

OFT-21W04

21.5" Open Frame Tablet

Quick Reference Guide

3rd Ed – 04 August 2022

Copyright Notice

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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 UNDESIRE 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 be 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.”

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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-21W04
- 1 x power cord, AC/DC adapter 12V/5A 90 Screw Type (Option)



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

1.3 System Specifications

Board Specification	
Mother Board	ACP-APL
CPU	Intel Celeron J3455 1.5GHz
CPU Cooler (Type)	Heatsink
Memory	4GB DDR3L SO-DIMM 1866
Power Supply	DC in
Adapter	60W / 12V
Microphone	1x3P_ pitch 2mm AMIC interface
Speaker	1x4P_ pitch 2mm Speaker interface
Camera	2x5P_ pitch 2mm Camera / DMIC
Wireless LAN	1 x 802.11 a/b/g/n/ac Wireless LAN
Bluetooth	BT 5.0
Operating System	2019 Win 10
Expansion Card	SD slot
Storage	
Other Storage Device	32GB eMMC
	SSD (60G) M.2 B-Key (3042) Apacer-A32.255GGB.00104
	Micro SD slot
Panel	
LCD Panel	21.5" Innolux M215HJJ-L30
Touch Screen	21.5" HH
Touch Controller	EETI 80H84
Resolution	1920 x 1080
Luminance	250 cd/m ² (typ.)
External I/O	
DC in Power jack	JDCIN1: Power Jack_90D Pwr-in 12V~24V
HDMI Port	JHDMI1: HDMI Port_90D
USB Port	JUSB1: USB Type A Host (3.0)_90D JUSB2: USB Type A Host (3.0)_90D
Lan Port	JLAN1: 10/100/1000 Lan port_90D
Audio Port	JHP1: Headphone Jack_90D
Power button	Power button_90D
Internal I/O	
Micro USB (Client)	JUUSB1: Micro USB_90D

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	For programming OTG
USB Camera & DMIC	JCAM1: 5x2P_2mm_90D USB for Camera & DMIC
Touch	J15TP1: USB for touch screen
M.2 Socket	JNGFF2: M.2 E-Key x 1(2230)_90D for 802.11 a/b/g/n/ac Wireless LAN and Bluetooth 5.0 JNGFF3: M.2 B-Key x 1(3042)_90D for SSD or WWAN (Option)
Touch Key Button	JTB1: 6x2P_2mm_90D Touch button control (power/vol/brightness...)
DC-IN(wafer)	JPWR2: 2x2P_2mm_90D Pwr-in 12V~24V
LVDS	J19LCD: 1x30P_90D
Analog MIC	JAMIC1: 1x3P_2mm_90D
Speaker	JSPK1: 1x4P_2mm_90D L+/L-, R+/R-
Sensor	JSENSE: 5x2P_2mm_90D
RS232	JRS232: 1x5P_2mm_90D Uart Rs232(Tx/Rx/Rts/Cts/GND)
RS232 & RS485	JRS485: 5x2P_2mm_90D Uart Rs232(Tx/Rx/Rts/Cts/GND) Uart Rs485
GPIO	JGPIO1: 10x2P_1mm_90D
RTC Battery	JRTC: 2P_1.25mm_90D
SIM Card socket	JSIM1: Micro SIM Card socket for LTE module
Expansion Slots	JSD1: Micro SD slot_90D
Mechanical	
Power Type	12V~24V wide voltage DC input
Power Connector Type	DC jack
Dimension	515x322x61.6 mm
Weight	3.8 kg
Color	Metallic
Fanless	Yes
OS Support	2019 Win 10
Reliability	
EMI Test	CE FCC class A
Safety	2014/35/EU EN 62368-1: 2014+A11: 2017 (Second Edition)

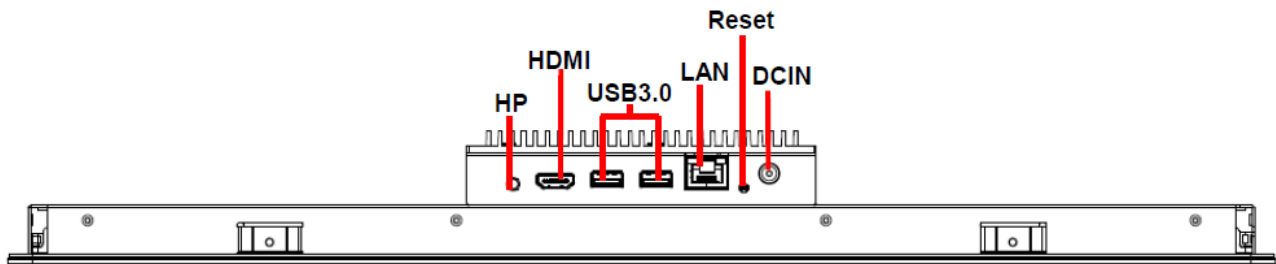
	Low Voltage Directive
Random Vibration Operation	<ol style="list-style-type: none"> 1. PSD: 0.00454G²/Hz, 1.5 Grms 2. Operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh 7. Storage : CF or SSD
Sine Vibration test (Non-operation)	<ol style="list-style-type: none"> 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 7. Reference IEC 60068-2-6 Testing procedures
Package vibration test	<ol style="list-style-type: none"> 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 6. IEC 60068-2-64 Test:Fh
Shock Test	<ol style="list-style-type: none"> 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 7. Reference IEC 60068-2-29 Testing procedures Test Eb : Bump Test
Package drop test	<ol style="list-style-type: none"> 1 One corner , three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test:Ed
Operating Temperature	0°C ~ 40°C
Operating Humidity	40°C @ 95% 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 Bottom View

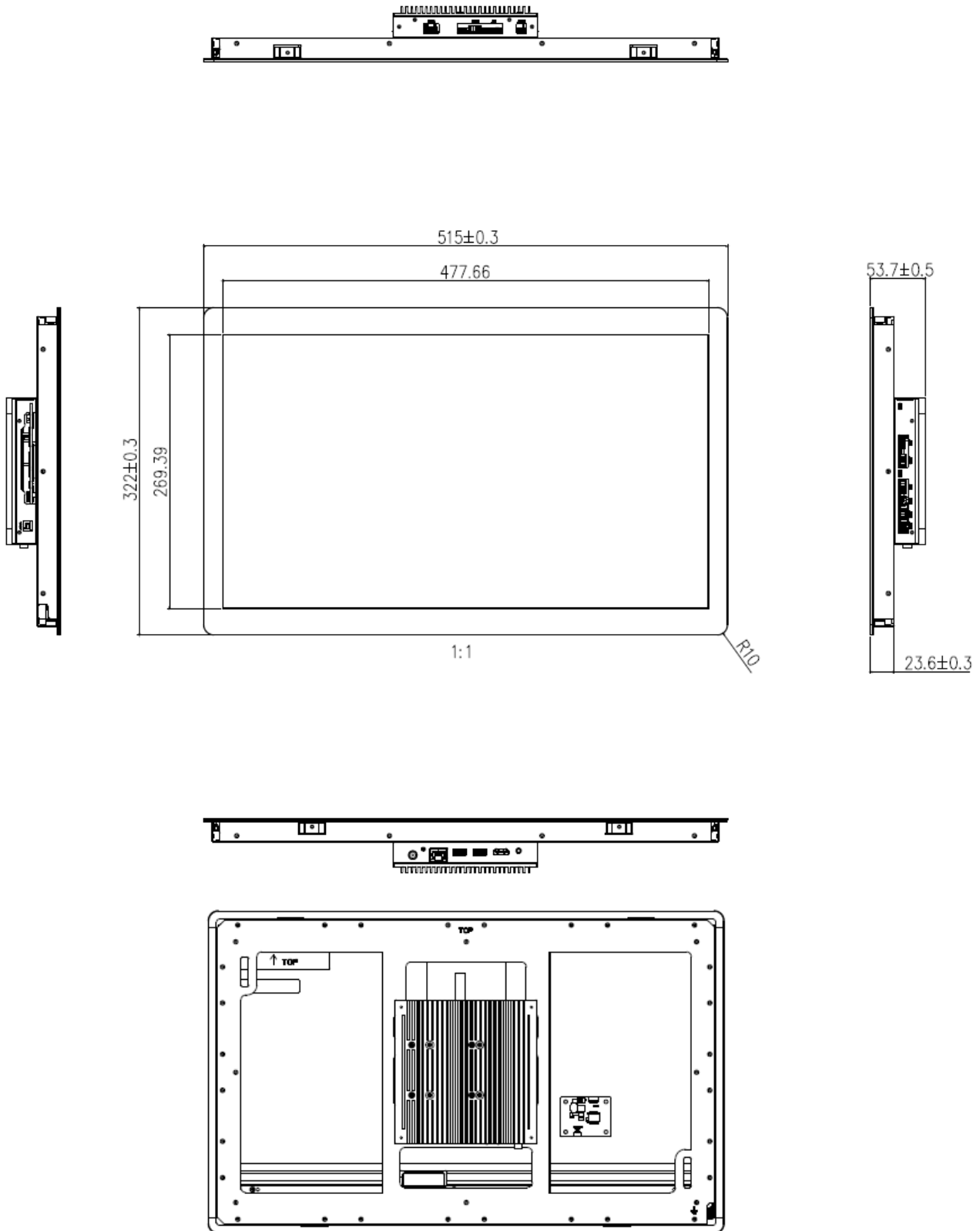


Connectors

Label	Function	Note
HP	Audio line-out connector	
HDMI	HDMI connector	
USB	2 x USB 3.0 connector	
LAN	RJ-45 Ethernet	
Reset	Reset button	
DCIN	DC power-in connector	

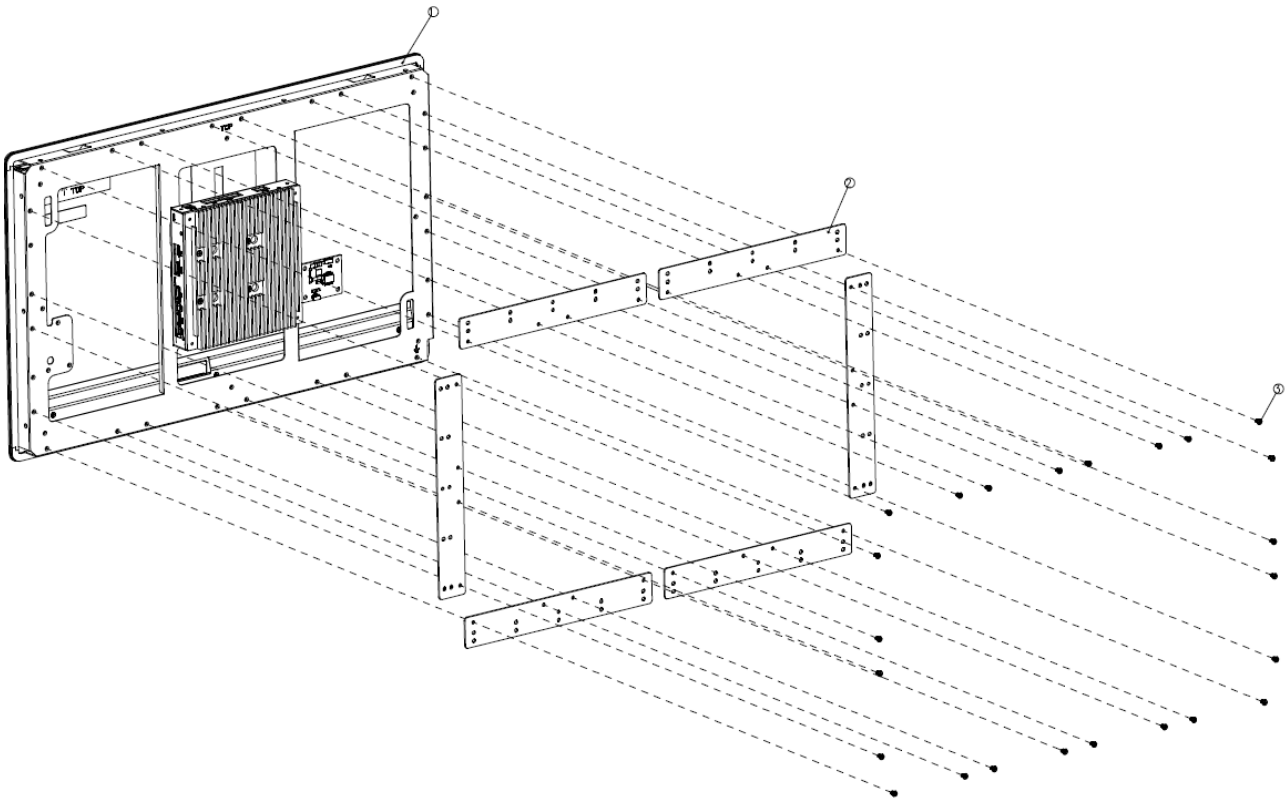
1.5 System Dimensions

1.5.1 Front and Rear side



(Unit: mm)

1.5.2 Installing Extend Brackets



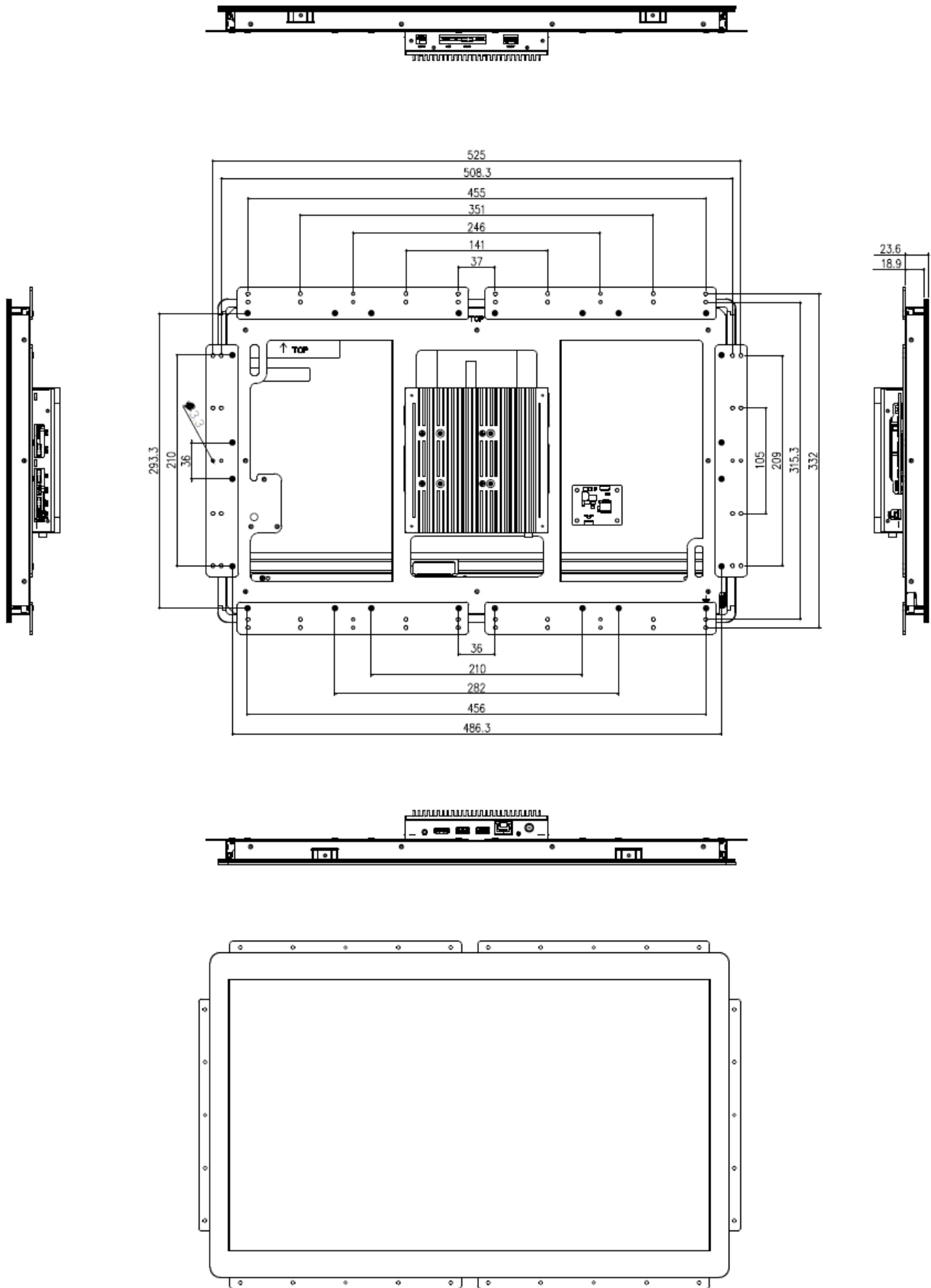
3	Screw	24
2	Extend bracket	6
1	OFT-21W04	1
Item	Part Name	Quantity

Step1. Locate brackets on both sides, matching the holes on the monitor.

Step2. Insert and fasten 24 screws on each side of the monitor to secure Mounting brackets.

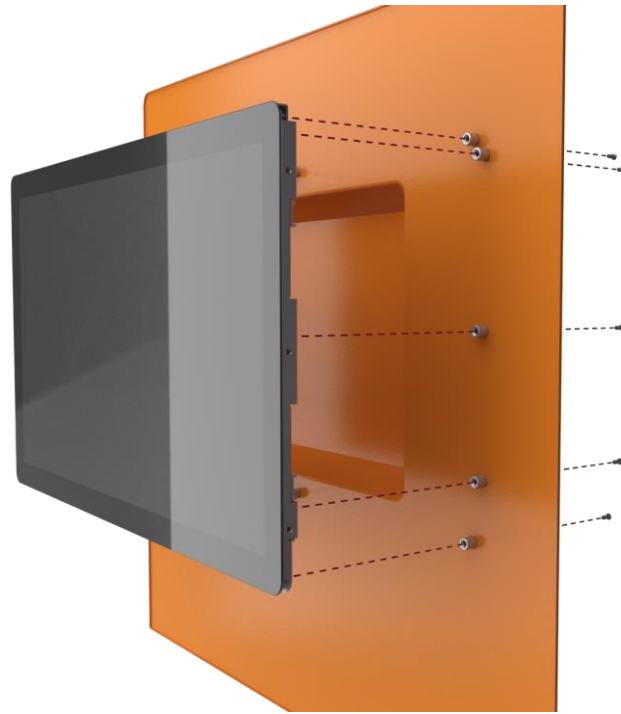
Note: Brackets sold separately.

1.5.3 Front and Rear side (With Extend Bracket)

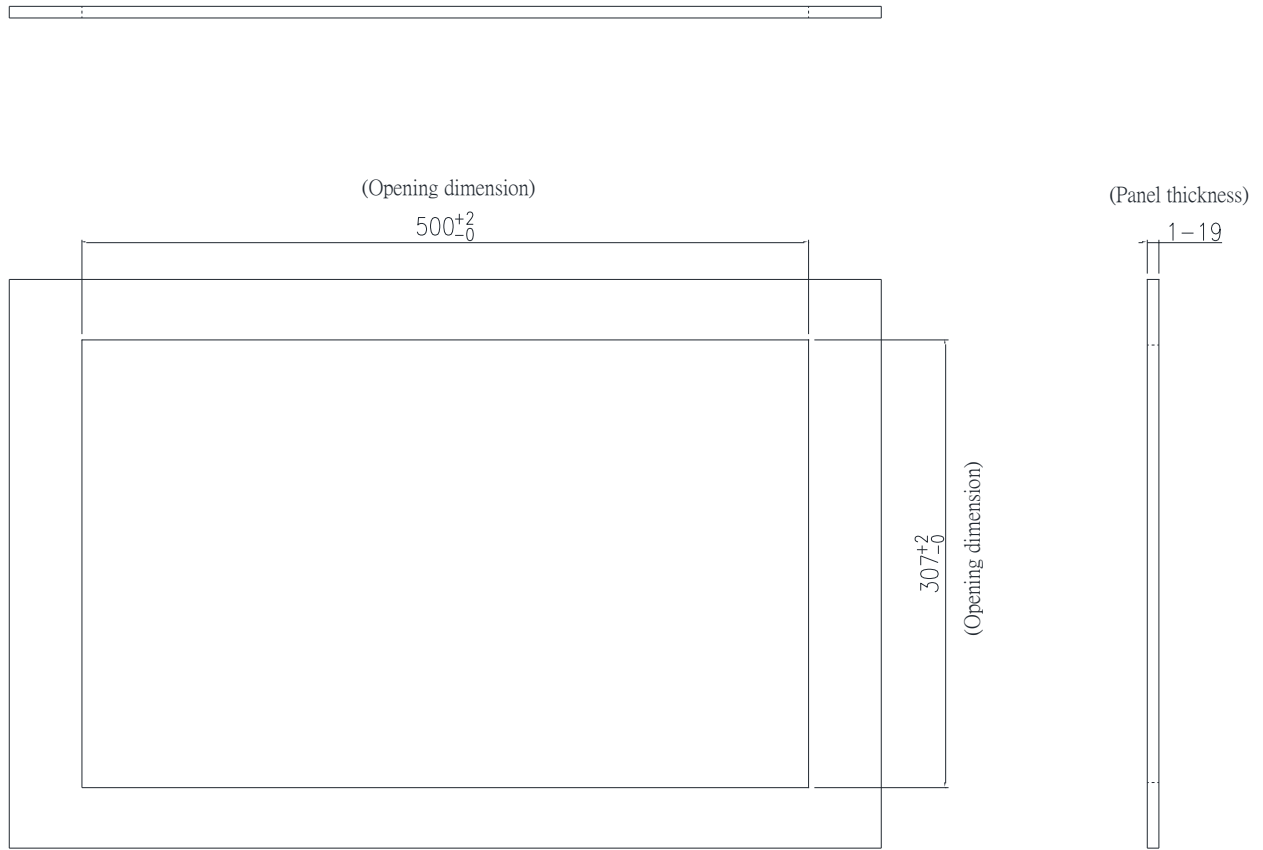


(Unit: mm)

1.6 Flush Mounting Concept

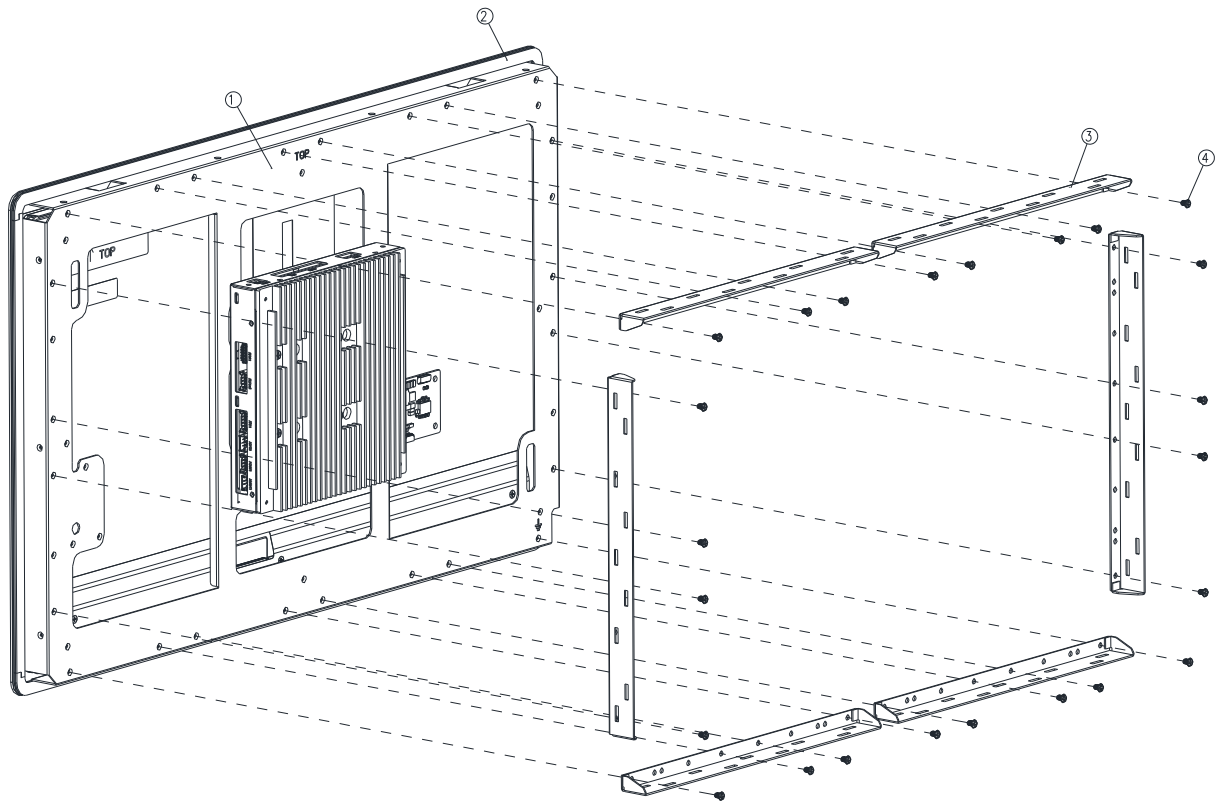


1.7 Panel Mounting



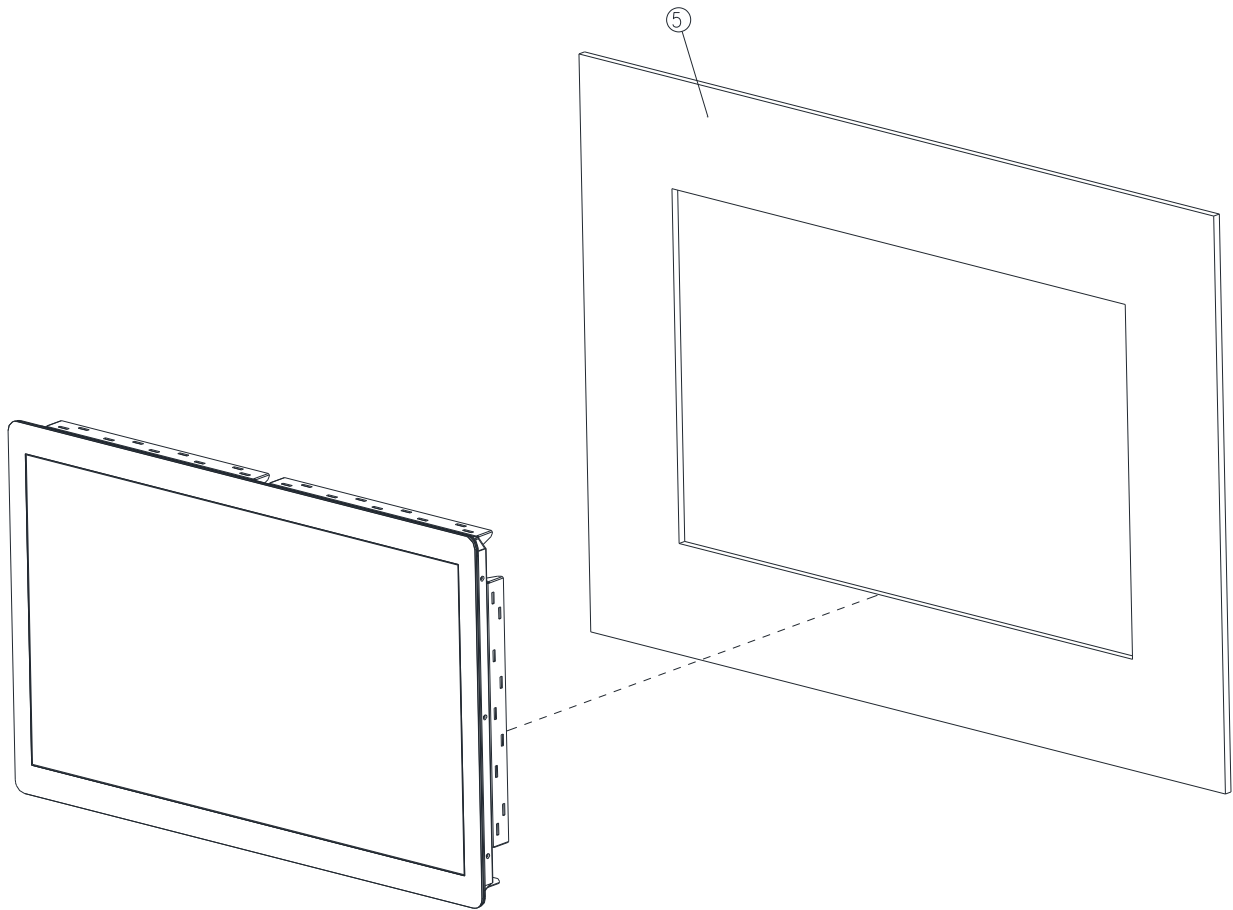
(Unit: mm)

OFT-21W04



Step1. Insert and fasten 24 screws to secure Panel mount bracket.

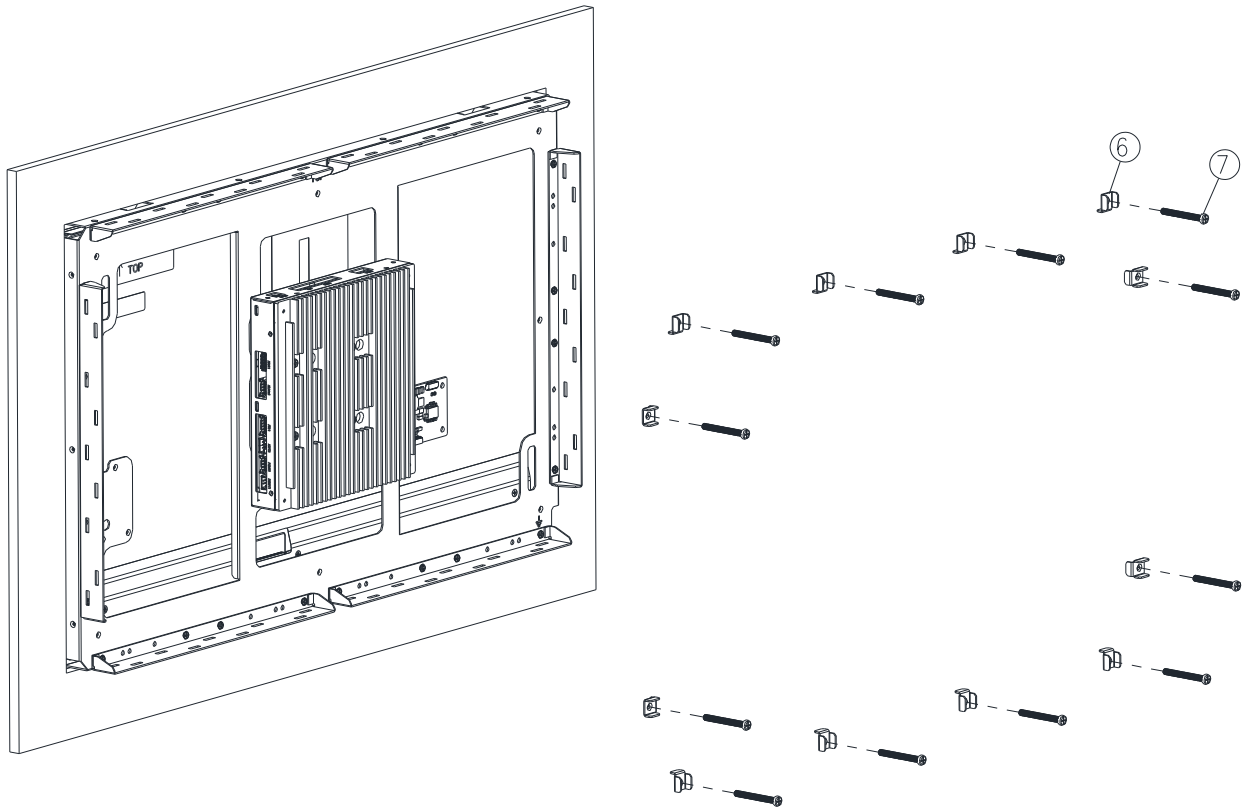
Item	Part Name	Quantity
1	OFT-21W04	1
2	Front sponge	1
3	Panel mount bracket	6
4	Screw	24



(Outside of the wall)

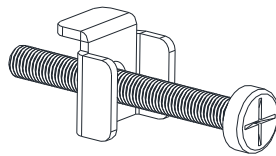
Step2. Insert OFT-21W04 Open frame into the wall.

Item	Part Name	Quantity
5	Wall	1



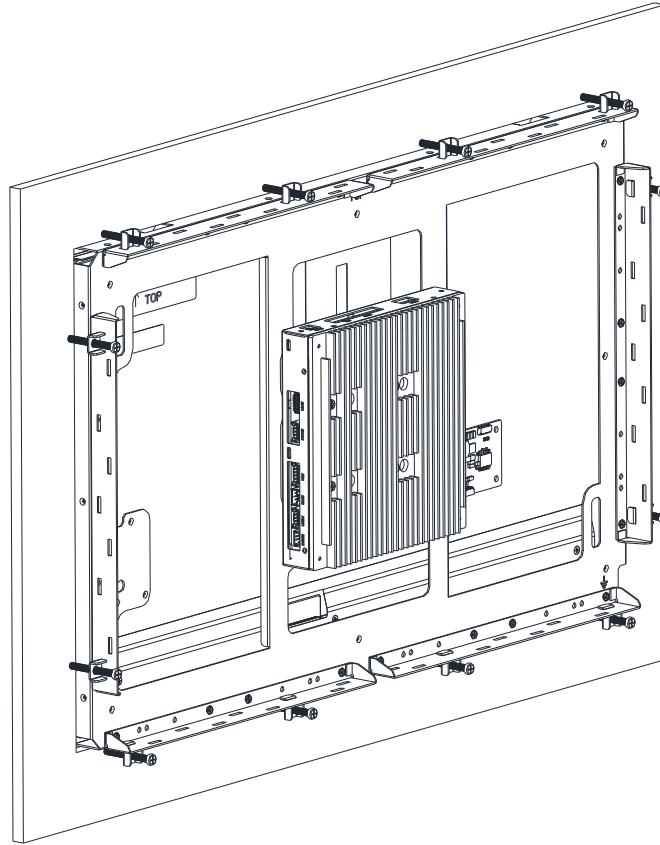
(Inside of the wall)

Step3. Fasten 12 screws to secure Panel mount kit and insert it into Panel mount Bracket.

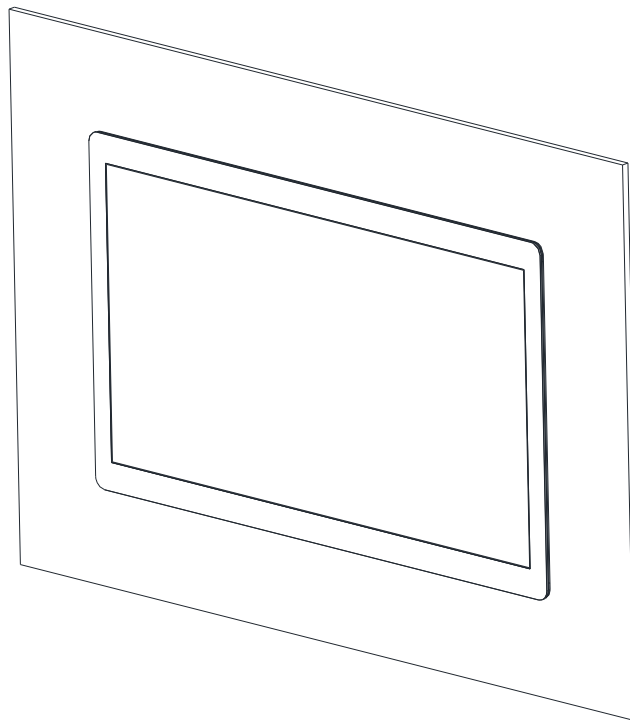


3-1

Item	Part Name	Quantity
6	Panel mount kit	12
7	Panel mount screw	12

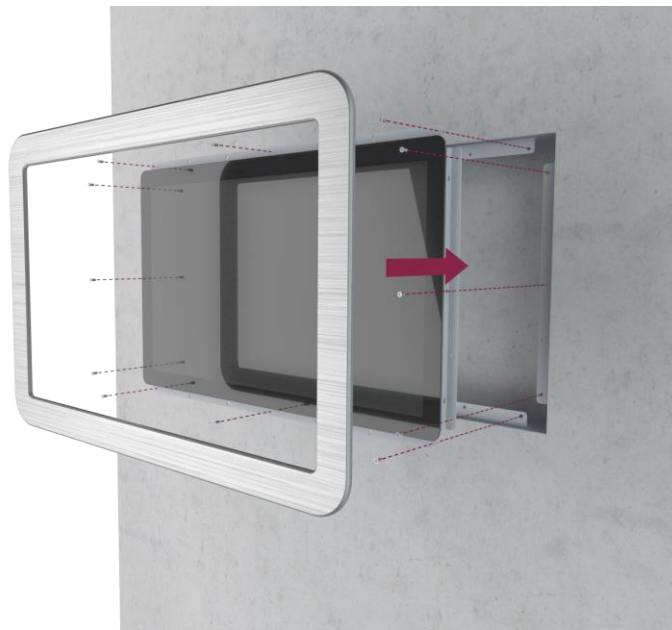
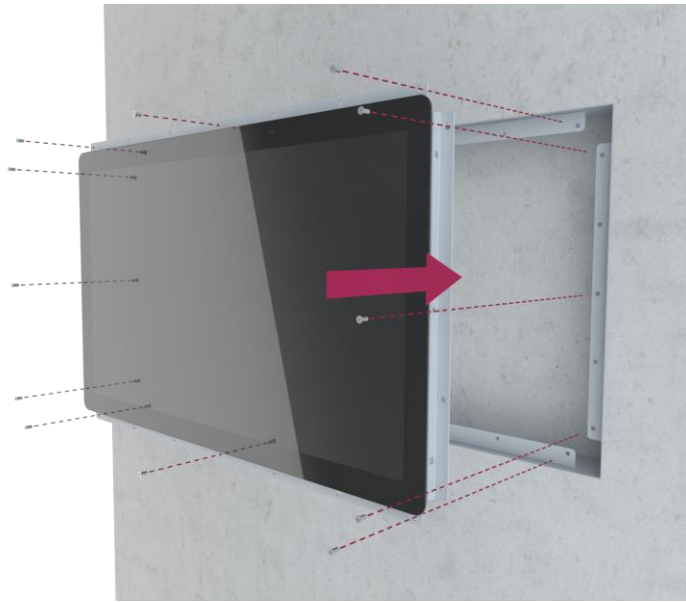


Step4. Insert and fasten 12 Panel mount screws to secure the module.



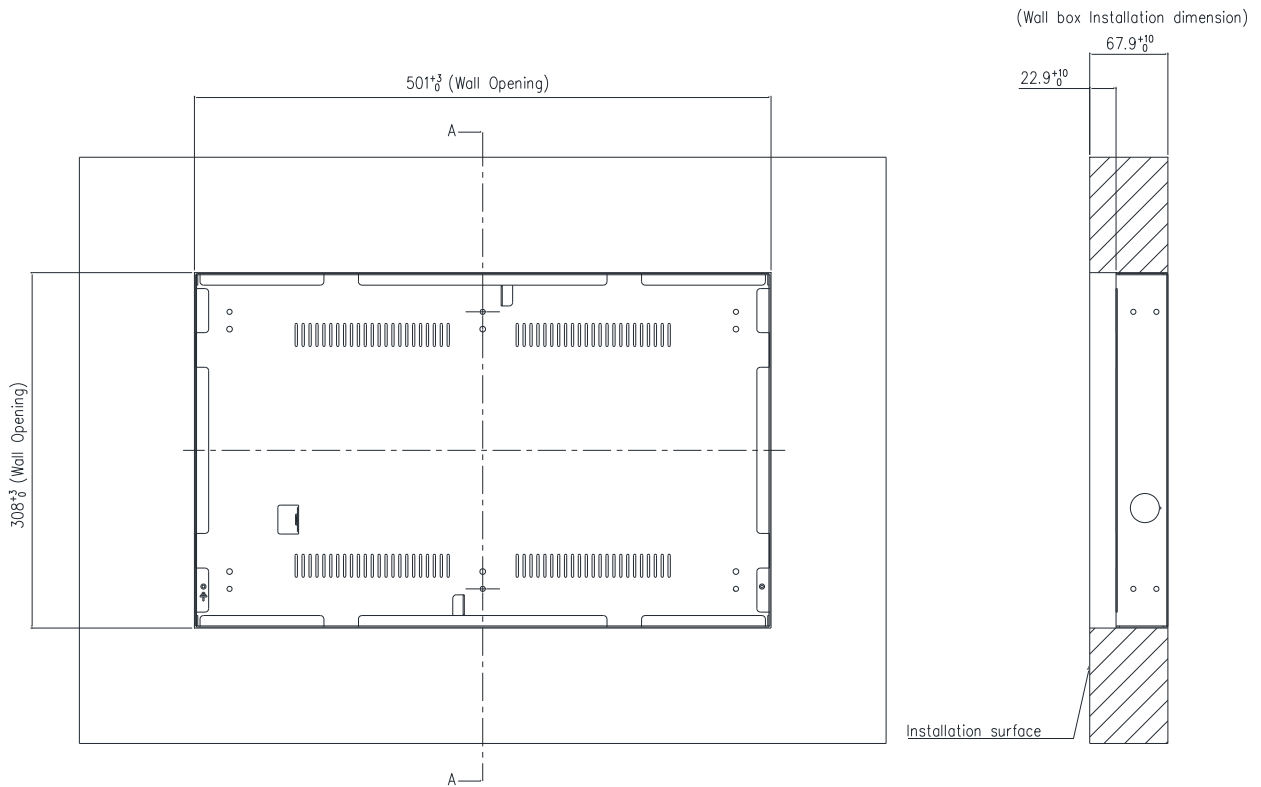
Step5. Installation completed.

1.8 Wall Mounting Concept



1.9 Wall Mounting

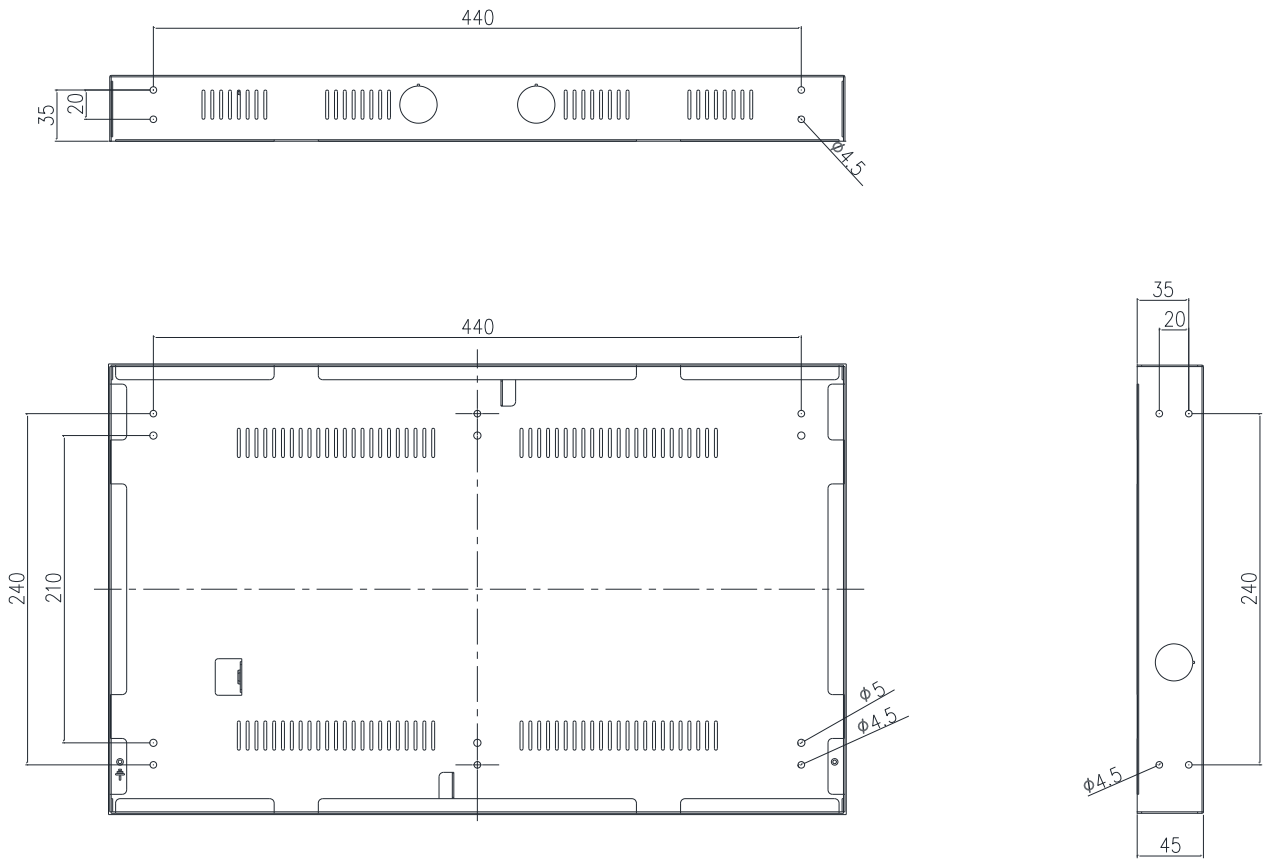
Size of the opening



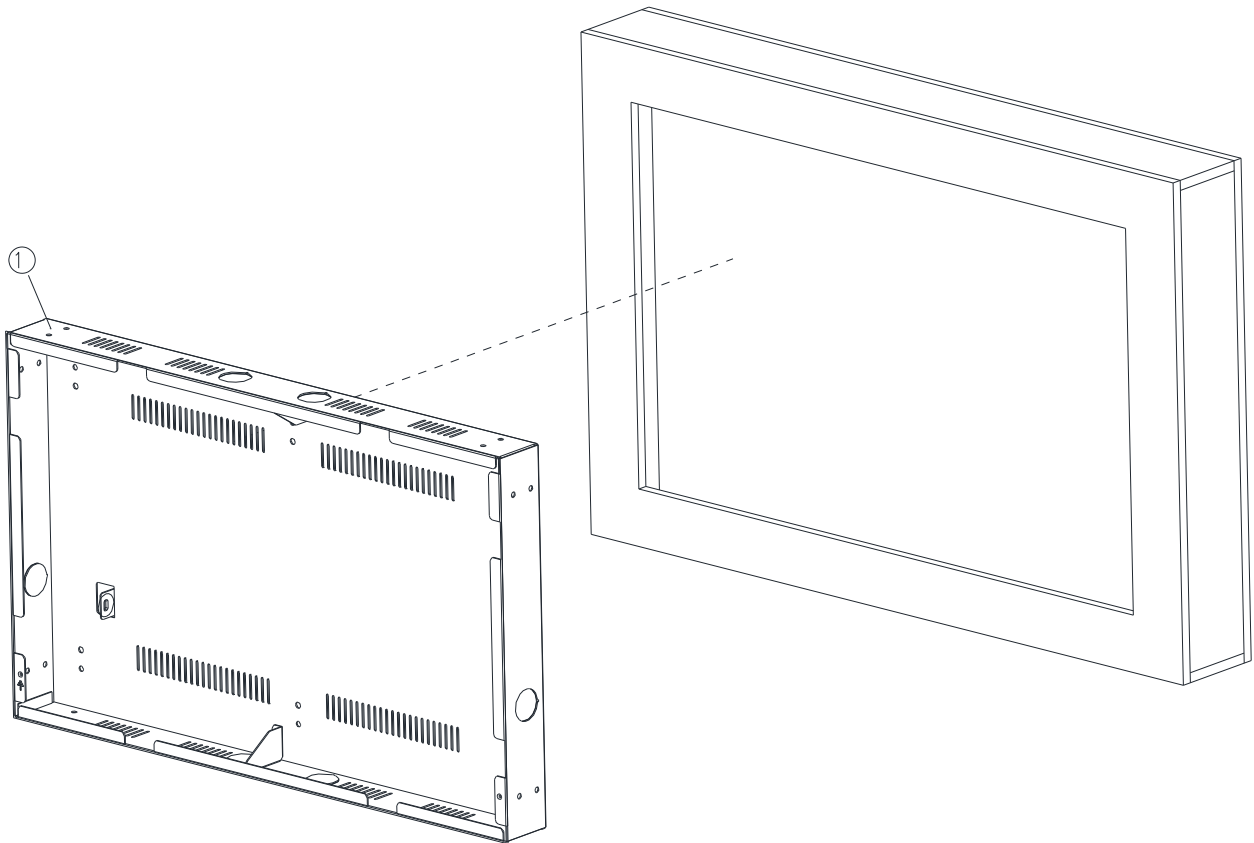
(Unit: mm)

OFT-21W04

Screw hole location



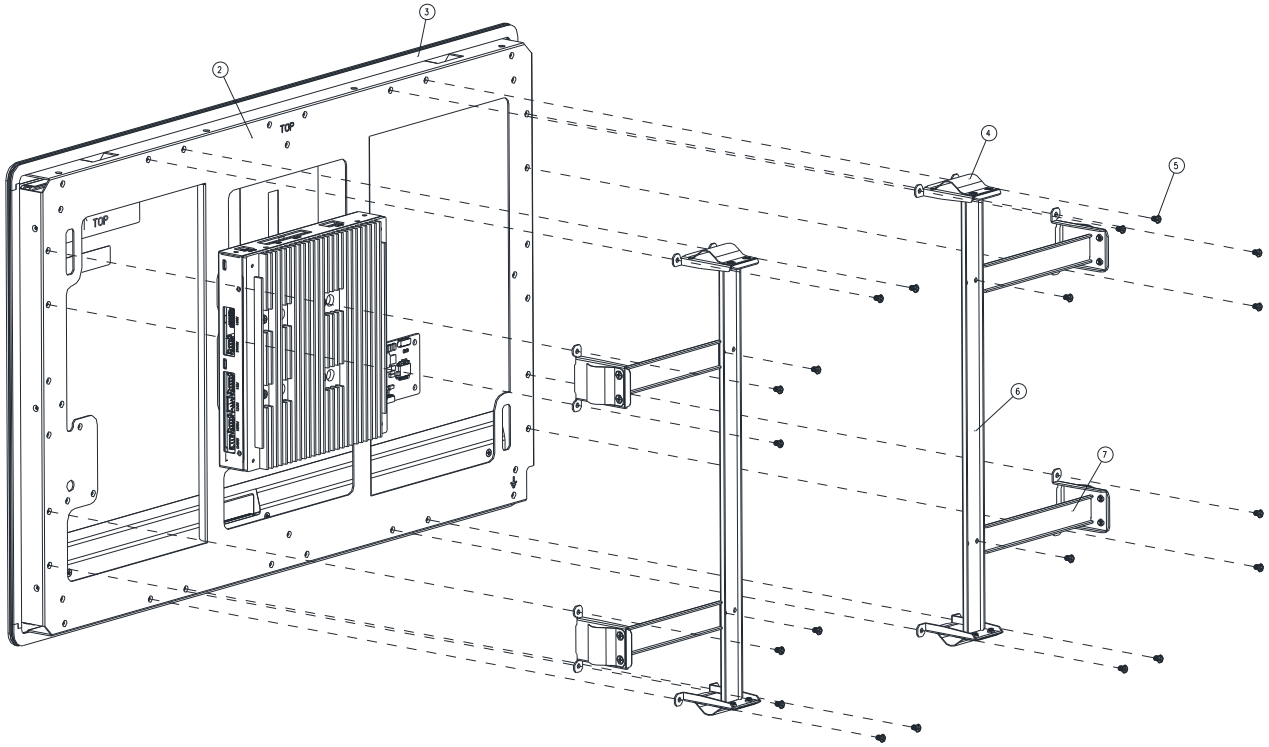
(Unit: mm)



Step1. Install the 21” Wall Box and fix it on the wall, and use suitable screws to lock the wall box (the screws can be purchased according to actual needs)

1	Wall box	1
Item	Part Name	Quantity

OFT-21W04



Step2-1. Paste the Sponge around the OFT-21W04.

Step2-2. Fasten the 2 pcs Wall mount kit to the top of OFT-21W04 with 4 screws.

Step2-3. Insert the 2 pcs Bracket-V into the locked rectangular hole of the Wall mount kit with 2 screws.

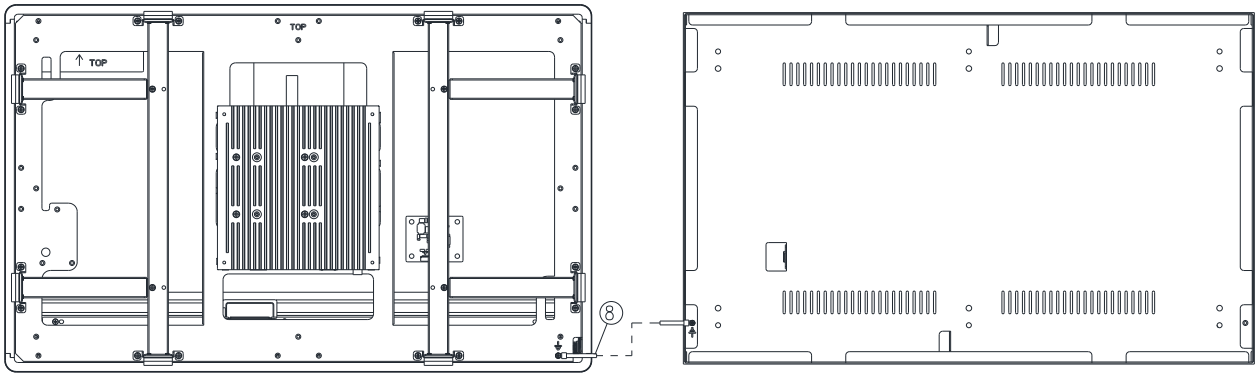
Step2-4. Insert the rectangular hole of the Wall mount kit into the Support Bracket-V and fasten 4 screws to the OFT-21W04.

Step2-5. Fasten the 4 pcs Wall mount kit to both sides of OFT-21W04 with 8 screws.

Step2-6. Insert the rectangular hole of the Bracket-H into the Wall mount kit and fasten 4 screws to secure Bracket-V.

7	Bracket-H	4
6	Bracket-V	2
5	Screw	20
4	Wall mount kit	8
3	Sponge	1
2	OFT-21W04	1
Item	Part Name	Quantity

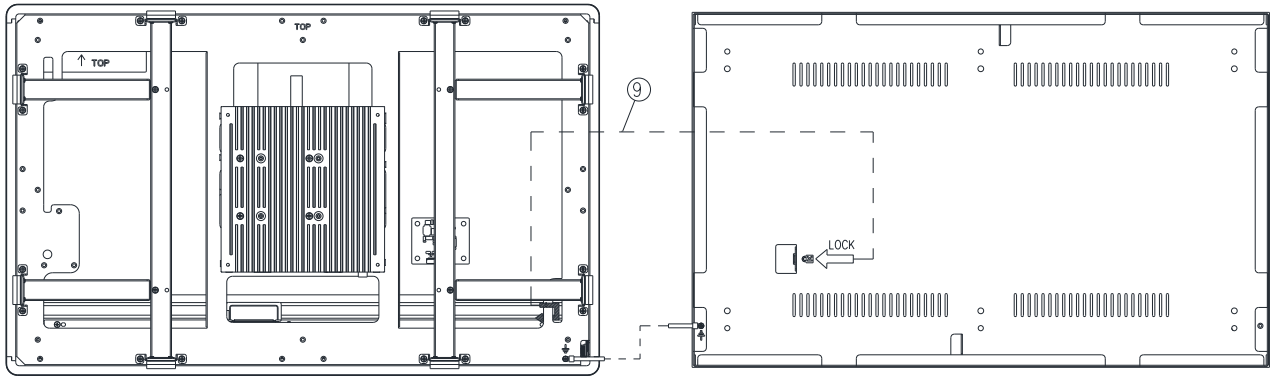
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Step3. Fasten the Ground wire with 2 screws on the ground screw holes of OFT-21W04 and Wall box.

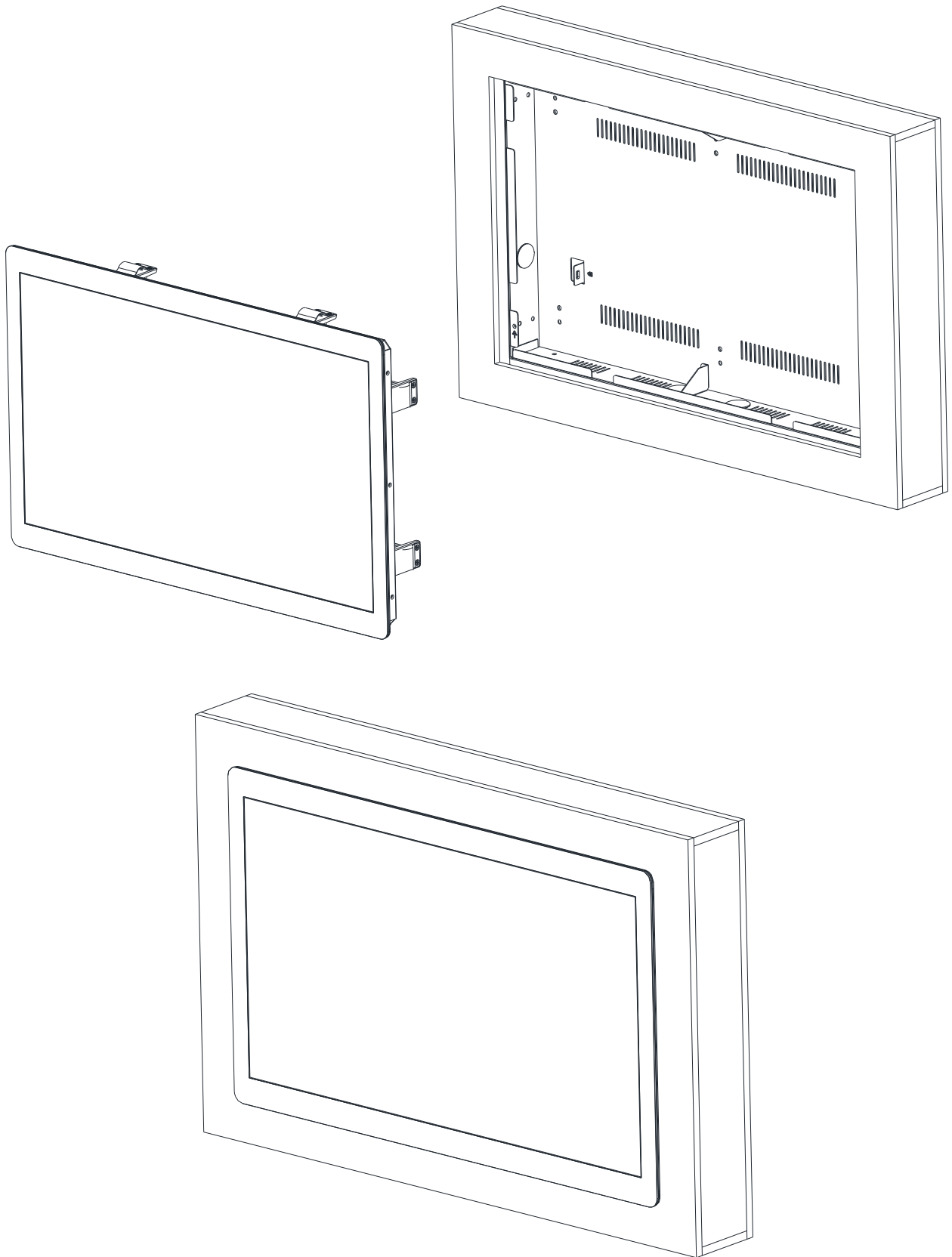
8	Ground wire	1
Item	Part Name	Quantity

OFT-21W04



Step4. Wrap the Kensington lock (option) around the hole in the OFT-21W04 and attach the lock to the keyhole in the Wall box.

9	Kensington lock	1
Item	Part Name	Quantity



Step5. Store the Ground wire and Kensington lock in the Wall box and embed the OFT-21W04 into the wall (Wall Box).

2. Hardware Configuration

For advanced information, please refer to:

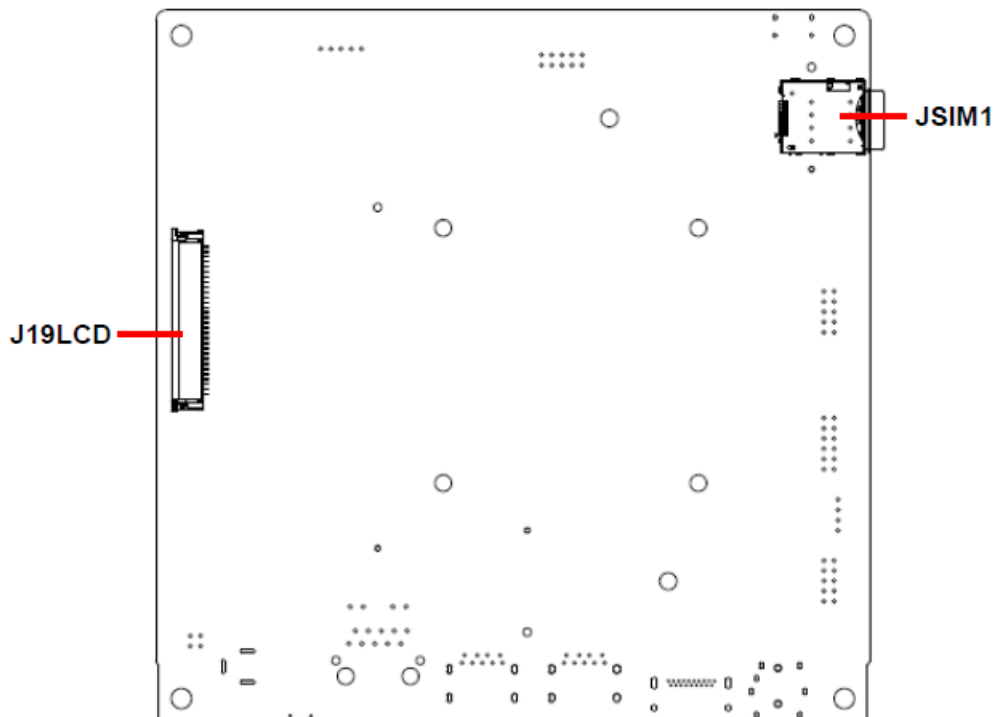
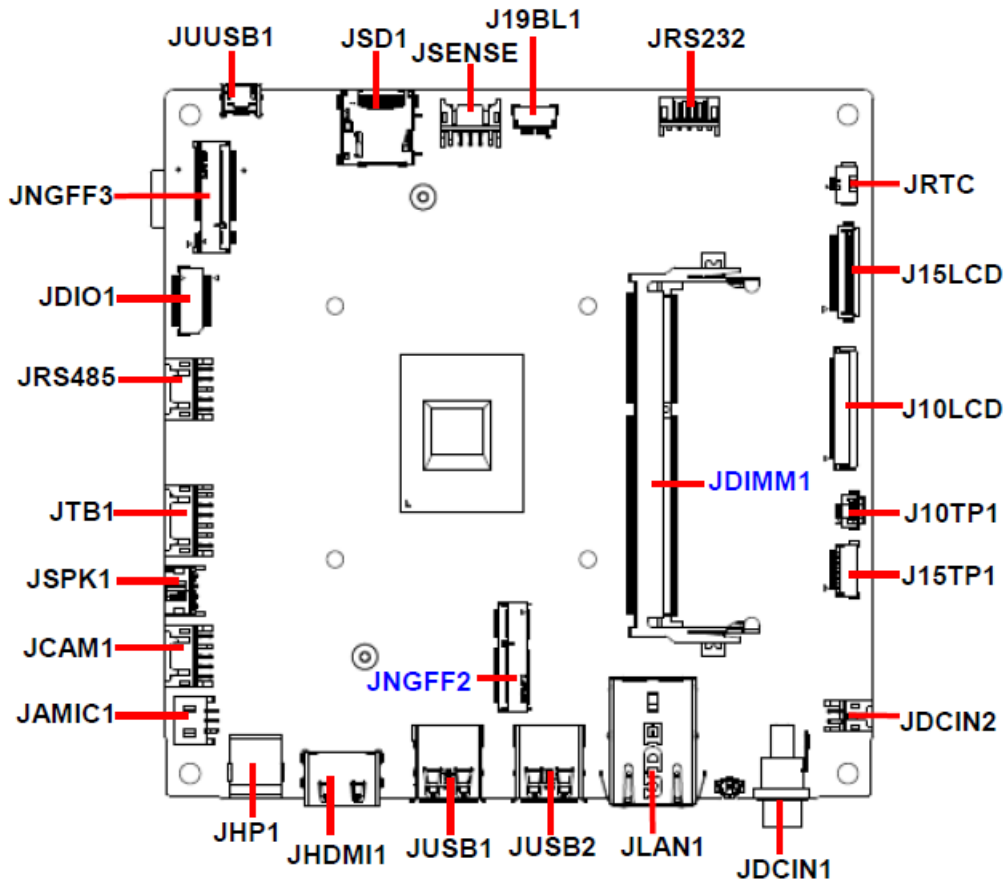
- 1- Motherboard included in this manual.



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

<http://www.avalue.com.tw>

2.2 Motherboard Overviews



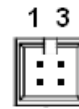
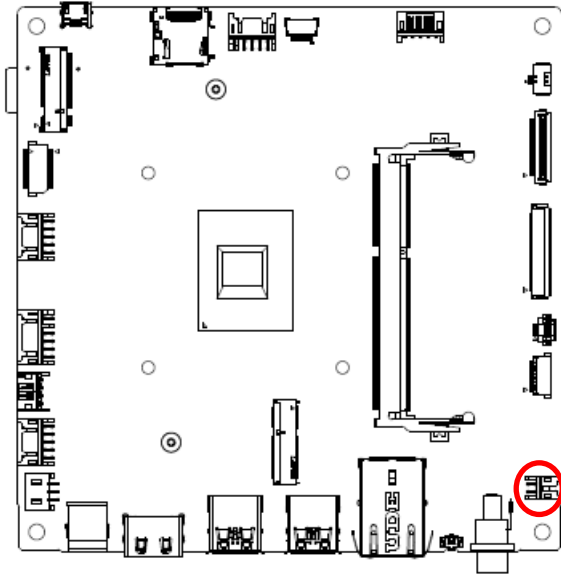
2.3 Motherboard Connector list

Connectors

Label	Function	Note
JHP1	Audio line-out connector	
JHDMI1	HDMI connector	
JUSB1	USB 3.0 connector	
JUSB2	USB 3.0 connector	
JDCIN1	DC IN Jack	
JDCIN2	DC Power-in connector	2 x 2 wafer, pitch 2.00 mm
J10TP1	10" Touch connector	
J15TP1	15/21" Touch connector	
J10LCD	10" Panel connector	
J15LCD	15" Panel connector	
JTB1	Touch Key Button	6 x 2 wafer, pitch 2.00 mm
JLAN1	RJ-45 Ethernet connector	
JDIMM1	DDR3 connector	
JAMIC1	A-MIC connector	3 x 1 wafer, pitch 2.00 mm
JDIO1	General purpose I/O connector	10 x 2 wafer, pitch 1.00 mm
JNGFF2	NGFF KEY E WIFI connector	
JNGFF3	NGFF KEY B WWAN connector	
JSENSE	Sensor Board connector	5 x 2 wafer, pitch 2.00 mm
JUUSB1	Micro USB connector	
JRS232	RS-232 connector	5 x 1 wafer, pitch 2.00 mm
JRS485	RS-232 & RS-485 connector	5 x 2 wafer, pitch 2.00 mm
JSD1	Micro SD card slot	
JSPK1	Speaker connector	4 x 1 wafer, pitch 2.00 mm
J19BL1	Backlight connector	5 x 1 wafer, pitch 2.00 mm
JCAM1	USB Camera & DMIC connector	2 x 5 wafer, pitch 2.00 mm
JRTC	RTC battery connector	2 x 1 wafer, pitch 1.25 mm
J19CD	21" Panel connector	
JSIM1	Micro SIM Card socket	

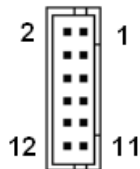
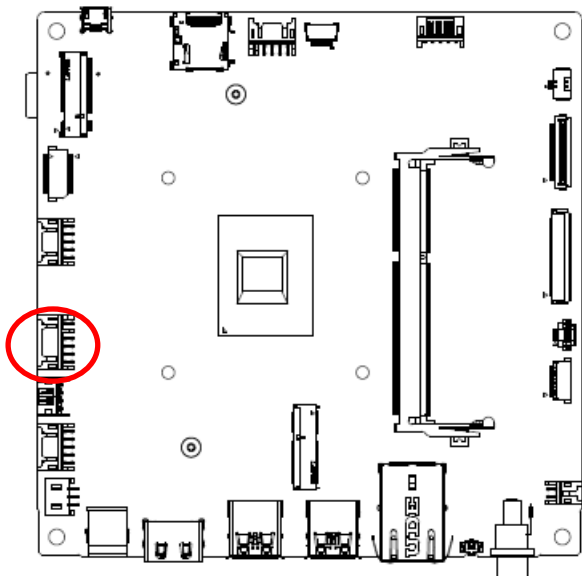
2.4 Motherboard Connectors settings

2.4.1 DC Power-in connector (JDCIN2)



Signal	PIN	PIN	Signal
+12V_24ADPIN	1	3	+12V_24ADPIN
GND	2	4	GND

2.4.2 Touch Key Button (JTB1)

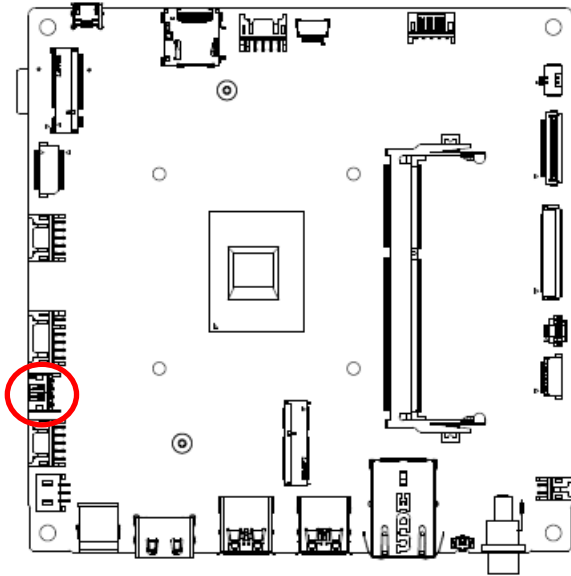


Function	Signal	PIN
Reset BTN	Reset BTN	3
	+5V	1
VOL_UP	VOL_UP	5
	+5V	1
VOL_DOWN	VOL_DOWN	6
	+5V	1
PWRBTN	PWRBTN	7
	+5V	1
BRIGHTNESS+	BRIGHTNESS+	8
	+5V	1
BRIGHTNESS-	BRIGHTNESS-	9
	+5V	1
LED_ORANGE (Power off)	LED_ORANGE+	12
	LED_GND	2
LED_GREEN (Power on)	LED_GREEN+	11
	LED_GND	2

Note: When using cable to connect JTB1 connector, please use twisted cable.

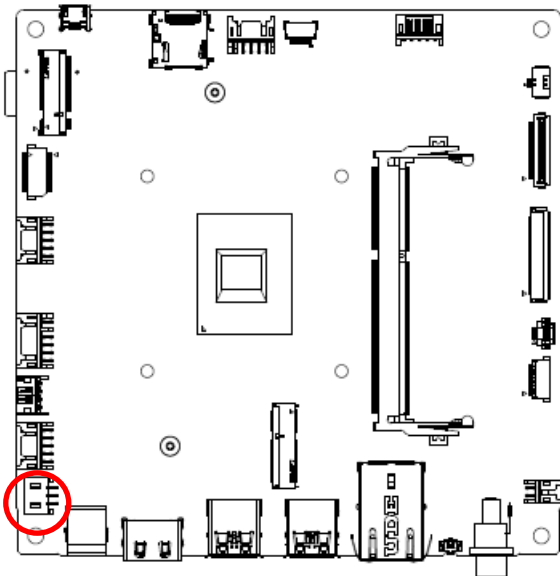


2.4.3 Speaker connector (JSPK1)



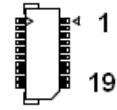
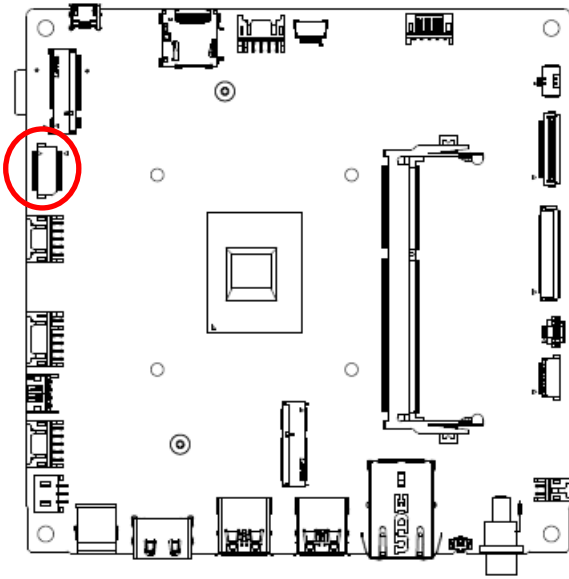
Signal	PIN
SPK_L+	1
SPK_L-	2
SPK_R+	3
SPK_R-	4

2.4.4 A-MIC connector (JAMIC1)



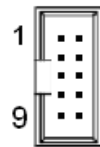
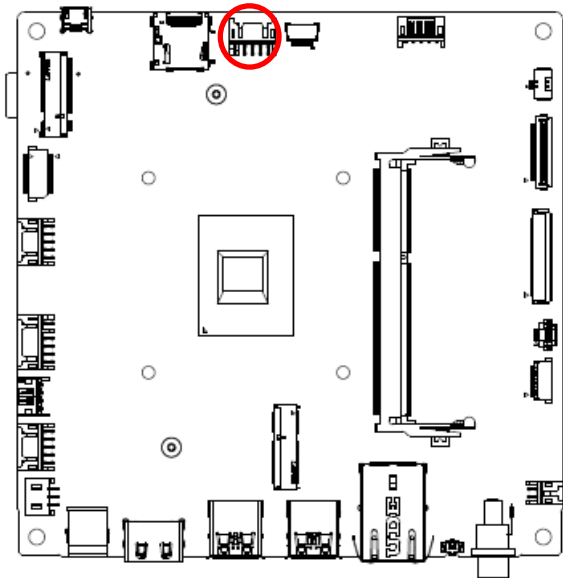
Signal	PIN
MIC_JD#	3
AMIC_IN	2
GND	1

2.4.5 General purpose I/O connector (JDIO1)



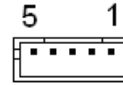
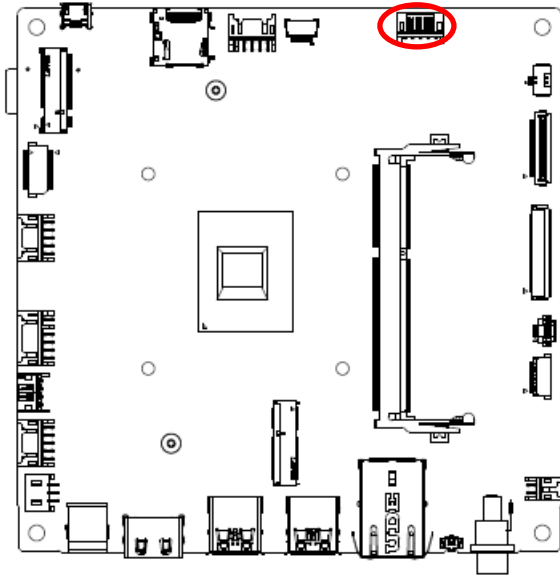
Signal	PIN	PIN	Signal
DIO_GP20	2	1	DIO_GP10
DIO_GP21	4	3	DIO_GP11
DIO_GP22	6	5	DIO_GP12
DIO_GP23	8	7	DIO_GP13
DIO_GP24	10	9	DIO_GP14
DIO_GP25	12	11	DIO_GP15
DIO_GP26	14	13	DIO_GP16
DIO_GP27	16	15	DIO_GP17
I2C_2_LV_SCL	18	17	I2C_2_LV_SDA
GND	20	19	+5V

2.4.6 Sensor Board connector (JSENSE)



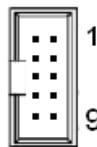
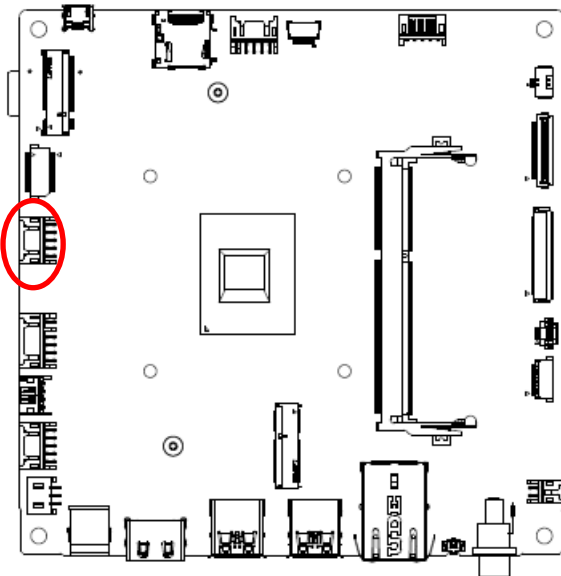
Signal	PIN	PIN	Signal
GND	1	2	GND
SENSE0_IRQ_R	3	4	SENSE2_IRQ_R
I2C_1_SDA_3.3V	5	6	I2C_6_SDA_3.3V
I2C_1_SCL_3.3V	7	8	I2C_6_SCL_3.3V
+3V	9	10	+3V

2.4.7 RS-232 connector (JRS232)



Signal	PIN
GND	1
DEBUG_CTS#_3	2
DEBUG_RTS#_3	3
DEBUG_RXD_3	4
DEBUG_TXD_3	5

2.4.8 RS-485 connector (JRS485)



RS232

Signal	PIN	PIN	Signal
GND	2	1	GND
232_CTS_2	4	3	NC
232_RTS_2	6	5	NC
232_RXD_2	8	7	NC
232_TXD_2	10	9	+5V

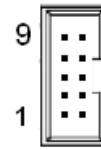
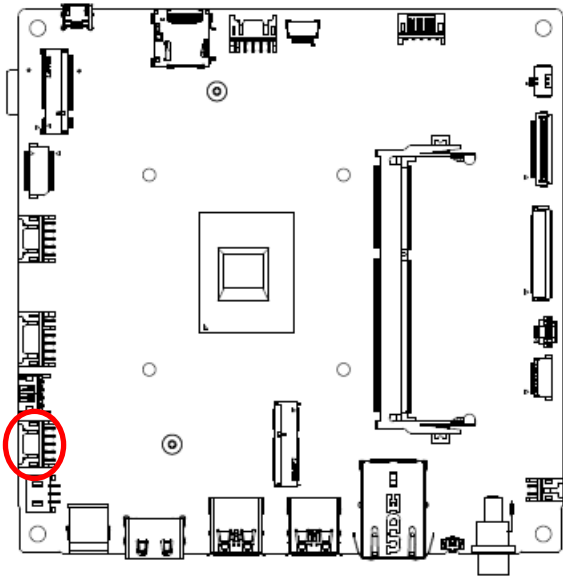
RS485

Signal	PIN	PIN	Signal
GND	2	1	GND
NC	4	3	Data+
NC	6	5	Data-
NC	8	7	NC
NC	10	9	+5V

Note:

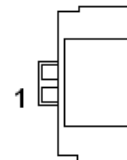
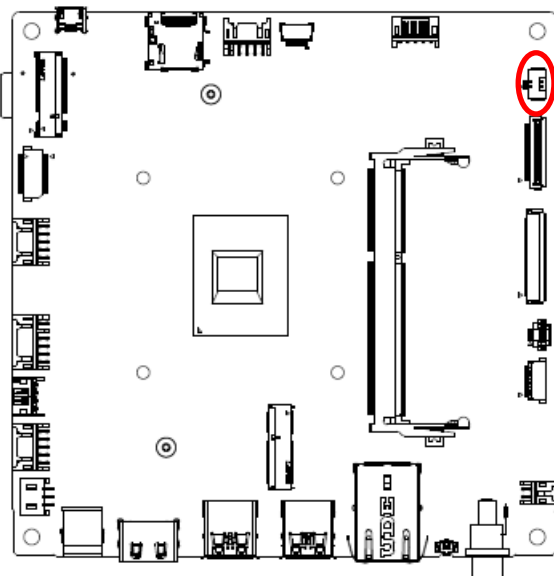
Pin9 as +5V while power up, no voltage out while system shutdown.

2.4.9 USB Camera & DMIC connector (JCAM1)



Signal	PIN	PIN	Signal
+CAM_VCC	9	10	+DMIC_VCC
USB20_N5_R	7	8	CAM_DMIC_CLK_R
USB20_P5_R	5	6	CAM_DMIC_DAT_R
GND	3	4	GND
GND	1	2	GND

2.4.10 RTC battery connector (JRTC)



Signal	PIN
GND	2
+RTCBATT	1

