

TFT LCM SPECIFICATION
MODEL NO:
HGYD2690H-V1

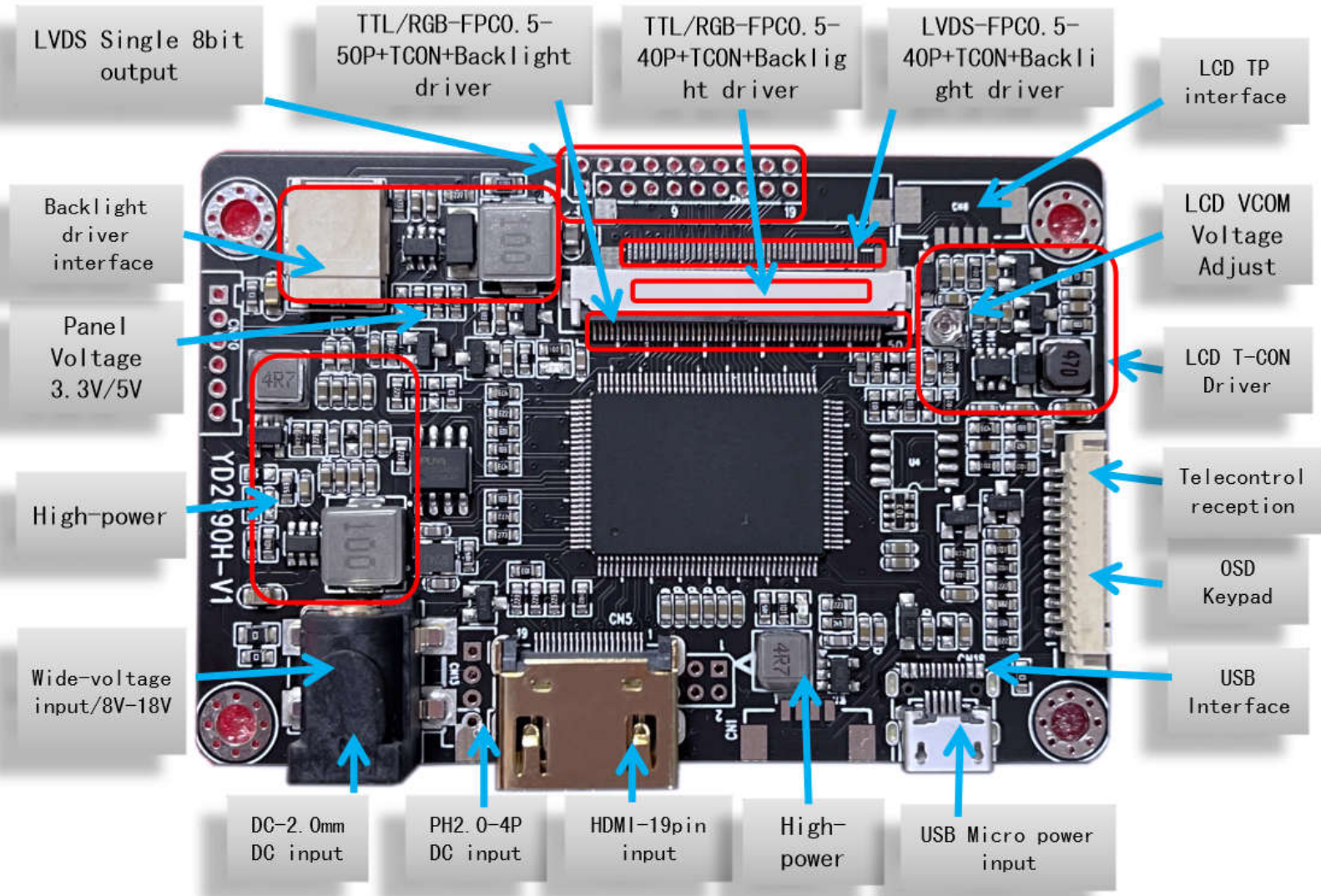
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HGYD2690H-V1

型号: HGYD2690H-V1

P/N号: V08602005



HGYD2690H-V1 User Manual
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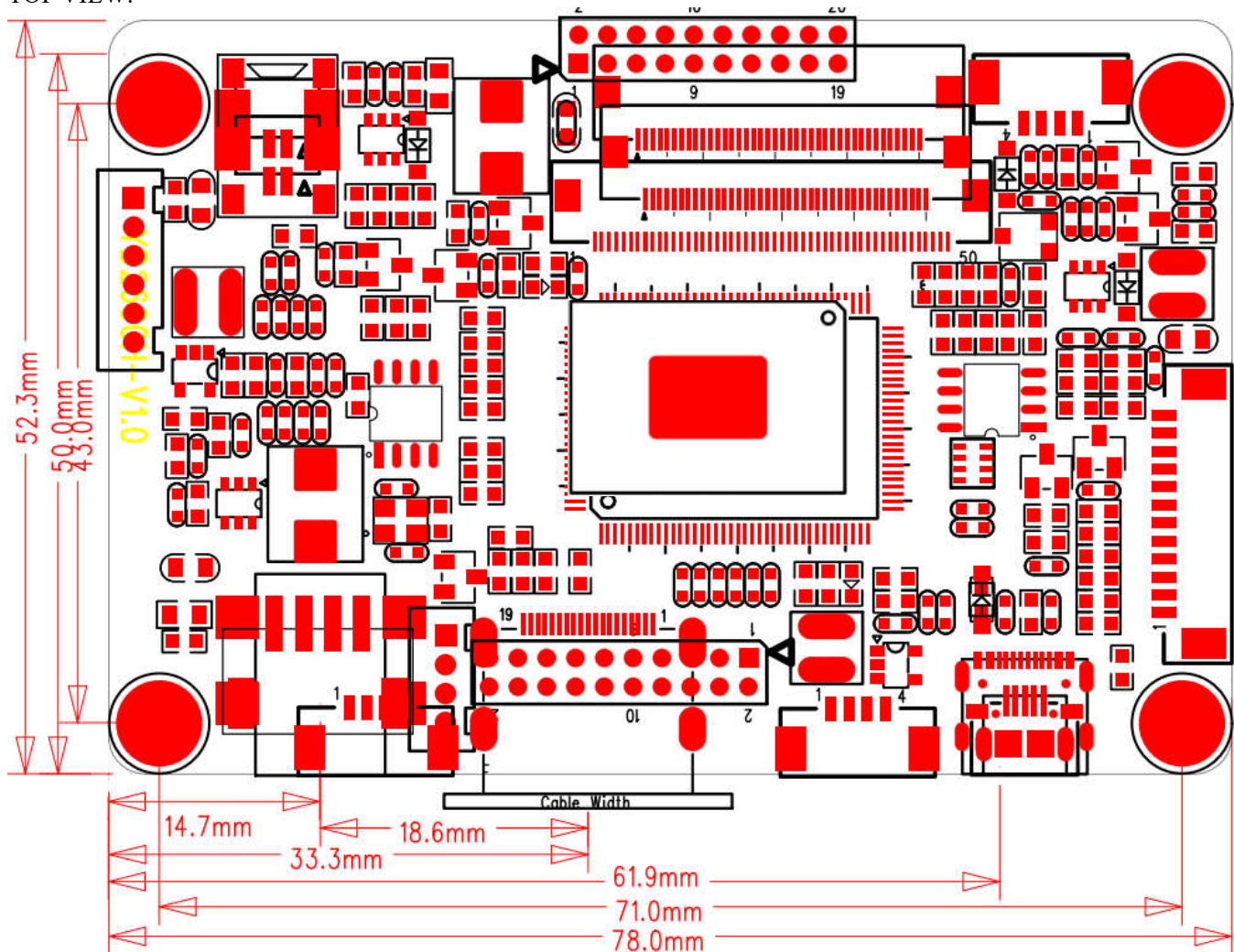
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Contents

1. The HGYD2690H-V1 LCD driver board is mainly designed for TFT LCD screens and is suitable for LCD screens and some other flat panel displays.
 - Input signal type: Digital high definition (HDMI).
 - The board supports USBMicro 5V voltage input (the board DC socket supports wide voltage input 9V~16V; typical value 12V default NC)
 - Wide temperature operating range: -20~+80
 - The board comes with LED backlight drive circuit; supports small and medium-sized LED backlight 9~25V voltage drive.
 - The board comes with T-CON circuit, which can directly drive small and medium-sized LVDS/TTL LCD without T-CON
 - Support PWM duty cycle to adjust backlight brightness
 - Display output interface: **TTL/RGB-FPC 0.5mm 50pin, TTL/RGB-FPC0.5mm 40pin, LVDS FPC0.5mm 40pin**
 - High-definition HDMI resolutions adapted to PC (personal computer) graphics cards:
320x240,480x272,800x480,800x600,1024x600,1024x768,1280x720,1280x800,1280x1024,1366x768... resolution
 - ; Features: This board has the characteristics of simple operation and reliable performance.

2. Layout and Dimensions

TOP VIEW:



BOTTOM VIEW:

- (5) Inverter cable: Different inverters generally have different input signals, so you need to choose matching cables. Improper connection may damage the inverter.
- (6) Function control: Function control includes power switch, backlight adjustment and OSD menu adjustment.
- (7) OSD adjustment board connection cable: This cable is generally required to be within 1m.
- (8) HDMI signal standard cable: This cable is very important for display quality, and it is required to use high-quality shielded cables.
- (9) Power supply: DC socket 12V DC power supply or USBMicro5V power supply, requiring a stable power supply. The power supply power depends on the LCD screen and inverter. Generally speaking, a 2A power supply can meet the needs of high-brightness or LED1000 brightness LCD screens. Power fluctuations will affect the life of the backlight, may also affect the display quality, and may even damage the product.

4.2 Power Safety

Since the startup voltage and operating voltage output by the LED backlight driver are relatively high (9~29V), and the operating frequency is also relatively high (tens of kHz), it may have an impact on the display and system.

4.3 Electromagnetic Interference

It is necessary to take certain shielding measures to prevent external interference.

4.4 Grounding

The mounting holes of the PCB are connected to the ground by default, and can also be disconnected by changing the grounding resistance.

4.5 Controller Installation

When installing this controller, it is recommended to keep at least 10mm of space on the component side and at least 5mm of space on the other side. Also pay attention to: electrical insulation; good grounding; prevention of electromagnetic interference; reasonable cable layout.

It must be noted that the signal line of the LCD screen must be kept at a necessary distance from the backlight line to prevent signal crosstalk.

Heat and ventilation: LCD screens with high backlight brightness also generate relatively high heat, so attention should be paid to heat dissipation.

4.6 Other issues that may affect system security and system performance

PC graphics card output: Signal quality is very important. If the PC graphics card output signal is noisy or unstable, its impact may be directly reflected in the display screen. Please refer to Adapting graphics card mode

5. Connection and Operation

5.1 Connection

Connection and use:

- 1) Backlight and LED backlight driver: Connect the backlight of the LCD screen to the LED driver output,
- 2) Display screen with LVDS/TTL/RGB signal: Connect the signal cable directly to the corresponding interface on the controller, and the other end to the LCD screen;
- 3) OSD function control: Use a cable to connect the OSD adjustment board to the OSD port of the controller;
- 4) HDMI cable and controller, one end of the HDMI cable is connected to the HDMI port of the controller, and the other end of the cable is connected to the PC graphics card output;
- 5) Power supply and controller: Connect the USB Micro 5V power supply to the USB Micro power input port of the controller;
- 6) Display screen power switch: realized through the OSD adjustment board

5.2 PC Settings

Although this controller is designed to accommodate a wide range of signals, in order to optimize the display signal, it is recommended to set the PC display refresh rate to 60Hz - this is less likely to cause screen flicker. It is best to set it to the same resolution as the LCD screen.

5.3 Adjustment Operation

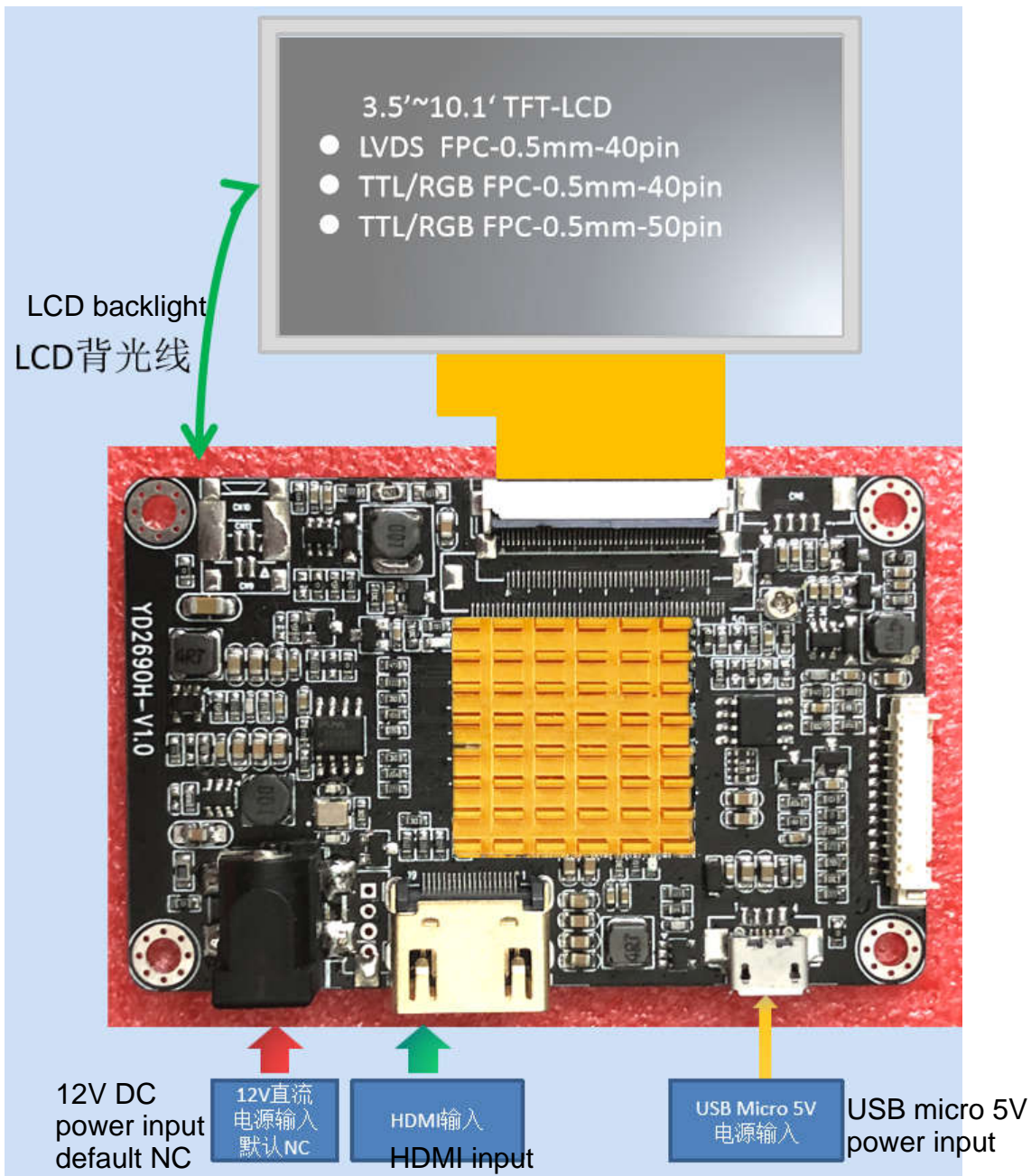
After the system is connected and working properly, it can be adjusted through the OSD menu. After the adjustment, the parameters will be automatically stored after exiting the menu.

5.4 Display system block diagram

Please see the figure on the next page:

Description:

1. TFT LCD screen;
2. Display controller: HGYD2690H-V1
3. OSD (On Screen Display) function adjustment board (manufacturers can make their own OSD keypad according to the definition);
4. Cable connecting the LCD screen to the control board;
5. Cable connecting the OSD adjustment board to the control board.



5.5 Feature points

5.5.1 Test points

Mark	Application	Min	Typ	Max	Unit	Ripple	Remark
12V	12V test points	10.8	12	13.2	V	400mV	Determined by external modules
5V	5V test points	4.75	5	5.25	V	200mV	
3.3V	3.3V test points	3.13	3.25	3.46		150mV	
1.8V	1.8V test points	1.70	1.75	1.85	V	100mV	
GND	GND	-	-	-	V	-	

BL-EN	Backlight Enable	0.1	-	4.5	V	-	
BL-PWM	Backlight PWM	0.1	-	4.5	V	-	

5.6 Interface Description

5.6.1 Interface Overview

Interface	Application	Connector Description	Remark
CN1	12V DC power input	4P, 2.0Pitch, single row, 180°, socket (JST/CVILUX)	Default NC
CN2	12V DC power input	DCJACK, positive inside and negative outside, positive pole outer diameter ϕ 2.0mm, negative pole inner diameter ϕ 5.5mm (JST/CVILUX)	Default NC
CN3	USB Micro 5V Input	USB Micro 5V Input	
CN12	HDMI input	HDMI-19pin, 90 degrees, Taiwan socket	HDMI input
CN5	Mini HDMI input	HDMI-19pin, 90 degrees, Taiwan socket	Default NC
CN7	OSD adjustment keyboard and infrared control interface	12P, 1.25Pitch, single row, 90°, socket (molex)	
CN16	LVDS-FFC0.5mm-40pin	LVDS-40PIN, default 8bit output	
CN19	LVDS-2.0mm,2x10,20pin	LVDS-Dupont 2.0mm, 2x10, 20pin	Default NC
CN20	Backlight power supply and control interface output	PH2.0MM-6PIN	
CN11	TTL/RGB-FFC0.5mm-40pin+TC ON	TTL/RGB-FFC0.5mm-40pin+TC ON	
CN13	TTL/RGB-FFC0.5mm-50pin+TC ON	TTL/RGB-FFC0.5mm-50pin+TC ON	
CN14	LED backlight voltage output	Small and medium size LED backlight output; high voltage socket terminal SM-POW-2P	
CN18	TTL-FFC0.5mm-40pin	TTL-40PIN default 8bit output	Default NC
CN17	TTL-FFC0.5mm-50pin	TTL-50PIN default 8bit output	
R2/R52	LCD screen power supply selection	R52 short circuit is 3.3V, R2 short circuit is 5V	Default 3.3V

5.6.2 Input Interface

- Marking: CN1 (default NC)
- Purpose: 12V DC power input (default NC)
- Type: 4P, 2.0Pitch, single row, 180°, socket (JST/CVILUX), white Connector
- Connector: PH2.0mm-4PIN straight plug
- Pin definition

Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	+12V	+12V DC power input (\pm 10%)	2	+12V	+12V DC power input (\pm 10%)
3	GND	Ground	4	GND	Ground

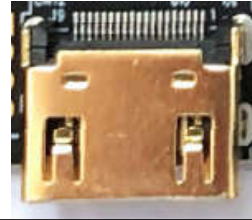
- Mark: CN2
- Purpose: 12V DC power input
- Type: positive inside and negative outside, positive pole outer diameter 2.0mm copper plated with gold, negative pole inner diameter 5.5mm, black
- Connector: DCJACK (CVILUX)
- Pin definition

Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	+12V	+12V DC power input (\pm 10%)	2	GND	Ground
3	GND	Ground			

- Logo: CN3
- Purpose: USBMicro 5V Power
- Input Type: USBMicro
- Connector: USBMicro
- Pin Definition

Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	5V	+5V DC power input ($\pm 10\%$)	2	D-	D-
3	D+	D+	4	ID	Default NC
5	GND	Ground			

- Logo: CN12
- Purpose: HDMI signal input
- Type: HDMI-19PIN/4-pin plug/gold-plated copper/90-degree
- Connector: DCJACK (CVILUX)
- Pin definition



Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	Data2+	HDMI Data 2+	2	GND	Ground
3	Data2-	HDMI Data 2-	4	Data1+	HDMI Data 1+
5	GND	Ground	6	Data1-	HDMI Data 1-
7	Data0+	HDMI Data 0+	8	GND	Ground
9	Data0-	HDMI Data 0-	10	Clock-	HDMI Clock -
11	GND	Ground	12	Clock+	HDMI Clock+
13	NC	NC	14	NC	NC
15	SCL	DDC I2C Clock	16	SDA	DDC I2C Data
17	GND	Ground	18	+5V	
19	HPD	Hot plug Detect hot plug identification			

- Marking: CN7
- Purpose: OSD function control connector
- Type: MOLEX-12PIN, 12P, 1.25Pitch, single row, 90°, socket (MOLEX), white
- Connector: (MOLEX) or compatible
- Pin definition

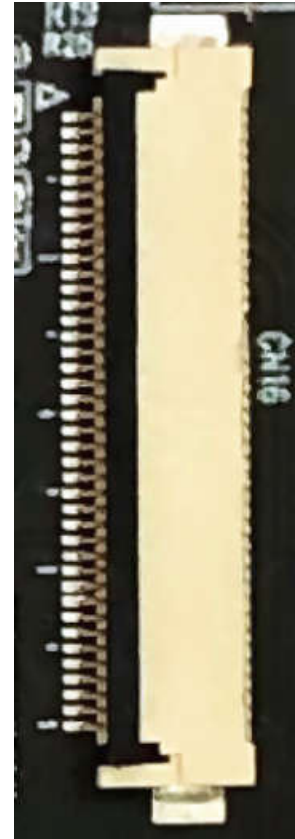
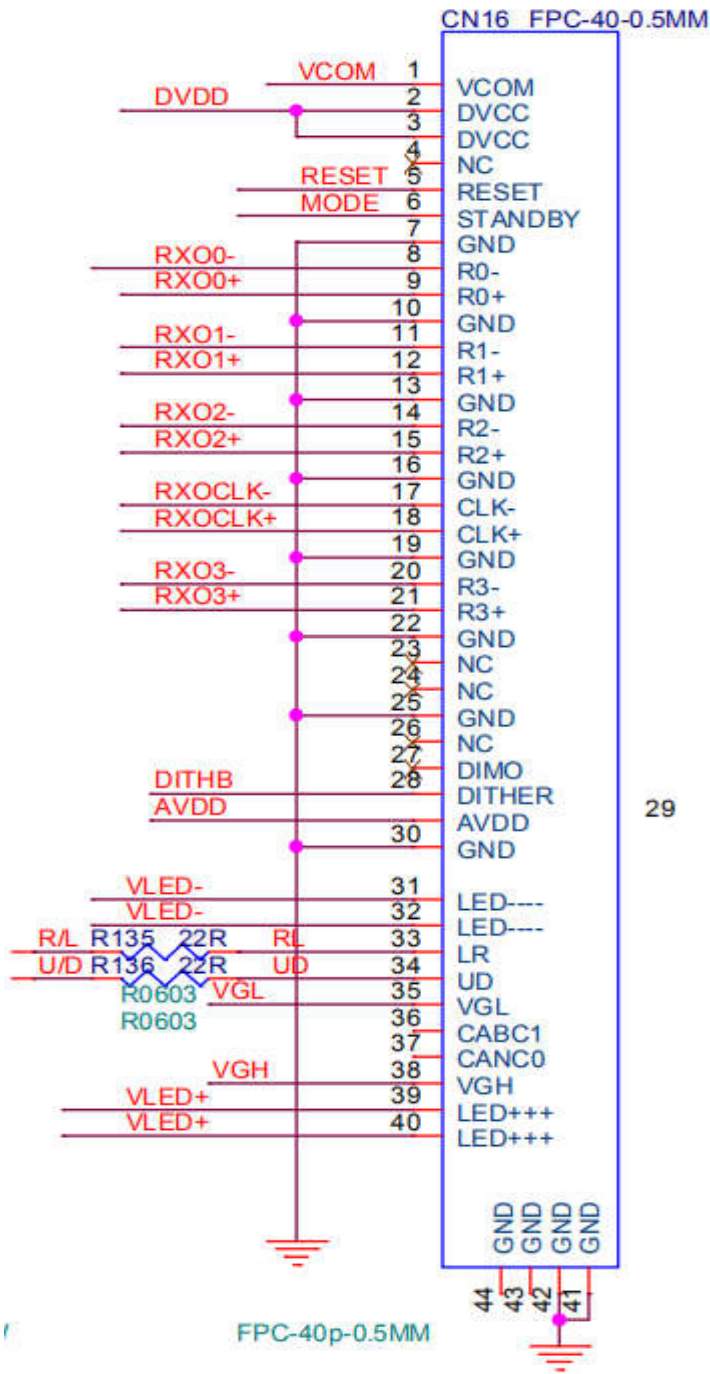
Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	IR		2	GND	
3	VCC-5V	VCC-5V	4	I/O (Source)	Signal source selection shortcut key/exit key K1
5	I/O (Menu)	Menu K2	6	Auto	NC/Reserved K3
7	I/O (Left)	Left Adjustment Key K4	8	I/O (Right)	Right adjustment key K5
9	GND	Ground	10	LED_GRN	Green indicator light
11	LED_RED	Red indicator light	12	I/O (Power)	Power on/off key K6

5.6.3 LVDS output interface

5.6.5 LVDS-40PIN output interface

- Identification: CN16
- Purpose: LVDS output interface default 8-bit output

- Connector/Type: Top contact, FFC-0.5mm-40pin or compatible, gold-plated/white
- Pin definition



LVDS output interface

- Mark: CN5
- Purpose: LVDS signal output
- Type: 2x10P, 2.0pitch, 20PIN, 180° straight plug, double-row socket, black
- Connector: CI0130P1VD0 (CVILUX)/DF11-30DP-2DSA
- Pin definition



Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	VCC	3.3V/5V/12V (default 3.3V)	2	VCC	3.3V/5V/12V (default 3.3V)

3	VCC	3.3V/5V/12V (default 3.3V)	4	NC	NC
5	GND	Ground	6	GND	Ground
7	TXO0-	The negative pole of channel 1 output of the odd channel.	8	TXO0+	The positive pole of channel 1 output of the odd channel.
9	TXO1-	The negative pole of channel 2 output of the odd channel.	10	TXO1+	The positive pole of channel 2 output of the odd channel.
11	TXO2-	The negative pole of channel 3 output of the odd channel.	12	TXO2+	The positive pole of channel 3 output of the odd channel.
13	GND	Ground	14	GND	Ground
15	TXOC-	The negative pole of the clock output of the odd channel.	16	TXOC+	The positive pole of the clock output of the odd channel.
17	TXO3-	The negative pole of channel 4 output of the odd channel.	18	TXO3+	The positive pole of channel 4 output of the odd channel.
19	NC	NC	20	NC	NC

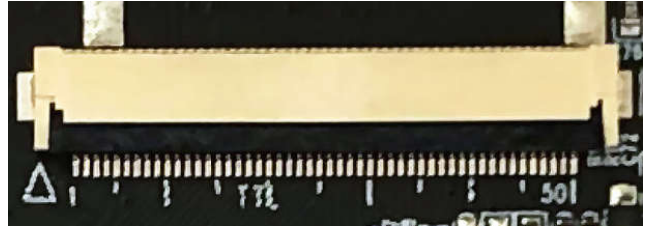
Boost converter/inverter interface

- Marking: CN3
- Purpose: Boost board/inverter interface
- Type: PH2.0mm-6PIN, 6P, 2.0Pitch, single row, 180°, socket (JST/CVILUX), white
- Connector: (CVILUX)
- Pin definition

Pinout	Symbol	Illustrate	Pinout	Symbol	Illustrate
1	GND	Ground	2	GND	Ground
3	PWM/Vadj	Connect to LCD screen or inverter brightness adjustment terminal	4	ON/OFF	On/off (enable) 5V/0V
5	+12V	12V, inverter power supply	6	+12V	12V, inverter power supply

TTL-50PIN output interface

- Mark: CN17
- Purpose: TTL output interface default 8bit output
- Type: Top contact, FFC-0.5mm-50pin or compatible, gold-plated/white
- Connector:
- Pin definition

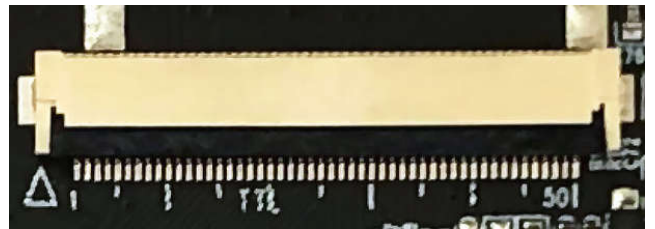


Pin No.	Symbol	I/O	function	Remarks
1	VLED+	P	Power for LED backlight(anode)	
2	VLED+	P	Power for LED backlight(anode)	
3	VLED-	P	Power for LED backlight(Cathode)	
4	VLED-	P	Power for LED backlight(Cathode)	
5	GND	P	Power ground	
6	VCOM	I	Common voltage	
7	DVDD	P	Power for digital circuit	
8	MODE	I	DE/SYNC mode select. Normally pull high	MODE=1,DE mode, VS and HS must pull high; MODE=0, HSD/VSD mode, DE must be grounded
9	DE	I	DATA INPUT Enable	
10	VS	I	VERTICAL SYNC INPUT	
11	HS	I	Horizontal Sync Input	
12	B7	I	Blue data(MSB)	
13	B6	I	Blue data	
14	B5	I	Blue data	
15	B4	I	Blue data	
16	B3	I	Blue data	
17	B2	I	Blue data	
18	B1	I	Blue data	When input 18 bits RGB data, B1 must be grounded
19	B0	I	Blue data(LSB)	When input 18 bits RGB data, B0 must be grounded
20	G7	I	Green data(MSB)	
21	G6	I	Green data	
22	G5	I	Green data	
23	G4	I	Green data	
24	G3	I	Green data	
25	G2	I	Green data	
26	G1	I	Green data	When input 18 bits RGB data, G1 must be grounded
27	G0	I	Green data(LSB)	When input 18 bits RGB data, G0 must be grounded
28	R7	I	RED data(MSB)	
29	R6	I	RED data	
30	R5	I	RED data	
31	R4	I	RED data	
32	R3	I	RED data	
33	R2	I	RED data	
34	R1	I	RED data	When input 18 bits RGB data, R1 must be grounded
35	R0	I	RED data(LSB)	When input 18 bits RGB data, R0 must be grounded

36	GND	P	Power ground	
37	DCLK	I	Sample clock	Data shall be latched at the falling edge of DCLK
38	GND	I	Power ground	
39	L/R	I	Left/right selection	Selection of scanning mode
40	U/D	I	Up/down selection	Selection of scanning mode
41	VGH	P	Gate on voltage	
42	VGL	P	Gate off voltage	
43	AVDD	P	Power for analog circuit	
44	RESET	I	Global reset pin	Active low to enter reset state, suggest to connect with an RC reset circuit for stability. Normally pull high
45	NC	-	No connection	
46	VCOM	I	Common voltage	
47	DITHB	I	Dithering function enable control, normally pull high;	When DITHB=1, disable internal dithering function; When DITHB=0, enable internal dithering function;
48	GND	P	Power ground	
49	NC	-	No connection	
50	NC	-	No connection	

TTL-40PIN output interface

- Mark: CN18
- Purpose: TTL output interface default 8bit output
- Type: Top contact, FFC-0.5mm-40pin or compatible, gold-plated/white
- Connector:
- Pin definition



No	Symbol	I/O	Description	Remark
1	VLED-	P	Back light cathode	
2	VLED+	P	Back light anode	
3	GND	P	Ground	
4	VDD	P	Power supply	
5	R0	I	Data input	
6	R1	I	Data input	
7	R2	I	Data input	
8	R3	I	Data input	
9	R4	I	Data input	
10	R5	I	Data input	
11	R6	I	Data input	
12	R7	I	Data input	
13	G0	I	Data input	
14	G1	I	Data input	
15	G2	I	Data input	
16	G3	I	Data input	
17	G4	I	Data input	
18	G5	I	Data input	
19	G6	I	Data input	
20	G7	I	Data input	
21	B0	I	Data input	
22	B1	I	Data input	
23	B2	I	Data input	
24	B3	I	Data input	
25	B4	I	Data input	
26	B5	I	Data input	
27	B6	I	Data input	
28	B7	I	Data input	
29	GND	P	Ground	
30	DCLK	I	Clock for input data. Data latched at rising edge of this signal.	
31	DISP	I	Standby mode. DISP = "1": Normally operation. DISP = "0": Standby mode.	
32	HSYNC	I	Horizontal sync input with negative polarity. If unused, please pull high level.	
33	VSYNC	I	Vertical sync input with negative polarity. If unused, please pull high level.	
34	DE	I	Data input enable. If unused, please pull low level.	
35	NC	--	No connection	
36	GND	P	Ground.	
37	X R	--	No connection	
38	Y B	--	No connection	
39	X L	--	No connection	
40	Y T	--	No connection	

Note: I--Input, O--Output, P--Power/Ground

5.6.5 Other interfaces

6. Technical Parameters

Product model		HGYD2690H-V1 Version: V0	
Overall dimensions		78mm×50 mm×13.5mm (L×W×H)	
Display Color		24 位 (3×8, 16.7M)	
Display screen interface		LVDS、TTL	
Control range		LCD with resolutions ranging from 480×272 to 1920×1200	
Signal input	Input signal type	HDMI	
	Input signal range	HDMI Input range	PC (VGA / HDMI) Highest 1920×1200
Supported input signal formats		Refer to Appendix A and Appendix B	
Supply voltage		Min: 4.8V	Nominal: 5V Max: 5.5V
Working current		Min: 0.1A	Nominal: 0.3A Max: 0.5A
Standby power		<0.8W	
Display voltage		3.3V/5V jumper selectable	
Maximum display load capacity (normal temperature)		1.8A@3.3V、2.5A@5V、	
User Interface		Visual OSD operation interface	
Communication Interface		Digital buttons, infrared IR	
Working temperature range		-20℃~80℃; -30℃~80℃ (Except the main chip)	
Working humidity range		10~95%RH (40℃, 95%RH)	
Storage temperature range		-40℃~70℃	
Storage humidity range		10~100%RH	
Working environment atmospheric pressure range		70kPa~106kPa	
MTBF		>100000 hour	

Note: For 7 inches

7. Display Adjustment

7.1 Menu Structure

Main Menu (主菜单)	Submenu (子菜单)		Reset (出厂复位)	Description (描述)
	背光亮度 (BackLight)	0~100	100	Note: Some screens may not support brightness adjustment
	信号亮度 (Brightness)	0~100	50	
	对比度 (Contrast)	0~100	50	
	色温 (Color Temp)	6500K	6500K	Visible when input is VGA only
		9300K		Visible when input is VGA only
	用户 (User)		Visible when input is only VGA. RGB adjustable, range is 0~255	
画面调整 (Adjust)	自动调整 (AutoConfig)			Visible when input is VGA only
	水平位置 (H Position)	0~100	50	Visible when input is VGA only

	垂直位置 (V Position)	0~100	50	Visible when input is VGA only
	相位 (Phase)	0~63	Indefinite	Visible when input is VGA only
	时钟 (Clock)	0~100	50	Visible when input is VGA only
菜单 (OSD)	语言 (Language)	简体中文/English 等 10 种国家语言	English	10 national languages
	水平位置 (H Position)	0~100	50	
	垂直位置 (V Position)	0~100	50	
	时间 (OSD Timeout)	5~60	10	Menu disappearance time setting when no operation is performed
	透明 (Transparent)	1/2/3/4/5/6/7/关 (Off)	关	When 7 is selected, the transparency is the highest. When Off is selected, the transparency is 0.
功能 (Function)	复位 (Reset)			
	显示比例 (Display Ratio)	16:9/4: 3/AUTO		
	蓝屏 (Blue Screen)	开 (On) /关 (Off)	关 (Off)	
	清晰度 (Sharpness)	0~100	50	
	翻转 (Rotation)	0-3	0	Image flip up, down, left, right (need to confirm whether the screen supports it)
声音 (Sound)	音量 (Volume)	0~100	50	
	静音 (Mute)	Off/on	off	

7.2 Operation Instructions

7.2.1 Button Instructions:

Digital button description

K1 (Source/EXIT)	Signal source input selection key/exit key
K2 (MENU)	Main menu button, confirm button
K3 (NC)	No function
K4 (Left)	Decrease option value (-)/parameter adjustment button, hot key 1 (definable)
K5 (Right)	Increase option value (+)/parameter adjustment button/confirmation button, hot key 2 (definable)
K6 (Power)	Standby button

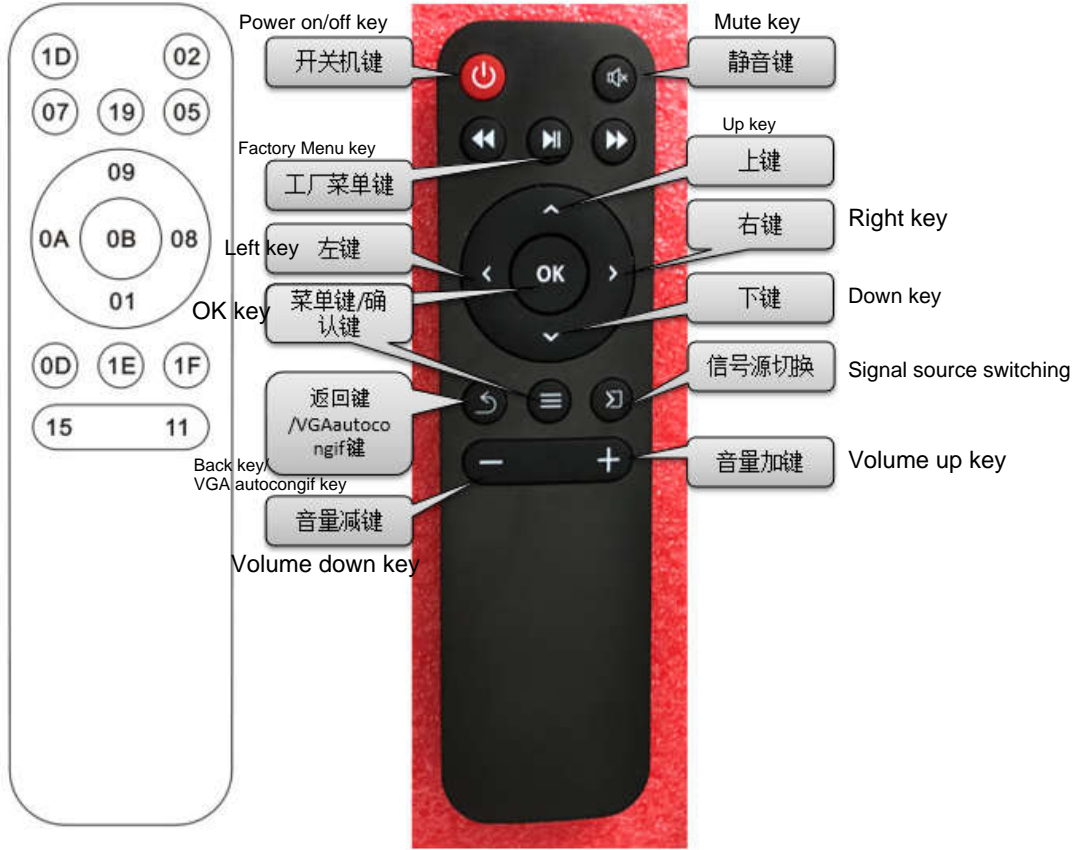
Infrared button instructions (optional remote control)

Menu	Main menu button, confirm button
← (Left)	Decrease option value (-)/parameter adjustment button, hot key 1 (definable)
→ (Right)	Increase option value (+)/parameter adjustment button/confirmation button, hot key 2 (definable)
Source	Exit key, signal source input selection key

Power	Standby button
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Infrared button instructions (optional remote control)

Custom Code:03FC(Nec)
Software No.:KD315T-A000-001



7.2.2 Indicator Light Description

After power on, no signal is displayed in red, normal operation is green, and shutdown is red.

Note: The standby indicator light caused by no signal is still orange.

7.2.3 Menu operation method:

- Press the "Menu" key to bring up the main menu, and then press the Menu key again to enter the submenu;
- Press the "Left"/"Right" key to switch between the main menu information and submenu items;
- Press "Menu" to enter the adjustment options, and use "Left"/"Right" to adjust the parameters in each adjustment option.

7.2.4 Power management and indicator light function description:

When the signal is working normally, the keypad indicator light is green. The indicator light D1 on the board is red and D2 is green.
When the "Power" key is pressed, it enters standby mode, and the keypad indicator light is red. The indicator light D1 on the board is normal, and D2 is off.
When there is no signal, the keypad indicator light is red. The indicator light D1 on the board is red, and D2 is off.
When there is no signal for 15 seconds, the system will enter power saving mode, and the keypad indicator light is red. The indicator light D1 on the board is red, and D2 is off.

When there is a signal, the power saving mode will be exited and the normal working mode will be entered. At this time, the keypad indicator light will return to green.

8. Fault analysis and troubleshooting

8.1 Possible fault links

Generally, when the display system is abnormal, it is necessary to judge the following links. By checking them step by step, you can usually determine where the problem lies.

- Controller (such as jumpers, PC signal settings);
- Display (consider controller, signal cable, connection, display, PC signal settings);
- Backlight (related to controller, cable, backlight tube);
- Cable (such as HDMI cable);
- Microcomputer system (display settings such as refresh rate, etc.);

8.2 No display

If the connection is incorrect, or there is no power (such as no power input, the power switch is not turned on), or the signal output by the PC is not within the adaptive range of this controller, it may result in no display.

8.3 Image location

If the image display position cannot be adjusted properly through OSD, it may be that the output timing of the graphics card does not meet the standard and the controller cannot adapt. You may try to replace another graphics card for testing. In addition, some video distributors may also have an impact.

8.4 Abnormal image display

Abnormal display phenomena may include missing lines, jitter, flickering, shadows, etc.

The refresh rate, resolution setting, scanning method of the graphics card and the controller requirements may not match, which may cause abnormal image display size, image scrolling, flickering or even no display.

The quality of the cable connecting the display screen can also cause abnormal display.

The quality of the signal cable directly affects the quality of the input signal and the anti-interference ability of the input end. The shadow of the image display is likely caused by the poor quality of the signal cable.

If there is no appropriate distance between the backlight and the display signal cable, it may affect the line synchronization signal of the LCD screen, and its impact can be seen directly in the display.

8.5 Backlight

If the backlight is abnormal, you need to check the following aspects: power input, input switch signal, input regulation (the regulation signal not within the required range of the inverter may also be the reason why the backlight is not bright) and backlight tube, etc.

8.6 Other faults

Improper use, such as inappropriate input power, circuit short circuit caused by misoperation, incorrect cables, etc. may bring unpredictable adverse consequences.

Appendix A List of supported HDMI input signal modes

Model	Resolution	Field frequency [Hz]	Line frequency [kHz]	Clock [MHz]	Synchronously	Standard
E1_70	640×350	70	31.469	25.175		N/A
E2_70	640×400	70	31.469	25.175		N/A
T_70	720×400	70	31.469	28.322		N/A
V60	640×480	59.940	31.469	25.175		Industry Standard
V75		75.000	37.500	31.500		VESA Standard
SV60	800×600	60.317	37.879	40.000		VESA Standard
SV75		75.000	46.875	49.500		VESA Standard
X_60	1024×768	60.004	48.363	65.000		VESA Standard
X_70		70.069	56.476	75.000		VESA Standard
X_75		75.029	60.023	78.750		VESA Standard
SX_60	1280×1024	60.020	63.981	108.000		VESA Standard
SX_75		75.025	79.976	135.000		VESA Standard
UX_60	1600×1200	60.000	75.000	112.288		VESA Standard
F-HD_60	1920×1080	59.940	67.433	148.352		VESA Standard

Appendix B List of supported video input signal modes

Input image format	Display image parameter description					Remark
	Interlacing ratio	Scan lines	Line frequency kHz	Field frequency Hz	Aspect Ratio	
720×576i	2:1	625	15.625	50	4:3	CVBS, S-Video
720×480i	2:1	525	15.73425	59.94/60	4:3	CVBS, S-Video

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