User Manual

Multi-Screen Splicing Processor J6

Rev1.0.1
NS160110162

Statement

Dear users,

You are welcome to use the J6, a multi-screen splicing processor of Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar).

This document is intended to help you understand and use the product. For accuracy and reliability, NovaStar may make improvements and/or changes to this document at any time and without notice. Any problem in use or any good suggestion, please contact us through ways provided in the document. We will do our utmost to solve the problems and adopt the suggestions after evaluation as soon as possible.

Trademarks

NOVASTAR is a trademark of NovaStar.

Contents

Safety Notice

To avoid potential hazards, please use this product according to regulations. In the event of breakdowns, non-professionals are not allowed to disassemble it for maintenance without permission. Please contact the after-sales department of NovaStar timely.

	High voltage danger: The operating voltage range of this product is 100V to 240V AC.
	Grounding: This product is grounded through the grounding cord of power supply. Please keep the grounding conductor well grounded.
	Electromagnetic interference: Keep this product far away from magnets, motors and transformers.
	Moisture proof: Keep this product in a dry and clean environment. In case of liquid immersion, please pull the power plug out immediately.
	Keep the product away from flammable and explosive hazardous substances.
	Prevent liquids or metal fragments from dropping into the product in order to avoid safety accidents.

Change History

Date	Version	Description	Remarks
2017-04-18	V1.0.0	First release	

Glossary of Terms

Preview: Preview includes input preview and preview in switcher mode.

OSD: On Screen Display. Preloaded images or texts can be overlapped and displayed on the any area of the screen.

Genlock: Synchronization lock, enabling one system or multiple systems in sync with the same video source.

Vertical synchronization: The accuracy level of synchronization.

Cascade: Connect multiple J6 units in specific order so as to output images with larger resolution.

Note: Terms explained here are only for the chapters below. We will be sorry if these terms cannot help you.

1 Overview

Developed by NovaStar, J6 is a high-performance multi-screen splicing processor featuring powerful image processing. Multiple video inputs can be overlapped and displayed on a display system composed by 4 screens after each of the input is scaled. J6 supports a wide range of inputs which can be spliced into a bigger picture.

Based on a powerful FPGA processing platform, J6 supports quick seamless switch between input sources and supports transition effects such as fade, etc., allow you to experience more flexible screen layouts.

In addition, J6 can work with V-Can, a new smart management software, to enable more screen splicing effects and better satisfy your needs.

1.1 System Architecture

1.2 Software Installation

Just like the installation of other common software, install V-Can following the setup wizard.

	In case of antivirus or firewall popups during installation, please permit them because serial driver may need to be installed during program installation.

2 Appearance

2.1 Front Panel

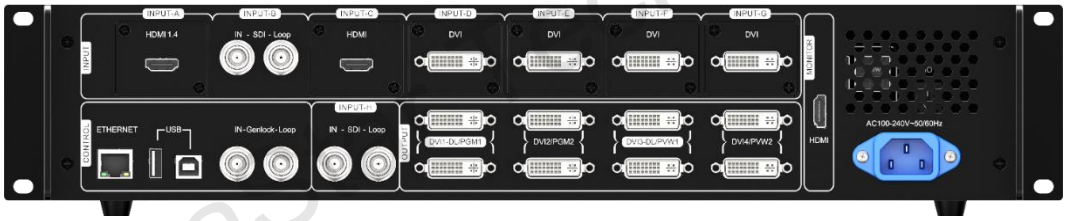
①	Power switch	ON/OFF
②	Window buttons	WIN1-WIN6, press a button to enter the relevant menu of window properties for quick settings. • A window is opened when its button indicator is on. • A window is closed when its button indicator is off. • Hold down the window button to close the window on the home screen.
③	Input source buttons	Status of signal sources • A signal source is accessed but not in use when the signal indicator is on. • A signal source is accessed and in use when the signal indicator becomes brighter. • A signal is not accessed when the signal indicator is off.
④	LCD panel	Used for displaying current status and menus of the processor.
⑤	Knob	• Rotate the knob to select menus or adjust parameters • Press the knob to enter main menu or confirm current selection.
⑥	ESC button	Exit from current operation or option.
⑦	Navigation button	Hold down the button to enter the quick navigation screen and quickly learn how to use J6.

⑧	Function buttons	• **PRESET**: Press the button to enter the “Preset Recall” menu. 16 presets are available for users to use, save, delete, etc. • **TEST**: Hold down the button to enter the test pattern settings menu. • **OSD**: Switch for loading images or texts. Prestored images or texts can be overlapped and displayed. • **Fn (TAKE)**: A user-definable function button – Fn (TAKE) button can be set as “Screen Settings”, “Window Settings”, “Black Out” or “Freeze” when the “System Mode” is set to “Splicer”. – Fn (TAKE) button can be set as “Take” or “Switch” when the “System Mode” is set to “Switcher”.

Tip:

Additional description for **PRESET**: Users can rename the presets through the control software V-Can.

2.2 Rear Panel

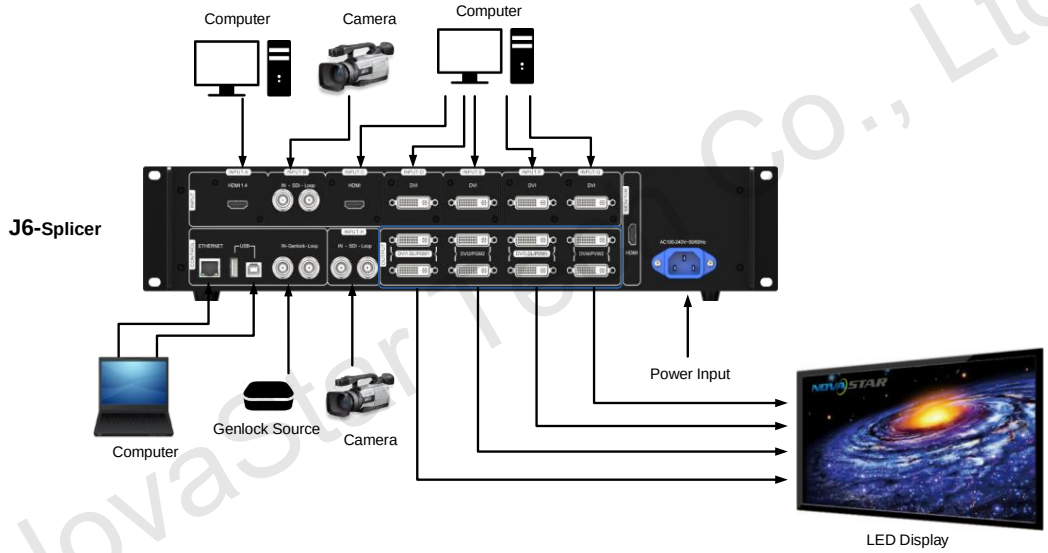


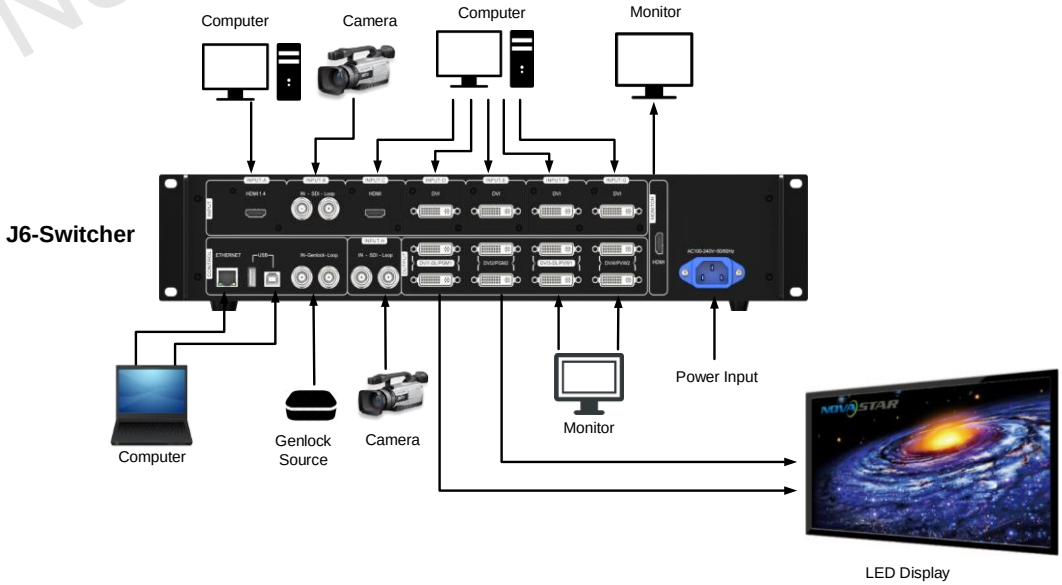
Inputs	
Input-A	Can be changed to interface of HDMI1.4, DP1.1 or DualLink DVI as required.
Input-B	SDI
	SDI Loop, SDI loop output
Input-C	Can be changed to DVI/HDMI/VGA depending on the requirements of users to allow input of different video sources.
Input-D	DVI1
Input-E	DVI2
Input-F	DVI3
Input-G	DVI4
Input-H	SDI
	SDI Loop, SDI loop output
Outputs	

HDMI preview	HDMI output, capable of previewing the PVW, PGM and 8 input sources.
DVI1-DL/PGM1	DVI1 output This interface works as PGM1 output when system mode is switcher, and as DualLink out1 when output mode is set to DualLink.
DVI2/PGM2	DVI2 output This interface works as PGM2 output when system mode is switcher, and is invalid when output mode is set to DualLink.
DVI3-DL/PVW1	DVI3 output This interface works as PVW1 output when system mode is switcher, and as DualLink out2 when output mode is set to DualLink.
DVI4/PVW2	DVI4 output This interface works as PVW2 output when system mode is switcher, and is invalid when output mode is set to DualLink.
Control	
ETHERNET (RJ45)	Control interface
USB (Type-B)	USB control interface for connecting upper computer
USB (Type-A)	For cascading multiple J6 units
Genlock IN-Loop	For connecting synchronous signals and for synchronous cascade of J6 units.
Power	
AC 100-240V, 50/60HZ	AC power interface

3 Signal Connection

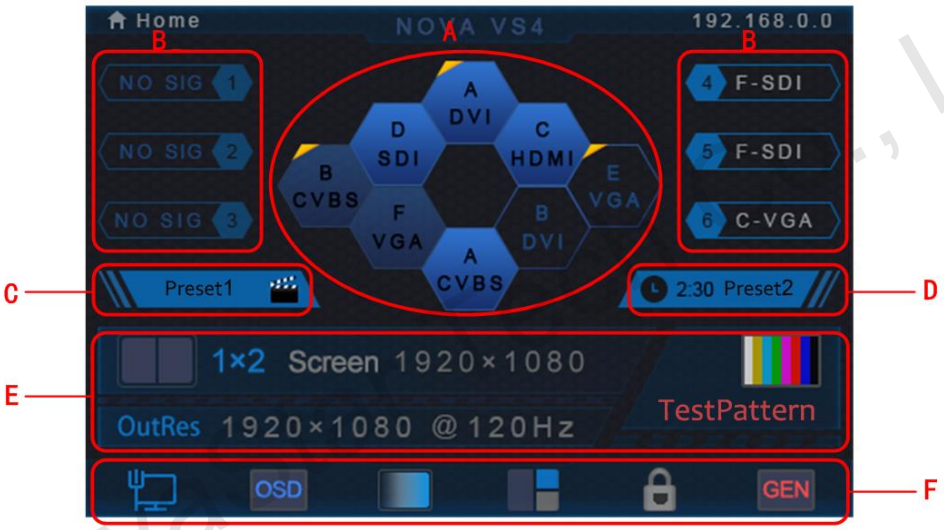
Please refer to the interface introduction in previous chapter to connect hardware devices (Please turn the power off before connecting signals).





4 Menu Operations

After startup, the home screen on the LCD panel is shown as below:

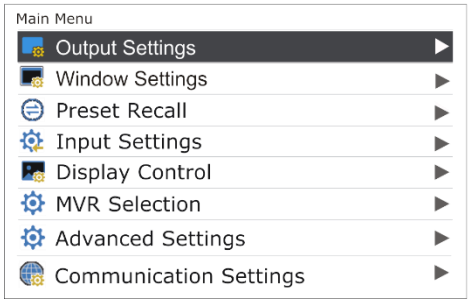


A		Pure color: The signal source is in use and signals are available. Semitransparent: The signal source is not in use and signals are available. Transparent: The signal source is not in use and no signal is available.
B		Transparent: The window has input signal and the type of the signal source is displayed in the window.
		Semitransparent: The window has no input signal. The window will display the input source used to open a window last time, or the default input source. When opening a window using the window template, the window will use the source of the INPUT-C connector as the default source.
C		Current preset is displayed. Pure color indicates the preset is turned on and semitransparent indicates the preset is not turned on.

D		Next preset and its turn-on time are displayed. Pure color indicates the schedule of the preset is displayed and transparent indicates the schedule is not displayed and showing “N/A”.
E		Screen structure and size, screen structure supports: 1×1, 1×2, 1×3, 1×4, 2×1, 2×2, 3×1, 4×1.
		Output resolution Maximum supported resolution: 3840×1080@60Hz.
		Prompt for test pattern, freeze, black out, etc. No icon is shown when the unit works normally.
F		Device connection status: Not connected/Connected to network/Connected to USB
		OSD on/OSD off
		Transition effects: 21 effects, such as cut and fade
		Working mode: splicer/switcher
		Button unlocked/button locked Hold down the knob and ESC button simultaneously to lock or unlock the buttons. All the buttons on the panel are not available after they are locked.
		Genlock is turned off. /The reference source of Genlock is lost or abnormal. /Genlock is locked. /Genlock is to be locked.

In the home screen, **press the knob** to enter main menu (Press the **knob** to enter sub-menus and press **ESC** to return to the previous menu. Rotate the knob clockwise to move down and rotate anticlockwise to move up.).

Main menu is shown as the figure below. The main menu includes: “Screen Settings”, “Window Settings”, “Preset Recall”, “Input Settings”, “Display Control”, “MVR Selection”, “Advanced Settings”, “Communication Settings” and “Language”.



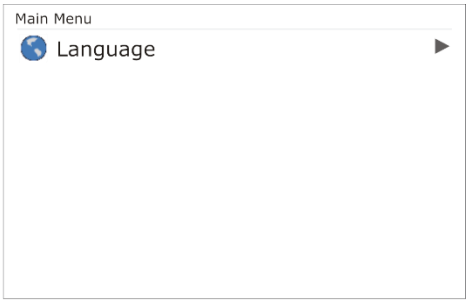
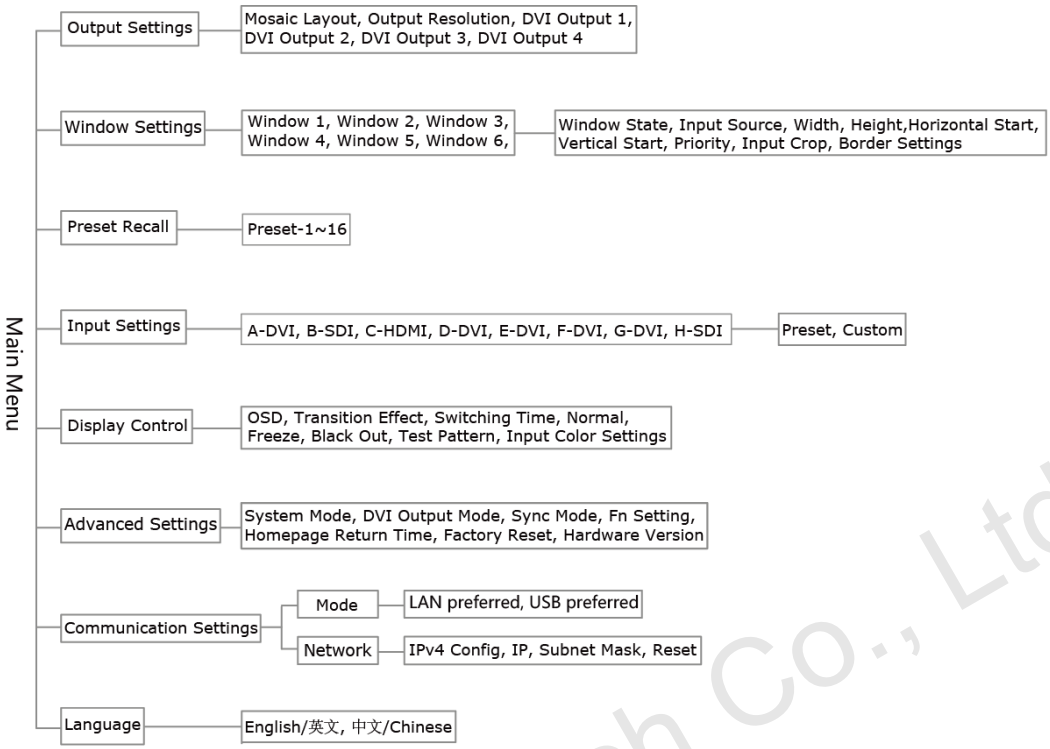
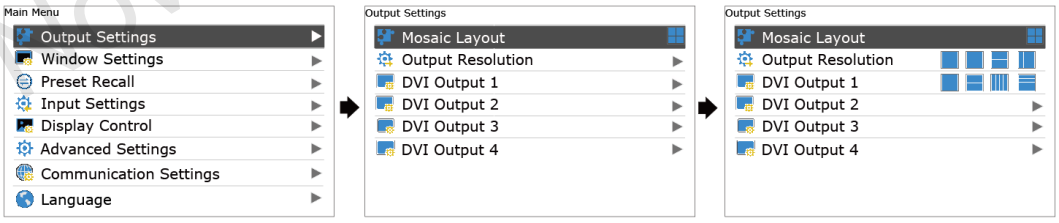


Figure 4-1 J6 menu tree



4.1 Output Settings

As shown in the figure below, set the mosaic mode of output images in the “Output Settings” menu. Set the resolution of output images in “Output Resolution”. Preset resolution and custom resolution are optional. Set the **Width** and **Height** of current screen in the “DVI Output” menu.



4.2 Window Settings

This processor is capable of displaying 6 windows at most and the input source, size, position, priority, input crop, border parameters, etc. of each window are settable.

Priority: allows to set the display priority of current window.

Input Crop: allows to turn on “Input Crop” and display cropped content on LED screen.

Border Settings: allows to add or delete borders and set border width and height as well as border color.

4.3 Preset Recall

Switch presets. Apply the preset parameters directly. 16 presets in total are available for users to set and use.

Preset Recall

J6 supports 16 user presets. After the preset data is configured, uses can directly use the configured presets by their names.

- Rotate the knob to select a preset you want to load and press the knob to load it.
- When you enter the **Preset Recall** menu, the indicators of number buttons on the front panel will turn on. You can press the number button to quickly load the corresponding preset. If the preset No. is a double-digit value, press the two numbers quickly within 2 seconds. For example, to load **Preset 15**, press **1** and **5** quickly within 2 seconds.

Preset Templates

J6 provides 6 preset templates. Users can use the templates to quickly open windows to fill the whole screen loaded by J6.

Provided preset templates are 1×1, 1×2, 2×1, 1×3, 2×2 and 1×4.

4.4 Input Settings

Input resolution of signal sources, including DVI, HDMI and DP, can be set. Preset resolutions and custom resolutions are available for users.

Preset resolutions include 800×600, 1024×768, 1280×720, 1280×768, 1280×800, 1280×1024, 1366×768, 1440×900, 1600×1200, 1680×1050, 1920×1080, 1920×1200, 2048×640, 2048×1152, 2048×1536, 2304×1152, 2560×816, 2560×960, 2560×1600 and 3840×1080.

Preset refresh rates include 50 Hz, 60 Hz, 75 Hz and 120 Hz.

Custom resolution includes custom width, custom height and custom refresh rate.

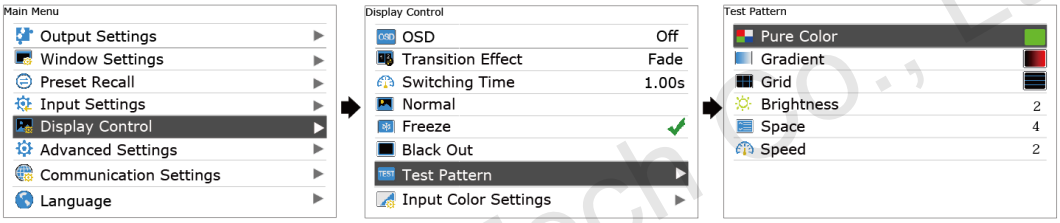
Note:

- Select “Apply” and confirm the selection after the settings are done, and then the settings will take effect.
- The total number of pixels is not greater than 2.1 million. The width of custom resolution cannot be greater than 3840 and height not greater than 1080.

4.5 Display Control

As shown in the figure below, “OSD” can be turned on/off, and “Transition Effect” (including fade and cut), “Switching Time”, display state and image quality can be set in the “Display Control” menu.

Input Color Settings: Select an input source to be adjusted to adjust its brightness, contrast, saturation, hue or reset to defaults.



Tip:

- OSD function description: You can turn on/off OSD. Control software is required for adding and setting detailed contents.
- Transition effect description: Switching time setting can change the transition time of an effect.

4.6 MVR Selection

Users can scale up a specific input source, the PVW or PGM to view on the preview monitor.

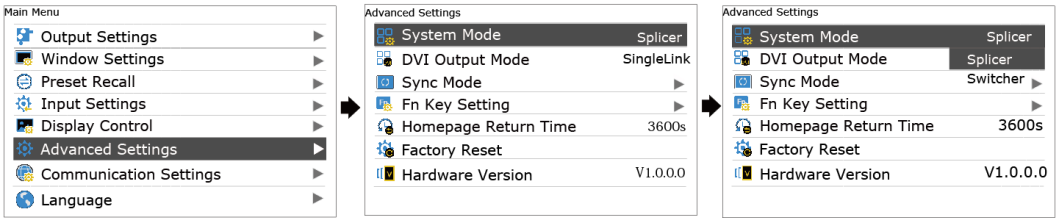
On the MVR selection menu, rotate the knob to select an input source, the PVW or PGM and press the knob to display the selected target on the monitor in full screen. When you press the knob again, the current scaled display will exit.

4.7 Advanced Settings

System modes include: “Splicer” and “Switcher”.

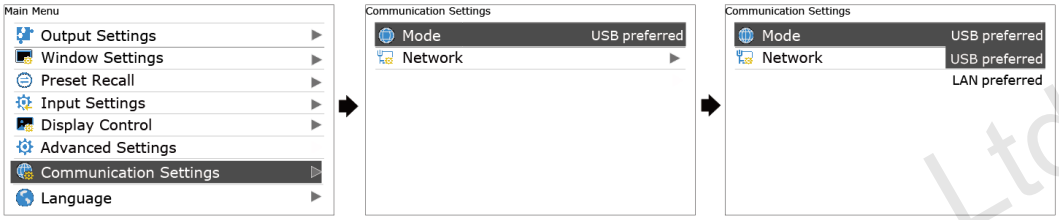
Output modes include: “SingleLink” and “DualLink”.

In synchronous mode, any one of the input sources can serve as synchronous source. Following synchronous sources are selectable: GenLock and any one of the input sources.

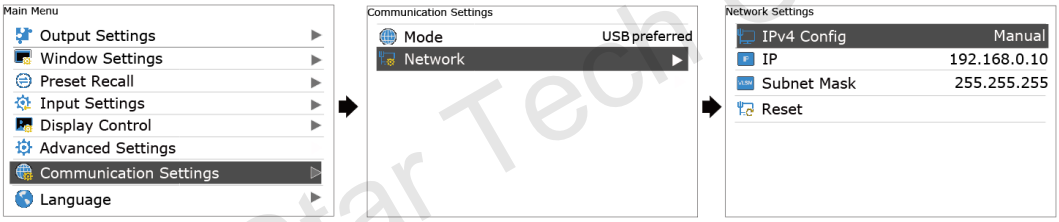


4.8 Communication Settings

Communication modes include: “USB preferred” and “LAN preferred”.



“Network”: allows to set IPv4 Config (manual and auto), IP address, and subnet mask or to reset to default network parameters.

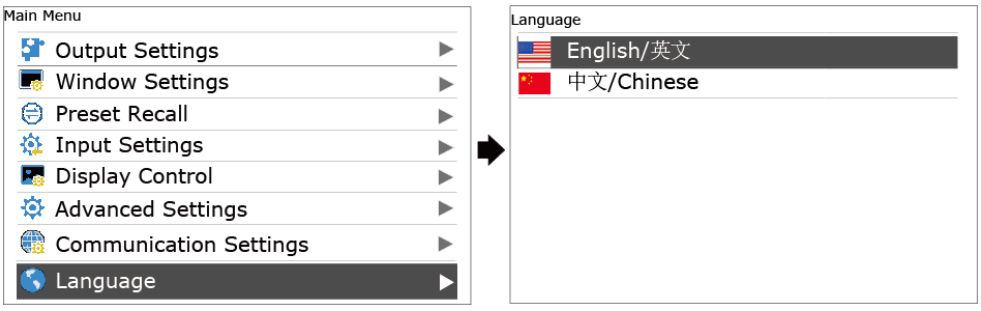


Tip:

- This processor supports two control modes: USB and Ethernet cable. Please select according to actual needs.
- IP and subnet mask can be edited only when network mode is set to “Manual”.

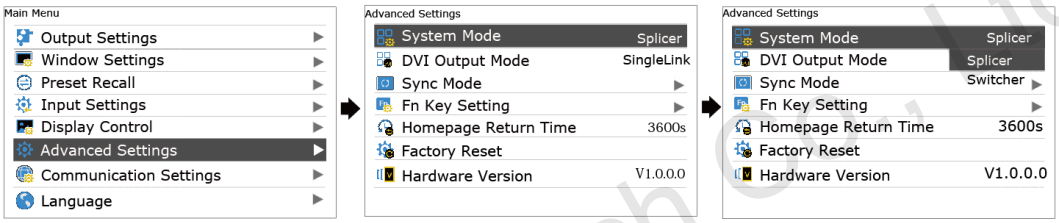
4.9 Language Settings

J6 currently supports “Chinese” and “English” only. Users can switch languages as required.



5 System Mode

System modes include “Splicer” and “Switcher”. In these two modes, J6 can work with the software V-Can.

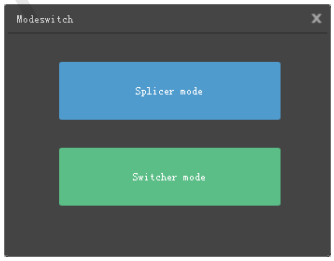


5.1 Switcher

Step 1: Refer to the hardware connection diagram to connect hardware devices.

Step 2: Start V-Can, connect devices and adjust their parameters. Set system mode to “Switcher”.

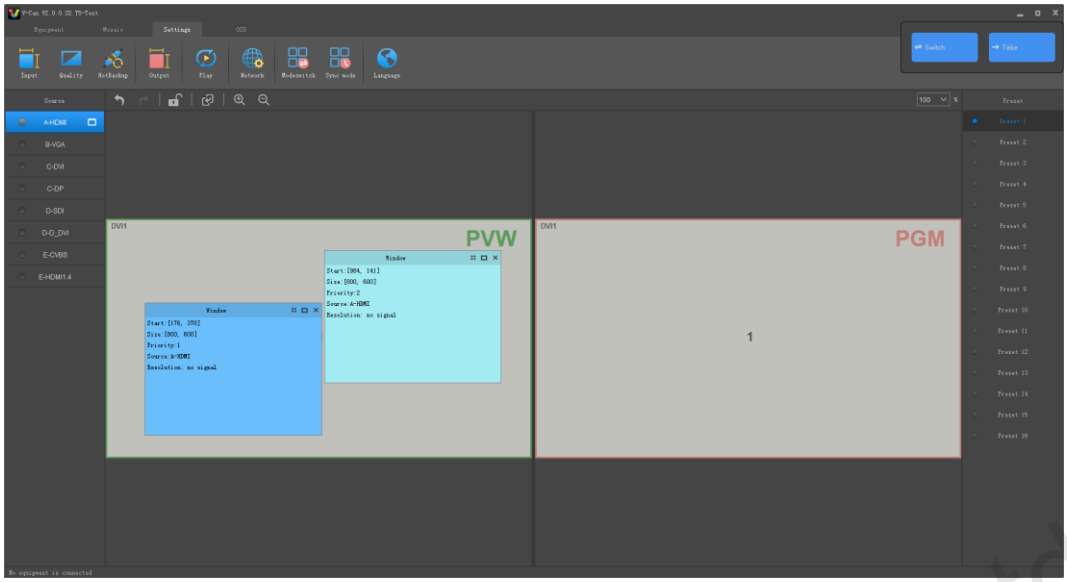
Step 3: Add windows in editing area and set window parameters. Then output the edited content to LED screen.

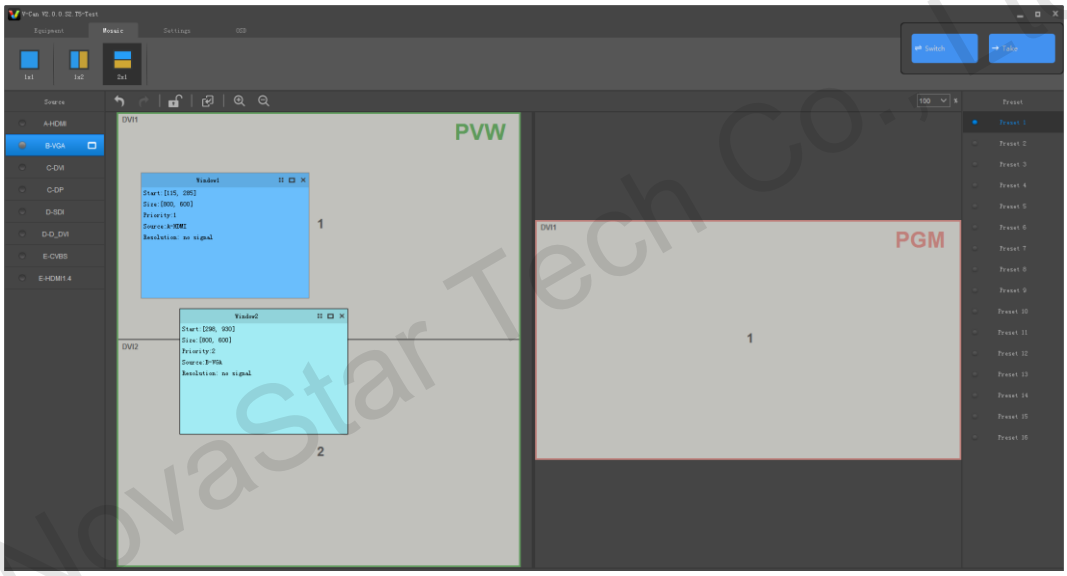


“PVW” area is for editing. Different signal sources can be selected. Windows can be added and window parameters can be edited. Six windows can be added at most.

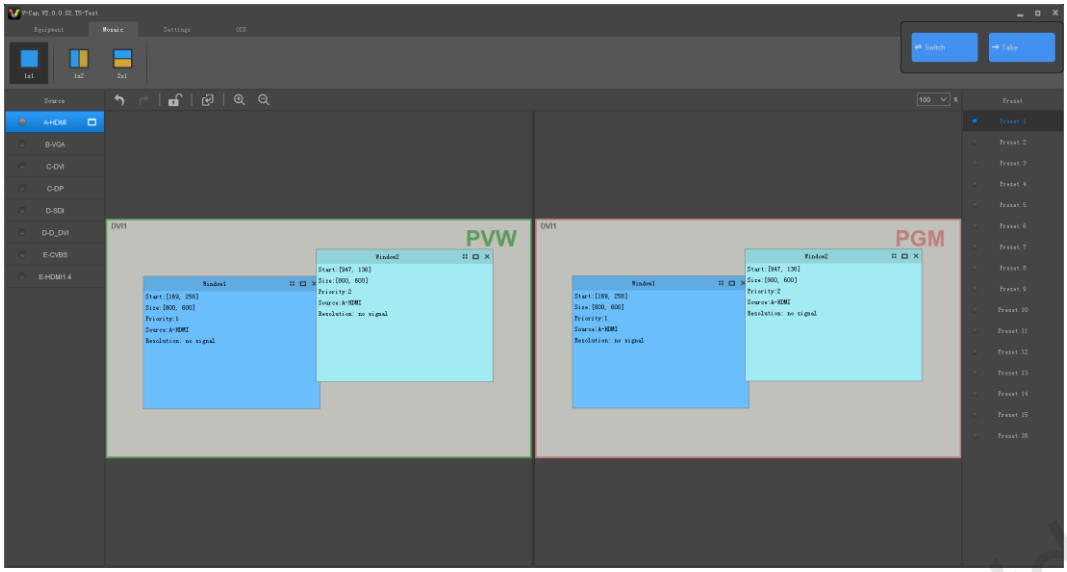
Splicing area supports up to 1×2 layout (Splicing mode can be chosen without limitation). Windows can be overlapped. The overlapped area displays the content of the window with higher priority. After the content is edited, result can be previewed on the monitor and can be adjusted.

The display parameters set before can be saved as preset, which is convenient for using next time.





As shown in the figure below, content in “PGM” area is being displayed on the LED screen. After the content to be output is edited in the “PVW” area, click the “TAKE” button in the top right corner of the page and then the content in “PVW” area will be mapped to “PGM” area. LED screen will display the edited content.

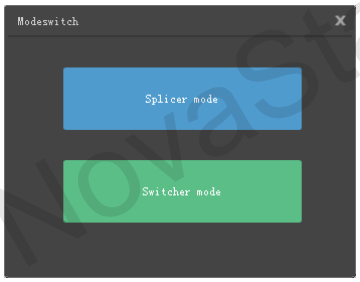


5.2 Splicer

Step 1: Refer to the hardware connection diagram to connect hardware devices.

Step 2: Start V-Can, connect devices and adjust their parameters. Set system mode to “Splicer”.

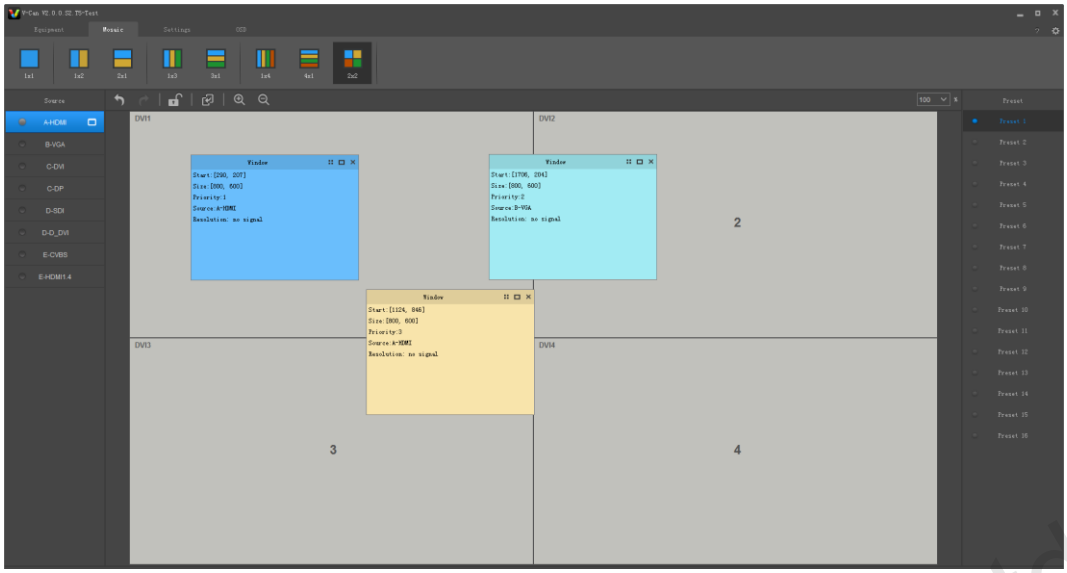
Step 3: Add windows in editing area and set window parameters. Then the edited content is displayed on LED screen in real-time.



Splicing area supports up to 2×2 layout. (Splicing mode can be chosen without limitation).

Different signal sources can be chosen. Windows (six at most) can be added. Window parameters can be edited. Windows can be overlapped. The overlapped area displays the content of the window with higher priority.

The display parameters set before can be saved as preset, which is convenient for using next time.



6 Electrical Parameters

Inputs		
Port	Qty	Resolution Specifications
DualLink DVI/HDMI1.4/DP1.1 (Choose one from these inputs)	1	4K×2K@30Hz 2560×1600@60Hz (downward compatible)
DVI (DVI-D)	4	VESA standard 1920×1080@60Hz (downward compatible)
CVBS(BNC)/VGA (DB25)/HDMI/ DVI (DVI-D) (Choose one from these inputs)	1	VESA standard 1920×1080@60Hz (downward compatible)
SDI(BNC)	2	720p, 1080p

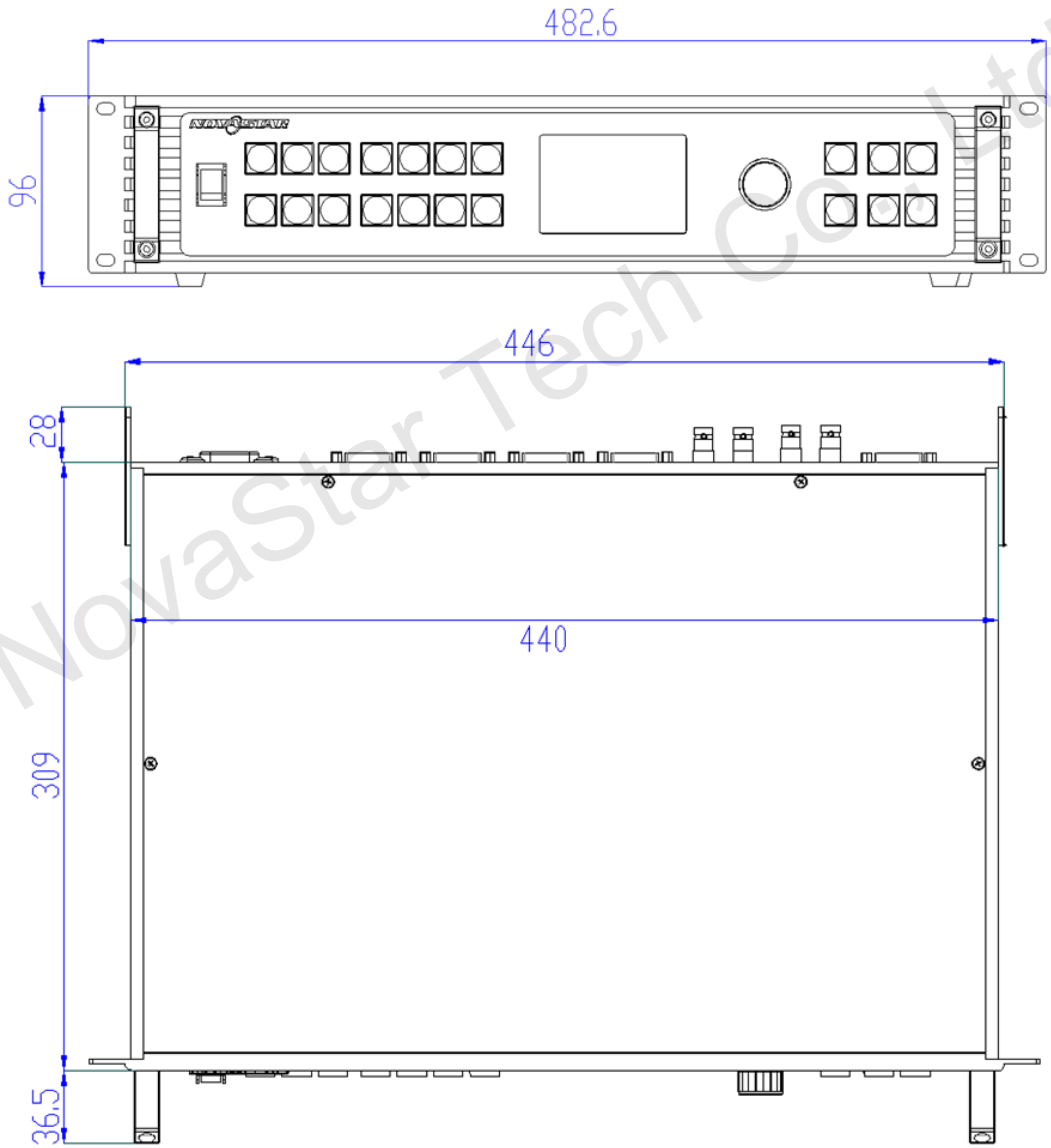
Outputs		
Port	Qty	Resolution Specifications
DVI (DVI-D)	4 groups (8 channels)	Resolution is programmable output. The maximum supported resolution of each port is 1080p (DualLink output is available for DVI1 and DVI3.)
SDI Loop (BNC)	2	480i, 576i, 720p, 1080i/p(3G SDI), same as SDI input
HDMI (Type A)	1	Supported output resolution: 1920×1080@60Hz

Control		
Port	Qty	Description
ETHERNET	1	Control port

USB (Type-B)	1	Control port for connecting upper computer
USB (Type-A)	1	For cascading multiple J6 units

Overall Specifications	
Input power	AC 100V–240V, 50/60 Hz
Power consumption	50 W
Operating temperature	-20°C–60°C
Dimensions	482.6 mm × 373.5 mm × 96 mm
Weight	4.66 kg (10.27 lb)

7 Installation Dimensions



Unit: mm

8 Troubleshooting

Problem	Solution
LED screen does not light up.	Make sure the power is properly connected and switched on, and the LED screen is configured properly and works normally.
DVI has no output image.	• Make sure the input channel has input image and the image is displayed correctly. • Make sure the output settings are correct. • Make sure the output settings are correct and whether the window is removed from the LED screen. • Make sure DVI output is properly connected. • If a preview monitor is connected, make sure the monitor supports the output resolution of the processor. • Reset the processor and try the operations again, then check whether there is image output.
DVI output image is abnormal.	• Check output settings and make sure parameters are properly set. • Check the status bar of the home screen on the LCD panel and make sure other enabled functions do not affect output parameters. • Make sure the DVI connector is properly connected to DVI cable.
Pictures are displayed abnormally.	• Check the input channels of each screen to make sure these channels have input signals and the signals are displayed normally. • Make sure the parameters of each screen are set correctly.
The fade transition effect is abnormal.	• Make sure the channel to be accessed has input signal. • Make sure the output settings are correct. • Make sure the input source before switching and the source after switching belong to same signal group.
Abnormal display	• Make sure the processor is properly connected. • Make sure parameter settings of the processor are correct. • Make sure the input signal is normal.