



Product User Manual

2-in-1 video processor
HD-VP1220S

V 2.2 20260423

1. Introduction

The HD-VP1220S is a two-in-one video processor that integrates a traditional video processor and 12 gigabit Ethernet outputs. This simplifies on-site setup and improves product reliability. It supports 5-channel synchronous signal input, making it suitable for various occasions requiring synchronized playback, such as hotels, shopping malls, conference rooms, exhibition halls, and studios. Additionally, the device supports point-to-point input/output, resulting in clearer images on LED displays.

Features

Input

- Supports a maximum of 4096*2160@60Hz synchronous signal input;
- Supports 2 HDMI, 1 DP, 1 DVI, and 1 VGA signal inputs, allowing for seamless switching between multiple video signals;
- Supports one TRS 3.5mm standard dual-channel audio input and HDMI/DP audio input.

Output

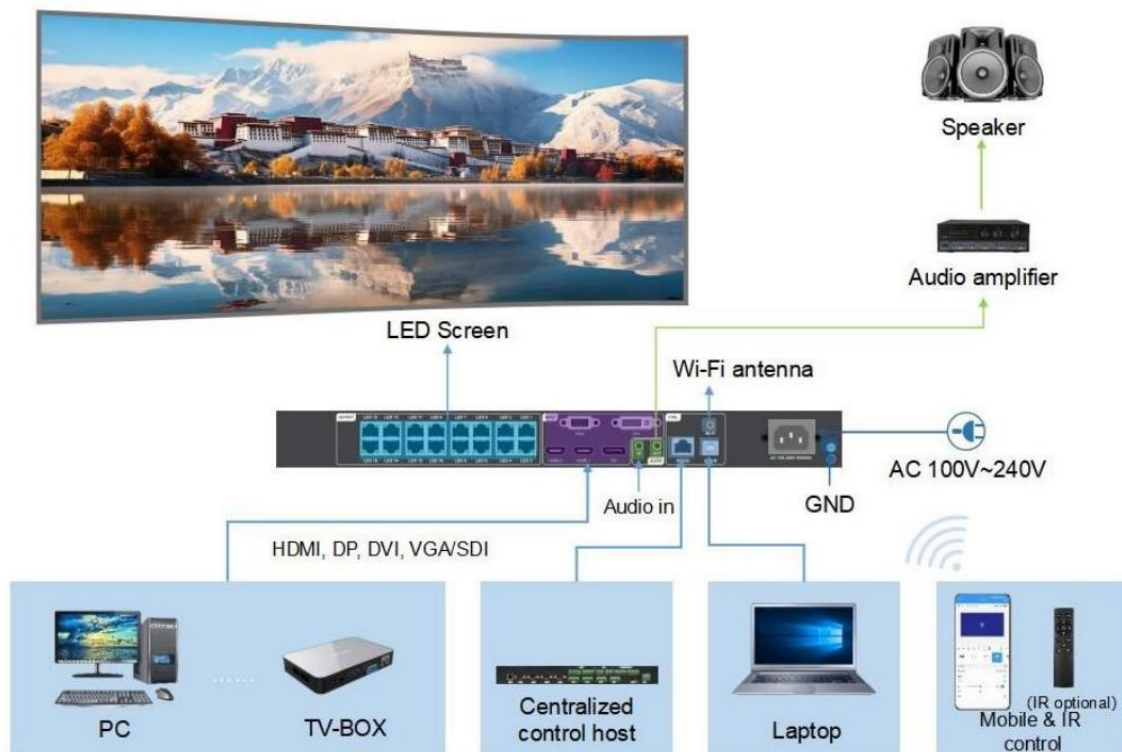
- Supports dual-screen layout, with a maximum of 2×4K windows;
- Standard configuration includes 1-2 gigabit Ethernet ports for direct cascading of receiver cards;
- Maximum resolution is 7.8 megapixels, with a maximum horizontal resolution of 16,000 pixels and a maximum vertical resolution of 4,000 pixels.
- 1 TRS 3.5mm standard dual-channel audio output.

Function

- Video signals can be switched, cropped, and scaled at will;
- Supports 16 preset scenes and their invocation;

- Supports brightness adjustment, color temperature adjustment, and button lock functions;
- Supports arbitrary overlap of network ports and non-rectangular loads;
- Supports point-to-point display and converting limited data to full data;
- Supports RS232 serial port protocol control for interface with central control equipment;
- Supports Wi-Fi Station mode, AP mode, and Wi-Fi Station+AP mode;
- Supports wireless control via mobile app;
- Supports infrared remote control (optional);
- Supports remote debt collection via Wi-Fi.

2 Application Scenarios



Connection diagram

3. Appearance

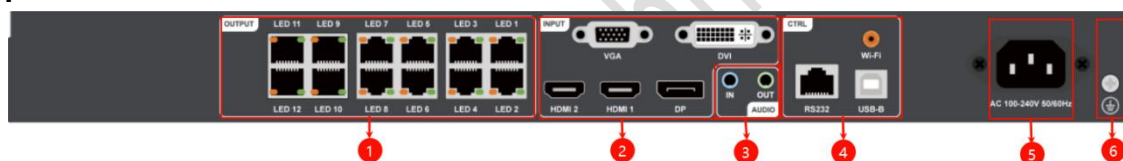
Front panel



Button Instructions		
Serial Number	button	illustrate
1	power switch	Control AC power input
2	LCD display	Debug display of menu, screen parameters and other information
3	I R	Infrared remote control receiver (optional)
4	MENU knob	Press the knob to enter the submenu or confirm the selection. Rotating the knob allows you to select menu items or adjust parameters.
5	ESC	Exit button/Back button
6	CONTROL	WIN1~WIN2 : Select an open window. HDMI1: Select HDMI1 signal for playback HDMI2 (SDI): Select HDMI2 (SDI) signal for playback. DP: Select DP signal for playback DVI: Select DVI signal for playback

		VGA (REV): Select VGA signal for playback (reserved function). MODE: Quickly bring up the preset mode menu FREEZE: One-click freeze button BLACK: One-click black screen button PXP: Quick access to the two-screen layout menu BRIGHT: Quickly bring up the brightness setting buttons	
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Rear panel



Input Interface			
Serial Number	Interface Name	quantity	illustrate
2	DP1.2	1	DP input interface Interface type: DP Signal standard: DP1.2 backward compatible Resolution: VESA standard, $\geq 720 \times 480 @ 60\text{Hz}$, $\leq 4096 \times 2160 @ 60\text{Hz}$ Supported color spaces: RGB4:4:4 / YCbCr4:4:4

			Supported color depth: 8-bit/10-bit Supported maximum width: 4096 Maximum height: 4096 Supports accompanying audio
	HDMI1~2	2	HDMI 2.0 input port × 1 (HDMI1) Interface type: HDMI-A Signal standard: HDMI 2.0 backward compatible Resolution: VESA standard, ≥800×600@60Hz, ≤4096×2160@60Hz HDMI 1.4 input port × 1 (HDMI 2) Interface type: HDMI-A Signal standard: HDMI 1.4 backward compatible Resolution: VESA standard, ≥800×600@60Hz, ≤4096x2160@30Hz Supported color spaces: RGB4:4:4 / YCbCr4:4:4 Supported color depth: 8-bit/10-bit Supported maximum width: 4096 Maximum height: 4096 Supports accompanying audio
	DVI	1	DVI input interface Interface type: DVI-I socket

			Signal standards: DVI 1.0, HDMI 1.3 (backward compatible) Resolution: VESA standard, $\geq 800 \times 600 @ 60\text{Hz}$, $\leq 1920 \times 1200 @ 60\text{Hz}$ Supported maximum width: 2048 Maximum height: 2048
	VGA	1	VGA input interface Interface type: DB15 socket Signal standards: R, G, B, Hsync, Vsync: 0 to 1Vpp $\pm 3\text{dB}$ (0.7V Video + 0.3V Sync) 75 ohm black level: 300mV Sync-tip: 0V Resolution: VESA standard, $\geq 720 \times 480 @ 60\text{Hz}$, $\leq 1920 \times 1080 @ 60\text{Hz}$
3	AUDIO IN	1	TRS 3.5mm dual-channel audio input jack
5	power supply	1	AC 100~240V 50/60Hz

Output interface			
Serial Number	Interface Name	quantity	illustrate
6	Grounding	1	Anti-static/leakage current protection to ensure

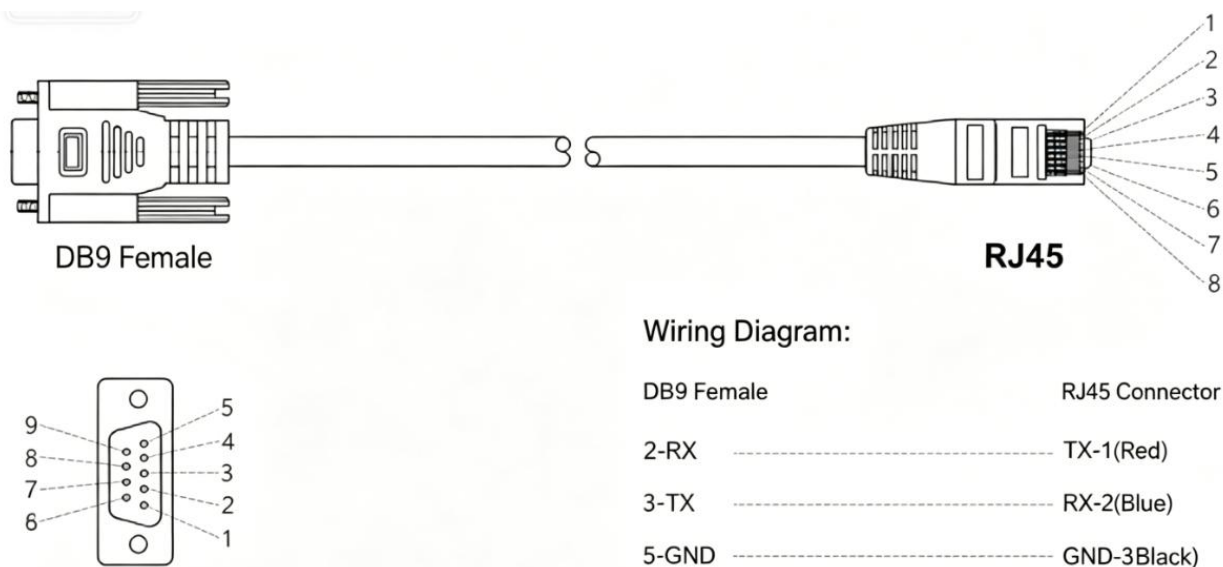
	interface		personal safety and normal equipment operation.
1	Gigabit Ethernet ports	1 2	Used for cascading receiver cards, transmitting RGB data streams, with each network port controlling a range of 650,000 pixels, and supporting interfacing with multi-function cards.
2	SDI-LOOP	1	SDI signal loop-out interface Interface type: BNC Signal standards: SD-SDI, HD-SDI, 3G-SDI Resolution: VESA standard, ≤1920x1080@60Hz
3	AUDIO OUT	1	TRS 3.5mm dual-channel audio output interface Connect to an audio amplifier for high-power external speaker playback.

Control Interface

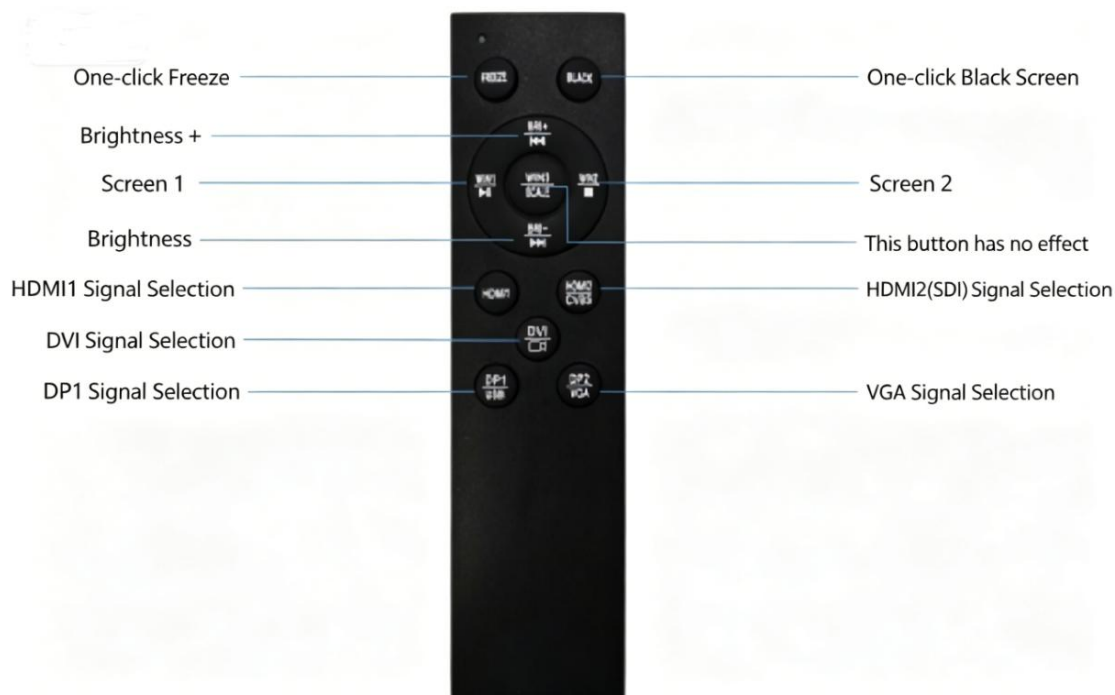
Serial Number	Interface	quantity	illustrate
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	Name		
4	USB -B	1	Connect to computer for device debugging
	RS232	1	RJ45 interface, for connecting to central control equipment.
	Wi-Fi	1	Connect a Wi-Fi antenna to enhance the Wi-Fi signal.

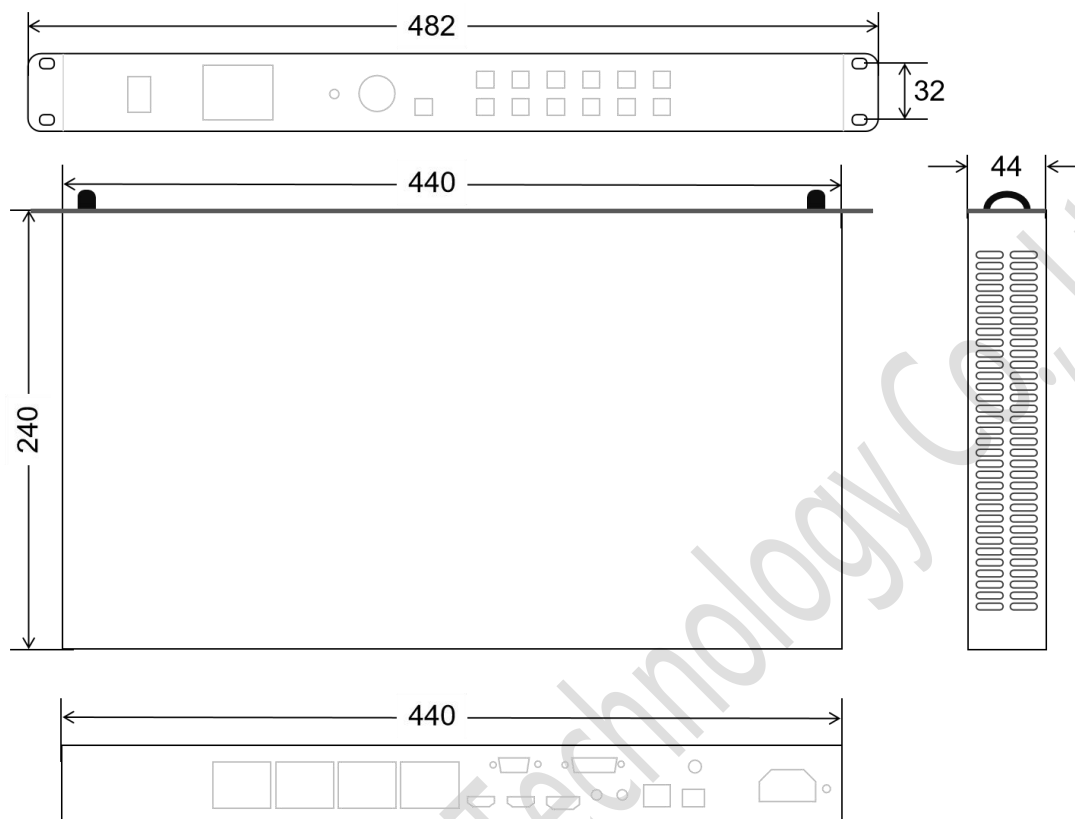
The diagram below shows the RJ45 to DB9 adapter cable. It is an optional accessory; please contact Grayscale sales or technical support in advance if needed.



* The remote control illustration is shown below. It is an optional accessory. Please contact Grayscale sales or technical support in advance if you require it.



4. Dimensional drawing



5. Product Use

5.1 Operating Procedures

Step 1: Connect the display screen to power on the screen.

Step 2: Connect a playable input source to the HD-VP1 2 20S.

Step 3: Connect the screen to the computer via USB serial port to adjust the screen parameters (**refer to the HDSets user manual for adjusting screen parameters**) .

5.2 Input Source Switching

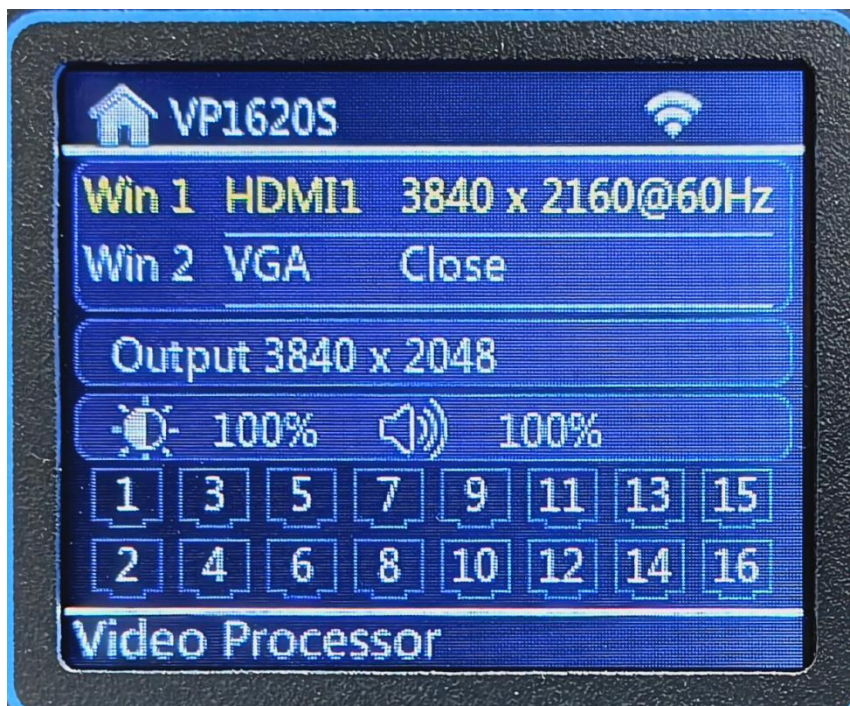
The HD-VP1 2 20S supports simultaneous input of 5 signal sources, and can be switched to the input source that needs to be played at any time as required.

There are two ways to switch input sources: one is to quickly switch by pressing the signal source button on the front panel;

One method is to select the input source through the menu interface, as follows:

1. Press the knob to select "Advanced Settings → Input Resolution" to enter the input resolution interface;
2. Rotate the knob to select the desired resolution or choose a custom resolution setting;
3. After setting the resolution, press the knob to confirm the resolution.

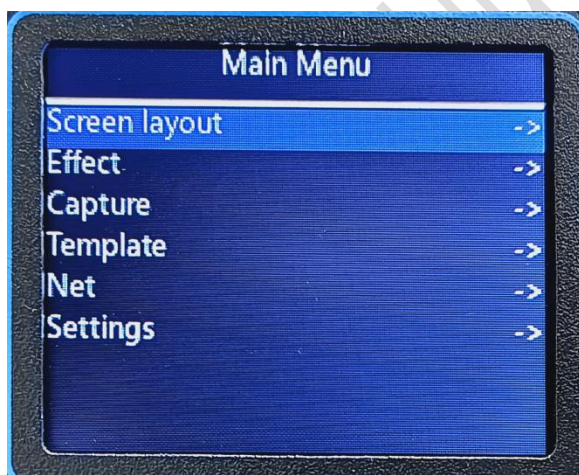
5.3 Interface Description



The upper part shows the signal source identification status and output size, while the lower part shows the network port icon indicating the network port's communication status.

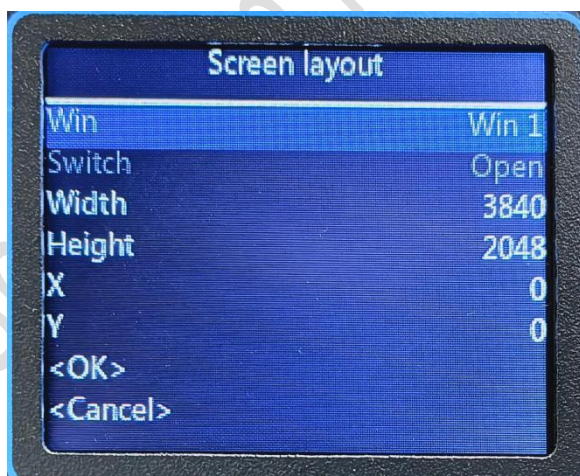
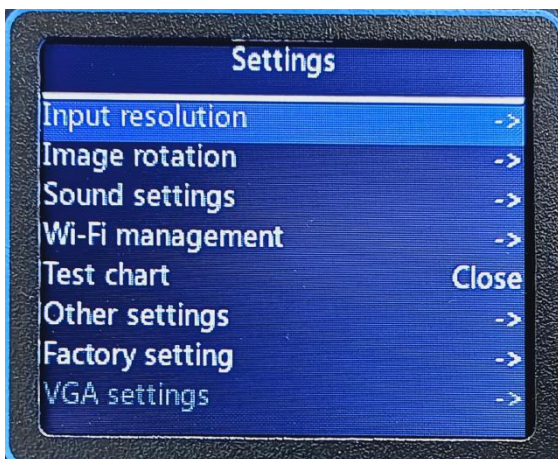
The icons in the bottom right corner, from top to bottom, represent: brightness and volume.

5.4 Main Menu Function Display Interface Description



1. The screen layout is used to set the output screen, and a maximum of two screens can be displayed simultaneously.

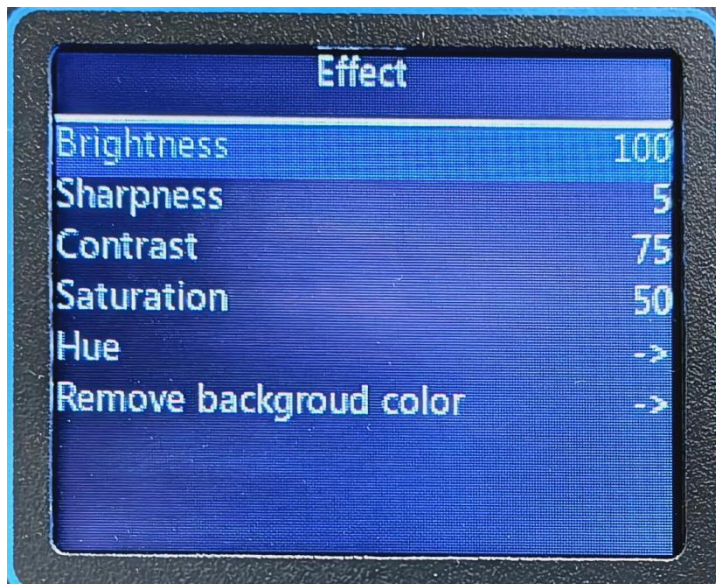
2. Image effects are used to set brightness, screen blackout and freeze settings, limited to full conversion, and other settings.
3. Image cropping is used to crop the input source of the image. You can set the image and coordinates of the input source to be cropped.
4. The template settings are used to save the currently set parameters into a template file for easy and quick setup later.
5. The network port settings are used to quickly set the output size.
6. Advanced settings are used to configure input source resolution, image rotation, sound settings, Wi-Fi management, test pattern, other settings, and factory settings.



The screen switch setting for screen 1 cannot be set to off.

The starting horizontal dimension plus the horizontal width cannot exceed the width of the LED screen.

The vertical starting value plus the vertical width cannot exceed the height of the LED screen.



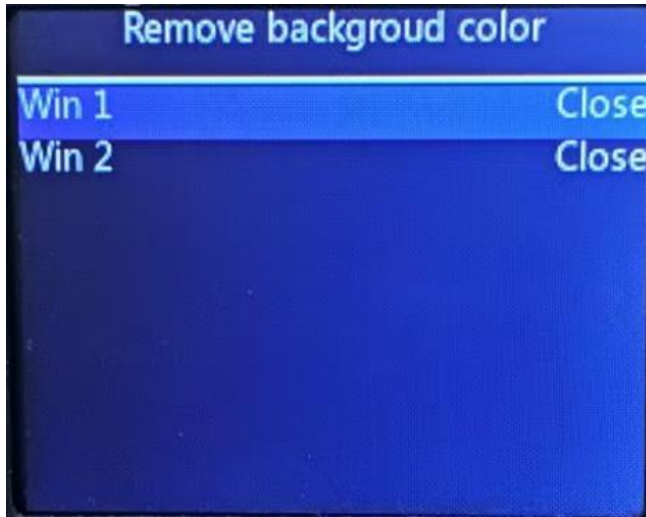
Brightness: 0-100, default 100

Sharpness: 0-10, default 5

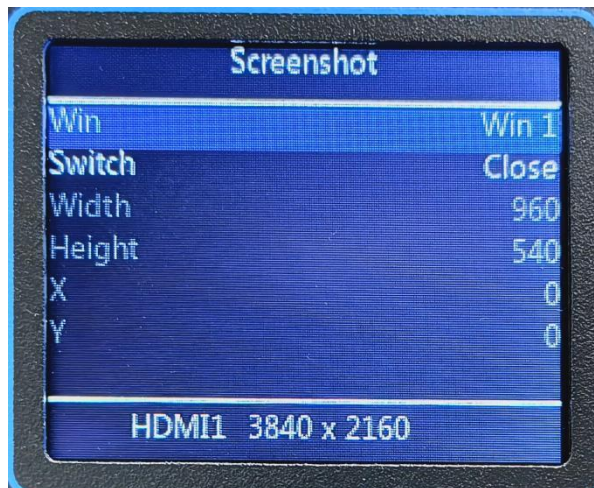
Contrast Ratio: 0-100, Default 76

Saturation: 0-100, default 50

Color temperature: Warm, Natural, Cool, Custom. Default is Warm.



The device can enable a limited-to-full conversion mode for the color format of the signal source.



When the Screenshot switch is off, the knob cannot select the Width, Height, horizontal start, or vertical start.

Cutoff Width: 128—Maximum width of input source;

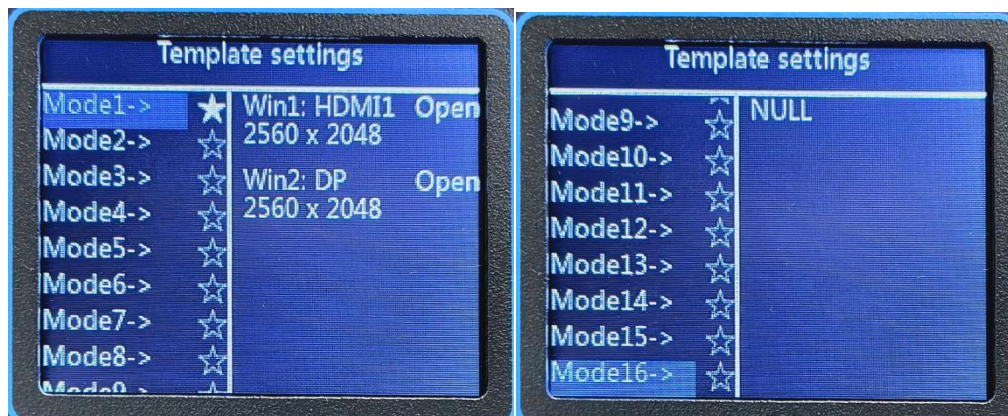
Cutoff Height: 128—Maximum height of input source

; Horizontal Start: Horizontal start value range = Input source width - Cutoff width;

Vertical Start: Vertical start value range = Input source width - Cutoff width.

Note: If the captured image size is the same as the output image size, it is a pixel-to-pixel display; if the captured image size is different from the output image size, it is a scaled

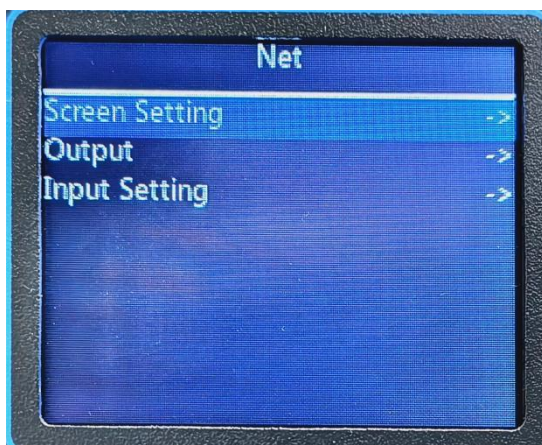
display.



Existing templates can be replaced, deleted, and loaded.

For templates that do not exist, you can save them.

Supports up to 16 template files



Quickly set the screen width and height, output size, and connection card relationship.



Four common resolutions are supported in the input resolution; custom resolution settings are also supported, with a default of 60Hz.

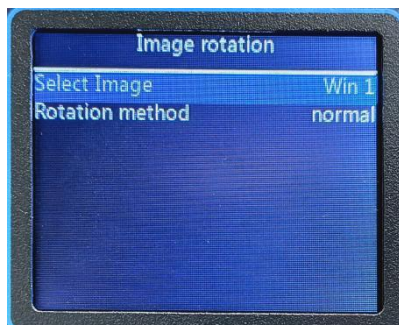
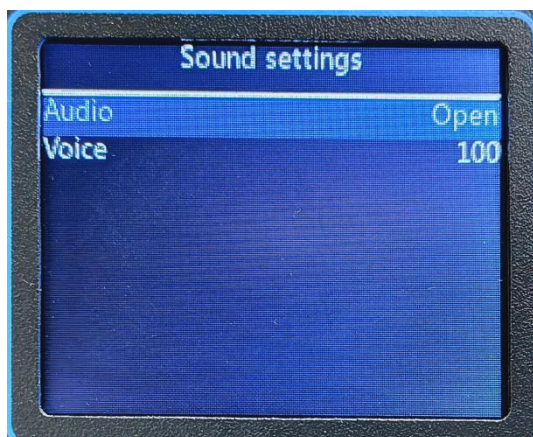


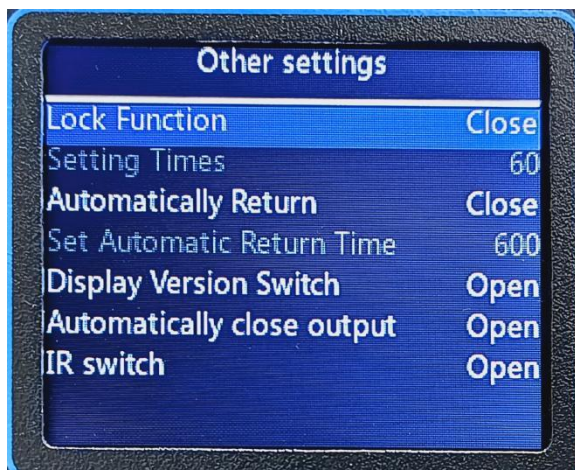
Image rotation: Supports normal, horizontal mirror, vertical mirror, and HV mirror settings.



The audio signal is provided by the video signal, and the audio switch and volume can be set.



You can turn WiFi on or off; view WiFi information; and perform a reset.



The button lock delay switch is enabled, supporting a maximum time of 3600 seconds. The button lock will automatically lock after the set time is exceeded.

To unlock the buttons, press and hold the ESC and FREEZE keys for 3 seconds; the buttons will unlock automatically.

Display version switch: Allows you to show or hide the device model in the upper left corner of the panel; it is enabled by default.

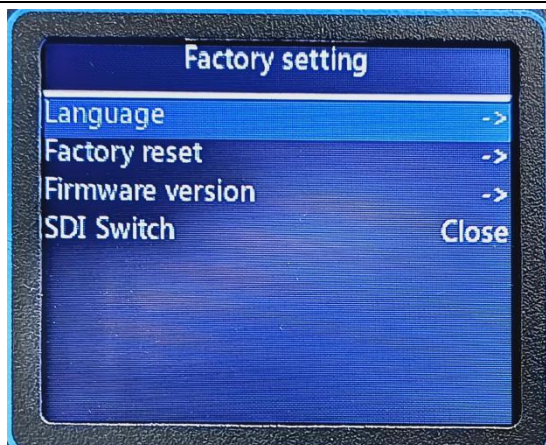
Automatically turn off network port output switch function:

No signal disables network port output switch: Off, the network port will output when the processor has no signal;

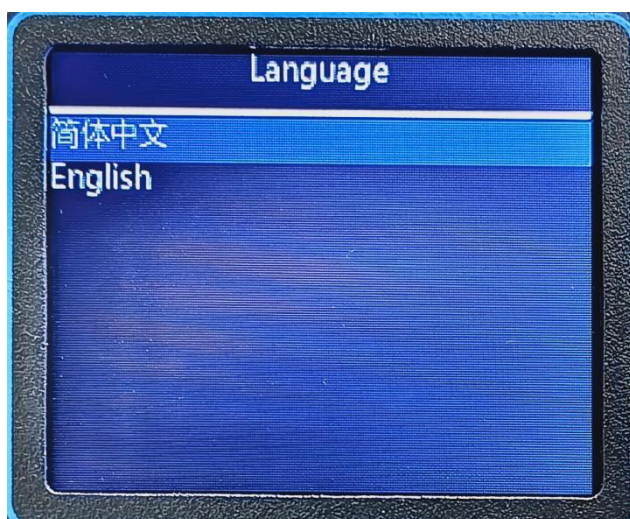
No signal disables network port output: When there is no signal, the network port output is disabled; when the processor has no signal, the network port has no output.

No signal disables network port output switch: Locks the last frame; when the processor has no signal, the LED retains the last frame image.

The remote control switch can be turned on or off independently.



Factory Settings: Allows you to switch languages, perform a factory reset, view the firmware version, and if it's an SDI version, enable the SDI option; the original HDMI2 area options will then be displayed as SDI.



Language selection: Supports English and Chinese



Firmware version display

Digital Function Description:

When entering a screen that requires number input, such as when setting the width and height of the display, the keypad reuses relevant buttons. During number input, only the reused buttons, ESC, and the rotary knob remain functional; other button functions are disabled until exiting the screen. The button reuse is as follows:

Original button function	Reused functions
WIN 1	1
HDMI 1	2
HDMI2	3
DP	4
DVI	5
WIN 2	6

MODE	7
FREEZE	8
BLACK	9
PXP	0

Button status light description

1. The button's indicator light illuminates when the button is pressed and turns off when the button is released unless otherwise required.
2. If the input source of the current window is DVI 1/DVI2 /HDMI 1/HDMI2 / HDMI3/ DP, it will flash off at 125ms intervals if there is no input source signal, and will remain constantly lit once an input source signal is detected. If the input source signal is lost in the middle, it will continue to flash off.
3. When the BLACK button is pressed, all the lights for DVI 1 , DVI2, HDMI 1, HDMI2 , HDMI3, and DP are off, and the BLACK light remains on. When the BLACK button is pressed again, the BLACK light turns off, and the light status in step 2 is then determined based on the current input source light in the window.
4. For WIN1, WIN2, WIN3 , and WIN4, the button light corresponding to the currently selected window

on the TV will be illuminated. When switching between different windows, the button light for the input source needs to be synchronized with the input source type of the current window.

5. The following states need to be saved during a power outage and restart: the input source type of the current window, the state of the BLACK light, the state of FREEZE, and the selection states of win1, win2 , win3 , and win4 .