AVMATRIX®

TB-P51

5-CH 3G-SDI | CAPTURE&PLAYBACK DOCKING STATION

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1. INTRODUCTION

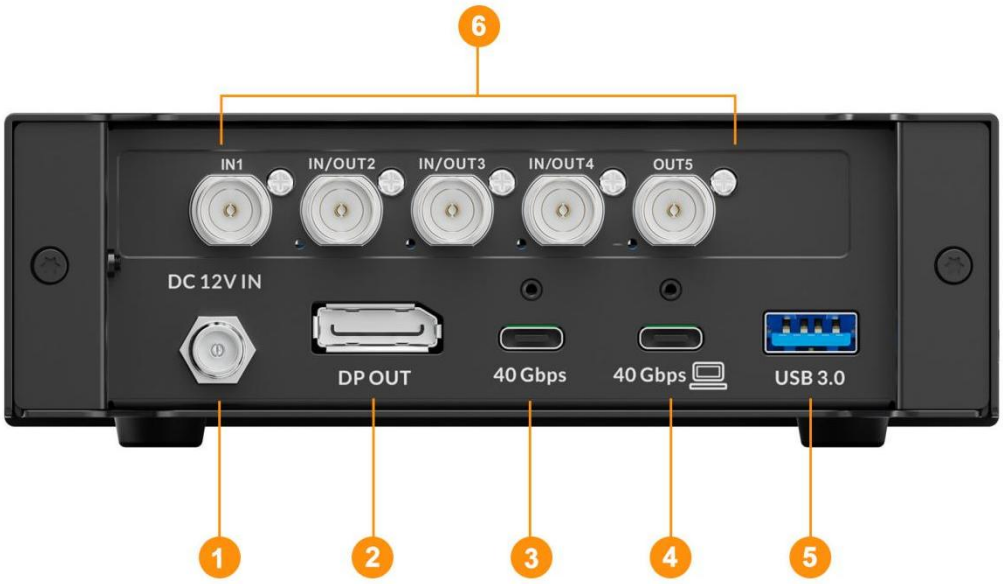
1.1 Overview

TB-P51 is a high-performance docking station equipped with 1 SDI input, 1 SDI output and 3 switchable SDI I/O channels, supporting lossless acquisition in YUY2 and RGB formats. It can achieve a maximum transmission rate of 40Gbps through the ultra-speed interface, and supports PCIe 3.0 x4 (bandwidth 32Gbps) to meet the needs of multi-channel HD video processing. The product has rich interfaces such as USB 3.1 Gen2, DP1.4, supports daisy chain, supports PD power supply (up to 60W), is compatible with Windows and Linux systems, SDK supports secondary development, and is equipped with an active cooling system, which can achieve 7×24 hours of stable operation.

1.2. Main Features

- 1 channel SDI input, 1 channel SDI output and 3 channels SDI input and output (I/O)
- Dual Ultra-speed interfaces, with a maximum rate of 40Gbps, supporting daisy chain
- A variety of video input and output interface versions are optional and replaceable, supporting up to 4K60
- Supports up to PCIe 3.0x4 interface (bandwidth 32Gbps), supports lossless acquisition formats such as YUY2 and RGB
- Expand computer interface, interface USB3.1 Gen2 10Gbps, DP1.4 interface 4*8Gbps (support windows platform DP MST daisy chain display)
- Supports up to 60W USB Type-C external power supply through PD protocol (optional)
- Widely compatible with operating systems, SDK supports secondary development (vp51 and vp30)
- Active heat dissipation works stably 24/7

2. INTERFACE



1	DC 12V IN
2	DP OUT (DP1.4 output, for external DP display)
3	Downlink port (for data transmission, achieving a maximum transmission rate of 40Gbps)
4	Uplink port (used for high-speed data transmission and power supply, supports a maximum transmission rate of 40Gbps and a maximum power supply of 60W.) Note: The power supply function must be used with a 20V4A adapter.
5	USB-A port (extended USB port , USB3.1 Gen2 port for connecting keyboard and mouse)
6	1×SDI input, 1×SDI output and 3×SDI input and output (I/O)

3. SPECIFICATIONS

Interface	Slot interface	PClex4 (Gen3)
	Video interface	1 × 3G-SDI input 1 × 3G-SDI output 3 × 3G-SDI input and output (I/O)
	Video format	Supports up to 1080p60
	Data interface	1×DC 12V input 1×DP video output 2×Ultra-speed ports (supporting data, video, power supply, daisy chain; compatible with USB4 & Thunderbolt 3/4/5-like

Video Format		Protocols) 1×USB3.1 Gen2 input
	Audio sampling	48kHz 24bit
	SDI color accuracy	YUV 4:2:2 8bit
	Color space	REC 601, REC 709
	SDI specifications	SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE425M, ITU-R BT.656 and ITU-R BT.601
	Device support	Support XBOX, PS4, SWITCH, video players, TV boxes and media boxes, etc.
Support	System support	Windows 7/8/10/11, 64-bit, Linux (Note: Windows 7/8 requires the system digital signature to be turned off)
	Software compatibility	OBS, XSplit, VLC, VirtualDub, VMix, VidBlaster, Wirecast, Microsoft Media Encoder, Adobe Flash Media Encoder, any other DirectShow/V4L2
Other	DC power supply	12V-21V
	Ulrta-speed port rate	40Gb/s
	PD power output	60W/45W/27W/15W
	Power consumption	12W
	Temperature	Working temperature: 0~40℃
	Relative humidity	0%~90% non-condensing
	Size	139.8×138×42.6mm
	Weight	Net weight: 792g, Gross weight: 1487g
	Warranty	2 years

4. Installation

4.1 Connect

Step 1: Use a high speed cable, plug one end into the Ultra-speed port on your computer, and the other end into any Ultra-speed port on the docking station. Your computer must have a Ultra-speed port (same shape as USB-C, but with a lightning icon)

Step 2: Make sure the computer has installed the relevant driver (download the driver from the AVMATRIX website www.avmatrix.com and open the driver).

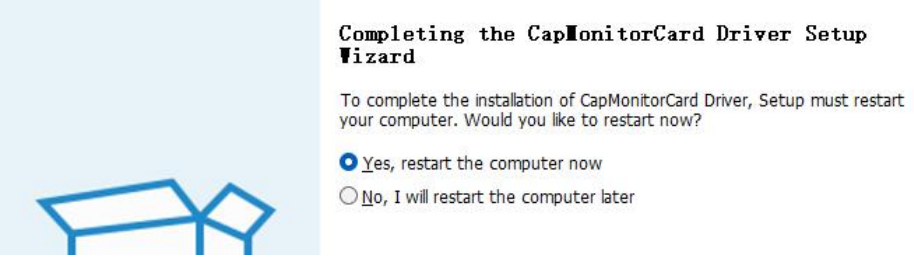
Step 3: After the connection is completed, the system will automatically recognize the device and you can connect the SDI signal source or display device according to your needs.

4.2 Driver Installation

Step 1: Download the driver from the AVMATRIX website www.avmatrix.com and open the driver.

Step 2: Double-click to open the driver installation and follow the prompts to complete the installation.

Step 3: After the installation is complete, you need to restart the computer, otherwise the computer may freeze.



In particular, if any Blackmagic Design PCIe capture card or output card driver is installed in your computer, please uninstall the Blackmagic Design driver before installing the AVMATRIX PCIe output card driver. Otherwise, the AVMATRIX PCIe capture card will not work properly.

Note: Supports Windows 7 and above, Linux 18.04 and above.

5. CONTROL SOFTWARE

Open the control software and use the control panel to view the output preview and set the output parameters. (If you need to use software such as Vmix, OBS, etc., you need to install a patch.)

1. Preview screen

There will be as many pictures as there are signal sources output, and no picture will be displayed if no signal source is connected.

2. Setting parameters

(1) Set the video format and video bit depth according to user needs. If you change the video format/decibel value/audio period and other parameters during the output process, you need to stop the playback before changing it.

(2) Pattern Generator

- Pattern type: Select the pattern type that comes with the control software.
- Audio Type: Select the audio type that comes with the control software.
- Static image: You can select a static image by yourself. First, select "imagefile" in the pattern type option. In the "static image" area , click the " ... " button to select a custom image file . You cannot select a video file.
- Audio file: You can select the audio file by your own choice. First, select "wavefile" in the audio type option. In the "audio file" area , click the " ... " button to select the audio file by your own choice . The audio file must be a dual-channel WAV file with a sampling rate of 48kHz and 16 bits. Otherwise, the output audio is prone to noise or cause the program to crash.
- Decibel value: The default decibel value is -20dBFS.
- Audio Period: The range is 10-10000, the default value is 1000.

(3) Media Files

Select the video file according to user needs. Support MP4 video files.

After the user's settings are completed, click "Start" to output the image. The preview and time code can be turned on or off according to the user's needs.

When the output preview is turned off, the preview screen in the control software is paused, and the output screen is not affected.

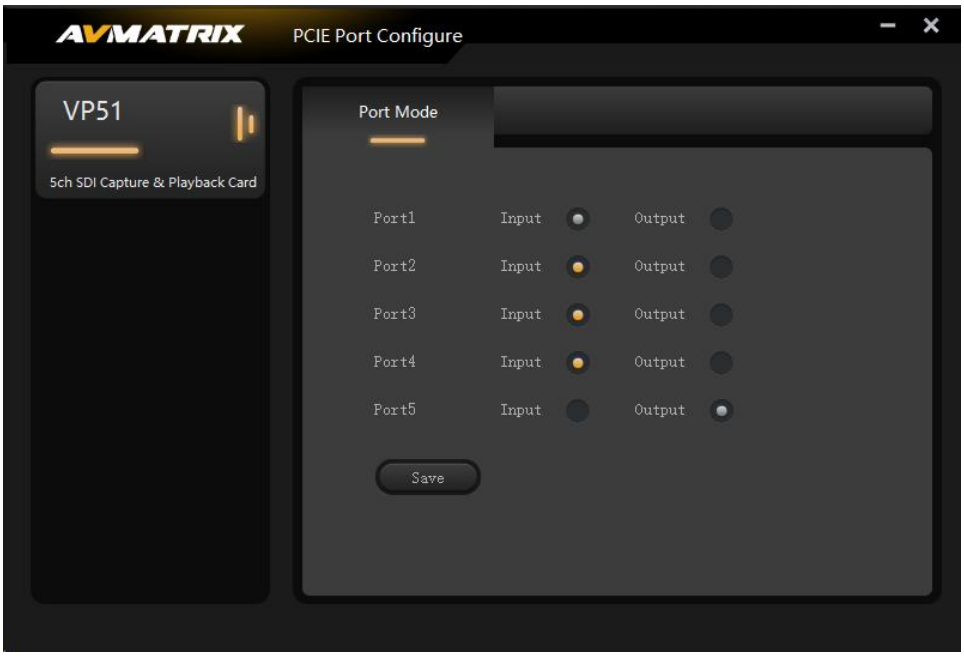
When the time code is turned off, the time code is hidden in the output image.

(4) Configuring I/O Interface Mode

After downloading the configuration program, open the I/O interface configuration application, select the input and output mode of the corresponding interface according to user needs, save and close. After the selection is completed, if you need to continue to use the control panel, you need to reopen the control panel. After reopening the driver control panel, the input and output interface modes after the settings are completed will be displayed, and the corresponding indicator light will also change to green (input) or red (output) according to the selected mode.

The default mode of the I/O interface is input, and the indicator light is green when the signal source is connected. After switching to output, when the output is stable, the indicator light is always red.

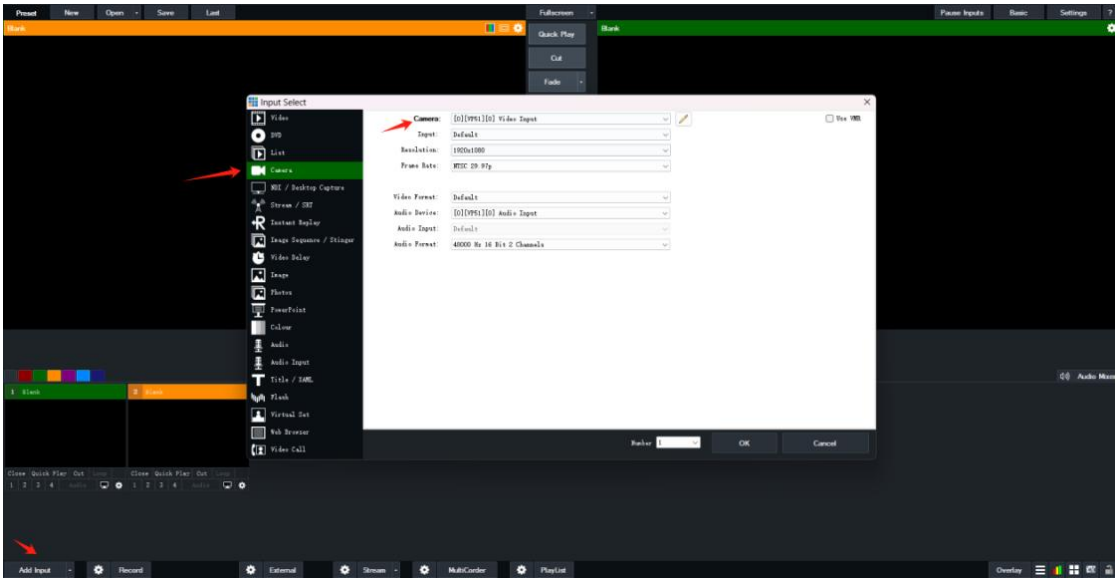
Note: The driver and I/O configuration software program cannot be opened at the same time to avoid freezing.



6.VMIX OPERATION INSTRUCTIONS

6.1 Vimx Input Collection Settings

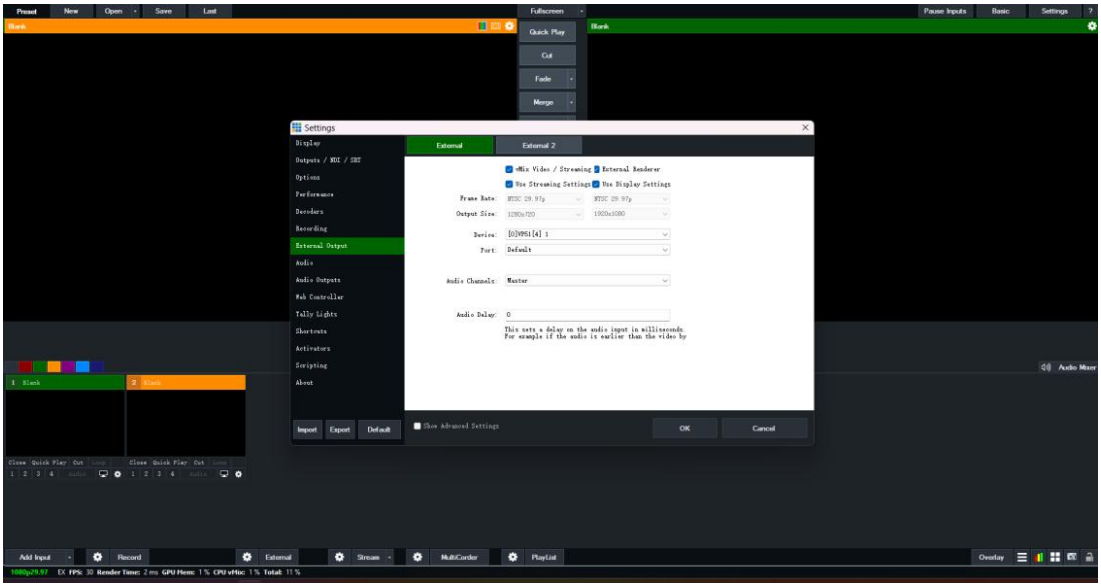
Steps: Click "Add Input" - "Camera", select the input source to be collected in the camera options, configure the parameters according to the requirements, and click "OK" to complete the collection.



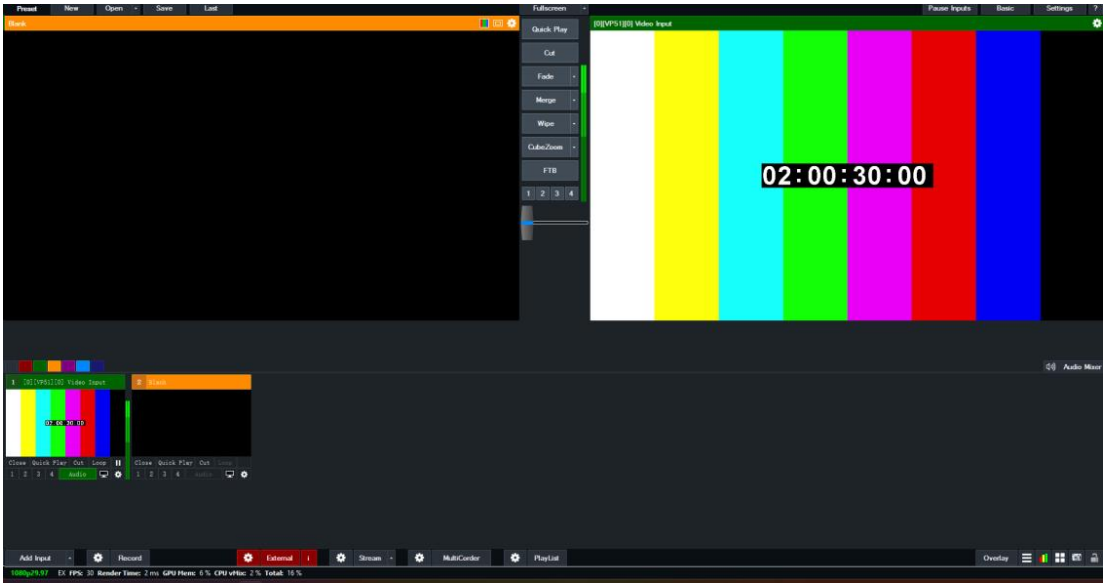
6.2 Vimx External Output Settings

Step 1: Open Vmix and click "External Settings" to select external output settings.

Step 2: Select "VP51" as the video output device in the external output settings.



Step 3: After the settings are completed, click "External", the icon turns red and the output starts.

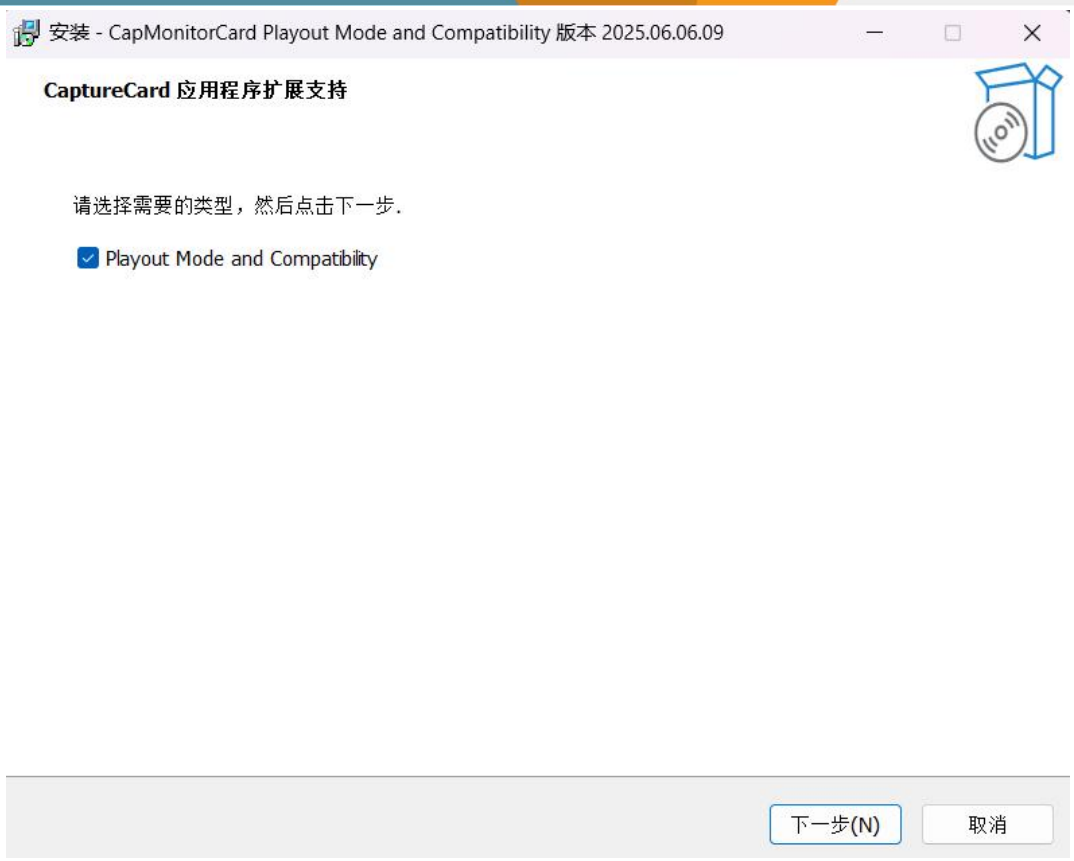


Notice:

1. If you need to use software settings such as Vmix, OBS, etc., you need to install a patch.

Patch installation: Double-click to open the patch program, follow the installation wizard to install the patch program , click "OK" to complete the patch installation.

After the installation is complete , you need to restart the computer to avoid a freeze .



2. When configuring Vmix, do not select the same signal source repeatedly, otherwise an error or occupation will occur.