B-STATION1 MANUAL

Revision History

Revision	Date	Author(s)	Description
2	02.03.2016	ME	Update.
3	27.11.2017	ME	Added: API appendix added. Replaced VisualTouch info by Kiosc.
4	07.06.2018	ME	Updated vManager chapter to reflect app-store distribution. Moved majority of Kiosc information to a dedicated Kiosc manual. Added API feedback.
5	08.07.2020	ME	Superseded by B-Station2. Added Kiosc Touch to Kiosc chapter.

Contents

VISUAL
PRODUCTIONS

Declaration of Conformity

CE

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

B-Station

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:
April 29th, 2013

Place:
Haarlem, The Netherlands

ing. Maarten Engels
Managing Director
Visual Productions BV

Chapter 1

Introduction

Thank you for choosing the B-Station1. The B-Station1 is a solid-state controller designed for two purposes.

Firstly, for remote-controlling a lighting system like CueCore or CueluxPro. The buttons can be freely assigned to any function in the lighting controller, e.g. select a cue or start/stop a show. Because the B-Station1 uses communication protocols that are open (in the public domain) such as UDP and OSC, it can also be used for controlling third-party equipment like show-controllers, lighting consoles, media servers or audio devices.

Furthermore, the B-Station1 is designed as a standalone lighting control system for small lighting setups like LED or architectural projects. It can control up to 32 individual DMX fixtures and supports 6 cue-lists with each 128 cues. It even features a dynamic FX-generator.

An internal web-server provides the web-interface through which you can program the B-Station1. A modern browser is required to access this web-interface during set-up. A browser or computer is not required for standalone use after the initial set-up.

At the time of writing this manual the B-Station1's firmware was at version 1.33.

The B-Station1 is end-of-life and is not recommended for new designs. It has been superseded by B-Station2.

This manual discusses setting up and programming the unit. Chapter 2 provides background information on the communication protocols used the B-Station1. Chapters 4 and 5 cover how to set up the unit and configure the network connection.

When the B-Station is just used for controlling external equipment then the chapters 6 and 7 can be ignored. Setting up this functionality is done in the 8 chapter discussed on page 26.

Setting up the B-Station1 for stand-alone lighting control will involve the following steps:

Figure 1.1: B-Station1

- Patching fixtures (discussed in chapter 6)
- Creating cues (discussed in chapter 7)
- Assigning buttons to trigger the cues (discussed in chapter 8)

1.1 Features

The feature set of the B-Station1 includes:

- 6 user-assignable push-buttons
- PWM controlled white LEDs
- Ethernet based, supporting protocols like UDP, OSC and Art-Net
- DMX-512 output
- Web-based user-interface for programming
- Standalone control for 6 zones, 32 fixtures and 768 cues
- Standalone FX-generator
- PoE (Power Over Ethernet) Class I
- Compatible with CueCore, QuadCore and IoCore
- Bundled with CueluxPro, vManager and Kiosc software

1.2 What's in the box?

The B-Station1 packaging contains the following items (see figure 1.2):

- Info card

- B-Station1
- 4 label sheets

Figure 1.2: B-Station1 box contents

1.3 Saving data to memory

This manual will describe how to configure the B-Station1 and program cuelists, action, etc. The unit's web-interface is used for editing these kinds of elements. When changes are made, these changes are directly stored in the RAM memory of the B-Station1 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 B-Station1 will copy any changes in the RAM memory to its onboard flash memory. Flash memory retains its data even when not powered. The B-Station1 will load all its data back from the flash memory upon startup.

This memory copy process is conducted automatically by the B-Station1 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 Further Help

If, after reading this manual, you have further questions then please consult the online forum at http://forum.visualproductions.nl for more technical support.

Chapter 2

Protocols

The B-Station1 is fitted with several communication ports and supports various protocols. This chapter describes these protocols and to which extent they are implemented in the B-Station1

2.1 DMX-512

DMX-512 is the standard communication protocol for stage lighting. Its official name is E1.11-2008 USITT DMX512-A. Nowadays the reach of the DMX protocol has extended beyond entertainment lighting and is also used for architectural lighting. Originally one DMX network contained 512 channels which is called a 'universe'. With the growing size and complexity of lighting systems it is now very common for a system to compose of multiple universes, each conveying 512 channels. 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.

The DIN Rail RdmSplitter from Visual Productions (See figure 2.1) helps tackle those inconvenient limitations. The Splitter takes a DMX signal and sends it out again on its 6 DMX output ports for scaling group topology. Each output port is capable of driving 32 more devices. The Splitter can also function as a signal booster as each port supports another 300 meter long connection.

The B-Station1 has one DMX port and is therefor able control 512 channels.

Figure 2.1: Visual Productions' RdmSplitter

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.

The B-Station1 supports sending and receiving of one universe of Art-Net data.

2.3 UDP

User Datagram Protocol (UDP) is a simple protocol for sending messages across the network. It is supported by various media devices like video projectors and Show Controllers. It does not incorporate error checking, therefor it is faster than TCP but less reliable.

There are two ways how to have the B-Station1 respond to incoming UDP messages. The API (see page 61) makes typical B-Station1 functions available through UDP. Furthermore, custom messages can be programmed in the Show Control page (see page 26). This is also the place where to program outgoing UDP messages.

2.4 OSC

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

There are apps available for creating custom-made user interfaces on iOS (iPod, iPhone, iPad) and Android. These tools allow to program fool-proof user-interfaces for controlling the device. E.g. Kiosc from Visual Productions.

There are two ways how to have the B-Station1 respond to incoming OSC messages. Firstly, the API (see page 60) makes typical B-Station1 functions available through OSC. Secondly, custom messages can be programmed in the Show Control page (see page 26).

Chapter 3

Quickstart

This chapter provides step by step tutorials on how to program your B-Station1 for some typical tasks:

- Remote control the playbacks in a CueCore 2
- Standalone control of a RGB fixture

3.1 Remote control the playbacks in CueCore2

This tutorial shows how to use the B-Station1 to remote the CueCore2. Follow the next few steps in order to link the B-Station's buttons to the CueCore2's playbacks.

1. Setup power and network
   Connect the B-Station1, CueCore2 and the computer to a PoE capable network switch.
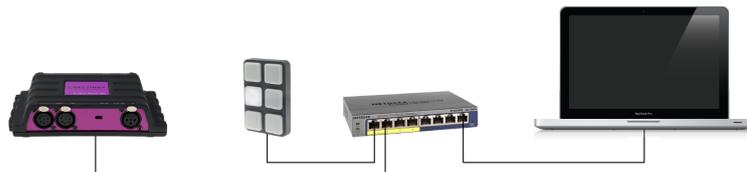
2. Connect to the network
   Configure the equipment to have the following static IP addresses:

	IP	Subnet
Computer	192.168.1.9	255.255.255.0
B-Station1	192.168.1.10	255.255.255.0 (Default setting)
CueCore 2	192.168.1.11	255.255.255.0

3. Prepare the CueCore2
   Make sure the CueCore2 has six cues inside playback 1. Each cues should refer to a track with a certain lighting scene. Also, its OSC 'In port' should be set to 8000. Please refer to the CueCore2's manual for more information.

4. Add template
   Open a browser on the computer and browse to the web-interface of the B-Station1 by typing '192.168.1.10' in the browser's address field. Go to the Show Control page and select the 'CueCore2 and QuadCore' template. Press the 'Add >>' button in the lower left corner of the screen.
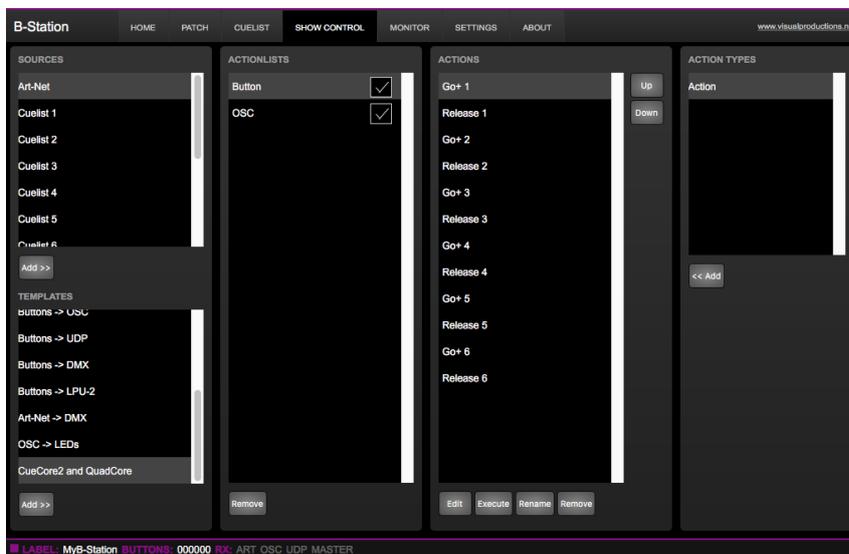
5. Set OSC IP address
   Go to the B-Station1 Settings page and fill in '192.168.1.11:8000' in the 'Out IP 1' field in the OSC settings.
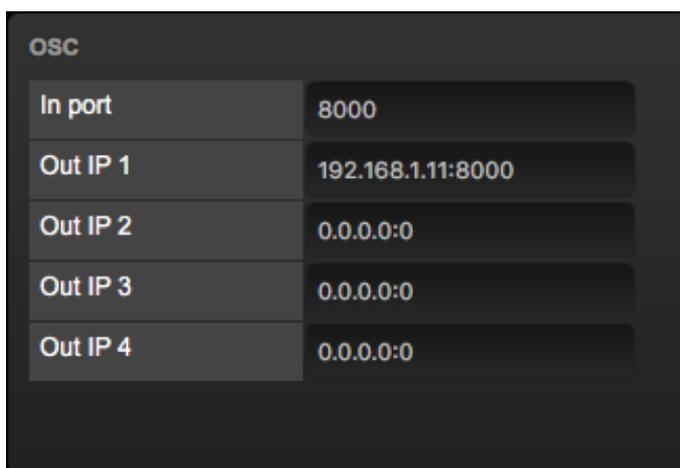
Pressing the buttons on the B-Station1 should now activate cues within the CueCore2.

3.2 Standalone control of a RGB fixture

This example will patch one RGB fixture, create a cuelist with three cues and assign buttons to those cues. Please take the following steps:

1. Setup power and network
   Connect the B-Station1 and the computer to a PoE capable network switch. Connect the fixture to the B-Station1's DMX connector.
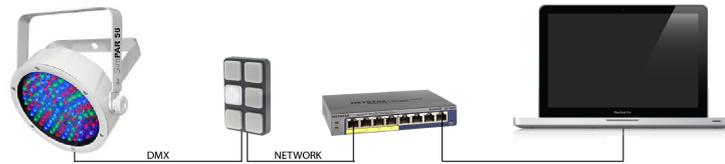
2. Patch
   Use the browser to go to the B-Station1's 'Patch' page. Select the first fixture slot and assign a RGB personality from the table on the right.

3. Prepare cuelist

   Go to the Cuelist page and select the first cuelist. Enable the checkbox on fixture 1. Make sure the cuelist has three cues.
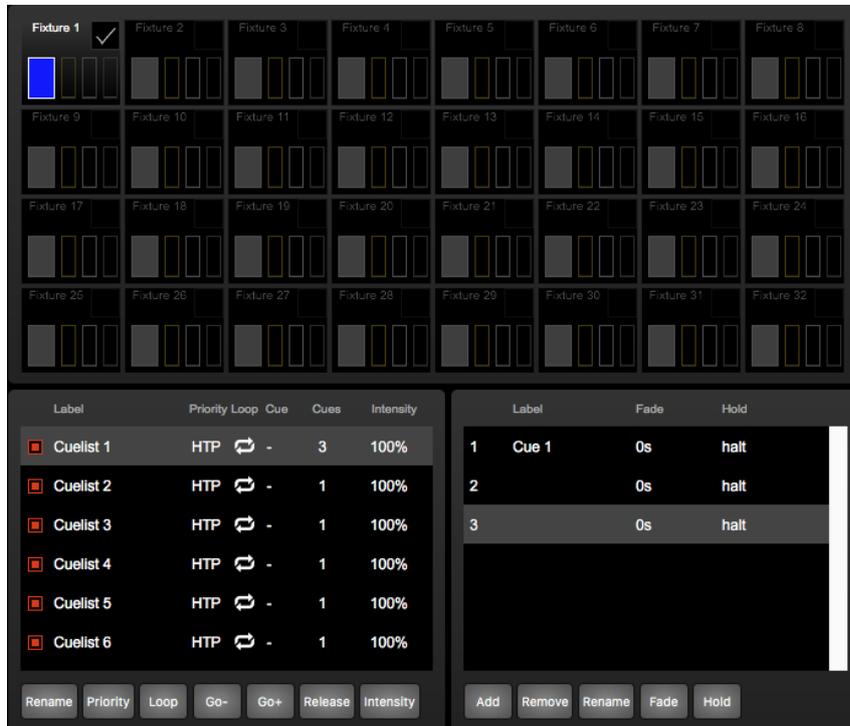
4. Program cues

   Press the Go+ button to activate the cuelist. Select cue 1. Select fixture 1. Bring the intensity and red levels 100% in order to create a red scene. Now also make a green scene in cue 2 and a blue scene in cue 3.
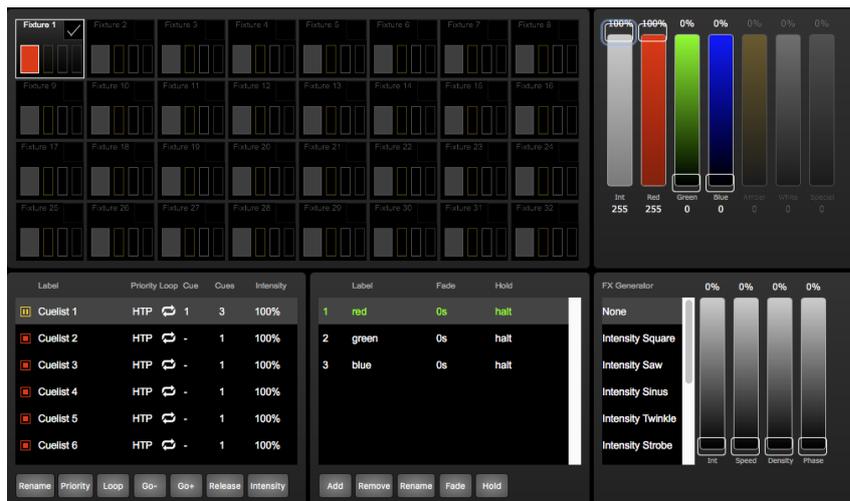
5. Assign buttons
   Go to the 'Show control' page. Add the 'Buttons ->6 Cues' template.
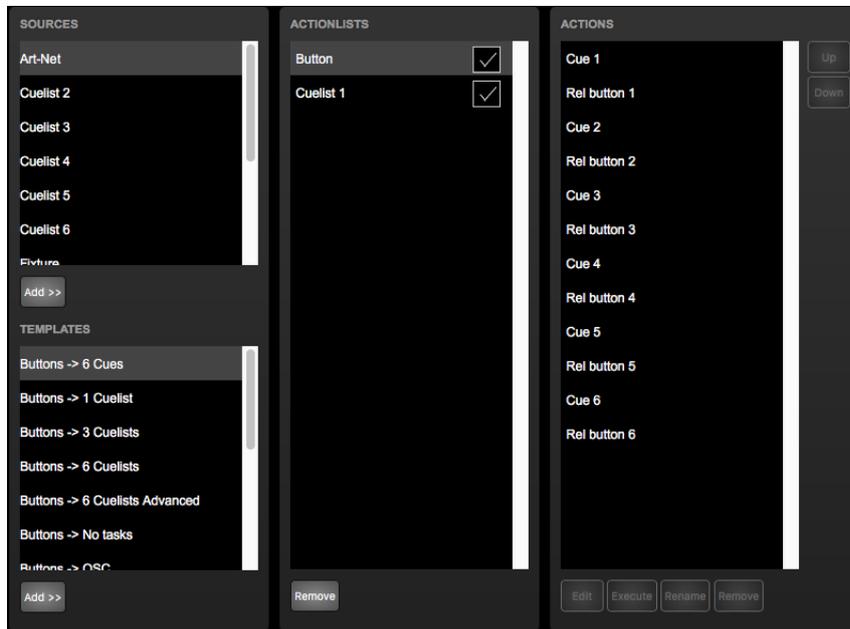
Pressing the buttons 1 till 3 will now activate cues 1 till 3. The button's LEDs will indicate which cue is active.

Chapter 4

Setting up

This chapter discusses how to set up the B-Station1.

4.1 Mounting

The B-Station is wall-mount, it is compatible with European and American gang boxes. If no gang box is available then the B-Station can also be surface mounted. The inside of the B-Station's enclosure suggests where you can create a hole for the cable to enter.

4.2 Power

The B-Station is Power-over-Ethernet (PoE) enabled, it requires PoE Class I.

4.3 Labels

The B-Station is shipped with various adhesive labels that you can apply to the buttons. If you wish to create your own labels then please use the following dimensions.
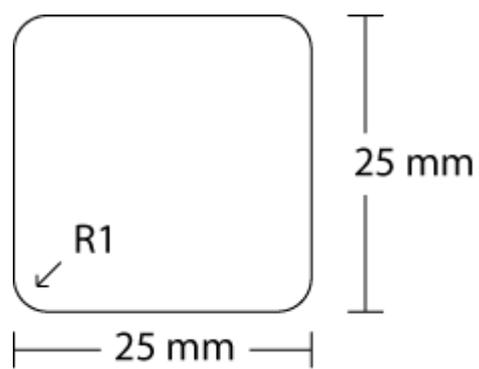
Figure 4.1: Label dimensions

Chapter 5

Network

The B-Station1 is a network capable device. A network connection between
between a computer and the unit is required to configure and program the
B-Station1, however, once the device is programmed then it is not necessary
anymore for the B-Station1 to be connected to an Ethernet network.

There are multiple arrangements possible for connecting the computer and the
B-Station1. They can be connected peer-to-peer, via a network switch or via
Wi-Fi. Figure 5.1 illustrates these different arrangements.
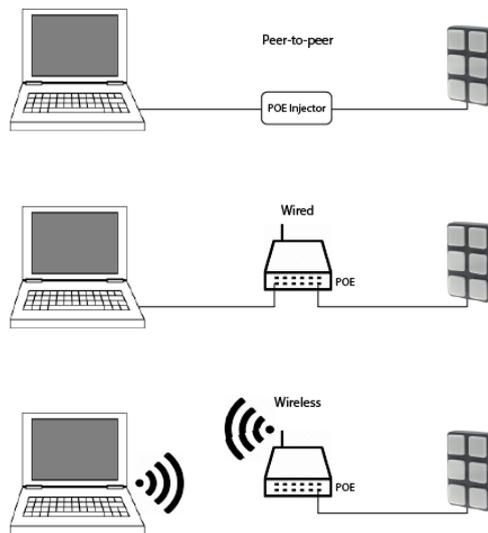
Figure 5.1: Network arrangements

The Ethernet port on the B-Station1 is auto-sensing; it does not matter whether
a cross or straight network-cable is being used.

5.1   IP Address

The B-Station1 only supports static IP addresses. By default, the B-Station1 is set to 192.168.1.10.

There are three ways to change the IP address setting of the B-Station1.

- **vManager** can be used to detect a B-Station1 on the network. Once found, the vManager software (figure **??**) allows for changing the IP address and subnet mask.

- If the IP address is already known then browsing to this address using the computer's browser will show the B-Station1's **web-interface**. The Settings page on this web-interface enables changing the IP address and subnet mask settings.

- By pressing the **reset button** on the device for 3 seconds, it will reconfigure the unit to the factory default IP address and subnet mask. No other settings will be changed. The default IP address is 192.168.1.10 with the subnet mask set to 255.255.255.0.

Figure 5.2: Reset button

5.2   Access via Internet

The B-Station1 can be accessed through the Internet. There are two ways to achieve this: Port-Forwarding and VPN.

- **Port-Forwarding** Is relatively easy to setup in the router. Each router is different so it is advised to consult the router's documentation (sometimes it is revered to as NAT or Port-Redirecting). Please note that port

forwarding is not secure, since anybody could access the B-Station1 this way.

- Accessing via a **Virtual Private Network** (VPN) tunnel requires more setup efforts, also the router needs to support the VPN feature. Once set up, this is a very secure way to communicate with the B-Station1. A VPN is a network technology that creates a secure network connection over a public network such as the Internet or a private network owned by a service provider. Large corporations, educational institutions, and government agencies use VPN technology to enable remote users to securely connect to a private network. For further information about VPN please refer to `http://whatismyipaddress.com/vpn`.

Chapter 6

Patch

The Patch page (see figure 6.1) allows you to setup the fixtures that you will be controlling in the standalone mode.
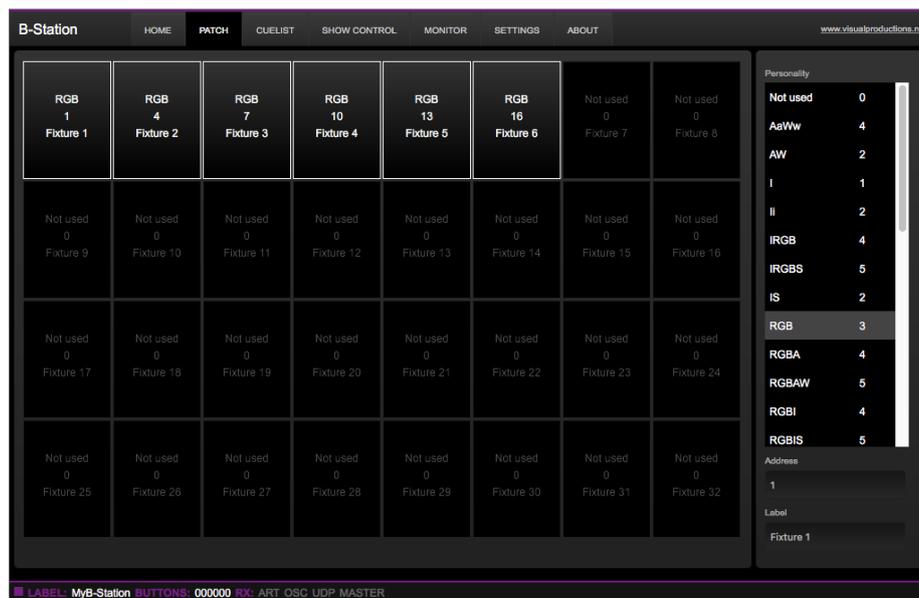
Figure 6.1: Patch page

There are 32 fixture slots available. For each fixture you can set a 'personality' (a profile that matches the fixture's DMX traits). The listed personalities are all LED, conventional or architectural type fixtures; moving lights are not supported by the B-Station. The personalities feature the following parameters:

I	Intensity
R	Red
G	Green
B	Blue
A	Amber
W	White
S	Special

To keep a fixture slot empty, set it to the 'Not used' personality.

6.1   Virtual Dimmer

Personalities with RGB but without Intensity will automatically be given an virtual dimmer. This means that the B-Station1 will act as if the fixture has an intensity channel and allows for RGB and intensity to be programmed separately, however, it will modulate the intensity on the RGB values.

6.2   16-Bit

16-Bit parameters are also supported, e.g. for a 16-bit RGB fixture please select the "RrGgBb" personality.

6.3   Address

DMX starting addresses are set by selecting one or more fixture 'cells' and typing in the value in the "Address" field. In case multiple fixtures are selected then the B-Station will automatically address the fixtures consecutively starting from the address you have provided.

6.4   Label

The fixtures can also be given a label for your own reference, again multiple fixtures can be renamed in which case the B-Station will automatically add a number suffix.

Chapter 7

Cuelist

Cuelists are only needed for standalone operation. After patching the fixtures the next step is to program the cuelists. There are six cuelists and each cuelist can have up to 128 cues. The cuelist web-page (see figure 7.1) shows the content of the selected cue.

In order to see editing changes live on the fixtures connected via DMX it is required for the playback to be activated and playing back the cue that is currently being edited.

Figure 7.1: Cuelist page

7.1 Zones

For each cuelist you can define which fixtures are present in that cuelist. When you have the cuelist selected, you can alter the fixture's checkboxes to include them in the cuelist. This way you can create six different zones: you spread the fixtures over different cuelists. Each cuelist is then capable of independently controlling a group of fixtures.

7.2 Precedence

You can specify the 'precedence' for a cuelist. You can choose between HTP (Highest Takes Precedence) and LTP (Latest Takes Precedence). In the case of HTP, the B-Station will take all the values generated by the cuelists and send the highest value to the fixture. This is done per attribute (e.g. intensity values are compared with other intensity values and RGB values are compared with other RGBs). When two or more cuelists are set to LTP then only one of those cuelists will be used in the value comparison; i.e. the cuelist that has been activated most recently.

7.3 Loop

The 'loop' property can be set for each individual cuelist. This property determines what the cuelist does after finishing the last cue. Does it start over again at the first cue (loop is on) or does it automatically release (loop is off).

7.4 Cue Timing

Each cue has a fade time. Once it has finished fading it will pause the cuelist if the 'hold' value is set to 'halt'. Alternatively, if you specify a time in the 'hold' value then as soon as the cue has finished fading it will hold the cue for this time and then automatically progress to the next cue.

7.5 FX generator

The B-Station is equipped with a FX generator capable of creating sinus, random and RGB-spectrum effects. You can choose within a list of FX algorithms. The output of the algorithm is manipulated by four faders: Intensity, Speed, Density and Phase. The settings of the FX generator are stored inside the cue; so each cue can have different effect.

Chapter 8

Show Control

The B-Station1 can interact with the outside world; it can receive messages and values through various protocols and it can send out many protocols. It is possible to automate the B-Station1 by having it respond automatically to incoming signals. An example of this would be to start a cuelist upon receiving a specific UDP network message. The Show Control page (See figure 8.1) enables this kind of programming to be made.

When using the B-Station1 as a standalone lighting controller then the show control page allows for assigning buttons to the cueslists and cues. To setup the B-Station1 quickly for this purpose it is recommended to add a template. Templates are discussed on page 29.
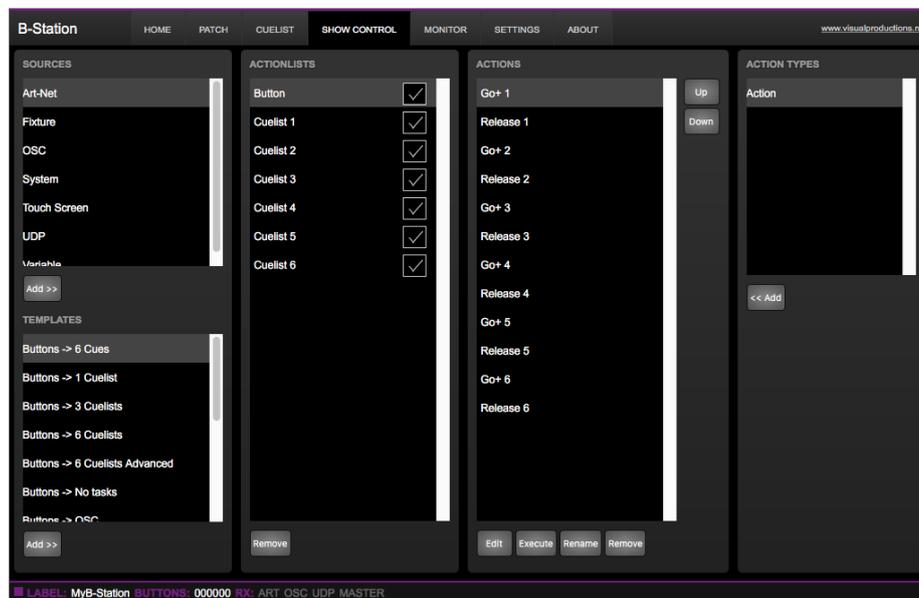
Figure 8.1: Show Control page

The Show Control page presents a system of 'actions'. A signal that the B-Station1 needs to respond to or perhaps convert into some other signal, needs to be expressed in an actions. Before programming actions please consider the Show Control structure in figure 8.2.
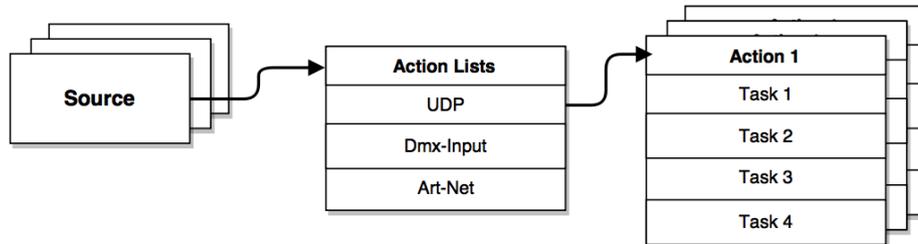
Figure 8.2: Show Control structure

The B-Station1 is capable of listening to various protocols. These available protocols are listed in Sources, however, the B-Station1 can only actively listen to 8 protocols at once. The active protocols are listed in 'Action Lists'. Each action list can contain actions. Within a protocol/source each individual signal requires its own action. For example, when listening to channel 1 and 2 on the incoming DMX, the DMX action list needs two actions; one for each channel.

Inside the action we define the trigger and tasks. The trigger specifies for which signal to filter. In the above DMX example the trigger would be set to 'channel 1' and 'channel 2' respectively. The tasks determine what the B-Station1 will do when this action is triggered. Several tasks can be placed in the action. There are tasks available for a wide range of B-Station1 features and external protocols. Task types are detailed in Appendix B on page 50.

Please consult the API appendix on page 60 before implementing incoming OSC or UDP messages; the API already exposes typical functionality through OSC and UDP and therefor it might not be necessary to implement custom messages.

8.1 Sources and Action Lists

The Sources listing presents all protocols that the B-Station1 is capable of receiving. It also includes internal features that can create events that can be used for triggering actions, such as the push-buttons. These sources are available, however, they will only be actively listened to once moved to the action-list table.

Source	Description
Art-Net	Art-Net DMX data
Button	Button movements
Cuelist 1-6	Events generated by the cuelists
Fixture	Events generated by the fixtures
OSC	OSC network message
System	Events such as 'Power on'
Touch Screen	Triggers from Kiosc. For each Action various controls can be chosen such as buttons and sliders, colour picker etc. The order of the actions will control the arrangement in Kiosc.
UDP	UDP network messages
Variable	The Variable source works in combination with the variable task (For more information about the Variable task please refer to Task Types). The Variable task will set a value of which an enabled action-list type with Variable as Source will use as a trigger. The B-Station1 will keep the values of the 8 variables even after shut down so long as the RTC battery is not empty.
Timer	There are 4 internal timers in the B-Station1. An event will be raised when a timer expires. Timers are set and activated by the Timer tasks.
User List 1-4	These action-lists will never trigger an event, however, they are useful for advanced programming.

Action-lists can be temporarily suspended by disabling their checkbox in the Show Control page. There is also a task available to automate changing the state of this checkbox.

8.2 Actions

Actions are executed when a certain signal is received. This signal is defined by the trigger. A trigger is always relative to the action-list the action belongs to. For example, when the trigger-type is set to 'Channel' then it refers to a single DMX channel if the action is placed inside a 'DMX Input' list and it means a single Art-Net channel if the action resides in an Art-Net action-list.

A trigger is determined by the trigger-type, trigger-value and trigger-flank fields. Although these fields are not applicable for all action-lists and are therefor sometimes omitted in the web GUI. The trigger-type field specifies what kind of signal the action will be triggered by. For example, when making an action in the Art-Net list there is the choice between 'Channel' and 'Receiving' trigger-types. The trigger-value specifies the actual signal value. In the Art-Net example the

trigger-value could be set to 'channel 1' or 'channel 2'.

In some action-lists actions do also need to specify the trigger-flank. The flank further specifies the value that the signal should have before triggering the action. For example, when an action is triggered from a Touch Screen list and it is linked to a button in the Kiosc software, the flank will determine whether to trigger only when the button goes down or only when it goes up. Appendix A provides an overview of the available trigger-types.

An action-list can have up to 48 actions, system-wide there is a maximum of 64 actions.

8.3   Tasks

Tasks are added to an action in order to specify what to do when it gets executed. Up to 8 tasks can be included in an action, systemwide there is a maximum of 128 tasks. The tasks are executed in the order of the list. There is a wide selection of tasks available to choose from, they include altering any of the internal software features like cuelists and LEDs but also sending out messages through any of the supported protocols. The tasks are organised in categories. Once a task is chosen from these categories each task allows for further choice between several 'Features' and 'Functions'. Tasks contain up to two parameters that might be required for its execution.

A task can be tested by selecting it and pressing the 'execute' button in the action-edit dialog. The complete action can also be tested; go to the Show Control page, select the action and press the 'execute' button.

Appendix B provides a detailed overview of the available tasks, features, functions and parameters.

8.4   Templates

The Show Control page presents a list of templates. A template is a set of action-list, actions and task. These templates configure the B-Station1 to perform typical functions; for example convert Art-Net to DMX or control the 6 playbacks through OSC. The templates thus save time; otherwise actions should have been set up manually. They can also function as a guide to soften the learning curve on actions; a lot can be learned from adding a template and then exploring the actions and tasks it created.

Please note that some templates require settings to changed in the settings page; for example the 'Receiving Art-Net' template needs the Art-Net subnet/universe to specified in order to achieve an Art-Net to DMX conversion. Appendix C gives an overview of the available templates.

8.5 Variables

Variables are internal memories that can hold a value; a number in the range of [0,255]. There are 8 variables and they are typically used for advanced show control programming. In the B-Station1, the content of the variable is not stored between power cycles.

Variables can be set by tasks. Variables can be added as sources in order to have actions triggered when a variable changes value.

Chapter 9

Monitors

This page allows the user to inspect the incoming and outgoing data, both DMX-type data (See figure 9.1) as well as control messages (See figure 9.2). Monitoring incoming and outgoing data can help the user troubleshoot during programming.
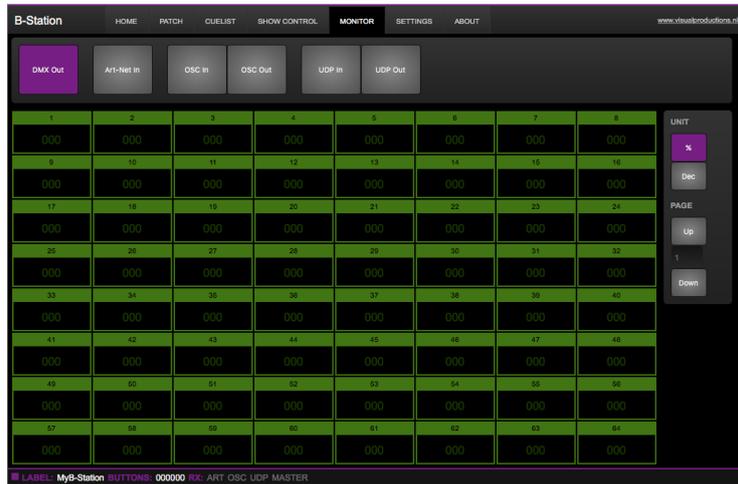
Figure 9.1: DMX Monitor page
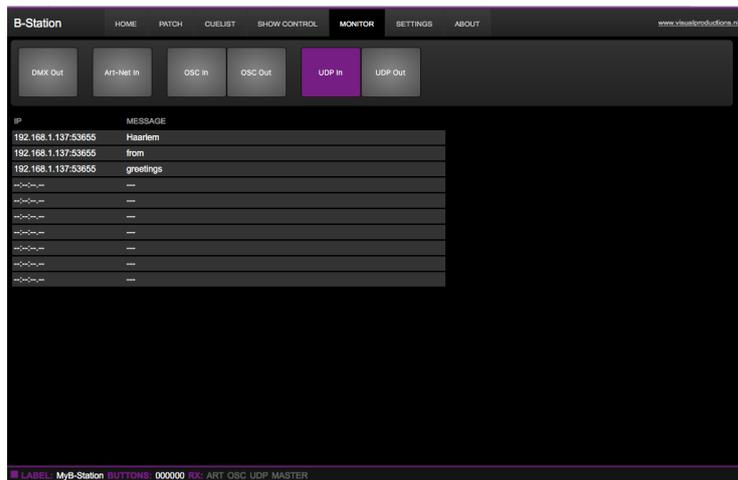
Figure 9.2: UDP Monitor page

Chapter 10

Settings

The B-Station1's settings are organised into sections, see the Settings page figure 10.1. This chapter will discuss each section.
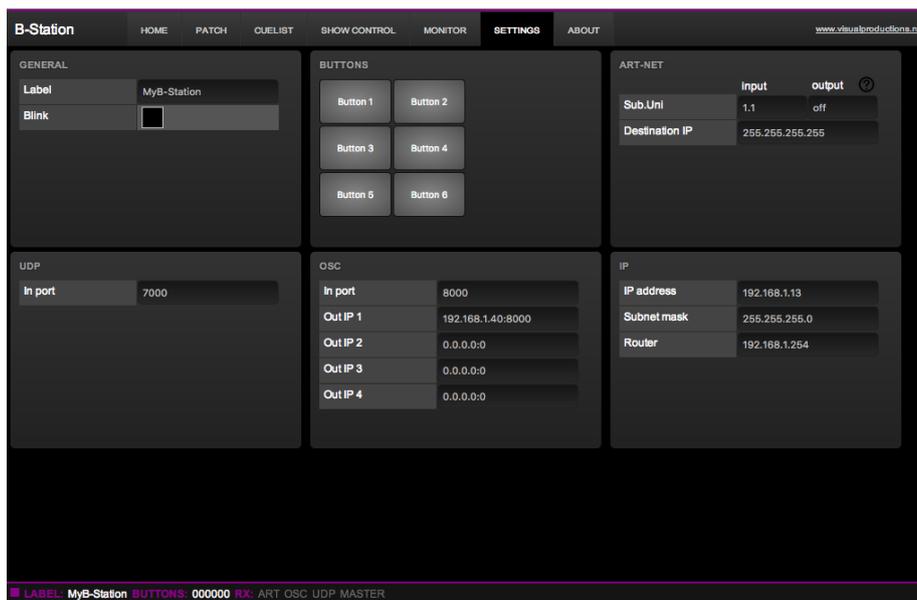
Figure 10.1: Settings page

10.1 General

You can change the B-Station1's label. This label can be used to distinguish the unit in a set-up with multiple devices. By enabling the 'Blink' checkbox the device's LED will blink to help to identify it amongst multiple devices.
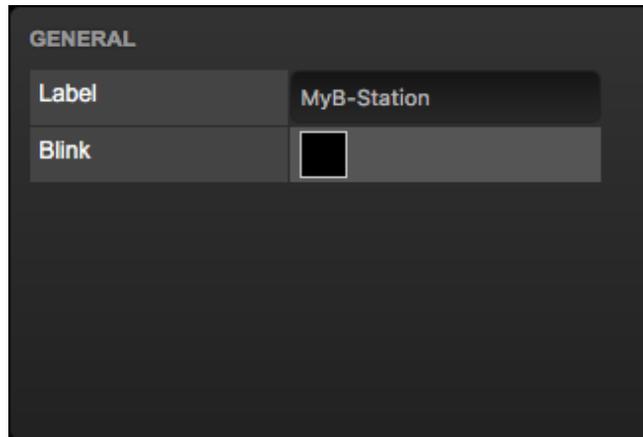
Figure 10.2: General Settings

10.2 IP

The IP fields are for setting up the IP address and subnet mask of the B-Station1. The 'Router' field is only required when Port Forwarding is used.
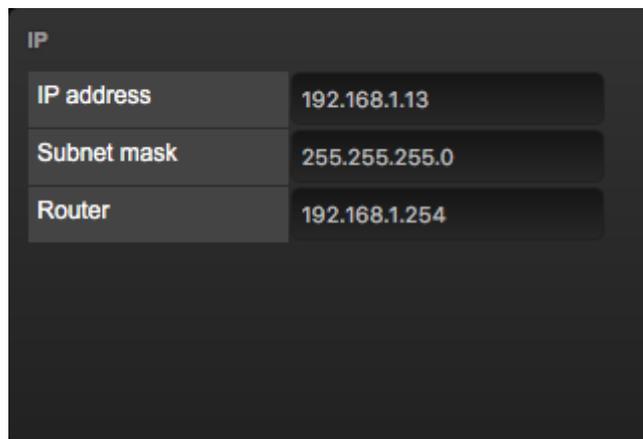
Figure 10.3: IP Settings

10.3 OSC

External equipment sending OSC messages to the B-Station1 need to be aware of the number specified in the 'Port' field. This is the port the B-Station1 listens to for incoming messages.
The B-Station1 will send its outgoing OSC messages to the IP addresses specified in the 'Out IP' fields. Up to four IPs can be specified here. Use the 'ipad-

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Figure 10.4: OSC Settings

dress:port' format in these fields, e.g. "192.168.1.11:9000". If a field should not be used that it can be filled with IP 0.0.0.0:0. It is possible to enter a broadcast IP address like 192.168.1.255 in order to reach more than four recipients.

10.4   UDP

Defines the listening ports for UDP messages. External system intending to send UDP message to the B-Station1 should need to know the unit's IP address and this port number. By default the port is set to 7000.

Figure 10.5: UDP settings

10.5 Art-Net

The B-Station1 supports sending out 1 universe or and receiving 1 universe of
Art-Net. These universes can be mapped to any of the 256 available universes
in the Art-Net protocol. The universe is entered in the 'subnet.universe' format,
i.e. the lowest universe number is written as '0.0' and the highest universe num-
ber is denoted as '15.15'. The outgoing Art-Net transmission can be disabled
by disabling the checkbox.
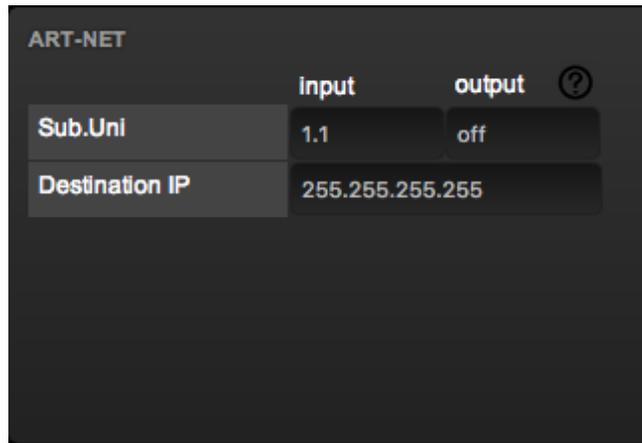
Figure 10.6: Art-Net settings

The vManager software also allows you to change the Art-Net destination IP.
The destination IP determines where the outgoing Art-Net data will be send to.
Typically, this field contains a broadcast address like 2.255.255.255 which will
send the Art-Net data to the 2.x.x.x IP range. Another typical Art-Net broad-
cast address is 10.255.255.255. When using broadcast address 255.255.255.255
then all the devices on the network will receive the Art-Net data.

It is also possible to fill in a unicast address like 192.168.1.11; in this case the
Art-Net data will be send to one IP address only. This keeps the rest of the
network clean of any Art-Net network messages.

Chapter 11

vManager

A free-of-charge software tool called vManager has been developed to manage the devices. vManager allows for:

- Setup the IP address, subnet mask, router and DHCP
- Backup and restore the device's internal data and settings
- Perform firmware upgrades
- Identify a specific device (in a multi device set-up) by blinking its LED
- Revert to factory defaults
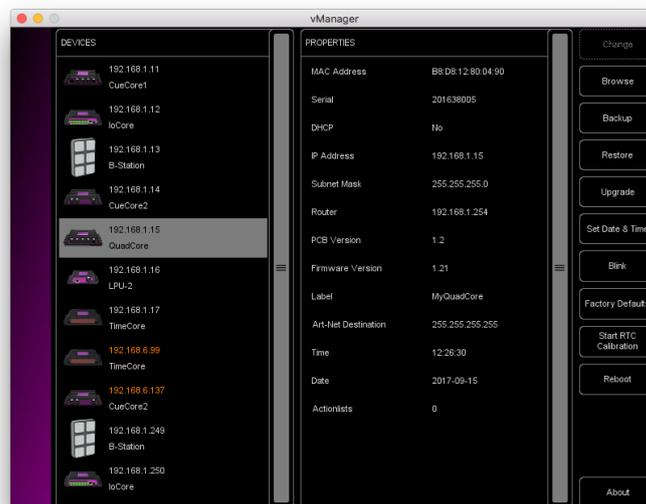
Figure 11.1: vManager

The following section explain the buttons in the vManager, as seen in figure 11.1.

11.1 Backup

Backups of all the programming data inside the device can be made. This backup file (an XML) is saved on the computer's hard-disk and can be easily transferred via e-mail or USB stick. The data of the backup can be restored via the *Restore* button.
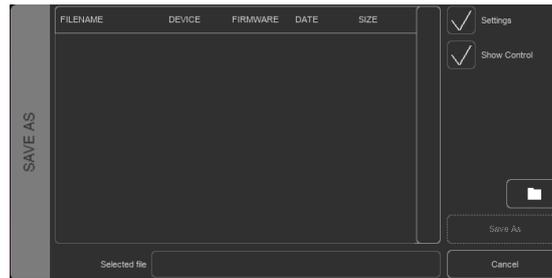
Figure 11.2: Creating a backup

Apps distributed by app stores are not allowed to access files outside this designated location. It is important to know where vManager is storing its files, in case you wish transfer a backup file to memory stick or dropbox.

The designated file location differs per operating system and is likely to be a long and obscure path. For this reason, vManager provides you with a shortcut to the correct file location. A *Folder* button can be found in the file related dialogs. Clicking this button will open a file browser at appropriate folder.

11.2 Upgrade Firmware

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

Figure 11.3: Firmware upgrade

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

11.3   Set Date & Time

The computer's date and time can be quickly copied to the unit by selecting a device and clicking the *Set Date & Time* button. Not all Visual Productions devices feature an internal real-time clock. The B-Station1 does not have such a RTC.

11.4   Blink

The device's LED can be set to *Blink* fast for identifying the 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.

11.5   Factory Defaults

All the user data like cues, tracks and actions are stored on the memory. They will be completely erased and all settings will reverted to their defaults by pressing the *Factory Defaults* button. This action does not affect the device's IP settings.

11.6   Reboot

The *Reboot* button allows you to remotely restart the device. This is useful for testing the unit's behaviour after a power-cycle.

11.7   Installing vManager

The vManager app is available on a wide range of operating systems, both mobile and desktop.

The softwares is distributed through app-stores to take advantage of receiving future software updates automatically.

11.7.1   iOS

vManager can be downloaded from the Apple iOS app-store at `https://itunes.apple.com/us/app/vman/id1133961541`.

11.7.2 Android

vManager can be found on the Google Play store at `https://play.google.com/store/apps/details?id=org.visualproductions.manager`.

Android 5.0 or higher is required.

11.7.3 Windows

Visit the Microsoft store at `https://www.microsoft.com/en-us/p/vmanager/9nblggh4s758`.

Windows 10 is required.

11.7.4 macOS

Visit the Apple macOS app store at `https://apps.apple.com/us/app/vmanager/id1074004019`.

macOS 10.15 is recommended.

11.7.5 Ubuntu

You can acquire the vManager from Snapcraft at `https://snapcraft.io/vmanager`.

Alternatively, it can be installed by using the command-line:
```
snap find vmanager
snap install vmanager
```

To update the apps later on via the command-line type:
```
snap refresh vmanager
```

Ubuntu 18.04 LTS is recommended. The software is only available for the amd64 architecture.

Chapter 12

Kiosc

Kiosc is an application for creating custom touch screen user-interfaces for the range of lighting controllers from Visual Productions. Kiosc is designed to have no editing capability, making it a fool-proof interface that can safely be presented to non-technical operators.
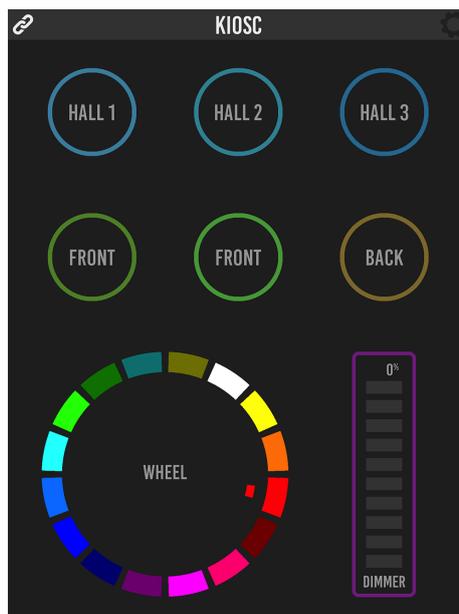
Figure 12.1: Kiosc

Kiosc is the ideal way to remote control our solid-state lighting controllers like CueluxPro, CueCore1, CueCore2, QuadCore, IoCore1, IoCore2, LPU-2, DaliCore, B-Station1 and the B-Station2. Kiosc enables you to choose scenes or presets, set intensity levels or choose RGB colours.

You can also use it to control third-party AV equipment. Kiosc speaks UDP and OSC.

Kiosc is available as software app and as a physical product. The hardware version of Kiosc is a wall-mount 7" touch screen with Kiosc pre-installed. It is powered by PoE and requires only a RJ-45 connection.

Figure 12.2: Kiosc

Please read the Kiosc manual, available from `http://www.visualproductions.nl/downloads` for more details.

Appendices

Appendix A

Trigger Types

The following tables list the different types of triggers that can be used in the B-Station1. The different types are accompanied with values and flanks.

A.1   Art-Net

Trigger Type	Trigger Value	Flank	Description
Channel	DMX address	Change	Channel changes
Channel	DMX address	Down	Channel becomes non-zero
Channel	DMX address	Up	Channel becomes zero
UniverseA	-	-	A DMX level change in the universe
Receiving	-	Change	Start receiving or loose Art-Net signal
Receiving	-	Down	Lost Art-Net signal
Receiving	-	Up	Start receiving Art-Net signal

A.2   Button

Trigger Type	Trigger Value	Flank	Description
Button	Button number	Change	Button state changes
Button	Button number	Down	Button is depressed
Button	Button number	Up	Button is released
Toggle	Button number	Down	Internal latching state of button becomes 'on'.
Toggle	Button number	Up	Internal latching state of button becomes 'off'.
Toggle	Button number	Change	Internal latching state of button has changed.
Binary	Combination value	-	A combination of buttons is pressed
Short press	Button number	-	Button is depressed momentary
Long press	Button number	-	Button is depressed for long time

Use the Binary trigger type to catch button combinations. Specify the button combination by adding the values that correspond to the buttons (see table below). This value is entered as the trigger value.

Button	Value
1	1
2	2
3	4
4	8
5	16
6	32

For example, to trigger on both button 1 and 2 being pressed fill in trigger value 3 (1+2). To trigger on button 5 and 6, fill in value 48 (16+32).

A.3 Cuelist 1-6

Trigger Type	Trigger Value	Flank	Description
Active	-	Change	Cuelist active state changes
Active	-	Down	Cuelist became active
Active	-	Up	Cuelist was released
Cue	Cue index	Change	Cue active state changes
Cue	Cue index	Down	Cue became active
Cue	Cue index	Up	Cue exited
CueIndex	-	-	Notifies the cue index number
Intensity	-	-	Cuelist's intensity changes

A.4 Fixture

Trigger Type	Trigger Value	Flank	Description
Intensity	Fixture index	-	Fixture's intensity changes

A.5 OSC

Trigger Type	Trigger Value	Flank	Description
Message	URI	Change	Receive a message that matches the URI
Message	URI	Down	Receive a message that matches the URI and the value non-zero
Message	URI	Up	Receive a message that matches the URI and the value is zero
Receiving	-	-	Receive any message

The user can define his own URI as the trigger value of a message, however, the OSC specification dictate this string must start with a '/' sign. Please note that this string has a maximum length of 25 characters, including the '/'.

A.6 System

Trigger Type	Trigger Value	Flank	Description
Startup	-	-	The B-Station1 has been power up
Network Connection	-	Change	Network connection established or lost
Network Connection	-	Stop	Network connection lost
Network Connection	-	Start	Network connection established
ReleasedByMaster	-	Change	Master (e.g. CueluxPro) released or obtained connection
ReleasedByMaster	-	Stop	Master released connection
ReleasedByMaster	-	Start	Master obtained connection

A.7 Touch Screen

Trigger Type	Trigger Value	Flank	Description
-	-	Change	Button/Fader goes up or down
-	-	Down	Button is pressed
-	-	Up	Button is released

When editing the Touch Screen actionlist it will be possible to add different kind of actions such as Button, Fader and Colour Picker. These elements will be displayed in the Kiosc software which is available from Visual Productions.

A.8 UDP

Trigger Type	Trigger Value	Flank	Description
Message	String	-	Receive a message that matches the trigger-value
Receiving	-	-	Receive any message

The user can define his own string as the trigger value of a message. Please note that this string has a maximum length of 25 characters.

A.9   Variable

Trigger Type	Trigger Value	Flank	Description
Channel	Variable Index	-	The specified variable changes
Variable 1	Number [0,255]	Change	Variable 1 becomes = or # to the value
Variable 1	Number [0,255]	Down	Variable 1 becomes = to the value
Variable 1	Number [0,255]	Up	Variable 1 becomes # to the value
Variable 2	Number [0,255]	Change	Variable 2 becomes = or # to the value
Variable 2	Number [0,255]	Down	Variable 2 becomes = to the value
Variable 2	Number [0,255]	Up	Variable 2 becomes # to the value
Variable 3	Number [0,255]	Change	Variable 3 becomes = or # to the value
Variable 3	Number [0,255]	Down	Variable 3 becomes = to the value
Variable 3	Number [0,255]	Up	Variable 3 becomes # to the value
Variable 4	Number [0,255]	Change	Variable 4 becomes = or # to the value
Variable 4	Number [0,255]	Down	Variable 4 becomes = to the value
Variable 4	Number [0,255]	Up	Variable 4 becomes # to the value
Variable 5	Number [0,255]	Change	Variable 5 becomes = or # to the value
Variable 5	Number [0,255]	Down	Variable 5 becomes = to the value
Variable 5	Number [0,255]	Up	Variable 5 becomes # to the value
Variable 6	Number [0,255]	Change	Variable 6 becomes = or # to the value
Variable 6	Number [0,255]	Down	Variable 6 becomes = to the value
Variable 6	Number [0,255]	Up	Variable 6 becomes # to the value
Variable 7	Number [0,255]	Change	Variable 7 becomes = or # to the value
Variable 7	Number [0,255]	Down	Variable 7 becomes = to the value
Variable 7	Number [0,255]	Up	Variable 7 becomes # to the value
Variable 8	Number [0,255]	Change	Variable 8 becomes = or # to the value
Variable 8	Number [0,255]	Down	Variable 8 becomes = to the value
Variable 8	Number [0,255]	Up	Variable 8 becomes # to the value

A.10 Timer

Trigger Type	Trigger Value	Flank	Description
-	Timer Index	Change	The timer starts or stops
-	Timer Index	Stop	The timer stops
-	Timer Index	Start	The timer starts

A.11 User List (1-4)

User lists have no triggers. Actions inside user lists can only be activated by other actions through 'Action' task with the 'Link' feature.

Appendix B

Task Types

Tasks allow you to automate the functionality in the B-Station1. All this functionality is categorized in task-types. This appendix provides a listing of the various task-types. The tables present an overview of all available features and functions per task-type.

B.1 Action

Trigger another action.

Feature	Function	Parameter 1	Parameter 2
Link	Set	Action	-

B.2 Action List

Manipulate an action-list.

Feature	Function	Parameter 1	Parameter 2
Enable	Set	Action-list	On or Off
Enable	Toggle	Action-list	-
Enable	Control	Action-list	-
Enable	Inverted Control	Action-list	-

B.3   Button

Force the Button actions to be triggered.

Feature	Function	Parameter 1	Parameter 2
Refresh	Set	-	-

B.4   Cuelist 1-6

Manipulate one of the six cuelists.

Feature	Function	Parameter 1	Parameter 2
Go+	Set	-	-
Go-	Set	-	-
Jump	Set	Cue [1,128]	-
Jump	Control	-	-
Intensity	Set	Percentage [0%,100%]	-
Intensity	Control	-	-
Intensity	Decrement	Delta [1,255]	-
Intensity	Increment	Delta [1,255]	-
Intensity	Continuous decrement	Delta [1,255]	-
Intensity	Continuous increment	Delta [1,255]	-
Intensity	Stop continuous	-	-
Release	Set	-	-
Playstate	Set	On or off	-
Playstate	Toggle	-	-
Playstate	Control	-	-
Playstate	Restart	-	-

B.5   Cuelist Selected

Manipulate the currently selected cuelist.

Feature	Function	Parameter 1	Parameter 2
Go+	Set	-	-
Go-	Set	-	-
Jump	Set	Cue [1,128]	-
Jump	Control	-	-
Intensity	Set	Percentage [0%,100%]	-
Intensity	Control	-	-
Intensity	Decrement	Delta [1,255]	-
Intensity	Increment	Delta [1,255]	-
Intensity	Continuous decrement	Delta [1,255]	-
Intensity	Continuous increment	Delta [1,255]	-
Intensity	Stop continuous	-	-
Release	Set	-	-
Playstate	Set	On or off	-
Playstate	Toggle	-	-
Playstate	Control	-	-
Playstate	Restart	-	-
Select	Set	-	Cuelist [1,128]
Select	Control	-	-
Select	Decrement	-	-
Select	Increment	-	-

B.6 Cuelist all

Manipulate settings that affect all cuelists.

Feature	Function	Parameter 1	Parameter 2
Release	Set	-	-
Solo	Set	-	Cuelist [1,128]
Solo	Control	-	-
Blackout	Set	On or off	-
Blackout	Control	-	-

B.7 DMX

Manipulate the DMX levels. These are the levels that can also be send out via Art-Net.

Feature	Function	Parameter 1	Parameter 2
Set Value	Set	Channel [1,512]	Value [0,255]
Set Value	Toggle	Channel [1,512]	-
Set Value	Control	Channel [1,512]	-
Set Value	Inverted Control	Channel [1,512]	-
Set Value	Decrement	Channel [1,512]	-
Set Value	Increment	Channel [1,512]	-
Set Value	Universe A	-	-
Set Value	Switch	DMX Channel	-
Set Value	Control scaled	Channel [1,512]	Percentage [0%,100%]
Set Value	Control offset	Channel [1,512]	Offset [0,255]
Bump Channel	Set	Channel [1,512]	Value [0,255]
Bump Channel	Control	Channel [1,512]	-
Clear All	Set	-	-
Spectrum	Control	Channel [1,510]	-

B.8 Fixture

Manipulate the fixtures directly.

Feature	Function	Parameter 1	Parameter 2
Intensity	Set	Fixture [1,32]	Percentage [0%,100%]
Intensity	Control	Fixture [1,32]	-
Intensity	Decrement	Fixture [1,32]	Delta [1,255]
Intensity	Increment	Fixture [1,32]	Delta [1,255]
Colour	Set	Fixture [1,32]	Colour
Colour	Control	Fixture [1,32]	-
White	Set	Fixture [1,32]	Percentage [0%,100%]
White	Control	Fixture [1,32]	-
Amber	Set	Fixture [1,32]	Percentage [0%,100%]
Amber	Control	Fixture [1,32]	-
Special	Set	Fixture [1,32]	Percentage [0%,100%]
Special	Control	Fixture [1,32]	-

B.9 LED

Control the button's LEDs.

Feature	Function	Parameter 1	Parameter 2
Intensity	Set	LED [1,6]	Percentage [0%,100%]
Intensity	Toggle	LED [1,6]	-
Intensity	Control	LED [1,6]	-
Intensity	Decrement	LED [1,6]	Delta [1,255]
Intensity	Increment	LED [1,6]	Delta [1,255]
Intensity	Fade in 0.3s	LED [1,6]	Percentage [0%,100%]
Intensity	Fade in 1s	LED [1,6]	Percentage [0%,100%]
Intensity	Fade in 3s	LED [1,6]	Percentage [0%,100%]
Flash	Set	LED [1,6]	Percentage [0%,100%]
Flash	Control	LED [1,6]	-
Blink	Set	LED [1,6]	Percentage [0%,100%]
Blink	Control	LED [1,6]	-
Playstate	Control	LED [1,6]	Percentage [0%,100%]
Solo	Set	LED [1,6]	Percentage [0%,100%]
Solo Flash	Set	LED [1,6]	Percentage [0%,100%]
Clear All	Set	-	-

B.10   OSC

Send an OSC message via the network. The OSC recipients are specified in the Settings page.

Feature	Function	Parameter 1	Parameter 2
Send	Set	URI	floating point number
Send	Control	URI	-
Send Float	Set	URI	floating point number
Send Float	Control	URI	-
Send Unsigned	Set	URI	positive number
Send Unsigned	Control	URI	-
Send Bool	Set	URI	true or false
Send Bool	Control	URI	-
Send String	Set	URI	String of characters
Send String	Control	URI	-
Colour	Set	URI	RGB colour
Colour	Control	URI	-

Please note that string in parameter 1 has a maximum length of 25 characters, including the compulsory leading '/' sign.

B.11   UDP

Send an UDP message via the network. Specify the recipient in Parameter 2. For example "192.168.1.11:7000".

Feature	Function	Parameter 1	Parameter 2
Send Float	Set	floating point number	IP address & port
Send Float	Control	-	IP address & port
Send Unsigned	Set	positive number	IP address & port
Send Unsigned	Control	-	IP address & port
Send Bool	Set	true or false	IP address & port
Send Bool	Control	-	IP address & port
Send String	Set	text string	IP address & port
Send String	Control	-	IP address & port
Send String Hex	Set	hex string	IP address & port
Send String Hex	Control	String	IP address & port
Send Bytes	Set	Hex string	IP address & port

Please note that string in parameter 1 has a maximum length of 25 characters.

When the Send String Hex feature is set to 'control' function then it will send the string plus the control value. The control value will be represented as a hex string. The Send Bytes features allows for sending ASCII codes. For example, in order to send the string 'Visual' followed by a line feed parameter 1 should be '56697375616C0A'.

B.12   Timer

Manipulate on of the four internal timers.

Feature	Function	Parameter 1	Parameter 2
Playstate	Start	Timer #	-
Playstate	Stop	Timer #	-
Playstate	Restart	Timer #	-
Time	Set	Timer #	Time

B.13   Variable

Manipulate one of the eight variables.

Feature	Function	Parameter 1	Parameter 2
Set Value	Set	Variable [1,8]	Value [0,255]
Set Value	Toggle	Variable [1,8]	Value [0,255]
Set Value	Control	Variable [1,8]	-
Set Value	Inverted Control	Variable [1,8]	-
Set Value	Decrement	Variable [1,8]	-
Set Value	Increment	Variable [1,8]	-
Set Value	Control Scaled	Variable [1,8]	Percentage [0%,100%]
Set Value	Control Offset	Variable [1,8]	Offset [0,255]
Refresh	Set	Variable [1,8]	-
Single Dimmer	Set	Variable [1,8]	Delta [1,255]

Variables are further explained on page 30

Appendix C

Templates

This appendix discusses the templates provided in the Show Control page.

Template	Description
Buttons ->6 Cues	Each button will jump one of the first six cues inside playback 1. The LEDs will indicate which cue is active. Playback 1 should contain at least six cues.
Buttons ->1 Cuelist	All buttons are used to control playback 1. There are buttons for Go+, Go-, Release, Intensity++, Intensity–, etc.
Buttons ->3 Cuelists	Each set of two buttons control one of the first three playbacks. The buttons are assigned to Go- and Go+. Long presses will release the playback.
Buttons ->6 Cuelists	Each button controls one playback. The LEDs indicate which playbacks are active.
Buttons ->6 Cuelists Advanced	Each button controls one playback. The LEDs indicate which playbacks are active.
Buttons ->No tasks	Creates empty actions for each button.
Buttons ->OSC	Each button will send an OSC message.
Buttons ->OSC Toggle	Each button will send an OSC message. These action will also control the LEDs.
Buttons ->OSC with Feedback	Each button will send an OSC message. Additional actions are created to control the LEDs externally via OSC.
Buttons ->UDP	Each button will broadcast a UDP message on down and up movement.
Buttons ->DMX	Each button will control on of the first six DMX channels.
Buttons ->LPU-2 (OSC)	The buttons will the first six playbacks in the LPU-2 device. The LPU-2's feedback is used to control the button's LEDs. Specify the LPU-2's IP address in the OSC table on the Settings page.
Art-Net ->DMX	Converts incoming Art-Net to DMX. Specify the Art-Net subnet and universe on the Settings page.
OSC ->LEDs	Creates actions for controlling the button's LEDs through OSC.
CueCore2 and QuadCore	Control the playbacks on a CueCore2/QuadCore through the OSC fixed mapping.
Buttons ->IoCore GPO	Control the GPO ports on a IoCore through the OSC fixed mapping.

Appendix D

API

The B-Station1 is pre-programmed to make its internal functionality available via OSC, TCP, UDP and HTTP. There is a simple API implemented for each protocol. Notwithstanding these API's, it is possible to create your own OSC, TCP and UDP implementation in the Show Control page.

D.1 OSC

The following table uses playback #1 as an example. The number '1' can be replaced by any number in the range of [1,6].

URI	Parameter	Description
/core/pb/1/go+	-	Jump to the next cue in playback #1
/core/pb/1/go-	-	Jump to the previous cue in playback #1
/core/pb/1/release	-	Release the playback
/core/pb/1/intensity	float	Set the playback's intensity
/core/pb/release	-	Release all playbacks

The following table uses actionlist #1 as an example. The number '1' can be replaced by any number in the range of [1,8]. The table also uses action #2 as an example. The number '1' can be replaced by any number in the range of [1,48].

URI	Parameter	Description
/core/al/1/2/execute	bool/float/integer	Execute action #2 inside action list #1
/core/al/1/enable	bool	Set the 'enable' checkbox for action list #1

The following table uses timer #1 as an example. The number '1' can be replaced by any number in the range of [1,4].

URI	Parameter	Description
/core/tm/1/start	-	Start timer #1
/core/tm/1/stop	-	Stop timer #1
/core/tm/1/restart	-	Restart timer #1
/core/tm/1/pause	-	Pause timer #1
/core/tm/1/set	time-string	Set timer #1 at the time-string

The following table uses variable #1 as an example. The number '1' can be replaced by any number in the range of [1,8].

URI	Parameter	Description
/core/va/1/set	integer	Set the value of variable #1
/core/va/1/refresh	-	Refresh variable #1; a trigger will be generated as if the variable changed value
/core/va/refresh	-	Refresh all variables; triggers will be generated

The following table shows how to active miscellaneous functions.

URI	Parameter	Description
/core/bu/1	bool	Set the button state
/core/ld/1	float	Set the LED intensity
/core/blink	-	Momentarily flashes the B-Station1's LED

D.2 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 functionality within the B-Station1 can controlled by using the following ASCII strings (human readable text) messages:

The following table uses playback #1 as an example. The number '1' can be replaced by any number in the range of [1,6].

String	Description
core-pb-1-go+	Jump to the next cue in playback #1
core-pb-1-go-	Jump to the previous cue in playback #1
core-pb-1-release	Release the playback
core-pb-1-intensity=<float>	Set the playback's intensity
core-pb-release	Release all playbacks

The following table uses actionlist #1 as an example. The number '1' can be replaced by any number in the range of [1,8]. The table also uses action #2 as an example. The number '1' can be replaced by any number in the range of [1,48].

String	Description
core-al-1-1-execute=<arg>	Execute action #2 inside action list #1
core-al-1-enable=<bool>	Set the 'enable' checkbox for action list #1

The following table uses timer #1 as an example. The number '1' can be replaced by any number in the range of [1,4].

String	Description
core-tm-1-start	Start timer #1
core-tm-1-stop	Stop timer #1
core-tm-1-restart	Restart timer #1
core-tm-1-pause	Pause timer #1
core-tm-1-set=<text>	Set timer #1 at the time-string

The following table uses variable #1 as an example. The number '1' can be replaced by any number in the range of [1,8].

String	Description
core-va-1-set=<integer>	Set the value of variable #1
core-va-1-refresh	Refresh variable #1; a trigger will be generated as if the variable changed value
core-va-refresh	Refresh all variables; triggers will be generated

The following table shows how to active miscellaneous functions.

String	Description
core-bu-1=<bool>	Control the button state
core-ld-1=<float>	Control the LED intensity
core-blink	Momentarily flashes the B-Station1's LED

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