VISUAL PRODUCTIONS

B-STATION MANUAL

WWW.VISUALPRODUCTIONS.NL

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Introduction

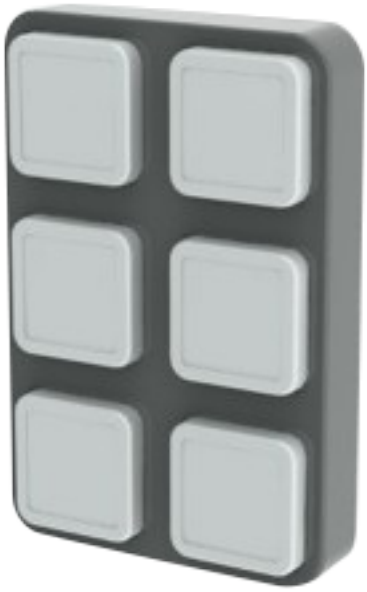
Thank you for choosing the B-Station. This manual discussing setting and programming the unit.

Features

The B-Station is 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-Station uses communication protocols that are open (in the public domain) it can also be used for controlling third-party equipment like show-controllers, lighting consoles, media servers or audio devices.

Furthermore, the B-Station 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 cuelists 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-Station. 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 set-up.

The specifications are:

- 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
- Compatible with CueCore, IoCore, CueluxPro and VisualTouch
- Standalone control for 6 zones, 32 fixtures and 768 cues
- Standalone FX-generator

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.

Setting up

This chapter discusses the steps to set up the B-Station to start programming.

Mounting

The B-Station is wall-mount, it is compatible with European and American gang boxes.

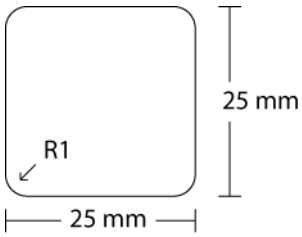
If no gang box is available then the B-Station can also be surface mounted. The inside of the B-Station's enclosure suggests where you can create a hole for the cable to enter.

Power

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

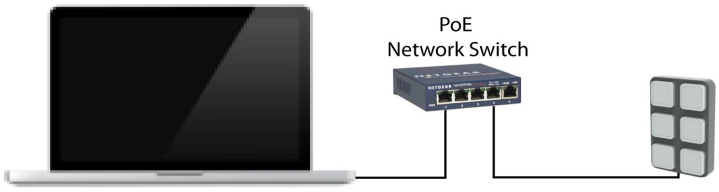
Labels

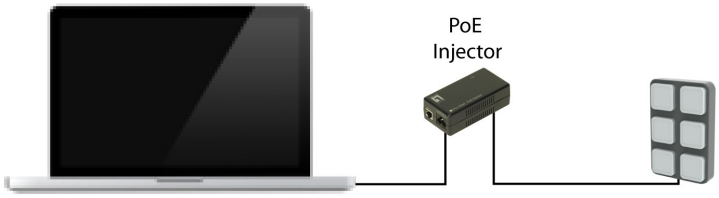
The B-Station is shipped with various adhesive labels that you can apply to the buttons. If you wish to create your own labels then please use the following dimensions.



Network

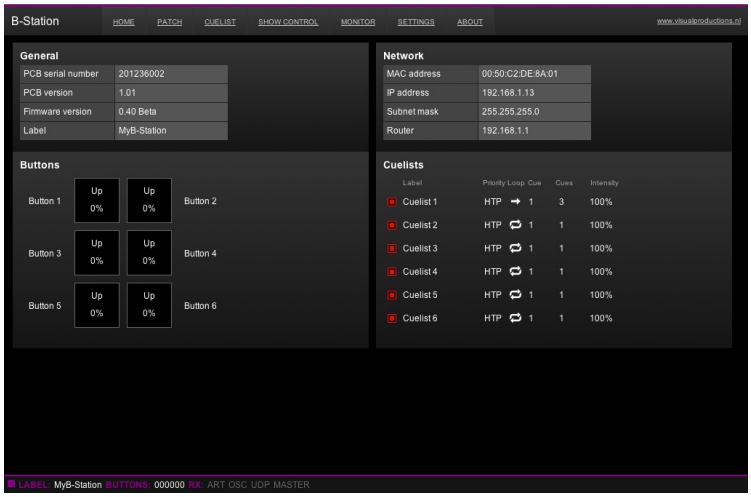
During programming a network connection is required between the device and computer. Connect the Ethernet port on the device to the Ethernet port on your computer by using RJ-45 cables. You have to connect to the B-Station via a PoE (Power over Ethernet) Injector or switch, in order for the B-Station to be powered.





The factory default IP address is 192.168.1.10 with the sub-net mask set to 255.255.255.0. Make sure your computer is in a valid address range, e.g. set your computer to IP 192.168.1.9 with a sub-net mask of 255.255.255.0.

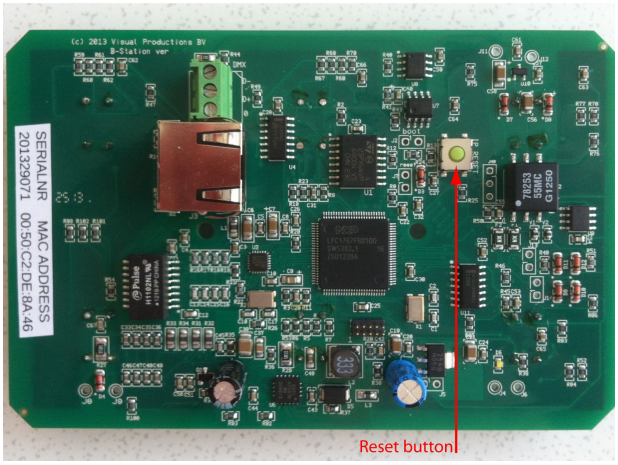
Then open a browser on your computer and go to http://192.168.1.10. You should see the following page:



B-Station home page

The settings page allows you to change the IP address and sub-net. Make sure that all equipment on your network have unique IP addresses.

By pressing the reset button on the device 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.



Access via Internet

The Statioons are network based and therefor could be accessed via the Internet. There are two ways to achieve this: Port-Forwarding and VPN.

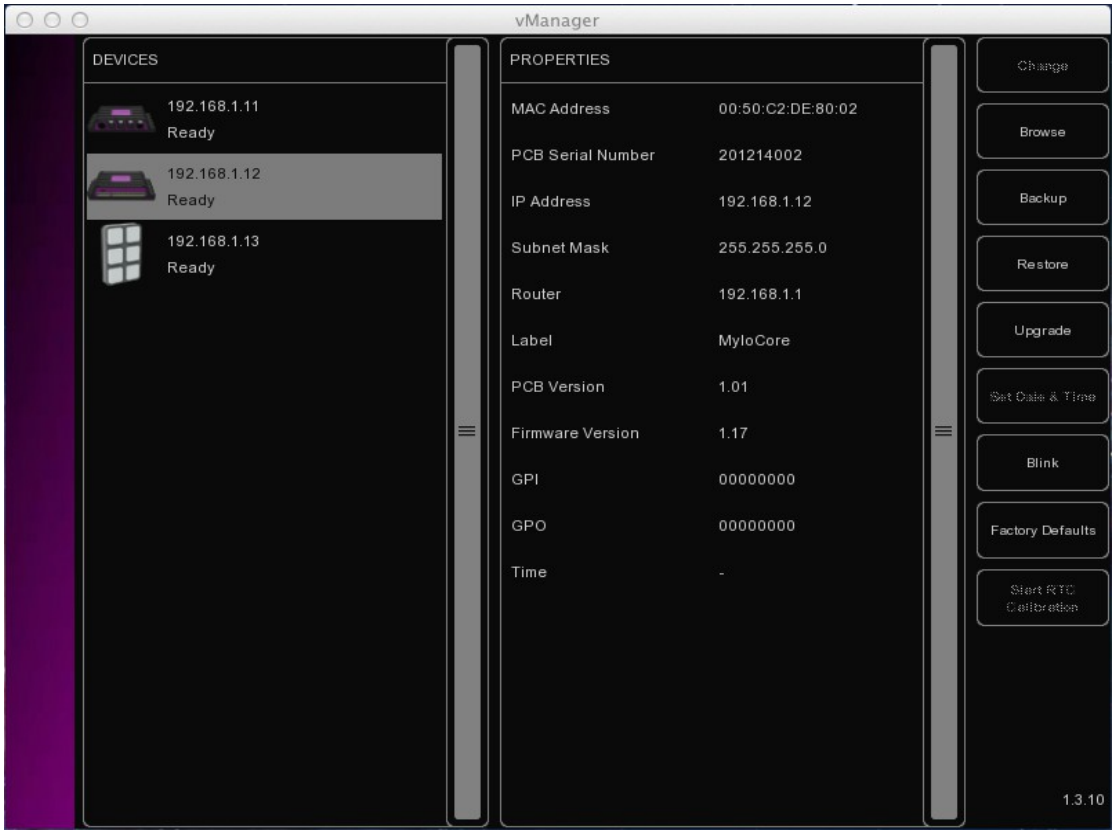
Port-Forwarding is relatively easy to setup in your router. Each router is different so you are advised to consult the router's documentation (sometimes it is revered to as NAT or Port-Redirecting). Please note that port forwarding is not secure, anybody could access your Station this way.

Accessing via a VPN (Virtual Private Network) tunnel requires a bit more to setup, also your router needs to support the VPN feature. Once setup, this is a very secure way to communicate with your Station.

vManager Software Tool

A special software tool called vManager has been developed to manage (multiple) devices. This tool is available on MS Windows, Mac OS X and Ubuntu Linux, it is available via our website, free of charge. vManager allows you to:

- Identify a specific device (in a multi device set-up) by blinking it's LED
- Change IP address and subnet
- Perform firmware updates
- Do a factory reset that will erase all user data in the device and will restore the default settings.
- Make a backup of all the data in the device.



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.

Upgrade Firmware

To upgrade the firmware, first select your device and press the 'Upgrade' button. The dialogue allows you to select from the firmware available.

Caution: Make sure the power to the device is uninterrupted during the upgrade process.

Factory Defaults

The memory containing all user data like cues, recordings and actions 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.

Backup

You can make a backup of all the programming data inside the device. This backup file (an XML) is saved on your computer's hard-disk and can be easily transferred via e-mail or USB stick. You can restore the backup via the 'Restore' button.

The backup files can be found at following location:

Windows XP	C:\Documents and Settings\[username]\My Documents\Visual Productions\vManager\Backups
Windows Vista	C:\Users\[username]\Documents\Visual Productions\vManager\Backups
Windows 7	C:\Users\[username]\Documents\Visual Productions\vManager\Backups
Mac OS X	/Users/[username]/Visual Productions/vManager/Backups
Ubuntu Linux	/home/[username]/Visual Productions/vManager/Backups

CueluxPro

CueluxPro is powerful software application for controlling DMX lighting, it features fixtures, groups, palettes, pixel-mapping, timeline-editor and fx-generator. Each CueCore unlocks 2 universes in CueluxPro, multiple CueCores can be used together to create one large control system.

The B-Station can be used in combination with CueluxPro. The B-Station's buttons can be assigned to any software feature, e.g. to trigger cues, select pages or make a blackout.

For compatibility with CueluxPro the B-Station needs to run firmware v1.00 or higher.

Please refer to the CueluxPro manual for more information.

Protocols

The B-Station fsupports various protocols. This chapter describes these protocols.

DMX-512

The B-Station is fitted with a DMX-512 output port. This port primarily used for the standalone operation, however, it can also be used for triggering external devices or conversion from Art-Net to DMX.

The DMX cable is connected to the green screw-terminal on the PCB. Caution: first disconnect the network cable before inserting or removing the DMX cable. By doing this you will de-power the PCB and therefor prevent any risk of short-circuiting the electronics.

If your cabling or fixtures are using a 3-pin XLR connector then you can create a adapter.

For both 5-pin and 3-pin connectors the pin-out is:

1 = GND

2 = Data-

3 = Data+

(on the 5-pin XLR pin 4 & 5 are not connected)

Cable

Use a shielded twisted pair cable for DMX cabling. The cable should be terminated with a 120 Ohm resistor.

Overcoming DMX-512 Limitations

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 cable should not be longer than 300 meters.

The DIN Rail DMX Splitter from Visual Productions helps tackle those inconvenient limitations of DMX-512. The Splitter takes a DMX signal and sends it out again on its 6 DMX output ports allowing a star-topology for efficient cable usage. 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.

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 B-Station supports 1 universe outgoing Art-Net and 1 universe incoming.

The broadcast messages sent out by Art-Net do put a certain load on the network, therefore it is recommended to disable Art-Net when not in use.

OSC

Open Sound Control (OSC) 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, time-code and custom information.

There are apps available for creating custom-made user interfaces on IOS (iPod, iPhone, iPad) and Android. These tools allow you to program fool-proof user-interfaces for controlling the device. E.g. TouchOSC from http://hexler.net/software/touchosc.

There is a TouchOSC layout available from http://www.visualproductions.nl/products/bstation.html that is configured to control the cuelists in the B-Station. This layout works in conjunction with the 'TouchOSC' templates, as discussed on page 16.

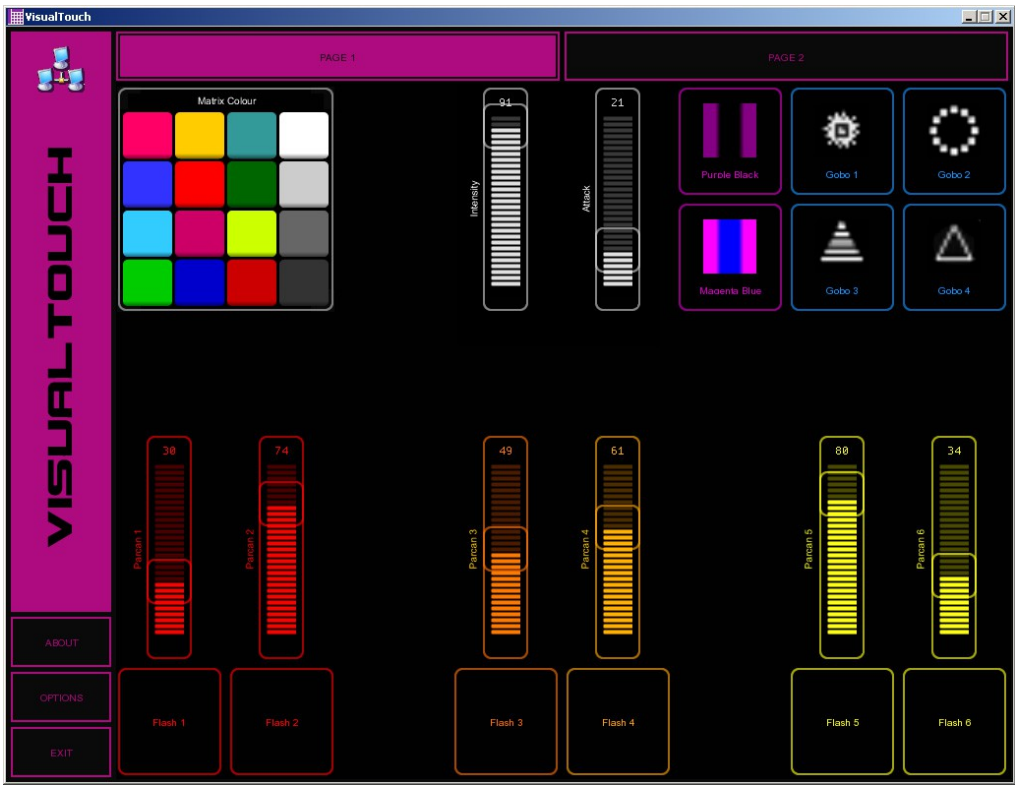
UDP

UDP (User Datagram Protocol) is a simple protocol for sending message across the network. It is supported by various media devices like video projectors and show controllers.

The device can send and receive UDP messages. The UDP message contains a NULL terminated ASCII string of maximum 15 characters. UDP can be received by adding the UDP source action-list in the Show Control page. Enter the expected ASCII string as the action's trigger. UDP messages can be send by adding a UDP task to any action. Parameter 1 allows you to enter the ASCII string and parameter 2 will contain the destination IP address and port number.

VisualTouch

VisualTouch is a software application that can trigger events within the device. VisualTouch is equipped with a user interface especially designed for use with Touch Screens.



VisualTouch is designed to have no editing capability, making it a fool-proof interface that can safely be presented to non-lighting technicians.

VisualTouch is available on Windows, Mac OS X and Ubuntu Linux and can be downloaded from http://www.visualproductions.nl/downloads.html.

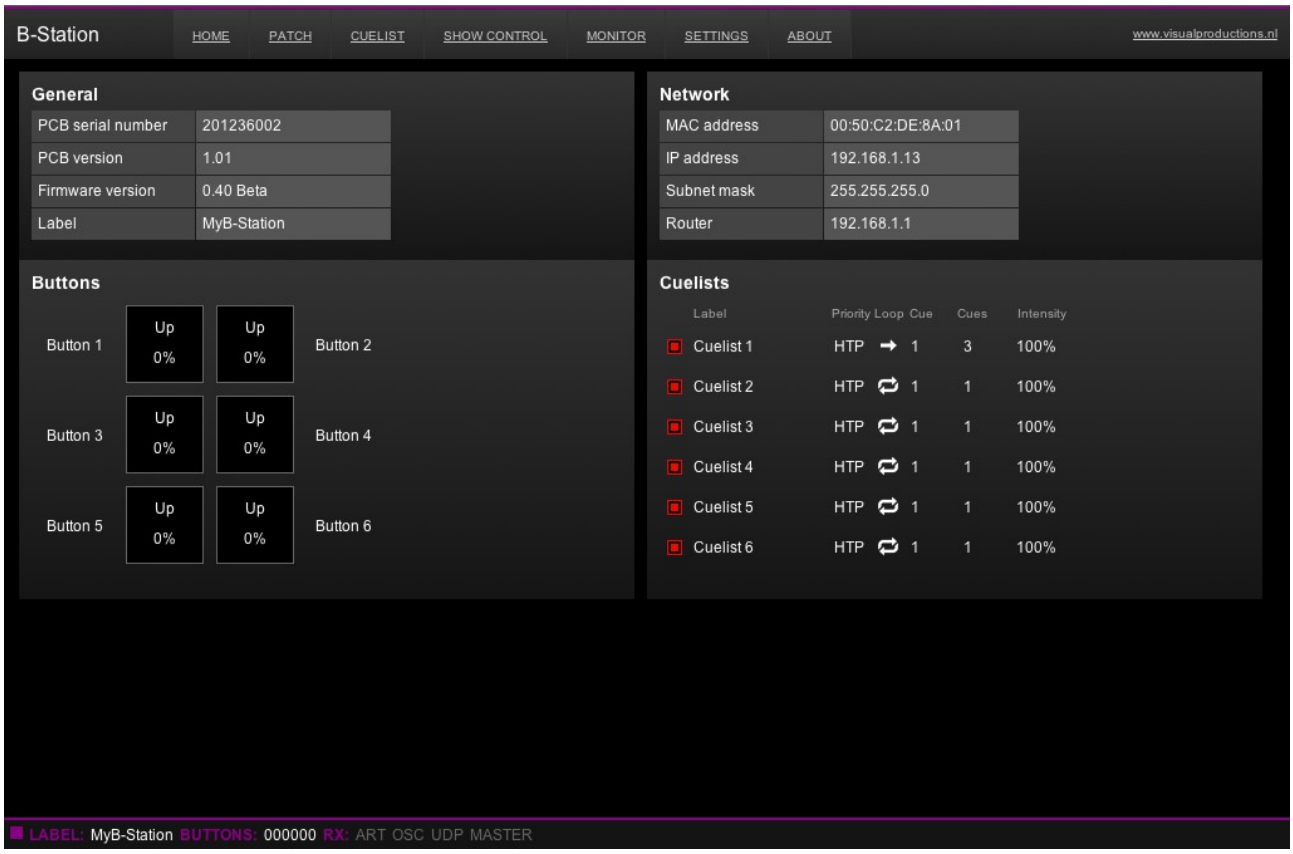
Web-Interface

The B-Station has an inbuilt web-server. All the programming of the B-Station is done via its web-based User-Interface. This 'website' has multiple pages and they are discussed in this chapter.

It is recommend to always use the latest version of your browser. There are many browsers around with many different versions. Compatibility with the web-interface is only guaranteed for the latest versions of Safari, Chrome, Firefox and Internet Explorer.

Home

This is the opening page of the web-interface. It gives a read-only overview of the settings and values; nothing can be changed here.

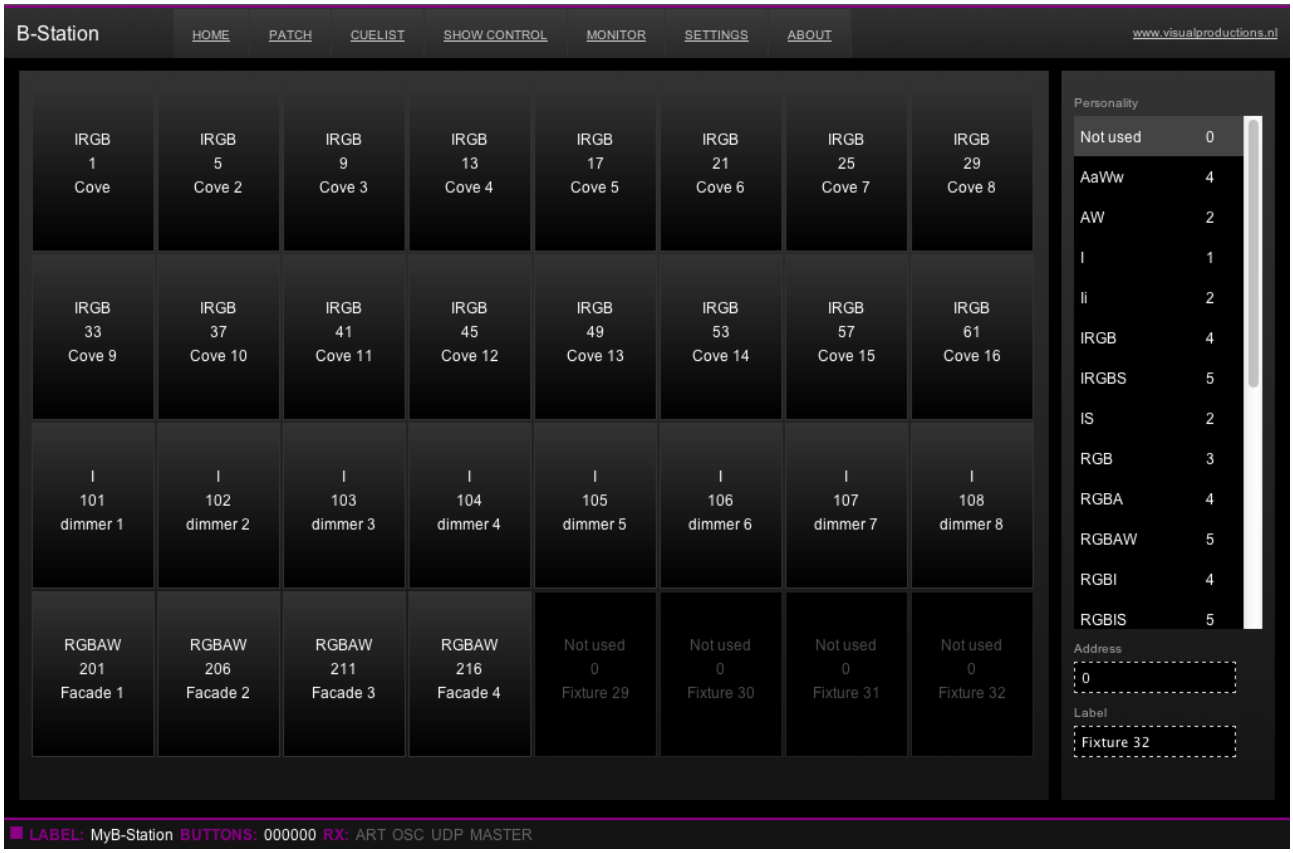


Notice the status bar at the bottom of the page, this bar offers a real-time display of the B-Station's primary properties. This bar remains visible on each page. The buttons indicate 'O' when it is up and 'I' when the button is down.

The Master field indicates whether the B-Station is connected to the CueluxPro software. Once connected to CueluxPro the will forward the button-presses to the software in real-time.

Patch

The Patch page allows you to setup the fixtures that you will be controlling in the standalone mode.



There are 32 fixture 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:

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

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

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.

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.

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 shows you the content of the selected cue, it does not indicate the fixture's output.

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.

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.

Cue Timing

Each can have 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.

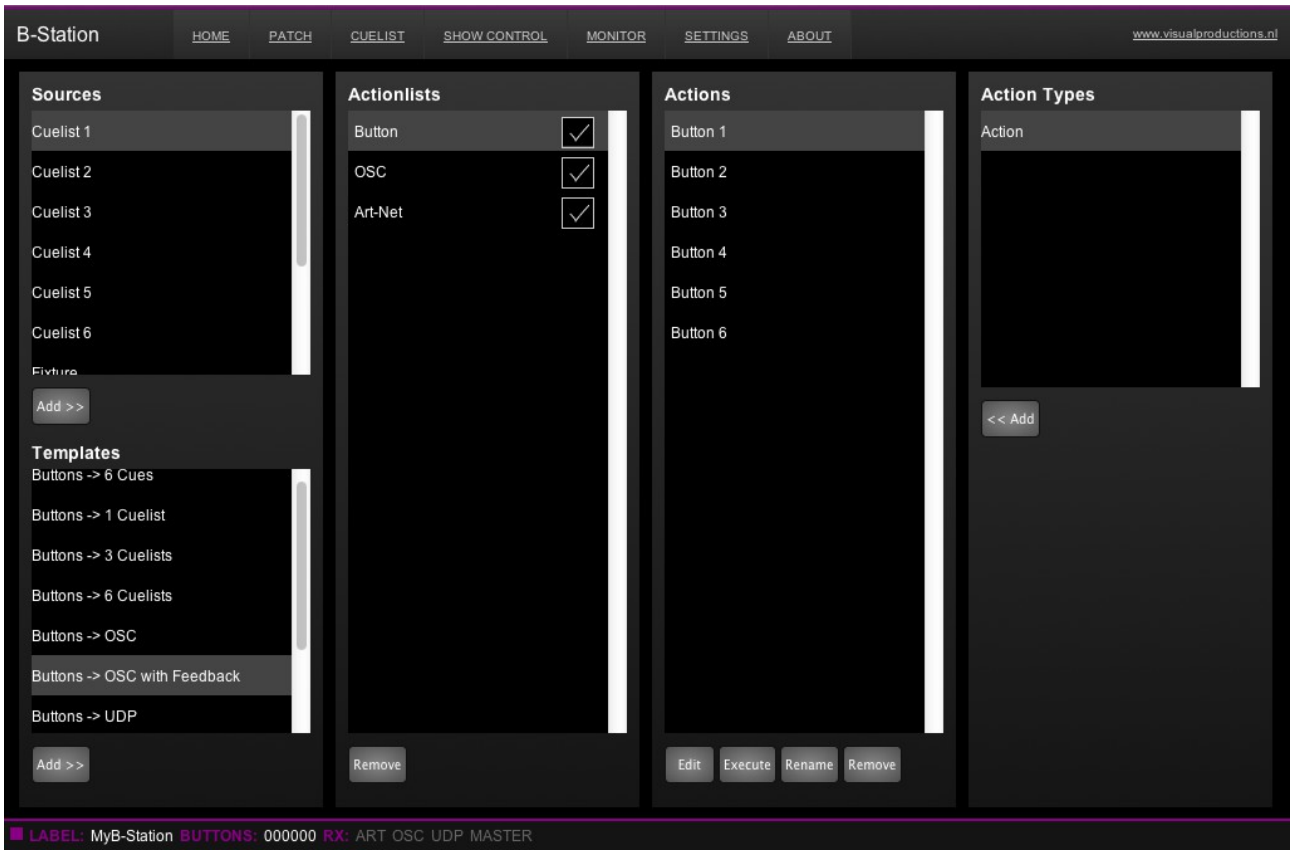
FX generator

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.

Show Control

In the Show Control page you can define the behaviour of the B-Station. You can specify what happens when a user presses a button and how the LEDs will indicate. Also, this is the page where you can handle incoming messages from protocols like UDP, OSC and Art-Net.



The show control consists of action-lists and actions. All the different kind of signals the B-Station can receive are categorized as 'sources'. Each action-list relates to one source and can contain multiple actions. Each action details to which specific signal it is listening and contains a list of tasks it will perform when triggered. Action-lists and actions are further discussed on page Error: Reference source not found.

Protocol Conversion

With many signals coming into the B-Station and many signal going out, the Show Control page is also the place where you can program conversions between different protocols. For example you can program an Art-Net Source and fit it within an Action that sends out DMX-512, thus creating an Art-Net to DMX-512 converter.

Templates

The Show Control page provides ready-made Templates for several typical action arrangements. Templates can be easily copied to the Source list and modified in necessary.

The following table describes the functionality of the templates.

Buttons → 6 Cues	Each button jumps to one of the first 6 cues inside cuelist 1.
Buttons → 1 Cuelists	All buttons are used to control the first cuelist.
Buttons → 3 Cuelists	Each pair of buttons will perform a 'Go-' and 'Go+' on one of the first three cuelists. A long-press will release the cuelist.
Buttons → 6 Cuelists	Each buttons will perform a 'Go+' on one of the six cuelists. A long-press will release the cuelist.
Buttons → OSC	Pressing the buttons will send out OSC messages.
Buttons → OSC with Feedback	Pressing the buttons will send out OSC messages. LEDs are controlled by incoming OSC messages.
Buttons → UDP	Pressing the buttons will send out UDP messages.
Buttons → DMX	Pressing the buttons will control DMX channels 1 through 6.
Art-Net → DMX	Converts Art-Net input to the DMX Output.
OSC → LEDs	Control the LED intensity by OSC messages.

VisualTouch

Creating a VisualTouch layout is done by creating a 'Touch Screen' action-list and adding actions. For each action you can choose between various controls like buttons and sliders. The order of the actions will control the arrangement in VisualTouch.

Action-lists

Programming the show controller involves adding action-list and specifying actions.

In the Action-lists table you can include the sources you will be using in your project. You can choose from input sources like: Button, Art-Net, UDP & OSC. Each source may exist in the table only once, with a maximum of 8 sources in total. Each Action-list can be enabled and disabled.

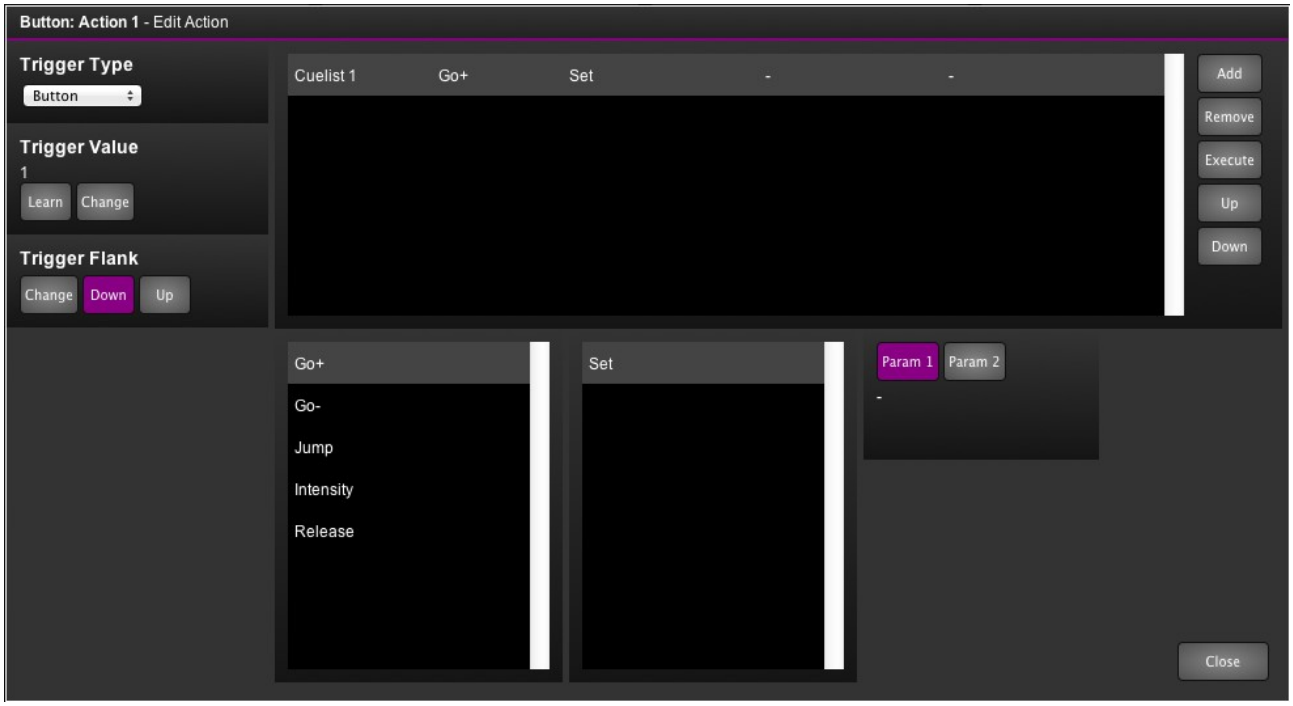
The available sources are:

Art-Net	Trigger on reception of Art-Net or convert Art-Net universes to DMX.
Button	Button press.
Cuelist 1	A state change in cuelist 1.
Cuelist 2	A state change in cuelist 2.
Cuelist 3	A state change in cuelist 3.
Cuelist 4	A state change in cuelist 4.
Cuelist 5	A state change in cuelist 5.
Cuelist 6	A state change in cuelist 6.
Fixture	A state change in a fixture.
OSC	Incoming OSC messages.
System	Miscellaneous triggers like 'OnStartup'
Touch Screen	Triggers received from VisualTouch.
UDP	Incoming UDP messages.
Variable	Variable changed value.

Actions

Within each Action-list you can create multiple Actions. You can create up to 64 Actions system-wide and maximum 48 per list. For each Action you specify when it will be triggered and which Tasks it will perform when that trigger occurs.

To change the details of an action, select it and press the EDIT button. This will open the Action page.



Flank

For most types of actions you can set the flank. For example when editing a Button action, you can trigger on the down-movement of the button or on the up-movement. When the flank is set to CHANGE, the action will be triggered on both up and down movement of the button..

Trigger

Specify the exact trigger on which to execute the tasks. In the case of a Button action, the trigger denotes the button number (there are 6 buttons on the B-Station).

Tasks

You can specify up to 8 Tasks per Action and a maximum 128 Tasks system-wide. When triggered, the Tasks are performed in the same order as they are listed in the Action. Tasks can control various elements and protocols in the B-Station, such as DMX, UDP, OSC, cuelists, LEDs. Tasks can also be used to trigger other Actions, enable or disable action-lists or link to another action.

Because a Task can do a wide variety of things they are organized in different Task 'Types'. When adding a task a pop-up window will allow you to choose from the following types:

Action	Trigger another action.
Action List	Control the properties of an Action-list (e.g. Enable check-box).
Button	You can force the B-Station to re-read the state of the buttons and trigger all associated actions.
Cuelist 1	Control all elements of cuelist 1.
Cuelist 2	Control all elements of cuelist 2.
Cuelist 3	Control all elements of cuelist 3.
Cuelist 4	Control all elements of cuelist 4.
Cuelist 5	Control all elements of cuelist 5.
Cuelist 6	Control all elements of cuelist 6.
Cuelist Selected	Control all elements of the selected cuelist.
Cuelist All	Control functions that are applicable to all cuelists, like 'release all'
DMX	Directly manipulate DMX channels.
Fixture	Set a fixture's parameters directly
LED	Control the LEDs
OSC	Send an OSC message.
UDP	Send a UDP message.
Variable	Store values in a 'variable' memory.

Feature

For each task you can select a Feature. The choice in Features differs for each Type.

Action features:

Link	Trigger another Action.

Action-list features:

Enable	Modify the 'enabled' checkbox of a action-list.

Button features:

Sample Binary	Read all 6 button states together as a binary value. This way you can trigger on any button combination.
Refresh	Force the B-Station to re-read the states of all buttons and trigger any associated action.

Cuelist X features:

Go+	Jump to the next Cue.
Go-	Jump to the previous Cue.
Jump	Jump to a specific Cue number.
Intensity	Set the cuelist's intensity.
Release	Stop the cuelist.

Cuelist All features:

Release	Stop all cuelists.

DMX features:

Set Value	Set a channel
Bump Channel	Momentary set a channel to certain value
Clear All	Set all channels to zero
Spectrum	Scroll through the RGB spectrum. Parameter 1 designates the starting address of the RGB fixture.

Fixture features:

Intensity	Change a fixture's intensity level.
Colour	Change a fixture's colour value.
White	Change a fixture's white level.
Amber	Change a fixture's amber level.
Special	Change a fixture's special level.

OSC features:

Send	Send a message with a parameter.
Send Float	Send a message with a float type parameter (compatible with TouchOSC).
Send Unsigned	Send a message with an unsigned type parameter.
Send Bool	Send a message with a bool type parameter.
Send String	Send a message with a string type parameter.

LED features:

Intensity	Change the intensity of a LED.
Flash	Performa a single flash with a LED
Blink	Blink a LED.
Playstate	
Solo	Turn on one LED, turn all others off.
Clear All	Turn off all LEDs.

Function

Each Task also has a Function field. The choice of Functions depends on the Task-Type and the selected Feature. For example, when you add a Task with the 'Cuelist 1' Type and set its Feature to 'Jump' then you can select of the following Functions:

Set	Jump to a Cue number specified in Param1.
Toggle	Jump to between the Cue numbers specified in Param1 and Param2.
Control	Jump to a Cue number determined by the trigger of this action. If this action was triggered by a MIDI messages then the Cue number is determinded by the MIDI value (in case of a CC message) or velocity (in case of a NoteOn message).
Switch	Switch to between the Cue numbers specified in Param1 and Param2. If the action was triggered by a value <50% it will select Param1 and if it's >50% it will select Param2.

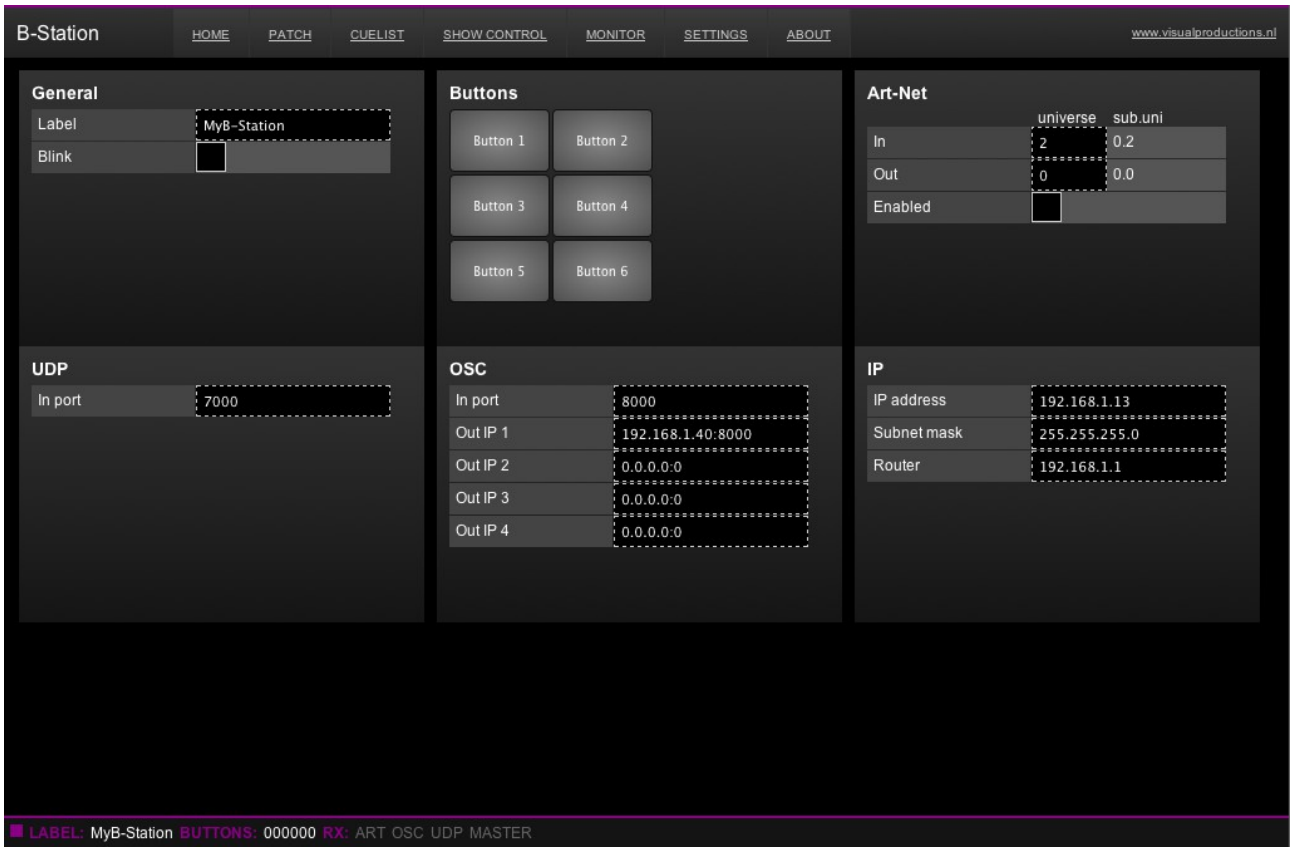
Monitors

The Monitor page presents you with an overview of the B-Station's incoming and outgoing data. This page is useful for checking and debugging your programming.

The top row of buttons allows for selecting the data stream. In the case of DMX or Art-Net data, you can use the buttons on the right to toggle between decimal and percentage notations, and use the up and down buttons to step through all the channel pages.

Settings

In the Settings page you can change various properties of the B-Station.



General

You can change the B-Station's label. This label can be used to distinguish the unit in a set-up with multiple units.

The 'Blink' check-box will flash the device's LED to help to identify it amongst multiple devices.

Buttons

These buttons represent the B-Station's physical knobs and can be used to test the programmed behaviour via the web-interface.

Art-Net

The Art-Net feature in the B-Station supports 1 universes out and 1 universes in. You can map each of those universes to any of the 256 available universes in the Art-Net protocol. This number is zero-based, ranging from 0 up to and including 255.

The broadcast messages sent out by Art-Net do put a certain load on the network, therefore it is recommended to disable Art-Net when not in use.

UDP

In this section you can set the port number on which the B-Station will listen out for UDP messages. The IP addresses and port numbers for outgoing UDP messages are set in the tasks at the Show Control page.

OSC

Set the port number on which the B-Station will listen for OSC messages in this section.

Also you need to fill in the addresses of the devices you would like to be receiving the OSC messages being sent out by the B-Station. In these IP Out fields you enter both IP address and port number; in the following syntax: “ipaddress:port”. E.g. to send OSC messages to your device at 192.168.1.99 and port number 7070, you would fill in: “192.168.1.99:7070”.

You can specify up to 4 addresses. Fill in “0.0.0.0:0” in each field you do not need to use.

IP

For setting up the IP address and sub-net mask of the B-Station. The 'Router' field is only required when doing Port Forwarding.

Alphabetical Index