

Compact3576 Hardware Manual

V1.202507



Boardcon Embedded Design

www.boardcon.com

1.Introduction

1.1.About this Manual

This manual is intended to provide the user with an overview of the board and benefits, complete features specifications, and set up procedures. It contains important safety information as well.

1.2.Feedback and Update to this Manual

To help our customers make the most of our products, we are continually making additional and updated resources available on the Boardcon website(www.boardcon.com, www.armdesigner.com).

These include manuals, application notes, programming examples, and updated software and hardware. Check in periodically to see what's new!

When we are prioritizing work on these updated resources, feedback from customers is the number one influence. If you have questions, comments, or concerns about your product or project, please do not hesitate to contact us at support@armdesigner.com.

1.3.Limited Warranty

Boardcon warrants this product to be free of defects in material and workmanship for a period of one year from date of buy. During this warranty period Boardcon will repair or replace the defective unit in accordance with the following process:

A copy of the original invoice must be included when returning the defective unit to Boardcon. This limited warranty does not cover damages resulting from lightning or other power surges, misuse, abuse, abnormal conditions of operation, or attempts to alter or modify the function of the product.

This warranty is limited to the repair or replacement of the defective unit. In no event shall Boardcon be liable or responsible for any loss or damages, including but not limited to any lost profits, incidental or consequential damages, loss of business, or anticipatory profits arising from the use or inability to use this product.

Repairs made after the expiration of the warranty period are subject to a repair charge and the cost of return shipping. Please contact Boardcon to arrange for any repair service and to obtain repair charge information.

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1 Compact3576 Introduction

1.1 Summary

The Compact3576 adopts the Rockchip RK3576 SoC, which integrates a quad-core Cortex-A72 processor running at up to 2.2 GHz and a quad-core Cortex-A53 processor running at up to 1.8 GHz. The SoC also features a dedicated NPU with computing power up to 6 TOPS, enabling efficient AI processing for various AI scenarios. It supports 8K video decoding and 4K video encoding, providing ultra-high-definition rendering and superior image processing capabilities. The RK3576 also offers powerful network communication functions, including support for 4G, Wi-Fi 2.4/5G, Bluetooth 5.0, and Gigabit Ethernet.

Compact3576 is implemented with a CM3576 computer-on-module providing most of the functions and interfaces, and Compact3576 carrier board providing connectors and several additional functions. The rich feature set of Compact3576 is customizable according to the price / performance needs of the target application. Compact3576 contains expansion connectors which accommodate a wide range of standard peripheral devices. Wide input range switched power supply is compatible with requirements for telecom and automotive applications. Compact3576 is provided with full ready-to-run Android 14 and Debian 12 SW packages and comprehensive user manual and designing guide.

1.2 Rockchip RK3576 Features

- **Microprocessor**

- Cortex-A72 cluster

- Quad-core Cortex-A72 MPCore processor.

- 48kB L1 instruction cache and 32kB L1 data cache for each core.

- 1MB unified L2 cache

- Cortex-A53 cluster

- Quad-core Cortex-A53 MPCore processor.

- 32kB L1 instruction cache and 32kB L1 data cache for each core.

- 512kB unified L2 cache.

- **Memory Organization**

- 4GB LPDDR4x(up to 8GB).

- Low power mode including power-down and self-refresh with power-down.

- **Cortex-M0**

- Single core Cortex-M0 cooperate with quad-core Cortex-A72 / Cortex-A53.

- **PWM**

- Supports 16 on-chip PWMs with interrupt-based operation.

- Support continuous mode and one-shot output mode.

- **Watchdog**

- Supports 5 non-secure watchdog and 1 secure watchdog.

- 32-bit watchdog counter.

- **Interrupt Controller**

- Support 4 PPI interrupt source and 480 SPI interrupt sources input.

- Support 16 software-triggered interrupts.

- **3D Graphics Engine**

- Arm Mali-G52 MC3 GPU.

- High performance OpenGL ES 1.1, 2.0 and 3.2, OpenCL 2.0, Vulkan 1.1.

- **Power unit**

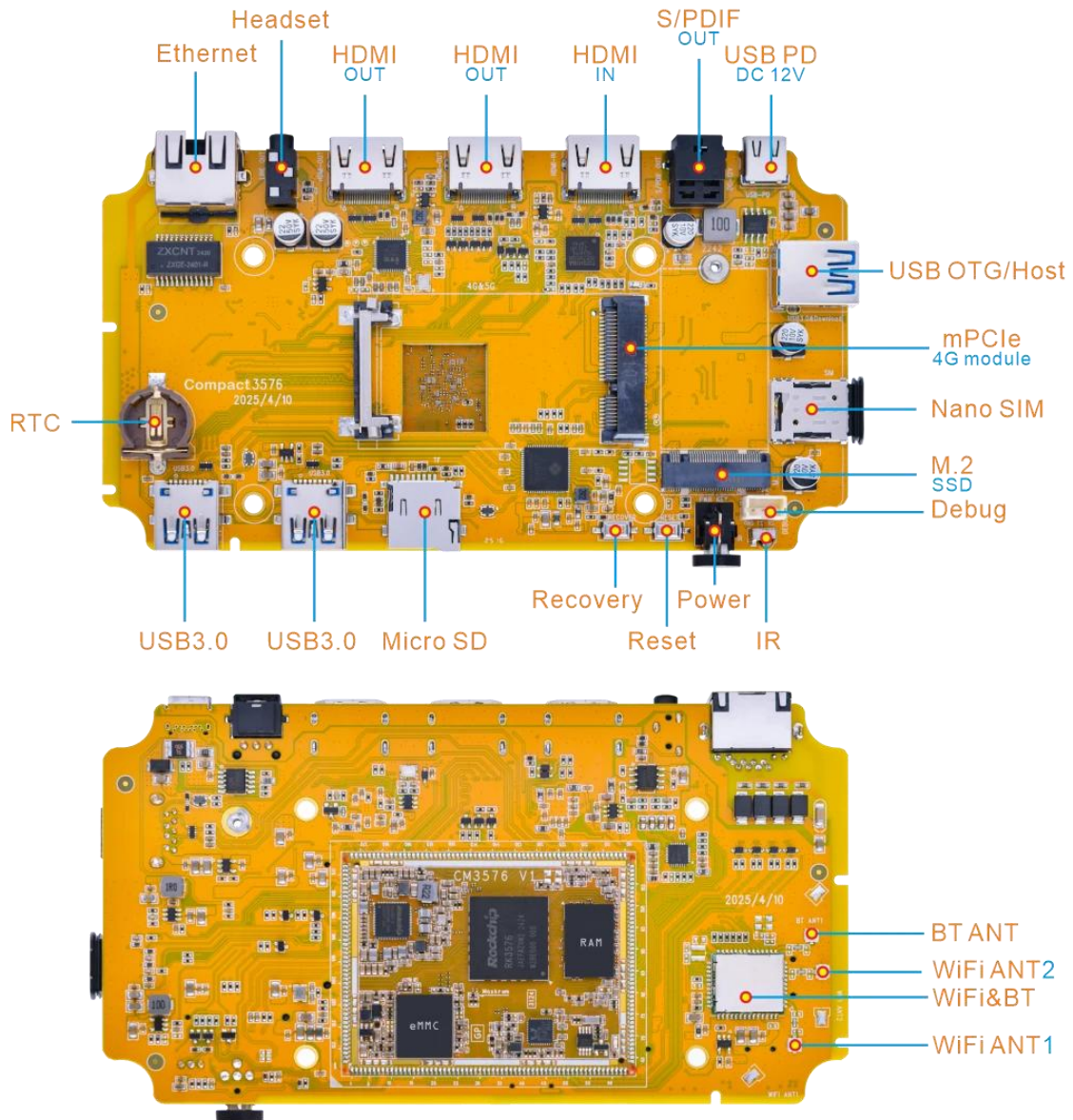
- Very low RTC consume current, less 7uA at 3V button Cell.

- **Temperature**

- Less 40°run video play (exposed board at 20°).



1.3 Compact3576 Specifications



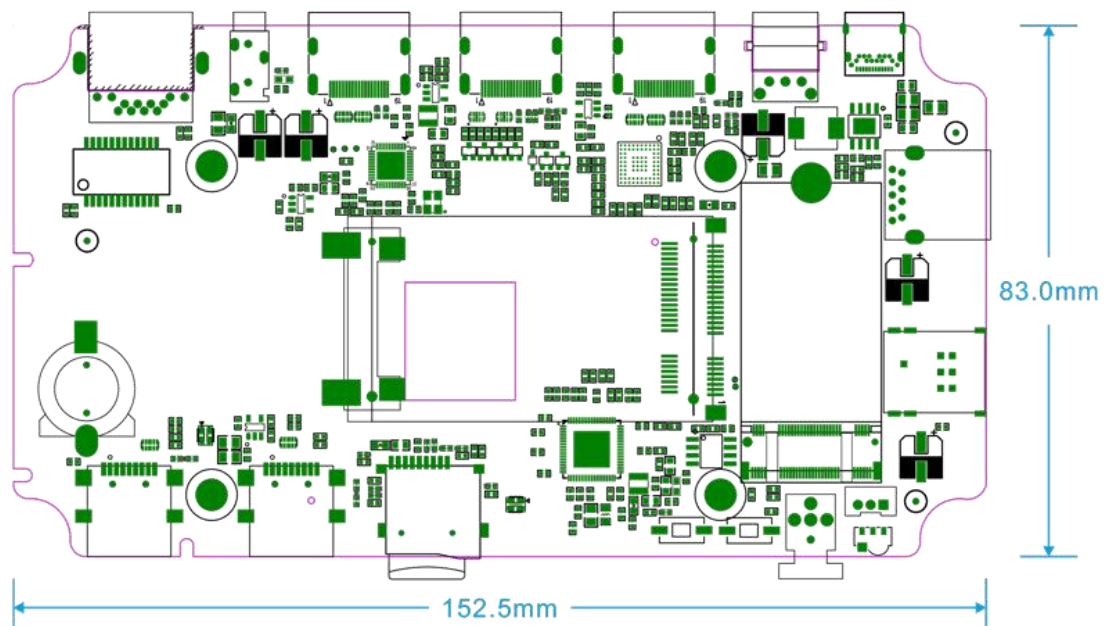
Feature	Specifications
CPU	• Octa-core ARM processor • Quad-core Cortex-A72+Quad-core Cortex-A53
GPU	• Arm Mali G52 MC3 GPU • OpenGL ES 1.1/2.0/3.2 • Vulkan 1.1 • OpenCL 2.0



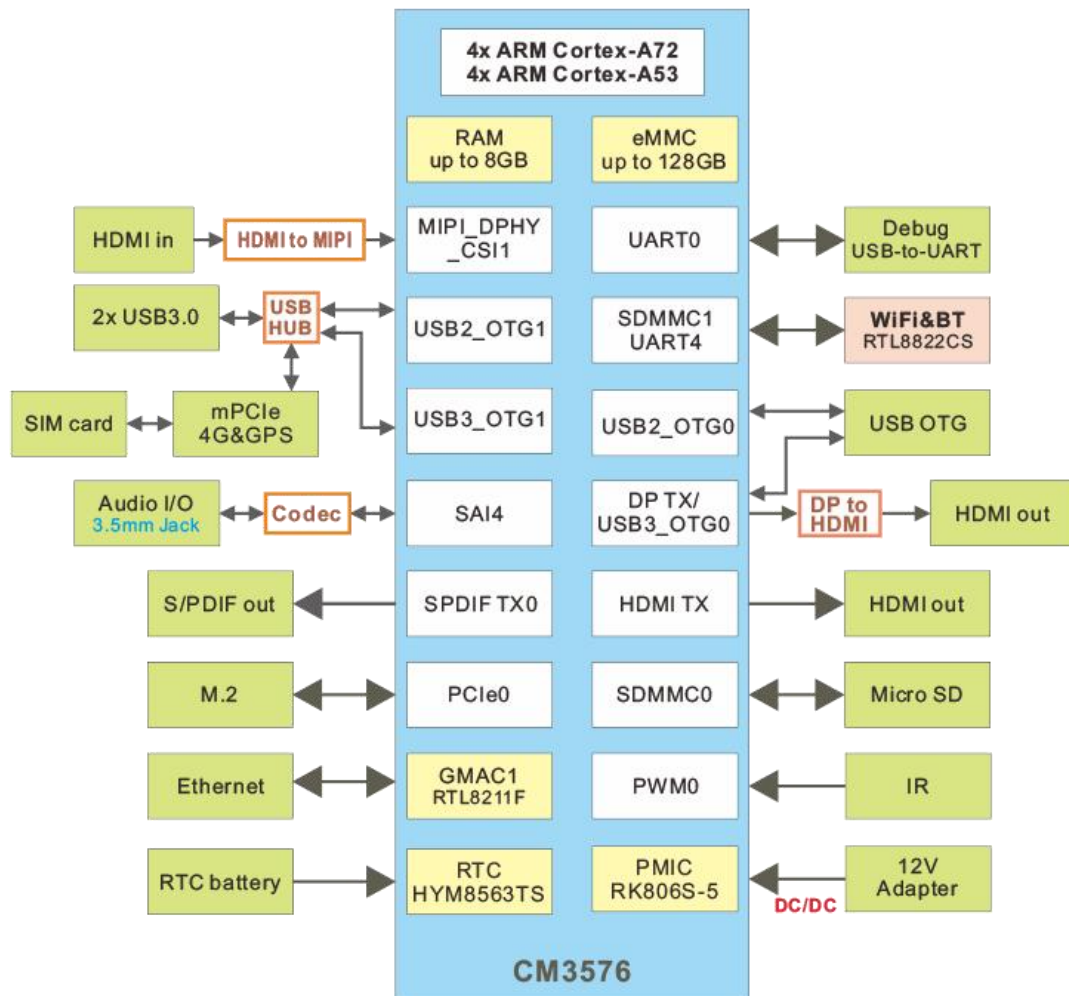
Memory	4GB LPDDR4x
Power	12V DC via USB-C connector (minimum 3A)
USB	- 2x USB 3.0 Host, Type-A - 1x USB OTG/Host (Type-A, USB 3.0)
Serial Port	Debug, 3-pin connector
Ethernet	10/100/1000 Mbps Ethernet RJ45 port via Realtek RTL8211F-CG controller
Display	- 1x HDMI2.1, up to 4Kp120 - 1x DP to HDMI2.0
HDMI IN	HDMI in interface
Headset	Headset output / input interface
RTC	Real Time Clock, powered by external lithium battery
M.2 SSD	M.2 SSD interface
SD card	1x T-Flash card slot
IR	IR receiver
S/PDIF OUT	S/PDIF digital audio output interface
Keys&Switch	1x Power key, 1x Reset key, 1x Recovery key
WIFI&BT	WIFI&Bluetooth module, support 2.4G/5G 2T2R WiFi (802.11a/b/g/n/ac) with Bluetooth 5.0
4G	mPCIe socket with Nano SIM card port to support 4G LTE Module
Dimension	152.5 x 83 mm



1.4 PCB Dimension



1.5 Block Diagram



1.6 CPU Introduction

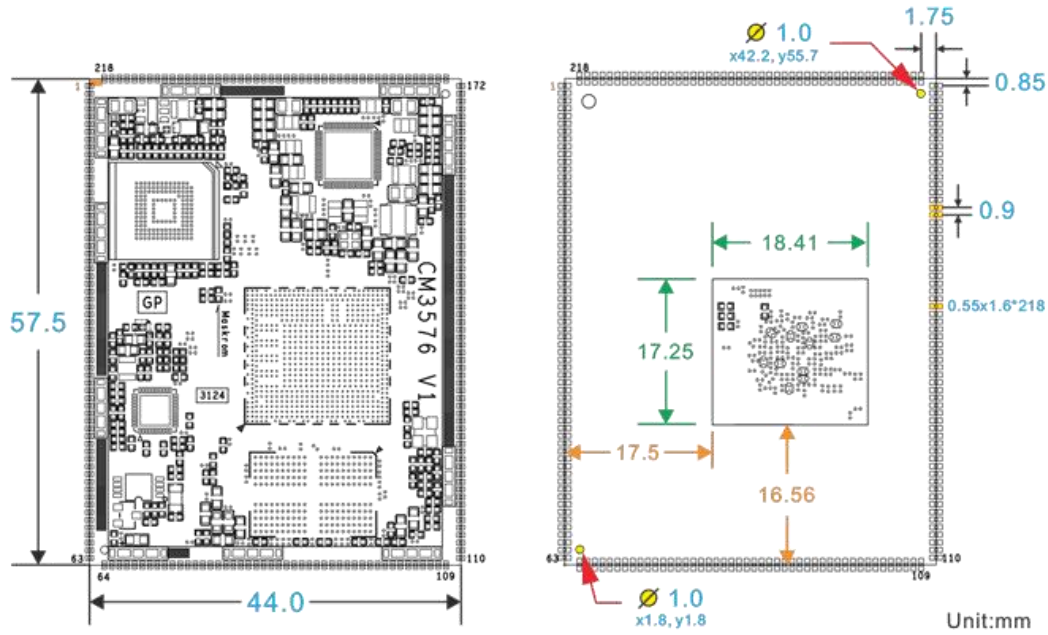
The CPU module RK3576 is equipped with up to 32GB storage.

CM3576 specifications

Pin number— 218-pin, 0.9mm pitch

Dimension—57.5 x 44.0 mm

Application—Industrial HMI, Motion Control and Robotics, Multi-Camera Monitoring, DMS&OMS, Automatic Vehicle Identification, Home Security and Surveillance, etc.



Pin Definition

Pin	Signal	Pin	Signal
1	VCC_SYS	110	SAI0_MCLK_M0_1V8
2	VCC_SYS	111	SAI0_SDO0_M0_1V8
3	VCC_SYS	112	SAI0_SDO1_M0_1V8
4	PWRON_L	113	SAI0_SDO2_M0_1V8
5	VCC_3V3_S3	114	SPDIF_RX1_M1_1V8
6	UART0_TX_M0_DEBUG	115	I2C7_SDA_M1_1V8
7	UART0_RX_M0_DEBUG	116	I2C7_SCL_M1_1V8
8	GND	117	GND
9	RESET_L	118	DP_TX_AUXP
10	SDMMC0_DET_L_1V8	119	DP_TX_AUXN
11	WIFI_WAKE_HOST_H_1V8	120	USB2_OTG1_DP
12	BT_WAKE_HOST_H_1V8	121	USB2_OTG1_DM
13	HOST_WAKE_BT_H_1V8	122	USB2_OTG0_DP
14	SAI2_SCLK_M0_1V8	123	USB2_OTG0_DM
15	SAI2_SDO_M0_1V8	124	USB3_OTG0_SSRX1N/DP_TX_D0N
16	SAI2_SDI_M0_1V8	125	USB3_OTG0_SSRX1P/DP_TX_D0P
17	SAI2_LRCK_M0_1V8	126	USB3_OTG0_SSTX1P/DP_TX_D1P
18	WIFI_REG_ON_H_1V8	127	USB3_OTG0_SSTX1N/DP_TX_D1N
19	BT_REG_ON_H_1V8	128	USB3_OTG0_SSRX2N/DP_TX_D2N
20	UART4_CTSN_M1_1V8	129	USB3_OTG0_SSRX2P/DP_TX_D2P
21	UART4_RTSN_M1_1V8	130	USB3_OTG0_SSTX2P/DP_TX_D3P
22	UART4_TX_M1_1V8	131	USB3_OTG0_SSTX2N/DP_TX_D3N



Pin	Signal	Pin	Signal
23	UART4_RX_M1_1V8	132	GND
24	SDMMC1_D1_M0_1V8	133	MIPI_DPHY_DSI_TX_D0N
25	SDMMC1_D0_M0_1V8	134	MIPI_DPHY_DSI_TX_D0P
26	SDMMC1_D2_M0_1V8	135	MIPI_DPHY_DSI_TX_D1N
27	SDMMC1_D3_M0_1V8	136	MIPI_DPHY_DSI_TX_D1P
28	SDMMC1_CMD_M0_1V8	137	MIPI_DPHY_DSI_TX_CLKN
29	SDMMC1_CLK_M0_1V8	138	MIPI_DPHY_DSI_TX_CLKP
30	GND	139	MIPI_DPHY_DSI_TX_D2N
31	RECOVERY_SARADC_VIN1	140	MIPI_DPHY_DSI_TX_D2P
32	SARADC_VIN2	141	MIPI_DPHY_DSI_TX_D3N
33	GND	142	MIPI_DPHY_DSI_TX_D3P
34	SDMMC0_CLK	143	MIPI_DPHY_CSI0_RX_D0P
35	SDMMC0_D1	144	MIPI_DPHY_CSI0_RX_D0N
36	SDMMC0_D0	145	MIPI_DPHY_CSI0_RX_D1P
37	SDMMC0_CMD	146	MIPI_DPHY_CSI0_RX_D1N
38	SDMMC0_D3	147	MIPI_DPHY_CSI0_RX_CLKP
39	SDMMC0_D2	148	MIPI_DPHY_CSI0_RX_CLKN
40	LCDC_DEN/EBC_SDLE/DSMC_D ATA0	149	MIPI_DPHY_CSI0_RX_D2P
41	LCDC_VSYNC/EBC_SDCLK/DSM C_CLKN	150	MIPI_DPHY_CSI0_RX_D2N
42	LCDC_HSYNC/EBC_GDCLK/DS MC_CLKP	151	MIPI_DPHY_CSI0_RX_D3P
43	LCDC_CLK/EBC_SDOE/DSMC_R ESETN	152	MIPI_DPHY_CSI0_RX_D3N
44	DSMC_INT0/GPIO4_A0_d	153	GND
45	DSMC_INT2/GPIO4_A1_d	154	HDMI_TX_D3N
46	PHY1_LED1/CFG_LDO0	155	HDMI_TX_D3P
47	PHY1_LED2/CFG_LDO1	156	HDMI_TX_D0P
48	PHY1_MDI0+	157	HDMI_TX_D0N
49	PHY1_MDI0-	158	HDMI_TX_D1P
50	PHY1_MDI1+	159	HDMI_TX_D1N
51	PHY1_MDI1-	160	HDMI_TX_D2P
52	PHY1_MDI2+	161	HDMI_TX_D2N
53	PHY1_MDI2-	162	HDMI_TX_SBDN
54	PHY1_MDI3+	163	HDMI_TX_SBDP
55	PHY1_MDI3-	164	GND
56	32KOUT_RTC_1V8	165	MIPI_DPHY_CSI2_RX_CLKP
57	VCC_RTC	166	MIPI_DPHY_CSI2_RX_CLKN



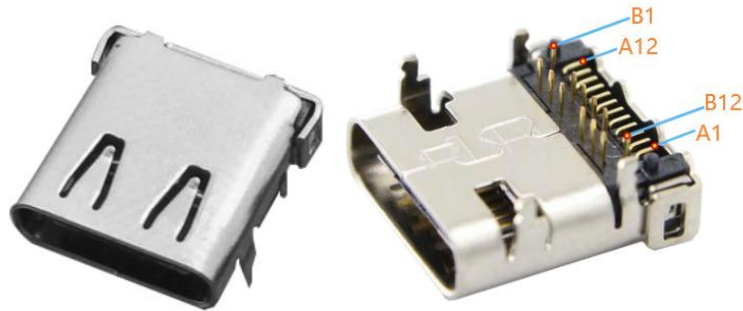
Pin	Signal	Pin	Signal
58	LCDC_D0/EBC_SDDO0/DSMC_C SN0	167	MIPI_DPHY_CSI1_RX_CLKN
59	LCDC_D1/EBC_SDDO1/DSMC_C SN3	168	MIPI_DPHY_CSI1_RX_CLKP
60	LCDC_D2/EBC_SDDO2/DSMC_C SN2	169	MIPI_DPHY_CSI1_RX_D3N
61	LCDC_D3/EBC_SDDO3/DSMC_D ATA1	170	MIPI_DPHY_CSI1_RX_D3P
62	LCDC_D4/EBC_SDDO4/DSMC_D ATA2	171	MIPI_DPHY_CSI1_RX_D2N
63	LCDC_D5/EBC_SDDO5/DSMC_D ATA3	172	MIPI_DPHY_CSI1_RX_D2P
64	LCDC_D6/EBC_SDDO6/DSMC_D ATA4	173	MIPI_DPHY_CSI1_RX_D1N
65	LCDC_D7/EBC_SDDO7/DSMC_D ATA5	174	MIPI_DPHY_CSI1_RX_D1P
66	LCDC_D8/EBC_SDDO8/DSMC_I NT3	175	MIPI_DPHY_CSI1_RX_D0N
67	LCDC_D9/EBC_SDDO9/DSMC_I NT1	176	MIPI_DPHY_CSI1_RX_D0P
68	LCDC_D10/EBC_SDDO10/DSMC _DATA6	177	VCC_1V8_S3
69	LCDC_D11/EBC_SDDO11/DSMC _DATA7	178	USB2_OTG1_VBUSDET
70	LCDC_D12/EBC_SDDO12/DSMC _DQS0	179	TP_INT_L
71	LCDC_D13/EBC_SDDO13/DSMC _DQS1	180	LCD_BL_PWM1_CH1_M0
72	LCDC_D14/EBC_SDDO14/DSMC _DATA8	181	PCIE1_WAKEn_M0
73	LCDC_D15/EBC_SDDO15/DSMC _DATA9	182	GPIO0_B4_d
74	LCDC_D16/EBC_SDCE0/DSMC_ DATA10	183	USBCC_INT_L
75	LCDC_D17/EBC_SDCE1/DSMC_ DATA11	184	PCIE0_PWREN_H
76	LCDC_D18/EBC_SDCE2/DSMC_ DATA12	185	PCIE0_WAKEn_M0
77	LCDC_D19/EBC_SDCE3/DSMC_ DATA13	186	LCD_PWREN_H



Pin	Signal	Pin	Signal
	CSN1		
78	LCDC_D20/EBC_VCOM/DSMC_DATA13	187	I2C2_SCL_M0_CC_RTC
79	LCDC_D21/EBC_GDOE/DSMC_DATA14	188	I2C2_SDA_M0_CC_RTC
80	LCDC_D22/EBC_GDSP/DSMC_DATA15	189	GPIO0_C4_d
81	LCDC_D23/EBC_SDSHR/DSMC_RDYN	190	I2C0_SCL_M1_TP
82	TYPEC_DPTX_AUX_PUPDCTL1	191	I2C0_SDA_M1_TP
83	PCIE1_CLKREQn_M2	192	TP_RST_L
84	PCIE1_PWREN_H	193	GND
85	HDMI_TX_ON_H	194	PCIE0_RXP
86	TYPEC_DPTX_AUX_PUPDCTL2	195	PCIE0_RXN
87	HP_CTL_H	196	PCIE0_TXN
88	I2C3_SCL_M0_Sensor	197	PCIE0_TXP
89	I2C3_SDA_M0_Sensor	198	PCIE0_REFCLKP
90	SPK_CTL_H	199	PCIE0_REFCLKN
91	PCIE1_PERSTn	200	PCIE1_TXP
92	IRC_BIN	201	PCIE1_TXN
93	IRC_AIN	202	PCIE1_RXP
94	PCIE0_CLKREQn_M3	203	PCIE1_RXN
95	PCIE0_PERSTn	204	PCIE1_REFCLKP
96	PWM2_CH5_M1_FAN	205	PCIE1_REFCLKN
97	HDMI_TX_HPDIN_M0	206	GND
98	HDMI_TX_SDA	207	MIPI_DPHY_CSI4_RX_CLKP
99	HDMI_TX_SCL	208	MIPI_DPHY_CSI4_RX_CLKN
100	DP_HPDIN_M0	209	MIPI_DPHY_CSI3_RX_D3N
101	HDMI_TX_CEC_M0	210	MIPI_DPHY_CSI3_RX_D3P
102	GND	211	MIPI_DPHY_CSI3_RX_D2N
103	MIPI_DPHY_CSI0_PWREN_H_1V8	212	MIPI_DPHY_CSI3_RX_D2P
104	SAI0_SDI0_M0_1V8	213	MIPI_DPHY_CSI3_RX_CLKN
105	SAI0_SDI1_M0_1V8	214	MIPI_DPHY_CSI3_RX_CLKP
106	SAI0_SDI2_M0_1V8	215	MIPI_DPHY_CSI3_RX_D1N
107	SAI0_SDI3_M0_1V8	216	MIPI_DPHY_CSI3_RX_D1P
108	SAI0_SCLK_M0_1V8	217	MIPI_DPHY_CSI3_RX_D0N
109	SAI0_LRCK_M0_1V8	218	MIPI_DPHY_CSI3_RX_D0P

2 Peripherals Introduction

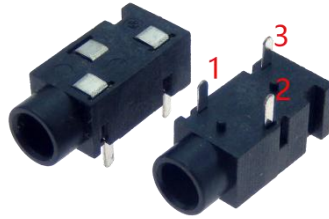
2.1 USB PD(J3)



12V DC is powered by the Type-C connector, reversible plug design.

Pin	Signal	Description	Pin	Signal	Description
A1	GND	Ground	A2	NC	Not connect
A3	NC	Not connect	A4	VDD_USB	USB Power Supply Voltage
A5	CC1	Configuration Channel 1	A6	TYPEC0_DP	USB Type-C Data Pair 0 Positive
A7	TYPEC0_DM	USB Type-C Data Pair 0 Negative	A8	NC	Not connect
A9	VDD_USB	USB Power Supply Voltage	A10	NC	Not connect
A11	NC	Not connect	A12	GND	Ground
B1	GND	Ground	B2	NC	Not connect
B3	NC	Not connect	B4	VDD_USB	USB Power Supply Voltage
B5	CC2	Configuration Channel 2	B6	TYPEC0_DP	USB Type-C Data Pair 0 Positive
B7	TYPEC0_DM	USB Type-C Data Pair 0 Negative	B8	NC	Not connect
B9	VDD_USB	USB Power Supply Voltage	B10	NC	Not connect
B11	NC	Not connect	B12	GND	Ground

2.2 Headset (J5)



The Compact3576 adopts audio codec ES8388 to provide stereo audio output/input.

Feature

- Low power
- Integrated ADC and DAC
- IIS transfer audio data
- Stereo output, support recording

Pin	Signal	Description	Pin	Signal	Description
1	AGND	Analog Ground	2	R-OUT	Right-channel audio output
3	L-OUT	Left-channel audio output			

2.3 HDMI OUT(J9,J21)



Compact3576 HDMI OUT supports up to 4K@120fps output, regular 19pins HDMI type A, with width 14.0mm and thickness 4.55mm.

Features

- Transmits high-quality audio signals, including support for various audio formats and audio synchronization.
- Features a nickel-plated copper shell for enhanced durability and corrosion resistance.
- Compatible with a wide range of HDMI-enabled devices, including smart TVs, gaming consoles and more.

J9					
Pin	Signal	Description	Pin	Signal	Description
1	TX2P	Differential Transmit Data Pair 2 Positive	2	GND	Ground
3	TX2M	Differential Transmit Data Pair 2 Negative	4	TX1P	Differential Transmit Data Pair 1 Positive
5	GND	Ground	6	TX1M	Differential Transmit Data Pair 1 Negative
7	TX0P	Differential Transmit Data Pair 0 Positive	8	GND	Ground
9	TX0M	Differential Transmit Data Pair 0 Negative	10	TXCP	Differential Transmit Control Pair Positive
11	GND	Ground	12	TXCM	Differential Transmit Control Pair Negative
13	NC	Not connect	14	NC	Not connect
15	HDMI2_TX_SC L_PORT	HDMI I2C Clock Line for Port 2	16	HDMI2_TX_SD A_PORT	HDMI I2C Data Line for Port 2
17	GND	Ground	18	HDMI_5V	HDMI +5 V power (HPD supply)
19	HDMI2_TX_HP D_PORT	HDMI Hot Plug Detect Port for Port 2			

J21					
Pin	Signal	Description	Pin	Signal	Description
1	HDMI_TX_D2P	HDMI Transmit Data 2 Positive	2	GND	Ground
3	HDMI_TX_D2N	HDMI Transmit Data 2 Negative	4	HDMI_TX_D1P	HDMI Transmit Data 1 Positive
5	GND	Ground	6	HDMI_TX_D1N	HDMI Transmit Data 1 Negative
7	HDMI_TX_D0P	HDMI Transmit Data 0 Positive	8	GND	Ground
9	HDMI_TX_D0N	HDMI Transmit Data 0 Negative	10	HDMI_TX_D3P	HDMI Transmit Data 3 Positive
11	GND	Ground	12	HDMI_TX_D3N	HDMI Transmit Data 3 Negative
13	HDMI_TX_CEC_PORT	HDMI Consumer Electronics Control Port	14	HDMITX_SBDP	HDMI Transmit Sideband Data Positive
15	HDMI_TX_SCL_PORT	HDMI Transmit I2C Clock Line Port	16	HDMI_TX_SDA_PORT	HDMI Transmit I2C Data Line Port
17	GND	Ground	18	VCC5V_HDMI_TX	5V Power Supply for HDMI Transmit

19	HDMITX_HPDI N/HDMITX_SB DN	HDMI Transmit Hot Plug Detect Input / HDMI Transmit Sideband Data Negative	
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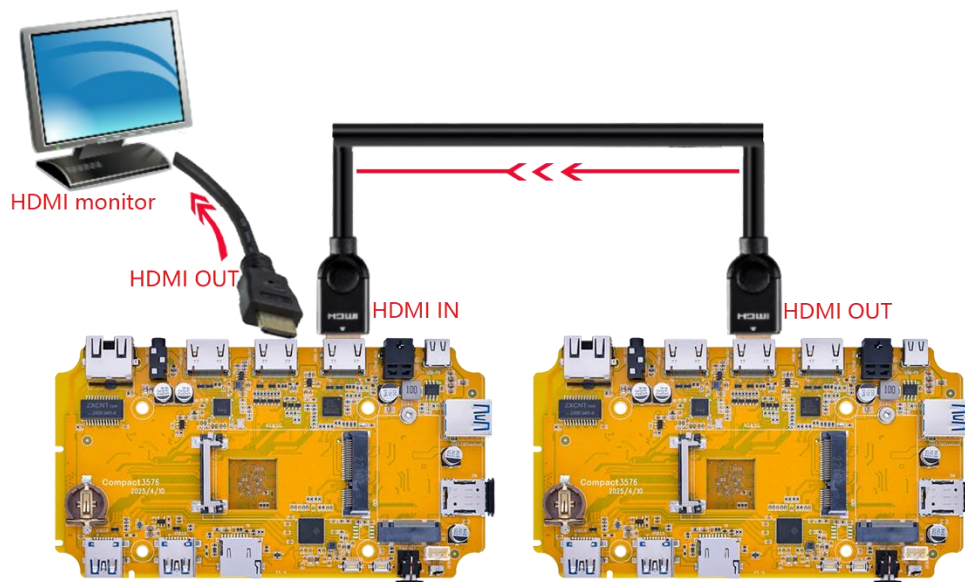
2.4 HDMI IN(J4)



Compact3576 HDMI IN is regular 19pins HDMI type A, with width 14.0mm and thickness 4.55mm.

Features

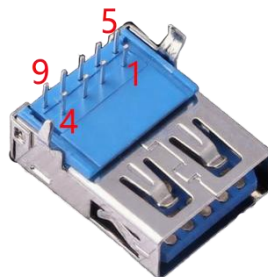
- The HDMI Type-A interface is widely compatible with various devices and can receive signals from various HDMI output devices.
- Supports high-bandwidth transmission and is capable of transmitting high-quality video and audio signals.
- Supports hot plugging for convenient user operation.



Pin	Signal	Description	Pin	Signal	Description
1	HDMI_RX2+	HDMI differential data channel 2 positive	2	GND	Ground
3	HDMI_RX2-	HDMI differential data	4	HDMI_RX1+	HDMI differential data

		channel 2 negative			channel 1 positive
5	GND	Ground	6	HDMI_RX1-	HDMI differential data channel 1 negative
7	HDMI_RX0+	HDMI differential data channel 0 positive	8	GND	Ground
9	HDMI_RX0-	HDMI differential data channel 0 negative	10	HDMI_RXC+	HDMI differential clock channel positive
11	GND	Ground	12	HDMI_RXC-	HDMI differential clock channel negative
13	HDMIIN_CEC	HDMI Consumer Electronics Control signal	14	GND	Ground
15	HDMIIN_DDC_SCL	HDMI Display Data Channel (DDC) Serial Clock Line	16	HDMIIN_DDC_SDA	HDMI Display Data Channel (DDC) Serial Data Line
17	GND	Ground	18	HDMIIN_5V	HDMI 5V power supply
19	HDMIIN_HPDO	HDMI Hot Plug Detect Output			

2.5 USB OTG/Host(J8)



SBC3588 USB3.0 Download port, it is used to download image and ADB transfer file, or use a docking station to connect USB device. Regular 9-pin, with width 15.5mm and thickness 7mm.

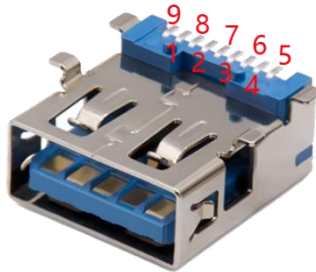
Feature

- Support hot plugging.
- Providing super speed data transfer capabilities.
- Supports USB Type-C OTG function, allowing the device to switch between host and device modes.

Pin	Signal	Description	Pin	Signal	Description
1	VCC5V0_USB30	5 V power for	2	TYPEC0_OTG_D	USB2.0 OTG Data-

	_HOST0	USB3.0 Host port		M	
3	TYPEC0_OTG_DP	USB2.0 OTG Data+	4	GND	Ground
5	TYPEC_RX2N	USB3.0 RX Lane 2 negative	6	TYPEC_RX2P	USB3.0 RX Lane 2 positive
7	GND	Ground	8	TYPEC_TX2N	USB3.0 TX Lane 2 negative
9	TYPEC_TX2P	USB3.0 TX Lane 2 positive			

2.6 USB3.0(J6,J7)



Compact3576 USB3.0 port, it is 9-pin, used to docking station to connect USB device.

J6					
Pin	Signal	Description	Pin	Signal	Description
1	VCC5V0_USB30_HOST1	5 V power for USB 3.0 Host 1 port	2	HUB_USB4-DM	USB 2.0 Data- (D-) from Hub port 4
3	HUB_USB4-DP	USB 2.0 Data+ (D+) from Hub port 4	4	GND	Ground
5	HUB_USB4-SSRXN	USB 3.x SuperSpeed RX Lane negative	6	HUB_USB4-SSRX P	USB 3.x SuperSpeed RX Lane positive
7	GND	Ground	8	HUB_USB4-SSTXN	USB 3.x SuperSpeed TX Lane negative
9	HUB_USB4-SSTX P	USB 3.x SuperSpeed TX Lane positive			

J7					
Pin	Signal	Description	Pin	Signal	Description
1	VCC5V0_USB30_HOST2	5 V power for USB 3.0 Host 2 port	2	HUB_USB3-DM	USB 2.0 Data- (D-) from Hub port 3
3	HUB_USB3-DP	USB 2.0 Data+ (D+) from Hub port 3	4	GND	Ground

5	HUB_USB3-SS RXN	USB 3.x SuperSpeed RX Lane 3 negative	6	HUB_USB3-SSR XP	USB 3.x SuperSpeed RX Lane 3 positive
7	GND	Ground	8	HUB_USB3-SST XN	USB 3.x SuperSpeed TX Lane 3 negative
9	HUB_USB3-SST XP	USB 3.x SuperSpeed TX Lane 3 positive			

2.7 Ethernet(JP1)



Compact3576 adopts an RJ45 connector as its Ethernet interface.

Feature

- Supports 10/100/1000 Mbps data transfer rates with the MII/RGMII interfaces
- Supports both full-duplex and half-duplex operation
- Implements the full 802.3 specification

Pin	Signal	Description	Pin	Signal	Description
1	DA1+	Differential Pair A Positive	2	DA1-	Differential Pair A Negative
3	DB1+	Differential Pair B Positive	4	DC1+	Differential Pair C Positive
5	DC1-	Differential Pair C Negative	6	DB1-	Differential Pair B Negative
7	DD1+	Differential Pair D Positive	8	DD1-	Differential Pair D Negative
11	PHY1_LED 2/CFG_LD O1	PHY1 Status LED2 or Config LDO1 select	12	GND	Ground
13	PHY1_LED 1/CFG_LD O0	PHY1 Status LED1 or Config LDO0 select	14	GND	Ground

2.8 User Buttons (SW1, SW2, K1)



Key	Signal	Description	Key	Signal	Description
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SW1	Reset-KEY	Reset	SW2	RECOVER-KEY	Recover
K1	POWER KEY+ Green LED	Power On/Off and Green LED			

The K1 is POWER key.

K1					
Key	Signal	Description	Key	Signal	Description
1	GND	Ground	2	PWRON_L	Power On Low
3	LCD_BL_PWM 1_CH1_M0	LCD Backlight PWM Channel 1	4	VCC_3V3	3V3 Power

2.9 M.2 SSD(J11)



M2_KEY_B_M_Socket socket (PCIe) for NVMe SSD.

Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	VCC3V3_M.2	3.3V Power Supply for M.2 Module
3	GND	Ground	4	VCC3V3_M.2	3.3V Power Supply for M.2 Module
5	NC	Not connect	6	NC	Not connect
7	NC	Not connect	8	NC	Not connect
9	NC	Not connect	10	NC	Not connect
11	NC	Not connect	20	NC	Not connect
21	GND	Ground	22	NC	Not connect
23	NC	Not connect	24	NC	Not connect
25	NC	Not connect	26	NC	Not connect
27	GND	Ground	28	NC	Not connect
29	NC	Not connect	30	NC	Not connect
31	NC	Not connect	32	NC	Not connect
33	GND	Ground	34	NC	Not connect
35	NC	Not connect	36	NC	Not connect
37	NC	Not connect	38	NC	Not connect
39	GND	Ground	40	NC	Not connect
41	PCIE0_RXN/SA TA0_RXN	PCIe/SATA RX-	42	NC	Not connect
43	PCIE0_RXP/SA TA0_RXP	PCIe/SATA RX+	44	NC	Not connect

45	GND	Ground	46	NC	Not connect
47	PCIE0_TXN/SA TA0_TXN	PCIe/SATA TX-	48	NC	Not connect
49	PCIE0_TXP/SA TA0_TXP	PCIe/SATA TX+	50	PCIE0_PERS Tn	PCIe0 Peripheral Reset
51	GND	Ground	52	PCIE0_CLKR EQn_M3	PCIe0 Clock Request (Mode 3)
53	PCIE0_REFCLK N	PCIe Ref Clock	54	PCIE0_WAKE n_M0	PCIe0 Wake Signal (Mode 0)
55	PCIE0_REFCLK P	PCIe Ref Clock+	56	NC	Not connect
57	GND	Ground	58	NC	Not connect
67	NC	Not connect	68	NC	Not connect
69	GND	Ground	70	VCC3V3_M.2	3.3V Power Supply for M.2 Module
71	GND	Ground	72	VCC3V3_M.2	3.3V Power Supply for M.2 Module
73	GND	Ground	74	VCC3V3_M.2	3.3V Power Supply for M.2 Module
75	GND	Ground			

2.10 4G Module(J12,P1)

The Compact3576 utilizes PCI-E as the socket for the 4G module(EC20).It delivers 50Mbps-up and100Mbps-down data rates on 4G FDD networks and can also be fully backward compatible with existing UMTS and GSM/GPRS networks.



J12					
Pin	Signal	Description	Pin	Signal	Description
1	WAKEUP_IN	Wake-up input (host → module)	2	PCIE_3V3	3.3V Power Supply for PCI Express
3	NC	Not connect	4	GND	Ground
5	NC	Not connect	6	NC	Not connect
7	NC	Not connect	8	SIM_VCC	SIM supply
9	GND	Ground	10	SIM_DATA	SIM data

11	VDD_EXT	1.8 V auxiliary output from module	12	SIM_CLK	SIM Clock
13	NC	Not connect	14	SIM_RST	SIM Reset
15	GND	Ground	16	NC	Not connect
17	NC	Not connect	18	GND	Ground
19	NC	Not connect	20	W_DISABLE#	Hardware wireless-disable
21	GND	Ground	22	5G_RESET	5G subsystem reset
23	USB_SSTXN	USB 3.0 SuperSpeed TX-	24	PCIE_3V3	3.3V Power Supply for PCI Express
25	USB_SSTXP	USB 3.0 SuperSpeed TX+	26	GND	Ground
27	GND	Ground	28	NC	Not connect
29	GND	Ground	30	NC	Not connect
31	USB_SSRXN	USB 3.0 SuperSpeed RX-	32	NC	Not connect
33	USB_SSRXP	USB 3.0 SuperSpeed RX+	34	GND	Ground
35	GND	Ground	36	HUB_USB1_DM	USB 2.0 D- (internal hub port)
37	GND	Ground	38	HUB_USB1_DP	USB 2.0 D+ (internal hub port)
39	PCIE_3V3	3.3 V PCIe power rail	40	GND	Ground
41	PCIE_3V3	3.3 V PCIe power rail	42	PCIE_3V3	3.3V Power Supply for PCI Express
43	GND	Ground	44	USIM1_DET	SIM card detect
45	NC	Not connect	46	NC	Not connect
47	NC	Not connect	48	NC	Not connect
49	NC	Not connect	50	GND	Ground
51	NC	Not connect	52	PCIE_3V3	3.3V Power Supply for PCI Express

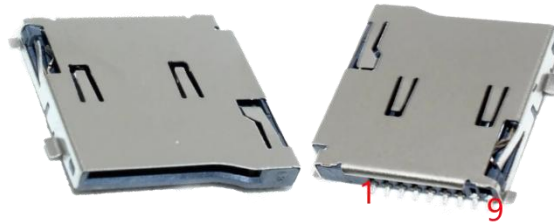
P1 is a drawer-type SIM card slot compatible with standard SIM cards and can be used for wireless transmission with 3G/4G modules.



P1					
Pin	Signal	Description	Pin	Signal	Description

1	SIM_VCC	SIM power supply	2	SIM_RST	Reset
3	SIM_CLK	Clock	5	GND	Ground
6	SIM_VCC	SIM power supply	7	SIM_DATA	send/receiver data I/O control

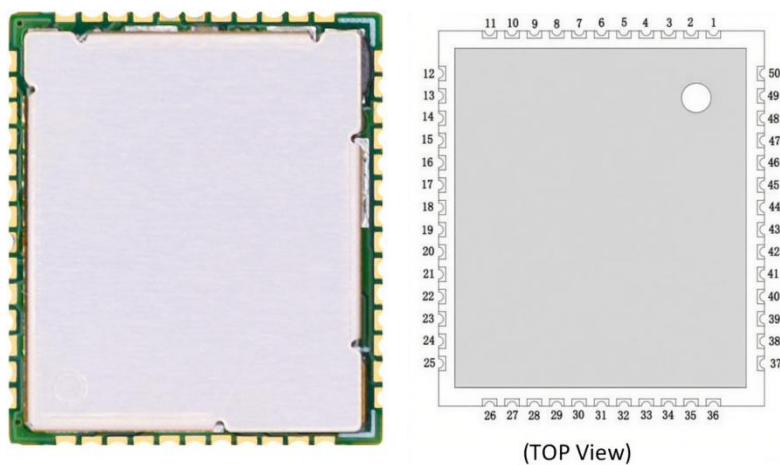
2.11 Micro SD(J10)



The Micro SD card is used as an external storage device. The MMC controller interface supports up to 4-bit transfer modes. MMC is always accessible through the carrier board interface.

Pin	Signal	Description	Pin	Signal	Description
1	SDMMC0_D2	SD/MMC data2	2	SDMMC0_D3	SD/MMC data3
3	SDMMC0_CMD	SD/MMC command signal	4	SD_3V3	3.3V
5	SDMMC0_CLK	SD/MMC clock	6	GND	Ground
7	SDMMC0_D0	SD/MMC data0	8	SDMMC0_D1	SD/MMC data1
9	SDMMC0_DET_L_1V8	SD/MMC detect signal(1.8V)			

2.12 WiFi&Bluetooth(U12)



BL-M8822CS1-S is a highly integrated dual band WLAN+Bluetooth v5.0 combo module, It combines a 2T2R Dual-band WLAN subsystem and a Bluetooth v5.0 subsystem which features dual BT controllers. The module is compatible with IEEE 802.11a/b/g/n/ac standard and provides

the maximum PHY rate up to 867Mbps, it supports BT/BLE dual mode with BT v5.0/4.2/2.1 compliant, offering feature-rich wireless connectivity at high standards, and delivering reliable, cost-effective throughput from an extended distance.

Features

- Operating Frequencies: 2.4~2.4835GHz or 5. 15~5.85GHz.
- Host Interface is SDIO (SDIO 1. 1/2.0/3.0) and UART for BT.
- Wireless PHY rate can reach up to 867Mbps.

Pin	Signal	Description	Pin	Signal	Description
1	GND	Ground	2	WL_BT_ANT0	Wi-Fi / BT RF antenna port
3	GND	Ground	4	GND	Ground
5	GND	Ground	6	GND	Ground
7	GND	Ground	8	GND	Ground
9	WL_ANT1	Wi-Fi RF antenna port 1	10	GND	Ground
11	GND	Ground	12	NC/PCIE_PREST_L	Not connect / PCIe reset (active low)
13	XTAL_OUT(NC)	Crystal oscillator output	14	XTAL_IN(NC)	Crystal oscillator input
15	GPIO0_B1_z_1V8	GPIO (1.8 V level)	16	WIFI_WAKE_HOST_H	Wi-Fi wake-up host (active high)
17	WIFI_CMD	SDIO CMD line	18	WIFI_CLK	SDIO CLK line
19	WIFI_D3	SDIO DATA3 line	20	WIFI_D2	SDIO DATA2 line
21	WIFI_D0	SDIO DATA0 line	22	WIFI_D1	SDIO DATA1 line
23	GND	Ground	24	SDIO_VSEL	SDIO IO voltage select (1.8 V/3.3 V)
25	VIN_LDO	LDO input supply	26	VIN_LDO_OUT	LDO output supply
27	PCM_SYNC_BT	PCM sync signal for Bluetooth	28	PCM_IN_BT	PCM data input for Bluetooth
29	PCM_OUT_BT	PCM data output for Bluetooth	30	PCM_CLK_BT	PCM clock for Bluetooth
31	32KOUT_RTC_1V8	32.768kHz RTC clock output (1.8 V)	32	GND	Ground
33	NC	Not connect	34	VCCIO_WL	Wi-Fi IO power
35	NC	Not connect	36	VCC3V3_WL_VBAT	Wi-Fi main power (3.3 V)
37	NC	Not connect	38	BT_REG_ON_H	Bluetooth regulator enable (active high)
39	GND	Ground	40	UART4_RX_M1_1	UART4 RX (1.8 V)

				V8	level)
41	UART4_TX_M1_1V8	UART4 TX (1.8 V level)	42	UART4_CTSN_M1_1V8	UART4 CTSn (1.8 V level)
43	UART4_RTSN_M1_1V8	UART4 RTSn (1.8 V level)	44	NC	Not connect
45	NC	Not connect	46	GND	Ground
47	GND	Ground	48	GND	Ground
49	HOST_WAKE_BT_H	Host wake-up Bluetooth (active high)	50	GPIO1_C6_d_1V8	GPIO (1.8 V level)

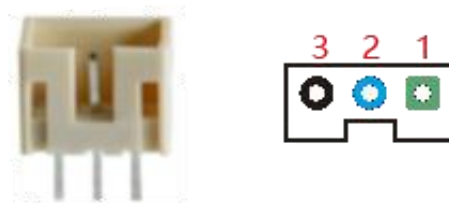
2.14 RTC(J2)



The backup battery (3V) is used to ensure the RTC (frequency 32.768KHz) is still able to work after power off. Lithium cell model:CR1220.

Pin	Signal	Description	Pin	Signal	Description
1	VCC_RTC	3V battery	2	GND	Ground

2.15 Debug(J1)



3-pin connector. The debug serial port baud rate is 1500000.

Pin	Signal	Description	Pin	Signal	Description
1	UART0_RX_M0_DEBUG	Serial data input	2	UART0_TX_M0_DEBUG	Serial data output
3	GND	Ground			

2.16 S/PDIF OUT(DJ1)



The GQ-G8 is a 3-pin plastic optical fiber transmitter base with a flat mounting design. It complies with the EIAJ CP-1201 standard, supports up to 13.2 Mbps NRZ SPDIF signals, support 3.3 V power supply, and is compatible with TTL/CMOS.

Pin	Signal	Description	Pin	Signal	Description
1	SPDIF_TX0_M1/GPIO4_A1_d	SPDIF digital audio TX or GPIO 4A1	2	VCC_3V3_S3	3.3 V power, S3 state
3	GND	Ground			

2.17 IR(U19)



The IR is a side-mounted infrared receiver with 4-pin, mainly used for receiving infrared remote control signals. It supports a carrier frequency of 38kHz and can efficiently demodulate infrared signals.

Pin	Signal	Description	Pin	Signal	Description
1	IR_IN	Infrared input signal	2	VCC_3V3_S3	3.3V power supply input
3	GND	Ground	4	GND	Ground

3 Product Configurations

3.1 Standard Contents

NO.	Item	Qty.(PCS)	Description
1	Compact3576 board	1	Standard Content(4GB RAM, 32GB eMMC)
2	U-disk/CD-ROM	1	Android SDK, Debian SDK, Documents, tools, Schematic Drawing, datasheets, etc.
3	Ethernet cable	1	1.5m Crossover cable
4	Serial Cable	1	CH9102X
5	USB Cable	1	USB OTG
6	Power adaptor	1	Type-C (12V / 3A) DC
7	Antenna	1	WIFI antenna

3.2 Optional Parts

- 4G Module
- SSD