Hi-LED 55 manual

Create your ultimate visual experience

Aluvision

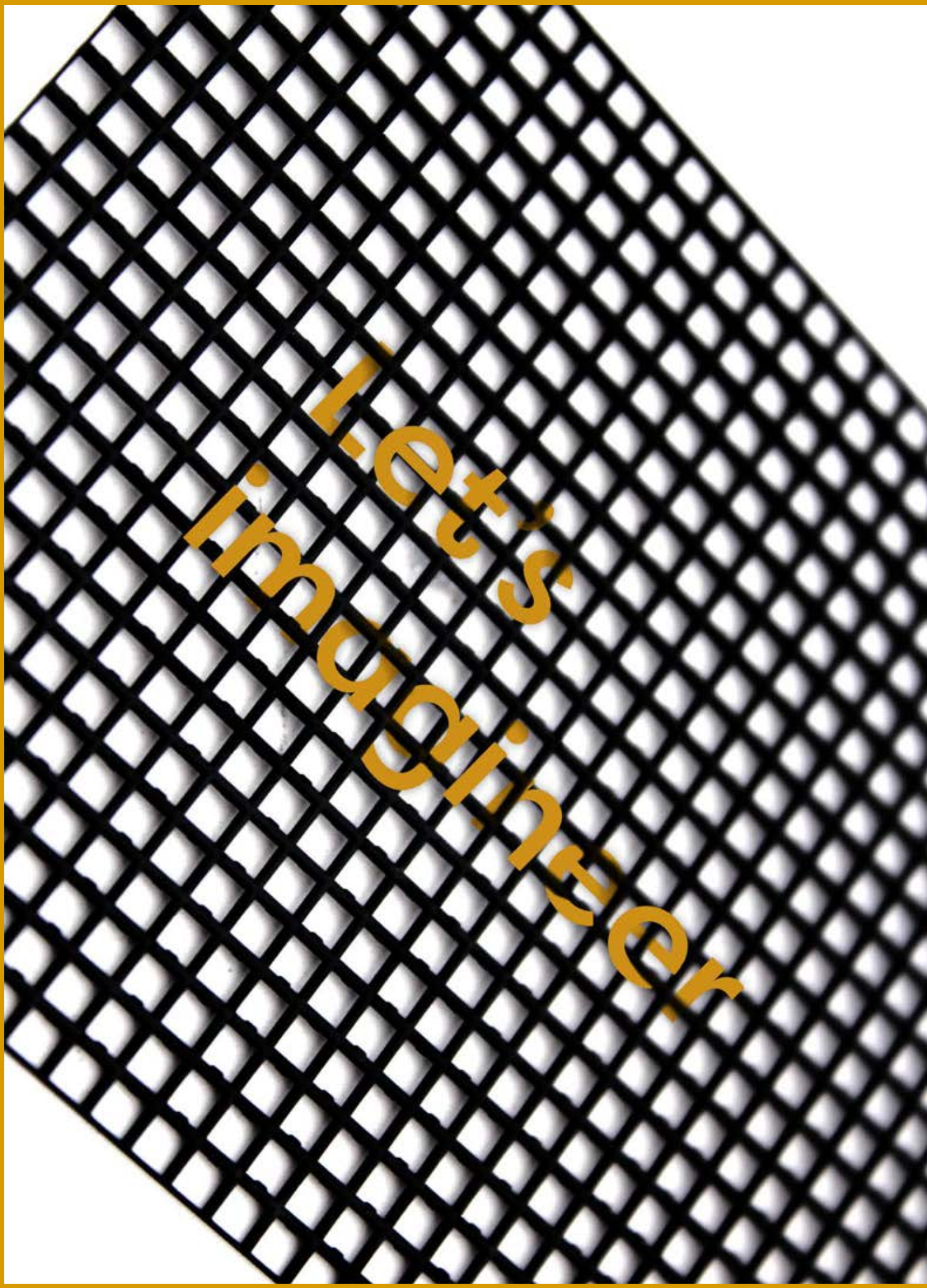

let's
imagine

Table of contents

01
Hardware

01.1 Pixel pitch
01.2 Batch
01.3 Hi-LED 55
01.4 Hi-LED 55+
01.5 Curves
01.6 Resolutions
01.7 Cables & connection
01.8 Powerflow
01.9 Dataflow
01.10 Hi-LED 55 hardware chain
01.11 Media players
01.12 Led controllers
01.13 Calculate dataflow layout

02
Video content

02.1 Regular video
02.2 Irregular video shape
02.3 Video file export settings
03.4 Brightauthor

03
Controlling Hi-LED 55

03.1 Standard screen - regular video
03.2 Large standard screen (multiple data output ports) - regular video
03.3 Multiple standard screens
03.4 Standard screen - irregular video shape
03.5 Complex screen - regular video
03.6 Save and load configuration
03.7 Remove configuration
03.8 Laptop or PC as media player

04
Hi-LED troubleshooting

04.1 Factory reset receiving cards
04.2 Calibrate cabinets
04.3 Troubleshoot decision tree

05
Annex

05.1 Glossary
05.2 Tables & settings
05.3 Downloads

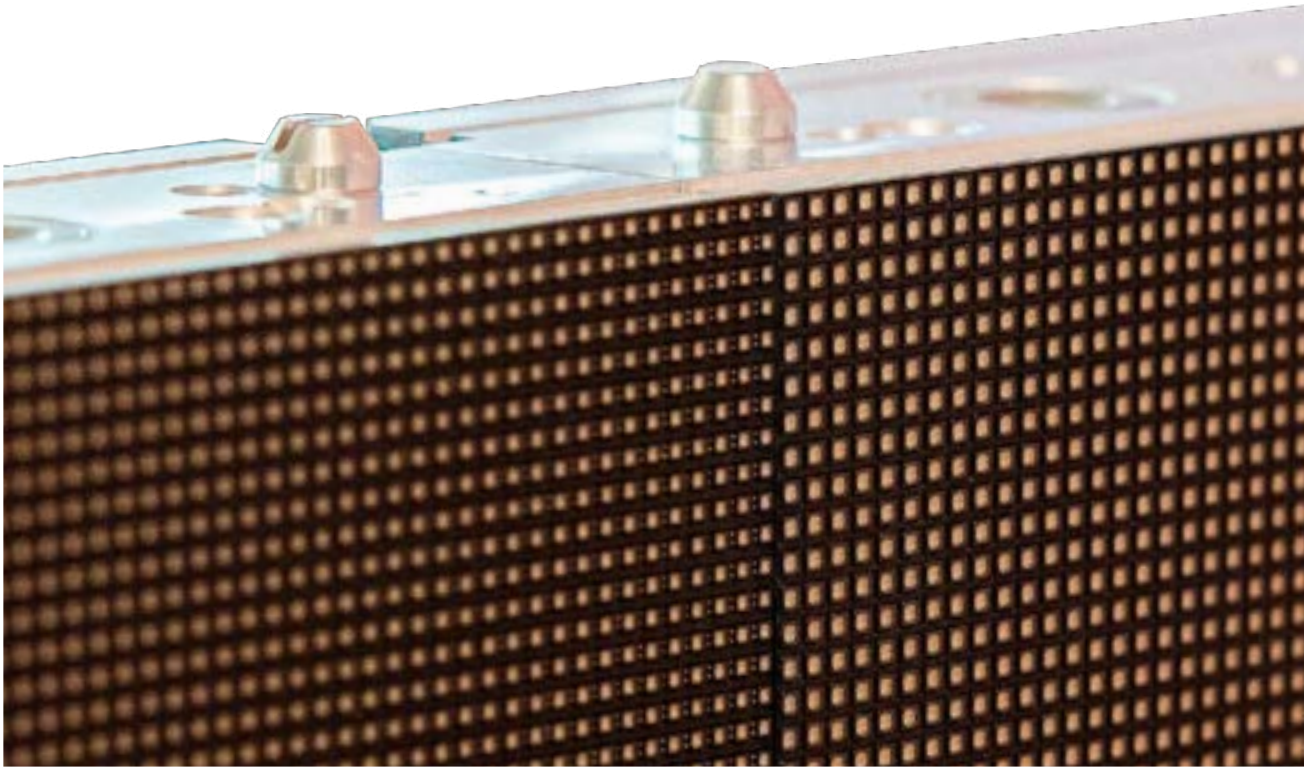
01. Hardware

01.1 Pixel pitch

Aluvision offers **two types of Hi-LED 55**:
- 2.8 (176x176 pixels, pitch 2.8 mm)
- 2.5 (192x192 pixels, pitch 2.5 mm

⚠ Please make sure you know what type of Hi-LED 55 you have and which batch they are. The batch number and amount of pixels is important when setting up the Hi-LED 55 configuration.

Each cabinet consists of **4 replaceable LED modules**. The pixel pitch value is the distance from one led to the next.



✕ Pixel pitch 2.5 module

✕ Pixel pitch 2.8 module

01.2 Batch

Each LED module has a **batch number**. LED modules of the same batch guarantee a seamless image across the LED surface.

On the back of each LED module you can find the batch number.

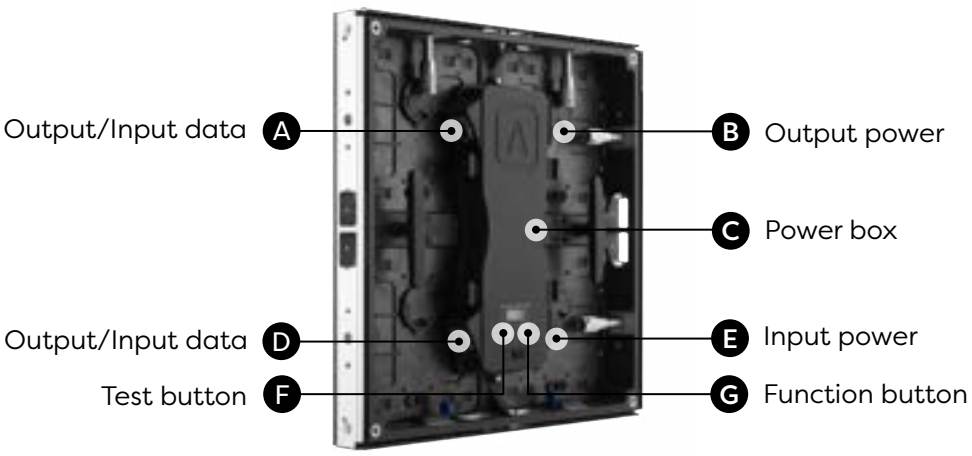
Example	Hi-LED 55 P2.5
BATCHNUMBER	BATCH 205

01.3 Hi-LED 55

At the back of the cabinet a **power box** is mounted. The power box has 4 connectors. There are 2 power connectors on the right, an **input** (male connection) and an **output** (female connection). On the left you can find **two signal connectors**, can be either an input or output.

At the bottom of the power box 2 buttons are available. The **test button** is used to play a colour or a pattern to check the brightness, check for broken pixels, etc. The test button functionality is only used when there is no LED controller connected. Press the button twice to enter the test modes, then press once to switch between the modes.

Pressing the **function button** shows more info about the cabinet on the LCD information display: *software version, current temperature and operating hours.*



Extra specifications

Weight: 8,8 kg (2.8 mm), 9,8 kg (2.5 mm)

Panel dimensions: 495,8x495,8 mm

Vertical viewing angle: 120°

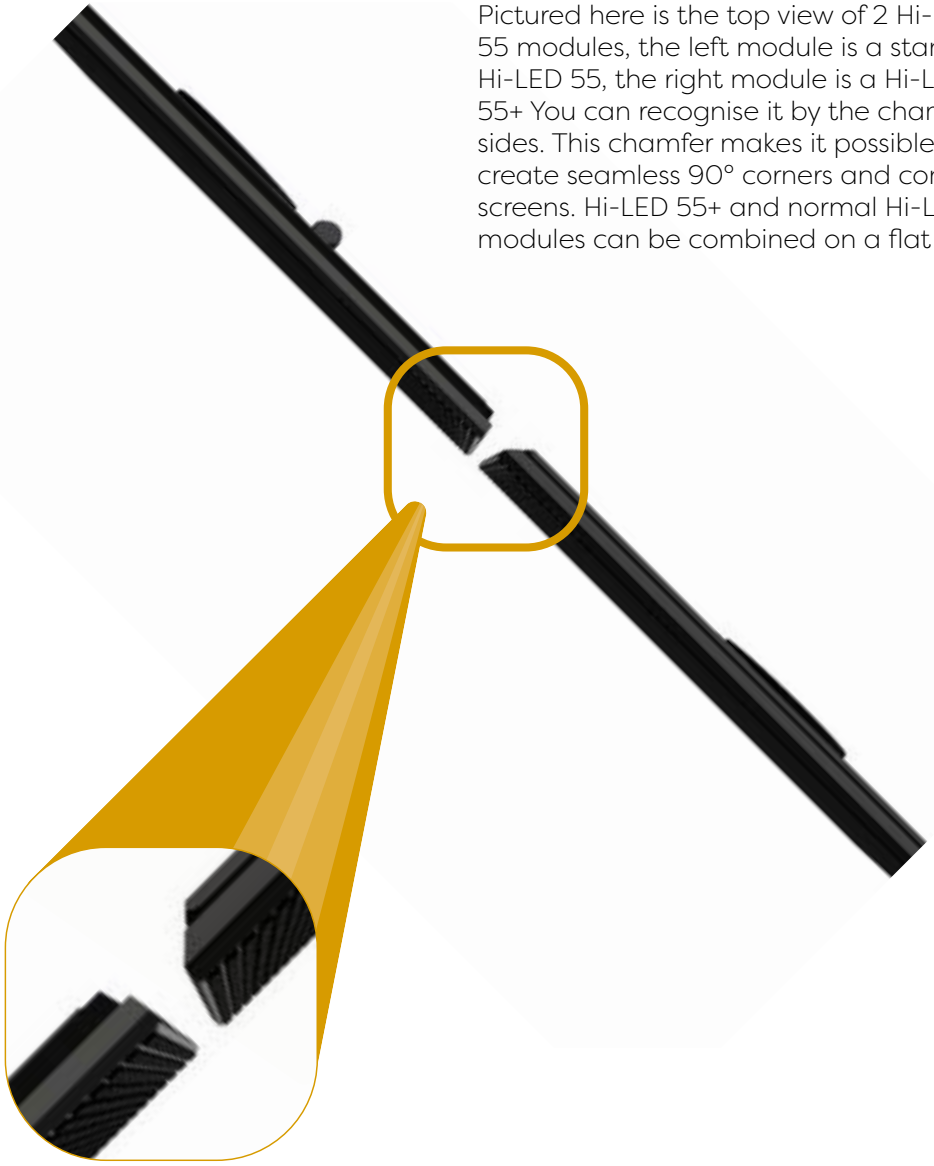
Horizontal viewing angle: 140°

Max. hanging quantity: 20 cabinets

Max. stacking quantity: 10 cabinets (without support)

01.4 Hi-LED 55+

Create seamless corners and convex screens.



Pictured here is the top view of 2 Hi-LED 55 modules, the left module is a standard Hi-LED 55, the right module is a Hi-LED 55+ You can recognise it by the chamfered sides. This chamfer makes it possible to create seamless 90° corners and convex screens. Hi-LED 55+ and normal Hi-LED 55 modules can be combined on a flat surface

Extra specifications

Weight: 10,1 kg (2.8 mm), 11 kg (2.5 mm)

Panel dimensions: 495,8x495,8 mm

Vertical viewing angle: 120°

Horizontal viewing angle: 140°

Max. hanging quantity: 20 cabinets

Max. stacking quantity: 10 cabinets (without support)

01.5 Curves

Aluvision also offers, next to the regular flat tiles, curves. All can be integrated seamlessly into the original Aluvision frame system.

Hi-LED R437 convex

- Outer curve 90°

Hi-LED R437 concave

- Inner curve 90°

The curved Hi-LED 55 tiles consist of 4 flexible (and replaceable) LED modules. The height is the same as a regular Hi-LED 55. The power box looks a little different, but has the same functionalities as the ones for a flat Hi-LED 55.

Look for this sticker on the back of the LED module to determine the pixel pitch and Batch number.

01.6 Resolutions

	Hi-LED 55/ Hi-LED 55+	90° CONCAVE	90° CONVEX	30° CONCAVE	30° CONVEX
					
Pixelpitch 2.8	176 x 176	244 x 176	274 x 176	274 x 176	274 x 176
Pixelpitch 2.5	192 x 192	266 x 192	300 x 192	300 x 192	300 x 192

01.7 Cables & connection

- A **Truecom power cable** of 10 meters powers the cabinets (32.8ft).

EU power cable

US power cable

Power input

- A **Neutric signal cable CAT5E** of 20 meters provides the data to the cabinets (65ft).

Signal input

- **Interlink cables** link the cabinets and send power and data from one cabinet to another. Interlink power cables can be connected to each other (daisy chaining), interlink signal cables can't.

Truecom Interlink power cable
(1, 3, 6 or 10 meters)
(3.2ft, 9.8ft, 19.6ft, 32.8ft)

Neutric Interlink signal/ data cable CAT5E
(1, 3, 6 or 10 meters)
(3.2ft, 9.8ft, 19.6ft, 32.8ft)

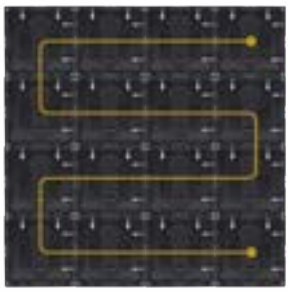
01.8 Powerflow

The power flow is the order in which the cabinets send power from one cabinet to the other.

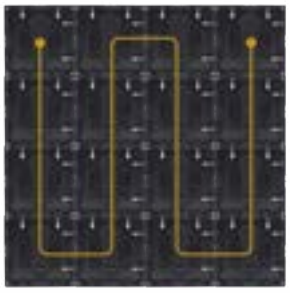
Connect up to **18 (EU)/9 (US) 2.8 mm cabinets** and **17 (EU)/8 (US) 2.5 mm cabinets** in one power flow, but always keep in mind the maximum and average power consumption.

	Max. connections EU	Max. connections US	Max. power (W)	Average power (W)
Hi-LED 55 (2.8)	18	9	147.5	49
90° CONCAVE (2.8)	13	6	204	68
90° CONVEX (2.8) **30° CONCAVE (2.8)** **30° CONVEX (2.8)**	12	6	230	77
Hi-LED 55 (2.5)	17	8	152.5	51
90° CONCAVE (2.5)	12	5	211	70
90° CONVEX (2.5) **30° CONCAVE (2.5)** **30° CONVEX (2.5)**	11	5	238	79

Maintain the overview: work in a vertical or horizontal data/signal flow.



Horizondal flow



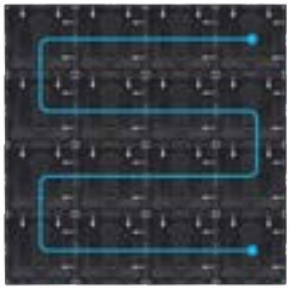
Vertical flow

01.9 Dataflow

The signal/data flow is the order in which the cabinets are connected. The signal/data flow is very important to keep in mind for the configuration of the cabinets later on. The maximum amount of cabinets in 1 signal/data flow depends on the used controller. See chapter 01.6. The power and data do not necessarily need to follow the same flow.

1. A Horizontal or a vertical snake pattern is the most efficient cabling layout.
2. If you are working with different cabinets (a combination of different pixel pitches or straight tiles and curves) try to group cabinets of the same shape and batch together on a cable. This makes configuration easier later on. That being said you, can definetly mix batches and shapes on one cable.
3. Just like power flows there is a limit on the amount of cabinets you can connect in one dataflow. Head to chapter 1.12 to calculate a dataflow layout.

⚠ **Maintain the overview:** work in a vertical or horizontal power flow.



Horizondal flow

Vertical flow

01.10 Hi-LED 55 hardware chain

After all the cabinets are connected with interlink power and signal/data cables, plug the first cabinet into a power outlet. Use a 20m Neutrik data/signal cable to connect the first cabinet to the LED controller. Connect the LED controller to a media player.

01.11 Media players

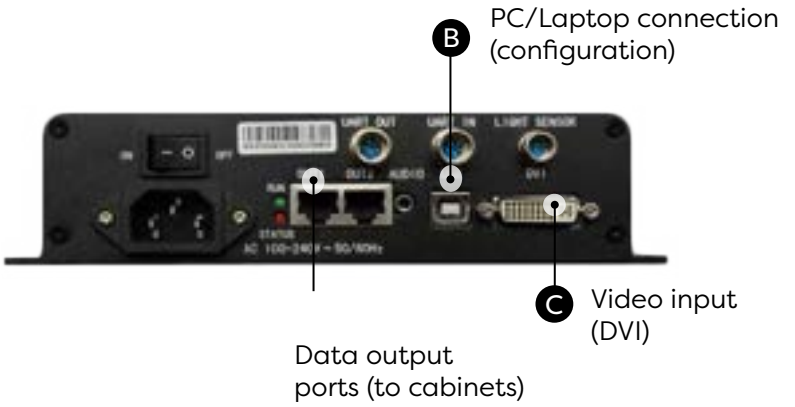
A media player is required to play content on your LED wall. You can use any media player you want: Media server PC/laptop, DVD/Blu-ray player, game console... or you can use a media player such as a '**BrightSign**' device. BrightSign LS424 (HD) is recommended by Aluvision. For 4K support, BrightSign HD224 is available. The biggest advantages are the player's physical size (fits inside an Aluvision frame) and the automatic looped playback.

The media player should be connected to the Novastar controller using an HDMI or an HDMI to DVI cable (only with Novastar MCTRL300).

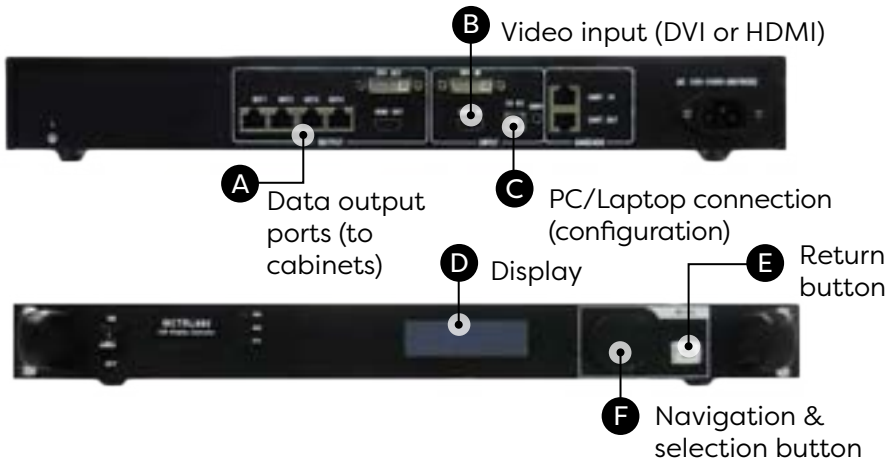
01.12 LED controllers

An LED controller/sending box is required to send the correct data to each cabinet. Aluvision uses Novastar controllers. Different types can be used, depending on the amount of cabinets in your setup and it's functionalities. We offers four types:

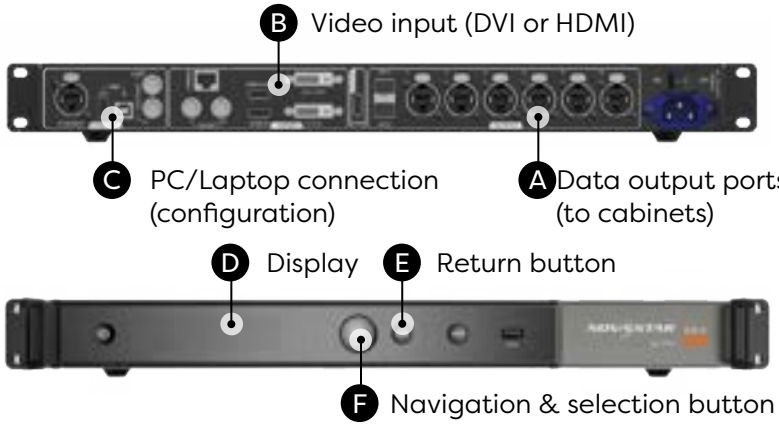
- **Novastar MCTRL300**
  - Supports 1.3 million pixels, 2 data outputs, including standard resolutions (1280x720, 1440x900, 1280x1024 and all smaller resolutions)
  - Output maximum: 20 cabinets (2.8 mm) / 17 cabinets (2.5 mm)
  - Controller maximum: 40 cabinets (2.8 mm) / 34 cabinets (2.5 mm)



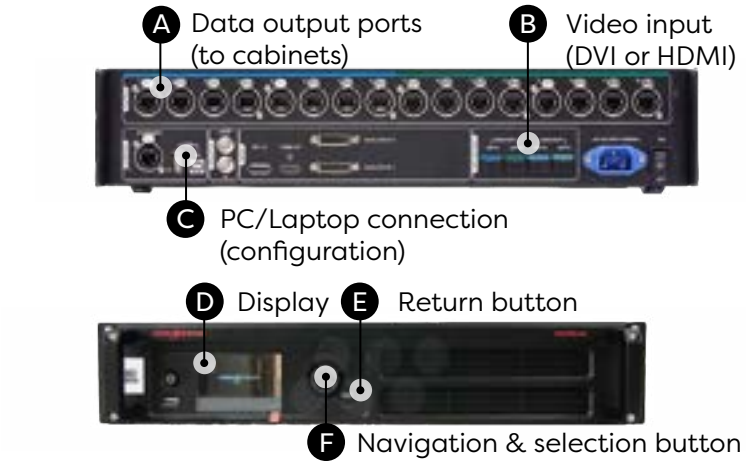
- **Novastar MCTRL660**
  - Supports 2.3 million pixels, 4 data outputs, including standard resolutions (1920x1080 fullHD, 1920x1200, 2048x1080 and all smaller resolutions)
  - Output maximum: 18 cabinets (2.8 mm) / 15 cabinets (2.5 mm)
  - Controller maximum: 72 cabinets (2.8 mm) / 60 cabinets (2.5 mm)



- **Novastar MCTRL660 PRO**
  - Supports 2.3 million pixels, 6 data outputs, including standard resolutions (1280x720, 1440x900, 1280x1024 and all smaller resolutions)
  - Output maximum: 12 cabinets (2.8 mm) / 10 cabinets (2.5 mm)
  - Controller maximum: 72 cabinets (2.8 mm) / 60 cabinets (2.5 mm)
  - No PC/laptop required for basic configuration and testing
  - 10/12-bit video support, low latency



- **Novastar MCTRL4K**
  - Supports: 8.3 million pixels, 16 data outputs, including 3840*2160 UHD and all smaller resolutions.
  - Output maximum: 16 cabinets (2.8 mm) / 14 cabinets (2.5 mm)
  - Controller maximum: 256 cabinets (2.8 mm) / 224 cabinets (2.5 mm)
  - No PC/laptop required for basic configuration and testing
  - HDR support
  - 4K support



01.13 Calculate dataflow layout

	300	600	660pro	4k
Number of ports	2	4	6	16
2.8 output max. full load	20	18	12	16
2.8 output max. (controller not fully loaded)	20	20	20	20
2.8 controller max.	40	72	72	256
2.5 output max. full load	17	15	10	14
2.5 output (controller not fully loaded	17	17	17	17
2.5 controller max.	34	60	60	224
max resolution	1280 x 1024 @60fps	1920 x 1200 60fps	1920 x 1200 @60fsp	4096 x 2160 @60fps
HDR	no	no	yes	yes
Low latency	no	no	yes	no

All resolutions smaller than the ones recommended, are supported too.
Custom resolutions are also possible within the restrictions of the controller.

Output maximum	Maximum amount of cabinets on one data port if the controller is fully loaded. When the controller is **not** fully loaded one output port can power a maximum of 20 2.8/17 2.5 cabinets.
Controller maximum	Maximum amount of cabinets on all data ports (this is limited).
HDR video	Standard video has 8 bit data rate . HDR video has a 10 bit datarate. Because of the higher bitrate, with HDR video the controller capacity is reduced by half.
Cascading	Novastar M600 & pro controllers have a video out port. This is for situations where you want to play the same video on different screens. You can have one media player, sending the video to LED controller 1, controller 1 sends the video to controller 2 and so on. Note: Cascading is not intended to use one 4k media player and 4 600 controllers to fill a 4k screen. The controllers cannot decode and pass trough a video signal larger than 1920x1200px)

02. Video content

02.1 Regular video

From now on we will be using the term **video** to define the content the hardware has to play. The term **screen** is used to describe the hardware.

Regular video	Any video that has a rectangle or square shape
Irregular video shape	Any video with a layout that is not strictly a rectangle or a square.
Standard screen	A LED wall built with one type of LED cabinets.
Irrecular video	A LED wall built with different types of LED cabinets (eg: a combination of flat tiles and curves).

The resolution of the video file that is played back by the media player is different from the actual resolution of the screen. When exporting the video, **use standard HD (1920x1080 pixels) or 4K (3840x2160 pixels) video resolution**. The footage that is shown on the screen is the rectangle positioned in the top left corner within this video.

Depending on the media player, other resolutions can be used. Below you can find the instructions how to prepare your video using a BrightSign media player. Other workflows are also possible, but this workflow makes sure you won't face any scaling issues later on.

The resolution of the rectangle should match the resolution (amount of pixels) of the screen. This is called **'pixel to pixel'** and means that every pixel in the video represents a pixel in the screen.

To calculate the resolution of the screen, first **count the amount of cabinets in your screen.** To calculate the resolution width, multiply the amount of horizontal cabinets in your screen with the amount of horizontal pixels in one cabinet (Hi-LED 55 2.8 mm = 176 pixels; Hi-LED 55 2.5 mm = 192 pixels). To calculate the resolution height, **multiply the amount of vertical cabinets in your screen with the amount of vertical pixels in one cabinet** (2.8 mm = 176 pixels; 2.5 mm = 192 pixels).

EXAMPLE:

Example of a standard screen (6 cabinets)

The setup is a 6 cabinet LED screen (3 wide, 2 high). Calculate the amount of pixels in the screen to determine the resolution for the rectangle in the video. This is different for pixel pitch 2.8 mm and 2.5 mm.

Resolution width: 3 x 176 pixels = **528 pixels** (Hi-LED 55 2.8 mm)
3 x 192 pixels = **576 pixels** (Hi-LED 55 2.5 mm)

Resolution height: 2 x 176 pixels = **352 pixels** (Hi-LED 55 2.8 mm)
2 x 192 pixels = **384 pixels** (Hi-LED 55 2.5 mm)

Screen resolution: **528 x 352 pixels** (Hi-LED 55 2.8 mm)
576 x 384 pixels (Hi-LED 55 2.5 mm)

2.8 pixel pitch

2.5 pixel pitch

02.2 Irregular video shape

An irregular screen is defined as any video with a layout that is not a rectangle or a square. So for example cabinets in a randow shape not necessarily right next to eachother. We've illustrated a random shape in the example below.

Again the resolution of the video file (that is played back by the media player) is different from the actual resolution of the screen. When exporting the video, **use standard HD (1920x1080 pixels)** or **4K (3840x2160 pixels)** video resolution. The footage that is shown on the screen (LED tile video) is represented by squares positioned in the same way the cabinets are. The remaining part of the video should stay black.

Depending on the media player, other resolutions can be used. Below you can find the instructions how to prepare your video using a BrightSign media player. Other workflows are also possible, but this workflow makes sure you won't face any scaling issues later on.

Again the irregular video shape should be **'pixel to pixel'** with the screen. The irregular video shape consists of squares with the same resolution as the used cabinets (Hi-LED 55 2.8 mm = 176x76 pixels; Hi-LED 55 2.5 mm = 192x192 pixels). If there's a gap between two cabinets in the screen, also leave a gap in the video. Gaps should also be 'pixel to pixel', meaning as big as 1 cabinet (2.8 mm = 176x176 pixels, 2.5 mm = 192x192 pixels).

Use a grid to represent the cabinets and to help position each square of video.

EXAMPLE:

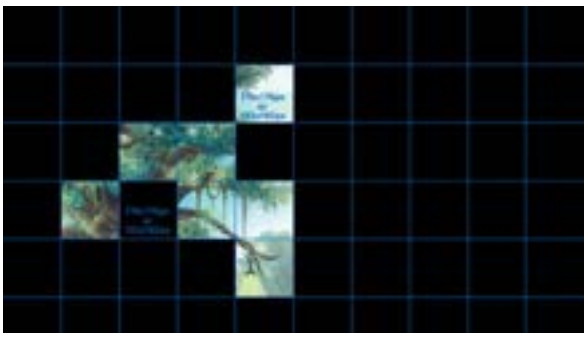
Example of an irregular screen (7 cabinets)

The setup is a 7 cabinet LED screen with the cabinets in a random shape. First **check the type of cabinets you have**, since Hi-LED 55 2.8 mm and Hi-LED 55 2.5 mm have a different amount of pixels.

Start from your full image and determine which parts of the footage should be shown on the screen. You can **use a grid** to make it easier. The grid should have a gridline every 176 pixels (Hi-LED 55 2.8 mm) or every 192 pixels (Hi-LED 55 2.5 mm). In the picture below the irregular video shape is marked in blue.

The indication of which parts that should be shown is called a **pixelmap** and is used to configure the screen later on.

Pixelmap



Pixel to pixel video

Note that the first row and column are blank, to match the top left of the video with the top left of the overall graphic.

To prepare a pixel to pixel video (according to Pixelmap), make sure only the irregular video shape remains. The result is a video consisting of 7 squares (176x176 pixels or 192x192 pixels) each of them representing a cabinet, **positioned in the same way the cabinets are**. The gaps also have the same resolution as the squares and represent a blank cabinet.

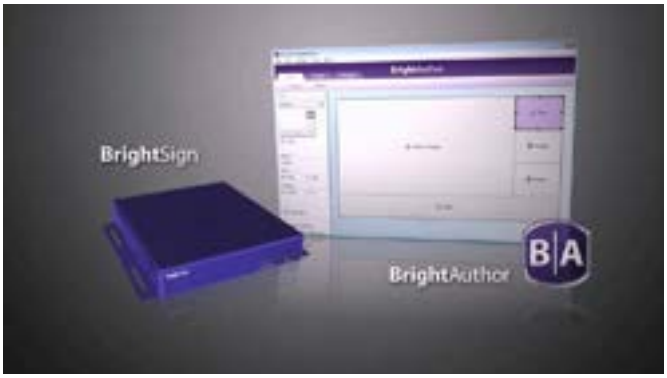
02.3 Videofile export settings

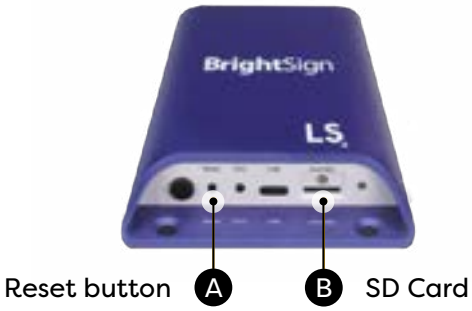
Take the following settings into account when exporting your video file for a Brightsign player:

Container: .mp4 (other formats possible depending on media player)
Resolution: HD (1920 x 1080) – 4K (3840 x 2160)
Codecs: H.265 best quality, very long render time – H.264 slightly lesser quality, faster rendertime
Frame rate: 25/50fps (EU) – 30/60fps (US)
Field order: progressive
Max. Bitrate: 25 Mbps (LS424) – 70 Mbps (HD224)

02.4 BrightAuthor

Using a BrightSign media player offers a lot of advantages (small, auto loop, scaling). If your video is made pixel to pixel and only loop playback is required, then you can just drop the video on an empty microSD card and put that in the player. If you need scaling or scheduling features then there are some extra steps required. Download BrightAuthor from www.brightsign.biz to configure your BrightSign media player.

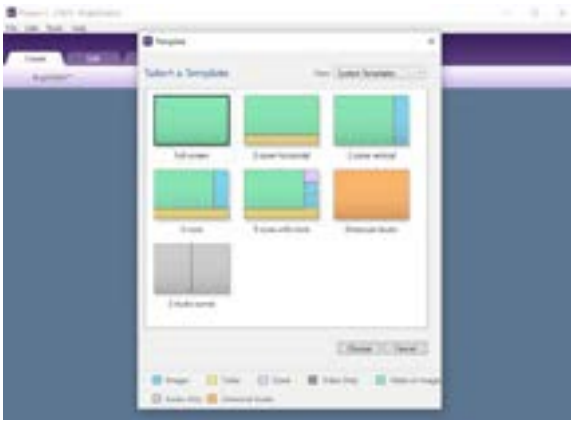




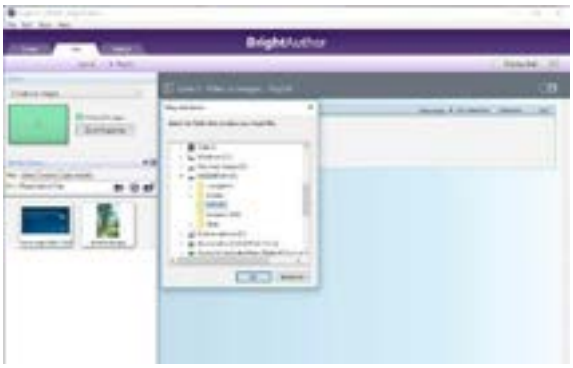
To publish a video, follow the steps below.

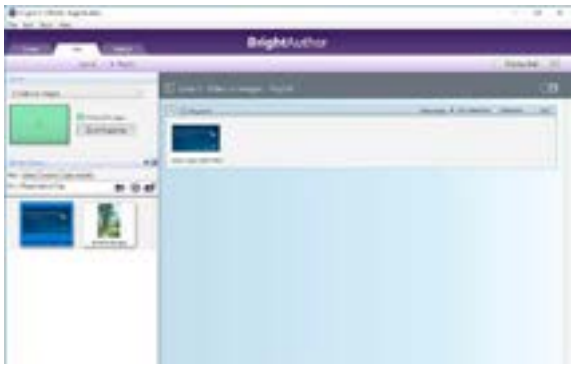
Open BrightAuthor and create a new project.

1. In the top menu choose **File > New project.**
2. Choose your model **LS424** (recommended for HD), **HD224** (recommended 4K) or another model.
3. Choose the **connector type** (in most cases HDMI).
4. Choose the **resolution**, this is the same as the video file resolution: **1920x1080x50 px (Europe) or 1920x1080x60 px (US) (4K: 3840x2160x50 px (Europe) or 3840x2160x60 px (US)).**
5. Choose **Landscape** as monitor orientation.
6. Click **Create** and in the next screen, choose **Full screen** as template.

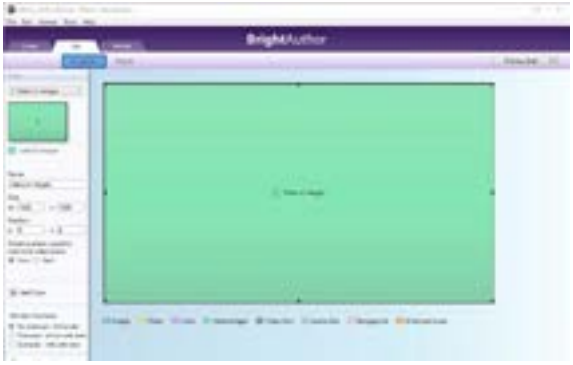


Select the **Edit** tab, choose the folder with the exported video in it and drag & drop the video in the **Drag media here** box. You can also drag and drop the video in this box directly from an Explorer window (Windows) or a Finder window (Mac).



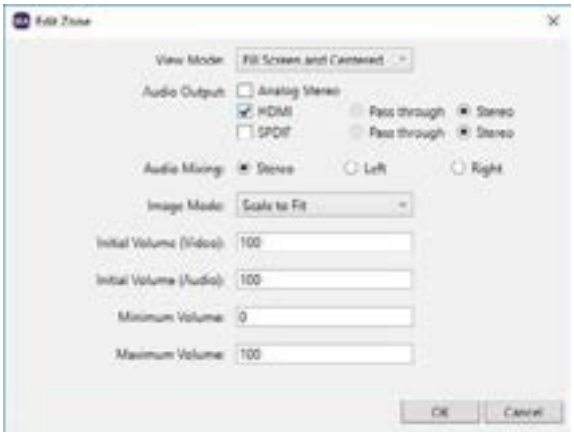


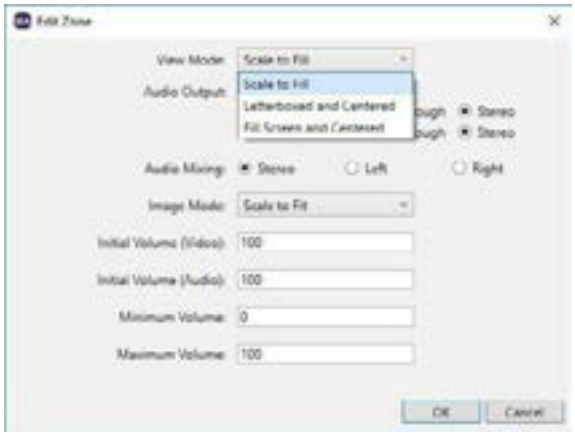
When the video is not prepared to match your screen, it's also possible to scale the video using the BrightAuthor software. Navigate to the **Layout** page and set the screen's width and height.



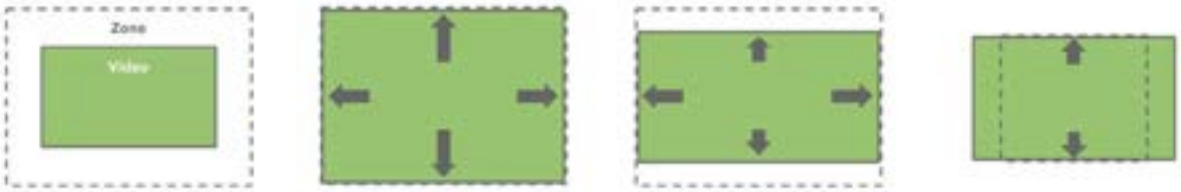
Next, go back to the **Playlist** page and click the **Zone Properties** button. A pop-up window shows up.

The **View mode** option allows you to determine how the video will be scaled to fit the screen. Logically, there will be no effect if the video and the screen are the same size.





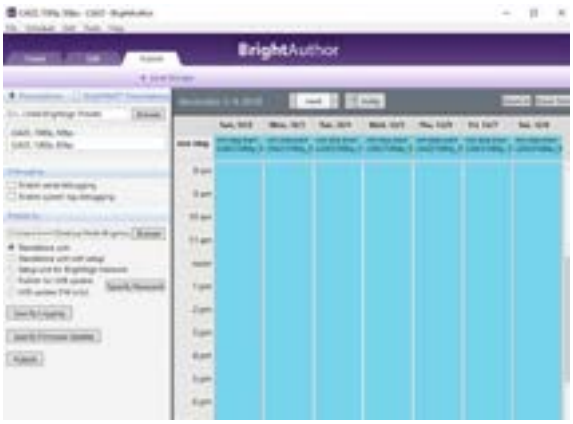
3 different options are available to scale the video, depending on what is important, filling the screen or maintaining the aspect ratio.

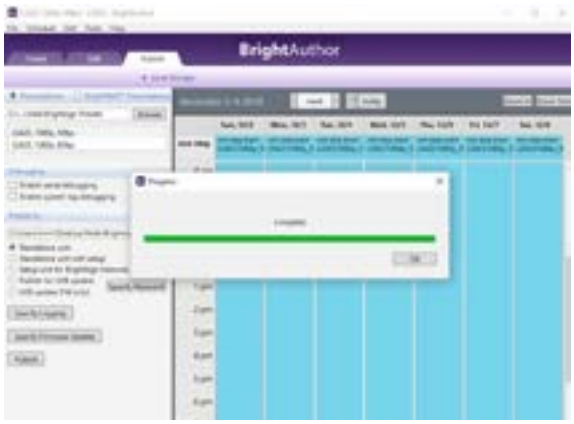


Scale to fill | Letterboxed and centered | Fill screen and centered

- **Scale to Fill:** scales the video without maintaining the aspect ratio, video is stretched
- **Letterboxed and Centered:** centers video and adds black borders to show the full video and to maintain the aspect ratio
- **Fill Screen and Centered:** centers and crops the video to fill the screen and to maintain the aspect ratio

For the last step select the **Publish** tab. Choose a formatted micro SD card, click **Publish** and click **OK** when completed.





Insert the SD Card in the BrightSign player and press **Reset**. The video is now ready.

03. Controlling Hi-LED 55

03.1 Standard screen - regular video

A standard screen is defined as **a setup with all cabinets in one big rectangular shaped screen**. This is the easiest setup. To configure the controller for this kind of screen two things are important to keep in mind: the amount of horizontal and vertical cabinets and the signal/data flow in between the cabinets. In the example below, the configuration of a standard 6-cabinet screen is shown step by step.

Example of a standard screen (6 cabinets)

✕ Standard screen – MCTRL300 controller setup

To configure a standard screen using a MCTRL300 controller, a Windows PC/laptop with NovaLCT software is required. The software doesn't run on Apple laptops.

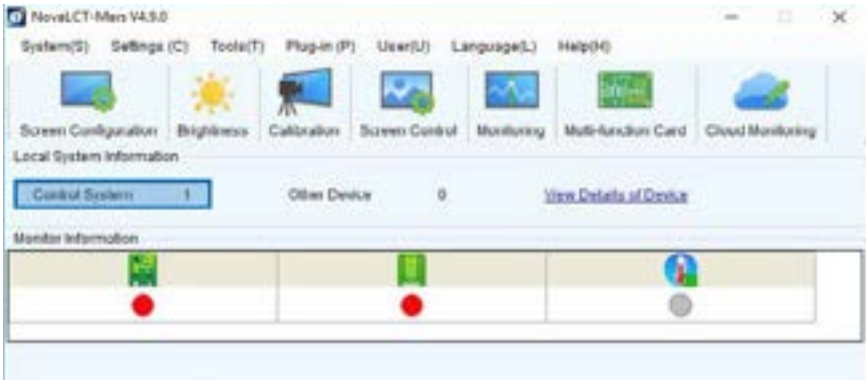
Connect your PC/laptop to the MCTRL300 controller using an USB cable and power up the controller.

Next, open the **NovaLCT software**. This software is used to configure the Novastar LED controllers.

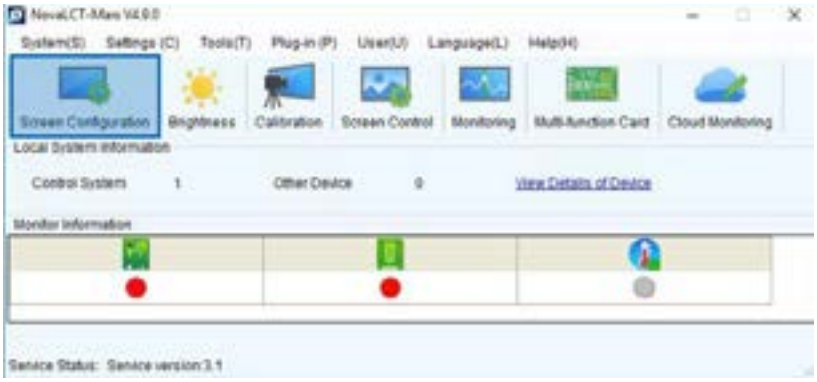
The software installation file can be downloaded from the Aluvision website: **www.aluvision.com/en/products/downloads.**

After opening the software, choose **User(U)** > **Advanced User Login** from the top menu to login. You will not be able to make any changes to the controller if you do not log in. Use **admin** or **666** as the password and press **Login**.

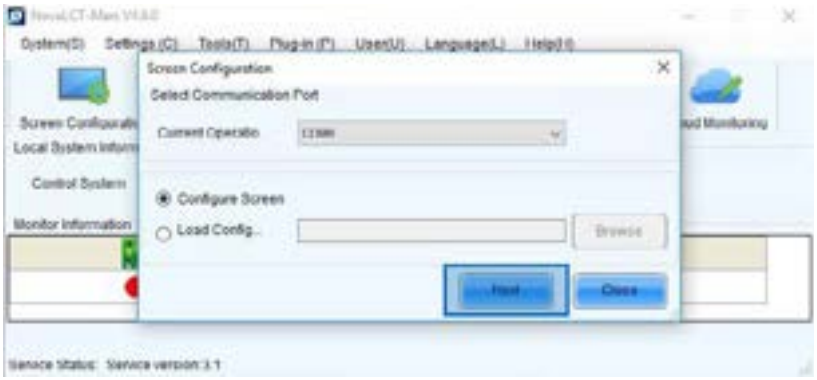
After logging in, check if the **Local System Information**: **Control System** indicates that the controller is successfully connected. **1** indicates that the connection to the controller is OK, **0** indicates that no connection to a controller has been found. In this case, do the following: check if the controller is powered, if not switch it on at the back of the controller. Also check if the USB cable is connected and if the USB cable or USB port is not damaged. Now choose **System (S)** > **Reconnect (R)** from the top menu, the **0** should change into **1**.



To start the configuration of a standard screen, click on the **Screen Configuration** button.

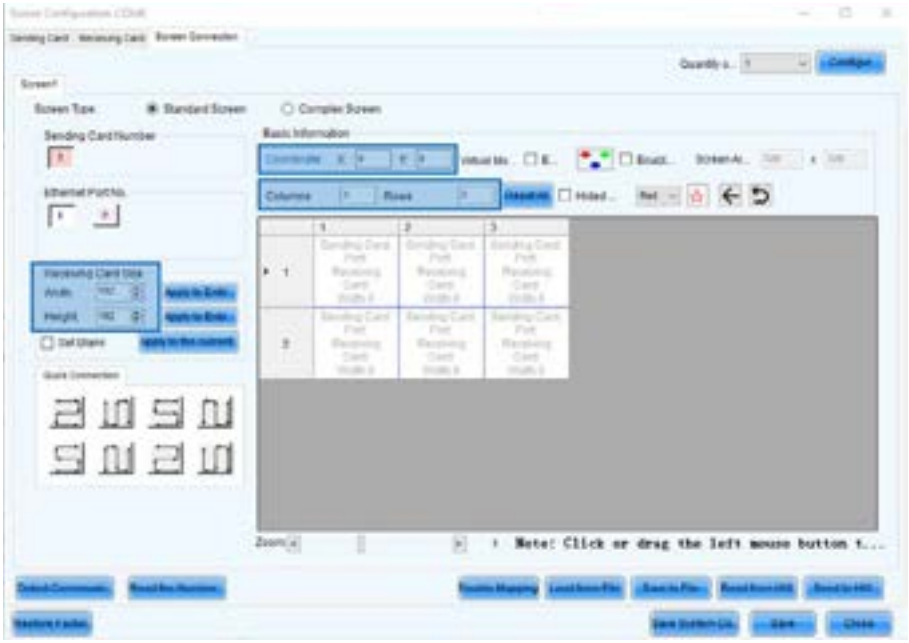


A pop-up window shows up. When you have a successful connection with a controller, the communication port will be selected automatically. Otherwise the drop down menu will stay empty. Click **Next** in the pop-up box. The **Screen Configuration** window shows up.



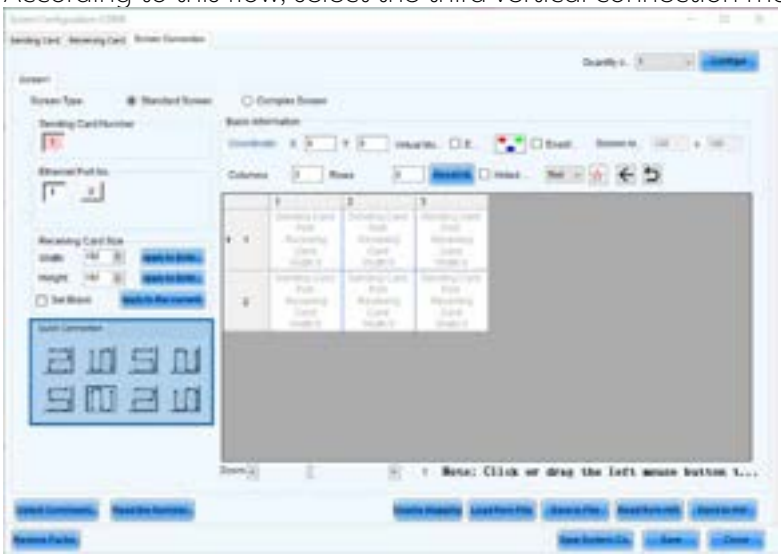
Select the third tab **Screen Connection** and select the first screen type option **Standard Screen**. Under **Basic Information** you can find the coordinates. This refers to the position in the video matching the top left position of your screen. By default **X** and **Y** are both **0**. Do not change this unless you don't want to match the top left position of your video with the top left position of your screen.

Set the amount of **Columns** (vertical cabinets) and the amount of **Rows** (horizontal cabinets). The screen in this example consists of 3 columns and 2 rows. The receiving card width/height refers to the amount of horizontal/vertical pixels in one cabinet. When using the Hi-LED 55 2.8 mm, this is 176 pixels. When using the Hi-LED 55 2.5 mm, this is 192 pixels.



To set the correct connection, it's necessary to know the physical signal/data flow in between the cabinets. This information has to be entered in the software. In the example below the signal/data flow starts with the bottom left cabinet and runs in a vertical flow to the top right cabinet. The blue line and arrows represent the direction of the cabling.

According to this flow, select the third vertical connection mode option.



Click and drag from the first cabinet to the opposite corner, the screen connection is made.

Always start your signal/data flow in one of the corners of your screen and work in a horizontal or

vertical flow (8 possible flows).

> ⚠ The connection mode setting in the software is the front view. In other words, **it represents the flow when standing in front of the screen.** This can be confusing, since the cabinets are connected from the back, the flow is mirrored.

The configuration is now complete, the only thing that's left is sending this configuration to the controller and save it. Click **Send to HW > Save**. The video plays properly now.

You can also save this configuration to a file by clicking **Save to File**, to use again for future projects.

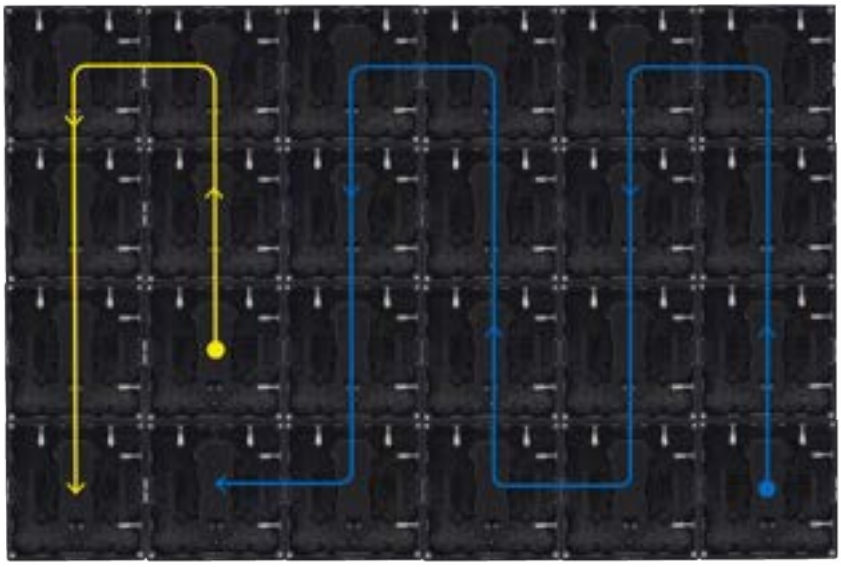
03.2 Large standard screen

Multiple data output ports - regular video

As already mentioned, a controllers data output has a maximum amount of pixels to control. This results in a maximum amount of cabinets in 1 signal/data flow. When the amount of cabinets in the screen setup exceeds this maximum amount, you will have to divide the cabinets in your setup between **multiple data port outputs**. How to do this is described below:

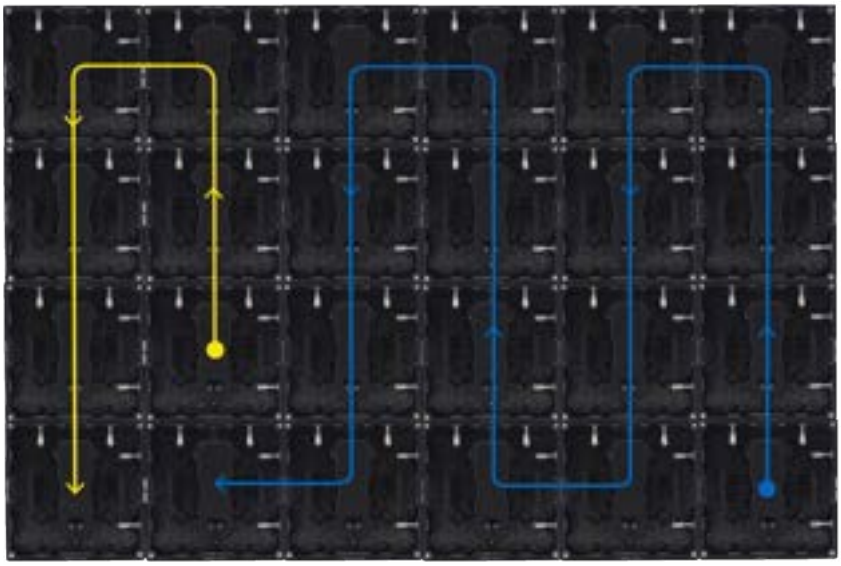
In this example a LED screen setup of 24 cabinets (6 wide, 4 high) is assumed, controlled by a Novastar MCTRL300 controller. Using Hi-LED 55 2.5 mm cabinets, this results in a maximum amount of 17 cabinets in one signal/data flow or in other words 17 cabinets for each data output (Hi-LED 55 2.8 mm = 20 cabinets). Check chapter **01.12 Led controllers** for more detailed information about these numbers.

Linking up all 24 cabinets in 1 signal/data flow results in an overload error, as not all cabinets will work properly. It's necessary to have a second signal/data flow connected to the second data output port. Data output 1 controls flow 1 (first 17 cabinets), data output 2 controls flow 2 (last 7 cabinets). Remember that the data flow in the software is front view and should always match the actual data flow of the cabinets. This means there's no interlink cable between cabinet 17 and cabinet 18. Cabinet 18 is the first cabinet in flow 2 and is connected directly to the second output of the controller.



Backview 6 x 4 screen:
Output 1 = flow 1 (blue) = 17 cabinets, output 2 = flow 2 (yellow) = 7 cabinets

To make it even easier, just work in 2 signal/data flows of 12 cabinets each.



Backview 6 x 4 screen:
Output 1 = flow 1 (blue) = 12 cabinets, output 2 = flow 2 (yellow) = 12 cabinets

MCTRL300 controller with 2 data flows:
Output 1 = flow 1 (blue), output 2 = flow 2 (yellow)

It's not possible to have more data flows than available data output ports.
Novastar MCTRL 300 controller only has 2 outputs, so a maximum of 2 data flows is possible to configure. If you need more outputs to provide all your cabinets of data, switch to a controller with more data output ports.

Configuring a screen using multiple data output ports can be done using the NovaLCT software.

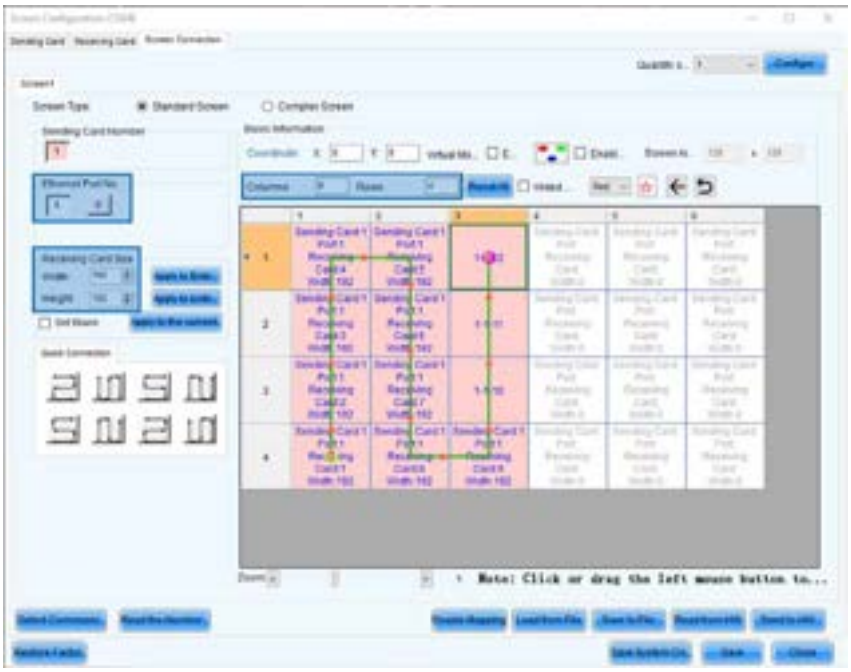
To configure the screen using the software, first open NovaLCT. In the **Screen Configuration** window select the third tab **Screen Connection** and select the first screen type option **Standard Screen**.

Set the following data:

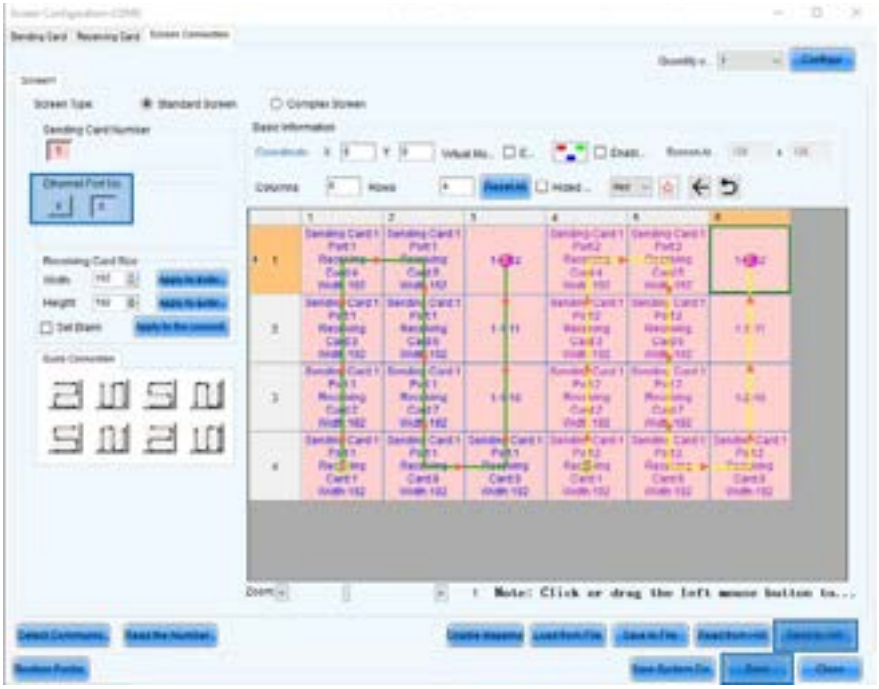
- **Columns**: 6, Rows: 4
- **Receiving Card Size:** 192x192 pixels (Hi-LED 55 2.5 mm)

On the left side of the **Screen Configuration** window you can choose which data flow you want to configure **(Ethernet port No. 1)**. The software automatically shows the correct amount of available data output ports corresponding to the connected controller. The first data output port is automatically selected.

With the first output selected, click the first cabinet from the first signal/data flow (bottom left, front view), next click the cabinet above and continue by clicking all other cabinets in this flow (12) vertically.



Select the second output **(Ethernet port No. 2)** and click the first cabinet from the second signal/data flow (bottom, 4th from the left). Next click the cabinet above and continue by clicking all other cabinets in this flow (12) vertically.



Send the configuration to the controller and save it by clicking **Send to HW** > **Save**. The video plays properly now.

Full HD screen setup

To build a Full HD screen (1920x1080px), calculate how many cabinets are required to fit a Full HD video. The calculation depends on what type of Hi-LED 55 tiles are used. Divide the Full HD video width/height by the cabinet width/height. The result is the amount of horizontal/vertical cabinets that fit in a Full HD format; logically these should be rounded numbers. Always round them down to fit within the Full HD format, as rounding them up would result in an amount of cabinets which exceeds this format. In this case, parts of the screen would stay black without scaling up the video. Scaling up a Full HD video also requires hardware that supports bigger formats.

Hi-LED 2.8 mm

- Horizontal cabinets: 1920 px (screen width) divided by 176 px (cabinet width) is 10,9 **= 10**
- Vertical cabinets: 1080 px (screen height) divided by 176 px (cabinet height) is 6,1 **= 6**
- The Hi-LED 55 screen should be 10 cabinets wide and 6 cabinets high

Hi-LED 2.5 mm

- Horizontal cabinets: 1920 px (screen width) divided by 192 px (cabinet width) = **10**
- Vertical cabinets: 1080 px (screen height) divided by 192 px (cabinet height) is 5,6 **= 5**
- The Hi-LED 55 screen should be 10 cabinets wide and 5 cabinets high

As seen in the calculations above, the screen will not match the Full HD video perfectly. Therefore the video needs to be slightly scaled to fit the screen. Scaling can be done in 2 ways: matching the width or matching the height.

Hi-LED 2.8 mm (10x6 cabinets)

- Video width matches screen width: black banding at top and bottom of the screen.
- Video height matches screen height: video is full screen, but some of the video is lost at the left and right of the screen.

Hi-LED 2.5 mm (10x5 cabinets)

- Video width matches screen width: video is full screen, but some of the video is lost at top and bottom of the screen.
- Video height matches screen height: black banding at left and right of the screen.

Either way, you will have to choose between losing a part of the video (full screen) or showing the full video (black banding, not full screen). In other words the screen is not the exact Full HD resolution and aspect ratio, but it supports Full HD playback. If you can build a bigger screen, it's even possible to play 4K content (3840x2160 px). Make similar calculations as above to know how many cabinets are needed for a 4K screen setup.

03.3 Multiple standard screens

Another possibility is having multiple screens in your setup. In this case 2 or more screens are combined in 1 configuration. Also, the video's that should play back are combined in 1 file. Again multiple data output ports will be used so the workflow stays more or less the same as for the previous chapter.

Backview multiple screen setup:
Screen 1 = Output 1 = flow 1 (blue)
Screen 2 = output 2 = flow 2 (yellow)

MCTRL300 controller with 2 screens:
Output 1 = screen 1 (blue), output 2 = screen 2 (yellow)

In this example a setup with 2 screens is assumed, controlled by a Novastar MCTRL300 controller. The first screen is 3 cabinets wide and 2 high, the second screen is 2 cabinets wide and 5 high. There are 16 cabinets in total, so 1 signal/data flow would be sufficient. But since there are 2 screens it's more logical and more clear to work with 2 data flows. Two data output ports will be used.

Prepare the video as described in chapter **02 Video** file. It is important to keep in mind the amount of pixels your screens consist of. Combine both screens in 1 video, make use of a gap the size of 1 cabinet in between the screens. The video should look like this:

Follow next steps to configure the screen: open the NovaLCT software. In the **Screen Configuration** window select the third tab **Screen Connection** and select the first screen type option **Standard Screen.**

The first option is to combine both screens in 1 setup. To do this, set the following data:

- **Columns:** 6, Rows: 5
- **Receiving Card Size:** 192x192 pixels (Hi-LED 55 2.5 mm)

With the first output selected, click the first cabinet from screen 1 (bottom left, front view). Next click the cabinet above and continue by clicking all other cabinets from screen 1 in a vertical flow. The sixth and last should be the top right cabinet from screen 1.

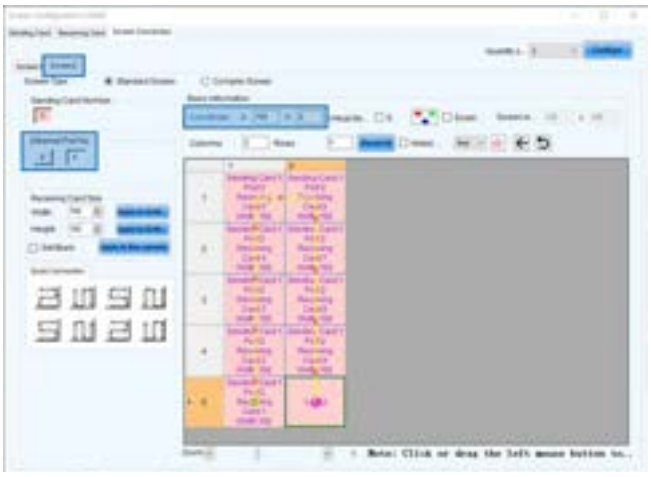
Select the second output **(Ethernet port No: 2)** and click the first cabinet from screen 2 (bottom left, front view). Next click the cabinet above and continue by clicking all other cabinets in this flow vertically. The tenth and last should be the top right cabinet from screen 2. Since there's a gap in the video in between the screens, don't forget to set all remaining cabinets in the software to blank. You can see a resolution of 192x192 pixels is assigned to those cabinets.

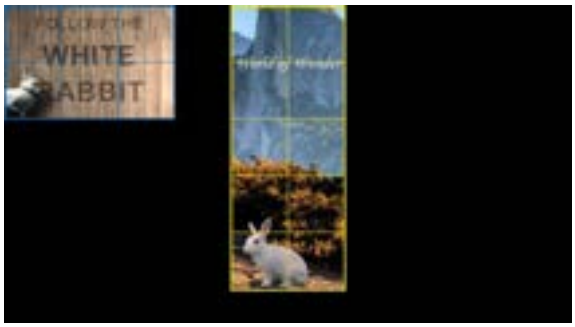
Send the configuration to the controller and save it by clicking **Send to HW** > **Save**. The video plays properly now.

It's also possible to place both video's next to each other, without a gap. If that's the case don't set the remaining cabinets in the configuration to blank, but leave them as they are. The software interprets them as cabinets without a width or height (0x0 pixels). You can also just remove the extra column and have no gap inbetween both screens. These options both give the same result.

The second option is to configure the screens in 2 setups. First select the quantity of screens you want to configure (in this example there are 2). Click **Configure** to confirm this number. Two screen tabs appear on top of the screen configuration window. Select the first tab **Screen 1**. With the first ouput selected (Ethernet port No. 1), configure data flow 1 (Columns: 3, Rows: 2). Please note that the coordinates are both **0**.

Now select the second tab **Screen 2**. With the second output selected (Ethernet port No. 2), configure data flow 2 (Columns: 2, Rows: 5). Since the video for screen 2 doesn't start in the top left corner, it's necessary to set the correct coordinates. Based on the video's pixelmap we can define that the video for screen 2 starts 4 cabinets from the left and 0 cabinets from the top. This results in the following coordinates: X = 4*192 = 768,Y = 0. Fill in these coordinates in the corresponding boxes.





Send the configuration to the controller and save it by clicking **Send to HW** > **Save**. The video plays properly now.

03.4 Standard screen - irregular video shape

Not all LED screen setups are a conventional rectangle, some can have a more unique shape like the example below.

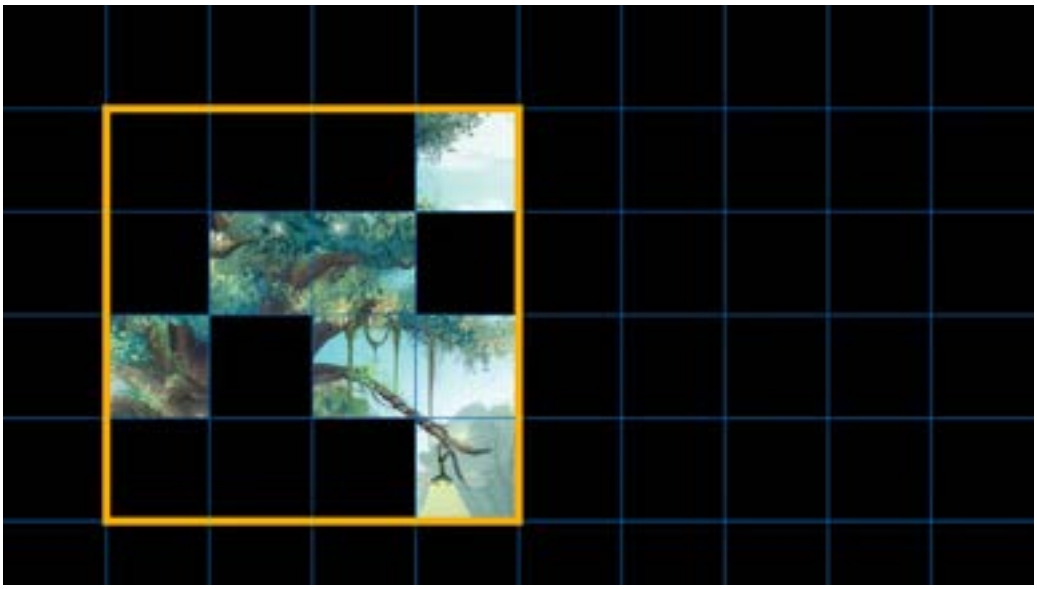
To configure the controller for this kind of screen three things are important to keep in mind: the pixelmap of the video content, the signal/data flow in between the cabinets and how they are positioned to each other. In the example below the data flow and configuration of this 7-cabinet screen are explained step by step.

Example of a standard screen with an irregular video shape (7 cabinets)

Data flow of a standard screen with an irregular video shape

Providing the cabinets with data for a standard screen, works in the same way as for a standard screen with a irregular video shape. Pay attention to maintain the overview of the signal/data flow: also **start in one of the corners of the screen and always work in a horizontal or vertical flow**. Another important aspect is the controller counting the gaps in between the cabinets as 'taxed pixels.

⚠ The controller is only able to count pixels within a **rectangular shape,** in other words the controller draws a virtual four-sided shape around all cabinets. All pixels within this rectangle are taxed from the port's capacity. The rectangle is always as small as possible. Any other gaps in the pixelmap (here: border between left- and topside) are taxed from the controller's total capacity.



Virtual four-sided shape
Drawing a four-sided shape around the cabinets, in this example, results in a rectangle of 4 by 4 cabinets. This means the controller will tax 16 cabinets from the port's capacity. Since the port's capacity for Hi-LED 55 2.5 mm is 17, this data flow is correct and all cabinets will work properly. If the result would be a 5 by 5 rectangle, the controller would tax 25 cabinets, which is too many. This data flow would not be correct and a part of the screen would stay black. The software gives you a warning when trying to send a configuration with a port overload.

When the maximum capacity for the first output is reached, provide a second data flow from the second output. Take the rectangular shape and the port's maximum capacity again into account. This can be repeated for all remaining output ports, if available. This way the complex screen gets divided into rectangles. The more outputs the controller has, the more wiggle room you have to fit your complex screen within the controller's maximum capacity.

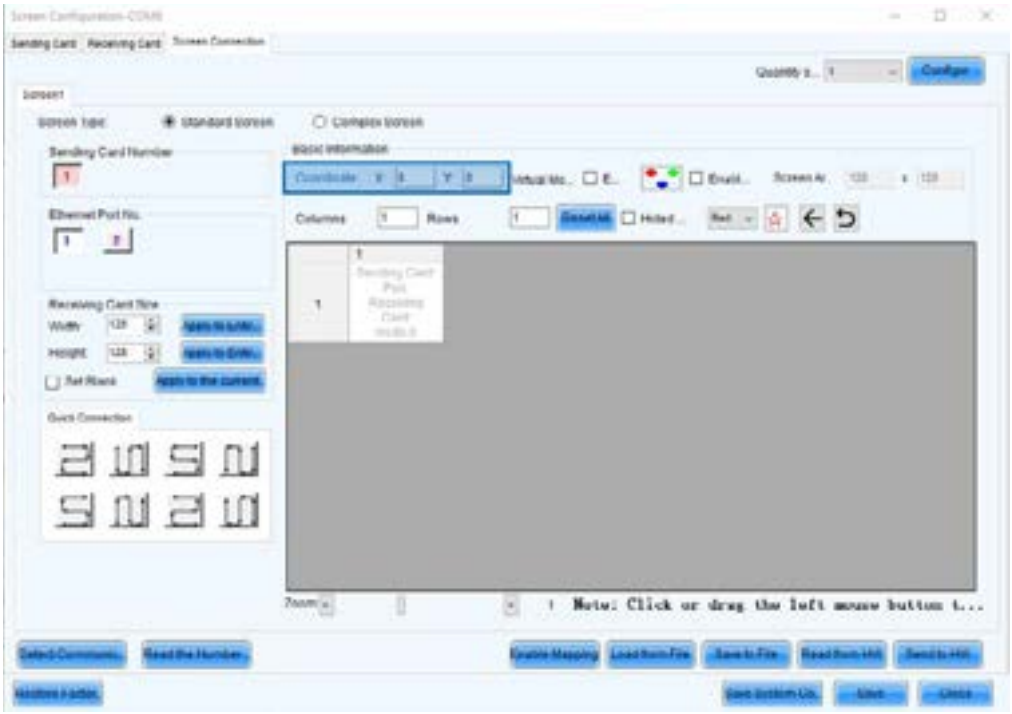
X Configuration of a complex screen

The configuration of a complex screen is the same for all types of controller (and all other Novastar controllers). **A Windows PC/laptop with NovaLCT software is required.**

Power up the controller, connect it to the computer and open the NovaLCT software. Make sure a successful connection is established between the computer and the controller before you start configuring. Login to the software and open the Screen Configuration window. Select the first tab and set the sending card resolution and refresh rate. For more information see chapter **03.1 Standard Screen - regular video**.

Select the third tab **Screen Connection** and select the first screen type option **Standard Screen.**

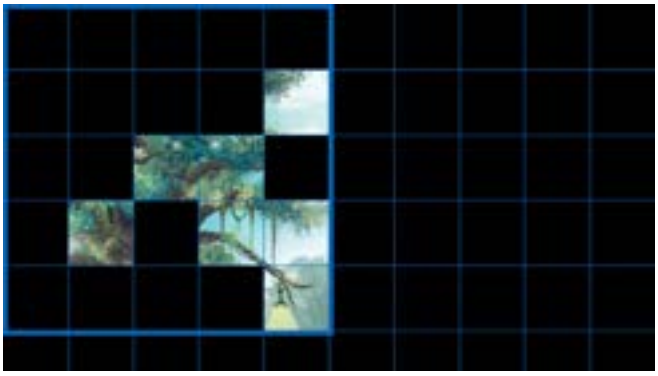
You can find the coordinates below the screen type selection. This refers to the position in the video matching the top left position of your screen. By default **X** and **Y** are both **0**. Do not change this unless you don't want to match the top left position of your video with the top left position of your screen.



Set the amount of columns and rows. In a standard screen setup this equals the amount of vertical and horizontal cabinets. But in a complex screen setup, the gaps also have to be taken into account. Use a grid to make the gaps more visual (see chapter 02 Video file). If your video content was created properly, each gap has the same resolution as a cabinet and can be represented by a blank cabinet.

Start counting the squares, representing either a cabinet or a gap (blank cabinet), from the top left. We need 5 columns and 5 rows to be able to show all the video content.

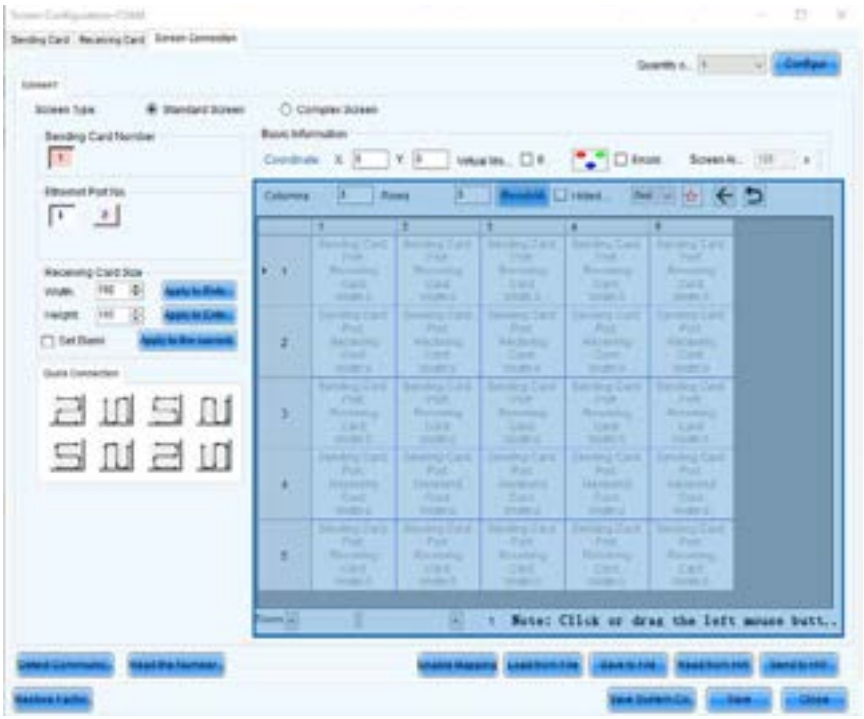
In this example the first row and column are blank to match the top left of the video with the top left of the overall graphic (cfr. stand design).



It's also possible to ignore the blank row and column. To do this, configure 4 rows and 4 columns. It is important here to also adapt the video file (no blank row and column) or fill in the correct coordinates (X = 192 and Y = 192). More information can be found in chapter 03.5 Multiple screens.

Pixelmap standard screen irregular video shape

Fill in the appropriate boxes in the software. 5 columns and 5 rows are created, but all of them are still empty, in other words, the cabinets aren't assigned to the correct positions yet. That's what needs to be done next.

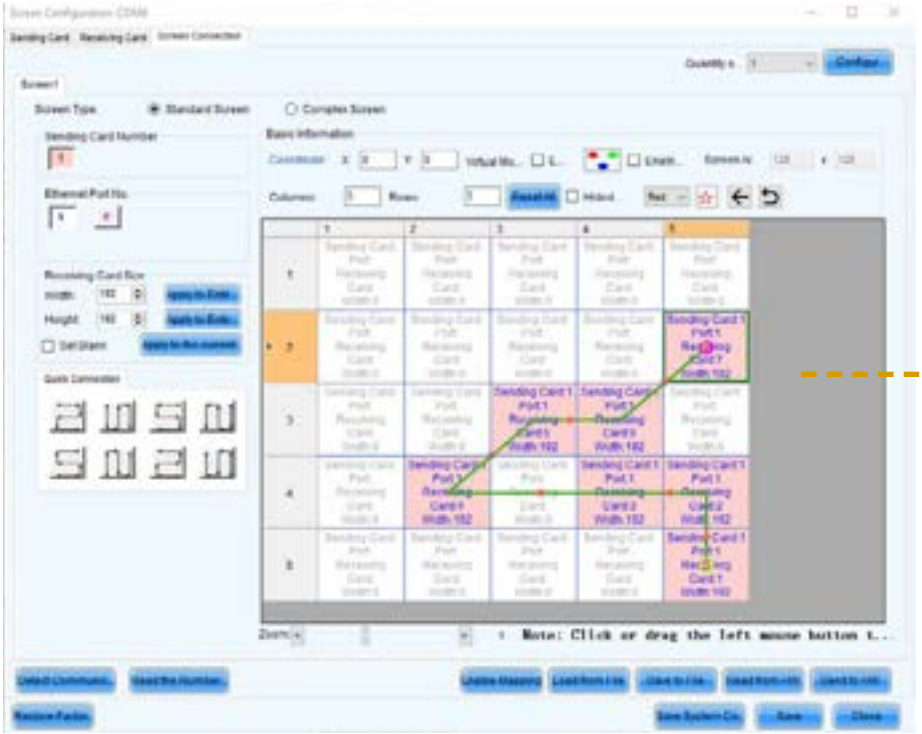


Before assigning the cabinets, set the **Receiving Card Size**. This refers to the amount of pixels in one cabinet. When using the Hi-LED 55 2.8 mm, this is 176x176 pixels. When using the Hi-LED 55 2.5 mm, this is 192x192 pixels.

To assign the cabinets to the correct position, it's necessary to know the physical signal/data flow in between the cabinets, because you have to tell the software in which order the cabinets are connected.

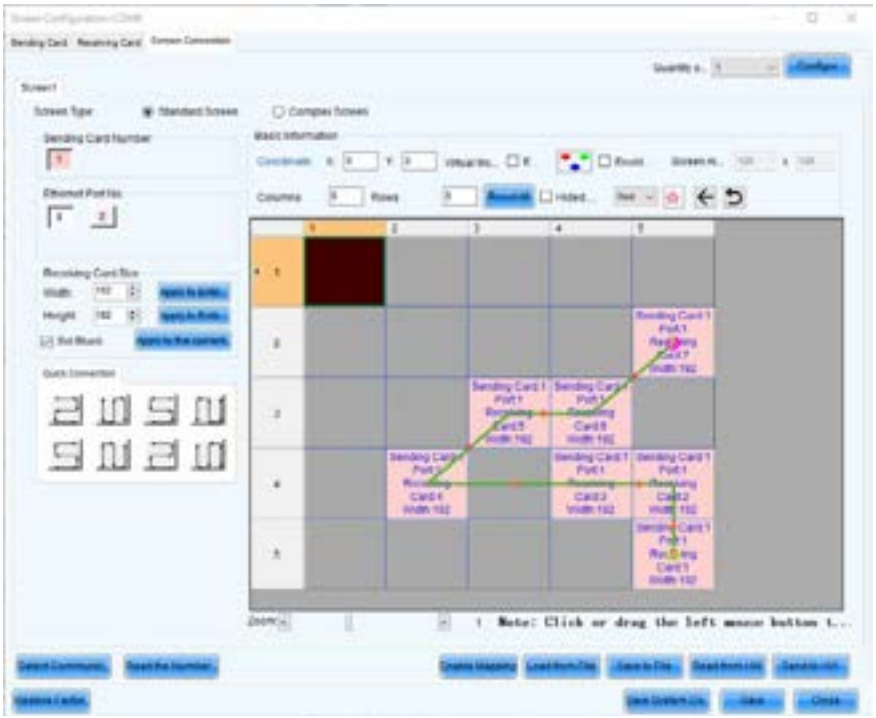
In the example below the signal/data flow starts with the bottom right cabinet and runs in a horizontal flow to the top right cabinet. The blue line and arrows represent the direction of the cabling.

According to this flow and the video's pixelmap, assign the cabinets by clicking the correct position one by one, starting with the bottom right position (first cabinet in the flow). The green line that appears represents the signal/data flow.



*** 16 ports taxed**

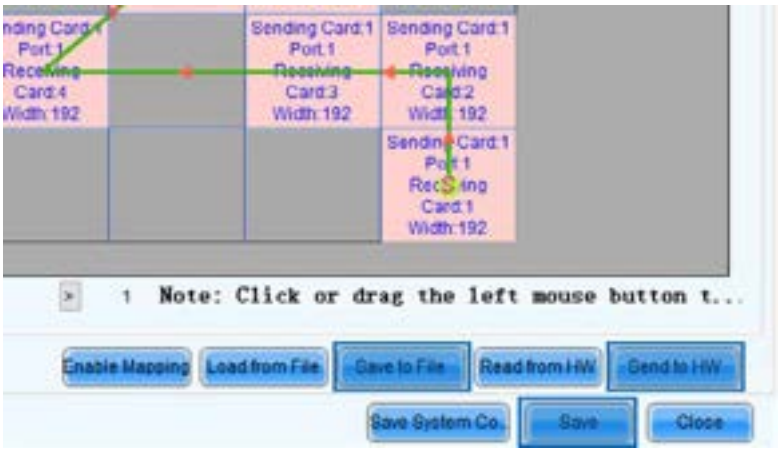
All cabinets are now assigned to the correct position. Next, we have to tell the software that the gaps in between the cabinets have the same resolution as the cabinets. You can do this by setting the positions without video to blank. In other words, assigning an imaginary cabinet to the positions that are black in the video's pixelmap. Click the top left position and select the box **Set Blank**. Proceed by clicking all empty positions.



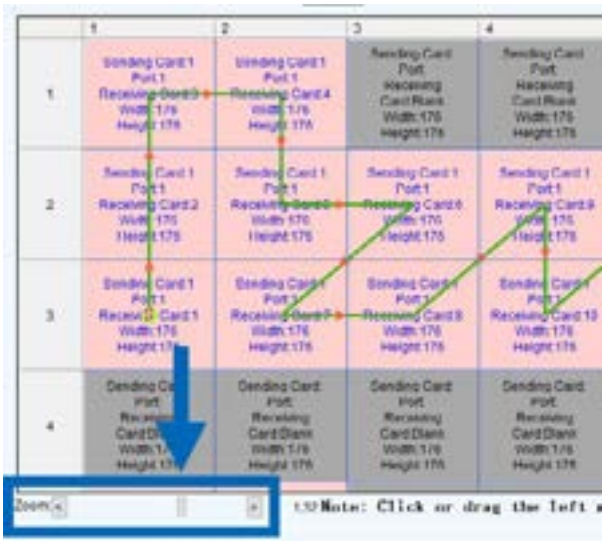
Maintain the overview of your signal/data flow: start in one of the corners of your screen and work in a horizontal or vertical flow.

The configuration is now complete, the only thing that's left is sending this configuration to the controller and saving it. Click **Send to HW** and click **Save**. The video plays properly now.

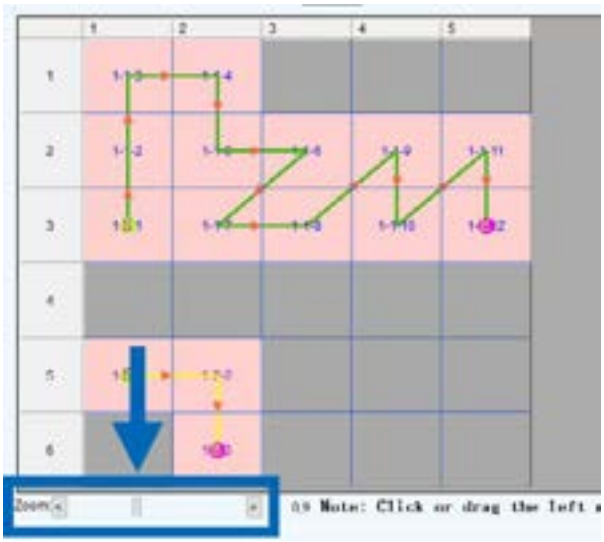
You can also save this configuration to a file by clicking **Save to File**, to use again for future projects.



Use the **zoom slider** to zoom out to see the whole configuration or zoom in to see the details for each cabinet.



Zoom in

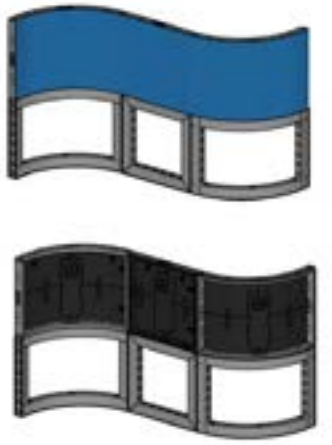


Zoom out

03.5 complex screen - regular video

A complex screen is a LED wall built with different types of LED cabinets. (eg: a combination of flat tiles and curves. The workflow of preparing and configuring a setup including curved Hi-LED 55 tiles is nothing different from a setup with only flat tiles. The only extra thing to keep in mind is the resolution (width & height in pixels).

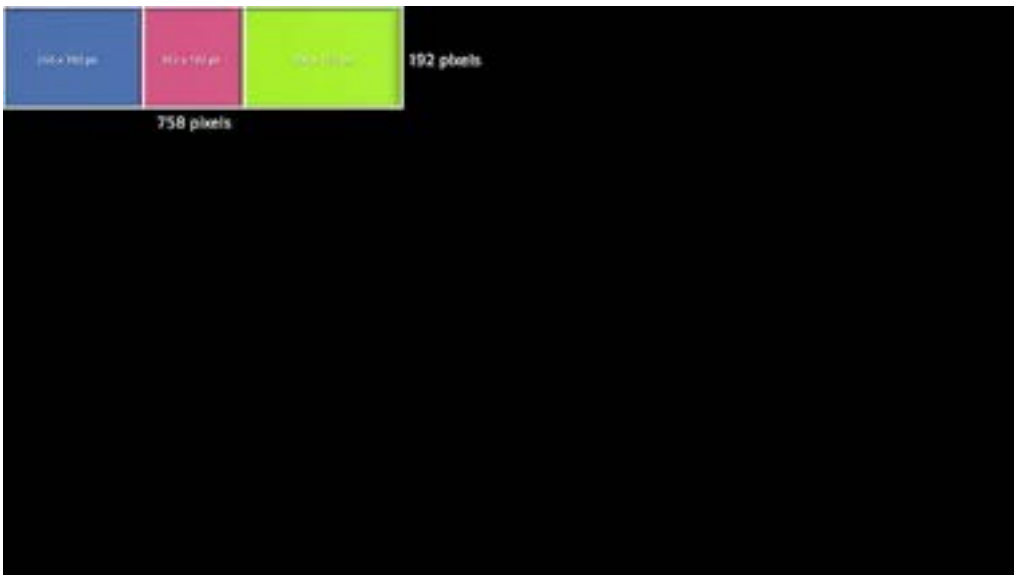
A basic display (1 Hi-LED R437 concave + 1 flat Hi-LED 55 + 1 Hi-LED R437 convex) is used here as an example:



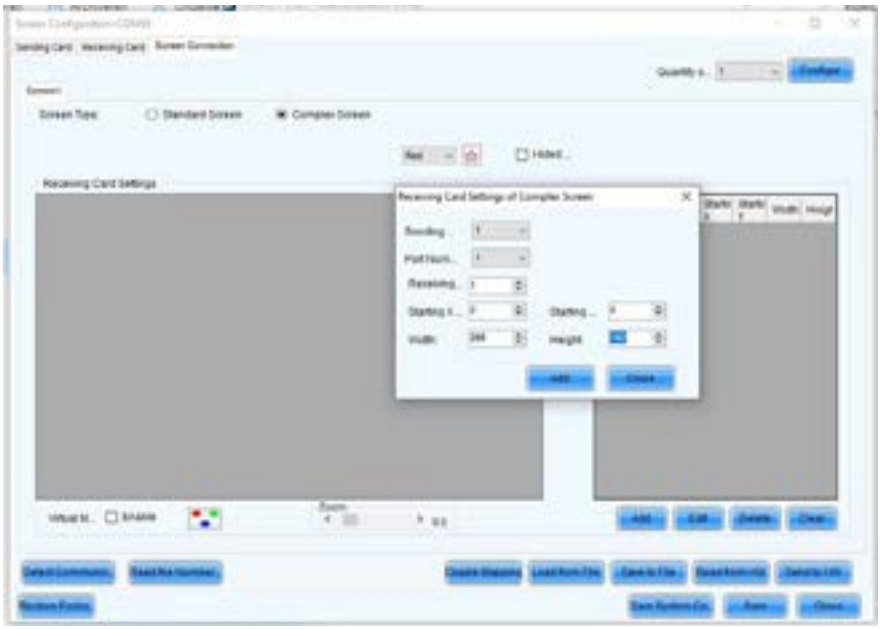
Prepare the video as described in chapter **02 Video file**. Important to keep in mind is the amount of pixels your screens consists of. Calculate the width and height by adding the widths and heights of the cabinets in the setup.

- Width = 266+192+300 = 758 pixels
- Height = 192 pixels

This is how the video file for this setup should look like:



Follow next steps to configure the screen: open the NovaLCT software. In the **Screen Configuration** window select the third tab **Screen Connection** and select the first screen type option **Complex Screen.**

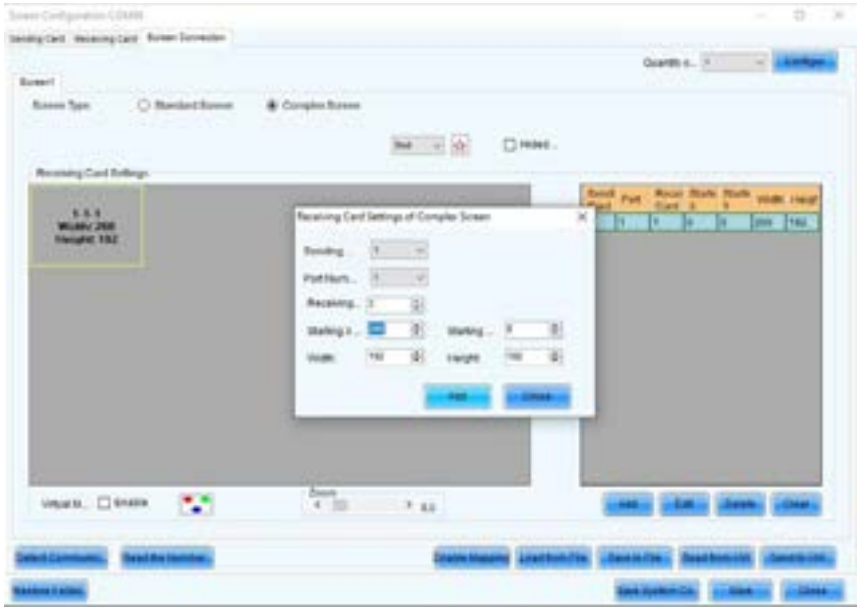


- Now add a second cabinet.

The second cabinet will be a 192 by 192 Hi-LED.

- Change the starting X position to 266, so the cabinet is placed right next to the first cabinet.
- Double check if Receiving Card Number is '2'. (The interface cuts the label off, it reads 'Receiving...' If you hover over the label, the full name appears.)
- Click Add.

The second cabinet appears in the lay-out.



- Let's add the third cabinet

It has a resulution of 300 by 192

- Change the starting X position to (266+192=) 458, so the third cabinet is placed right next to the second cabinet.

- Sent the configuration to the controller.
- Save it by clivking 'Send to HW → Save

The video plays properly now.

X Configure complex screen

To configure a complex screen:

- Go to the third tab 'Screen connection'.
- Choose 'complex screen' for screen type.

In this example the data flows from left to right, meaning the first cabinet is an inner curve, the width is 266 pixels, the height 192 pixels.

- Click the add button to add the first Hi-LED cabinet.

The first cabinet has a 266px by 192px resolution and starts at x 0 and y 0.

- Click add in the window. The first cabinet appears in the layout.

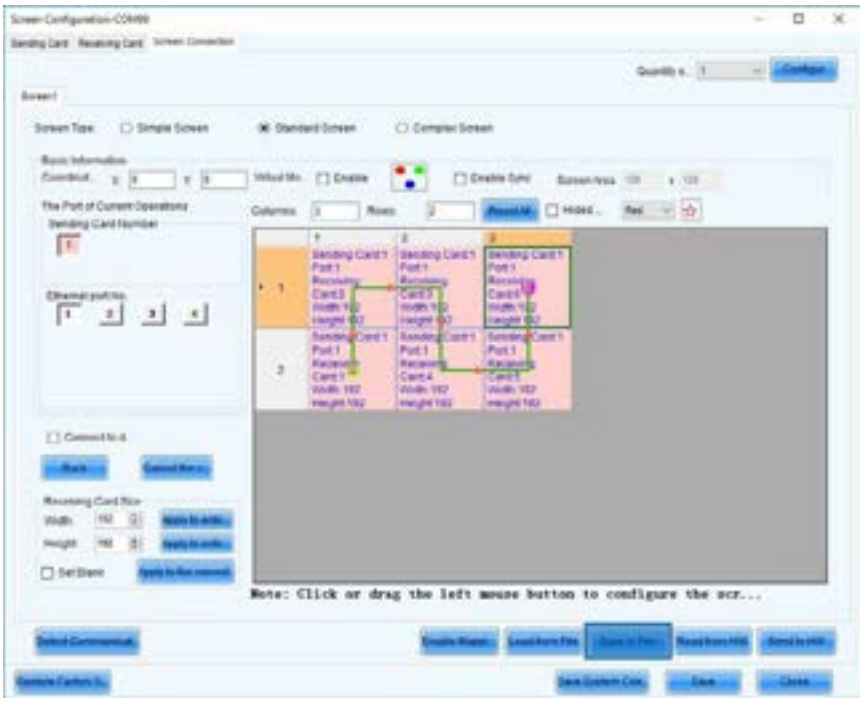
03.6 Save and load configuration

When a setup configuration is saved, it's stored inside the controllers memory and will stay saved until it gets overwritten. For this reason it is possible to configure a setup and rebuild this setup at a

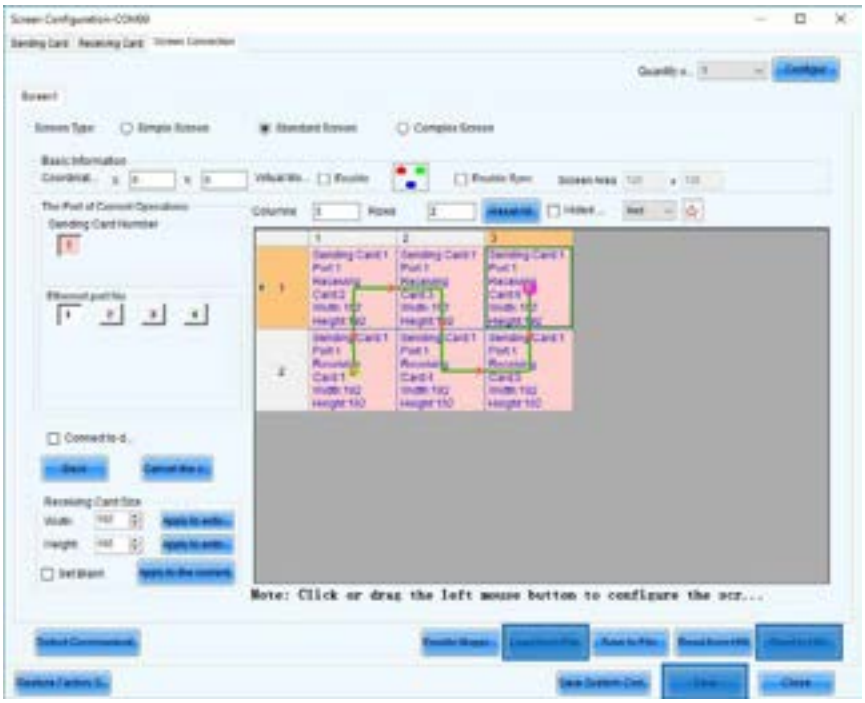
different location without having to configure the setup again. It is very important here to maintain the same data flow, otherwise reconfiguration will be needed! The power flow isn't influenced by the configuration.

After connecting a configured controller to a computer and opening the **NovaLCT** software, the software will load and show the existing configuration automatically. In case the software was started before connecting the controller to a computer, choose **Read from HW** to load the saved configuration from the controller to the software.

It's also possible to save a setup configuration to a file. This makes it possible to retain a configuration, even if it was overwritten. Saving can be done by choosing **Save to File**.

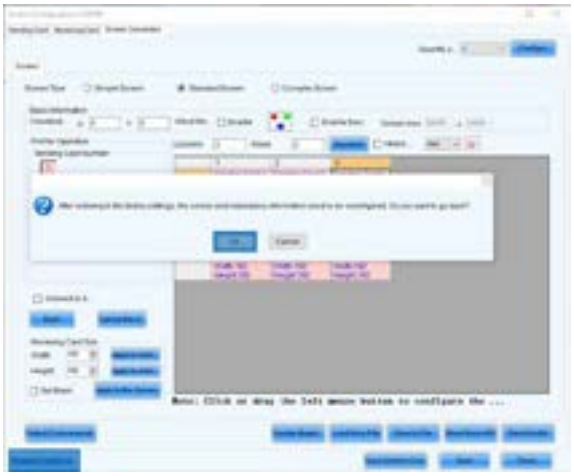


Click **Load from File** to load the configuration back to the software. Do not forget to choose **Send to HW** and **Save** to store the configuration in the controller again. Remember to maintain the correct data flow according the configuration.

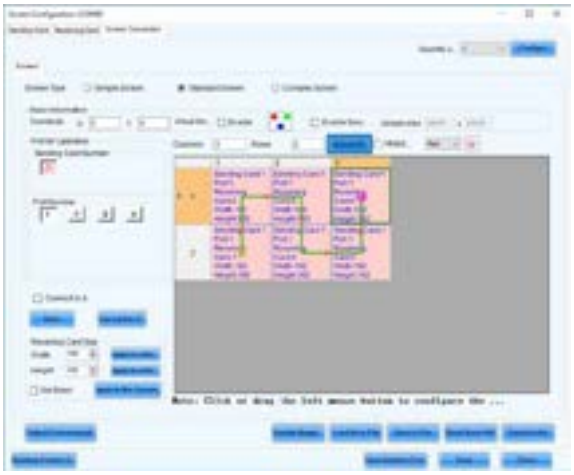


03.7 Remove configuration

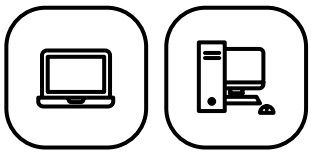
As already mentioned in the previous chapter, the NovaLCT software will load the present configuration from the controller when started. To remove the configuration and start again from scratch (as with a new controller), click the **Restore Factory Settings** button. Choose **OK** in the pop-up box. All configured screens will be removed and also the original **Sending Card** settings will be restored.



It's also possible to remove the data flow from a screen without removing any other settings. This situation arises for instance when the screen setup remains the same, but the wiring is done differently or when a mistake was made and the data flow has to be reconfigured. To do this, click the **Reset All** button; all assigned cabinets for this screen become clear again, but any other settings (columns & rows, other screens, receiving card size...) remain.



0.3.8 Laptop or PC as media player



A **Windows system laptop or PC** is required for LED display configuration.

As already mentioned in the 'hardware' part of this manual. A laptop/PC can also be used as a media player. Depending on if you prepared a pixel-to-pixel video or not, chose the correct instructions and followed the steps:

Pixel to pixel video:

1. Connect the computer to the controller with a DVI or HDMI cable
2. Open the computer's **Screen Configuration** settings
3. The LED screen should be recognized as a second screen
4. Set the second screen as a duplicate of the first one
5. If possible set the **Screen Resolution** to '**1920x1080 px**, otherwise keep the recommended setting or choose at least a resolution with a 16:9 ratio.
6. (A part of) the computer screen is shown on the LED screen (starting from the top left)
7. Play the pixel to pixel video in full screen mode
8. If necessary, move the video to the correct position using the coordinates function in the NovaLCT software (connect pc and controller with an USB cable) or the controller.

Standard video:

1. Connect the computer to the controller with a DVI or HDMI cable
2. Connect the computer to the controller with an USB cable
3. Open the NovaLCT software
4. In the **Screen Configuration** window, select the first tab **Sending Card**
5. Check the **Custom resolution** box
6. Calculate and fill in the LED screen resolution (176/192 x #horizontal cabinets = width, 176/192 x #vertical cabinets = height)
7. Set and save these changes
8. Open the computer's **Screen Configuration** settings
9. The LED screen should be recognized as a second screen
10. Set the second screen as an extension of the first one
11. The **Screen Resolution** for the second screen should automatically match the resolution of the LED screen (step 6)
12. From the second screen, play the video in full screen mode
13. Use settings from the media player software (standard media player PC/MAC, VLC, PotPlayer...) to choose how to scale (fill or remain proportions)

Since scaling is done by the computer's graphics card, **using this workflow will only work properly within the restrictions of the graphics card.** This is different for every computer. **Trying to use an unsupported resolution will result in the LED screen staying black.**

04. Hi-LED troubleshooting

04.1 Factory reset receiving cards

(SEND FACTORY CONFIGURATION FILE TO RECEIVING CARDS)

Open the NovaLCT software. This software is used to configure the cabinets.

The software installation file can be downloaded from the Aluvision website: **www.aluvision.com/en/products/downloads**.

Possible issue installing the NovaLCT software: the person installing the software (= the actual user logging in to the PC) needs to have (temporary) administrator rights during the installation process of the software. If not, he or she will not be able to access the program after installation.

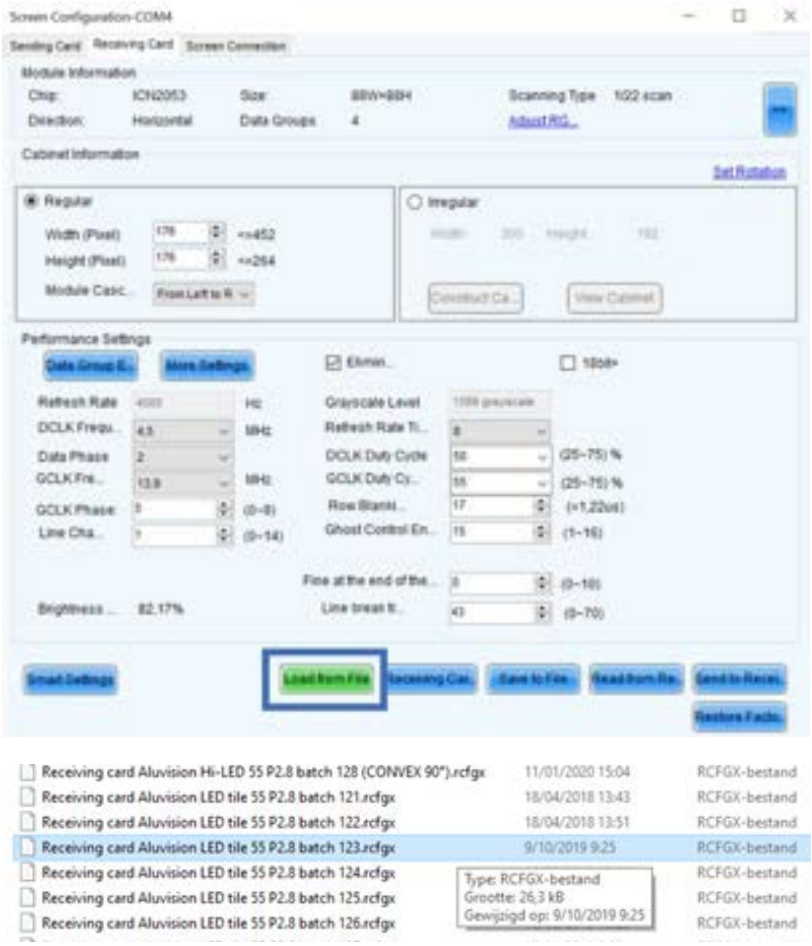
Go to **System(S)**, click on **Reconnect (R),** this option detects the connections.

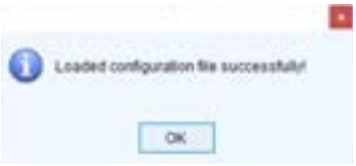
Then, **log in** as an **Advanced Synchronous System UserLogin (A)** with the password '**666'**.

To configure screen go to **'Screen Configuration'**

Download the Hi-LED 55 receiving card configuration files from our website: **www.aluvision.com/en/products/downloads**.

Next step, load the correct receiving card configuration file for your screen setup, choose the same batch number as on the LED modules.





Next: loaded configuration should be successful!

Shutdown power and reboot the LED system to check if the configuration files are succesfully saved to each individual receiving card. If glitches reappear after the reboot, repeat the process a second time.

04.2 Calibrate cabinets

(FLASHING A HI-LED 55 MODULE)

After replacing a module in a cabinet, this module will work immediately, but the cabinet could show a difference in brightness or colour. This difference can be solved with a 'module flash'. This

checks and reloads the correct calibration for each module in the cabinet. To perform a module flash you'll need the same setup as for configuring a screen.

A Windows PC/laptop with NovaLCT software is required.
The software doesn't run on Macintosh.

Connect your PC/laptop to the controller (MCTRL300 or MCTRL660) using an USB cable and power up the controller.

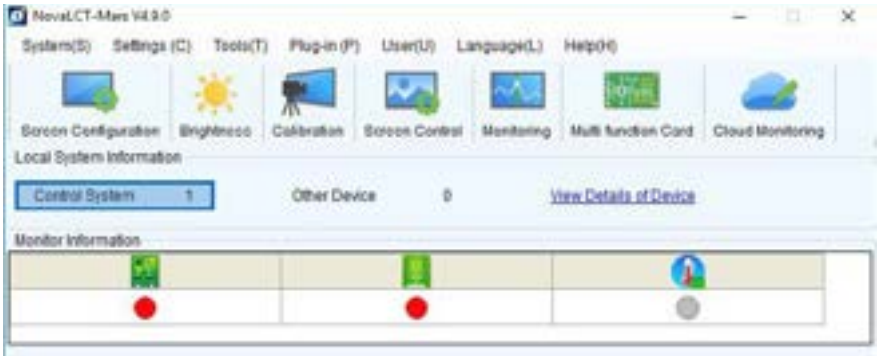
Open the NovaLCT software.

The software installation file can be downloaded from the Aluvision website: **www.aluvision.com/en/products/downloads.**

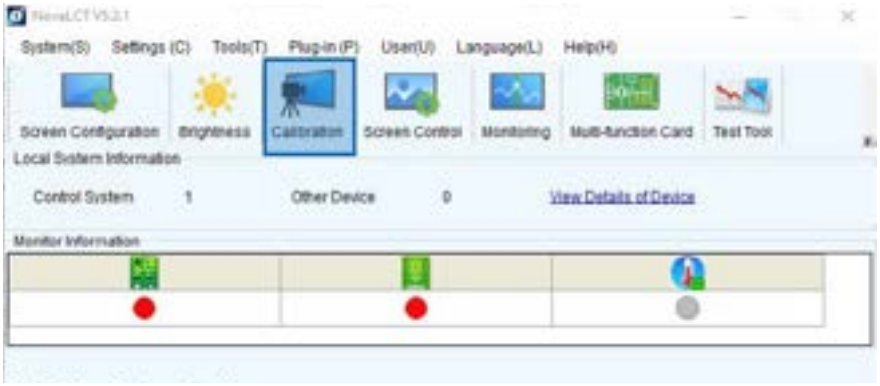
Possible issue installing the NovaLCT software: the person installing the software (= the actual user logging in to the PC) needs to have (temporary) **administrator rights** during the installation process of the software. If not, he will not be able to access the program after installation.

After opening the software, choose **User(U)** > **Advanced User Login** from the top menu to login. Without logging in you won't be able to make any changes to the controller. For the password fill in **admin** or **666** and press **Login**.

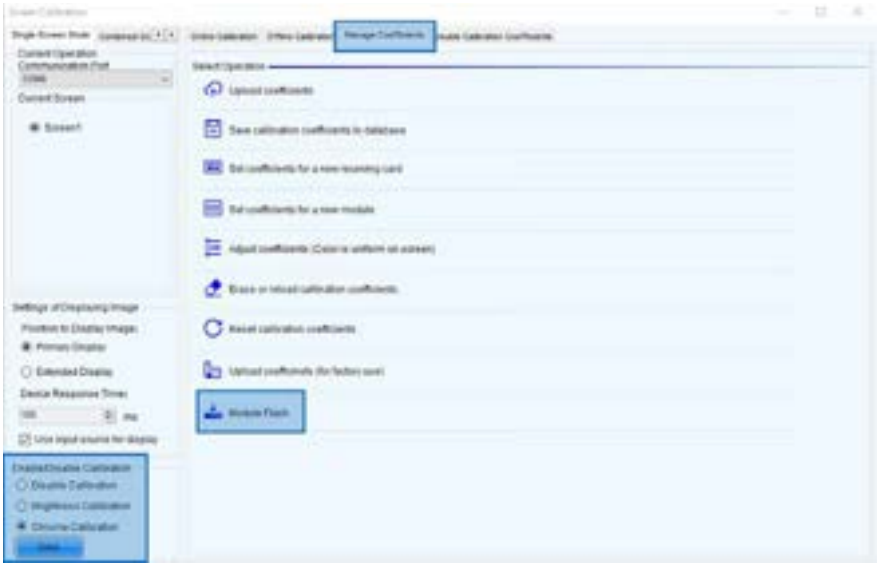
After logging in, check the **Local System Information**: **Control System** shows if the controller is successfully connected. **1** indicates that the connection to the controller is OK, **0** indicates that no connection to a controller has been found. If this is the case, do the following: check if the controller is powered, if not switch it on at the back of the controller. Also check if the USB cable is connected and if the USB cable or USB port is not damaged. Now choose **System(S)** > **Reconnect(R)** from the top menu, the **0** should change into **1**.



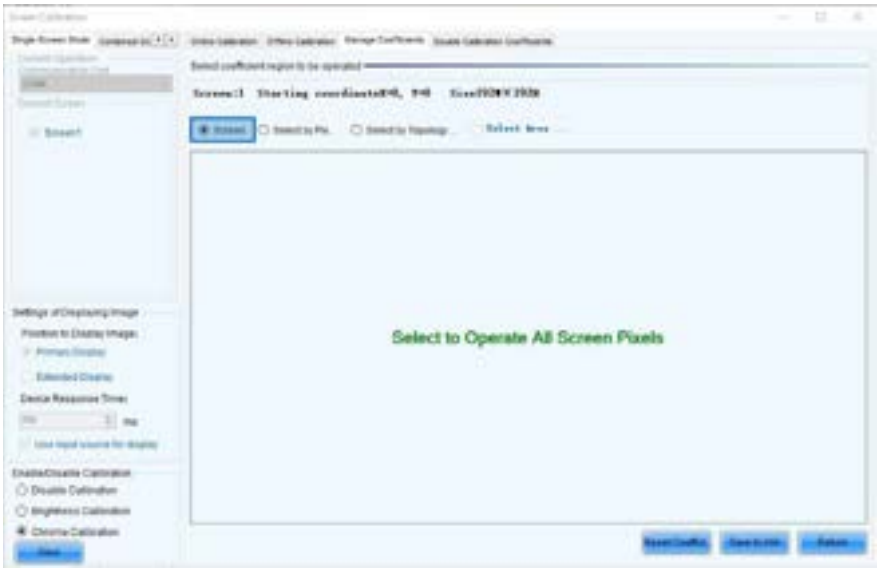
From the main menu choose **Calibration** to open the screen calibration window.



On the bottom left, select the third option **Chroma Calibration** and save. Select the third option **Manage Coefficients** and click the **Module Flash** button.



Select the first option **screen** to flash all cabinets for the selected screen.



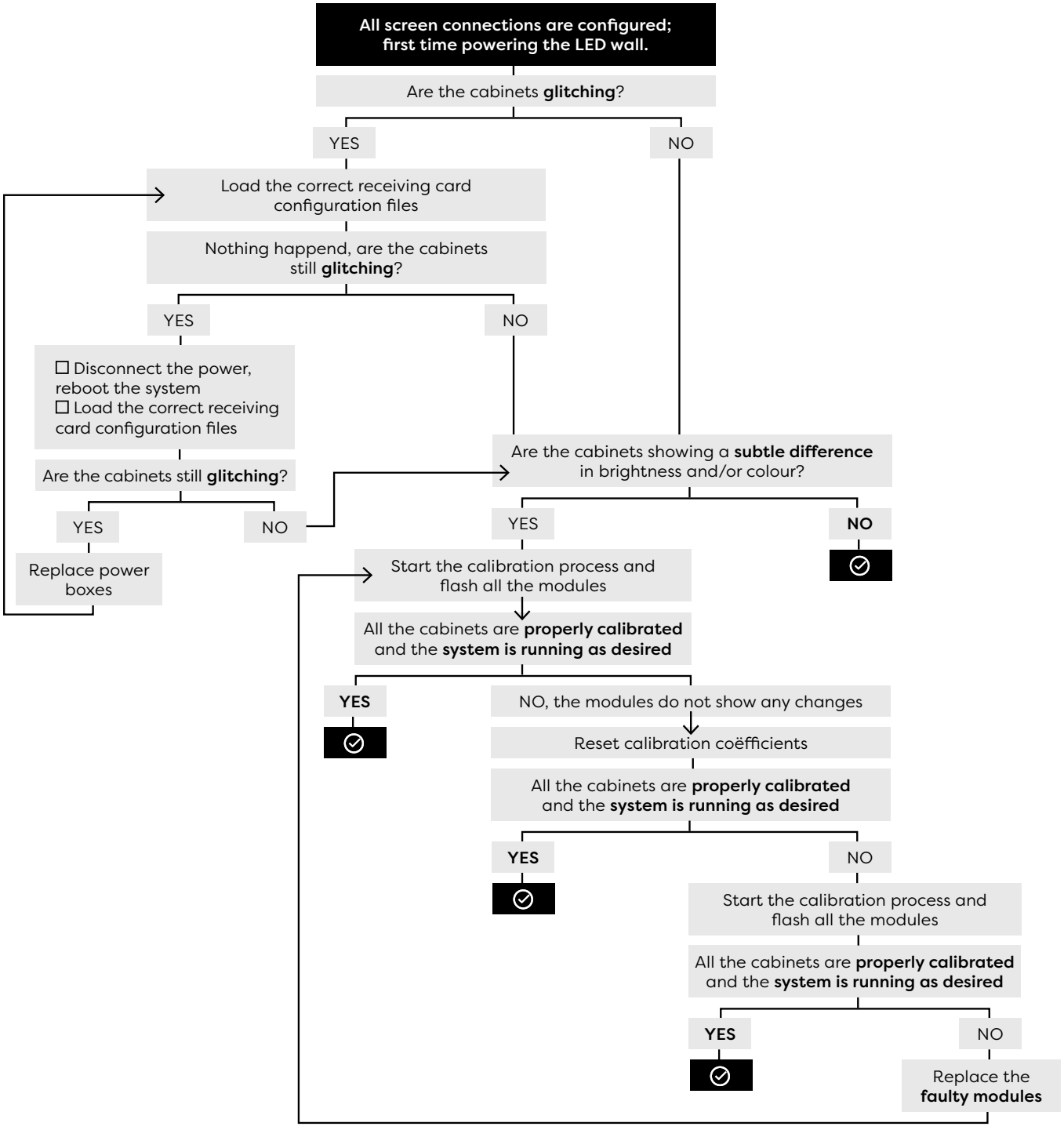
Select the third option **Select by Topology or List** to be able to choose the cabinet to flash the modules from. Select the correct cabinet from your setup by clicking it, the selected cabinet turns yellow.

Both options require the same workflow to flash the Modules. First of all click **View Receiving Card Calibration Coefficients**. When this is successful a pop-up box appears, click **OK.**

Next, click **View Module Calibration Coefficients** and wait until a pop-up box appears. Perform a visual check yourself, if the colours in all modules match and no deviations are seen in the replaced module, click **OK** in the pop-up box.

The last step is saving al this information on the cabinets receiving card. Click **Save calibration coefficients to receiving card**. When this is successful a pop-up box appears, click **OK**. Finish by clicking **Save to HW.** Finally turn off the whole system by disconnecting the power. Reboot the system. Verify if every cabinet is still properly calibrated and the system is running as desired.

04.3 Troubleshoot decision tree



05. Annex

05.1 Glossary

Video	Regular: any video that has a rectangle or square shape. Irregular shape: any video with a layout that is not strictly a rectangle or a square.
Screen	Standard: a LED wall with one type of LED cabinets. Complex: a led wall built with different types of LED cabinets (eg: a combination of flat tiles and curves).
Pixel to pixel	**The resolution of the LED tile video should match the resolution (amount of pixels) of the screen.** This is called **'pixel to pixel'** and means that every pixel in the video represents pixel in the screen. To calculate the resolution of the screen, first **count the amount of cabinets in your screen.** To calculate the resolution width, multiply the amount of horizontal cabinets in your screen with the amount of horizontal pixels in one cabinet (Hi-LED 55 2.8 mm = 176 pixels; Hi-LED 55 2.5 mm = 192 pixels). To calculate the resolution height, **multiply the amount of vertical cabinets in your screen with the amount of vertical pixels in one cabinet** (2.8 mm = 176 pixels; 2.5 mm = 192 pixels).
BrightAuthor	Using a BrightSign media player offers a lot of advantages (small, auto loop, scaling). Some extra steps are required to play the video. After exporting the video file, it also needs to be published. To publish the video you can make use of the free software offered by BrightSign: **BrightAuthor**. The files that are created by publishing have to be copied onto a micro-SD card, which is inserted in the BrightSign media player.
Signal/data flow	The signal/data flow is the order in which the cabinets are connected. The signal/ data flow is very important to keep in mind for the configuration of the cabinets later on. The maximum amount of cabinets in 1 signal/data flow depends on the used controller. See chapter 01.6. The power and data do not necessarily need to follow the same flow. 1. AHorizontal or a vertical snake pattern is the most efficient cabling layout. 2. If you are working with different cabinets (a combination of different pixel pitches or straight tiles and curves) try to group cabinets of the same shape and batch together on a cable. This makes configuration easier later on. That being said you, can definitly mix batches and shapes on one cable. 3. Just like power flows there is a limit on the amount of cabinets you can connect in one dataflow. Head to chapter 1.12 to calculate a dataflow layout.
Connection mode	The connection mode setting in the software is the front view. In other words. it represents the flow when standing in front of the screen. This can be confusing, since the cabinets are connected from the back, the flow is mirrored.
Output maximum	Maximum amount of cabinets on one data port if the controller is fully loaded. When the controller is not fully loaded one output port can power a maximum of 20 2.8/17 2.5 cabinets.
Controller maximum	Maximum amount of cabinets on all data ports (this is limited).
HDR video	Standard video has 8 bit data rate . HDR video has a 10 bit datarate. Because of the higher bitrate, with HDR video the controller capacity is reduced by half.
Cascading	Novastar M600 & pro controllers have a video out port. This is for situations where you want to play the same video on different screens. You can have one media player, sending the video to LED controller 1, controller 1 sends the video to controller 2 and so on. Note: Cascading is not intended to use one 4k media player and 4 600 controllers to fill a 4k screen. The controllers cannot decode and pass trough a video signal larger than 1920x1200px)

05.2 Tables & settings

Resolutions Hi-LED tiles

	Hi-LED 55/ Hi-LED 55+	90° CONCAVE	90° CONVEX	30° CONCAVE	30° CONVEX
					
Pixelpitch 2.5	176 x 176	244 x 176	274 x 176	274 x 176	274 x 176
Pixelpitch 2.8	192 x 192	266 x 192	300 x 192	300 x 192	300 x 192

Powerflow

The power flow is the order in which the cabinets send power from one cabinet to the other.

Connect up to **18 (EU)/9 (US) 2.8 mm cabinets** and **17 (EU)/8 (US) 2.5 mm cabinets** in one power flow, but always keep in mind the maximum and average power consumption.

	Max. connections EU	Max. connections US	Max. power (W)	Average power
2.8 Hi-LED 55	18	9	147.5	49
2.8 90° CONCAVE	13	6	204	68
2.8 90° CONVEX **2.8 30° CONCAVE** **2.8 30° CONVEX**	12	6	230	77
2.5 Hi-LED 55	17	8	152.5	51
2.5 90° CONCAVE	12	5	211	70
2.5 90° CONVEX **2.5 30° CONCAVE** **2.5 30° CONVEX**	11	5	238	79

LED controllers

	300	600	660pro	4k
Number of ports	2	4	6	16
2.8 output max. full load	20	18	12	16
2.8 output max. (controller not fully loaded)	20	20	20	20
2.8 controller max.	40	72	72	256
2.5 output max. full load	17	15	10	14
2.5 output (controller not fully loaded	17	17	17	17
2.5 controller max.	34	60	60	224
max resolution	1280 x 1024 @60fps	1920 x 1200 60fps	1920 x 1200 @60fsp	4096 x 2160 @60fps
HDR	no	no	yes	yes
Low latency	no	no	yes	no

Video file export settings

Take the following settings into account when exporting your video file:

Container: .mp4 (other formats possible depending on media player)
Resolution: HD (1920 x 1080) – 4K (3840 x 2160)
Codecs: H.265 best quality, very long render time – H.264 slightly lesser quality, faster rendertime
Frame rate: 25/50fps (EU) – 30/60fps (US)
Field order: progressive
Max. Bitrate: 25 Mbps (LS424) – 70 Mbps (HD224)

Full HD settings

Hi-LED 2.8 mm

- Horizontal cabinets: 1920 px (screen width) divided by 176 px (cabinet width) is 10,9 **= 10**
- Vertical cabinets: 1080 px (screen height) divided by 176 px (cabinet height) is 6,1 **= 6**
- The Hi-LED 55 screen should be 10 cabinets wide and 6 cabinets high

Hi-LED 2.5 mm

- Horizontal cabinets: 1920 px (screen width) divided by 192 px (cabinet width) = **10**
- Vertical cabinets: 1080 px (screen height) divided by 192 px (cabinet height) is 5,6 **= 5**
- The Hi-LED 55 screen should be 10 cabinets wide and 5 cabinets high

Hi-LED 2.8 mm (10x6 cabinets)

- Video width matches screen width: black banding at top and bottom of the screen.
- Video height matches screen height: video is full screen, but some of the video is lost at the left and right of the screen.

Hi-LED 2.5 mm (10x5 cabinets)

- Video width matches screen width: video is full screen, but some of the video is lost at top and bottom of the screen.
- Video height matches screen height: black banding at left and right of the screen.

05.3 Downloads

NovaLCT Software

This software is used to configure the MCTRL300 controller.

The software installation file can be downloaded from the Aluvision website:
www.aluvision.com/en/products/downloads.

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