-2.

The functionality within the LPU-2 can controlled by using the following OSC messages:

Description	URI	Parameter Type	Parameter Range
Set playback intensity	/pb<playback index>/in	float	$0.0 \rightarrow 1.0$
Get playback intensity	/pb<playback index>/in	bool	false / true
Increment playback intensity	/pb<playback index>/in++	float	$-1.0 \rightarrow 1.0$
Decrement playback intensity	/pb<playback index>/in- -	float	$-1.0 \rightarrow 1.0$
Set playback speed	/pb<playback index>/sp	float	$-1.0 \rightarrow 1.0$
Get playback speed	/pb<playback index>/sp	bool	false / true
Increment playback speed	/pb<playback index>/sp++	float	$-1.0 \rightarrow 1.0$
Decrement playback speed	/pb<playback index>/sp- -	float	$-1.0 \rightarrow 1.0$
Control playback button[1]	/pb<playback index>/bu	bool	false / true
Control playback flash	/pb<playback index>/fl	bool	false / true
Release playback	/pb<playback index>/re	-	-
Playback go forward	/pb<playback index>/go+	-	-
Playback go back	/pb<playback index>/go -	-	-
Playback jump	/pb<playback index>/ju	int	$1 \rightarrow 48$
Set all intensity	/pbxx/int	float	$0.0 \rightarrow 1.0$
Set all speed	/pbxx/spd	float	$-1.0 \rightarrow 1.0$
Release all playbacks	/pbxx/rel	-	-
Hello	/hello	-	-
Set blackout	/blackout	bool	false / true

[1]This command mimmics the button in the Cuety interface. It can be short-pressed for Go+ and long-pressed for Release. It expects a 1 first, and then 0. The time between these commands determine wheter it is a long-press or a short-press.

A.2.1 OSC Feedback

The following commands are used for feedback. For more information about feedback send by the LPU-2, see A.5 "Receiving API Feedback"

Description	URI	Parameter Type	Parameter Range
Playback intensity	/pb<playback index>/in	float	$0.0 \rightarrow 1.0$
Playback speed	/pb<playback index>/sp	float	$0.0 \rightarrow 1.0$
Playback button	/pb<playback index>/bu	bool	false / true
Playback active	/pb<playback index>/ac	bool	false / true
Hello API	/hello	-	-
Blackout	/blackout	bool	false / true

A.3 TCP & UDP

TCP (Transmission Control Protocol) is a protocol for sending messages across an Ethernet network. TCP provides reliable, ordered and error-checked delivery of messages between programs running on computers connected to a local area network, intranet or the public Internet.

UDP (User Datagram Protocol) is a simple protocol for sending message across the network. It does not provide any error checking. Although UDP is a bit faster than TCP, it is less secure.

Typically either TCP or UDP is supported by various media devices like video projectors and show controllers. The LPU-2 uses port 7000 for receiving the TCP and UDP messages.

The functionality within the LPU-2 can controlled by using the following ASCII strings (human readable text) messages:

Description	String	Parameter	Range	Example
Set playback intensity	pb<playback index>/in	int	$0 \rightarrow 100$	pb01/in=55
Get playback intensity	pb<playback index>/in	-	-	pb00/in
Increment playback intensity	pb<playback index>/in=++	int	$-100 \rightarrow 100$	pb01/in=++10
Decrement playback intensity	pb<playback index>/in=- -	int	$-100 \rightarrow 100$	pb01/in=−10
Set playback speed	pb<playback index>/sp	int	$-100 \rightarrow 100$	pb33/sp=-20
Get playback speed	pb<playback index>/sp	-	-	pb00/sp
Increment playback speed	pb<playback index>/sp=++	int	$-100 \rightarrow 100$	pb33/sp=++10
Decrement playback speed	pb<playback index>/sp=- -	int	$-100 \rightarrow 100$	pb33/sp=−10
Control playback button[1]	pb<playback index>/bu	int	0 / 1	pb59/bu=1
Control playback flash	pb<playback index>/fl	int	0 / 1	pb64/fl
Get active cue	pb<playback index>/cue	-	-	pb01/cue
Release playback	pb<playback index>/re	-	-	pb10/re
Playback go forward	pb<playback index>/go+	-	-	pb21/go+
Playback go back	pb<playback index>/go-	-	-	pb21/go-
Playback jump	pb<playback index>/ju	int	$1 \rightarrow 48$	pb45/ju=17
Set all intensity	pbxx/int	float	$0.0 \rightarrow 1.0$	pbxx/int=0.5
Get all intensity	pbxx/int	-	-	pbxx/int
Set all speed	pbxx/spd	float	$-1.0 \rightarrow 1.0$	pbxx/spd=0.5
Get all speed	pbxx/spd	-	-	pbxx/spd
Get all active Cues	pbxx/cue	-	-	pbxx/cue
Get all playback status	pbxx/ac	-	-	pbxx/ac
Release all playbacks	release	-	-	release
Hello API	hello	-	-	hello
Set blackout	blackout	int	0 / 1	blackout=1

[1]This command mimmics the button in the Cuety interface. It can be short-pressed for Go+ and long-pressed for Release. It expects a =1 first, and then =0. The time between these commands determine wheter it is a long-press or a short-press.

A.3.1 UDP & TCP Feedback

The following commands are used for feedback. For more information about feedback send by the LPU-2, see A.5 "Receiving API Feedback"

Description	String	Parameter	Range	Example
Playback intensity	pb<playback index>/in	int	$0 \to 100$	pb01/in=100
Playback speed	pb<playback index>/sp	int	$0 \to 100$	pb01/sp=10
Playback button	pb<playback index>/bu	int	$0 \to 1$	pb01/bu=1
Playback active	pb<playback index>/ac	int	$0 \to 1$	pb01/ac=1
Playback cue	pb<playback index>/cue	int	$0 \to 48$	pb01/cue=32
All intensity	pbxx/all/intensity	float Array	$0.0 \to 1.0$	pbxx/all/intensity=[0.25,0.75,0...
All playback speed	pbxx/all/speed	float Array	$0.0 \to 1.0$	pbxx/all/speed=[0.00,0.80,0.40...
All playback active	pbxx/all/ac	int Array	0 / 1	pbxx/all/ac=[1,1,0,1,0,0,0,0...
All active Cues	pbxx/all/cue	int Array	$0 \to 48$	pbxx/all/cue=[1,-,4,-,-,-,1,1...
Hello API	hello	-	-	hello
Blackout	blackout	int	0 / 1	blackout=0

A.4   HTTP

HTTP (Hyper Text Transfer Protocol) is the standard protocol to access web pages. It can also be used to control the LPU-2, using the URLs listed below. You can send your HTTP GET requests to port 80.

Description	URL	Range	Example
Set playback intensity	/ajax/pb<playback index>/int=	0.0 → 1.0	http://192.168.1.10/ajax/pb01/int=0.55
Get playback intensity	/ajax/pb<playback index>/int	-	http://192.168.1.10/ajax/pb01/int
Increment playback intensity	/ajax/pb<playback index>/int=++	0.0 → 1.0	http://192.168.1.10/ajax/pb01/int=++0.05
Decrement playback intensity	/ajax/pb<playback index>/int=- -	0.0 → 1.0	http://192.168.1.10/ajax/pb01/int=–0.05
Set playback speed	/ajax/pb<playback index>/spd=	-1.0 → 1.0	http://192.168.1.10/ajax/pb33/sp=-0.20
Get playback speed	/ajax/pb<playback index>/spd	-	http://192.168.1.10/ajax/pb33/sp
Increment playback speed	/ajax/pb<playback index>/spd=++	0.0 → 1.0	http://192.168.1.10/ajax/pb33/spd=++0.1
Decrement playback speed	/ajax/pb<playback index>/spd=- -	0.0 → 1.0	http://192.168.1.10/ajax/pb33/spd=–0.1
Control playback button[1]	/ajax/pb<playback index>/btn=	-	http://192.168.1.10/ajax/pb59/btn=0
Control playback flash	/ajax/pb<playback index>/fla=	-	http://192.168.1.10/ajax/pb64/fla=1
Release playback	/ajax/pb<playback index>/rel	-	http://192.168.1.10/ajax/pb10/rel
Playback go forward	/ajax/pb<playback index>/go+	-	http://192.168.1.10/ajax/pb21/go+
Playback go back	/ajax/pb<playback index>/go-	-	http://192.168.1.10/ajax/pb21/go-
Playback jump	/ajax/pb<playback index>/jmp=	1 → 48	http://192.168.1.10/ajax/pb45/jmp=17
Set all playback intensity	/ajax/pbxx/int=	0.0 → 1.0	http://192.168.1.10/ajax/pbxx/int=0.6
Get all playback intensity	/ajax/pbxx/int	-	http://192.168.1.10/ajax/pbxx/int
Set all playback speed	/ajax/pbxx/spd=	0.0 → 1.0	http://192.168.1.10/ajax/pbxx/spd=0.2
Get all playback speed	/ajax/pbxx/spd	-	http://192.168.1.10/ajax/pbxx/spd
Get all active cues	/ajax/pbxx/cue	-	http://192.168.1.10/ajax/pbxx/cue
Get all active playback status	/ajax/pbxx/ac	-	http://192.168.1.10/ajax/pbxx/ac
Release all playbacks	/ajax/pbxx/rel	-	http://192.168.1.10/ajax/pbxx/rel
Hello API	/ajax/hello	-	http://192.168.1.10/ajax/hello
Blackout	/ajax/blackout=	0 / 1	http://192.168.1.10/ajax/blackout=1

[1]This command mimmics the button in the Cuety interface. It can be short-pressed for Go+ and long-pressed for Release. It expects a =1 first, and then =0. The time between these commands determine wheter it is a long-press or a short-press.

A.5 Receiving API Feedback

The LPU-2 is capable of sending messages back to the external control system when communicating via OSC or UDP. As soon as the LPU-2 receives a command via OSC or UDP it will store the IP and port of the external system in a list. When a status changes inside the LPU-2 (e.g. a playback gets released) then all 'clients' in this list will receive a message indicating the new status. The LPU-2 can store a maximum of four OSC clients plus four UDP clients. This internal client list will be cleared by a power-cycle.

The 'hello' command can be used to poll the LPU-2. The LPU-2 will respond to a incoming Hello by sending a Hello message back to the client.

Clients can also get the current levels of certain properties. Some properties (e.g. playback intensity) can be polled by sending the command message without a parameter. For example, the following UDP command will get the speed level of playback 9: `pb09/spd` The LPU-2 will now reply with `pb09/spd=-0.5` indicating the speed level is at -50%.

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