AR3399RK

Quick Start Guide

Ver 0.1

This Quick Start Guide is for BCM AR3399RK ARM motherboards based on Rockchip RK3399 Cortex A72+A53 platform.

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Contents

1. Overview

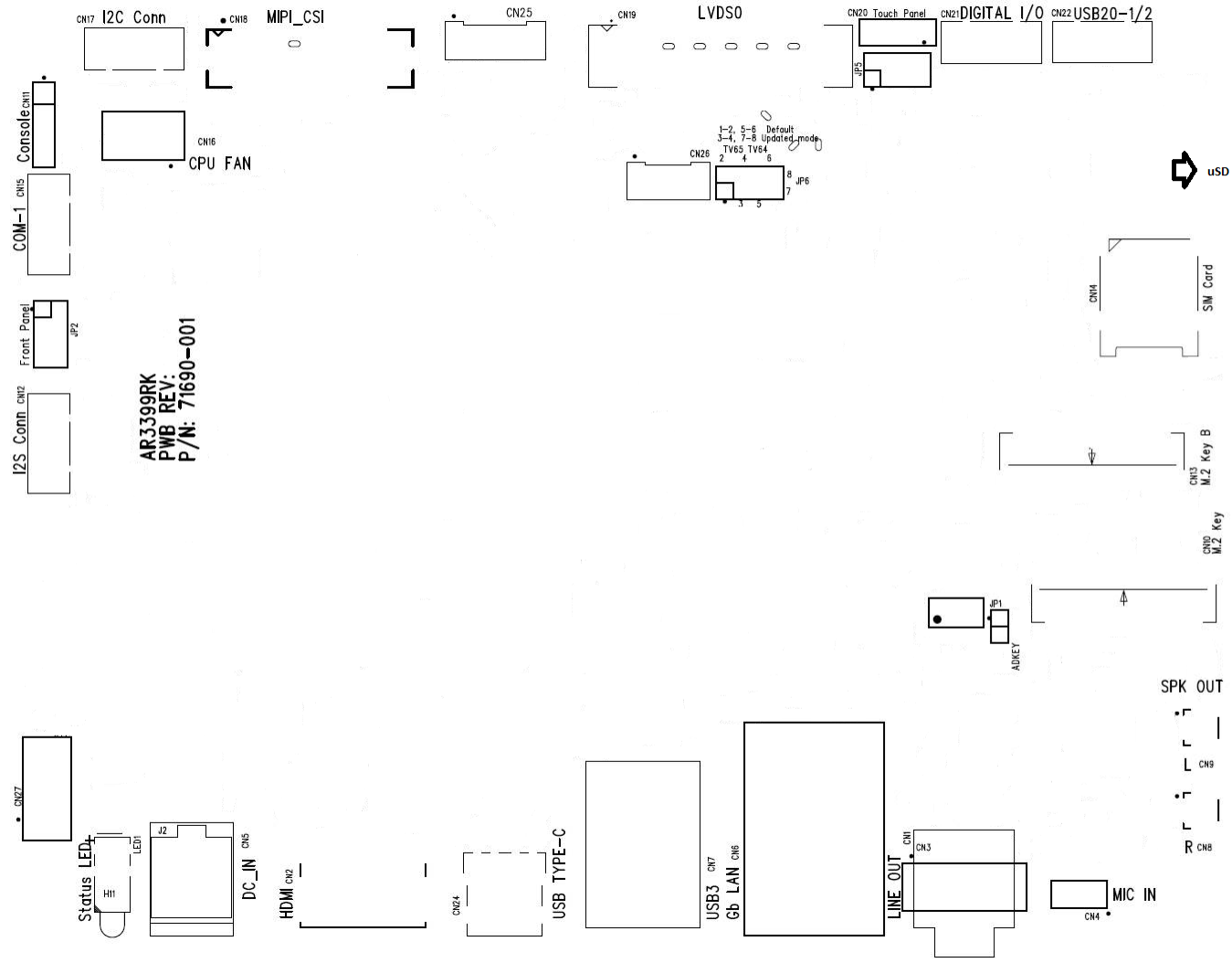
AR3399RK

Rockchip® RK3399 Dual Core Cortex-A72 + Quad Core Cortex-A53 (6-Core) SoC ARM Motherboard

- Rockchip® RK3399 Dual Core Cortex-A72 + Quad Core Cortex-A53 (6-Core) SoC
- 2GB DDR3L Onboard (Expandable to 4GB Max)
- ARM® Mali-T860MP4 Integrated Graphics
- HDMI, LVDS, MIPI-CSI
- 1 x uSD Card Socket
- 16GB eMMC Onboard
- 2 x USB 3.0, 2 x USB 2.0, 1 x USB 3.0 Gen 2 Type C OTG Connector
- 1 x 2230 M.2 E Key and 1 x 2242 M.2 B Key
- I2C, I2S, GPIO
- 12V DC-In
- 4.33” x 5.71” (110mm x 145mm)

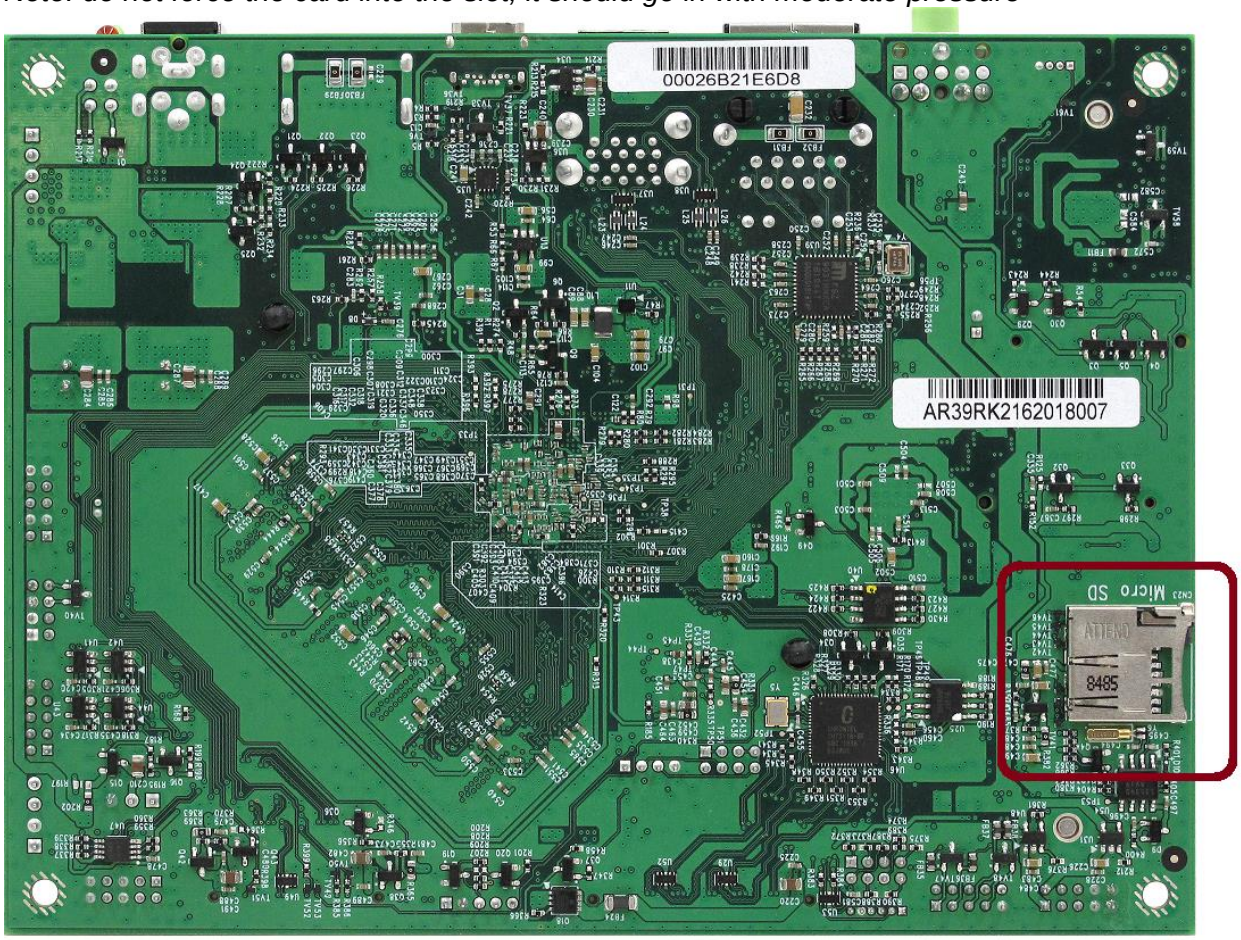
2. Board IO/Jumper illustration

Board Top view：

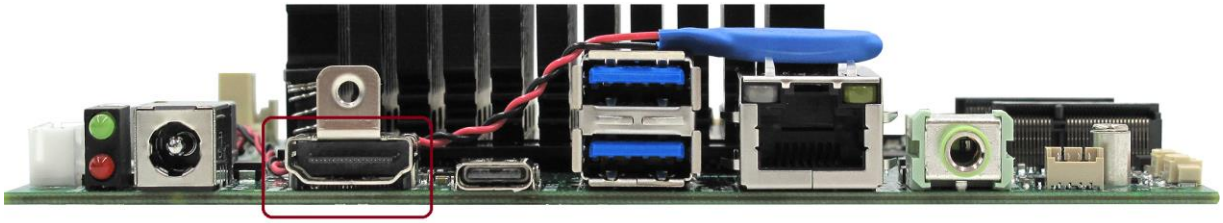


3. Getting started

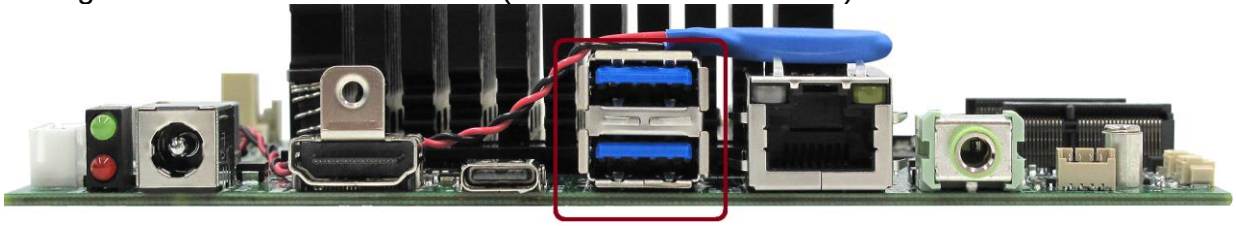
1. Insert a bootable uSD card into slot CN23 if booting from uSD instead of eMMC.
   Note: do not force the card into the slot; it should go in with moderate pressure



2. Connect an HDMI monitor to CN2

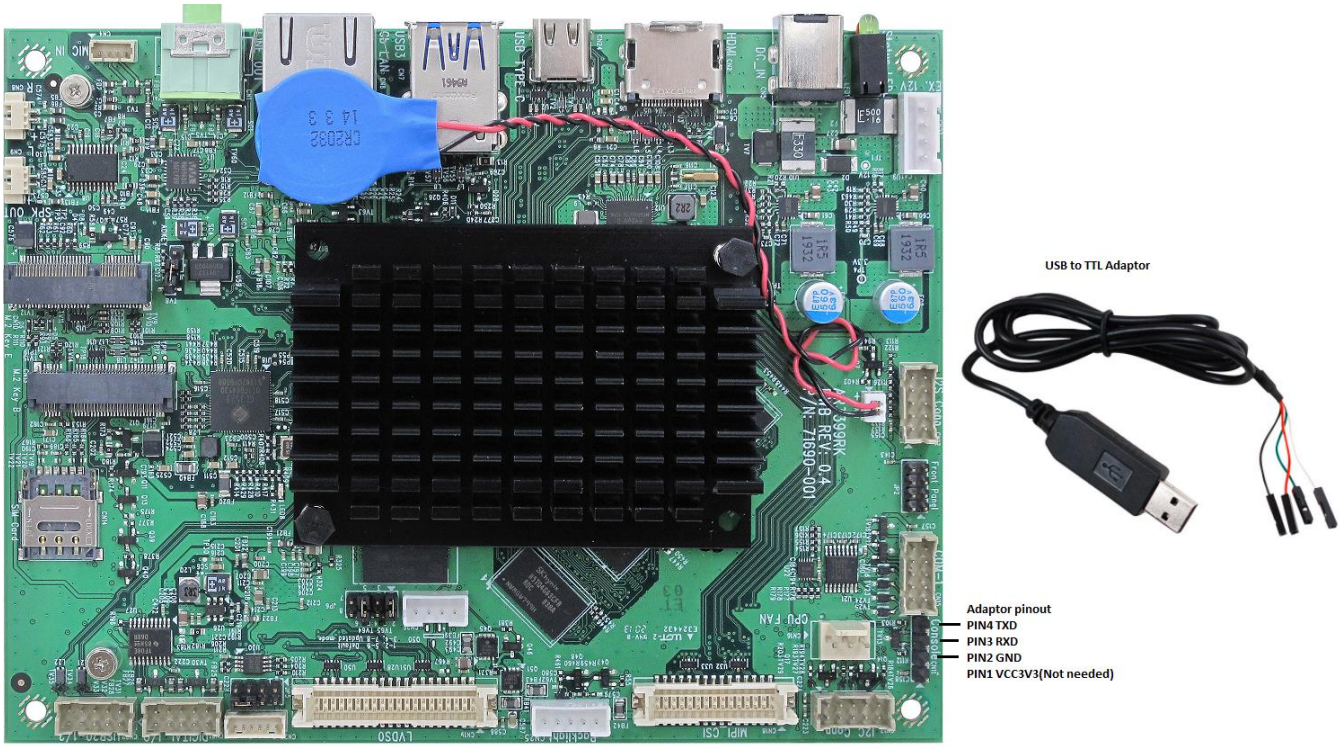


3. Connect a USB mouse/keyboard either to the rear I/O USB connectors (CN7), or through the onboard header CN22 (USB cable not included)

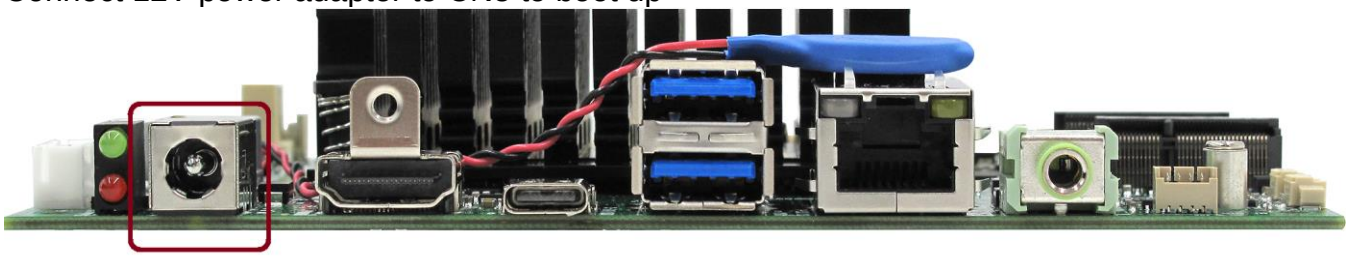


4. if you need console access, connect a serial (TTL) to USB adapter from CN11 to your workstation.

   4.1 Set your terminal settings to the following: 115200 bps, 8bits, no parity, 1 stop bit, and no flow control



5. Connect 12V power adapter to CN5 to boot up



4. Jumper Settings and Pin Definition

1. JP1 — Boot Mode

Connector type：HDR 1x2 2.0mm

Pin	Definition
1	GND
2	GND

Default

JP1	BOOT MODES
Open	Normal Boot
Close	Recovery Mode

2. JP2 — Front Panel

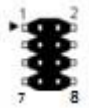
Connector type：HDR 2x4 2.0mm DIP

Pin	Definition	Pin	Definition
1	GND	5	GND
2	NC	6	PMIC_PWRON
3	GND	7	VCC_RTC
4	NC	8	RK808D_RESET

Usage

JP2	Effect
Short pin 7-8	System Reset

3. JP5 — LVDS Panel EDID Options

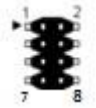


Connector type：HDR 2x4 2.0mm DIP

Pin	Definition	Pin	Definition
1	7511GPI3	5	7511GPI2
2	7511GPI1	6	7511GPI0
3	GND	7	GND
4	GND	8	GND

Default

GPI[3:0]	Panel EDID	GPI[3:0]	Panel EDID
0000	800x600 1ch/18bit	1000	1366x768 1ch/24bit
0001	1024x768 1ch/18bit	1001	1440x900 2ch/24bit
0010	1024x768 1ch/24bit	1010	1440x1050 2ch/24bit
0011	1280x768 1ch/18bit	1011	1600x900 2ch/24bit
0100	1280x800 1ch/18bit	1100	800x480 1ch/24bit
0101	1280x960 2ch/24bit	1101	1024x600 1ch/24bit
0110	1280x1024 1ch/18bit	1110	800x480 1ch/18bit
0111	1366x768 1ch/18bit	1111	1024x600 1ch/18bit

4.	JP6	CH7511 LVDS FW mode	5.	CN1	LINE OUT
		Connector type：HDR 2x4 2.0mm DIP **Pin / Definition / Pin / Definition** 1 9904_SPC 5 9904_SPD 2 SPC1 6 SPD1 3 9904_SPC 7 9904_SPD 4 EE100_SPC 8 EE100_SPD **Default** **Jumper selector / 9904 EEPROM** 1-2, 5-6 Default 3-4, 7-8 Update mode			Connector type：3.5mm Phone Jack Green **Pin / Definition** 1 AD_AGND 2 LOUT_R 3 L-DET 4 AD_AGND 5 LOUT_L
6.	**CN2**	**HDMI**	**7.**	**CN4**	**MIC IN**
		Connector type：HDMI **Pin / Definition / Pin / Definition** 1 D2+ 13 CEC 2 GND 14 NC 3 D2- 15 I2C_CLK 4 D1P 16 I2C_DAT 5 GND 17 GND 6 D1+ 18 5V 7 D0+ 19 HP_DET 8 GND 20 GND 9 D0- 21 GND 10 CLK+ 22 GND 11 GND 23 GND 12 CLK-			Connector type：HDR 1x4 1.25mm DIP **Pin / Definition** 1 MIC_DET 2 MICBIAS_J 3 MIC_J 4 AD_AGND

8.	CN5	DC JACK	9.	CN6	LAN

Connector type：DC-JACK 6.5/2.5mm

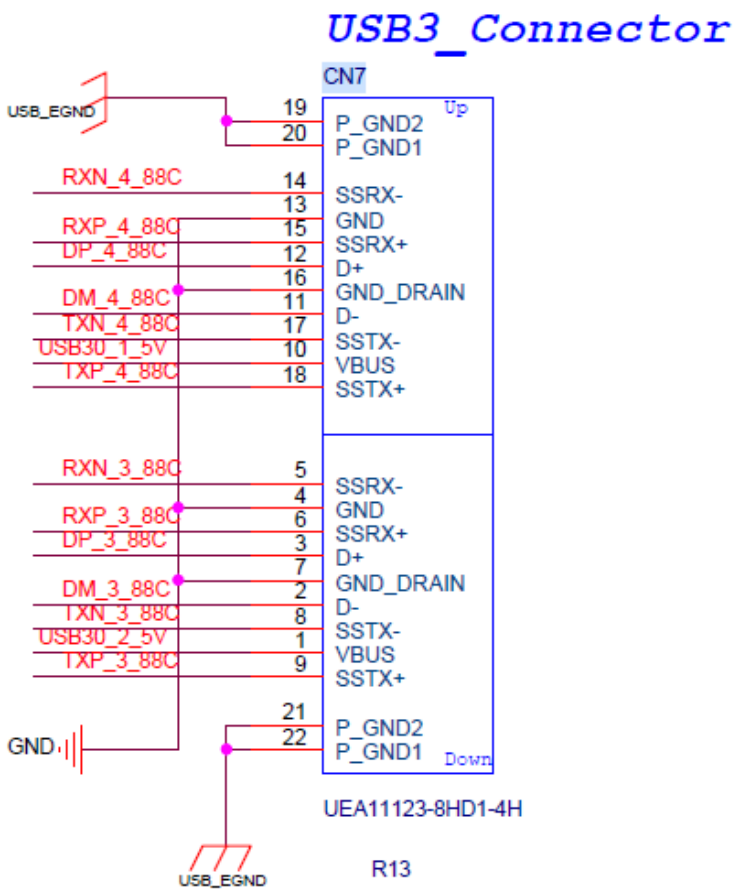
Pin	Definition
1	12V DC-IN
2	GND
3	GND

Connector type：RTA-164AAK1A

Pin	Definition	Pin	Definition
1	GE_MDI0+	9	GE_MDI3+
2	GE_MDI0-	10	GE_MDI3-
3	GE_MDI1+	11	LED2
4	GE_MDI1-	12	D3V3
5	GND	13	D3V3
6	GND	14	LED1
7	GE_MDI2+	15	GND
8	GE_MDI2-	16	GND

10.	CN7 : USB3.0x2 (Type A)

Connector type：UEA11123-8HD1-4H

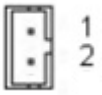


11. **CN8** **SPK OUT R**

Connector type：Header 1X2 1.25

Pin	Definition
1	SPK_R_OUT+
2	SPK_R_OUT-

12. **CN9** **SPK OUT L**



Connector type：Header 1X2 1.25

Pin	Definition
1	SPK_L_OUT+
2	SPK_L_OUT-

13. **CN10** **M.2 Key E Slot**

Standard M.2 Key E pinout

14. **CN11** **UART Debug Console**

Connector type：Header 1X4 2.54

Pin	Definition
1	VCC3V3
2	GND
3	UART2_TXD
4	UART2_RXD

15. **CN12** **I2S**

Connector type：HDR 2x5 2.0mm DIP

Pin	Definition	Pin	Definition
1	I2S1_SCLK	6	I2S1_SDO0
2	VCC1V8	7	I2S_LRCK_TX
3	GND	8	I2S1_SDI0
4	GND	9	GND
5	I2S_LRCK_RX	10	GND

16. **CN13** **M.2 Key B Slot**

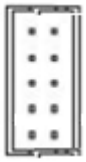
Standard M.2 Key B pinout

17. **CN14** **NANO SIM CARD**

Connector type：NANO SIM Socket

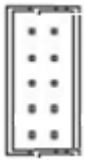
Pin	Definition
C1	CCVCC
C2	CCRST
C3	CCCLK
C5	GND
C6	NC
C7	CCIO
SW	SIMDET_1

18. **CN15** **COM-1 UART0**



Connector type：HDR 2x5 2.0mm DIP

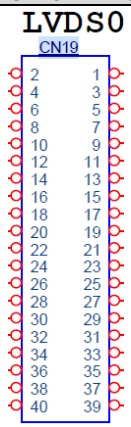
Pin	Definition	Pin	Definition
1	RTS_RS232	6	RX_TTL
2	RX_RS232	7	CTS_TTL
3	CTS_RS232	8	TX_TTL
4	TX_RS232	9	GND
5	RTS_TTL	10	GND

19.	CN16	CPU FAN	20.	CN17	I2C
		Connector type：HDR 1x3 2.54mm Wafer			Connector type：HDR 2x5 2.0mm DIP

Pin	Definition
1	NC
2	VCC
3	GND

Pin	Definition	Pin	Definition
1	VCC3V3	6	GND
2	VCC5V	7	EXT_I2C_SCL
3	EXT_I2C_SDA	8	I2C_SCL_5V
4	I2C_SDA_5V	9	GND
5	GND	10	GND

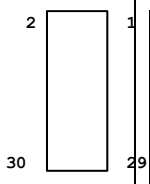
21.	CN19 : LVDS0



Connector type：HIROSE DF13A-40DP-1.25

Pin	Definition	Pin	Definition	Pin	Definition	Pin	
1	LVDS_3.3V	11	LVDS_DB1-	21	LVDS_DA1+	31	GND
2	LVDS_5V	12	LVDS_DB0-	22	LVDS_DA0+	32	GND
3	LVDS_3.3V	13	GND	23	LVDS_DA1-	33	LVDSA_CLK+
4	LVDS_5V	14	GND	24	LVDS_DA0-	34	LVDSB_CLK+
5	LVDS0_PAL_SCL	15	LVDS_DB3+	25	GND	35	LVDSA_CLK-
6	LVDS0_PAL_SDA	16	LVDS_DB2+	26	GND	36	LVDSB_CLK-
7	GND	17	LVDS_DB3-	27	LVDS_DA3+	37	GND
8	HPD_DET_C	18	LVDS_DB2-	28	LVDS_DA2+	38	GND
9	LVDS_DB1+	19	GND	29	LVDS_DA3-	39	LVDS_12V
10	LVDS_DB0+	20	GND	30	LVDS_DA2-	40	LVDS_12V

22.	CN18：MIPI CSI



Connector type：HIROSE DF13A-30DP-1.25

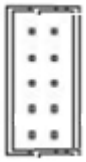
Pin	Definition	Pin	Definition	Pin	Definition
1	MIPI_RX0_3V3	11	MIPI_RX0_D3P	21	GND
2	MIPI_RX0_3V3	12	MIPI_RX0_D2P	22	GND
3	GND	13	MIPI_RX0_D3N	23	MIPI_RX0_I2C_SCL
4	GND	14	MIPI_RX0_D2N	24	MIPI_RX0_D0P
5	MIPI_RX0_EN_C	15	GND	25	MIPI_RX0_I2C_SDA
6	MIPI_RX0_CLKP	16	GND	26	MIPI_RX0_D0N
7	NC	17	MIPI_RX0_RST_B_C	27	GND
8	MIPI_RX0_CLKN	18	MIPI_RX0_D1P	28	GND
9	GND	19	MIPI_RX0_MCLK_OUT	29	MIPI_RX0_1V8
10	GND	20	MIPI_RX0_D1N	30	MIPI_RX0_1V8

23. CN20：I2C Touch Panel

Connector type：HDR 1x6 1.25mm

Pin	Definition
1	LVDS_TH_RST#
2	LVDS_TH_SCL
3	LVDS_TH_SDA
4	CAP_TCH_INT0
5	GND
6	VCC3V3

24. CN21：Digital IO



Connector type：Header 2X5 2.0mm

Pin	Definition	Pin	Definition
1	DIO0	6	DIO5
2	VCC3V3	7	DIO3
3	DIO1	8	DIO6
4	DIO4	9	GND
5	DIO2	10	DIO7

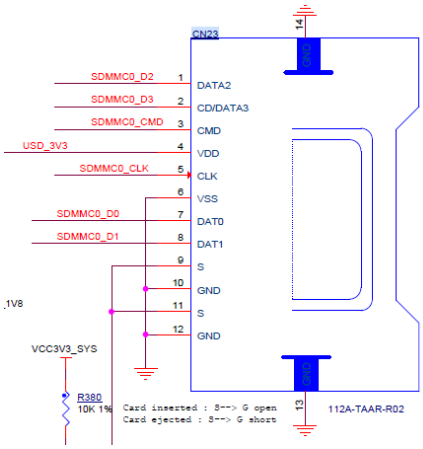
25. CN22：USB2.0 1/2

Connector type：Header 2X5 2.0mm

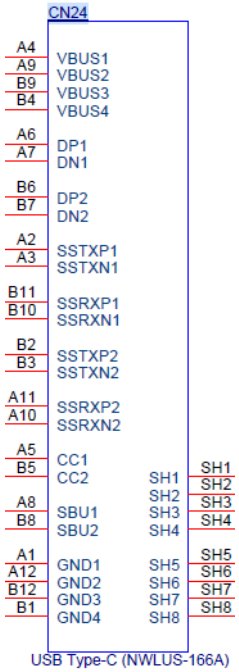
Pin	Definition	Pin	Definition
1	VCC5V	6	USB1P+
2	VCC5V	7	GND
3	USB0P-	8	GND
4	USB1P-	9	GND
5	USB0P+	10	GND

26. CN23：Micro SD Card Socket

Connector type：112A-TAAR-R02



27. CN24：USB Type-C



28. CN25：Backlight power

Connector type：HDR 1x5 2.0mm

Pin	Definition
1	VCC12V_DCIN
2	GND
3	BL0EN
4	LVDS_PWM
5	VCC5V

29.	CN26：9904 EEPROM Update Header		30.	CN27：External 12V Output	
		Connector type：HDR Wafer 1x4 2.0mm Pin / Definition 1 NC 2 EE100_SPC 3 EE100_SPD 4 GND			Connector type：HDR Wafer 1x4 2.5mm Pin / Definition 1 DC_IN_C 2 DC_IN_C 3 GND 4 GND