

# C12 Board Specification Sheet

Model No. C12 ( Part No.:C12--778AC1--)

## Main Feature:

- ◎ Support vertical refresh rate up to 75Hz for VGA~SXGA+ (1400X1050) and 60Hz for higher resolution of VESA standard timing
- ◎ Support Power Delivery (PD) sink mode : 5V/3A,9V/3A,15V/3A and 20V/3A
- ◎ Supply single pixel(24bits) or dual pixel(48bits) digital RGB output
- ◎ Compatible with VGA up to Full HD (1920x1200) LCD panel
- ◎ Support stereo audio amplifier function: 2Wx2 (Optional)
- ◎ Support USB (Type C) input : PD+DP+USB2.0
- ◎ Support USB HUB output : USB 2.0 x 4
- ◎ Operating temperature : -30 °C to +80 °C
- ◎ Storage temperature : -40 °C to +80 °C
- ◎ Support RS232 (Optional)
- ◎ Output : LVDS or eDP
- ◎ DC 12V input (Optional)
- ◎ RoHS compliant

## Support Timing Table:

| Mode | Resolution   | H Frequency (KHz) | V Frequency (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               |
| 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               |
| 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*720@50  | 36.91             | 49.82            |
| 15   | 1280*720@60  | 44.62             | 59.81            |
| 16   | 1280*1024@60 | 63.980            | 60               |
| 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               |
| 23   | 1920*1080@60 | 66.6              | 60               |
| 24   | 1920*1200@60 | 74.556            | 59.885           |

## Connector Description:

### Connector List:

| Connector | Description                  | Note                  |
|-----------|------------------------------|-----------------------|
| J1        | eDP Panel Connector          | PH 1.25mm. 30Pin.90°  |
| J2        | LVDS Panel Connector         | PH 2.0mm. 32Pin.90°   |
| J3        | USB-C Connector              | 24Pin. USB Type C     |
| CON3      | UART Connector               | PH 2.0mm. 5Pin.90°    |
| CON6      | IR Connector                 | PH 2.0mm. 3Pin.90°    |
| CON7      | Key Pad Connector            | PH 2.0mm. 10Pin.90°   |
| CON10     | ISP/ADC Connector            | PH 1.25mm. 6Pin.180°  |
| CON11     | Speak R Connector            | PH 2.0mm. 2Pin.90°    |
| CON13     | Speaker L Connector          | PH 2.0mm. 2Pin.90°    |
| CON14     | Power Input Connector        | PH 2.0mm. 4Pin.90°    |
| CON15     | Inverter Connector           | PH 2.0mm. 8Pin.90°    |
| JA1~JA4   | USB HUB 2.0 Output Connector | PH 1.25mm. 5Pin.180°  |
| JP1       | 3.3V/5V/12V Selector         | PH 2.0mm. 2x3Pin.180° |

## Pin Definition of Connector:

### J1: eDP Panel Connector (1.25 mm 30 Pin SMD)

| Pin | Description       | Note                                |
|-----|-------------------|-------------------------------------|
| 1   | NC                | No contact                          |
| 2   | NC                | No contact                          |
| 3   | GND               | Ground                              |
| 4   | TXAUXN R          | Complement signal Auxiliary Channel |
| 5   | TXAUXP R          | True signal Auxiliary Channel       |
| 6   | GND               | Ground                              |
| 7   | TX0N R            | Complement signal link lane0        |
| 8   | TX0P R            | True signal link lane0              |
| 9   | GND               | Ground                              |
| 10  | TX1N R            | Complement signal link lane1        |
| 11  | TX1P R            | True signal link lane1              |
| 12  | GND               | Ground                              |
| 13  | TX2N R            | Complement signal link lane2        |
| 14  | TX2P R            | True signal link lane2              |
| 15  | GND               | Ground                              |
| 16  | TX3N R            | Complement signal link lane3        |
| 17  | TX3P R            | True signal link lane3              |
| 18  | GND               | Ground                              |
| 19  | 3.3V or 5V or 12V | +3.3V or +5V or +12V Panel power    |
| 20  | 3.3V or 5V or 12V | +3.3V or +5V or +12V Panel power    |
| 21  | DP_HPDP           | HPD Signal in                       |

|    |          |                      |
|----|----------|----------------------|
| 22 | BKLT_EN  | Backlight enable     |
| 23 | BKLT_ADJ | Backlight adjustment |
| 24 | GND      | Ground               |
| 25 | GND      | Ground               |
| 26 | 12V      | +12V Power supply    |
| 27 | 12V      | +12V Power supply    |
| 28 | 12V      | +12V Power supply    |
| 29 | 12V      | +12V Power supply    |
| 30 | NC       | No contact           |

## **J2: LVDS Panel Connector (2.0 mm 32 Pin DIP):**

| <b>Pin</b> | <b>Description ( 8 bit )</b> | <b>Note</b>                    |
|------------|------------------------------|--------------------------------|
| 1,2,3,4    | VDD                          | 3.3V/5V/12V Panel power supply |
| 5          | GND                          | Ground                         |
| 6          | GND                          | Ground                         |
| 7          | RXEIN3-                      | EvenTx3- Data Pin              |
| 8          | RXEIN3+                      | EvenTx3+ Data Pin              |
| 9          | RXEINC-                      | EvenTx- Clock Pin              |
| 10         | RXEINC+                      | EvenTx+ Clock Pin              |
| 11         | RXEIN2-                      | EvenTx2- Data Pin              |
| 12         | RXEIN2+                      | EvenTx2+ Data Pin              |
| 13         | RXEIN1-                      | EvenTx1- Data Pin              |
| 14         | RXEIN1+                      | EvenTx1+ Data Pin              |
| 15         | RXEIN0-                      | EvenTx0- Data Pin              |
| 16         | RXEIN0+                      | EvenTx0+ Data Pin              |
| 17         | RXOIN3-                      | OddTx3- Data Pin               |
| 18         | RXOIN3+                      | OddTx3+ Data Pin               |
| 19         | RXOINC-                      | OddTx- Clock Pin               |
| 20         | RXOINC+                      | OddTx+ Clock Pin               |
| 21         | RXOIN2-                      | OddTx2- Data Pin               |
| 22         | RXOIN2+                      | OddTx2+ Data Pin               |
| 23         | RXOIN1-                      | OddTx1- Data Pin               |
| 24         | RXOIN1+                      | OddTx1+ Data Pin               |
| 25         | RXOIN0-                      | OddTx0- Data Pin               |
| 26         | RXOIN0+                      | OddTx0+ Data Pin               |
| 27         | N.C.                         | Not connect                    |
| 28         | N.C.                         | Not connect                    |
| 29         | N.C.                         | Not connect                    |
| 30         | N.C.                         | Not connect                    |
| 31         | GND                          | Ground                         |
| 32         | GND                          | Ground                         |

### J3: USB-C Connector (24Pin USB Type C SMD)

| Pin | Description   | Note                            |
|-----|---------------|---------------------------------|
| A1  | GND           |                                 |
| A2  | Type C_TX1+   | Super speed differential#1 TX + |
| A3  | Type C_TX1-   | Super speed differential#1 TX - |
| A4  | Type C_VBUS   | V <sub>BUS</sub>                |
| A5  | Type C_CC1_1  | Configuration channel           |
| A6  | Type C_D+     | USB 2.0 differential position + |
| A7  | Type C_D-     | USB 2.0 differential position - |
| A8  | Type C_SBU1_1 | Sideband use (SBU)              |
| A9  | Type C_VBUS   | V <sub>BUS</sub>                |
| A10 | Type C_RX2-   | Super speed differential#2 RX - |
| A11 | Type C_RX2+   | Super speed differential#2 RX + |
| A12 | GND           |                                 |
| B1  | GND           |                                 |
| B2  | Type C_TX2+   | Super speed differential#2 TX + |
| B3  | Type C_TX2-   | Super speed differential#2 TX - |
| B4  | Type C_VBUS   | V <sub>BUS</sub>                |
| B5  | Type C_CC2_1  | Configuration channel           |
| B6  | Type C_D+     | USB 2.0 differential position + |
| B7  | Type C_D-     | USB 2.0 differential position - |
| B8  | Type C_SBU2_1 | Sideband use (SBU)              |
| B9  | Type C_VBUS   | V <sub>BUS</sub>                |
| B10 | TypeC_RX1-    | Super speed differential#1 RX - |
| B11 | TypeC_RX1+    | Super speed differential#1 RX + |
| B12 | GND           |                                 |

### CON3: UART Connector (2.0 mm 5Pin SMD):

| Pin | Description | Note         |
|-----|-------------|--------------|
| 1   | 5V          | Output +5VDC |
| 2   | Key2        |              |
| 3   | Tx          |              |
| 4   | Rx          |              |
| 5   | GND         | Ground       |

### CON6: IR Connector (2.0 mm 3Pin SMD):

| Pin | Description | Note            |
|-----|-------------|-----------------|
| 1   | 5V          | Output +5VDC    |
| 2   | IR          | Interrupt input |
| 3   | GND         | Ground          |

**CON7: Key Pad Connector (2.0 mm 10Pin SMD):**

| Pin | Description | Note                   |
|-----|-------------|------------------------|
| 1   | SEL+(RIGHT) |                        |
| 2   | SEL-(LEFT)  |                        |
| 3   | AUTO        |                        |
| 4   | MENU        |                        |
| 5   | POWER       |                        |
| 6   | LED-G       | Green LED (Power ON)   |
| 7   | LED-R       | Red LED (Power saving) |
| 8   | GND         | Ground                 |
| 9   | CH-         | Not connect            |
| 10  | ADC_3       | Not connect            |

**CON10: ISP/ADC Connector (1.25mm 6Pin SMD)**

| Pin | Description | Note |
|-----|-------------|------|
| 1   | 3.3V        |      |
| 2   | ADC_1       |      |
| 3   | ADC_2       |      |
| 4   | DDCSDA      |      |
| 5   | DDCSCL      |      |
| 6   | GND         |      |

**CON11: Speaker Connector (2.0 mm 2Pin SMD)**

| Pin | Description | Note |
|-----|-------------|------|
| 1   | R-          |      |
| 2   | R+          |      |

**CON13: Speaker Connector (2.0 mm 2Pin SMD)**

| Pin | Description | Note |
|-----|-------------|------|
| 1   | L-          |      |
| 2   | L+          |      |

**CON14: Power Connector (2.0 mm 4Pin SMD):**

| Pin | Description | Note         |
|-----|-------------|--------------|
| 1,4 | DC 12V      | Input +12VDC |
| 2,3 | GND         | Ground       |

**CON15: Inverter Connector (2.0mm 8 Pin SMD):**

| Pin | Description        | Note         |
|-----|--------------------|--------------|
| 1,2 | 12V Input          |              |
| 4,6 | GND                |              |
| 3   | Brightness Control | PWM 0-100%   |
| 5   | ON/OFF Control     | 5V ON;0V OFF |
| 7,8 | 5V                 |              |

Note : 2.0mm 5 pin connector(Pin1~5) is used on standard 12V input and standalone Inverter .

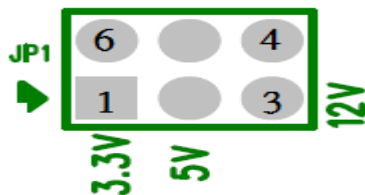
2.0mm 3 pin connector (Pin6~8) is used on 2-in-1 power supply with 5V input .

**JA1~JA4: USB HUB Output Connector (1.25 mm 5Pin SMD)**

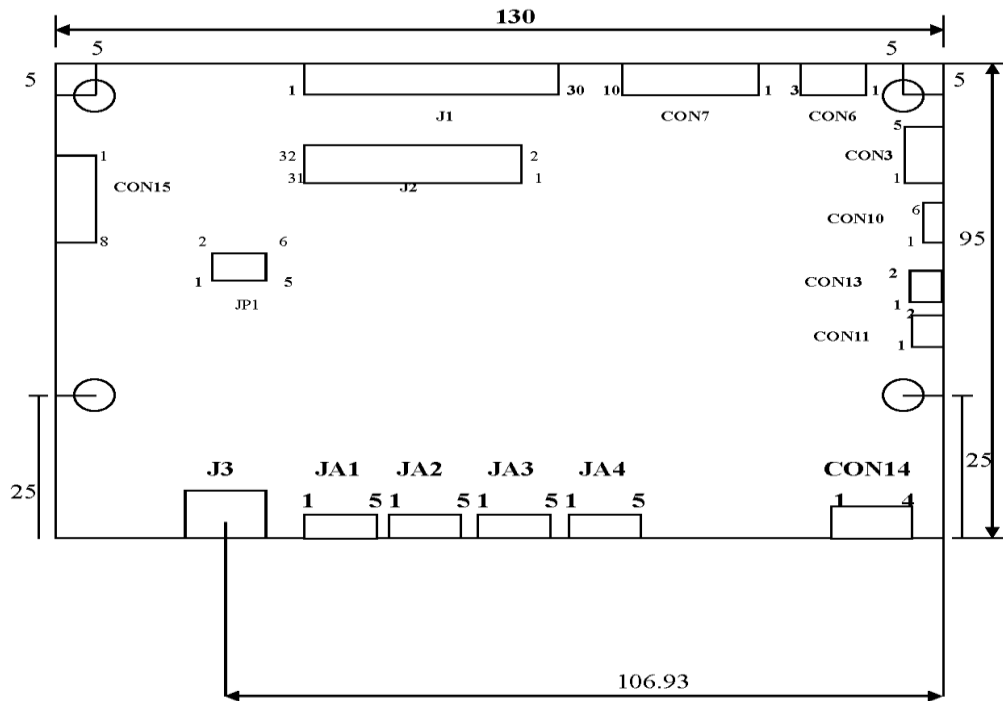
| Pin | Description | Note      |
|-----|-------------|-----------|
| 1   | 5V          | HUB5V     |
| 2   | DATA-       | USB DATA- |
| 3   | DATA+       | USB DATA+ |
| 4   | GND         |           |
| 5   | GND_EARTH   |           |

**JP1: 3.3V/5V/12V Selector (2.0 mm 2x3 Pin SMD):**

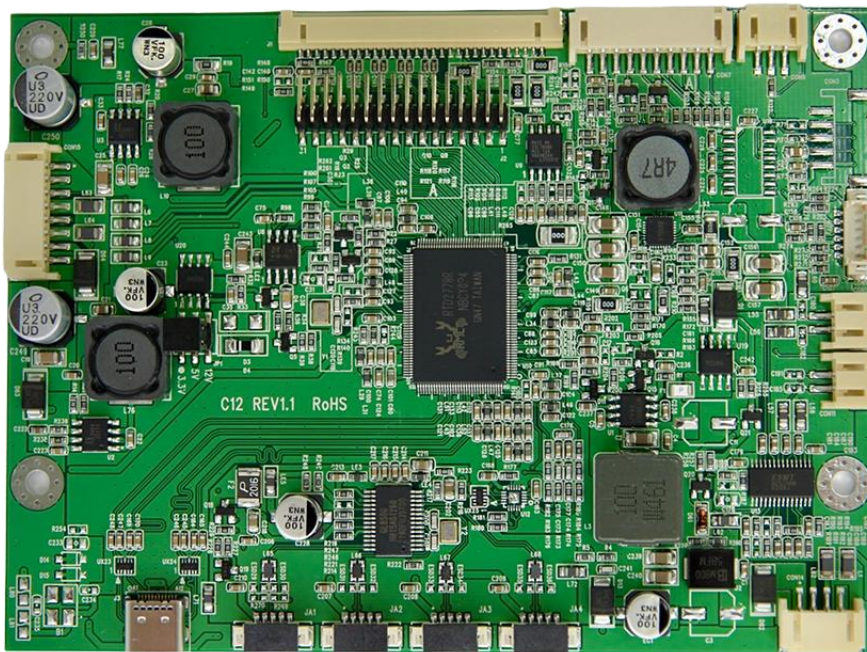
| Pin   | Description | Note                    |
|-------|-------------|-------------------------|
| 1 - 6 | 3.3V        | Power supply of +3.3VDC |
| 2 - 5 | 5V          | Power supply of +5VDC   |
| 3 - 4 | 12V         | Power supply of +12VDC  |



## Board Dimension :130mm\*95mm



## Board Photo:



※Specifications and product design are subject to change without notice.