

 \square Preliminary Specifications

■ Final Specifications

| Module | LCD Controller Board (AD Board) For eDP Display | | |
|------------------|---|--|--|
| Model Name | AD-0112 | | |
| Document Version | Rev.2.1 | | |

| Coutomer | |
|--|--|
| Approved by Date | |
| Notice : This Specification is subject to change without notice. | |

| Approved By | Prepared By | |
|-------------|-------------|--|
| Tony Chiu | Frank Kuo | |
| 2018/12/09 | 2018/12/09 | |







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Product Specification AD-0112

Revised History

| Version | Date | Revised Content/Summary | Page | Remark |
|---------|------------|--|------|--------|
| 0 | 2018/11/27 | First Edition | All | |
| 1 | 2018/12/6 | Final Specification was first issued. | All | |
| 2 | 2019/11/26 | Temperature Release | 4 | |
| 2.1 | 2019/12/9 | Modify D.Mini DISPLAY PORT 1.2 TO DISPLAY PORT 1.2 | 4 | |
| | | Modify Input Source Display Port 1.1a to 1.2 | 4 | |
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- A. TFT-LCD MODULE DRIVE BOARD.
- B. RESOLUTION UP TO 1920 x 1080 @ 60Hz
- C. HDMI 1.4a CONNECTOR INPUT
- D. DISPLAY PORT 1.2 CONNECTOR INPUT
- E. 1/2 LANE eDP INTERFACE OUTPUT TO PANEL
- F. OSD (On Screen Display) CONTROL MENU.
- G. SUPPORTING HDCP PROTOCOL (OPTIONAL).
- H. SUPPORTING DDC/CI PROTOCOL.

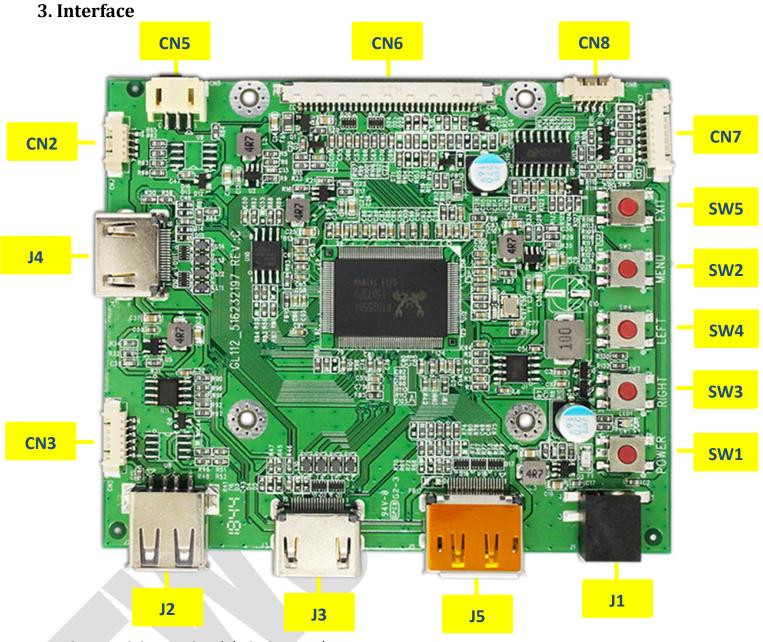
2. Specification

| Model | AD-0112 | | |
|--|--|--|--|
| Panel Interface | 1/2 lane eDP | | |
| Maximum Resolution | Up to WUXGA 1920x1080 8 bits per color , total 16.7M colors | | |
| Vertical Refresh Rate | WUXGA up to 75Hz | | |
| Input Source | HDMI 1.4a Display Port 1.2 | | |
| Audio Output | 1.6W+1.6W at 8 Ohm speaker | | |
| Dot Clock Maximum (Pixel clock) | 165 MHz | | |
| Power On/Off OSD Menu Adjust — Adjust + EXIT | | | |
| Board Dimension | 100 x 85 mm | | |
| Voltage for LCD Panel | 3.3V DC | | |
| Storage Temperature Limits | Temperature −40°C ~70°C | | |
| Operation Temperature Limits | its Temperature -10°C ~60°C Humidity: Less than 85% | | |

7WScreen®

Product Specification

AD-0112



- 3-1 J1: 2.0 mm DC Jack (DC 12V Input)
- 3-2 J2: USB Output (by passed TOUCH signal CN3 to J2)
- 3-3 J3: HDMI Connect (HDMI Signal Input)
- 3-4 J4: HDMI Connect (HDMI Signal Input)
- 3-5 J5: Display Port Connect (Display Port Signal Input)
- 3-6 CN2:5V Output
- 3-7 CN3: Input Port (for USB TOUCH signal through)
- 3-8 CN5: Color Type Selector
- 3-9 CN6: eDP Output
- 3-10 CN7: OSD Key Output Extend
- 3-11 CN8: Speaker Output
- 3-12 SW1,SW2,SW3,SW4,SW5: OSD Key On Board

Taiwan Screen Optronics Co., Ltd. TEL: 886-2-82275490 FAX: 886-2-32347264



| 1. VGA640×400 31.480 70 2. VGA640×480 31.649 60 3. VGA720×400 37.469 70 4. VESA 640×480 37.5 75 5. VESA 800×600 35.156 56.25 7. VESA 800×600 37.9 60 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 48.363 60 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×1024 63.981 60 17. VESA 1280×1024 79.977 75 19. VESA 140x900 59.9 60 20. VESA 1600x1200 75 60 21. VESA 1600x1200 81.3 65 23. | NO. | Description | H-Freq. (KHz) | V-Freq. (Hz) |
|---|-----|-----------------|---------------|--------------|
| 3. VGA720×400 37.469 70 4. VESA 640×480 37.862 72.809 5. VESA 640×480 37.5 75 6. VESA 800×600 35.156 56.25 7. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 x 768 60.3 75 15. VESA 1280 x 768 60.3 75 16. VESA 1280×1024 63.981 60 17. VESA 1280×1024 79.977 75 19. VESA 1440×900 79.977 75 21. VESA 1600×1200 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 87.5 70 24. VESA 1680×1050 65.3 60 | 1. | VGA640×400 | 31.480 | 70 |
| 4. VESA 640×480 37.862 72.809 5. VESA 640×480 37.5 75 6. VESA 800×600 35.156 56.25 7. VESA 800×600 37.9 60 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×1024 63.981 60 17. VESA 1280×1024 63.981 60 18. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 87.5 70 24. VESA 1680×1050 65.3 60 <t< td=""><td>2.</td><td>VGA640×480</td><td>31.649</td><td>60</td></t<> | 2. | VGA640×480 | 31.649 | 60 |
| 5. VESA 640×480 37.5 75 6. VESA 800×600 35.156 56.25 7. VESA 800×600 37.9 60 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 60.3 75 15. VESA 1280×768 60.3 75 16. VESA 1280×1024 63.981 60 17. VESA 1280×1024 79.977 75 19. VESA 1440×900 79.97 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 81.3 65 23. VESA 1600×1200 93.8 75 24. VESA 1680×1050 65.3 60 25. VESA 1680×1050 66.25 50 <td>3.</td> <td>VGA720×400</td> <td>37.469</td> <td>70</td> | 3. | VGA720×400 | 37.469 | 70 |
| 6. VESA 800×600 35.156 56.25 7. VESA 800×600 37.9 60 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×1024 63.981 60 17. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 81.3 65 23. VESA 1600×1200 93.8 75 24. VESA 1680×1050 65.3 60 26. VESA 1680×1050 74.9 75 <t< td=""><td>4.</td><td>VESA 640×480</td><td>37.862</td><td>72.809</td></t<> | 4. | VESA 640×480 | 37.862 | 72.809 |
| 7. VESA 800×600 37.9 60 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1600×1200 75 60 21. VESA 1600×1200 75 60 22. VESA 1600×1200 87.5 70 24. VESA 1680×1050 65.3 60 26. VESA 1920×1080 56.25 50 | 5. | VESA 640×480 | 37.5 | 75 |
| 8. VESA 800×600 48.077 72.188 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 81.3 65 23. VESA 1600×1200 87.5 70 24. VESA 1680×1050 65.3 60 25. VESA 1680×1050 65.3 60 26. VESA 1920×1080 56.25 50 <td>6.</td> <td>VESA 800×600</td> <td>35.156</td> <td>56.25</td> | 6. | VESA 800×600 | 35.156 | 56.25 |
| 9. VESA 800×600 46.875 75 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 × 768 47.8 60 15. VESA 1280 × 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 87.5 70 22. VESA 1600×1200 87.5 70 24. VESA 1600×1200 93.8 75 25. VESA 1680×1050 74.9 75 27. VESA 1920×1080 56.25 50 | 7. | VESA 800×600 | 37.9 | 60 |
| 10. VESA 1024×768 48.363 60 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 x 768 47.8 60 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 8. | VESA 800×600 | 48.077 | 72.188 |
| 11. VESA 1024×768 56.476 70 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 x 768 47.8 60 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 87.5 70 23. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 9. | VESA 800×600 | 46.875 | 75 |
| 12. VESA 1024×768 60.023 75 13. VESA 1152×864 67.5 75 14. VESA 1280 x 768 47.8 60 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1680x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 10. | VESA 1024×768 | 48.363 | 60 |
| 13. VESA 1152×864 67.5 75 14. VESA 1280 x 768 47.8 60 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 11. | VESA 1024×768 | 56.476 | 70 |
| 14. VESA 1280 x 768 47.8 60 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 12. | VESA 1024×768 | 60.023 | 75 |
| 15. VESA 1280 x 768 60.3 75 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 13. | VESA 1152×864 | 67.5 | 75 |
| 16. VESA 1280×960 60 60 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 14. | VESA 1280 x 768 | 47.8 | 60 |
| 17. VESA 1280×1024 63.981 60 18. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 81.3 65 23. VESA 1600×1200 87.5 70 24. VESA 1600×1200 93.8 75 25. VESA 1680×1050 65.3 60 26. VESA 1680×1050 74.9 75 27. VESA 1920×1080 56.25 50 | 15. | VESA 1280 x 768 | 60.3 | 75 |
| 18. VESA 1280×1024 79.977 75 19. VESA 1440×900 59.9 60 20. VESA 1440×900 75 75 21. VESA 1600×1200 75 60 22. VESA 1600×1200 81.3 65 23. VESA 1600×1200 87.5 70 24. VESA 1600×1200 93.8 75 25. VESA 1680×1050 65.3 60 26. VESA 1680×1050 74.9 75 27. VESA 1920×1080 56.25 50 | 16. | VESA 1280×960 | 60 | 60 |
| 19. VESA 1440x900 59.9 60 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 17. | VESA 1280×1024 | 63.981 | 60 |
| 20. VESA 1440x900 75 75 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 18. | VESA 1280×1024 | 79.977 | 75 |
| 21. VESA 1600x1200 75 60 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 19. | VESA 1440x900 | 59.9 | 60 |
| 22. VESA 1600x1200 81.3 65 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 20. | VESA 1440x900 | 75 | 75 |
| 23. VESA 1600x1200 87.5 70 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 21. | VESA 1600x1200 | 75 | 60 |
| 24. VESA 1600x1200 93.8 75 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 22. | VESA 1600x1200 | 81.3 | 65 |
| 25. VESA 1680x1050 65.3 60 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 23. | VESA 1600x1200 | 87.5 | 70 |
| 26. VESA 1680x1050 74.9 75 27. VESA 1920x1080 56.25 50 | 24. | VESA 1600x1200 | 93.8 | 75 |
| 27. VESA 1920x1080 56.25 50 | 25. | VESA 1680x1050 | 65.3 | 60 |
| | 26. | VESA 1680x1050 | 74.9 | 75 |
| 28. VESA 1920×1080 67.5 60 | 27. | VESA 1920x1080 | 56.25 | 50 |
| | 28. | VESA 1920x1080 | 67.5 | 60 |

Note: depends on panel



5-1 Power Input

Location – J1 : DC JACK D=2.0mm, 12V DC Input

5-2 USB Output (by passed TOUCH signal - CN3 to J2)

Location – J2: USB A TYPE

5-3 HDMI Input

Location – J3&J4:HDMI Connector

Pin Assign and Definition

| Pin No. | SYMBOL | Pin No. | SYMBOL | Pin No. | SYMBOL |
|---------|-------------|---------|-------------|---------|----------|
| 1 | HDMI_DATA2+ | 8 | GND | 15 | HDMI_SCL |
| 2 | GND | 9 | HDMI_DATA0- | 16 | HDMI_SDA |
| 3 | HDMI_DATA2- | 10 | HDMI_CLK+ | 17 | GND |
| 4 | HDMI_DATA1+ | 11 | GND | 18 | HDMI_5V |
| 5 | GND | 12 | HDMI_CLK- | 19 | HDMI_HPD |
| 6 | HDMI_DATA1- | 13 | CEC | | |
| 7 | HDMI_DATA0+ | 14 | NC | | |

5-4 Display Port Input

Location – J5 :Display Port Connector

Pin Assign and Definition

| Pin No. | SYMBOL | Pin No. | SYMBOL | Pin No. | SYMBOL |
|---------|--------|---------|--------|---------|---------|
| 1 | LANE3- | 8 | GND | 15 | AUX_CHP |
| 2 | GND | 9 | LANE1+ | 16 | DP DET |
| 3 | LANE3+ | 10 | LANEO- | 17 | AUX_CHN |
| 4 | LANE2- | 11 | GND | 18 | HPD |
| 5 | GND | 12 | LANE0+ | 19 | RETURN |
| 6 | LANE2+ | 13 | GND | 20 | DP_5V |
| 7 | LANE1- | 14 | GND | | |





5-5 5V Output

Location - CN2: 4PIN wafer pitch 1.25mm 90D

Pin assign and definition

| Pin No. | SYMBOL |
|---------|--------|
| 1 | +5V |
| 2 | +5V |
| 3 | GND |
| 4 | GND |

5-6 Input Port (for USB TOUCH signal through)

Location – CN3: 6PIN wafer pitch 1.25mm 90D

Pin assign and definition

| Pin No. | SYMBOL | Pin No. | SYMBOL |
|---------|--------|---------|--------|
| 1 | NC | 4 | USB D- |
| 2 | GND | 5 | USB 5V |
| 3 | USB D+ | 6 | NC |

5-7 Color Type Selector

Location - CN5: 3PIN (with 2P Jumper)

Pin2, Pin3 short select color mode (2.0mm Jumper)

Pin2, Pin1 short or empty(8bits)

5-8 eDP OUTPUT

Location - CN6: WF13-423-3033

Pin Assign and Definition

| Pin No. | SYMBOL | Pin No. | SYMBOL | Pin No. | SYMBOL |
|---------|-------------------|---------|--------|---------|----------------|
| 1 | +12V | 11 | NC | 21 | D1- |
| 2 | +12V | 12 | HPD | 22 | D1+ |
| 3 | +12V | 13 | AUX- | 23 | D0- |
| 4 | +12V | 14 | AUX+ | 24 | D0+ |
| 5 | Dimming control | 15 | D3- | 25 | GND |
| 6 | Back Light Enable | 16 | D3+ | 26 | GND |
| 7 | GND | 17 | GND | 27 | NC |
| 8 | GND | 18 | GND | 28 | VLCD for Panel |
| 9 | GND | 19 | D2- | 29 | VLCD for Panel |
| 10 | GND | 20 | D2+ | 30 | VLCD For Panel |

Taiwan Screen Optronics Co., Ltd. TEL: 886-2-82275490 FAX: 886-2-32347264





5-9 OSD Key Output Connector

Case1: On Board OSD Key Switch

Location - SW1,SW2,SW3,SW4,SW5 Switch TSZ-R

| Location | SYMBOL |
|----------|-----------|
| SW1 | POWER KEY |
| SW3 | RIGHT KEY |
| SW4 | LEFT KEY |
| SW2 | MENU KEY |
| SW5 | EXIT KEY |

Case2: For Extend OSD 5Key

Location – CN7: 8PIN wafer pitch 1.25mm 90D

All Key Active Low Level , All LED Active HI Level , Output Current 10mA MAX

Pin assign and definition

| Pin No. | SYMBOL | Pin No. | SYMBOL | Pin No. | SYMBOL |
|---------|----------|---------|-----------|---------|-----------|
| 1 | MENU KEY | 4 | RIGHT KEY | 7 | LED_G |
| 2 | EXIT KEY | 5 | GND | 8 | POWER KEY |
| 3 | LEFT KEY | 6 | LED_O | 1 | |

Note: Standard Status in Case1

5-10 Speaker Output

Location - CN8:4PIN wafer pitch 1.250mm 90D

Audio Output 1.6W + 1.6W at 8 Ohm

Pin assign and definition

| Pin No. | Signal | | |
|---------|--------|--|--|
| 1 | L- | | |
| 2 | L+ | | |
| 3 | R + | | |
| 4 | R - | | |



6. LCD Controller Board Dimension

