Led Screen - User manual

Table of contents
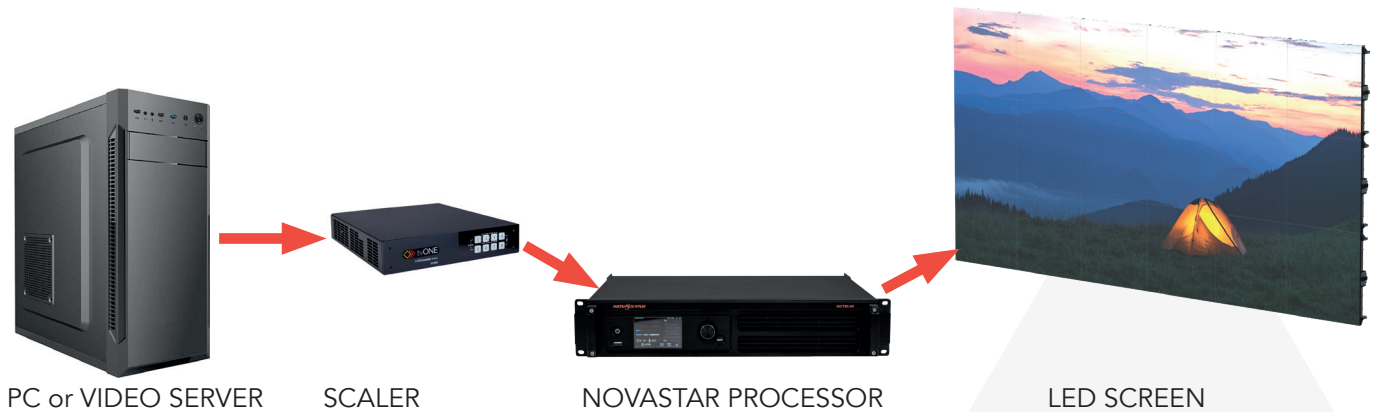
Software required: Nova LCT or Smart LCT (Novastar **download** page)
Contacts: support@musiclights.it

NOTE: In this document there are no info about mechanical mounting. *If info about mounting are needed, please contact **support@musiclights.it***

General info

PC or VIDEO SERVER   SCALER   NOVASTAR PROCESSOR   LED SCREEN

Novastar processor is the sending card that sends signal to cabinets. Each cabinet has a receiving card mounted in. Novastar processor has a different number of DATA output depending from the product version. Each DATA output can manage a max number of **650.000 pixels**.

NOTE: *650.000 it's only a reference number considered for a settings of 60Hz and 8 bit for color. The max number of pixels is related to different values such as bit rate, cables quality and cables lenght.*

The type and the number of Novastar processor need to be selected in relation to:
- total led screen dimensions
- total led screen resolution
- kind of application (fixed or rental)
- scaling needed or not
- input video source

Equipment in need to configure the led screen:
- Windows PC
- USB cable
- Nova LCT software

*NOTE: PRO user can utilize the software **SMARTLCT** to configure more complex led screen. It's possible to see user manual on Novastar web site* https://oss.novastar.tech/uploads/2020/07/SmartLCT-User-Manual-V3.5.3.pdf

Led screen design

1 - Dimensions of the screen

It's the first info needed to design the screen and select the right Novastar processor.
Screen dimension is the **number of columns X number of rows**

2 - Resolution of the screen

It's the **resolution of each cabinet X the total number of cabinets.**
Each led screen cabinet can have a different pixel resolution depending from pixel pitch (distance between each single pixel). It's possible to see this info in the specifications of the product
Examples:

Product	Pixel pitch	Cabinet resolution	Total pixels
OmegaX26B	2.6 mm	192x192	36.864
DeltaX48T	4.8 mm	104x104	10.816

3 - Power cabling

Each cabinet has an IN and OUT power connection (powercon true or powercon). It's possible to connect in chain many cabinets. To design the power cabling, it's necessary to know the max power consumption for each panel. It's possible to see this info in the specifications of the product
Examples:

| Product	Max power consumption	Max number of cabinets on a 16A power line
OmegaX26B	160 W	22
DeltaX48T	200 W	17
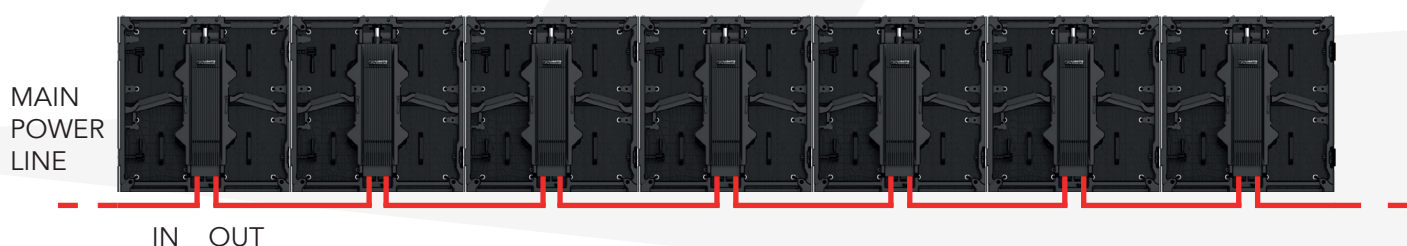
NOTE: *it's suggested to use a class D switch*

4 - Data cabling

Each cabinet has an IN and OUT data connection (RJ45). Each data output of a Novastar processor, can manage a max of 650.000 pixels. To design the cabling of data, it's necessary to know the resolution of each cabinet.

Examples:

Product	Cabinet total pixels	Max number of cabinets for a data line
OmegaX26B	36.864	17
DeltaX48T	10.816	60

MAIN
DATA
LINE

IN   OUT
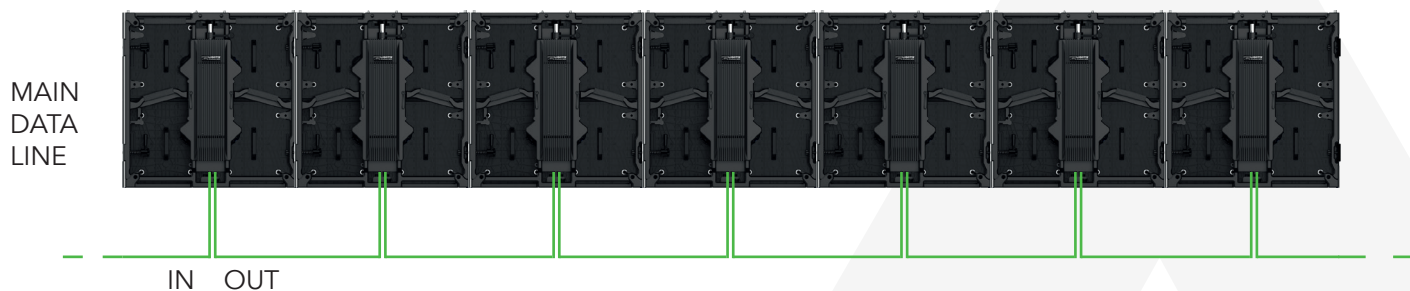
NOTE: it's suggested to distribute the signal as evenly as possible between the various signal lines

NOTE: it's necessary to complete a row or a column with a data chain. It's not possible to connect half of a row or a column on a data chain.

5 - MAIN and BACKUP data line

For all Prolights led screen cabinet it's possible to install a MAIN data line and a BACKUP data line. This allows to see image on led screen in case of MAIN failure. MAIN and BACKUP need to be assigned from the PC software to the outputs of the processor.

MAIN data cable comes from the output of the processor to the last cabinet of the chain.

BACKUP data cable come from the output of the last cabinet of the chain to the output of the processor.

NOTE: it's always suggested to use different processor for MAIN line and BACKUP line

First cabinet
of the chain

Last cabinet
of the chain

IN   OUT

DATA MAIN

IN   OUT

DATA BACKUP
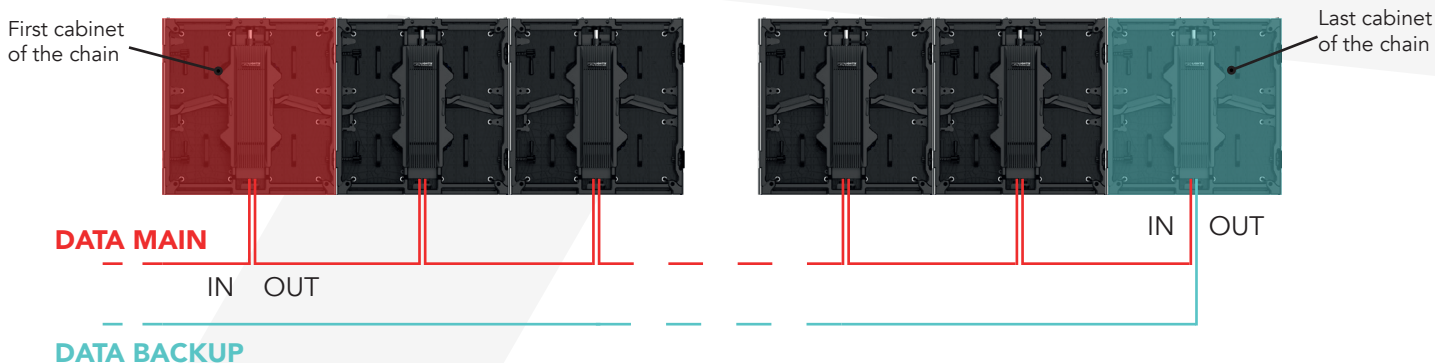
6 - Power backup

Only DeltaX series has a BACKUP power connector IN and OUT made with special connectors. This allows to have a BACKUP power line in case of damage of the MAIN power line.

NOTE: it's important that BACKUP and MAIN power line are connected to the same cabinet chain.

First cabinet of the chain

Last cabinet of the chain

POWER MAIN

IN   OUT

IN   OUT

POWER BACKUP
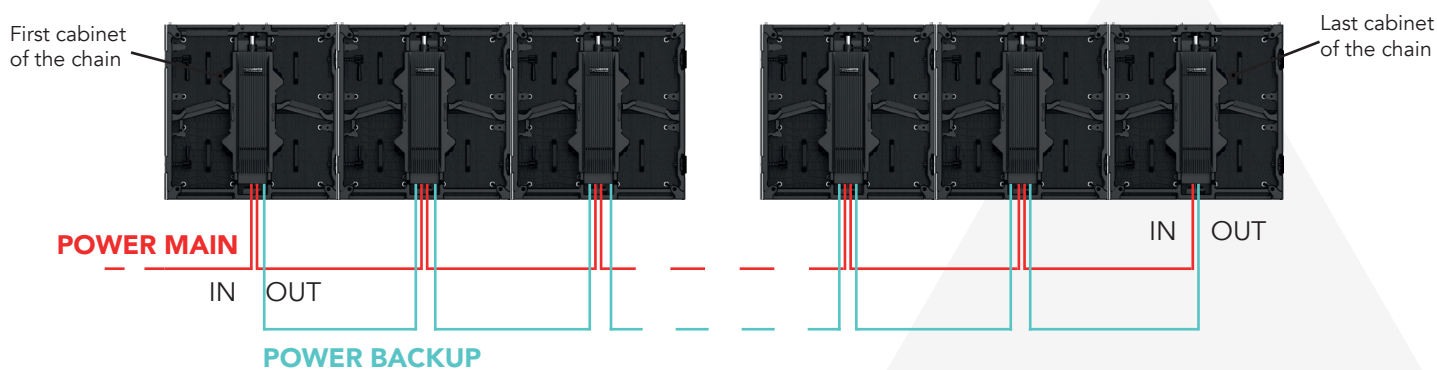
Resolution management

The have the best result in terms of resolution on your led screen is to respect the chain of input and output resolution between video source and led screen.
The more the rate between led screen pixels and sending card resolution is near to 1:1, the more the result is better.

| VIDEO RESOLUTION | PC OUTPUT RESOLUTION | SENDING CARD RESOLUTION | LED SCREEN RESOLUTION |
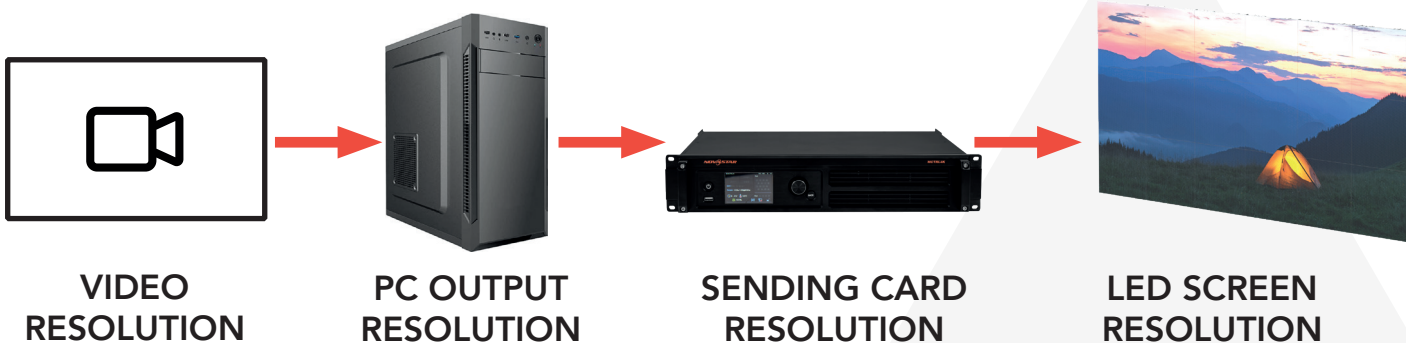
Video resolution need to be defined during led screen design
PC output resolution can be set in PC settings
Led screen resolution is the phisical number of pixels in the led screen as shown at **page 3**
Sending card resolution can be s et on NOVALCT in **Screen Configuration - Sending Card**
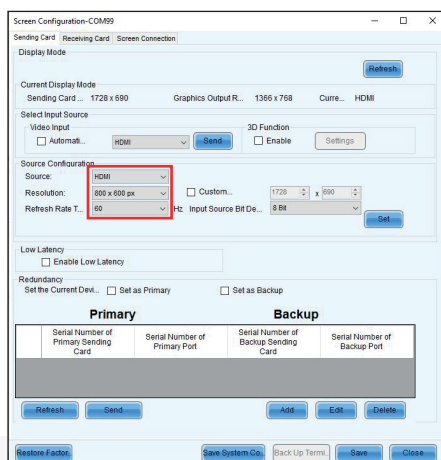
Example:

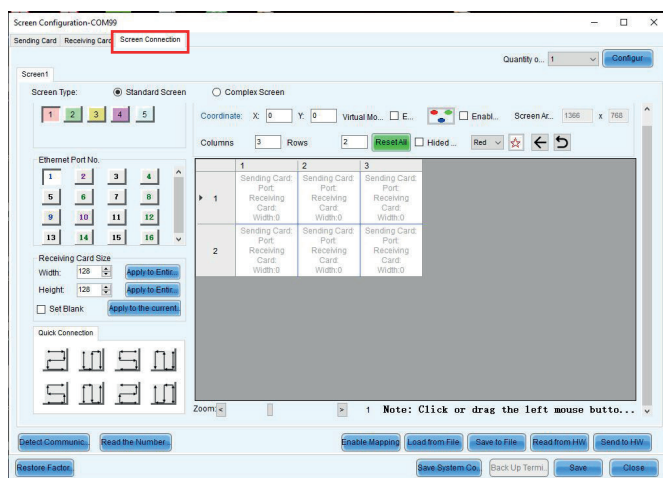| Product	OmegaX26B
Led screen dimension	10 columns X 5 rows
Led screen resolution	1.843.200 pixels
Video Resolution	HD 1920x1080 (2.073.600 pixels)
Pc output resolution	**NOTE:** HD resolution can be used in this case because is very similar to the native one
Sending card resolution	
Pixel rate	1:1,125 (2.073.600/1.843.200)

Led screen configuration with NOVALCT

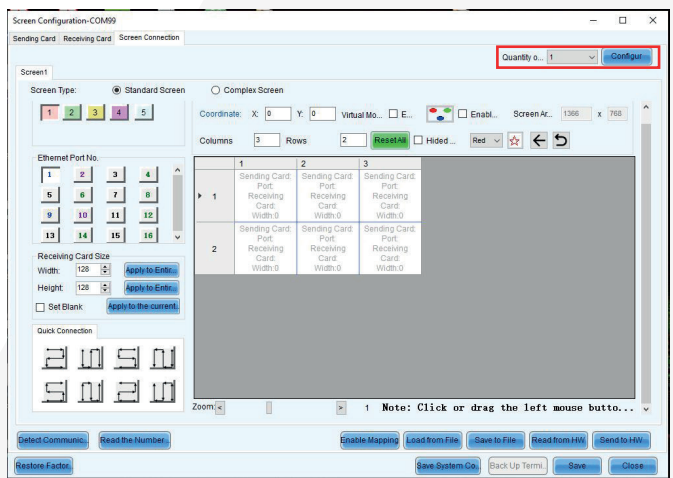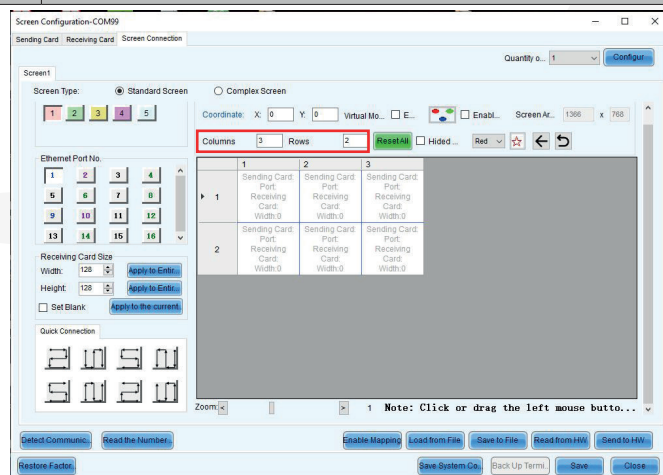| 1	Open the software **Nova LCT**. Login as **Advancer User** with **Admin** password.	2	Go in **Screen Configuration** and **Next**
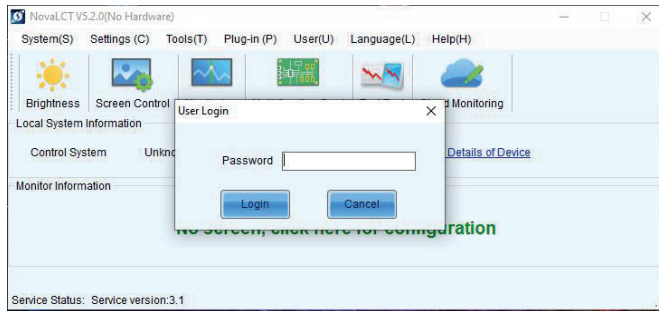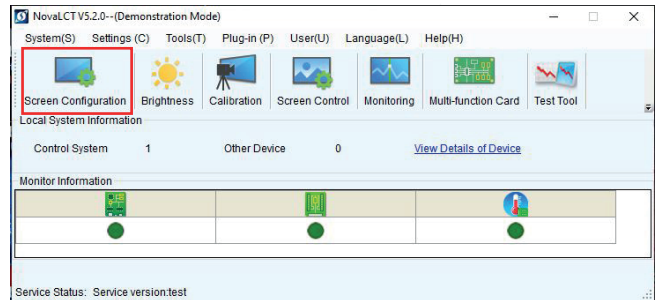
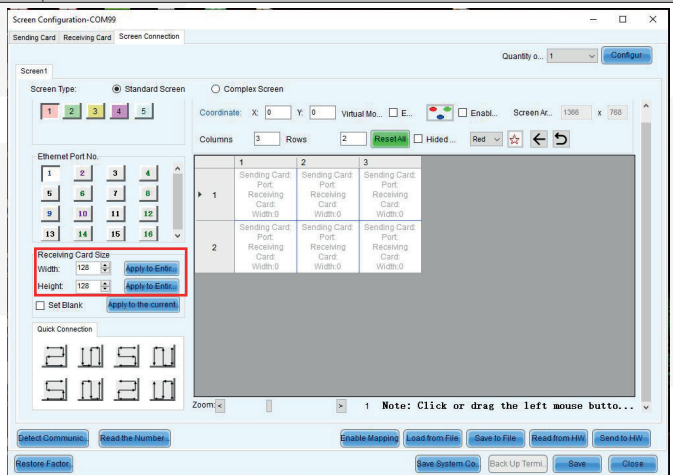| 3	Go in **Screen Connection** tab	4	Set the quantity of screen and **Configure**

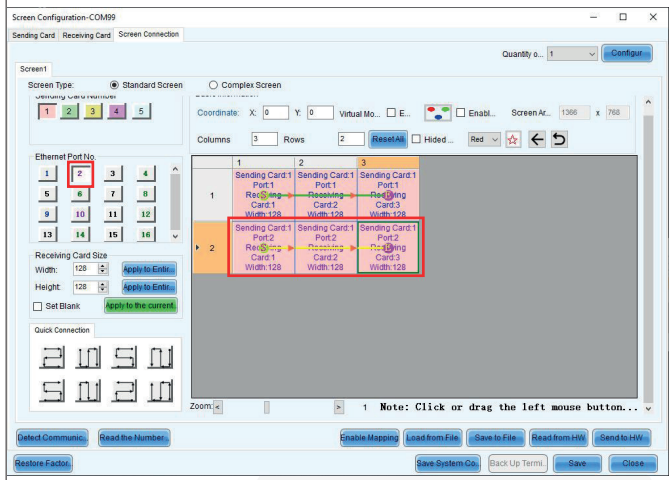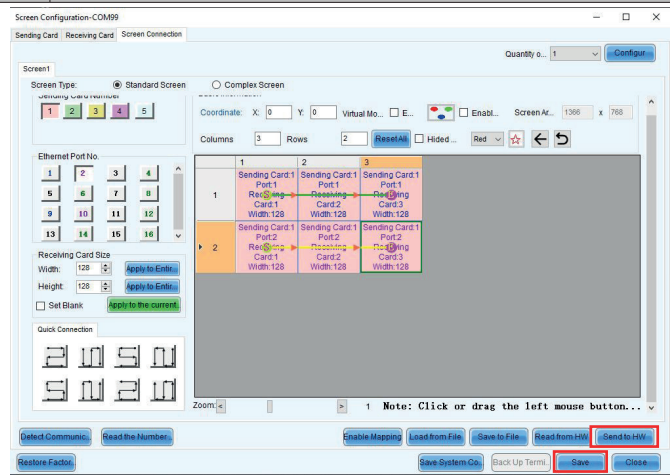| 5	Set the number of **columns** and **rows**	6	Set the cabinet resolution and apply to entire row and column

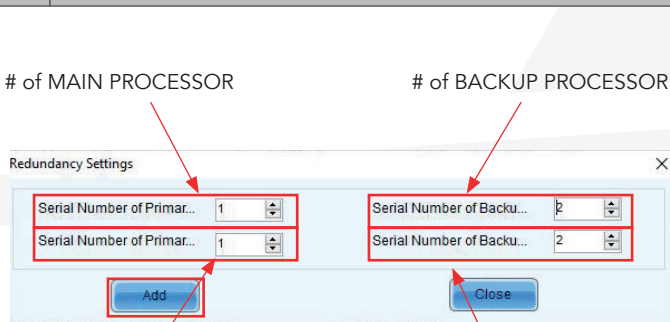|			
7	Select the port of the processor and draw the data line on the screen (view from behind)	**8**	Repeat the same procedure with another port and other cabinets (if needed)
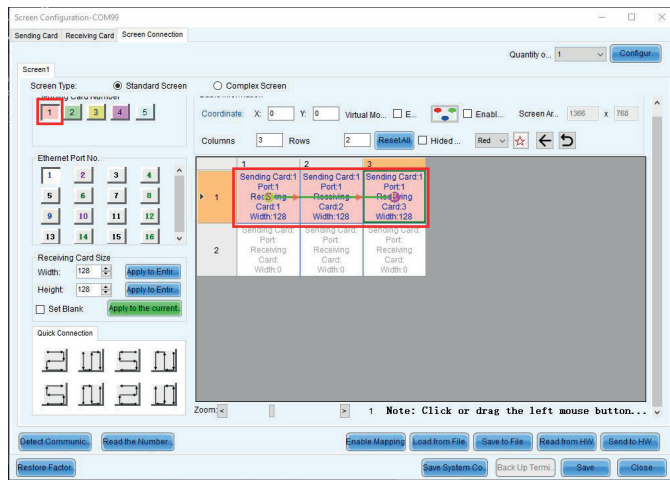
9	Once completed all data lines click on **Send to HW** and **Save**	**10**	Go in **Sending Card** and click **Add**
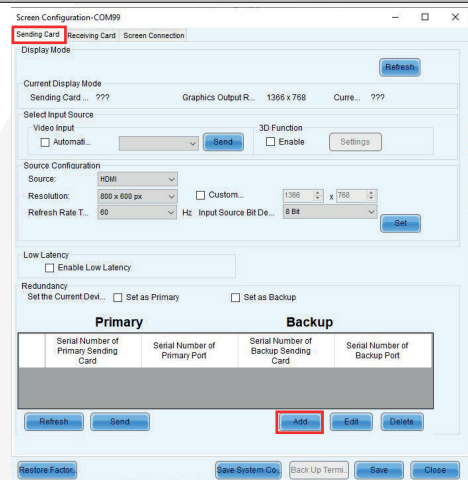
11	Set the Backup and press **Add**	**11**	Press **Send** to apply settings and **Save**
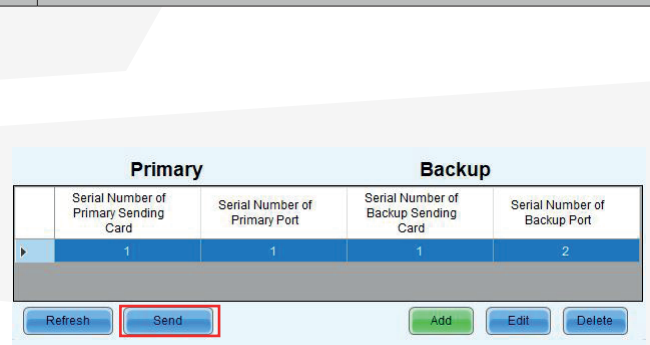
# of MAIN PROCESSOR   # of BACKUP PROCESSOR

Redundancy Settings

| Serial Number of Primar... | 1 | Serial Number of Backu... | 2 |
| Serial Number of Primar... | 1 | Serial Number of Backu... | 2 |

Add   Close
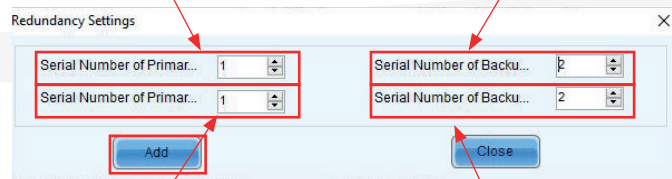
# of MAIN PORT   # of BACKUP PORT

	Primary		Backup	
	Serial Number of Primary Sending Card	Serial Number of Primary Port	Serial Number of Backup Sending Card	Serial Number of Backup Port
▶	1	1	1	2

Refresh   Send   Add   Edit   Delete
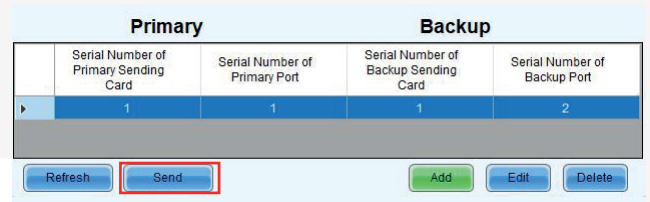
Application Example

Design a LED screen

Product	OmegaX26B	
Screen dimensions	45 cabinets	9 columns X 5 rows
Total resolution	1.658.880 pixels	192x192x45
Novastar processor	2 NOVAMCTRL660	1 MAIN + 1 BACKUP
Output number	8	4 for each processor
Pixels capacity	2.300.000 pixels for each processor	
Video resolution		
Pc resolution	1728x960	
Sending card resolution		
Pixel rate	1:1	

Processor's port assignment

PROCESSOR 1 MAIN			
Output 1	Output 2	Output 3	Output 4
MAIN 1	**MAIN 2**	**MAIN 3**	not used
row 1	row 3	row 5	not used
row 2	row 4		not used
10 cabinets	**10 cabinets**	**5 cabinets**	not used
PROCESSOR 2 BACKUP			
Output 1	Output 2	Output 3	Output 4
BACKUP 1	**BACKUP 2**	**BACKUP 3**	not used
row 1	row 3	row 5	not used
row 2	row 4		not used
10 cabinets	**10 cabinets**	**5 cabinets**	not used

Power line distribution

16 LINE 1	16A LINE 2	16A LINE 3
Column 1	Column 4	Column 7
Column 2	Column 5	Column 8
Column 3	Column 6	Column 9
15 cabinets	**15 cabinets**	**15 cabinets**

Data line schematics

MAIN 1

BACKUP 1

MAIN 2

MAIN 3

BACKUP 3

BACKUP 2

BACKUP PROCESSOR

MAIN PROCESSOR

VIDEO SPLITTER

VIDEO SOURCE

Power line schematics
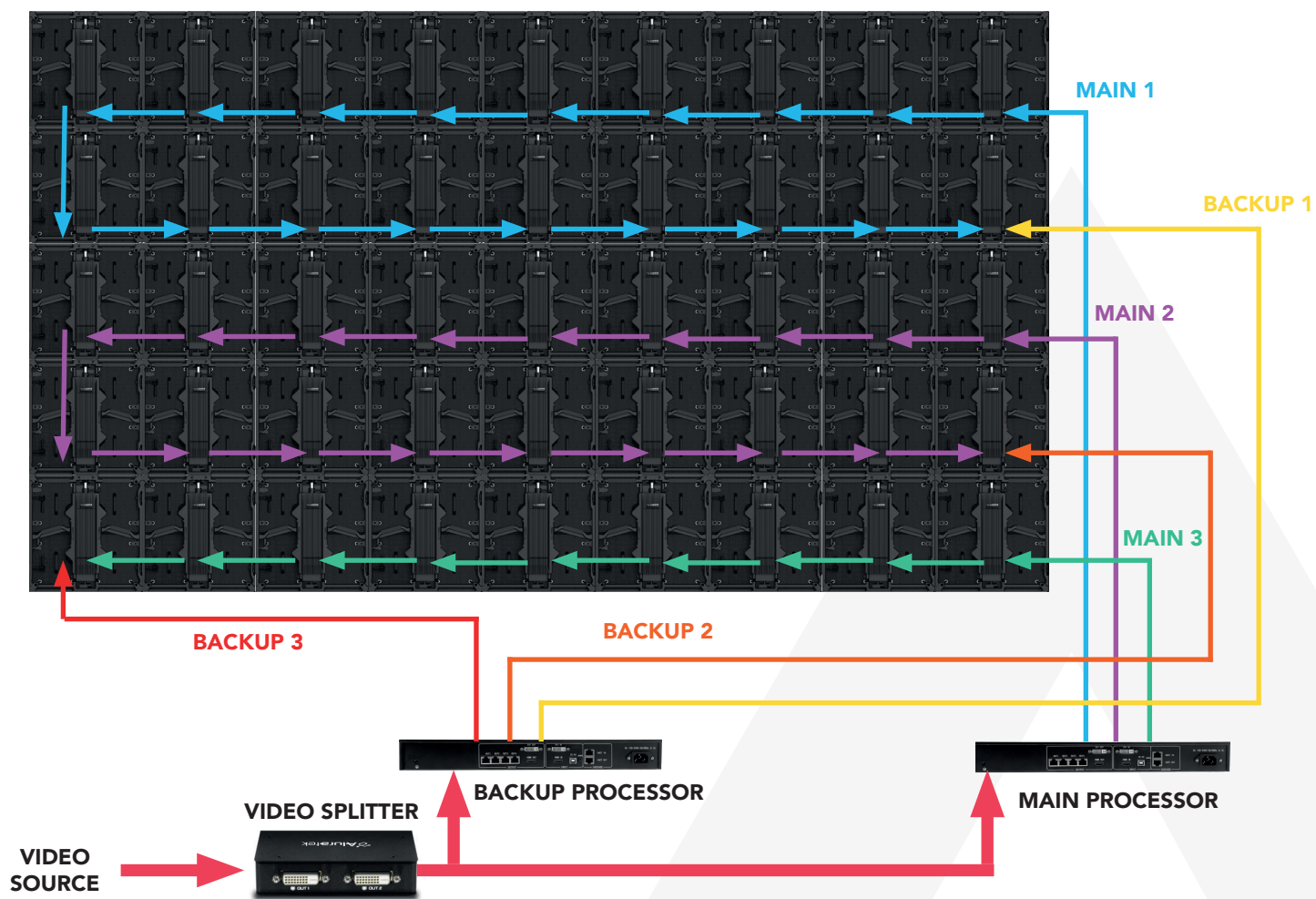
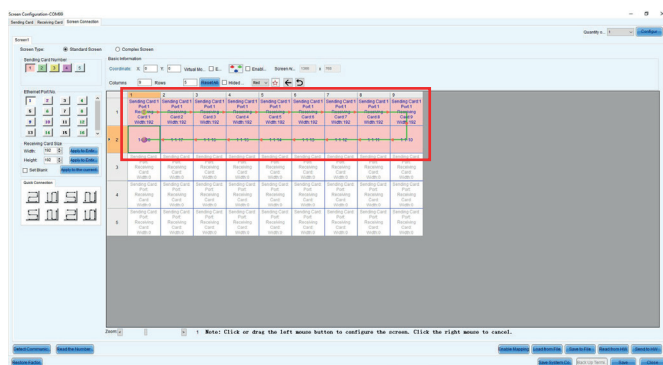**16A LINE 1**
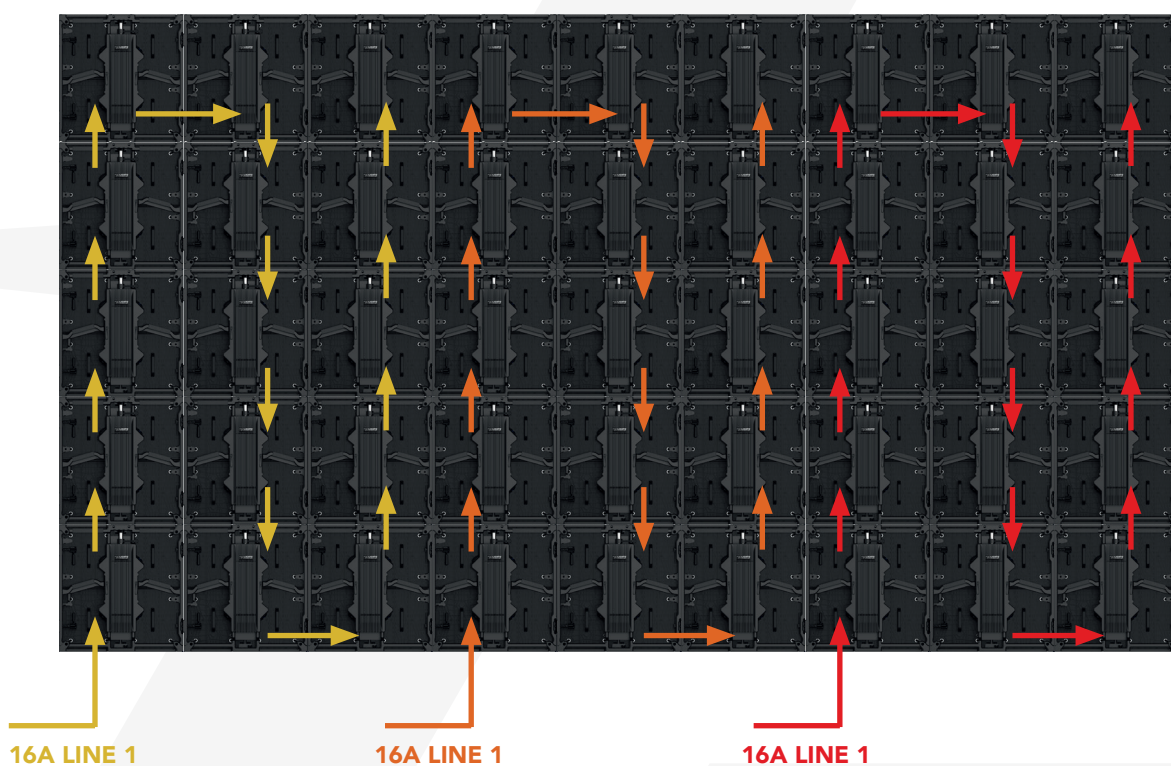
16A LINE 1

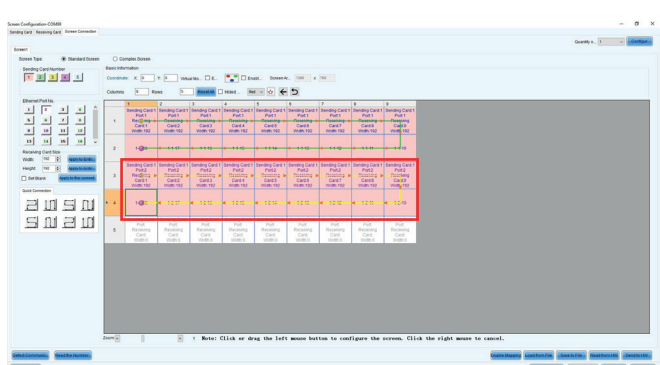**16A LINE 1**

NOTE: *screen is seen from behind*

Configuration with NOVALCT

NOTE: *in NOVALCT the screen is view from frontal view*

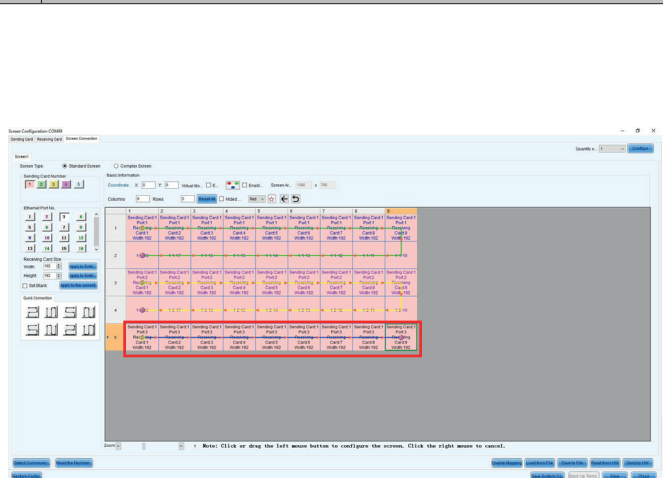| **1**	Configure Data line 1	**2**	Configure Data line 2

3	Configure Data line 3	**4**	Backup settings for port 1, 2 and 3