

# **4K Video Wall Controller Board**

## **Specification**

**Product Model: ST5820**

**Issue date: 2023.8.29**

型号: ST5820

*The information in the specification is subject to change without notice.*

## 1. Product Overview

ST5820 is a multi-purpose LCD video wall controller board which support various of video signal(DP+2HDMI+DVI+VGA+OPS) input and one DP signal loop out .

- DVI and VGA input support 1080P , DP and HDMI input support 4K@60HZ .
- DP loop out feature support any video signal insert to the board and output to the next board' s DP input interface . also it can transmit video wall control signal at the same time . This feature can help to save a video splitter if you have only one video input application and a extra cable for video wall control signal .

ST5820 support up to 15X15 video wall system for FHD signal input and 10X10 for 4K signal input . Also with powerful PC Control software .

## 2. Product Features

(1) Support 4K input, point 4 1920 splicing screen (3840x2160) when you can realize the point-to-point display, display screen without compression and stretching, the display effect is more clear and realistic;

(2) Any input signal could transport to the next board ' s DP input by DP interface ring , at the same time can also transmit serial command (this function can be used instead of signal distributor/matrix, can also save so wiring).

(3) Support the signal 90°,180°or 270°rotation.

(4) Support for machine code (address code), line address at eye level, fill in the control software can be, no longer need to calculate the binary trouble;

(5) 1366, 1920 common screen reference (support 8bit and 10bit LVDS LCD) system integration, the use of the It can be set through the dipswitch, which is very

convenient for installation and after-sale, and eliminates the trouble of burning the program;

(6) Signal auto-detection function, when a signal input is detected, it will automatically switch to that signal source;

(7) Support all the way to MHL function, with MHL function of cell phones, tablets can be synchronized directly to the big screen, and you can crop the screen to remove the black border operation. screen, and you can crop the screen to remove black edges.

(8) Supports 4k vby1 60hz LCD (optional);

(9) Supports OPS built-in PC computer output (optional);

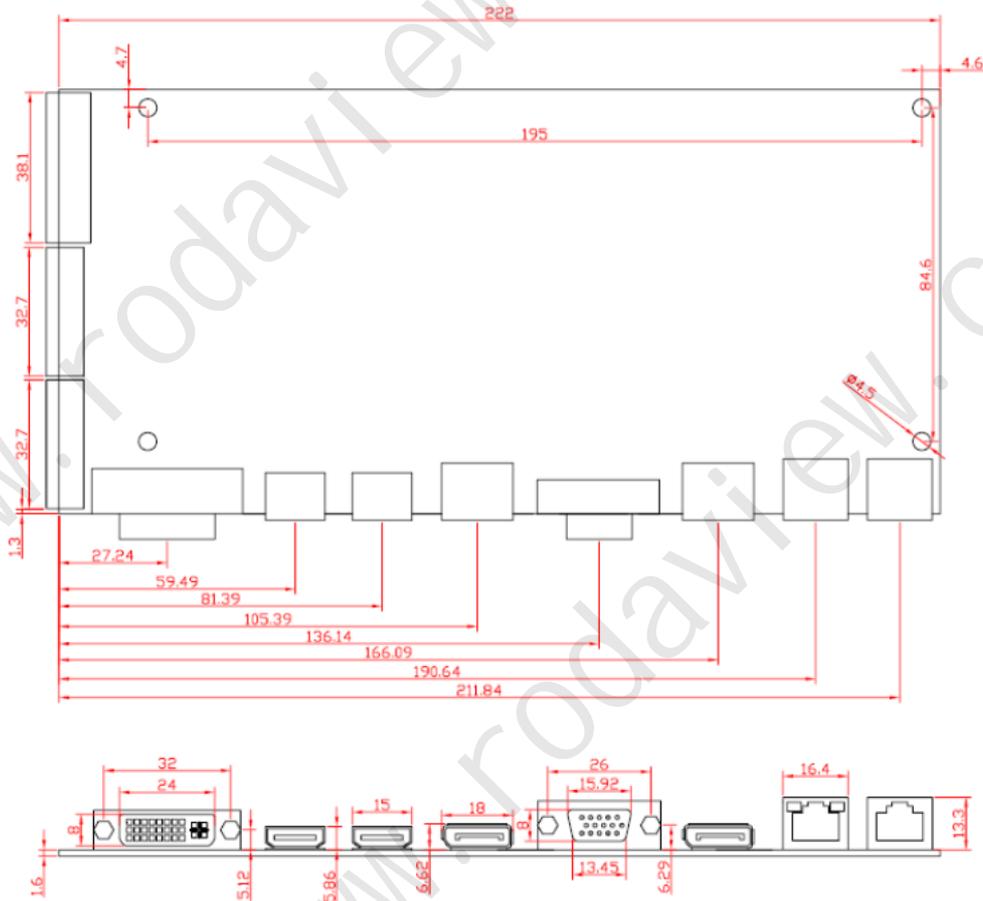
(10) Supports extensions such as key panel buttons, remote control, power-on indicator (optional);

(11) Support amplifier output, connect the speakers to bring better sound (optional).

### 3. Product feature description

<b>Interface</b>	DisplayPort(DP)	3840x2160@60Hz、3840x2160@30Hz、 3840x2160@25Hz、		
	HDMI	480p、576p、720p、1080i、1080p、2160p		
	DVI	480p、576p、720p、1080i、1080p、		
	PC-RGB	Model	DOS、VGA、SVGA、XGA、SXGA、WXGA、 WXGA、WSXGA+、WUXGA	
		color	24BIT	
		Horizontal Frequency	30—80KHz	
		Field frequency	56—75Hz	
	Input interface	DisplayPort	1*DP	
		PC- RGB	1*15pinD-SUB port	
		HDMI	1*HDMI 2.0 port.1*HDMI1.4 port	
		DVI	1*DVI port	
		RS232	1*LAN port (control RS232 use)	
		Panel cable	2 LVDS 1920*1080@ 120Hz	
	1 vby1 8lan 3840x2160@60Hz			
Output interface	RS232	1 LAN port (control RS232 use)		
	DP output	1 DP port		
<b>Power supply</b>	Working voltage	5VS , 5V , 12V , 24V		
	Panel voltage	12V		
	Standby power	≤ 1W		
	Combed filter	3D		
<b>Other</b>	Key function	POWER、INPUT、MENU、VOL+/-、CH+/-、 (REMOTE)		
	OSD language	Chinese, English,etc		

## 4. Product PCB size and structure



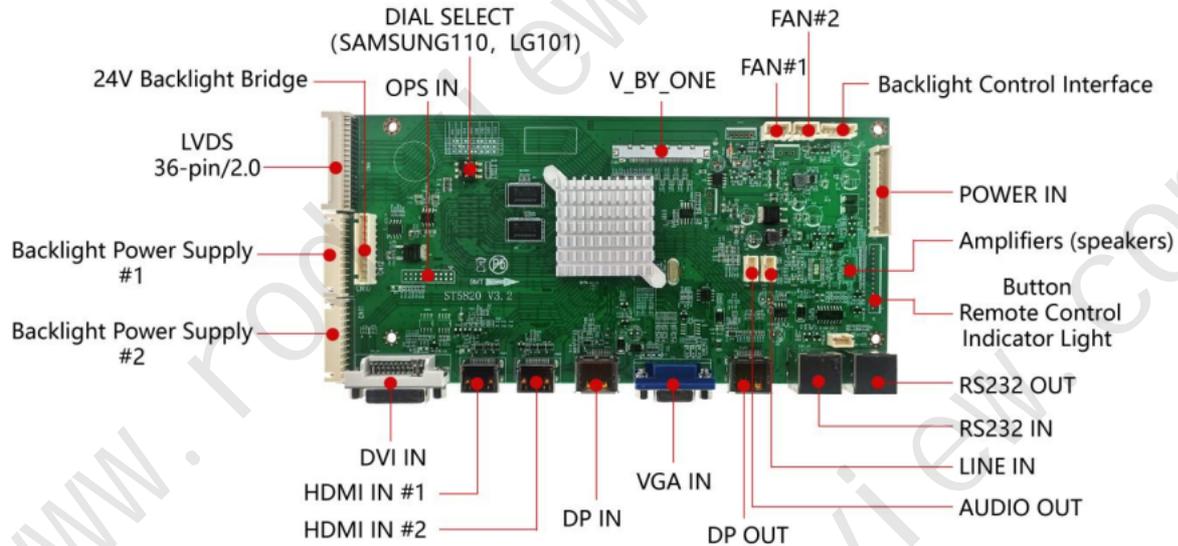
\* PCB size note: The size is for reference, please measure according to the actual PCB when making the shell.

\* PCB length: 222mm

\* PCB width: 107mm

\* PCB screw aperture: 3.5mm

## 5. Main Interface Definition Description



### ***CN2(6PIN/2.0) INVERTER interface***

Foot number	Define	Descriptive
1	GND	Ground
2	GND	Ground
3	ADJ (PWM control)	Brightness adjustment
4	BL_ON	INVERTER switch control (active high)
5	12V	DC power supply
6	12V	DC power supply

### ***CN1(13PIN/2.5) Power interface***

Foot number	Define	Descriptive
1	GND	Ground
2	GND	Ground

3	5V	5V power input
4	5V	5V power input
5	ON/OFF	STANDBY
6	5V_STB	5V standby power input
7	5V	5V power input
8	5V	5V power input
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	12V	12V power input
13	12V	12V power input

***CN9 (36PIN/2.0) LCD interface (LVDS signal format)***

Foot number	Define	Typology	Descriptive
1	LCD-VDD	Power	Power for Panel
2	LCD-VDD	Power	Power for Panel
3	LCD-VDD	Power	Power for Panel
4	LCD-VDD	Power	Power for Panel
5	GND	Ground	---
6	GND	Ground	---
7	GND	Ground	---
8	GND	Ground	---
9	RXE4-	0	LVDS EVEN 4 - Signal
10	RXE4+	0	LVDS EVEN 4 + Signal

11	RXE3-	0	LVDS EVEN 3 - Signal
12	RXE3+	0	LVDS EVEN 3 + Signal
13	RXE2-	0	LVDS EVEN 2 - Signal
14	RXE2+	0	LVDS EVEN 2 + Signal
15	RXEC-	0	LVDS EVEN Clock - Signal
16	RXEC+	0	LVDS EVEN Clock + Signal
17	RXE1-	0	LVDS EVEN 1 - Signal
18	RXE1+	0	LVDS EVEN 1 + Signal
19	RXE0-	0	LVDS EVEN 0 - Signal
20	RXE0+	0	LVDS EVEN 0 + Signal
21	GND	0	---
22	GND	0	---
23	RXO4-	0	LVDS ODD 4 - Signal
24	RXO4+	0	LVDS ODD 4 + Signal
25	RXO3-	0	LVDS ODD 3 - Signal
26	RXO3+	0	LVDS ODD 3 + Signal
27	RXO2-	0	LVDS ODD 2 - Signal
28	RXO2+	0	LVDS ODD 2 + Signal
29	RXOC-	0	LVDS ODD Clock - Signal
30	RXOC+	0	LVDS ODD Clock + Signal
31	RXO1-	0	LVDS ODD 1 - Signal
32	RXO1+	0	LVDS ODD 1 + Signal

33	RX00-	0	LVDS ODD 0 - Signal
34	RX00+	0	LVDS ODD 0 + Signal
35	GND	Ground	---
36	GND	Ground	---

### ***CN12(10PIN/2.5) 24V Backlight power interface 1***

<b>Foot number</b>	<b>Define</b>	<b>Descriptive</b>
1	24V	24V power input
2	24V	24V power input
3	24V	24V power input
4	24V	24V power input
5	24V	24V power input
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground

### ***CN10(12PIN/2.5) 24V Backlight power interface 1***

<b>Foot number</b>	<b>Define</b>	<b>Descriptive</b>
1	24V	24V power input
2	24V	24V power input
3	24V	24V power input
4	24V	24V power input

5	24V	24V power input
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground
11	ON/OFF	Backlight switch
12	ADJ	Backlight brightness

***CN11(12PIN/2.5) External 24V backlight power interface 2***

<b>Foot number</b>	<b>Define</b>	<b>Descriptive</b>
1	24V	24V power input
2	24V	24V power input
3	24V	24V power input
4	24V	24V power input
5	24V	24V power input
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground
11	ON/OFF	Backlight switch
12	ADJ	Backlight brightness

**SW1(3PIN) HD screen type selection dip switch**

Foot number			Define	Descriptive
1	2	3	(be) worth	Screen type
low	low	tall	001	
low	tall	low	010	
low	tall	tall	011	
tall	low	low	100	LG High Definition Screen
tall	low	tall	101	
tall	tall	low	110	Samsung High Definition Screen
tall	tall	tall	111	

**CN3(3PIN/2.5) Fan interface**

Foot number	Define	Descriptive
1	12V	12V power input
2	NC	Unoccupied
3	GND	Ground

**CN4(3PIN/2.5) Fan interface**

Foot number	Define	Descriptive
1	12V	12V power input
2	NC	Unoccupied
3	GND	Ground

***CN5(4PIN/2.0) Sound output interface***

Foot number	Define	Descriptive
1	L_OUT	Left channel input
2	GND	Unoccupied
3	GND	Ground
4	R_OUT	Right Channel Inputs

***JP4(4PIN/2.0) Sound output interface***

Foot number	Define	Descriptive
1	L_OUT+	Left channel output +
2	L_OUT-	Left channel output -
3	R_OUT+	Right channel output +
4	R_OUT-	Right channel output-

***CN14(3PIN/2.0) IR Remote control interface***

Foot number	Define	Descriptive
1	5V	5V power input
2	GND	Ground
3	IR	IR signal input

***JP8(12PIN/2.0) Pushbutton & Remote control, Indicator interface***

Foot number	Define	Descriptive
1	3.3V	3.3V VDD power supply
2	GND	Ground

3	LED_R	LED_R
4	LED_G	LED_G
5	IR	IR signal input
6	KEY0	KEY0
7	KEY1	KEY1
8	KEY2	KEY2
9	KEY3	KEY3
10	KEY4	KEY4
11	KEY5	KEY5
12	KEY6	KEY6
13	KEY7	KEY7

***CN8 (51P /0.5mm) LCD interface (VBO signal format)***

Foot number	Define	Typology	Descriptive
1,2,3,4,5,6,7,8	PANEL-VCC	Power	Power for Panel 12v
9	NC		---
10,11,12,13,14	GND	Ground	---
15,16,17	NC		---
18	SDA	0	SDA_V-by-One
19	SCL	0	SCL_V-by-One
20,21,22,23	NC		---
24	8b_10b	0	8b_10b_V-by-One
25	HTPDN	0	HTPDN
26	LOCKN	0	LOCKN

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27,30,33,36,39,42,45,48, 51	GND	Ground	---
28	RX0N	0	V-by-One HS Data Lane 0
29	RX0P	0	V-by-One HS Data Lane 0
31	RX1N	0	V-by-One HS Data Lane 1
32	RX1P	0	V-by-One HS Data Lane1
34	RX2N	0	V-by-One HS Data Lane 2
35	RX2P	0	V-by-One HS Data Lane 2
37	RX3N	0	V-by-One HS Data Lane 3
38	RX3P	0	V-by-One HS Data Lane 3
40	RX4N	0	V-by-One HS Data Lane 4
41	RX4P	0	V-by-One HS Data Lane 4
43	RX5N	0	V-by-One HS Data Lane 5
44	RX5P	0	V-by-One HS Data Lane 5
46	RX6N	0	V-by-One HS Data Lane 6
47	RX6P	0	V-by-One HS Data Lane 6
49	RX7N	0	V-by-One HS Data Lane7
50	RX7P	0	V-by-One HS Data Lane 7

## 6. CONFIGURATION & GENERAL PRECAUTIONS

Relative Humidity:  $\leq 80\%$

Storage Temperature:  $-10 \sim +60^{\circ}\text{C}$

Operation Temperature:  $0 \sim +40^{\circ}\text{C}$

Protect the board from static electricity in case of damage to the IC

Don't press, distort or disassemble the board

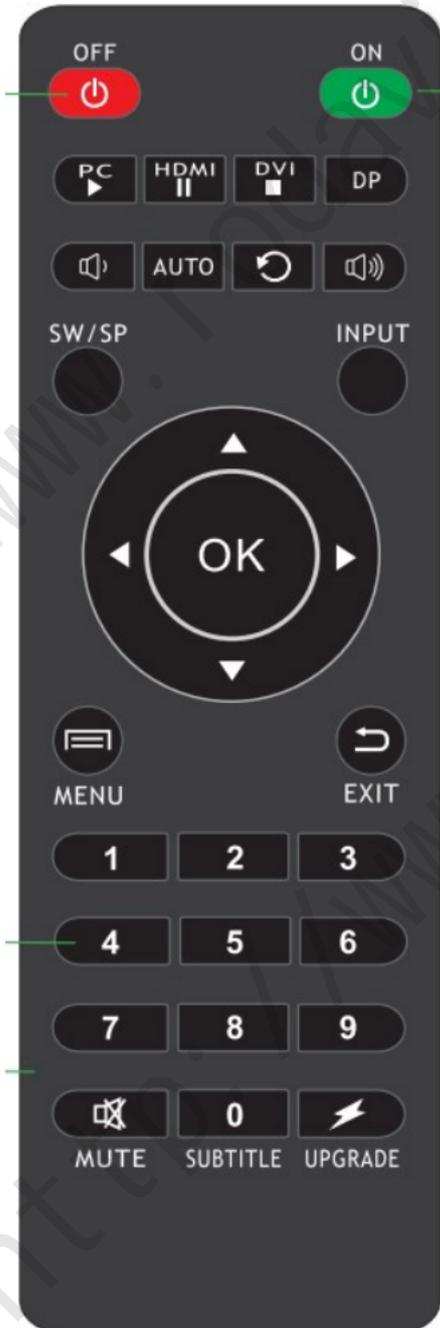
Keep the board away from conductor when it is working

Don't wire in the board to power supply before panel is correctly connected

Don't push or pull the connectors when the board is working.

## 7.Remote control instructions

### Definition of Remote Control



<b>OFF/ON</b>	Power switch options
<b>PC</b>	PC source options
<b>HDMI</b>	HDMI source options
<b>DVI</b>	DVI source options
<b>DP</b>	DP source options
<b>AUTO</b>	
	Volume down options
	Volume plus options
<b>INPUT</b>	source selection options
	Up menu options
	Down menu options
	Left menu options
	Right menu options
<b>OK</b>	Confirmation options
<b>MENU</b>	Menu options
<b>EXIT</b>	Exit options
<b>7</b>	One-click splicing
<b>9</b>	One-click decomposition

## 8.Physical picture

