

# **FBD-25VHD**

## **AD Board User Manual (Preliminary)**

**Version:** V21

**Document No:** doc-FBD25VHD-1130911

**PCB Bare Board:** PB25VHD64v21

*\*The content of this document is subject to be change without notice*

# Ordering Information

Part Number: FBD25VHD-[abc](#)

- [ab](#) : Power Adapter Input

12: DC-12V

24: DC-24V

- [c](#) : Hardware Function Specification

S Factory Standard (**w/o Audio AMP & Brightness-VR**)

A Audio AMP Installed

B Brightness-VR Installed

D Audio AMP & Brightness-VR Installed

# Table of Contents

|                                                                 |    |
|-----------------------------------------------------------------|----|
| 1. General Information .....                                    | 4  |
| 1-1. General Features.....                                      | 4  |
| 2. Dimension of Driving Board .....                             | 5  |
| 2-1. Driving Board .....                                        | 5  |
| 3. Pin assignment of Connector .....                            | 6  |
| 3-2. DC Power Jack-(J1)/Side Entry .....                        | 6  |
| 3-3. Substitute of DC Power Jack-(W1)/Side Entry (option) ..... | 6  |
| 3-4. DP Port-(J3)/Side entry .....                              | 6  |
| 3-5. HDMI Port-(J2)/Side entry.....                             | 7  |
| 3-6. VGA Port-(J4)/Side entry.....                              | 7  |
| 3-7. Substitute of VGA port-(W6)/Side entry (option) .....      | 7  |
| 3-8. Command for OSD Menu Control-(UART1)/Top Entry .....       | 7  |
| 3-9. Keypad for OSD Menu Control-(W4)/Side Entry.....           | 8  |
| 3-10. Backlight Connector-(W2)/Side entry.....                  | 9  |
| 3-12. Speaker Connector-(W7)/Top Entry (option) .....           | 10 |
| 3-13. Stereo Line-In Port-(J6)/Side Entry (option) .....        | 11 |
| 4. Factory Preset VESA Timings Mode .....                       | 11 |
| 5. OSD Function Description .....                               | 12 |
| 5-1. OSD-Main-Menu drawing: .....                               | 12 |
| 5-2. The item Description of OSD-Main-Menu: .....               | 12 |
| 5-3. OSD-Option-Menu drawing: .....                             | 13 |
| 5-4. The item Description of OSD-Option-Menu: .....             | 13 |

# 1. General Information

FBD-25VHD is designed to support various TFT-LCDS up to WUXGA resolution by BIOS option.

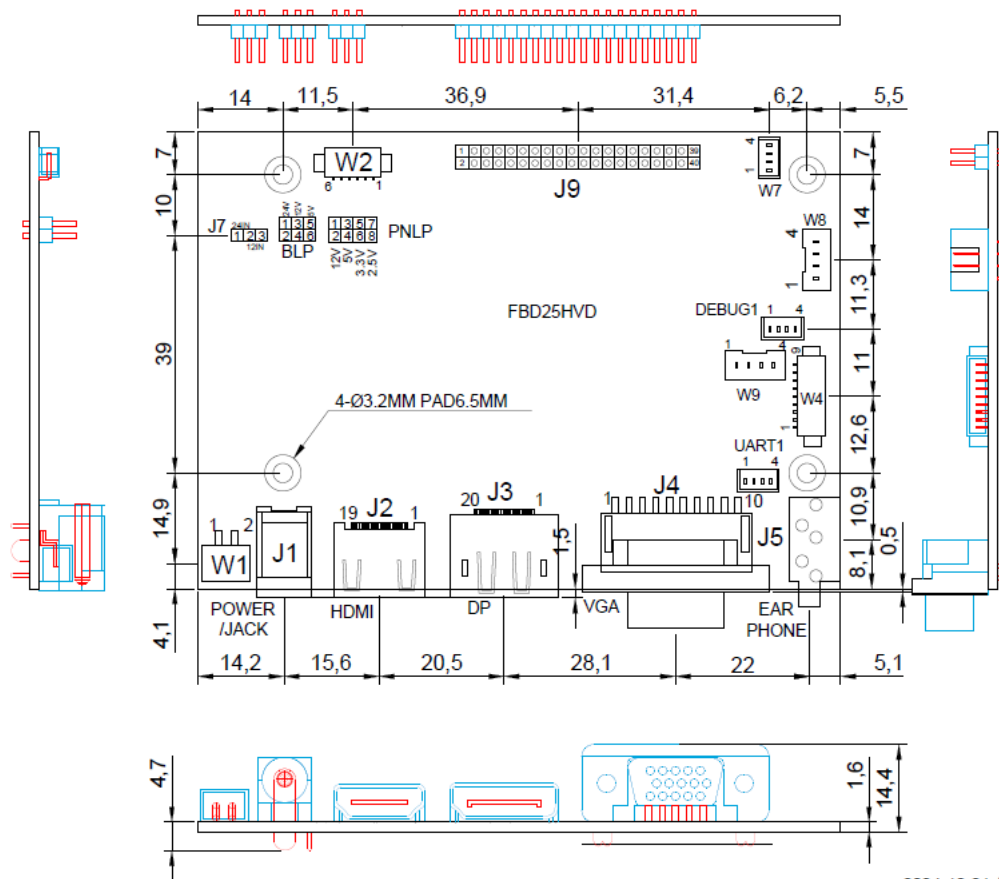
## 1-1. General Features

|                          |                 |                                                   |
|--------------------------|-----------------|---------------------------------------------------|
| Acceptable Graphic Input |                 | VGA : D-Sub-15P, Max. 1920*1200@60Hz              |
|                          |                 | HDMI : Version 1.4a                               |
|                          |                 | DP: DisplayPort 1.2                               |
| Panel                    | Interface       | LVDS 6/8bit, single/dual channel, Max. 1920x1200. |
|                          | VCC Power       | 2.6V/3.3V/5V/12V selectable by jumper (PNLP).     |
|                          | Backlight Power | 5V/12V/24V selectable by jumper (BLP).            |
| OSD                      | Keypad          | 4/5 keys.                                         |
|                          | UART(5V)        | Command Stream.                                   |
| DDC Interface            |                 | VESA DDC2B/CI                                     |
| Power Source             |                 | DC12V for FBD25VHD-12                             |
|                          |                 | DC24V for FBD25VHD-24                             |
| Power Consumption        |                 | Standby Mode : 0.24W (w/o TFT panel).             |
|                          |                 | Continue Mode: 2.4W (w/o TFT panel).              |
| Operation Temperature    |                 | 0~60 °C.                                          |

## 2. Dimension of Driving Board

### 2-1. Driving Board

Dimension :105.5 mm(L) ×75 mm(W) ×17.5 mm(H)



2024-10-21 修正

### 3. Pin assignment of Connector

#### 3-1. Connector Overview

■ : An alternative item.

| Pin   | Description                        | Remarks                     |
|-------|------------------------------------|-----------------------------|
| J1    | DC Power Jack                      | DC-Jack- Ø2.0mm.            |
| W1    | Substitute of DC Power Jack-J1     | Wafer 2 Pin, 2.0mm          |
| J3    | DP Port                            |                             |
| J2    | HDMI Port                          | Receptacle Type-A.          |
| J4    | VGA Port                           | Dsub-15 Pin, Female.        |
| W6    | Substitute of VGA Port-J4 (option) | Wafer 10 Pin, 2.0mm.        |
| W2    | Backlight Connector                | Wafer 6 Pin, 1.25mm.        |
| W4    | Keypad for OSD Menu Control        | Wafer 9 Pin, 1.25mm.        |
| UART1 | Command for OSD Menu Control       | Wafer 4 Pin, 1.25mm.        |
| J9    | LVDS Dual Link Connector           | Header 20X2 Pin, 2.0mm, DIP |
| J6    | Stereo Line-In Port (option)       | Jack- Ø3.5mm.               |
| W7    | Speaker Connector (option)         | Wafer 4 Pin, 1.25mm.        |
| W8    | Line In Connector                  | Wafer 4 Pin, 2.0mm.         |

#### 3-2. DC Power Jack-(J1)/ Ø2.0mm ,Side Entry

| Pin NO | Signal     | I/O | Description              |
|--------|------------|-----|--------------------------|
| 1      | Center Pin | I   | Ext. DC 12V or 24V input |
| 2      | GND        | P   | Ground                   |

#### 3-3. Substitute of DC Power Jack-(W1)/2P\_2.0mm,Side Entry

| Pin NO | Signal    | I/O | Description              |
|--------|-----------|-----|--------------------------|
| 1      | GND       | P   | Ground                   |
| 2      | Power pin | I   | Ext. DC 12V or 24V input |

**Note:** There is only one connector will be existed, either one J1 or W1

#### 3-4. DP Port-(J3)/Side entry

### 3-5. HDMI Port-(J2)/Side entry

### 3-6. VGA Port-(J4)/Side entry

### 3-7. Substitute of VGA port-(W6)/10P\_2.0mm,Side entry

| Pin NO | Signal | I/O | Description                |
|--------|--------|-----|----------------------------|
| 1      | Red    | I   | Red analog input           |
| 2      | Green  | I   | Green analog input         |
| 3      | Blue   | I   | Blue analog input          |
| 4      | GND    | P   | Ground                     |
| 5      | HSYNC  | I   | Horizontal Sync            |
| 6      | VSNC   | I   | Vertical Sync              |
| 7      | GND    | P   | Ground                     |
| 8      | SCL    | I   | Serial clock input for DDC |
| 9      | SDA    | I/O | Serial Data Line for DDC   |
| 10     | VGA 5V | I   | +5V input for EDID reading |

**Note:** There is only one connector will be existed, either one J4 or W6.

### 3-8. OSD Menu Control-(UART1)/4P-1.25mm,Top Entry

Baud rate: 4800/N/8/1

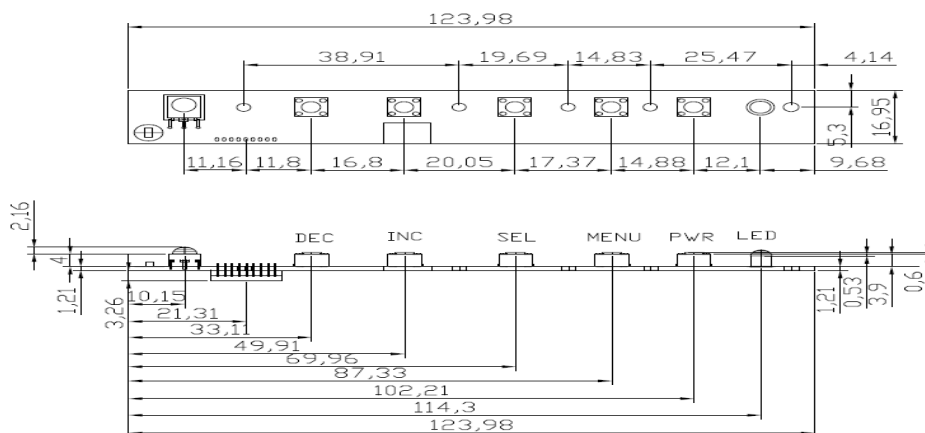
| Pin NO | Signal | I/O | Description      |
|--------|--------|-----|------------------|
| 1      | GND    | P   | Ground           |
| 2      | RX     | I   | Logical level 5V |
| 3      | TX     | O   | Logical level 5V |
| 4      | Power  | O   | DC 5V output     |

Please, contact with your sales person for detail commands list.

### 3-9. OSD keypad Pins--(W4)/9P\_1.25mm,Side Entry

| Pin NO | Assignmen<br>t | I/<br>O | Description     |
|--------|----------------|---------|-----------------|
| 1      | LED-Green      | -       | Power Indicator |
| 2      | NC             | -       | Reserved        |
| 3      | NC             | -       | Reserved        |
| 4      | GND            | P       | Ground          |
| 5      | Power key      | I       | Active low      |
| 6      | Menu key       | I       | Active low      |
| 7      | Hot key        | I       | Active low      |
| 8      | Up key         | I       | Active low      |
| 9      | Down key       | I       | Active low      |

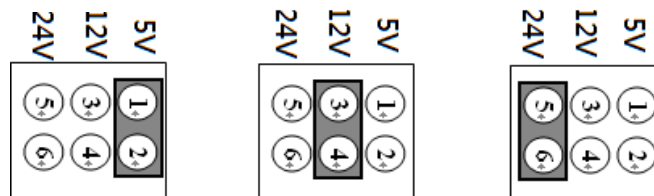
- Power key : As switch-key to switch video channel by hold less than 1 Sec.  
As power-key to entry Standby mode by hold more than 2 Sec,  
Then push once again to resume display.
- Menu Key : As menu-on key while menu-off state.  
As item-selection key while menu-on state.
- Hot Key : As auto-adjust key or dimming key, it can be defined in Option  
menu.
- Inc Key : As value increase or enter.
- Dec Key : As value decrease or enter.
- LED-Green : Normally on for power-on. Flashing in 1 Sec interval during standby  
Mode.



### 3-10. Backlight Connector-(W2)/6P\_1.25mm,Side entry

| Pin NO | Signal        | I/O | Description                   |
|--------|---------------|-----|-------------------------------|
| 1      | Power         | O   | Refer to the <b>BLP</b> Power |
| 2      | Power         | O   | Refer to the <b>BLP</b> Power |
| 3      | GND           | P   | Ground                        |
| 4      | GND           | P   | Ground                        |
| 5      | Backlight     | O   | Logical level 5V, Active High |
| 6      | Backlight-Adj | O   | Logical level 5V, Freq. 300Hz |

#### \*The BLP power Jumper:



| Voltage selection for Backlight power | Description    | Note |
|---------------------------------------|----------------|------|
| DC 5V                                 | Pin1 - 2 short |      |
| DC 12V                                | Pin3 - 4 short |      |
| DC 24V                                | Pin5 - 6 short | Note |

**Note:** The DC24V of Backlight power only available for AD-board FBD-25VHD-24x.

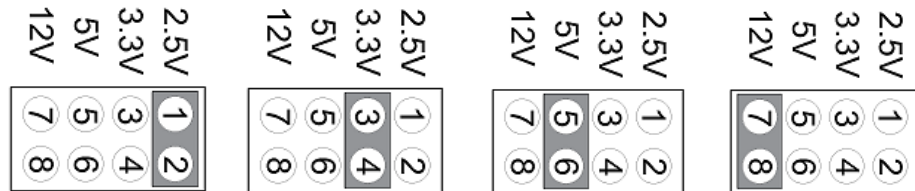
### 3-11. LVDS Dual Connector-(J9)/PH20X2Pin, 2.0mm, DIP, Top entry

| Pin | Signal                | Pin | Signal                |
|-----|-----------------------|-----|-----------------------|
| 1*  | Backlight Power (BLP) | 2*  | Backlight Power (BLP) |
| 3   | Backlight-Enable      | 4   | Backlight-Adjust      |
| 5   | GND                   | 6   | GND                   |
| 7*  | Panel VCC (PNLP)      | 8*  | Panel VCC (PNLP)      |
| 9*  | Panel VCC (PNLP)      | 10* | Panel VCC (PNLP)      |
| 11  | GND                   | 12  | GND                   |
| 13  | TXA0N                 | 14  | TXA0P                 |
| 15  | TXA1N                 | 16  | TXA1P                 |
| 17  | TXA2N                 | 18  | TXA2P                 |



|    |         |    |         |
|----|---------|----|---------|
| 19 | TXACLKN | 20 | TXACLKP |
| 21 | TXA3N   | 22 | TXA3P   |
| 23 | GND     | 24 | GND     |
| 25 | TXB0N   | 26 | TXB0P   |
| 27 | TXB1N   | 28 | TXB1P   |
| 29 | TXB2N   | 30 | TXB2P   |
| 31 | TXBCLKN | 32 | TXBCLKP |
| 33 | TXB3N   | 34 | TXB3P   |
| 35 | GND     | 36 | GND     |
| 37 | NC      | 38 | NC      |
| 39 | NC      | 40 | NC      |

### \*The PNLP power Jumper:



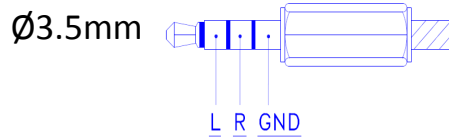
| Voltage selection for Panel power | Description    | Note |
|-----------------------------------|----------------|------|
| DC 2.5V                           | Pin1 - 2 short |      |
| DC 3.3V                           | Pin3 - 4 short |      |
| DC 5V                             | Pin5 - 6 short |      |
| DC 12V                            | Pin7 - 8 short |      |

**Warning!!! If the voltage setting did not fits to the power of panel. It may cause fatal damage to the panel display.**

### 3-12. Speaker Connector-(W7)/4P\_1.25mm,Top Entry (option)

| Pin NO | Signal |
|--------|--------|
| 1      | SPK L- |
| 2      | SPK L+ |
| 3      | SPK R+ |
| 4      | SPK R- |

### 3-13. Stereo Line-In Port-(J6)/Side Entry (option)



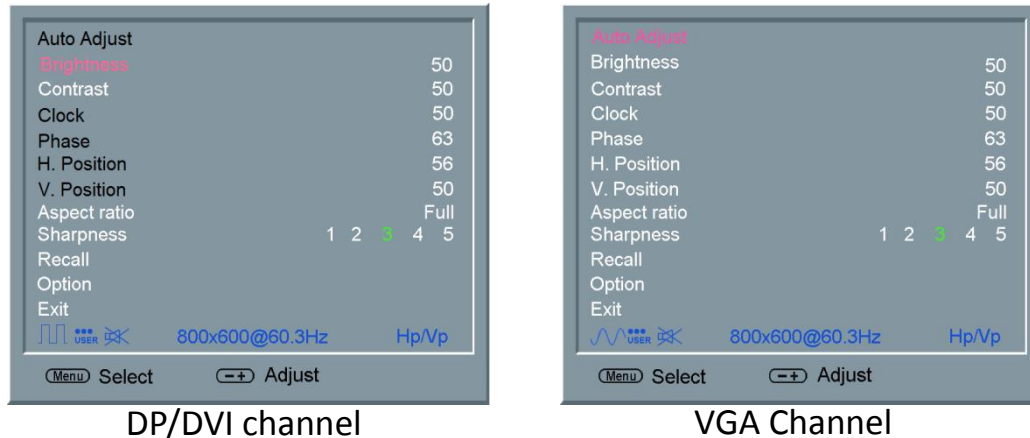
## 4. Factory Preset VESA Timings Mode

| Item | Resolution   | H Freq.(KHz) | V Freq.(Hz) |
|------|--------------|--------------|-------------|
| 1    | 640*350@70   | 31.469       | 70.087      |
| 2    | 640*480@60   | 31.469       | 59.940      |
| 3    | 640*480@72   | 37.861       | 72.809      |
| 4    | 640*480@75   | 37.500       | 75.000      |
| 5    | 720*400@70   | 31.469       | 70.087      |
| 6    | 800*600@56   | 35.156       | 56.250      |
| 7    | 800*600@60   | 37.879       | 60.317      |
| 8    | 800*600@72   | 48.077       | 72.188      |
| 9    | 800*600@75   | 46.875       | 75.00       |
| 10   | 1024*768@60  | 48.363       | 60.004      |
| 11   | 1024*768@70  | 56.476       | 70.069      |
| 12   | 1024*768@72  | 58.038       | 71.918      |
| 13   | 1024*768@75  | 60.023       | 75.029      |
| 14   | 1280*70@50   | 36.91        | 49.82       |
| 15   | 1280*720@60  | 44.62        | 59.81       |
| 16   | 1280*1024@60 | 63.980       | 60.000      |
| 17   | 1280*1024@70 | 74.882       | 69.853      |
| 18   | 1280*1024@75 | 79.976       | 75.025      |
| 19   | 1360*768@60  | 47.72        | 59.799      |
| 20   | 1440*900@60  | 55.935       | 59.887      |
| 21   | 1680*1050@60 | 65.3         | 60          |
| 22   | 1920*1080@50 | 56.25        | 50.00       |
| 23   | 1920*1080@60 | 66.6         | 60          |
| 24   | 1920*1200@60 | 72.72        | 60          |

## 5. OSD Function Description

\*\*\* If the item within OSD window shows up with color black, it denotes non selectable in current OSD action.

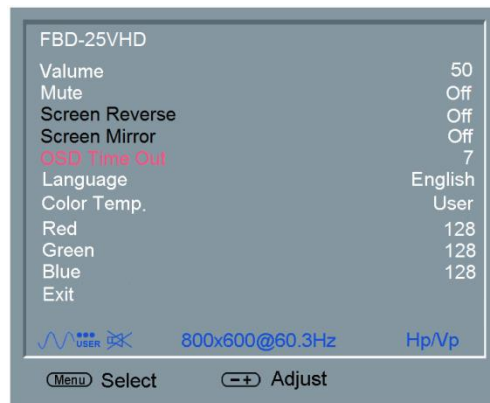
### 5-1. OSD-Main-Menu drawing:



### 5-2. The item Description of OSD-Main-Menu:

| DP/DVI              | VGA                | Description                                          |
|---------------------|--------------------|------------------------------------------------------|
|                     | <b>Auto adjust</b> | Available only as image is full screen.              |
| <b>Brightness</b>   | <b>Brightness</b>  | Adjust Brightness by Inc/Dec. key                    |
| <b>Contrast</b>     | <b>Contrast</b>    | Adjust contrast by Inc/Dec key.                      |
|                     | <b>Clock</b>       | Adjust image focus by Inc/Dec key.                   |
|                     | <b>Phase</b>       | Adjust phase alignment of clock by Inc/Dec key.      |
|                     | <b>H.position</b>  | Adjust Horizontal position of image by Inc/Dec key.  |
|                     | <b>V.position</b>  | Adjust Vertical position of image by Inc/Dec key.    |
| <b>Aspect ratio</b> | <b>Full/Origen</b> | Adjust image 16:9 to 4:3 by Inc/Dec key.             |
| <b>Sharpness</b>    | <b>Sharpness</b>   | Adjust Sharpness of image by Inc/Dec key.            |
| <b>Recall</b>       | <b>Recall</b>      | Re-load default value including the OSD-Option-Menu. |
| <b>Option</b>       | <b>Option</b>      | Entry to the OSD-Option-Menu.                        |
| <b>Exit</b>         | <b>Exit</b>        | Quit OSD                                             |

### 5-3. OSD-Option-Menu drawing:



### 5-4. The item Description of OSD-Option-Menu:

| Function              | Description                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Volume</b>         | 0~100, only available for internally AMP.                                                                   |
| <b>Mute</b>           | “On”: Speaker is mute, only available for internally AMP.                                                   |
| <b>Screen Reverse</b> | “On”: The screen image is upside down.<br>Only available if panel has support this function.                |
| <b>Screen Mirror</b>  | “On”: The left and right of screen image is opposite.<br>Only available if panel has support this function. |
| <b>Color temp.</b>    | Provides 9300K, 7500K, 6500K, 5800K, SRGB, USER (default).                                                  |
| <b>Red</b>            | The Red value Range is 0~255, default 128 in USER mode.<br>Only available if Color temp. is in USER mode.   |
| <b>Green</b>          | The Red value Range is 0~255, default 128 in USER mode.<br>Only available if Color temp. is in USER mode.   |
| <b>Blue</b>           | The Red value Range is 0~255, default 128 in USER mode.<br>Only available if Color temp. is in USER mode.   |
| <b>Exit</b>           | Return Main-Memu.                                                                                           |