OFT-1202/1502

12.1"/15" Open Frame Tablet

Quick Reference Guide

1st Ed –05 July 2017

Copyright Notice

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Part No. E2017OT12A0R

Federal Communication Commission Interference Statement

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**

Notice:

(1) A Unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord by used.

(2) Use only shielded cables to connect I/O devices to this equipment.

(3) Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65 and found compliant to the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices. The radiated output power of this Wireless LAN device is far below the FCC radio frequency exposure limits. Nevertheless, this device shall be used in such a manner that the potential for human contact during normal operation is minimized. When nearby persons has to be kept to ensure RF exposure compliance, in order to comply with RF exposure limits established in the ANSI C95.1 standards, the distance between the antennas and the user should not be less than 20 cm.

WARNING

“CAUTION – Use suitable mounting apparatus to avoid risk of injury.”

“CAUTION – This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures”

“CAUTION –Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.”

“CAUTION - Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.”

“WARNING – To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.”

WiFi information :

Product Description	**IEEE 802.11 b/g/n Wireless LAN and Bluetooth Combo LGA Module**
WLAN Standard	**IEEE 802.11b/g/n, Wi-Fi compliant**
Bluetooth Standard	**Bluetooth 2.1+Enhanced Data Rate (EDR) / BT4.0**
Major Chipset	**Realtek RTL8723BS**
WiFi PID/VID	**B723 / 024C**
Antenna Type	**PIFA**
Operating Conditions	
Temperature	**Operating: 0~70 oC ; Storage: -20~85 oC**
Electrical Specifications	
Frequency Range	**WLAN: 2.4 GHz Band 2.412-2.472 GHz Bluetooth: 2400~2483.5MHz**
Number of Channels	**802.11b: USA, Canada and Taiwan : 1 ~ 11 Most European Countries : 1 ~ 13 Japan : 1 ~ 13** **802.11g: USA and Canada : 1 ~ 11 Most European Countries : 1 ~ 13** **802.11n: USA and Canada : 1 ~ 11 Most European Countries : 1 ~ 13**
Modulation	**WLAN: DSSS, OFDM, BPSK(9/6Mbps), QPSK(18/12Mbps), DBPSK(1Mbps), DQPSK(2Mbps), CCK(11/5.5Mbps), 16-QAM(36/24Mbps), 64-QAM (72.2/54/48Mbps)** **Bluetooth: GFSK (1Mbps), Π/4DQPSK (2Mbps) and 8DPSK (3Mbps)**

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Content

1. Getting Started 8
1.1 Safety Precautions 8
1.2 Packing List 8
1.3 System Specifications 9
1.4 System Overview 12
1.4.1 Top View 12
1.4.2 Bottom View 12
1.5 System Dimensions 14
1.5.1 OFT-1202 14
1.5.2 OFT-1502 15
1.6 Wall Mounting Concept 16
2. Hardware Configuration 17
2.1 ACP-Z8300 Overviews 18
2.2 ACP-Z8300 Jumper and Connector list 19
2.3 Ethernet LED behavior 20
2.4 ACP-Z8300 Jumper and Connector settings 21
2.4.1 Clear CMOS (JBAT1) 21
2.4.2 AT/ATX Input power select (JAT1) 21
2.4.3 Serial port 1/2 pin9 signal select (JRI1/2) 22
2.4.4 Serial port 2 RS-232/485 mode selector (JP1) 22
2.4.5 Serial port 2 RS-232/485 mode selector (JP2) 23
2.4.6 U37 mode selector (JP3) 23
2.4.7 Power button connector (PWRBTN1) 24
2.4.8 Volume Up/Down connector (JVOLUD1) 24
2.4.9 Touch button board connector (JTB1) 25
2.4.10 SPI connector (JSPI1) 25
2.4.11 USB connector (JUSB1) 26
2.4.12 LCD Inverter connector (JBKL1) 26
2.4.13 LVDS connector (JLVDS1) 27
2.4.14 AMPLIFIER_L (JSPKL1) 28
2.4.15 AMPLIFIER_R (JAMP_R) 28
2.4.16 Audio connector (JAUDIO1) 29
2.4.17 MCU connector (JMCU1) 29
2.4.18 RTC battery connector (JRTC1) 30
2.4.19 Serial port1 connector (COM1) 30
2.4.20 IET connector (JB2B1) 31

2.4.21 Debug connector (JDBG1) 32
2.5 FCC 33
3. Software Configuration 34
3.1 HDMI Monitor/Touch Calibration on Windows 35

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

- 1 x OFT-1202/1502 Open Frame Tablet
- 1 x ACC-ADP-060N-04R AC/DC adapter 12V/5A

If any of the above items is damaged or missing, contact your retailer.

1.3 System Specifications

Component		
Model	**OFT-1202**	**OFT-1502**
Mother Board	ACP-Z8300	
CPU	Intel Atom Z8350	
CPU Cooler(Type)	Heatsink	
Memory	2GB DDR3L	
Power Supply	DC Input, 12 ~ 24V	
Microphone	1 x A-MIC & Audio pin header	
Speaker	2 x speaker(L & R) interface	
Camera	1 x USB pin header	
Wireless LAN	WIFI 802.11 b/g/n	
Bluetooth	BT4.0	
Operating System	Windows 10	
Expansion Card	Micro SD Socket (UHS-I type (SD 3.0) Micro SD card is recommended.)	
Other Component	1 x RS232 or RS485 1 x RS232 1 x Touch Button interface 1 x eDP & Dual channel 24bit LVDS 1 x backlight control & power 1 x I2C interface for PCAP	
Storage		
Other Storage Device	8GB or 32GB eMMC	
Panel		
LCD Panel	12.1”: 1024 x 768 pixel	15.1": 1024 x 768 pixel
Touch Screen	PCAP: By USB or I2C RES: onboard touch controller	
Touch Controller	EETI Res. Touch controller	
External I/O		
Serial Port	DSUB-9 x1	
USB Port	1 x USB 2.0 Type A 1 x Micro USB2.0 client (reserved)	
Video Port	1 x HDMI	
LAN Port	1 x 10/100/1000 Ethernet	
Others	Avalue IET module:	

	ARC-BYT DB-A (4 x USB3.0 module) or ARC-BYT DB-B (3xAudio Jack+HDMI) or ARC-BYT DB-C (HDMI+Mini PCIe+3G SIM)
Mechanical	
Power Type	DC 12 ~ 24V
Power Connector Type	DC jack
Dimension	TBD
Weight	TBD
OS Support	Windows 10
Reliability	
EMI Test	CE FCC Class B VCCI
Vibration Test	Sine Vibration test (Non-operation) Reference IEC60068-2-6 Testing procedures Test Fc : Vibration sinusoidal 1 Test Acceleration : 2G 2 Test frequency : 5 ~ 500 Hz 3 Sweep：1 Oct/ per one minute. (logarithmic) 4 Test Axis : X,Y and Z axis 5 Test time :30 min. each axis 6 System condition : Non-Operating mode Package Vibration Test Reference IEC60068-2-64 Testing procedures Test Fh : Vibration boardband random Test 1. PSD: 0.026G²/Hz , 2.16 Grms 2. Non-operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 min. per each axis Random Vibration Operation Reference IEC60068-2-64 Testing procedures Test Fh : Vibration boardband random Test 1. PSD: 0.00454G²/Hz , 1.5 Grms 2. Operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis

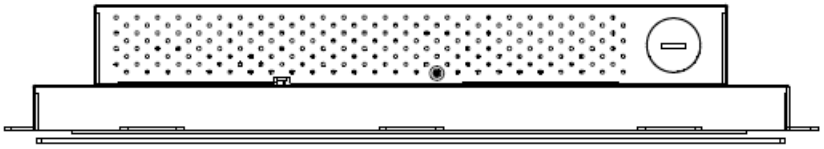
	5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh
Mechanical Shock Test	Bump Test Reference IEC 60068-2-29 Testing procedures Test Eb : Bump Test 1. Wave form：Half Sine wave 2. Acceleration Rate：10g for operation mode 3. Duration Time：11ms 4. No. of Shock：Z axis 300 times 5. Test Axis: Z axis 6. Operation mode
Operating Temperature	0°C ~ 40°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Storage Temperature	-20°C ~ 60°C

Note: Specifications are subject to change without notice.

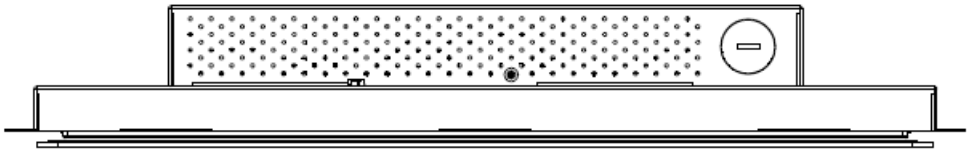
1.4 System Overview

1.4.1 Top View

OFT-1202

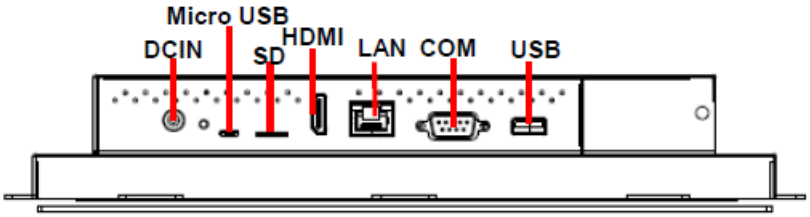


OFT-1502

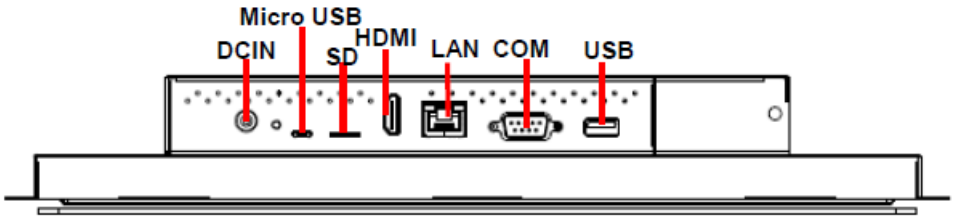


1.4.2 Bottom View

OFT-1202



OFT-1502

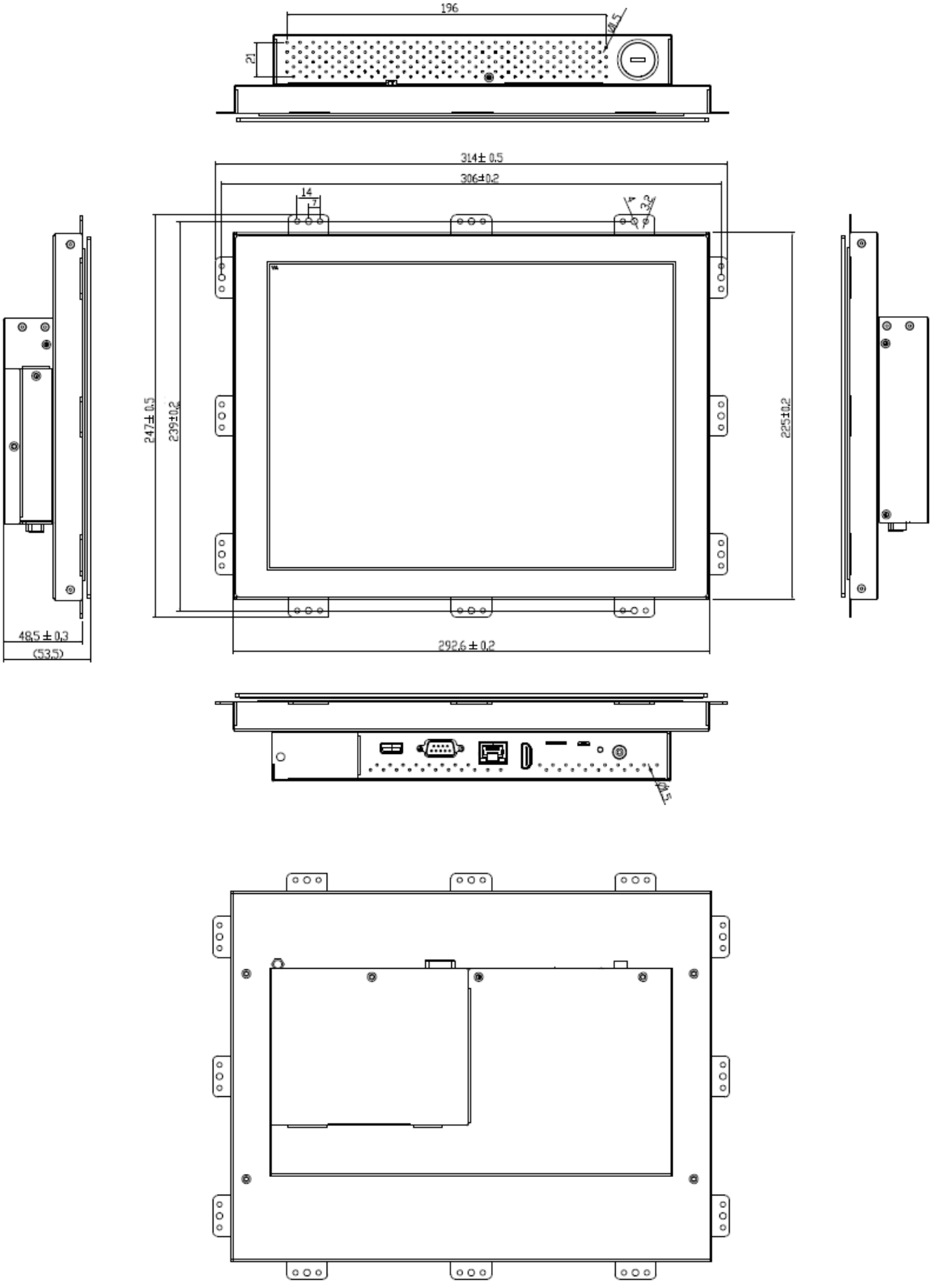


Connectors

Label	Function	Note
USB	USB 2.0 connector	
COM	Serial port connector	
LAN	RJ-45 Ethernet	
HDMI	HDMI connector	
SD	Micro SD card slot	
Micro USB	Micro USB connector	
DCIN	DC power-in connector	

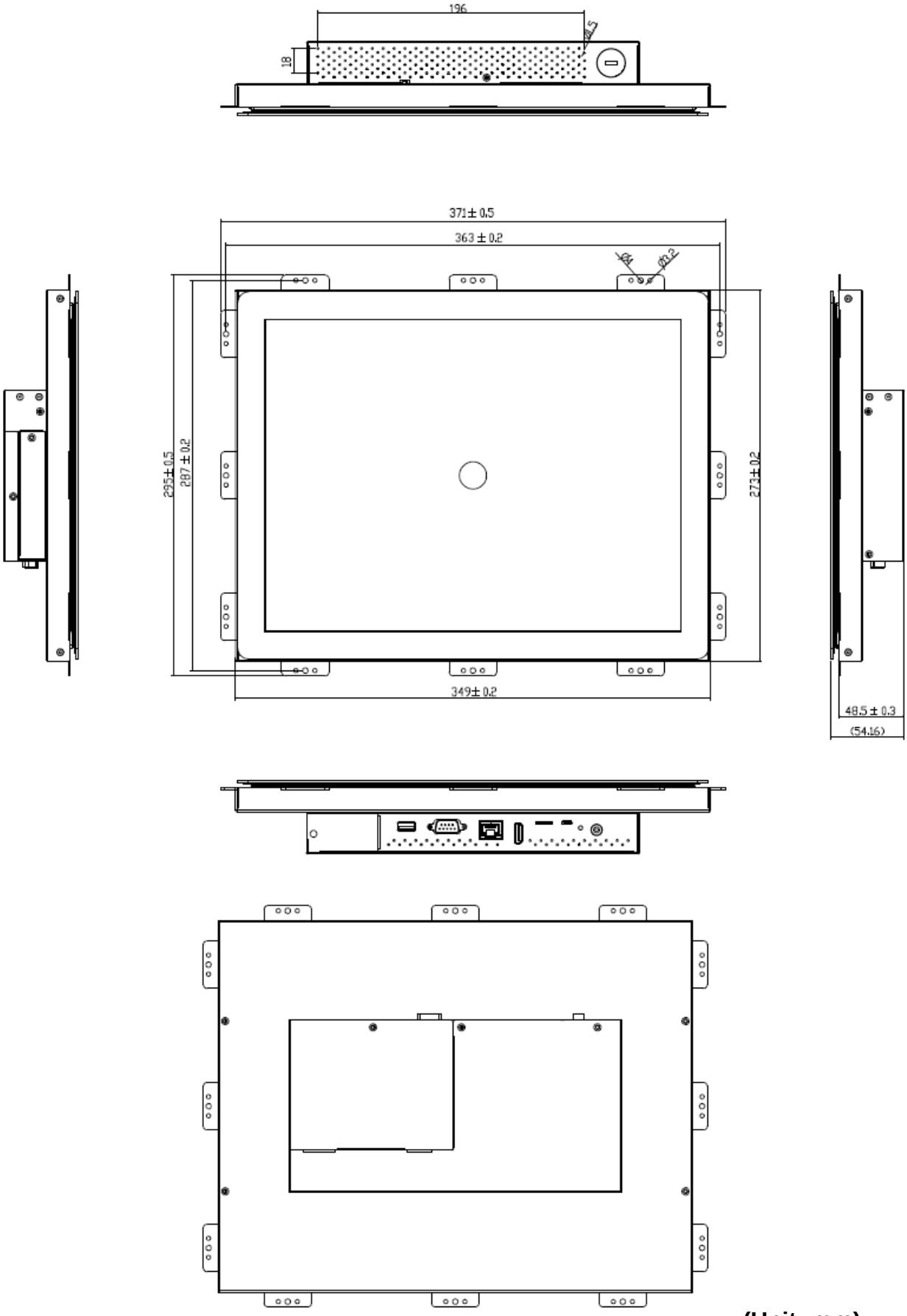
1.5 System Dimensions

1.5.1 OFT-1202



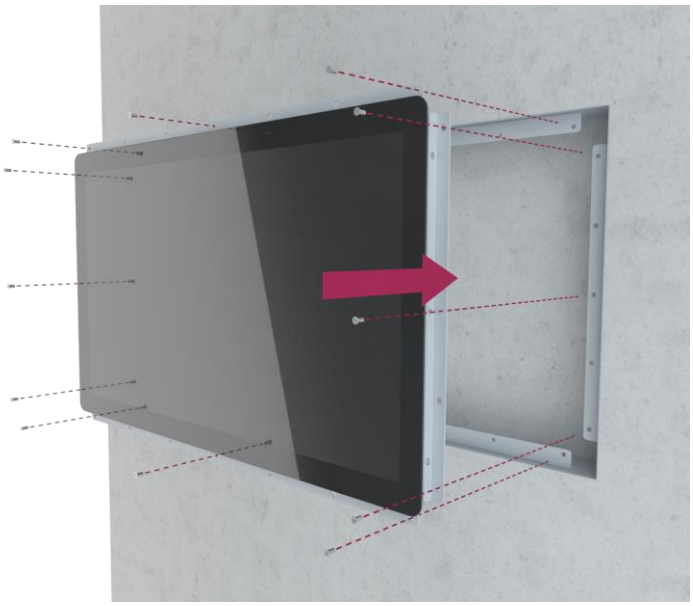
(Unit: mm)

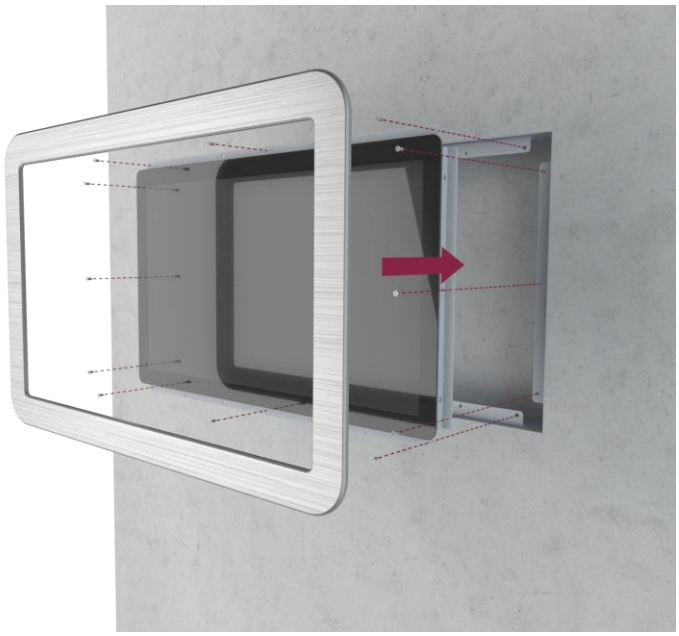
1.5.2 OFT-1502



(Unit: mm)

1.6 Wall Mounting Concept





2. Hardware Configuration

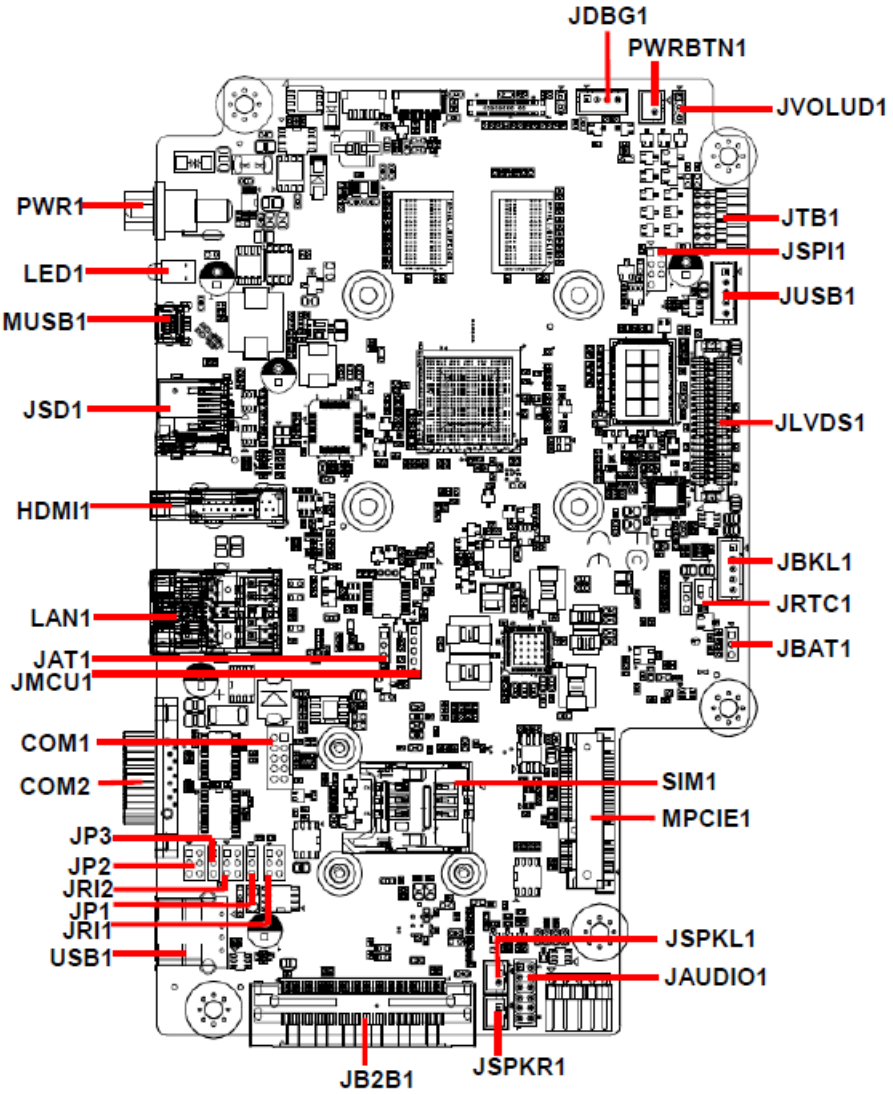
For advanced information, please refer to:

1- ACP-Z8300 included in this manual.

Note: If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 ACP-Z8300 Overviews



2.2 ACP-Z8300 Jumper and Connector list

Jumpers

Label	Function	Note
JBAT1	Clear CMOS	3 x 1 header, pitch 2.00mm
JAT1	AT/ATX Input power select	3 x 1 header, pitch 2.00mm
JP1	Serial port 2 RS-232/485 mode selector	3 x 1 header, pitch 2.00mm
JP2	Serial port 2 RS-232/485 mode selector	3 x 1 header, pitch 2.00mm
JP3	U37 mode selector	3 x 2 header, pitch 2.00mm
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
PWRBTN1	Power button connector	2 x 1 wafer, pitch 2.00mm
PWR1	Power connector	
JVOLUD1	Volume Up/Down connector	3 x 1 header, pitch 2.00mm
JTB1	Touch button board connector	6 x 2 header, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JUSB1	Internal USB2.0 connector	5 x 1 wafer, pitch 2.00mm
USB1	USB2.0 connector	
MUSB1	Micro USB2.0 connector	
JLVDS1	LVDS connector	20 x 2 wafer, pitch 1.25mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
JRTC1	RTC battery connector	2 x 1 wafer, pitch 1.25mm
SIM1	SIM card slot	
MPCIE1	Mini-PCIe connector 1	
JSPKL1	AMPLIFIER_L	2 x 1 wafer, pitch 2.00mm
JSPKR1	AMPLIFIER_R	2 x 1 wafer, pitch 2.00mm
JAUDIO1	Audio connector	6 x 2 header, pitch 2.00 mm
JB2B1	IET connector	40 x 2 wafer, pitch 0.80mm
COM1	Serial port 1 connector	5 x 2 wafer, pitch 2.00mm
COM2	Serial port 2 connector	
JMCU1	MCU Firmware upgrade connector	5 x 1 header, pitch 2.00 mm

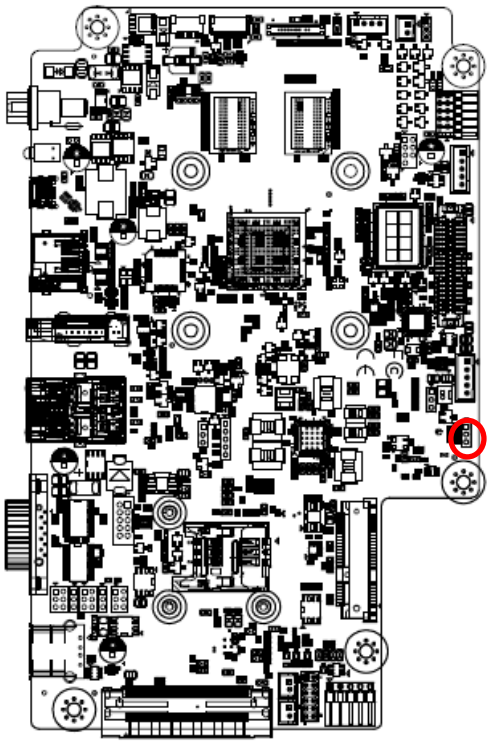
LAN1	RJ-45 Ethernet connector	
HDMI1	HDMI connector	
JSD1	Micro SD card slot	
LED1	LED indicator connector 1	
JDBG1	Debug connector	4 x 1 wafer, pitch 2.00mm

2.3 Ethernet LED behavior

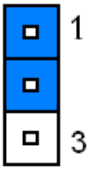
Label	LED color	Indication	Meaning
Data Rate	Yellow	LED off	10 Mbits/sec data rate is selected
		LED on	100 Mbits/sec data rate is selected
Link/ACT	Green	off	LAN link is not established
		LED on	LAN link is established
		LED Blinking	LAN active is occurring

2.4 ACP-Z8300 Jumper and Connector settings

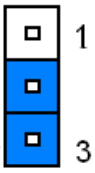
2.4.1 Clear CMOS (JBAT1)



Protect*

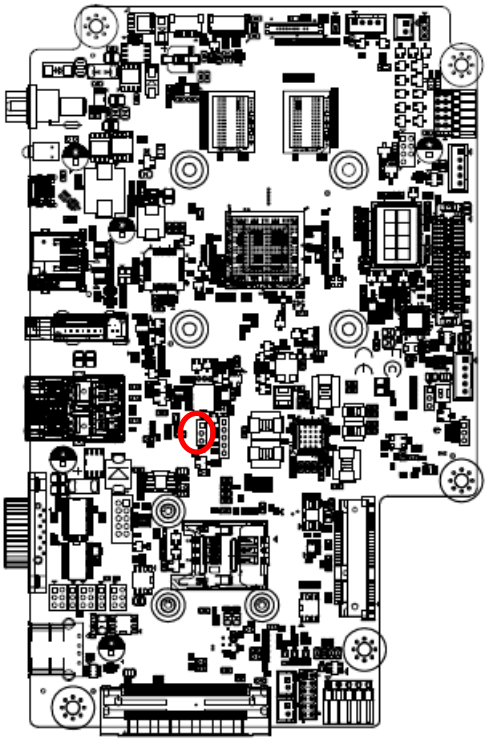


Clear CMOS

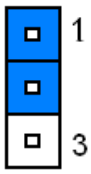


*** Default**

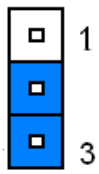
2.4.2 AT/ATX Input power select (JAT1)



AT*

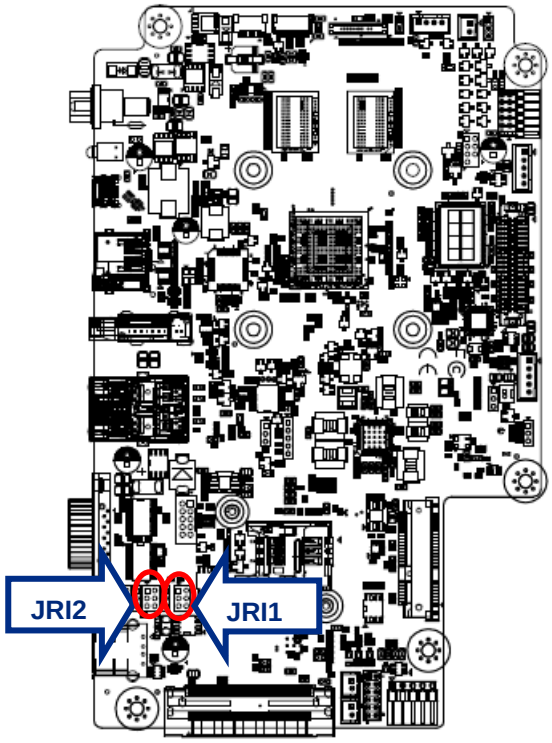


ATX

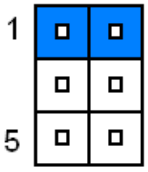


*** Default**

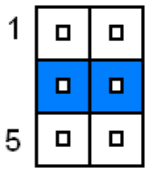
2.4.3 Serial port 1/2 pin9 signal select (JRI1/2)



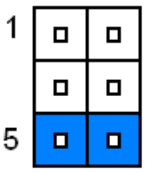
Ring*



+5V

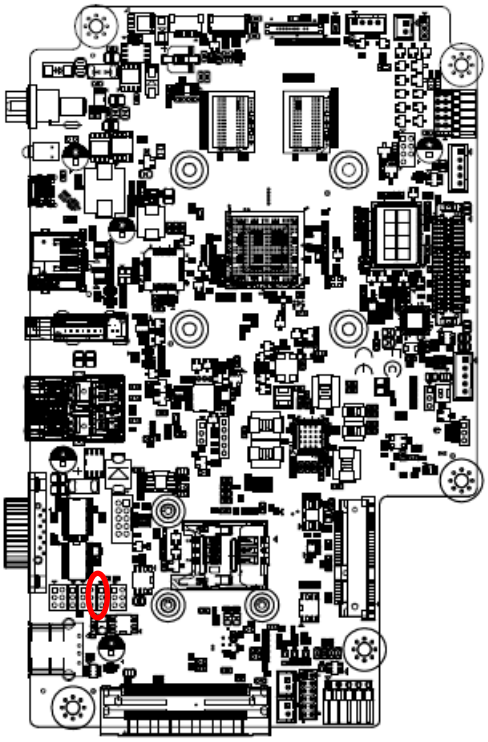


+12V

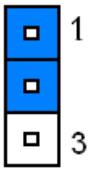


*** Default**

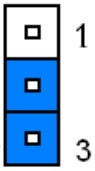
2.4.4 Serial port 2 RS-232/485 mode selector (JP1)



RS-232*

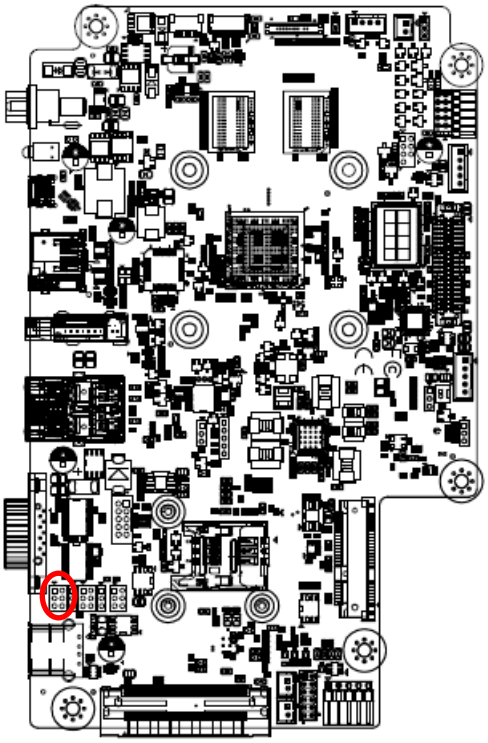


RS-485

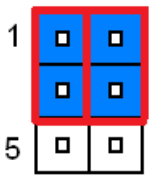


*** Default**

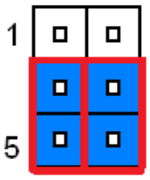
2.4.5 Serial port 2 RS-232/485 mode selector (JP2)



RS-232*

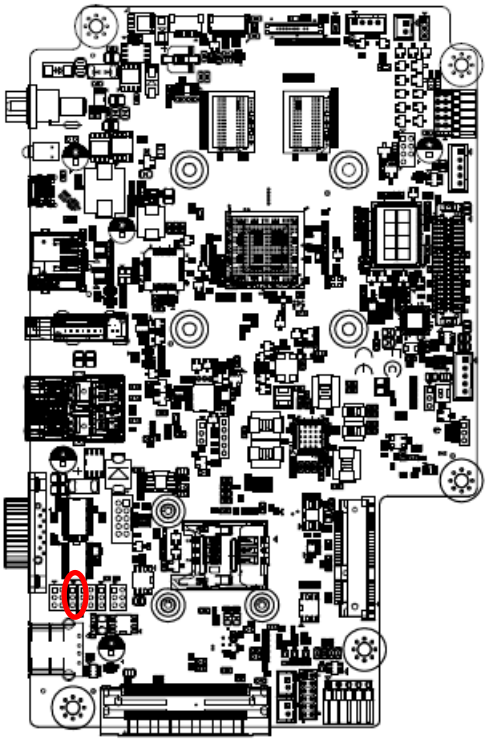


RS-485

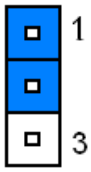


*** Default**

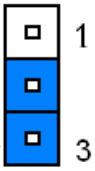
2.4.6 U37 mode selector (JP3)



Normal operation*



Mode switch setting

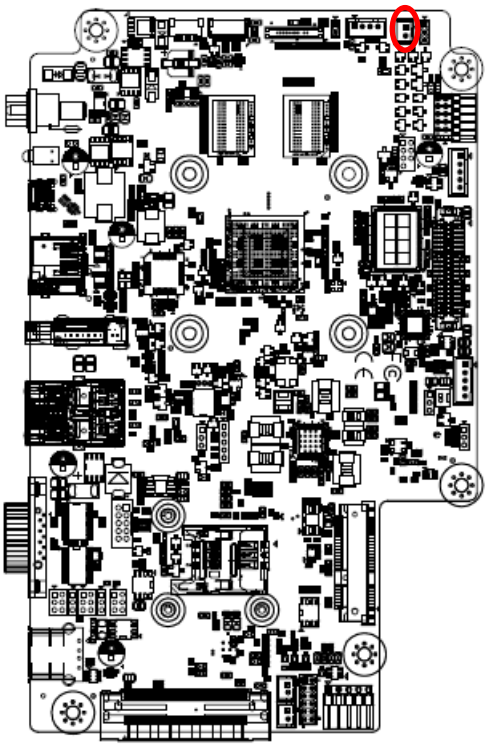


*** Default**

Note:

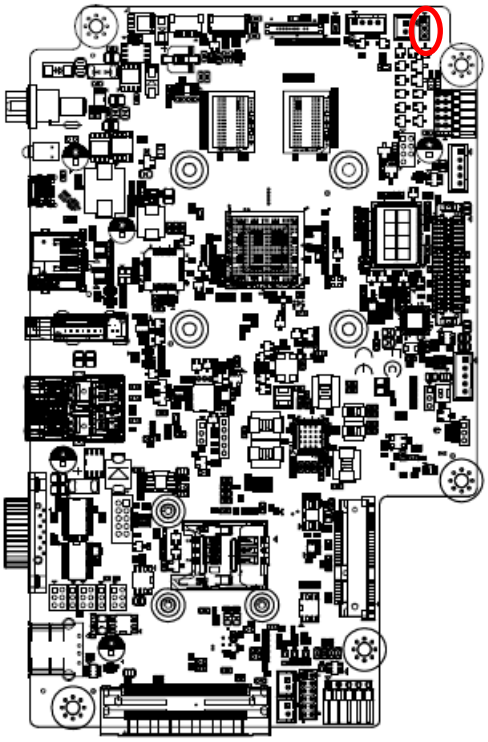
For Engineer setting. Don’t try to modify it.

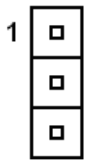
2.4.7 Power button connector (PWRBTN1)



Signal	PIN
JTB1_PWRBTN_3V#	1
GND	2

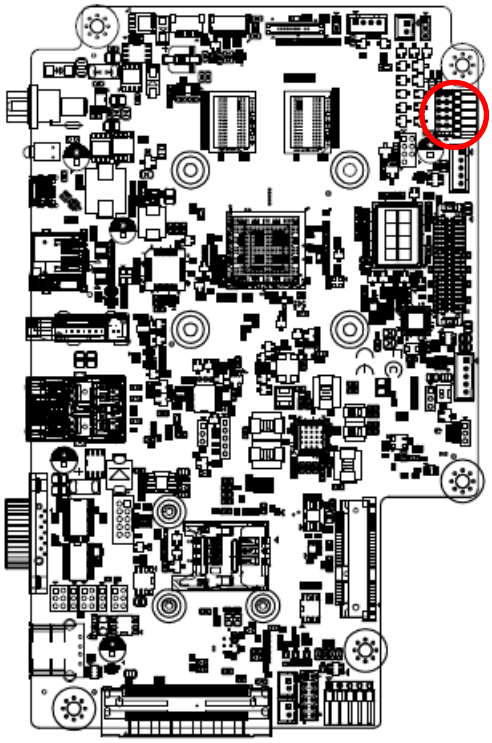
2.4.8 Volume Up/Down connector (JVOLUD1)

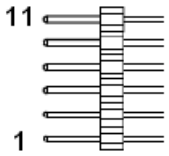




Signal	PIN
JTB1_VOL_UP_3V#	1
GND	2
JTB1_VOL_DOWN_3V#	3

2.4.9 Touch button board connector (JTB1)

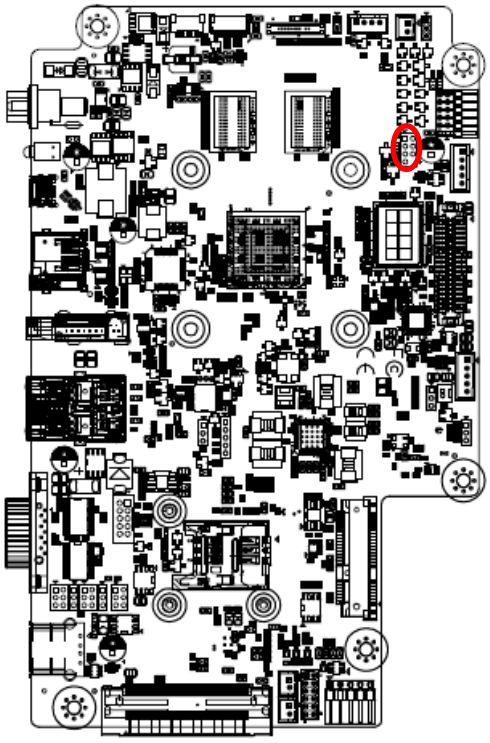


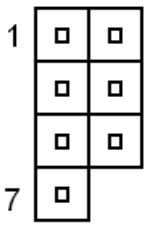


Signal	PIN	PIN	Signal
LED_ORANGE_con	12	11	LED_GREEN_con
BU7_3V	10	9	BU_BR-_3V
BU_BR+_3V	8	7	PWRBTN_3V
VOL_DOWN_3V	6	5	VOL_UP_3V
BU1_TV_3V	4	3	NC
GND	2	1	+5V

Note: Only for touch button board use.

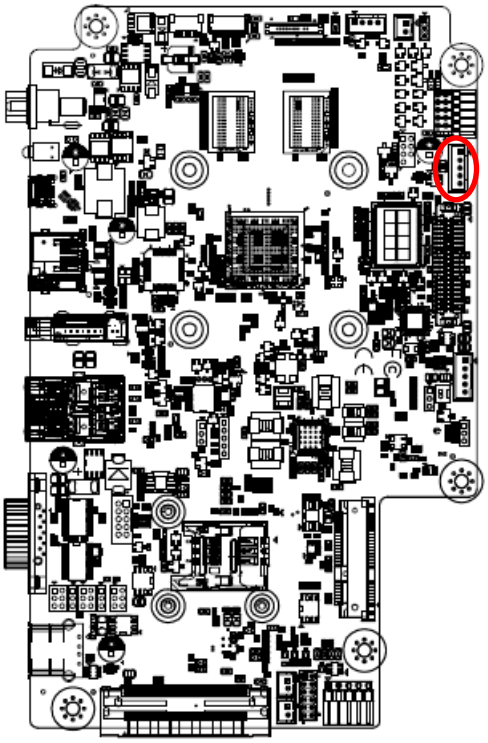
2.4.10 SPI connector (JSPI1)





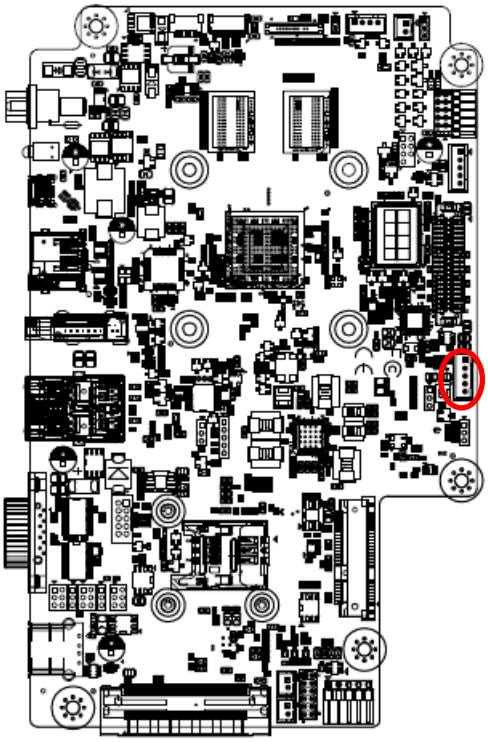
Signal	PIN	PIN	Signal
+VSPI_BIOS	1	2	GND
SPI_ROM_CS#_R	3	4	SPI_ROM_CLK_R
SPI_ROM_MISO_R	5	6	SPI_ROM_MOSI_R
SPI_HOLD#	7		

2.4.11 USB connector (JUSB1)



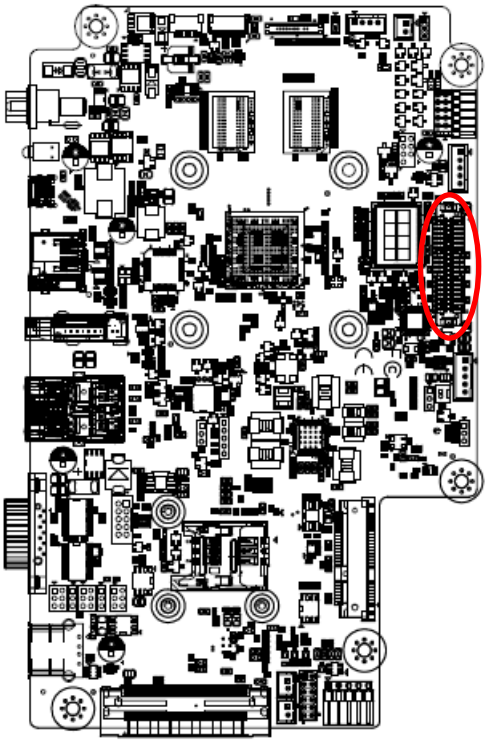
Signal	PIN
+5VSB	1
USB_HUB_N3_R	2
USB_HUB_P3_R	3
GND	4
GND	5

2.4.12 LCD Inverter connector (JBKL1)



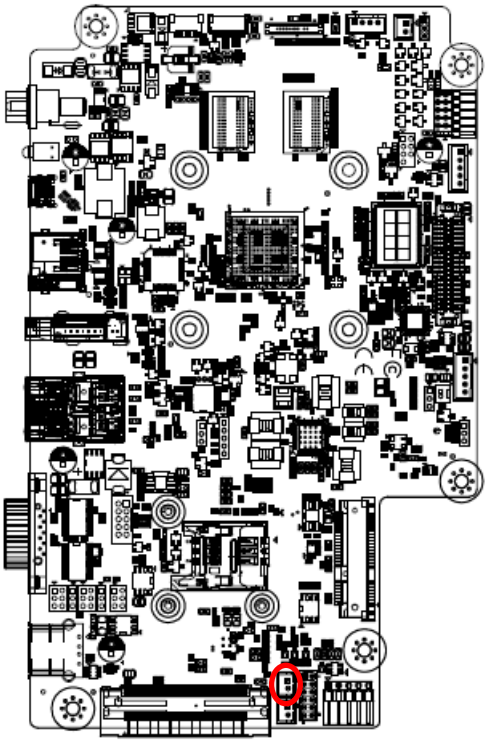
Signal	PIN
+12V	1
GND	2
LCM_BL_EN	3
PWM_LCD	4
+5V	5

2.4.13 LVDS connector (JLVDS1)



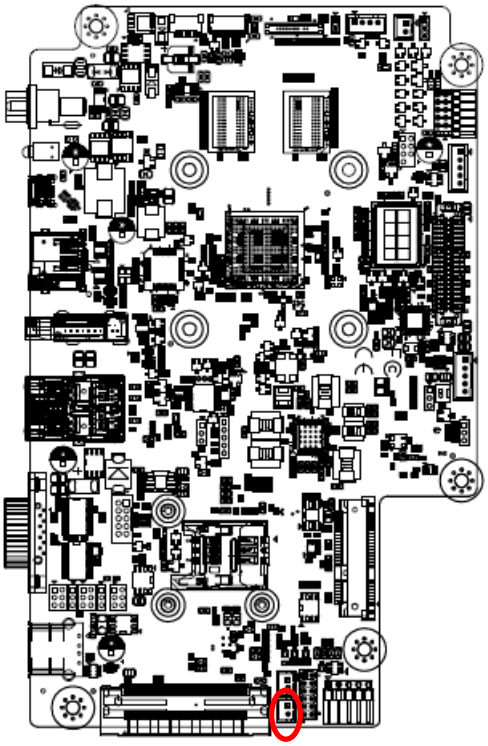
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS_TXO0+	10	9	LVDS_TXO1+
LVDS_TXO0-	12	11	LVDS_TXO1-
GND	14	13	GND
LVDS_TXO2+	16	15	LVDS_TXO3+
LVDS_TXO2-	18	17	LVDS_TXO3-
GND	20	19	GND
LVDS_TXE0+	22	21	LVDS_TXE1+
LVDS_TXE0-	24	23	LVDS_TXE1-
GND	26	25	GND
LVDS_TXE2+	28	27	LVDS_TXE3+
LVDS_TXE2-	30	29	LVDS_TXE3-
GND	32	31	GND
LVDS_TXOC+	34	33	LVDS_TXEC+
LVDS_TXOC-	36	35	LVDS_TXEC-
GND	38	37	GND
+12V	40	39	+12V

2.4.14 AMPLIFIER_L (JSPKL1)



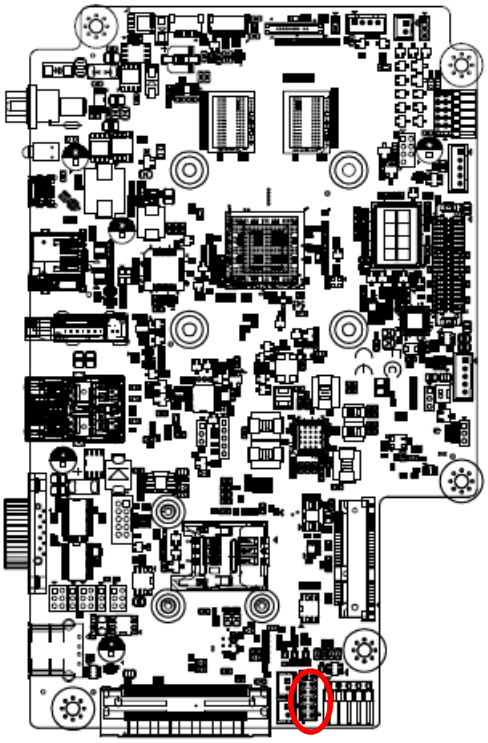
Signal	PIN
SPK_L+	1
SPK_L-	2

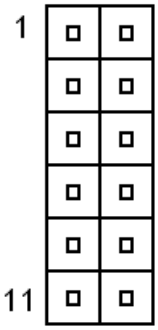
2.4.15 AMPLIFIER_R (JAMP_R)



Signal	PIN
SPK_R+	1
SPK_R-	2

2.4.16 Audio connector (JAUDIO1)

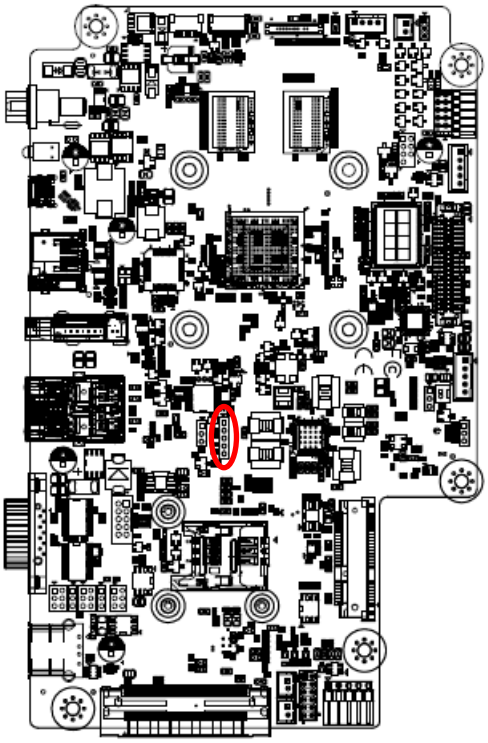


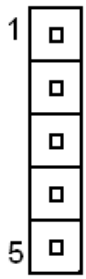


Signal	PIN	PIN	Signal
HP_R_CN	1	2	HP_L_CN
GND	3	4	GND
Don't Use	5	6	Don't Use
IN1N_MIC_R	7	8	IN1P_MIC_R
HP_JD	9	10	HP_JD
NC	11	12	GND

Note: HP_JD enable Headphone and Microphone function at the same time.

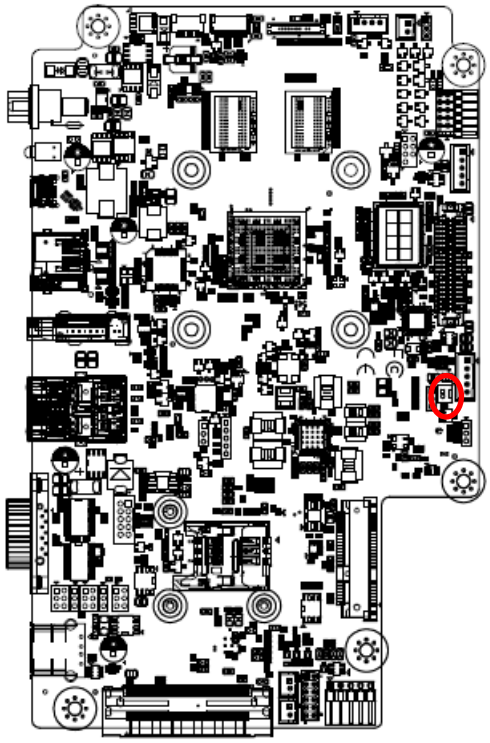
2.4.17 MCU connector (JMCU1)





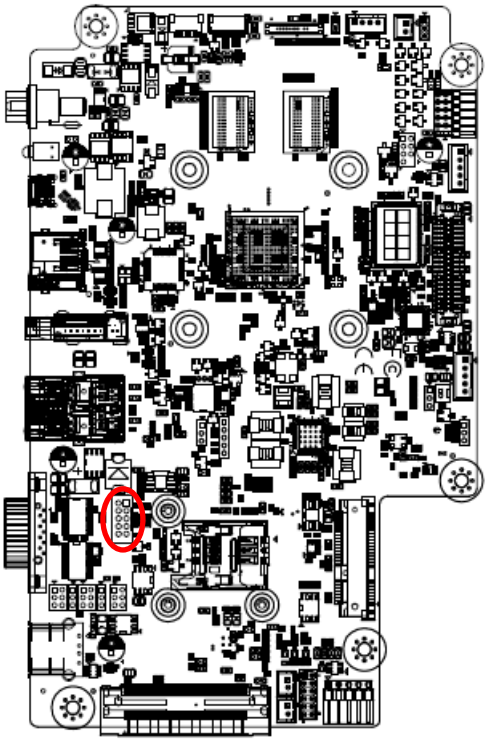
Signal	PIN
+5V	1
MCU_MCLR	2
MCU_ICSPCLK	3
MCU_ICSPDAT	4
GND	5

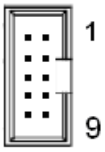
2.4.18 RTC battery connector (JRTC1)



Signal	PIN
3V Battery	1
GND	2

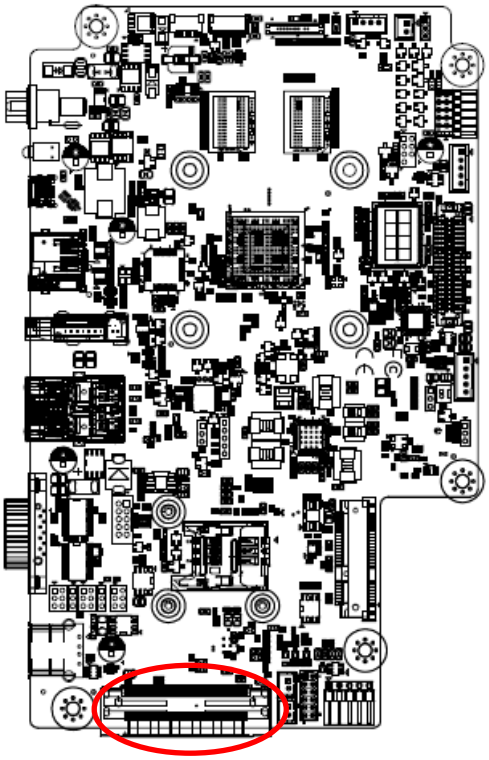
2.4.19 Serial port1 connector (COM1)

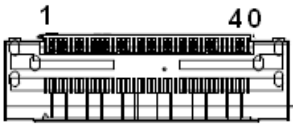




Signal	PIN	PIN	Signal
NRXD_SCI	2	1	NDCD_SCI
NDTR_SCI	4	3	NTXD_SCI
NDSR_SCI	6	5	GND
NDSR_SCI	8	7	NRTS_SCI
NC	10	9	CN_RI_SCI

2.4.20 IET connector (JB2B1)

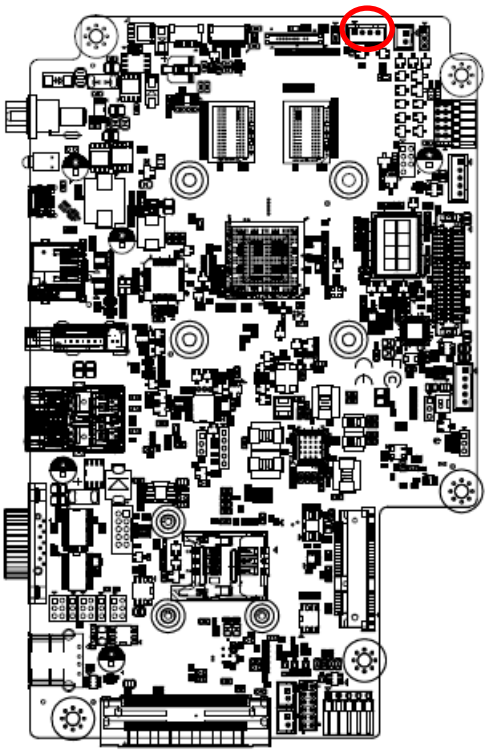


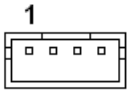


Signal	PIN	PIN	Signal
GND	1	41	GND
GND	2	42	GND
+12VSB	3	43	GND
+12VSB	4	44	GND
GND	5	45	GND
NC	6	46	+5VSB
NC	7	47	+5VSB
NC	8	48	+5VSB
NC	9	49	+5VSB
NC	10	50	+5VSB
NC	11	51	GND
NC	12	52	USB_PP1
+V3.3A_PG	13	53	USB_PN1
PLTRST#	14	54	GND
SLP_S0IX#	15	55	SMB_PCIE_CLK
HDMI_HPD_JB2B1	16	56	SMB_PCIE_DATA
GND	17	57	GND
HDMI_CTRL_CLK	18	58	DIS_MPCIE2
HDMI_CTRL_DATA	19	59	NC
GND	20	60	NC
HDMI_TXN2_JB2B1	21	61	MPCIE2_WAKE#
HDMI_TXP2_JB2B1	22	62	PCIESW_C_RST#
GND	23	63	PCIE_CLKREQ#
HDMI_TXN1_JB2B1	24	64	GND
HDMI_TXP1_JB2B1	25	65	PCIE_PEXC_TX_N
GND	26	66	PCIE_PEXC_TX_P
HDMI_TXN0_JB2B1	27	67	GND
HDMI_TXP0_JB2B1	28	68	PCIE_PEXC_RX_N
GND	29	69	PCIE_PEXC_RX_P
HDMI_CLKN_JB2B1	30	70	GND
HDMI_CLKP_JB2B1	31	71	PCIE_CLK_C_N
GND	32	72	PCIE_CLK_C_P
GND	33	73	GND
IN1P_MIC	34	74	GND
IN1N_MIC	35	75	HP_JD
GND	36	76	GND
HP_JD	37	77	HP_JD
LINEOUT_R	38	78	Don't USE
LINEOUT_L	39	79	Don't USE
GND	40	80	GND

Note: HP_JD enable LINEOUT and Microphone function at the same time.

2.4.21 Debug connector (JDBG1)





Signal	PIN
+3.3VSB	1
UART_0_TX_R	2
UART_0_RX_R	3
GND	4

Note:

Only for debug use by engineer.

***RTC Battery**

Warning: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."

Attention: Risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées selon les instructions.

2.5 FCC

Contains

FCC ID: TX2-RTL8723BS

IC: 6317A-RTL8723BS

FCC ID is located on the MB WiFi Module:

Remove all screws on back cover.

WiFi Module is located on MB underneath of the back cover.

FCC ID is shown on WiFi Module.

3. Software Configuration

Note: If you need more information, please visit our website:

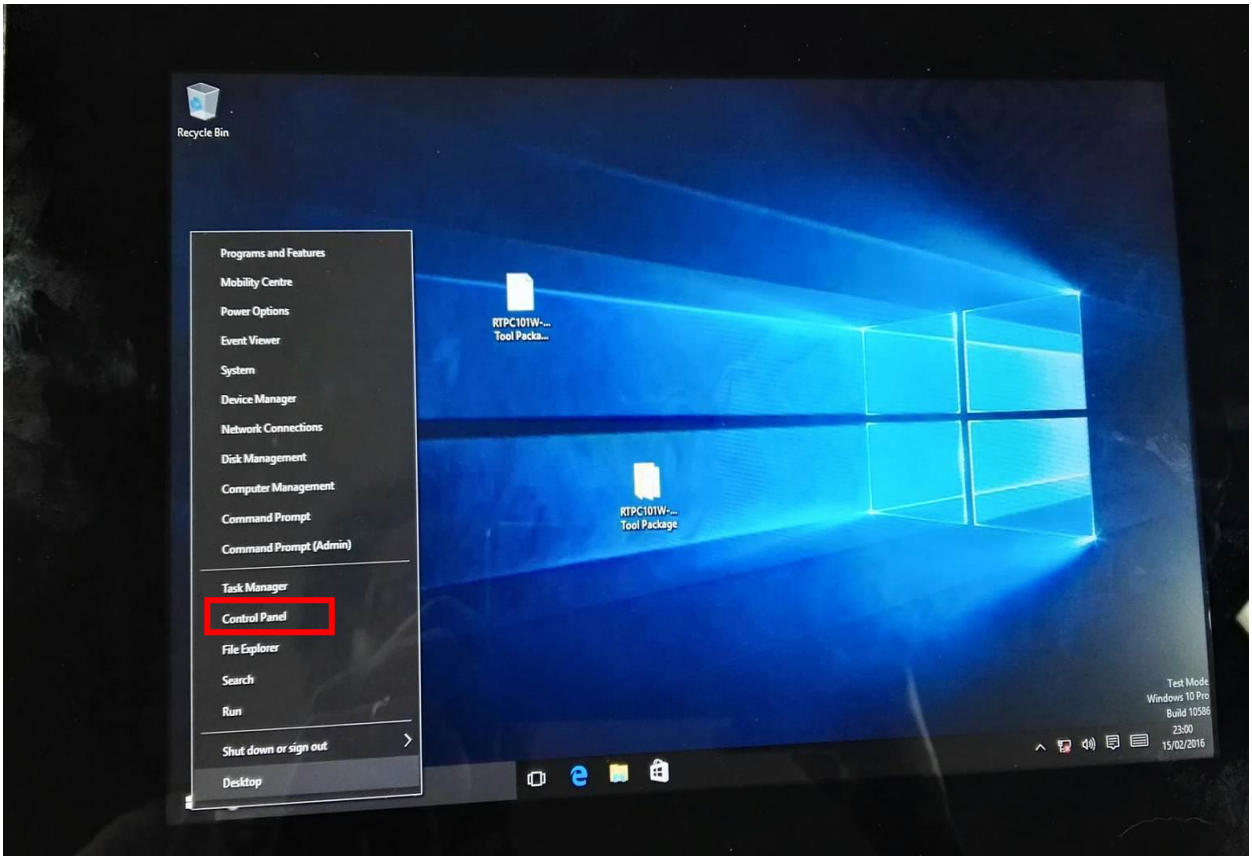
http://www.avalue.com.tw

3.1 HDMI Monitor/Touch Calibration on Windows

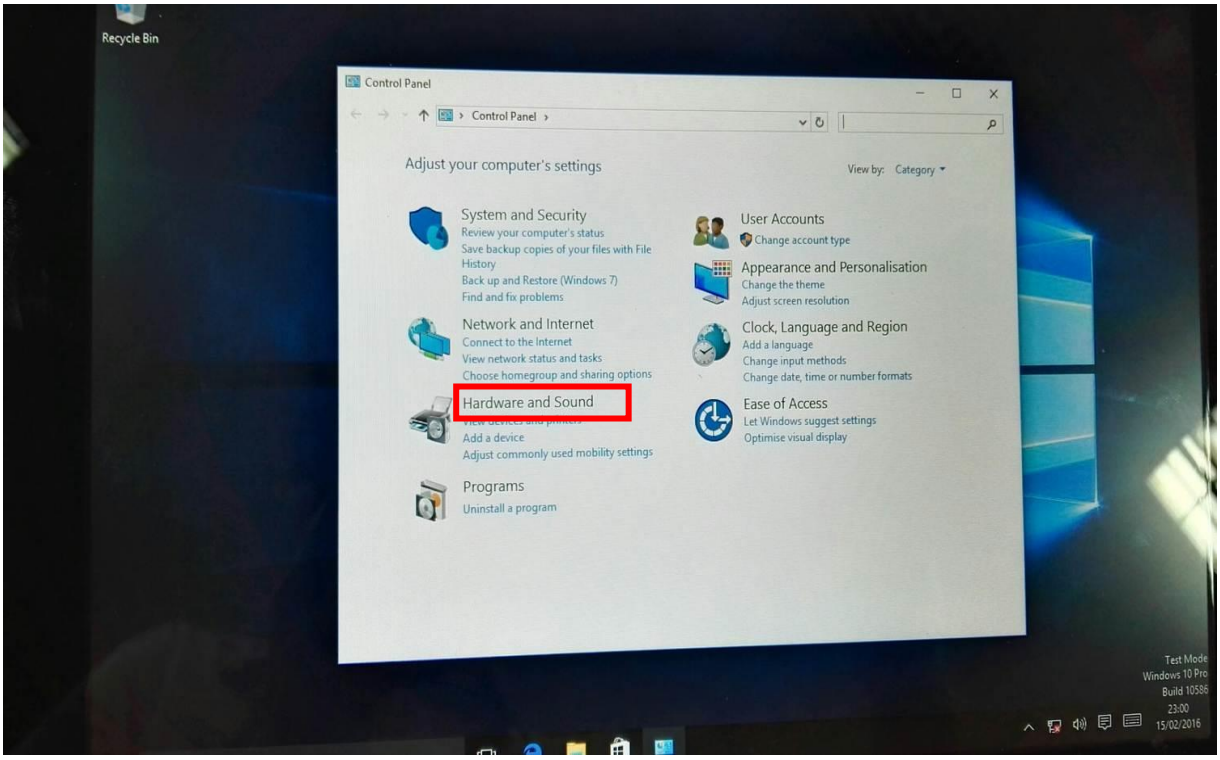
The Windows 10 IoT image included in OFT-1202 and OFT-1502 is HDMI Monitor pre-calibrated. If you would like to run Windows installation process for any reason, you will need to run Monitor/Touch calibration when your HDMI monitor is connected to OFT-1202 and OFT-1502 at the first time.

1. Connect your Keyboard, HDMI Monitor to OFT-1202 or OFT-1502

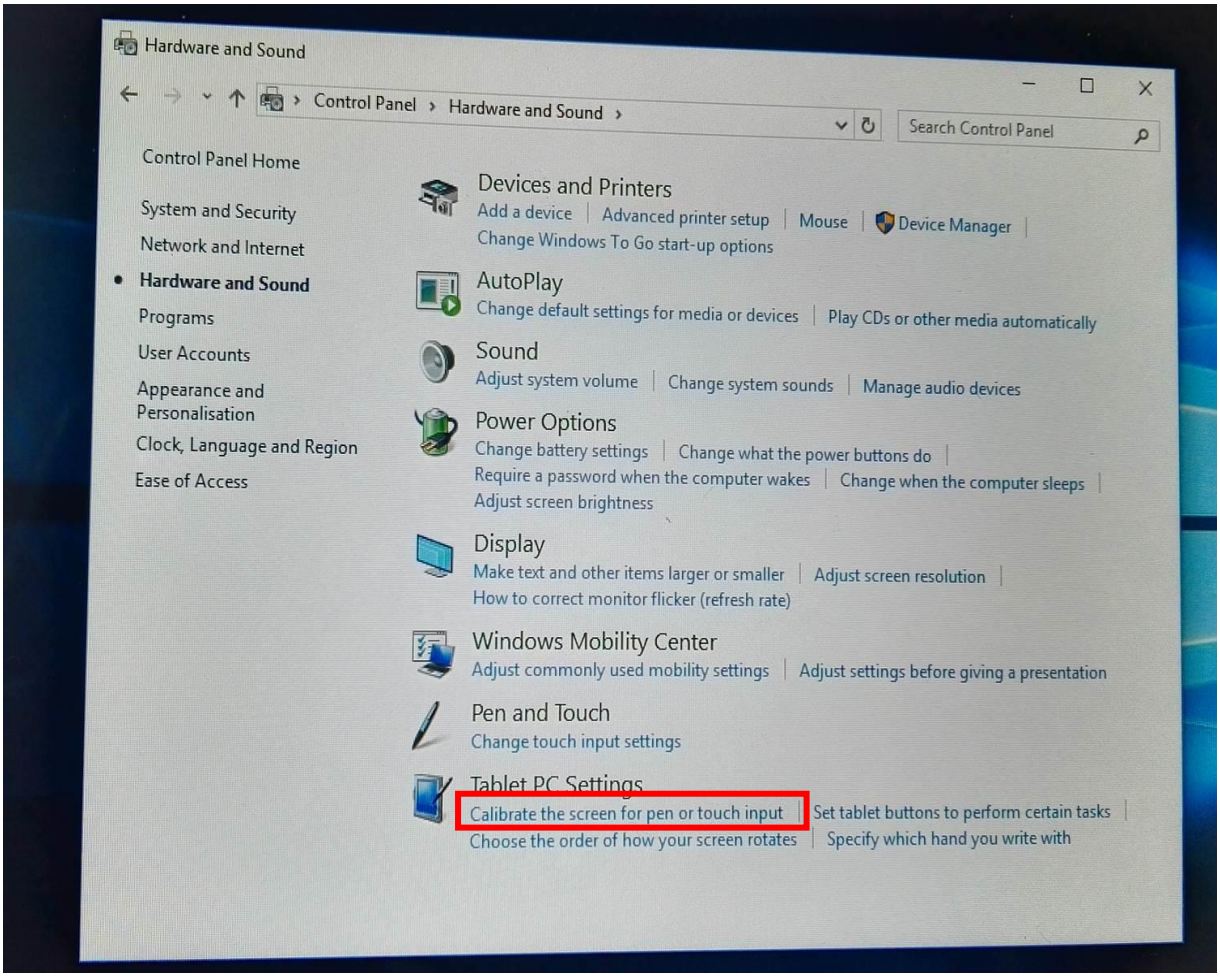
2. Right click on Win Icon and select Control Panel



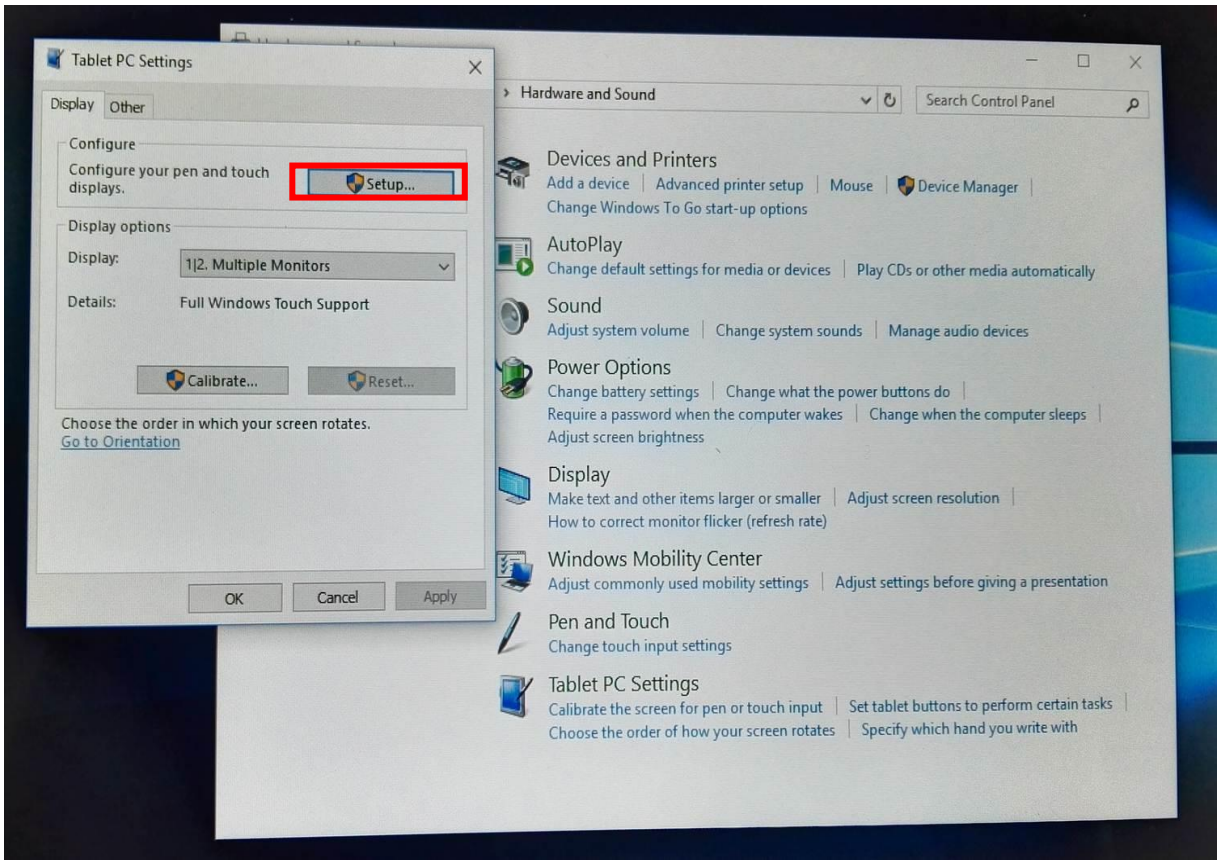
3. Select Hardware and Sound



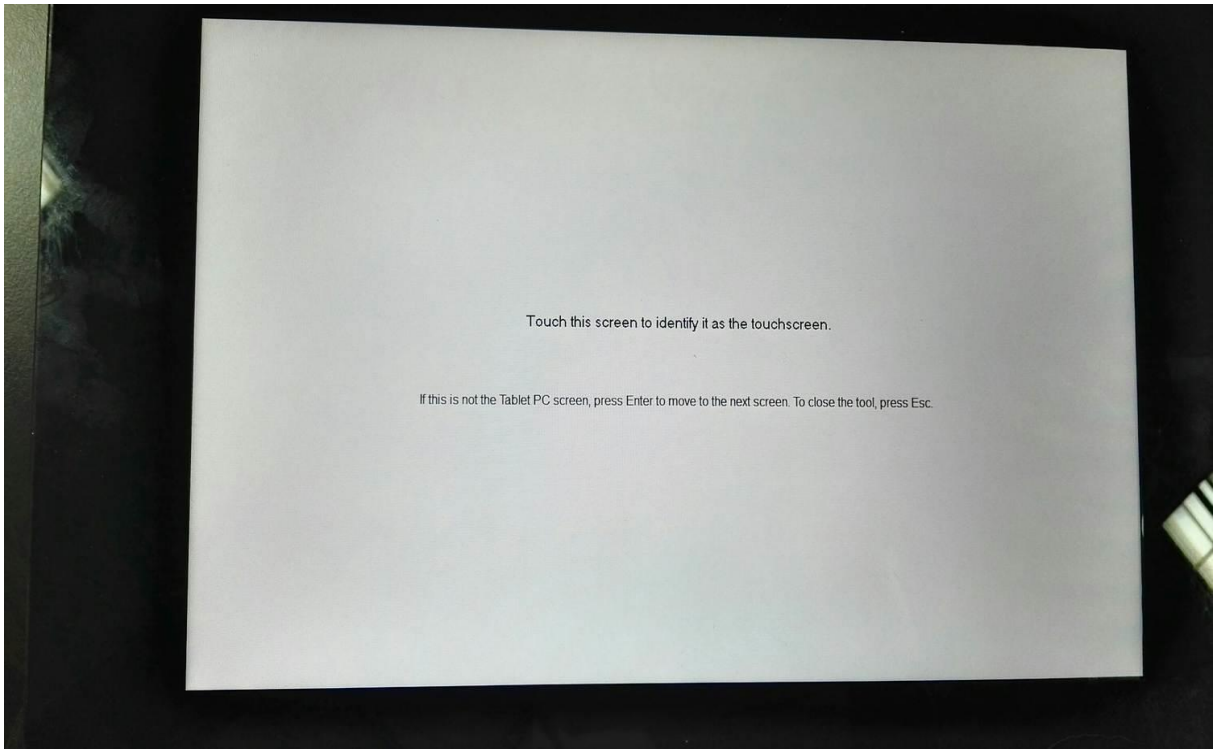
4. Select Calibrate the screen for Pen or touch input



5. Under Configure click on Setup



6. Click the screen with the touch Sensor, and then the OS will know how to follow the finger on which Display



7. Use keyboard and press Enter when calibration message is shown on your HDMI Monitor.

8. Calibration is done.