

# **4K Bar Screen Splicing Board Specification**

**Product Model: ST5823**

**Issue date: 2024.3.7**

型号: ST5823

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

## 1. Product Overview

ST5823 is a comprehensive high-performance bar screen splicing display driver board. Equipped with powerful video processing capabilities, it can output high-quality images. Supports DP (MINI), HDMI, built-in OPS (optional) and other interface inputs, supports any input to DP (MINI) output, supports high-definition signal input and output within  $4096 \times 2160 @ 60\text{HZ}$  (HDMI/DP signal), supports 4K ultra high definition V\_BY-ONE/EDP\_x (optional) screen driven display, provides better effects and high-definition video display line by line, supports high-quality amplifier audio output. The board also integrates convenient functions such as automatic temperature control, LED indicator lights, buttons, remote control, and light control.

## 2. Product Features

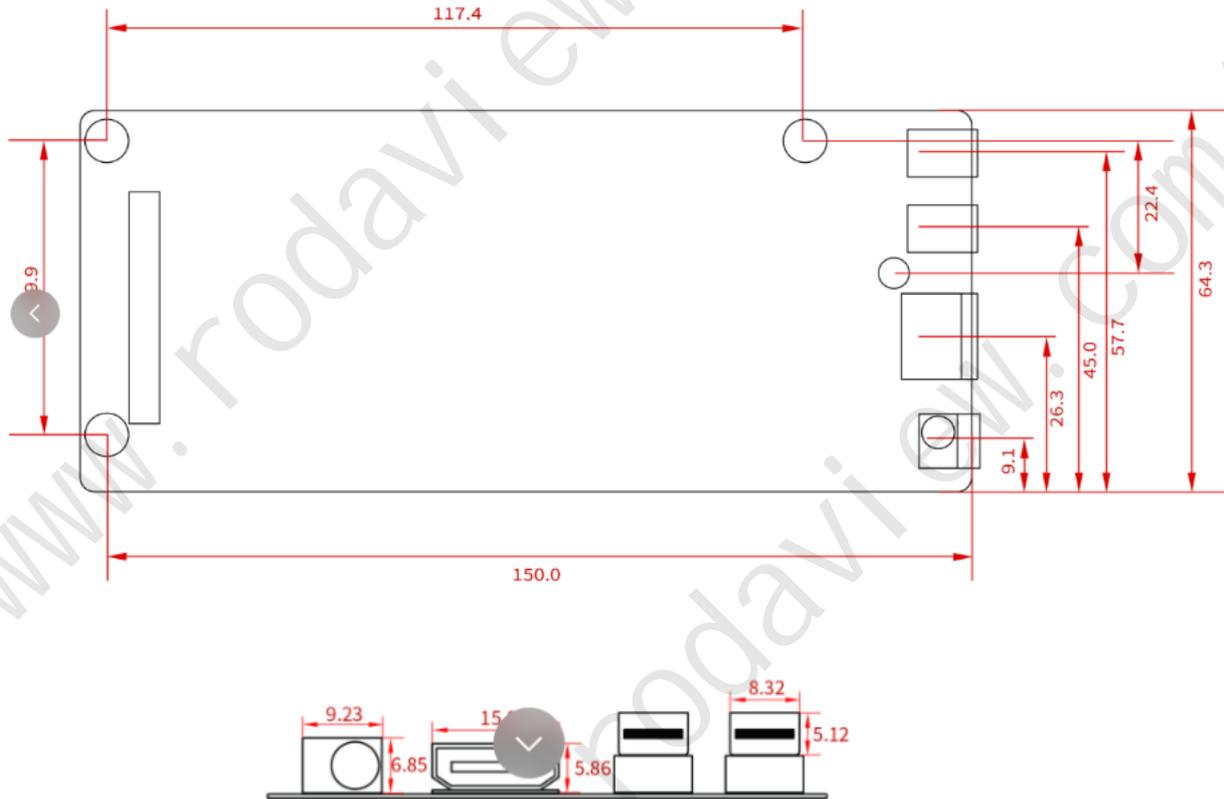
- (1) Supports 4K60 (maximum)  $4096 \times 2160 @ 60$  ) HDMI/DP input, supports 4K60 DP output.
- (2) Support built-in OPS (maximum)  $4096 \times 2160 @ 60\text{HZ}$  Input. (Optional)
- (3) Support input signal display in 0 degree, 180 degree, horizontal mirror, and vertical mirror directions.
- (4) Support button and remote control operation.
- (5) Supports 4K V\_BY-ONE screen display, single partition, dual partition VBO screen, supports up to 8LAN VBO LCD screen. Supports up to 4LAN channel EDP x (optional) 4K LCD screen. Support PWM Backlight modulation.

- (6) Supports various unconventional resolution bar screen drivers, such as (3840x540, 3840x1080, etc.).
- (7) Supports high-quality amplifier audio output (supports up to 10W high-power speakers).
- (8) Support temperature control adjustment for automatic fans.
- (9) Supports power board or DC power supply (either option).
- (10) Support AD conversion extension, can be connected to modules such as light sensing and temperature control. Sensing the brightness of the external environment to automatically adjust the display brightness. (Optional)
- (11) Support automatic standby without signal and automatic wake-up function with signal input. Support signal free standby time selection Choose.
- (12) Supports arbitrary splicing display within a maximum horizontal and vertical dimension of 16x16, and supports serial port expansion for upper computer control.
- (13) Support machine codes (address codes), where row and column addresses can be seen and entered into the control software Don't worry about calculating binary.
- (14) The external serial port control board can achieve cascade control of the serial port to the splicing board.
- (15) Applicable national standard standby energy consumption.

### 3. Product feature description

Support signal	OPS (HDMI built-in)	colour	24bit
		Synchronization range of rows	30-80KHZ
		Field synchronization range	50-75HZ
	HDMI /DP	colour	24bit
		Synchronization range of rows	30-80KHZ
		Field synchronization range	50-75HZ
interface	input	OPS x 1	30Pin FPC
		DP x 1	MINI - DP
		HDMI x 1	HDMI-19 pin
	output	VBO interface	51Pin VBO standard FPC socket (LG specification)
		EDP x interface	30Pin EDP-x FPC
		DP x 1	MINI - DP
Power Supply	Input power supply	DC24V/12V/5V	
	Screen driving voltage	10V/12V	
	power operation	Normal working mode, power-saving working mode	
other	OSD language	Chinese, English and other multiple languages (other languages can be customized and added upon request)	

#### 4. Product PCB size and structure



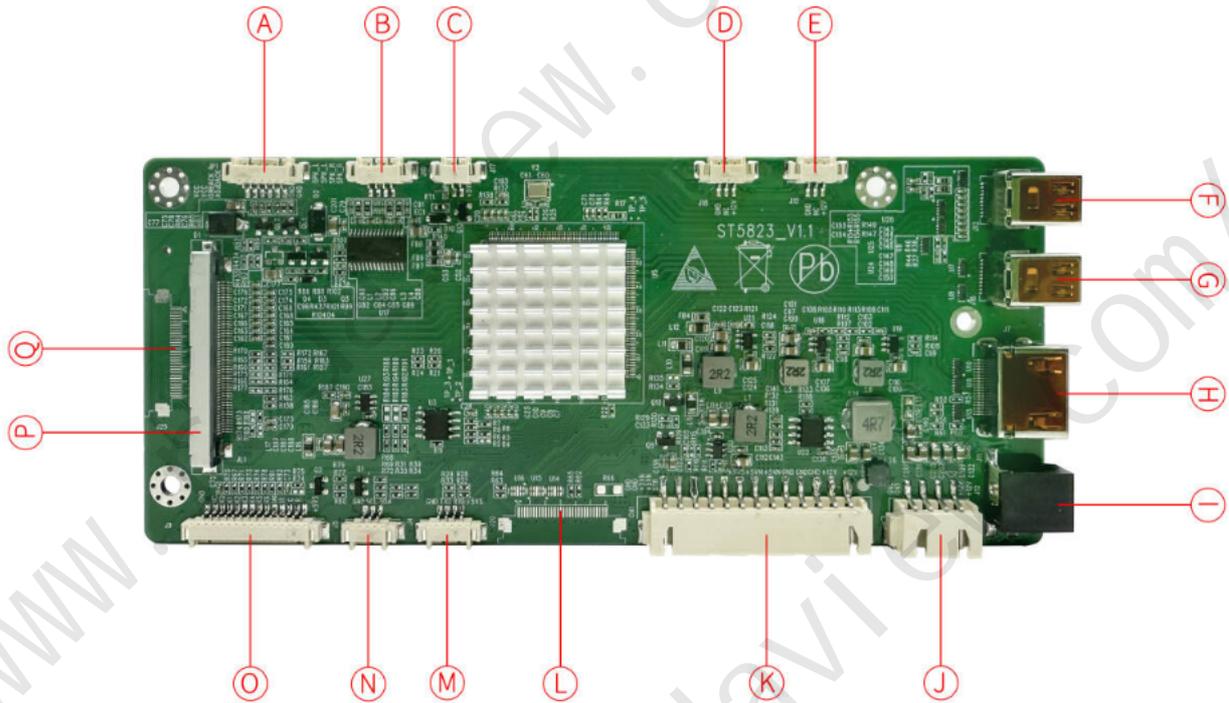
\*PCB size description: The size is for reference only. Please measure according to the actual PCB when making the shell.

\*PCB length: 150.0mm

\*PCB width: 64.3mm

\*PCB screw hole diameter: 3.5mm

## 5. Main Interface Definition Description



NO	Description	NO	Description
A	Backlight control interface	B	4Pin audio output
C	Expand AD module	D	Fan 1
E	Fan 2	F	MINI_DP OUT
G	MINI_DP IN	H	HDMI IN
I	DC12V IN	J	4Pin DC12V IN
K	13Pin power board power supply interface	L	30Pin OPS input
M	4Pin UART interface	N	I2C interface
O	Button+remote control+indicator light interface	P	V_BY-ONE screen driver interface
Q	EDP_X screen driver interface		

**CN1 (13PIN/2.5) power interface**

Foot number	definition	describe
1	GND	grounds
2	GND	grounds
3	5V	5V power input
4	5V	5V power input
5	ON/OFF	Power on/off
6	5V_STB	STANDBY
7	5V	5V power input
8	5V	5V power input
9	GND	grounds
10	GND	grounds
11	GND	grounds
12	12V	12V power input
13	12V	12V power input

**JP1 (6PIN/1.25) INVERTER interface**

Foot number	definition	describe
1	GND	grounds
2	GND	grounds
3	ADJ (PWM Control)	Brightness adjustment
4	BL_ON	Inverter switch control (high level active)
5	12V	DC power supply
6	12V	DC power supply

**J4 (4PIN/1.25) UART interface**

Foot number	definition	describe
1	+5V	5V
2	RX	URAT RX
3	TX	URAT TX
4	GND	GND

**J5 (3PIN/1.25) I2C interface**

Foot number	definition	describe
1	SDA	I2C SDA
2	SCL	I2C SCL
3	GND	Ground

**J9 (14PIN/1.25) button+IR+indicator light interface**

Foot number	definition	describe
1	GND	GND
2	NC	NC
3	KEY0	POWER
4	KEY1	MENU
5	KEY2	LEFT
6	KEY3	RIGHT
7	KEY4	UP
8	KEY5	DOWN
9	KEY6	INPUT(OK)
10	DGND	GND
11	IR_IN	IR_IN
12	LED_G	LED_G
13	LED_R	LED_R

14	+5V	5V
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***J10 (4PIN/1.25) audio output interface***

Foot number	definition	describe
1	L_OUT	Left channel output
2	L_OUT	Left channel output
3	R_OUT	Right channel output
4	R_OUT	Right channel output

***J12 (4PIN/2.54) 4P DC12V power supply***

Foot number	definition	describe
1	+12V	12V
2	+12V	12V
3	GND	GND
4	GND	GND

***J17 (2PIN/1.25) extended temperature sensing detection interface***

Foot number	definition	describe
1	+5V	5V
2	TEMP	Temperature sensitive ADC

***J18, J19 (3PIN/1.25mm) fan interface x2***

Foot number	definition	describe
1	12V	12V power input
2	NC	empty
3	GND	Ground

**J20(30PIN/0.5 FPC) OPS IN**

Foot number	definition	describe
1, 4, 7, 10, 13, 16, 20, 22, 23	GND	GND
2	DDCSDA_3	DDCSDA
3	DDCSCL_3	DDCSCL
5	RX_CP	RX_CP
6	RXCN	RXCN
8	RX_2P	RX_2P
9	RX_2N	RX_2N
11	RX_1P	RX_1P
12	RX_1N	RX_1N
14	RX_0P	RX_0P
15	RX_0N	RX_0N
17, 18, 19, 24, 25	NC	NC
21	HDMI_HPD	HPD
26, 27, 28, 29, 30	+12V	12V OUT

**J25 (30PIN/0.5 FPC) EDP X screen interface**

Foot number	definition	describe
1, 2, 3, 4, 5	PANEL_VCC	PANEL_VCC
6, 7, 10, 12, 15, 18, 21, 24, 27, 30	GND	GND
8	IO1	IO1
9	IO2	IO2
11	ETX HPD	ETX HPD
13	AUX_CH_N_1	AUX_CH_N
14	AUX_CH_P_1	AUX_CH_P

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16	ETX_TX0P	ETX_TX0P
17	ETX_TX0N	ETX_TX0N
19	ETX_TX1P	ETX_TX1P
20	ETX_TX1N	ETX_TX1N
22	ETX_TX2P	ETX_TX2P
23	ETX_TX2N	ETX_TX2N
25	ETX_TX3P	ETX_TX3P
26	ETX_TX3N	ETX_TX3N
28	On BACK	On BACK
29	ADJBACK	ADJBACK

**JL1 (51P/0.5mm) LCD screen interface (VBO signal format)**

Foot number	definition	type	describe
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
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 Lane 1
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 Lane 7
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

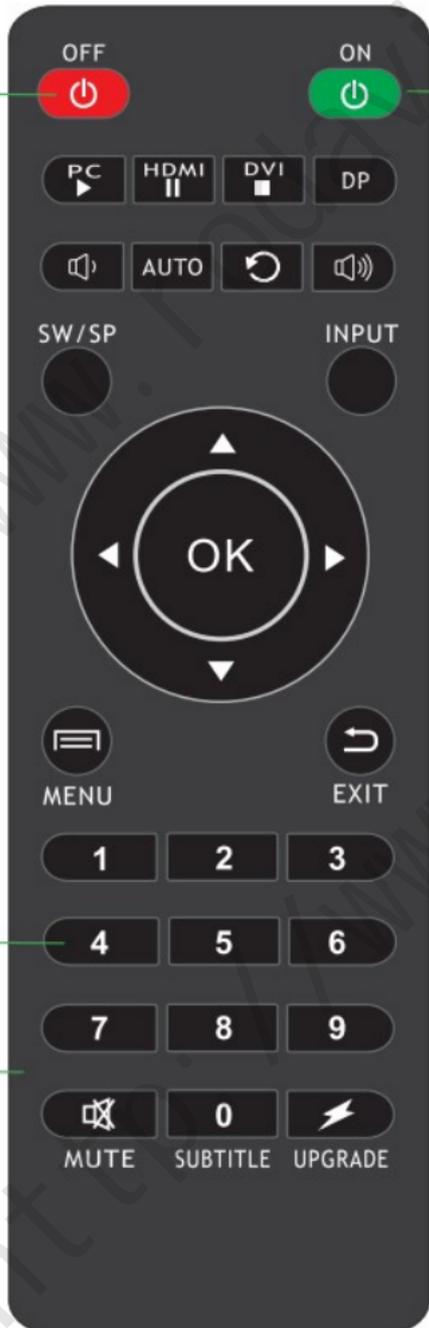
Keep the board away from conductor when it is working

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



OFF	Power off option
ON	Power on option
VOL-	Volume reduction option
VOL+	Volume up option
UP	Up menu options
DOWN	Downward menu options
LEFT	Left menu options
RIGHT	Right menu options
OK	Acknowledgment Option
MENU	Menu Options
INPUT	Source selection options
EXIT	Exit Options
DP	DP source options
HDMI	HDMI Source Options
MUTE	mute
UPGRADE	

## 8.Physical picture

