# TFT LCM SPECIFICATION

# MODEL NO:

# YD2680HU-V12

| **Customer**/client | **Approved by**/Approval | **Notes**/Remark |
|---|---|---|
| | | |

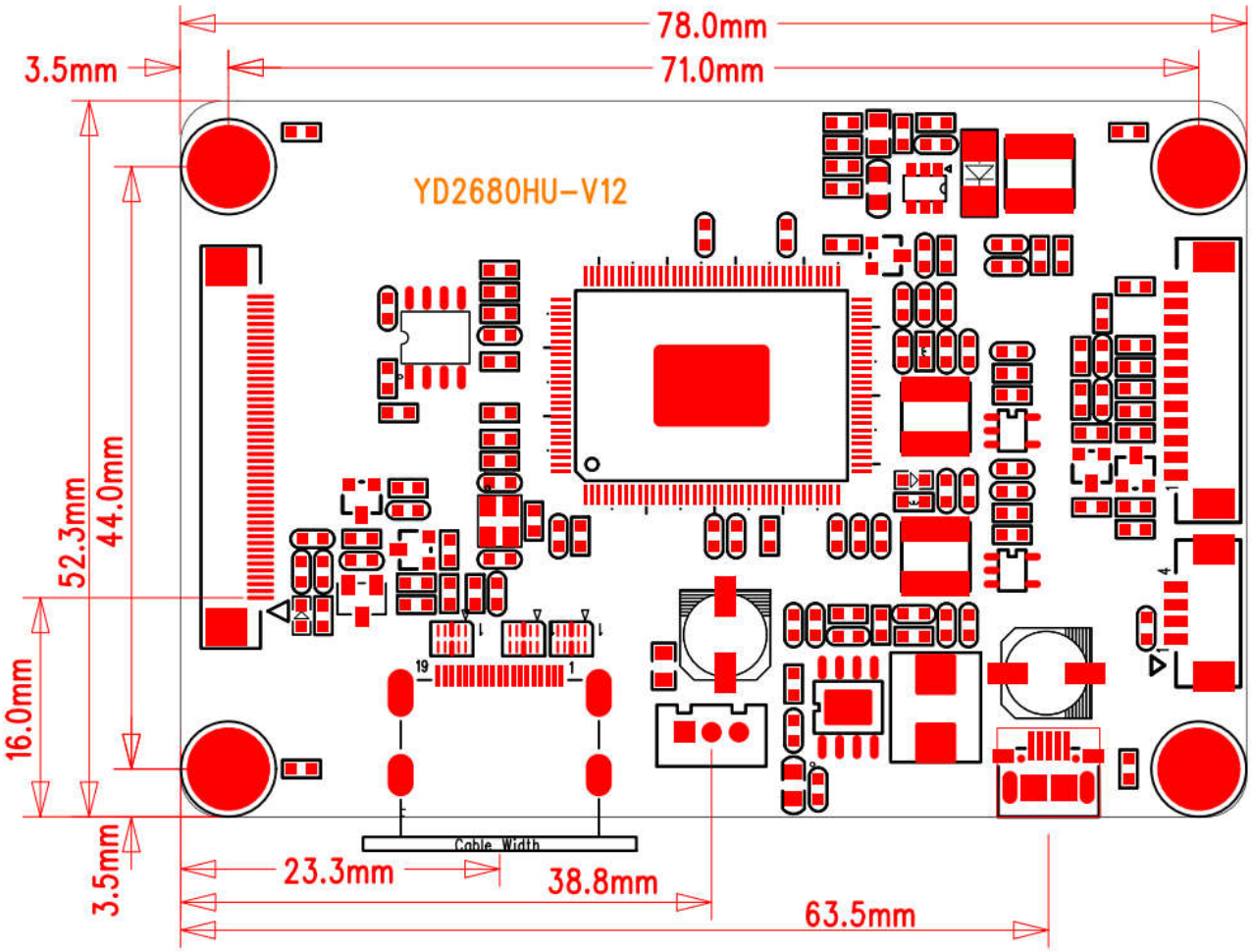
| **R/D/Research and Development Department** | | |
|---|---|---|
| **Customer**/client | **Approved by**/Approval | **Notes**/Remark |
| | | |

Version:A1

# YD2680HU-V12

## Model: YD2680HU-V12

## P/N No.: V08602005



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**1.summary**

YD2680HU-V12 LCDThe driver board is mainly forTFTLCD-like design, suitable for LCD screens and some other flat panel displays.

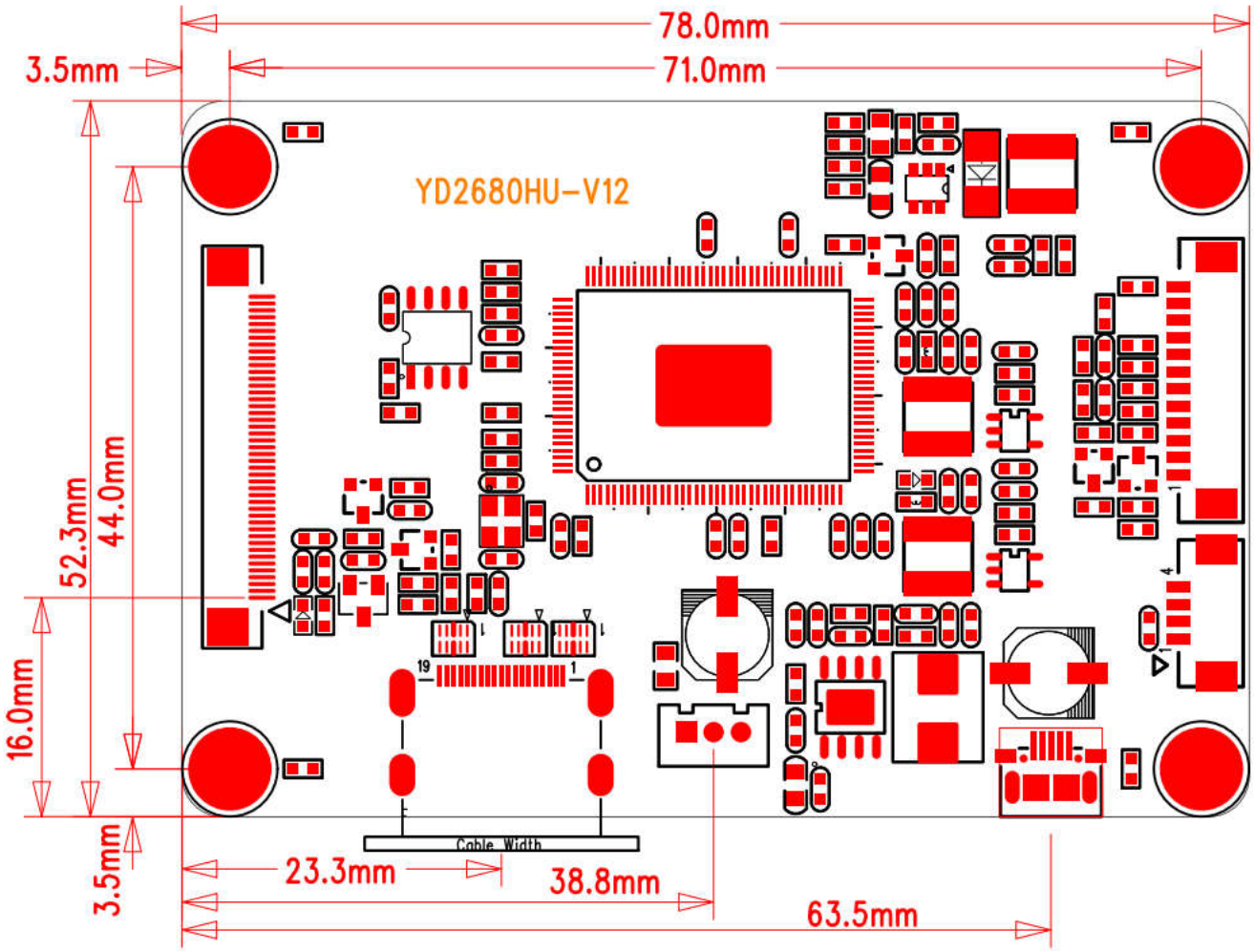
- Input signal type: Digital HD (HDMI).
- Board SupportUSB Micro 5VVoltage input, (cardDCThe socket supports wide voltage input9V~16V;Typical Value12V )
- Wide operating temperature range: -20℃ ~ +80℃
- Board comes withledBacklight drive circuit; supports small and medium sizeledBacklight9~25VVoltage drive.
- supportPWMDuty cycle adjusts backlight brightness
- Display output interface: **LVDS FPC0.5mm 45pin**
- adaptPC(Personal computer) graphics card high definitionHDMIResolution:

320x240,480x272,800x480,800x600,1024x600,1024x768,1280x720,1280x800,1280x1024,1366x768-1920X1200 Equal resolution;

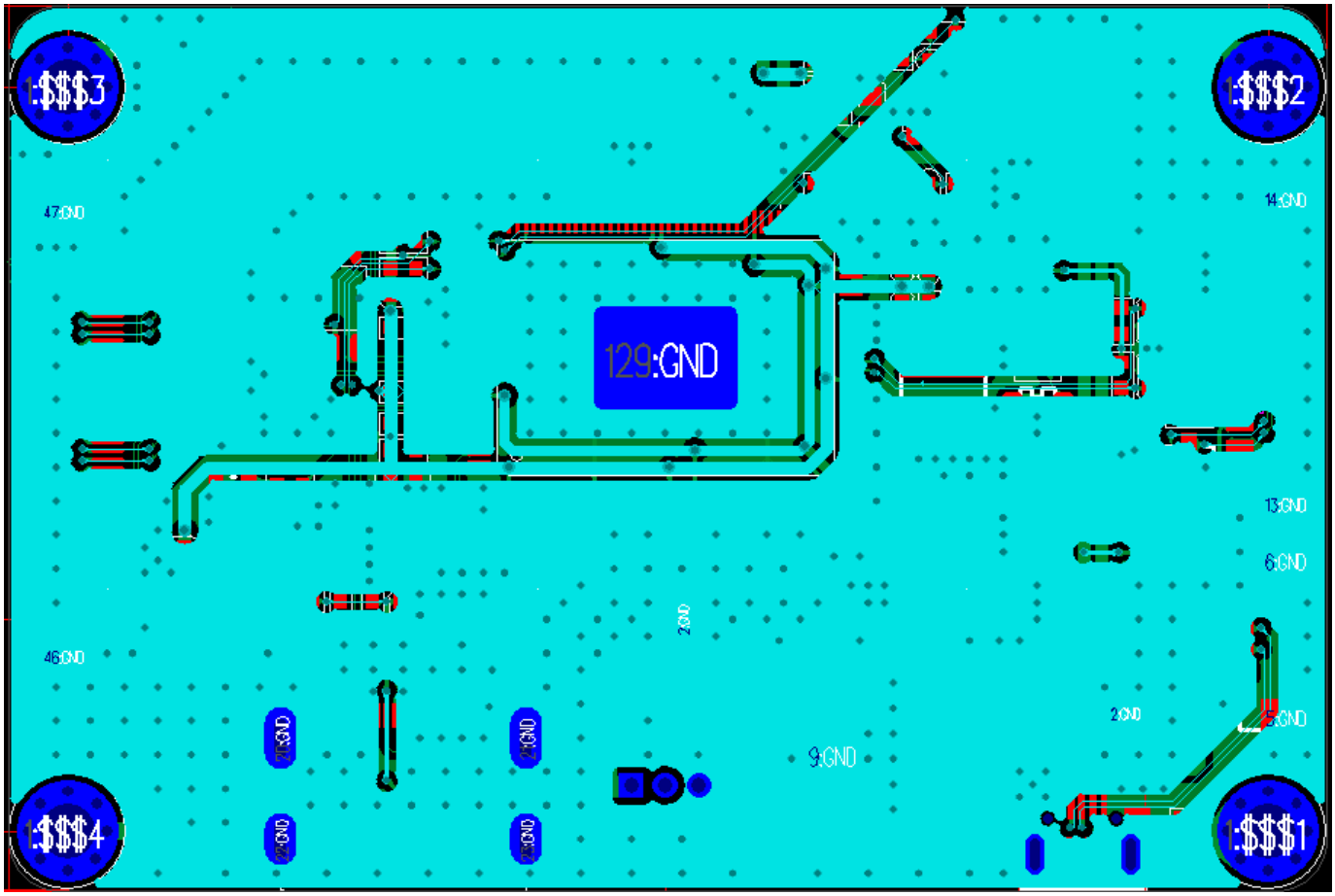
- Features: This board has the characteristics of simple operation and reliable performance.

**2.Layout and Dimensions**

TOP VIEW:




BOTTOM VIEW:




## 3.How to use

First, make sure the controller and related accessories are complete and correct. Please refer to the relevant connection diagrams and assembly precautions. Check the settings of the controller to ensure they are accurate (wrong settings may damage the display);

Prepare the signal source (HDMI); Connect all links;

Be familiar with how to operate and product functions.

### 4.Precautions for use

This control panel is suitable for

320x240,480x272,800x480,800x600,1024x600,1024x768,1280x720,1280x800,1280x1024,1366x768-1920X1200Equal resolutionTFTFor LCD display solutions, the following issues need to be noted:

### 4.1Preparation

Understand the component configuration of the entire system in advance, prepare the connecting devices, understand the installation dimensions, assembly layout, etc. Work according to the guidance of the system connection diagram. The following are some necessary preparations for reference:

（1） LCD screen: This control panel is suitable for power supply3.3Vor5V, the interface isLVDSLCD screen.

（2） Control panel: When touching the control panel, be careful to avoid static electricity to avoid damaging components. Confirm that the control panel settings fully meet the requirements of the display. （3) LCD screen connection components: Different LCD screens may use different connectors and have different pin signal arrangements.

(4) Inverter: LCD screens without built-in inverters require optional inverters, and the matching inverter should be selected according to the backlight parameters of the LCD screen.

（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 andOSDMenu adjustment.7）OSDAdjustment board connection cable: This cable is generally required to be1mWithin.

（8）HDMISignal standard cable: This cable is very important to the display quality and requires the use of high-quality shielded cables.

(9)power supply:DCseat12VDC power supply orUSB Micro 5VPower supply, requires a stable power supply. The power supply power depends on the LCD screen and the inverter. Generally speaking,2AThe power supply can meet the high brightness orLED 1000Brightness determines the demand of LCD screens. Power fluctuations can affect the life of the backlight, and may also affect the display quality and even damage the product.

## 4.2Power safety

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

4.3Electromagnetic Interference

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

4.4Grounding

PCBThe mounting hole is connected to the ground by default, and it can be disconnected by changing the grounding resistance.

4.5Controller Installation

When installing this controller, it is recommended that the component surface should be kept at least10mmHigh space, the other side at least maintain5mmAlso pay attention to: electrical insulation; good grounding; prevention of electromagnetic interference; reasonable cable layout.

It is important to note 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 will generate relatively high heat, so attention should be paid to heat dissipation.

4.6Other issues that may affect system security and system performance

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

**5.Connection and Operation**

5.1connect

Connect and use:

1)Backlight andledBacklight driver: connects the LCD backlight to theledDriver output,

2) LVDSSignal display screen: Connect the signal cable directly to the corresponding interface on the controller and the other end to the LCD screen;

3) OSDFunction control: Use cable toOSDThe regulator board is connected to the controllerOSDport;

4) HDMICables and controllers,HDMIConnect one end of the cable to the controllerHDMIport, the other end of the cable is connected toPCGraphics card output;

5)Power supply and controller:USB Micro 5VPower supply to the controllerUSB MicroPower input port;

6)Display power switch: throughOSDAdjustment board to achieve.

## 5.2 PC set up

Although this controller is designed to accommodate a wide range of signals, it is recommended to optimize the display signal.PCThe display refresh rate is set to

60Hz——This will not easily cause the screen to flicker. It is best to set the resolution to match the LCD screen.

5.3Adjustment Operation

After the system is connected and working properly, you canOSDAfter adjustment, the parameters will be automatically stored after exiting the menu.

5.4Feature Points

5.5.1Test Points

| Logo | use way | Minimum | typical | maximum | unit | Ripple | Remark |
|---|---|---|---|---|---|---|---|
| 12V | 12VTest Points | 10.8 | 12 | 13.2 | V | 400mV | By external module Decide |
| 5V | 5VTest Points | 4.75 | 5 | 5.25 | V | 200mV | |
| 3.3V | 3.3VTest Points | 3.13 | 3.25 | 3.46 | | 150mV | |
| 1.8V | 1.8VTest Points | 1.70 | 1.75 | 1.85 | V | 100mV | |
| GND | GND | - | - | - | V | - | |
| BL-EN | Backlight Enable | 0.1 | - | 4.5 | V | - | |
| BL-PWM | BacklightPWM | 0.1 | - | 4.5 | V | - | |

5.5Interface Description

5.6.1Interface Overview

| interface | use | Connector Description | Remark |
|---|---|---|---|
| CN1 | 12VDC power input | 3P,2.0Pitch, single row,180°, socket | |
| CN3 | USB Micro 5Venter | USB Micro 5Venter | |
| CN12 | HDMIenter | HDMI-19pin,90degrees, Taiwan socket | HDMIenter |
| CN7 | OSDAdjustment keyboard + infrared control interface | 12P,1.25Pitch, single row,90°, socket (molex) | |
| CN16 | LVDS-FFC0.5mm-45pin | LVDS-40PIN,default8bitOutput | |
| CN20 | Backlight power supply and backlight control interface output | PH2.0MM-6PIN | |
| R2/R52 | LCD screen power supply selection | R52Short circuit3.3V,R2Short circuit5V | default3.3V |

5.6.2Input Interface

- Logo:CN1(defaultNC) Application:12VDC
- power input (defaultNC)
- type:3P,2.0Pitch, single row,180°, socket (JST/CVILUX),White
- Connectors:PH2.0mm-3PINDirect Plug
- Pin Definition

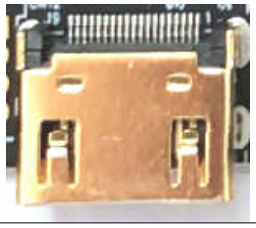
| Pinout | symbol | explain bright | Pinout | symbol | explain bright |
|---|---|---|---|---|---|
| 1 | +12V | +12VDC power input (±10%) | 2 | NC | NC |
| 3 | GND | land | | | |

- Logo:CN3
- use:USB Micro 5VPower input
- type:USB Micro

- Connectors:USB Micro
- Pin Definition

| Pinout | symbol | explain bright | Pinout | symbol | explain bright |
|---|---|---|---|---|---|
| 1 | 5V | +5VDC power input (±10%) | 2 | D- | D- |
| 3 | D+ | D+ | 4 | ID | defaultNC |
| 5 | GND | land | | | |

-
- Logo:CN12
- use:HDMISignal input
- type:HDMI-19PIN/4Pin plug/gold-plated copper/
- 90Connector:DC JACK（CVILUX）
- Pin Definition



| Pinout | symbol | explain bright | Pinout | symbol | explain bright |
|---|---|---|---|---|---|
| 1 | Data2+ | HDMIdata2+ | 2 | GND | land |
| 3 | Data2- | HDMIdata2- | 4 | Data1+ | HDMIdata1+ |
| 5 | GND | land | 6 | Data1- | HDMIdata1- |
| 7 | Data0+ | HDMIdata0+ | 8 | GND | land |
| 9 | Data0- | HDMIdata0- | 10 | Clock- | HDMIclock- |
| 11 | GND | land | 12 | Clock+ | HDMIClock+ |
| 13 | NC | NC | 14 | NC | NC |
| 15 | SCL | DDC I2Cclock | 16 | SDA | DDC I2Cdata |
| 17 | GND | land | 18 | +5V | |
| 19 | HPD | Hot plug DetectHot plug identification | | | |

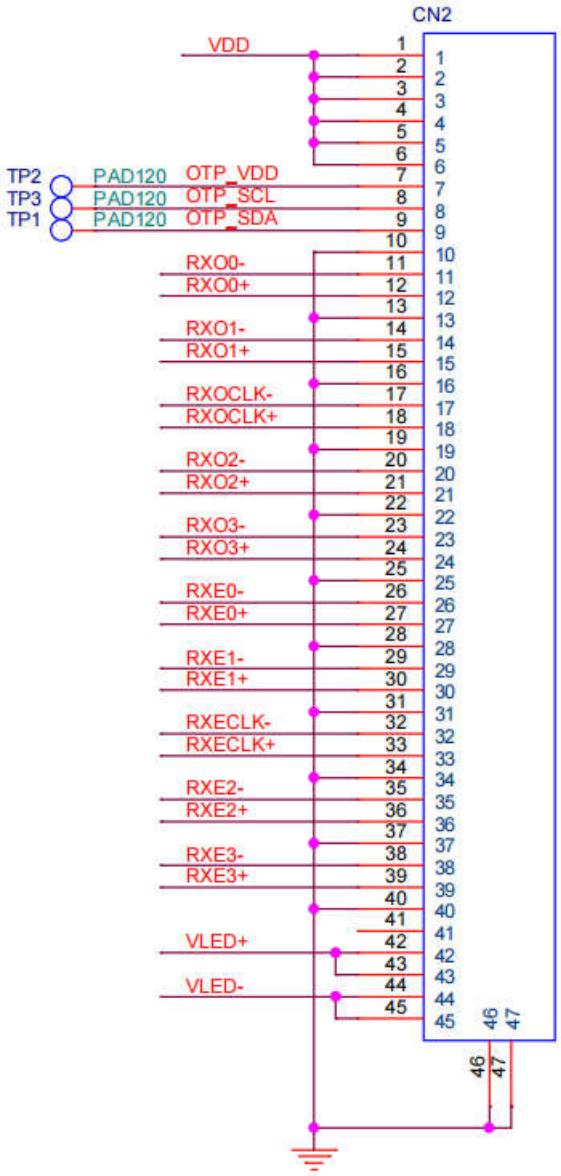
- Logo:CN7
- use:OSDFunction control connector
- type:MOLEX-12PIN,12P,1.25Pitch, single row,90°,socket(MOLEX), White
- connector: (MOLEX) or compatible
- Pin Definition

| Pinout | symbol | explain bright | Pinout | symbol | explain bright |
|---|---|---|---|---|---|
| 1 | NC | NC | 2 | GND | |
| 3 | VCC-5V | VCC-5V | 4 | I/O（Source） | Signal source selection shortcut key/exit keyK1 |
| 5 | I/O（Menu） | Menu Key K2 | 6 | Auto | NC/ReserveK3 |
| 7 | I/O（Left） | Left Adjustment KeyK4 | 8 | I/O（Right） | Right Adjustment KeyK5 |
| 9 | GND | land | 10 | LED_GRN | Green indicator light |
| 11 | LED_RED | Red indicator light | 12 | I/O（Power） | Power buttonK6 |

5.6.3 LVDSOutput Interface

5.6.5 LVDS-40PINOutput Interface

- Logo:CN16
- use:LVDSOutput Interface default8bitOutput
- Connector/Type: Upper Contact,FFC-0.5mm-40pinor compatible, gold-plated/white pin
- definition




**6.Technical Parameters**

| | | | | |
|---|---|---|---|---|
| Product Model | | YD2680HU-V12Version:V0 | | |
| Dimensions | | 78mm×52.3mm×13.5mm（L×W×H） | | |
| Display Color | | twenty fourBit(3×8,16.7M) | | |
| Display screen interface | | LVDS | | |
| Control scope | | 480×272~1920×1200Equal resolutionLCD | | |
| Signal input | Input signal type | HDMI | | |
| | Input signal range | HDMIInput range | PC（VGA / HDMI)Highest1920×1200 | |
| Supported input signal formats | | Reference AppendixA,appendixB | | |
| Supply voltage | | Minimum:4.8V | Nominal:5V | maximum:5.5V |
| Working current Note | | Minimum:0.1A | Nominal:0.3A | maximum:0.5A |

| | |
|---|---|
| Standby power | <0.8W |
| Display voltage | 3.3V/5VJumper selectable |
| Maximum display load capacity (normal temperature) | 1.8A@3.3V,2.5A@5V, |
| User Interface | VisualizationOSDUser Interface |
| Communication interface | Digital buttons, infraredIR |
| Operating temperature range | - 20°C～80°C;－30°C～90°C (Except main chip) |
| Operating humidity range | 10~95%RH（40°C,95%RH） |
| Storage temperature range | - 40°C～90°C |
| Storage humidity range | 10~100%RH |
| Working environment atmospheric pressure range | 70kPa~106kPa |
| MTBF | > 100000Hour |

Note:against7inch

**7.Display Adjustment**

7.1Menu Structure

| Main Menu (Main menu) | Submenu (Submenu) | | Reset (Factory Reset) | Description (describe) |
|---|---|---|---|---|
| | Backlight brightness (BackLight) | 0~100 | 100 | Note: Some screens may not support bright Degree adjustment |
| | Signal brightness (Brightness) | 0~100 | 50 | |
| | Contrast (Contrast) | 0~100 | 50 | |
| | Color temperature (Color Temp) | 6500K | 6500K | Input onlyVGAVisible |
| | | 9300K | | Input onlyVGAVisible |
| | | user(User) | | Input onlyVGAVisible at times.RGB Adjustable, range is0~255 |
| Picture Adjustment (Adjust) | Automatic Adjustment (AutoConfig) | | | Input onlyVGAVisible |
| | Horizontal position (H Position) | 0~100 | 50 | Input onlyVGAVisible |
| | Vertical position (V Position) | 0~100 | 50 | Input onlyVGAVisible |
| | Phase (Phase) | 0~63 | indefinite | Input onlyVGAVisible |
| | clock(Clock) | 0~100 | 50 | Input onlyVGAVisible |
| menu(OSD) | language(Language) | Simplified Chinese/Englishwait10Seed Country Home Language | English | 10National languages |
| | Horizontal position (H Position) | 0~100 | 50 | |
| | Vertical position (V Position) | 0~100 | 50 | |
| | time(OSD Timeout) | 5~60 | 10 | Menu disappearance time setting when no operation is performed |
| | transparent(Transparent) | 1/2/3/4/5/6/7/close(Off) | close | When the selection is7The highest transparency is When Off is selected (Off) Brightness is0 |

| | | | | |
|---|---|---|---|---|
| Function(Function) | Reset (Reset) | | | |
| | Display Scale(Display Ratio) | 16:9/4:3/AUTO | | |
| | Blue Screen (Blue Screen) | open(On)/close(Off) | close(Off) | |
| | Clarity (Sharpness) | 0~100 | 50 | |
| | Flip (Rotation) | 0-3 | 0 | Image flip up, down, left, right (Need to confirm whether the screen supports it) |
| sound(Sound | volume (Volume) | 0~100 | 50 | |
| | Mute (Mute) | Off/on | off | |

## 7.2Instructions

### 7.2.1Button Description:

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 |

Infrared button instructions (optional remote control)

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

7.2.2Indicator 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.

7.2.3Menu operation method:

-according to"Menu”Press to bring up the main menu, then pressMenukey to enter the submenu;

-according to"Left”/“Right”Key to switch between main menu information and submenu items;

-according to"Menu”Go to the Adjustment Options and selectLeft”/“Right”Adjust the parameters in each adjustment option.

7.2.4Power management and indicator light function description:

-When the signal is working properly, the keypad indicator light is green.D1is red,D2is green.

-When you pressPowerWhen the key is pressed, the system enters standby mode and the keypad indicator light turns red.D1normal,D2Not lit.

-When there is no signal, the keypad indicator light is red.D1is red,D2Not lit.

-When no signal lasts15sAfter that, the system will enter the power saving mode, and the keypad indicator light will be red.D1is red,D2 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**

## 8.1Possible 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.

Controllers (such as jumpers,PCSignal settings);

Display (consider controller, signal cables, connections, display,PCSignal settings);

Backlight (related to the controller, cables, backlight tube);

Cables (such asHDMIWire);

Microcomputer system (display settings such as refresh rate, etc.);

## 8.2No display

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

## 8.3Image location

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

## 8.4Abnormal image display

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

Inconsistency between the graphics card's refresh rate, resolution setting, and scanning mode and the controller's requirements may result in abnormal image display size, image rolling, flickering, or even no display.

The quality of the cables connecting the display can also cause display anomalies.

The quality of the signal cable directly affects the quality of the input signal and the anti-interference ability of the input end. If there are shadows on the image, it is very likely caused by the poor quality of the signal cable.

If there is not an appropriate distance between the backlight and the display signal cable, it may affect the LCD screen's horizontal synchronization signal, and its impact can be seen directly in the display.

## 8.5Backlight

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.

## 8.6Other faults

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

**appendixAsupport HDMIInput signal mode list**

| model | Resolution | Field frequencyHz] | Line frequencykHz] | clock[MHz] | Synchronous mode | 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 |

**appendixBList of supported video input signal modes**

| Input image format | Display image parameter description | | | | | |
|---|---|---|---|---|---|---|
| | Interlacing ratio | Scan lines | Line frequencykHz | Field frequencyHz | Aspect Ratio | Remark |
| 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 |

Approval Records

| | | |
|---|---|---|
| Design department: R&D department | | Type: YD2680HU-V12/HDMI high-definition display driver board |
| Written by: zs | | Date of writing: 2021.05.18 |
| Hardware Review: zy | | Review Date: |
| Firmware Review: h | | Review Date: |
| approve: | | Approval Date: |

Modification Record

| date | Version Number | page number | Modifications | Modified by | Review and Signature |
|---|---|---|---|---|---|
| 2021-05-18 | A0 | all | New compilation | ZlUT | |
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