User's Manual

PBSW-090T

Intel® Braswell Processor

Compact Panel PC with 9" Resistive Touch Screen

PBSW-090T-8A-E8-4G

PBSW-090T-8A-N7-4G

PBSW-090T-8A-N6-4G

PBSW-090T-P8A-E8-4G

PBSW-090T-P8A-N7-4G

PBSW-090T-P8A-N6-4G

(Revision 1.3A)

REVISION

DATE	VERSION	DESCRIPTION
2020/07/24	Version 1.0A	New Release
2020/11/19	Version 1.1A	Correct HSUART Port information.
2020/12/10	Version 1.2A	Remove out 5A version.
2021/08/26	Version 1.3A	Add Projected Capacitive Touch Solution.
2022/01/05	Version 1.4A	Correct part numbers for PCAP Solution.

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- https://www.icop.com.tw/resource_entrance

This Manual is for the PBSW-090T series.

SAFETY INFORMATION

- Read these Safety instructions carefully.

- Please carry the unit with both hands, handle carefully.

- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

- Do not expose your Panel PC to rain or moisture in order to prevent shock and fire hazard.

- Power Input voltage +12~36VDC (Version 8A).

- Operating temperature between 0~+50°C (+32~+140°F) for standard, and optional for -20~+60°C (-4~+158°F).

- Keep PBSW-090T away from humidity.

- When a M.2 2242 SATA SSD storage is the main operating system storage, please turn off power before inserting or removing. Do not open the cabinet to avoid electrical shock. Refer to your nearest dealer for qualified personnel servicing.

- Never touch un-insulated terminals or wire unless your power adaptor is disconnected.

- Locate your Panel PC as close as possible to the socket outline for easy access and to avoid force caused by entangling of your arms with surrounding cables from the Panel PC.

- USB connectors are not supplied with Limited Power Sources.

- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

WARNING!

DO NOT ATTEMPT TO OPEN OR TO DISASSEMBLE THE CHASSIS (ENCASING) OF THIS PRODUCT. PLEASE CONTACT YOUR DEALER FOR SERVICING FROM QUALIFIED TECHNICIAN.

Content

Ch. 1

General Information

1.1 Product Description

ICOP Technology Inc. is proudly going to release a brand new Panel PC, which offers fanless design, low power consumption, and IP65 front panel. The PBSW-090T is powered by Intel® Braswell Atom x5-E8000 / Pentium N3710 / Celeron N3160 processor, and 4GB DDR3L onboard that handles processing more efficiently and provides faster performance. The project capacity touch panel with LED backlight TFT LCD increases operation convenience and visibility in outdoor environments. The ultra-compact and thin exterior design is perfect for the present demanding embedded and productive applications.

The new PBSW-090T inherited PBSW series' smooth appearance and ultra-texture aluminum exterior design to make your industrial applications look more stylish. The versatile I/O ports, IP65 front panel, GIGA high-speed Ethernet etc. can fulfill fundamental functions. Our consistent advantages feature stable performance, extended working temperature support, low power consumption and fanless design. The expandable customize I/O ports can be accommodated connectivity requirements to industrial machine platforms and industrial automation equipment's needs.

The PBSW-090T supports Win7 (64-bit), Windows Embedded 7, Windows 10 (64-bit), Windows 10 IoT and Linux to meet ready-to-market demand and provide competitive advantages for customers.

1.2 Product Specifications

CPU BOARD SPECIFICATIONS

CPU	Intel® x5-E8000 (Quad core **1.04GHz; Burst 2.00GHz**) Intel® N3710 (Quad core **1.60GHz; Burst 2.56GHz**) Intel® N3160 (Quad core **1.60GHz; Burst 2.24GHz**)
Cache	L2: 2MB Cache
BIOS	AMI BIOS
Memory	4GB DDR3L Onboard
Display	Intel® HD Graphics
LAN	Integrated 10/100/1000Mbps Ethernet x 1
Audio	HD Audio-Realtek ALC262VD CODEC
Internal Drives	M.2 Slot Support (M-Key, SATA Interface, 2242)
Expansion	MiniPCIe Slot x1, Micro SIM Card Holder x1
I/O	HSUART x 1 USB3.0 x 2 RJ45 x 1 Audio-Out x 1

MECHANICAL & ENVIRONMENT

Power Requirement	8A: +12 ~ 36VDC Power Input
Power Consumption	12W (Typical for x5-E8000 without I/O)
Operating Temperature	0~+50°C (+32~+140°F) / -20~+60°C (-4~+158°F; Optional)
Storage Temperature	-30~+80°C (-22~ +176°F)
Operating Humidity	0% ~ 90% Relative Humidity, Non-Condensing
Dimensions	236.6x146x35mm (9.31"x5.75"x1.38")
Weight	880g

Protection	IP65 Front Panel
Certification	CE / FCC / VCCI / Vibration/ Shock

LCD SPECIFICATIONS

Display Type	9" WSVGA TFT LCD
Backlight Unit	LED
Display Resolution	1024(W) x 600(H)
Brightness (cd/m^2)	300 nits
Contrast Ratio	500 : 1
Display Color	262,144
Active Area (mm)	196.61 (W) x 114.15 (H)
Viewing Angle	Vertical 120°, Horizontal 140°
Backlight Lifetime	20,000 hrs

TOUCHSCREEN

Type1	Analog Resistive **(Standard)**
Resolution	Continuous
Transmittance	80%
Controller	USB interface
Software Driver	Linux, Win7, WES7, Win10, Win10 IoT
Durability	1 million
Type2	Projected Capacitive Touch Screen **(Optional)**
Resolution	25ppi (Min.)
Transparency	86% ± 2%
Accuracy	Within 2.5mm each target
Surface Hardness	$\geqq$ 7H (Pressure：0.5N/45°)

1.3 Inspection standard for TFT-LCD Panel

DEFECT TYPE			LIMIT						Note
VISUAL DEFECT	INTERNAL	SPOT	φ＜0.15mm			Ignore			Note1
			0.15mm≦φ≦0.5mm			N≦4			
			0.5mm＜φ			N=0			
		FIBER	0.03mm<W≦0.1mm, L≦5mm			N≦3			Note1
			1.0mm＜W, 1.5mm＜L			N=0			
		POLARIZER BUBBLE	φ＜0.15mm			Ignore			Note1
			0.15mm≦φ≦0.5mm			N≦2			
			0.5mm＜φ			N=0			
		Mura	It' OK if mura is slight visible through 6%ND filter						
ELECTRICAL DEFECT		BRIGHT DOT	A Grade			B Grade			
			C Area	O Area	Total	C Area	O Area	Total	Note3
			N≦0	N≦2	N≦2	N≦2	N≦3	N≦5	Note2
		DARK DOT	N≦2	N≦3	N≦3	N≦3	N≦5	N≦8	
		TOTAL DOT	N≦4			N≦5	N≦6	N≦8	Note2
		TWO ADJACENT DOT	N≦0	N≦1 pair	N≦1 pair	N≦1 pair	N≦1 pair	N≦1 pair	Note4
		THREE OR MORE ADJACENT DOT	NOT ALLOWED						
		LINE DEFECT	NOT ALLOWED						

(1) One pixel consists of 3 sub-pixels, including R, G, and B dot. (Sub-pixel = Dot)

(2) Little bright Dot acceptitable under 6% ND-Filter.

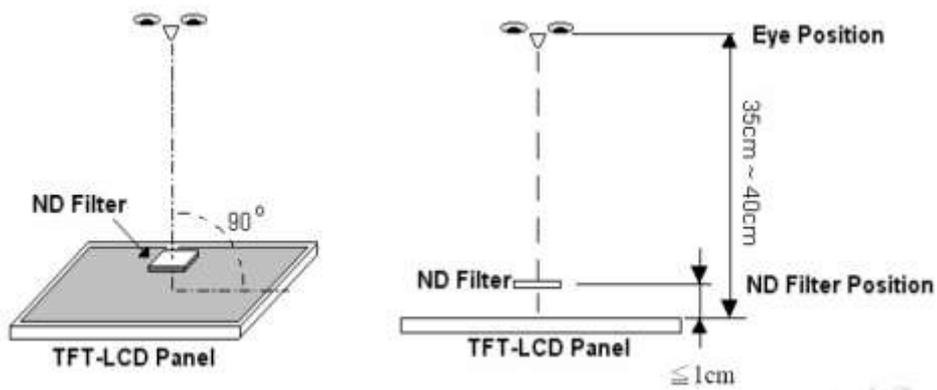**(3) If require G0 grand (Total dot N≦0), please contact region sales.**

[Note 1] W: Width[mm]; L: Length[mm]; N: Number; φ: Average Diameter.

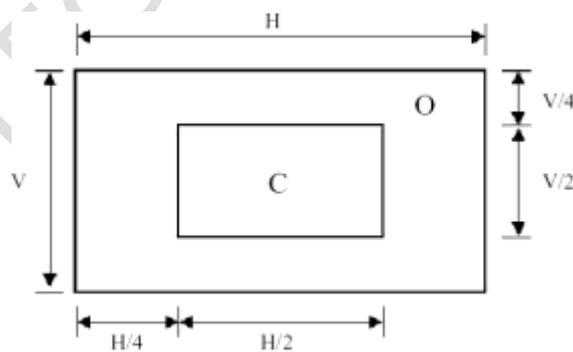$$\varphi = \frac{(a + b)}{2}$$
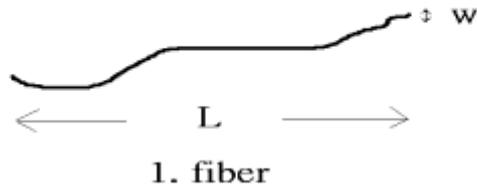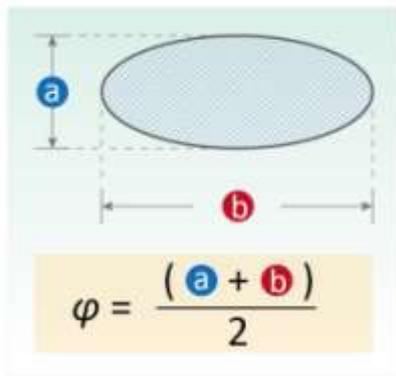
(a) White / Black Spot   (b) Polarizer Bubble

[Note 2] Bright dot is defined through 6% transmission ND Filter as following.
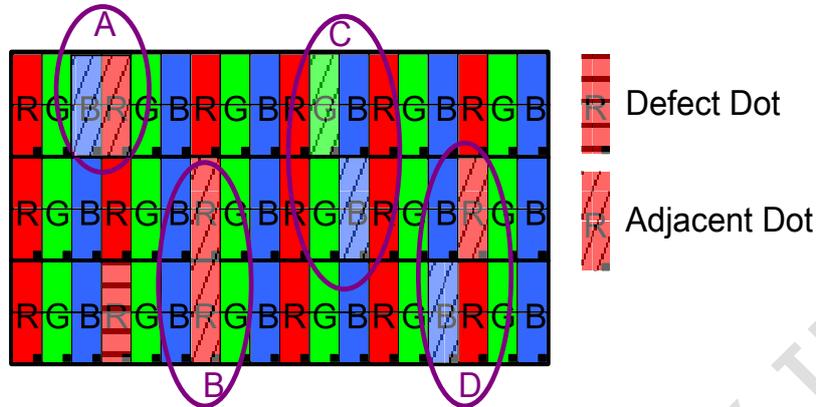

[Note 3] Display area

C Area: Center of display area   **O Area**: Outer of display area

[Note 4] Judge the defect dot and the adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dark adjacent dot. And they will be counted 2 defect dots in total quantity.

The defects that are not defined above and considered to be problem shall be reviewed and discussed by both parties.

Defects on the Black Matrix, out of Display area, are not considered as a defect or counted.

[Note 5]

According to the technical information from LCD manufacturer, the image retention may happen on LCD display if the static image is kept for a period of time without any change. ICOP will suggest customers not to have static image on LCD for over 4 hours without any image movement and also enable screensaver to avoid image sticking issue if LCD displays need to be kept on for a long time.
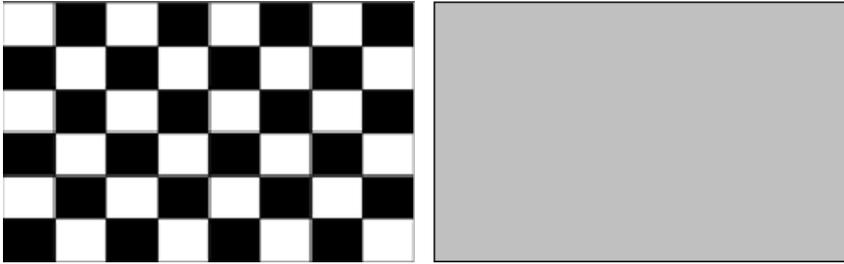
Some Image retention issue will disappear when LCD display is turned off for a period of time, but some image retention may be not reversible when LCD encounters screen burn.

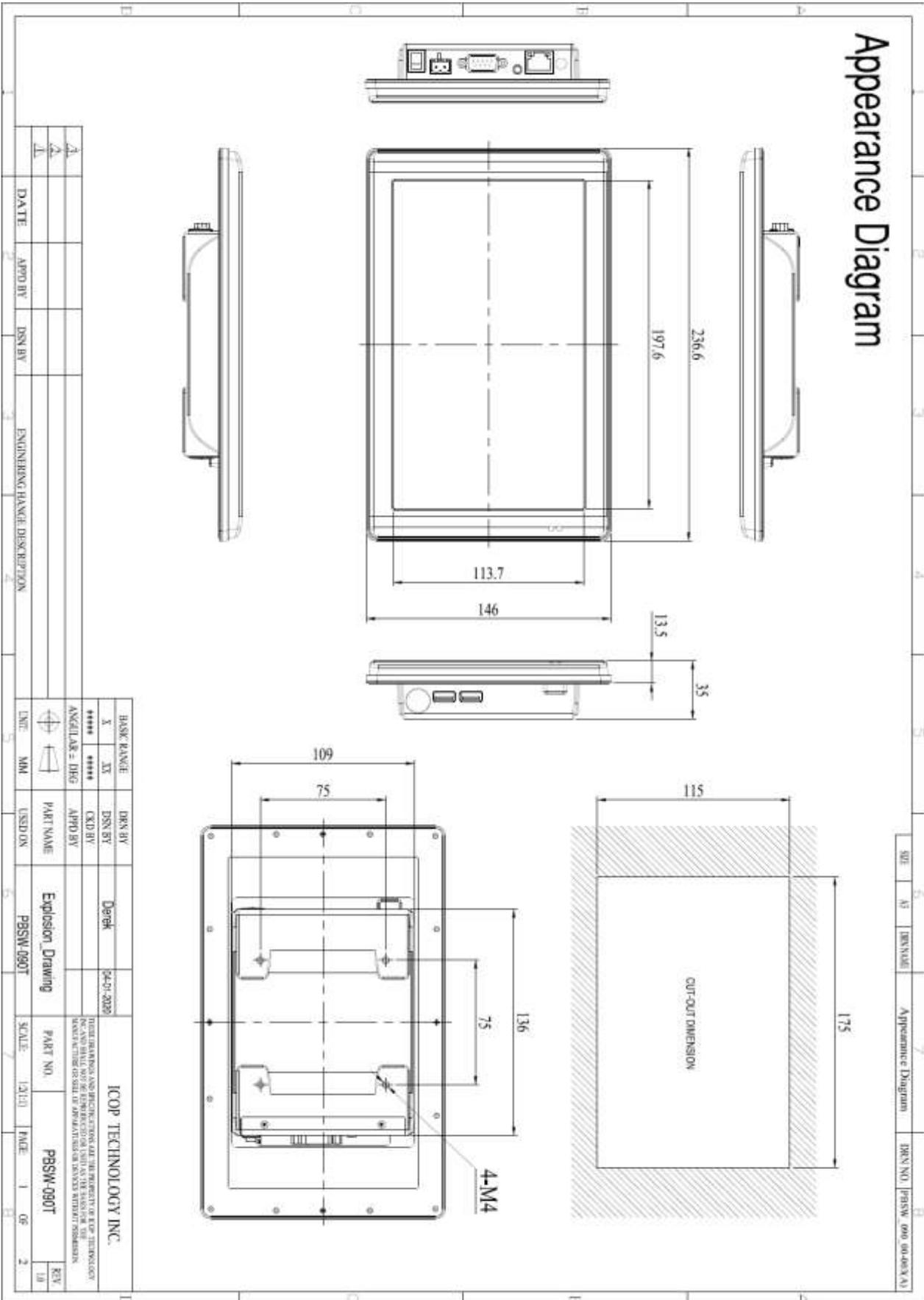The following is LCD manufacturer's test result for customers' reference.

TEST ITEMS	CONDITIONS	NOTE
High Temperature Operation	70℃ ;240hrs	
High Temperature Storage	80℃ ; 240hrs	
High Temperature High Humidity Operation	60℃ ; 90%RH ;240hrs	No condensation
Low Temperature Operation	-20℃ ; 240hrs	Backlight unit always turn on
Low Temperature Storage	-30℃ ; 240hrs	
Thermal Shock	−30℃(0.5hr) ~ 80℃(0.5hr) ; 200 Cycles	
Image Sticking	25℃ ; 4hrs	**Note 5-1**
MTBF	20,000Hrs	

Note 5-1

1. Condition of Image Sticking test：25 ℃±2 ℃.

2. Operation with test pattern sustained for 4 hrs, then change to gray pattern immediately.

3. After 5 mins, the mura must be disappeared completely.

1.4 Product Dimensions

Appearance Diagram
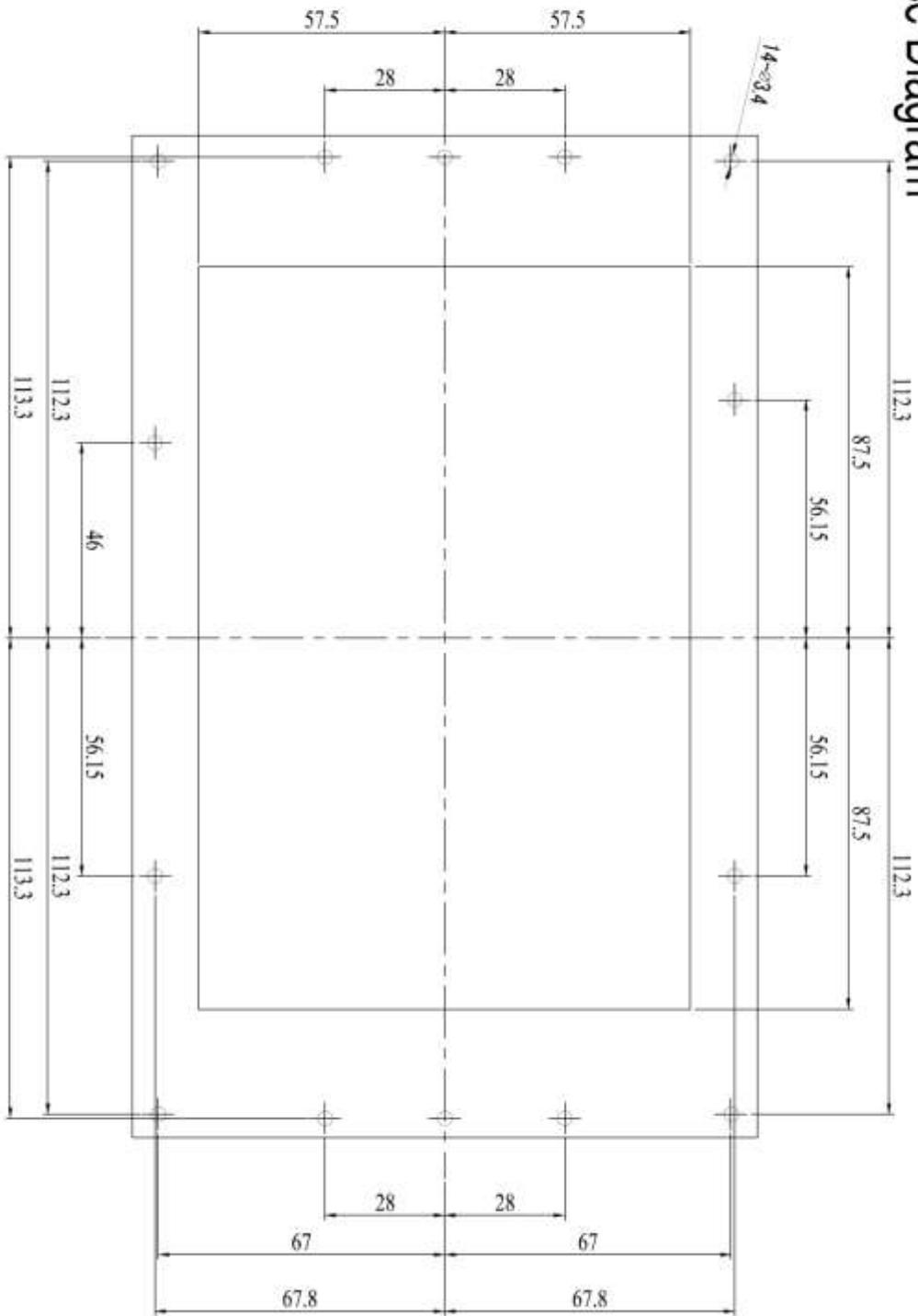
CUT-OUT MOUNTING DIMENSION-FRONT VIEW (1:1)

57.5 57.5
28 28
14-ø3.4
113.3
112.3
46
56.15
112.3
87.5
56.15
56.15
87.5
112.3
113.3
112.3
56.15
28 28
67 67
67.8 67.8

BASIC RANGE
.X   DRN BY
.XX DSN BY   Derek
ANGULAR ± DEG   CKD BY
APPD BY   04-01-2020

UNIT MM
PART NAME   Explosion_Drawing
USED ON   PBSW-090T
SCALE   1.3(1:1)

ICOP TECHNOLOGY INC.

PART NO.   PBSW-090T
PAGE   2   OF   2
REV   B

SIZE A3 DRN NAME   Appearance Diagram   DRN NO. PBSW-090-00-00(A)

# 1.5 Mounting Instruction

• Panel Mounting

- Cut a mounting hole in the panel. (Refer to PBSW‑090T Dimensions on page 10) (Note 1)

- Check and remove the twelve M3 screws in a diagonal pattern as image below if necessary.

- Place PBSW‑090T face‑down on a clean, flat surface.

- Slide the panel cutout around the back of PBSW‑090T, until the panel rests directly on the gasket. Make sure the screw holes align with the screw holes on PBSW‑090T.

- The screw size is M3*L (L=wall thickness + 6.0mm) (Note 2)

- Insert all twelve M3 screws into the screw holes. (Note 2)

- Finger-tighten the M3 screws. Finish tightening the M3 screws in a diagonal pattern using an M3 screw driver (see the image as below); maximum torque 1.18Nm (12 kgf‑cm).
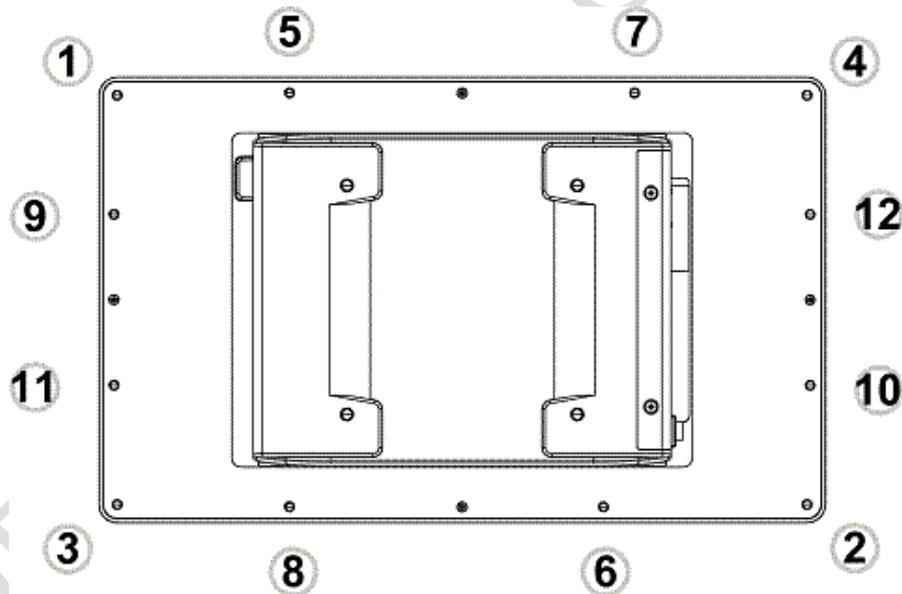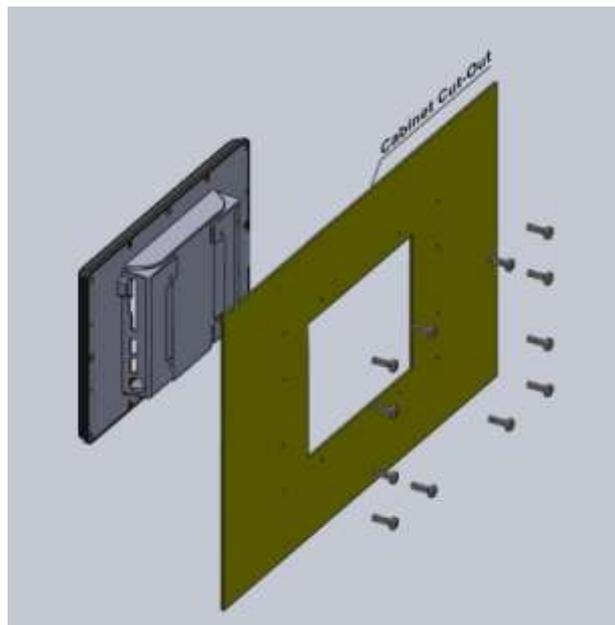
Note 1:

It is strongly recommended that a professional machine shop cut the mounting hole in the panel.
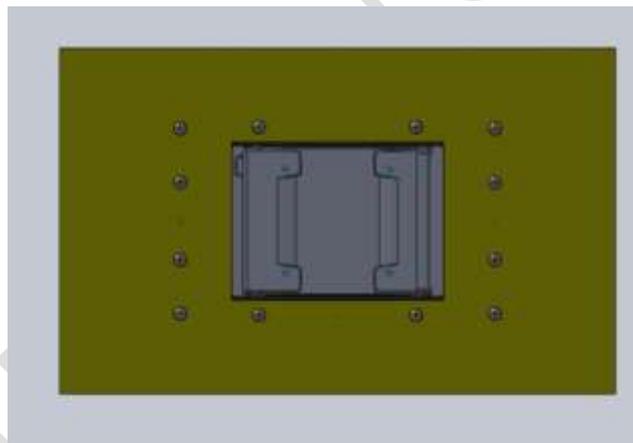
Note 2:

The length for all twelve M3 screws will be according to the thickness of mounting panel. For example: The length of standard M3 screws for PBSW‑090T is 6mm. If the thickness of your mounting panel is 3mm and washer thickness is 1mm, you have to use 10mm M3 screw.

1.6 Ordering Information

Product Code	LCD Size	DC-Input Type	CPU Type	RAM	Wide Temp.
PBSW	090T	8A (DC12~36V) **P**8A (**PCAP** w/DC12-36V)	**E8** **N7** **N6**	4G	I (Wide Temp.)

1. Product Code：

　　PBSW：PBSW Series。

2. LCD Size：

　　090T：9" LCD Panel。

3. DC-Input Type：

　　8A：Audio Line-out and Support DC12~36V Power Input。

　　P8A：**PCAP Touch Panel** with Audio Line-out and Support DC12~36V Power Input。

4. CPU Type:

　　E8：Intel Braswell Atom x5-E8000 Processor with Resistive Touch。

　　N7：Intel Braswell Pentium N3710 Processor with Resistive Touch。

　　N6：Intel Braswell Celeron N3160 Processor with Resistive Touch。

5. RAM：

　　4G：4GB。

6. Wide Temp.：

　　I：Support Wide Temp. -20~+60℃。 **(Optional)**

　　(Standard version doesn't need to show this item.)

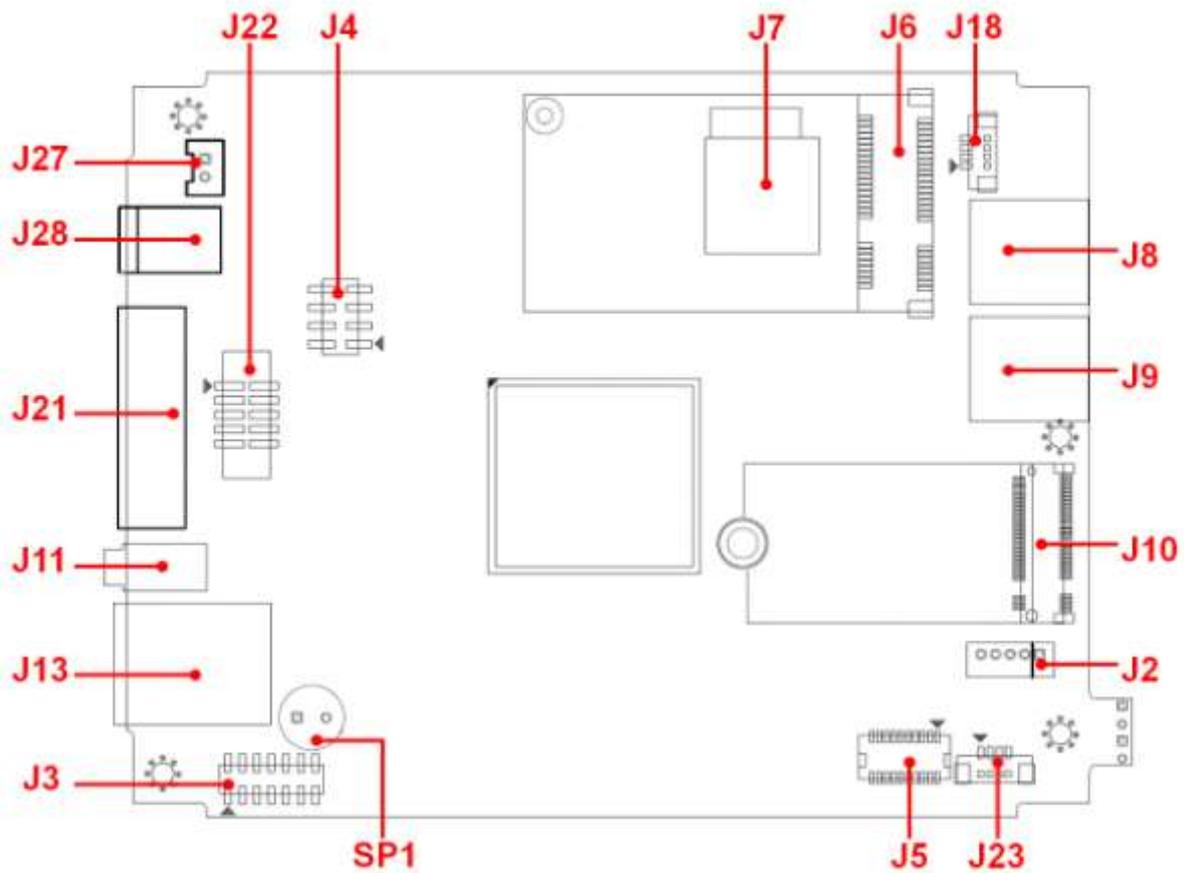| PART NUMBER	DESCRIPTION
PBSW-090T-8A-E8-4G	9" Panel PC w/Intel Braswell x5-E8000/4GB DRAM /2U/Giga LAN/1S/**RTP**/DC12~36V Power Input
PBSW-090T-8A-N7-4G	9" Panel PC w/Intel Braswell N3710/4GB DRAM /2U/Giga LAN/1S/**RTP**/DC12~36V Power Input
PBSW-090T-8A-N6-4G	9" Panel PC w/Intel Braswell N3160/4GB DRAM /2U/Giga LAN/1S/**RTP**/DC12~36V Power Input
PBSW-090T-P8A-E8-4G	9" Panel PC w/Intel Braswell x5-E8000/4GB DRAM /2U/Giga LAN/1S/**PCAP**/DC12~36V Power Input
PBSW-090T-P8A-N7-4G	9" Panel PC w/Intel Braswell N3710/4GB DRAM /2U/Giga LAN/1S/**PCAP**/DC12~36V Power Input
PBSW-090T-P8A-N6-4G	9" Panel PC w/Intel Braswell N3160/4GB DRAM /2U/Giga LAN/1S/**PCAP**/DC12~36V Power Input
WLAN KIT (Optional)	MINIPCIE-WLAN-159H (or 161H) x1 CASE-H2F-MINIPCIE x1 WIRELESS-ANTENNA-157 x1 WIRELESS-CABLE-UFL x1

Ch.2

System Installation

2.1 CPU Board Outline

PBSW CPU Board

2.2 Connector Summary

No.	Description	Type of Connections	Pin #
J2	USB2.0	2.0mm 5-pin wafer	5-pin
J3	LPC Bus **(Reserved)**	2.0mm 14-pin pin header	14-pin
J4	SPIO **(Reserved)**	2.0mm 8-pin pin header	8-pin
J5	HDMI **(Reserved)**	1.0mm 20-pin wafer	20-pin
J6	Mini-PCIe	External Mini-PCIe Connector	52-pin
J7	Micro SIM card for Mini-PCIe	External Micro SIM card	6-pin
J8	USB3.0	External USB3.0 Connector	9-pin
J9	USB3.0	External USB3.0 Connector	9-pin
J10	M.2 SATA (M-Key)	External M.2 SATA Connector	75-pin
J11	Audio Line-out Jack	External Audio Line-out Jack	4-pin
J13	GIGA Ethernet	External RJ45 Connector	8-pin
J18	I2C Bus **(Reserved)**	1.25mm 4-pin wafer	4-pin
J21	HSUART/COM1	External D-Sub 9-pin	9-pin
J22	COM1 Pin Header **(Reserved)**	2.0mm 10-pin pin header	10-pin
J23	Power LED Header	1.25mm 4-pin wafer	4-pin
J27	Power Switch Header	2.54mm 2-pin wafer	2-pin
J28	Power Connector (8A)	External Power Plug	2-pin
SP1	Buzzer	PC Buzzer 2-pin	2-pin

2.3 Connector Pin Assignments

J2: USB2.0

Pin #	Signal Name	Pin #	Signal Name
1	VCC	2	USBD2-
3	USBD2+	4	GND
5	GND		

J3: LPC Bus (Reserved)

Pin #	Signal Name	Pin #	Signal Name
1	CLKOUT	2	GND
3	L_FRAME_N	4	N/C
5	PLTRST_N	6	VCC
7	LPC_AD3	8	LPC_AD2
9	VCC3	10	LPC_AD1
11	LPC_AD0	12	GND
13	SMB_CLK	14	SMB_DAT

J4: SPIO Bus (Reserved)

Pin #	Signal Name	Pin #	Signal Name
1	VCC1.8	2	GND
3	SPIO_CS_N	4	SPIO_CLK
5	SPIO_MISO	6	SPIO_MOSI
7	N/C	8	VCC3

J5: HDMI (Reserved)

Pin #	Signal Name	Pin #	Signal Name
1	HDMI_D2+	2	N/C
3	HDMI_D2-	4	GND
5	GND	6	HDMI_CLK+
7	HDMI_D1+	8	HDMI_CLK-
9	HDMI_D1-	10	GND
11	GND	12	HDMI_SCL
13	HDMI_D0+	14	HDMI_SDA
15	HDMI_D0-	16	GND
17	VCC	18	HDMI_HPD
19	GND	20	GND

J6: Mini-PCIe

Pin #	Signal Name	Pin #	Signal Name
1	WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	VCC1.5
7	CLKREQ#	8	SIM-VCC
9	GND	10	SIM-IO
11	PCIe_CLK-	12	SIM-CLK
13	PCIe_CLK+	14	SIM-RST
15	GND	16	SIM-VPP
17	N/C	18	GND
19	N/C	20	W_DISABLE#
21	GND	22	PLTRST_N
23	PCIe_RX-	24	VCC3
25	PCIe_RX+	26	GND
27	GND	28	VCC1.5
29	GND	30	SMB_CLK
31	PCIe_TX-	32	SMB_DAT
33	PCIe_TX+	34	GND
35	GND	36	USBD3-
37	GND	38	USBD3+
39	VCC3	40	GND
41	VCC3	42	LED_WWAN#
43	GND	44	N/C

45	N/C	46	N/C
47	N/C	48	VCC1.5
49	N/C	50	GND
51	N/C	52	VCC3

J7: Micro SIM card for Mini-PCIe

Pin #	Signal Name	Pin #	Signal Name
1	SIM-VCC	2	SIM-RST
3	SIM_CLK	4	GND
5	SIM-VPP	6	SIM-IO

J8 & J9: USB3.0

Pin #	Signal Name	Pin #	Signal Name
1	VCC	2	USB3_D-
3	USB3_D+	4	GND
5	USB3_RX-	6	USB3_RX+
7	GND	8	USB3_TX-
9	USB3_TX+		

J11: Audio Line-out Jack

Pin #	Signal Name	Pin #	Signal Name
1	GND_AUD	2	LOUT-R
3	Open Touch	4	LOUT-L

J13: GIGA LAN

Pin #	Signal Name	Pin #	Signal Name
1	TP0+	2	TP0-
3	TP1+	4	TP2+
5	TP2-	6	TP1-
7	TP3+	8	TP3-

J18: I2C Bus (Reserved)

Pin #	Signal Name	Pin #	Signal Name
1	VCC	2	GND
3	I2C_SCL	4	I2C_SDA

J21: HSUART/COM1

Pin #	Signal Name	Pin #	Signal Name
1	N/C	2	RXD
3	TXD	4	N/C
5	GND	6	N/C
7	RTS	8	CTS
9	N/C		

J22: COM1 Pin Header

(Reserved for Mini-PCIe RS232 Module)

Pin #	Signal Name	Pin #	Signal Name
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	N/C or VCC

J23: Power LED Header

Pin #	Signal Name	Pin #	Signal Name
1	VCC_PWR	2	GND
3	VCC_SATA	4	SATA_LED_N

J27: Power Switch Header

Pin #	Signal Name	Pin #	Signal Name
1	DCIN	2	VIN+

J28: Power Connector (8A)

Pin #	Signal Name	Pin #	Signal Name
1	DCIN	2	GND

SP1: Buzzer

Pin #	Signal Name	Pin #	Signal Name
1	SPKR	2	VCC

2.4 External I/O Overview

{ PBSW-090T-8A }

Wireless Antenna (Optional) · Line-Out · DC-IN +12V~36V

ANT · COM · DC-IN · POWER SW

10/100Mbps Ethernet · HSUART · Power Switch

USB 3.0 Port

{Note}
1. WLAN is optional
2. HSUART is from Intel Internal HSUART. Please refer the section, 4.4 to install special driver, but it not a standard RS232 port. If you want a standad RS232 port, please contact the region sales and ICOP can offer an add-on RS232 module in PBSW-090T unit.

2.5 External I/O Pin Assignment

Power Switch

Pin #	Status
|	ON
O	OFF

Power Connector (8A)
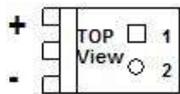
Pin #	Signal Name
1	+12 ~ 36V
2	GND

HSUART (From Intel Internal SIO)
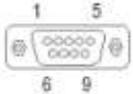
Pin #	Signal Name	Pin #	Signal Name
1	N/C	2	RXD2
3	TXD2	4	N/C
5	GND	6	N/C
7	RTS2	8	CTS2
9	N/C		

Audio Line-Out

Pin #	Signal Name
1	GND_AUD
2	LOUT-R
3	Open Touch
4	LOUT-L

GIGA LAN

Pin #	Signal Name	Pin #	Signal Name
1	TP0+	2	TP0-
3	TP1+	4	TP2+
5	TP2-	6	TP1-
7	TP3+	8	TP3-

USB 3.0 Port
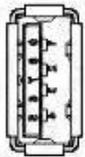
Pin #	Signal Name
1	VCC
2	D-
3	D+
4	GND
5	SSRX-
6	SSRX+
7	GND
8	SSTX-
9	SSTX+

Ch.3

Hardware Installation

PBSW-090T supports various kinds of storages for industrial application, divided into M.2 2242 SATA (M-Key) and 2.5" SATAIII HDD/SSD.

3.1 Installing the M.2 2242 SATA

3.2 Installing the Mini-PCIe Module

3.3 Installing the Micro SIM Card (Must include 3G/4G Mini-PCIe Module in advance)

3.1 Installing the M.2 2242 SATA

[SPEC]

Standard M.2 2242 form factor

22 x 42 x 3.2 mm

[M.2 2242 SATA LIST]

P/N	MLC	Operating Temperature
IM242S-8G-M	V	0℃ ~ +70℃
IM242S-16G-M	V	0℃ ~ +70℃
IM242S-32G-M	V	0℃ ~ +70℃
IM242S-64G-M	V	0℃ ~ +70℃
IM242S-128G-M	V	0℃ ~ +70℃
IM242S-256G-M	V	0℃ ~ +70℃

[STEP]

1. Remove the 16 screws as the image below.
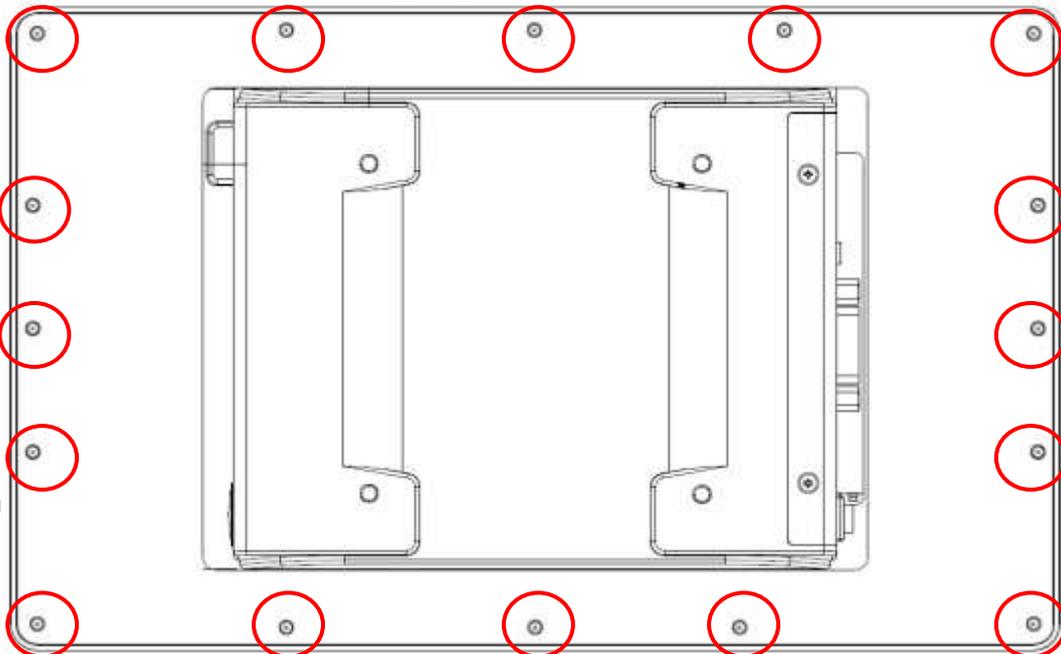
2. Remove the 2 screws and 2 Hex Head Bolts as the image below.
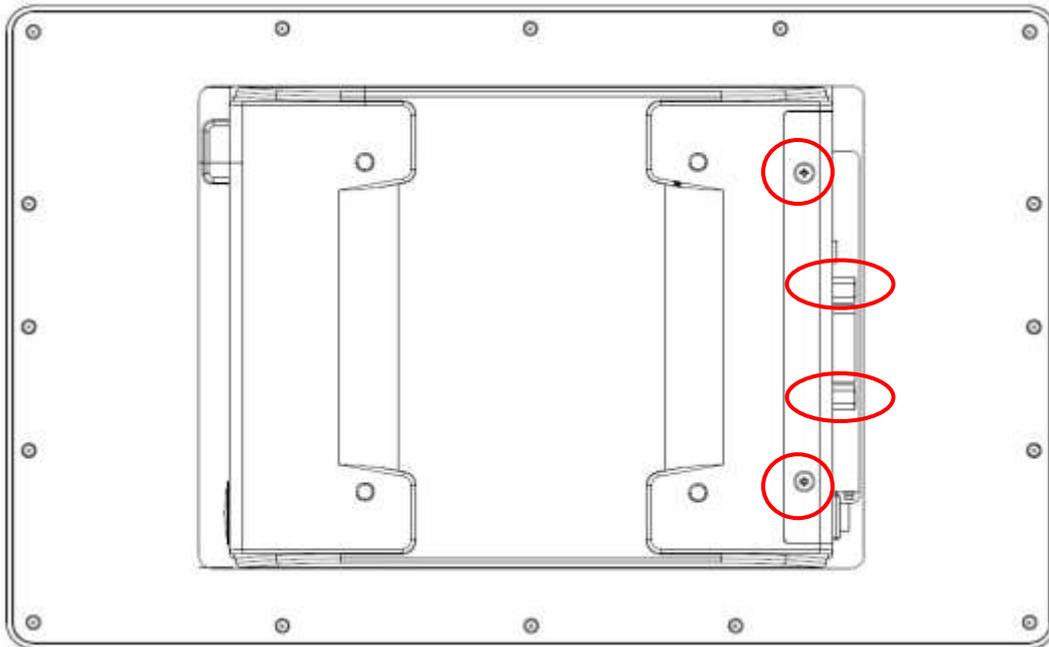
3. Pull out the I/O bracket carefully.

4. Pull up and remove the rear cover.

5. Remove the screw of M.2 Slot.

6. Plug M.2 2242 Storage on M.2 Slot and lock the screw back.

7. Put the rear cover back, and lock back 2 screws and 2 Hex Head Bolts.
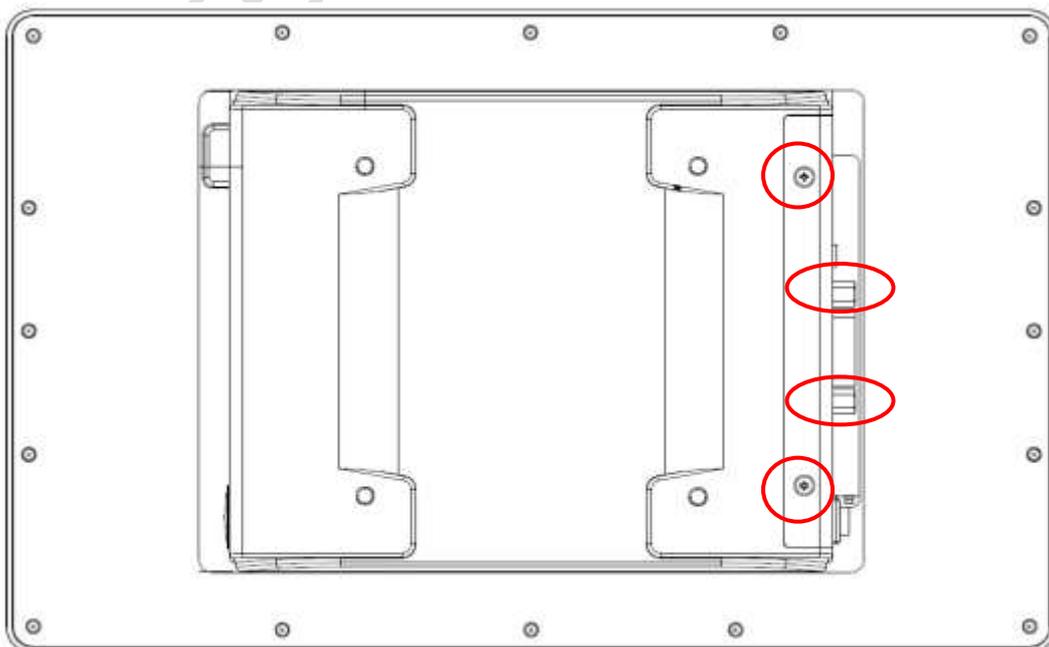
8. Lock the 16 screws back.
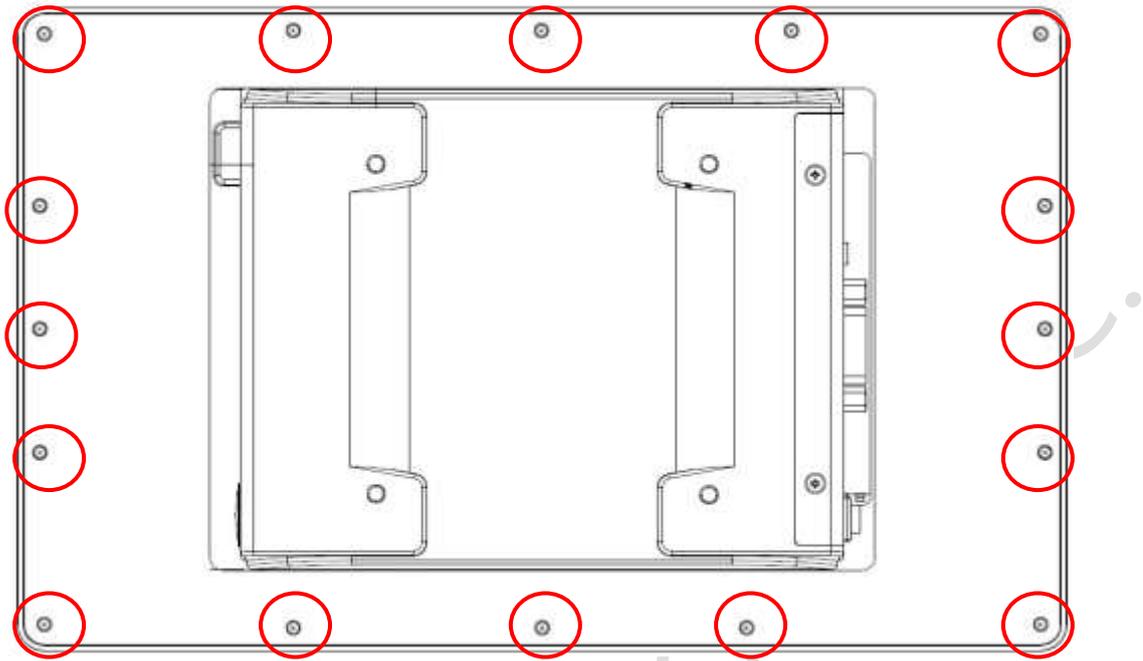
3.2 Installing the Mini-PCIe Module

[STEP]

1. Remove the 16 screws as the image below.
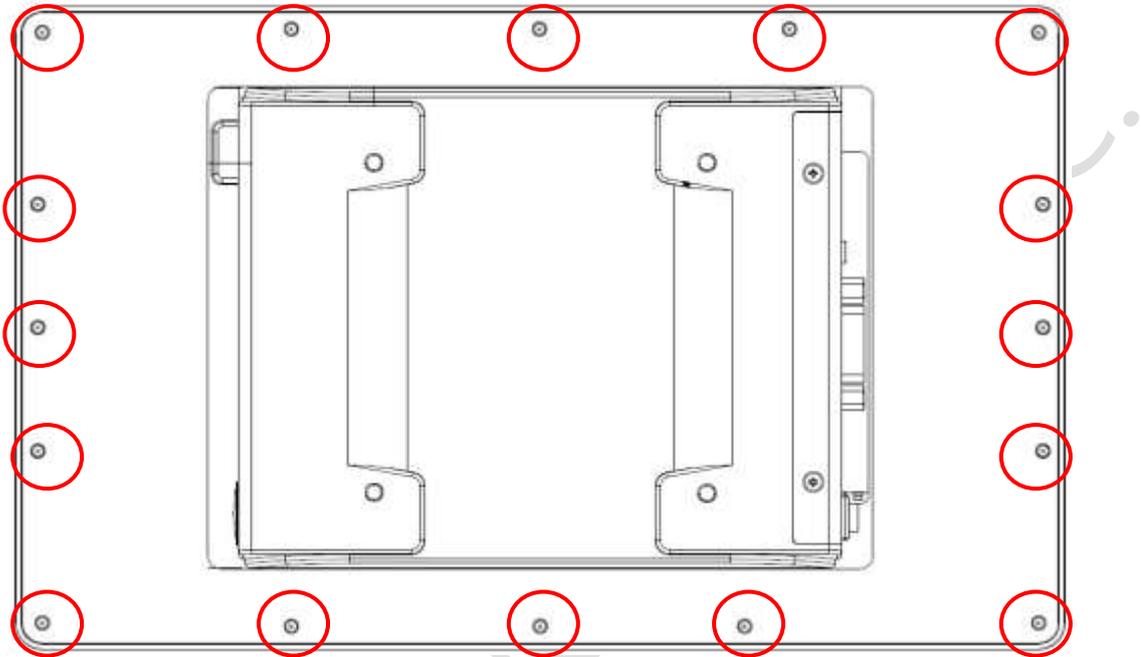
2. Remove the 2 screws and 2 Hex Head Bolts as the image below.
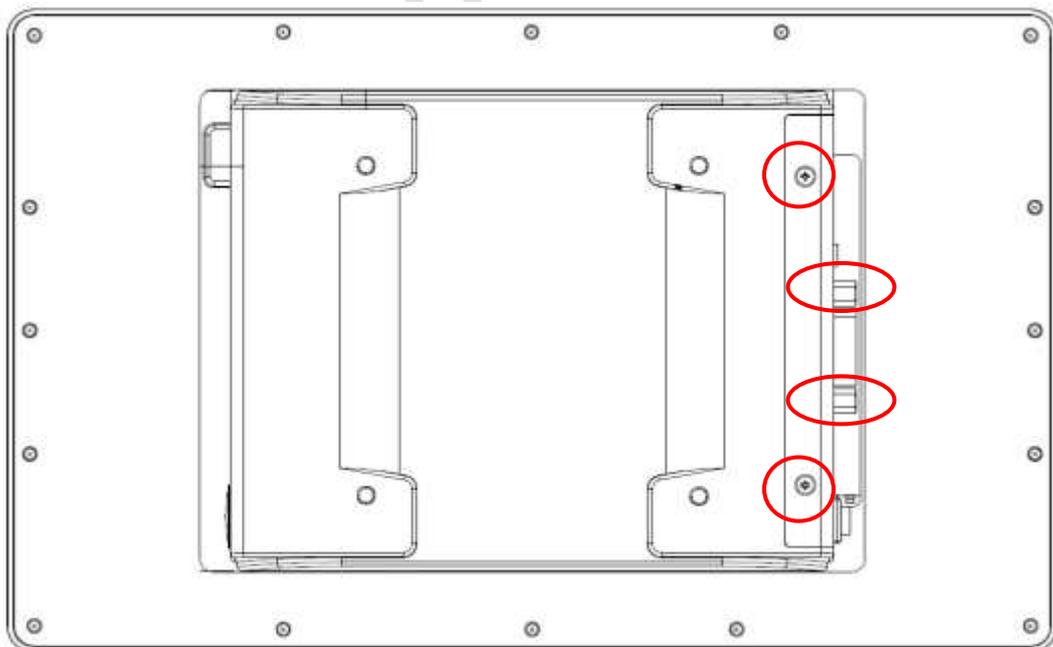
3. Pull out the I/O bracket carefully.

4. Pull up and remove the rear cover.

5. Remove the screw of Mini-PCIe Slot.

6. Plug Mini-PCIe Module in the slot and lock the screws.

7. Put the rear cover back, and lock back 2 screws and 2 Hex Head Bolts.
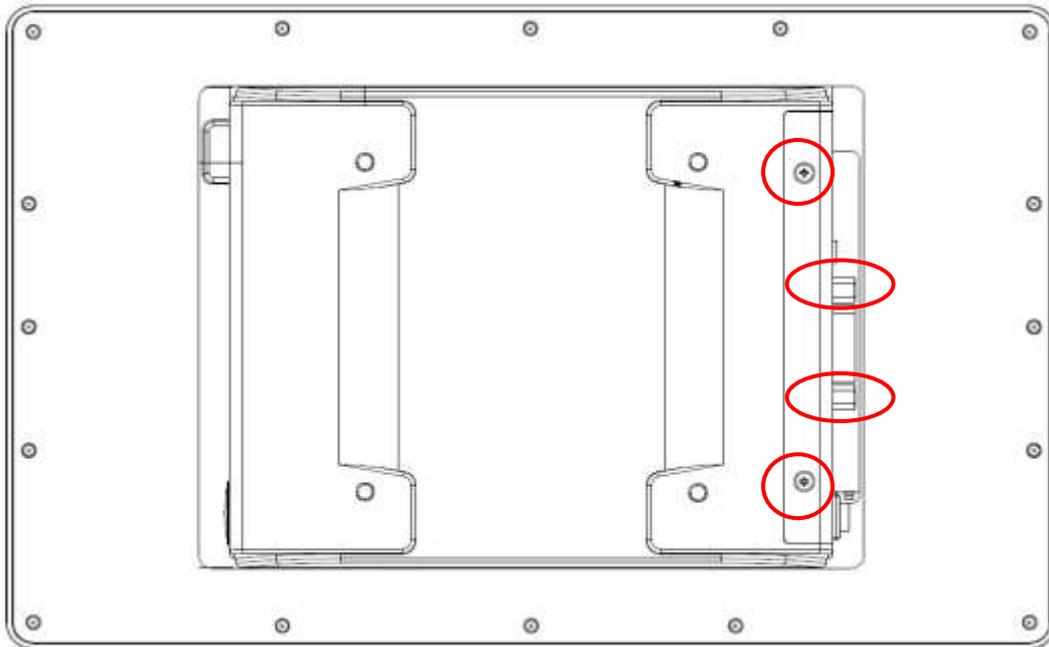
8. Lock the 16 screws back.
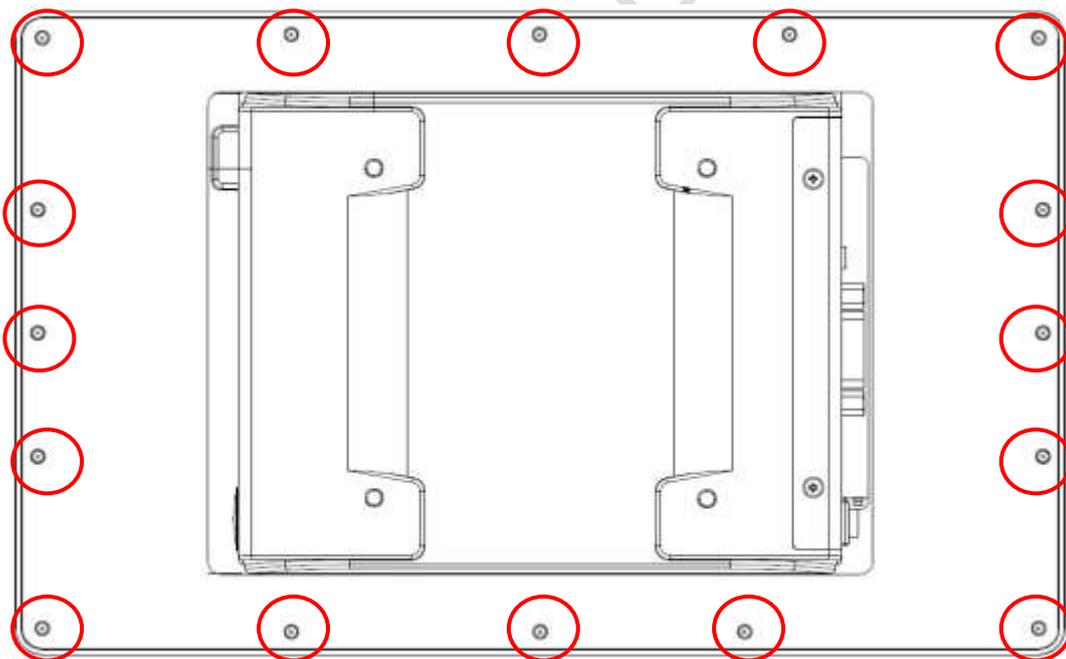
3.3 Installing the Micro SIM Card (Must have 3G/4G Mini-PCIe Module in advance)

[STEP]

1. Remove the 16 screws as the image below.
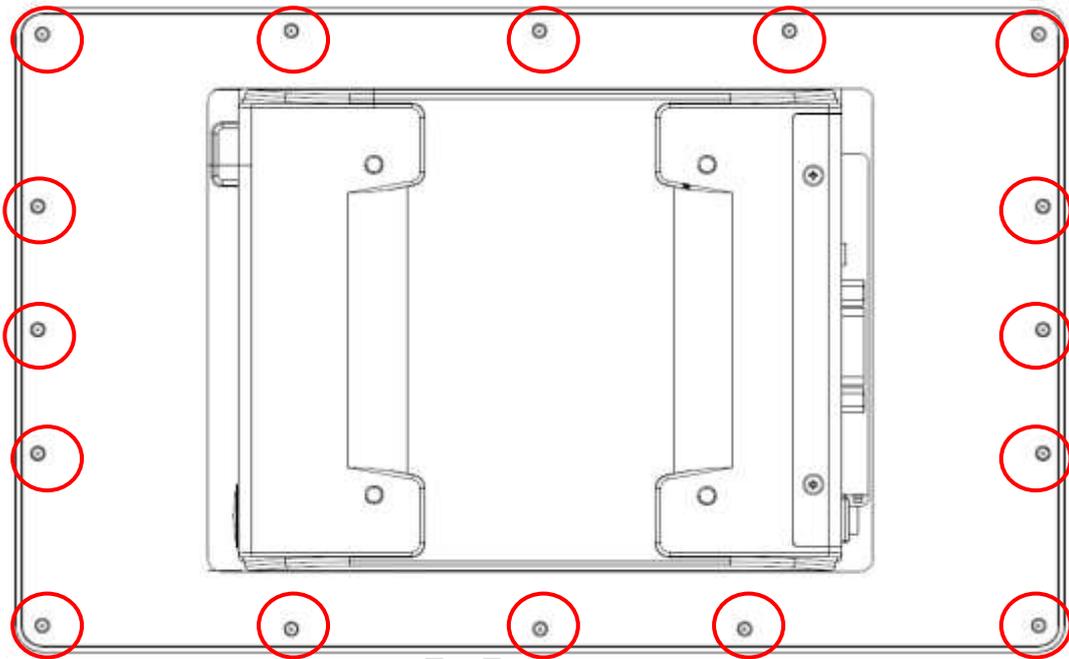
2. Remove the 2 screws and 2 Hex Head Bolts as the image below.
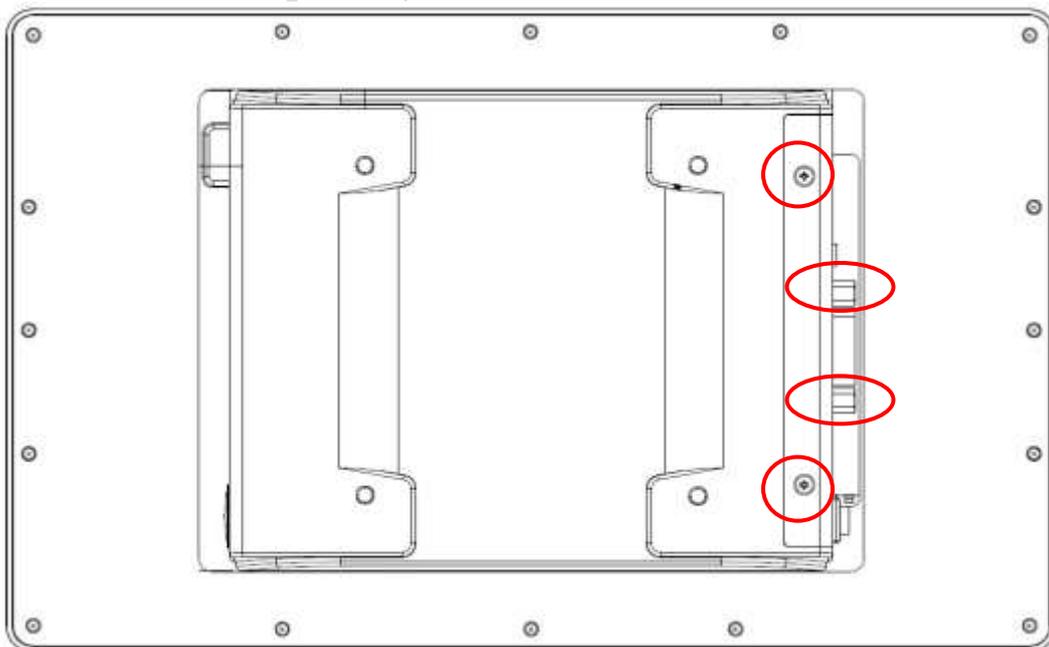
3. Pull out the I/O bracket carefully.

4. Pull up and remove the rear cover.

5. Pull Micro SIM Card on the slot.

6. Please refer the section, 3.2 to install 3G/4G Mini-PCIe Module.

7. Put the rear cover back, and lock back 2 screws and 2 Hex Head Bolts.
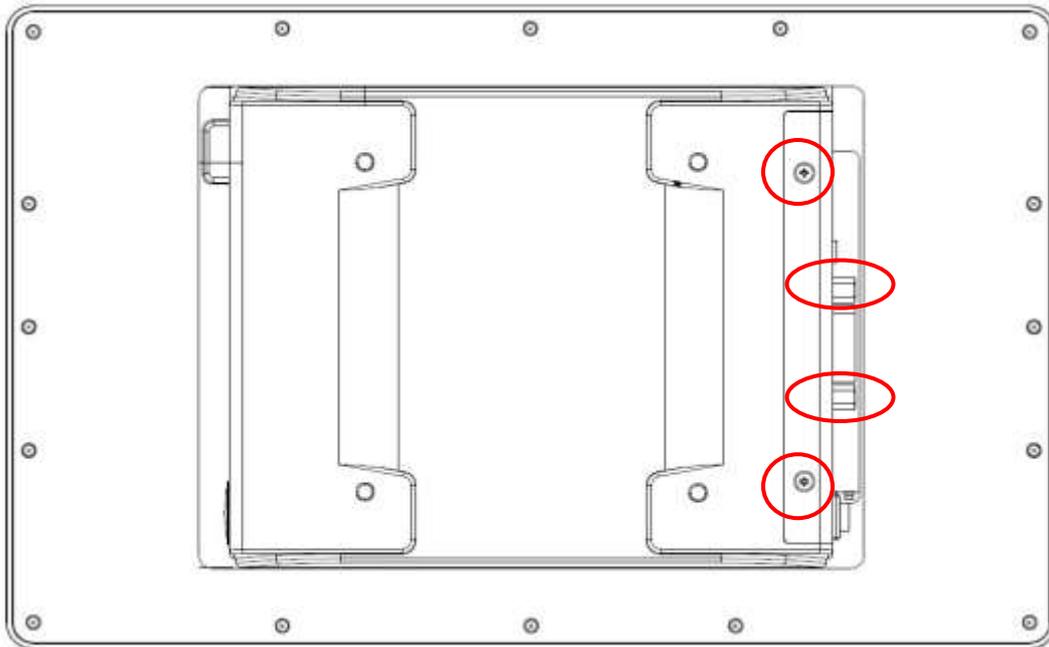
8. Lock the 16 screws back.
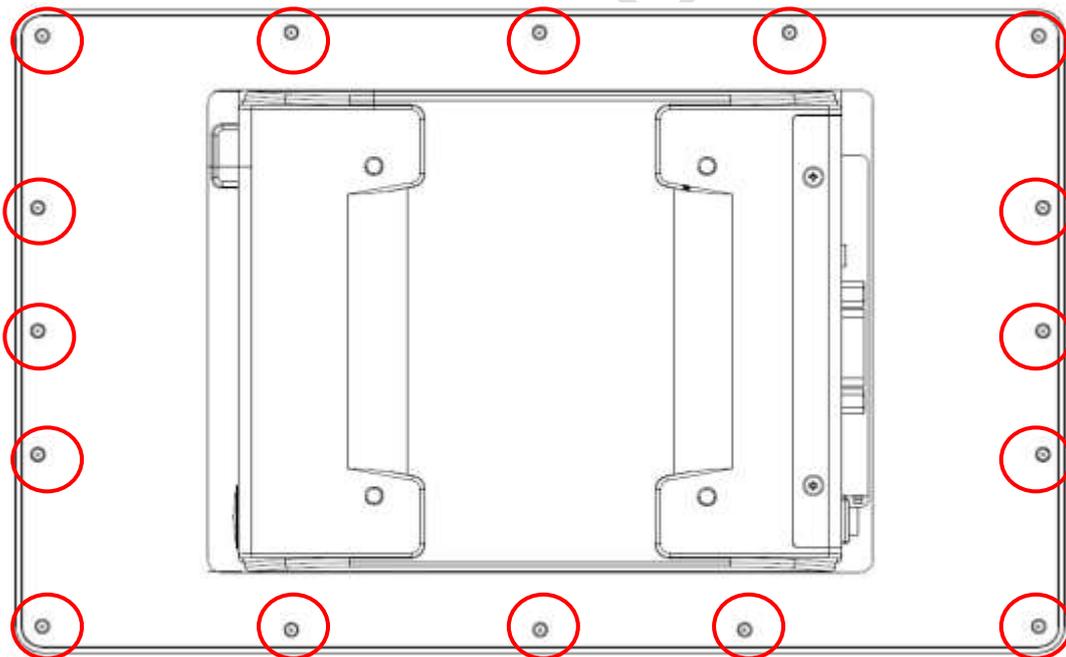
Ch. 4

Drivers and BIOS Instruction

4.1 Operating System Support and Drivers

The PBSW-090T support Legacy and UEFI operating system. For Windows, the driver support Win7, Win10 and Win10 IoT Enterprise.

Please get the drivers from ICOP technical support URL:

https://www.icop.com.tw/download_resource/PBSW-090T?tags=18,81,34,35,38,39,64,65&selected=35

For Linux, most Linux distributions support Intel® Braswell Processor and user can install Linux upon PBSW-090T directly. Please contact your region sales for technical support if you have any question.

4.2 BIOS Hot Key

After power on, it supports BIOS hot key as below.

Del	Press < **Del** > to enter the AMI BIOS setup
F11	Press < **F11** > to enter boot device selection Menu

4.3 BIOS Boot Mode Select

PBSW supports Legacy and UEFI mode for different operating systems. Please refer the settings as below.

(1) Power on and press "Del" key In the BIOS Setup, and go to "Boot" and set "Boot mode select" to be "LEGACY", "UEFI" or "DUAL".

("LEGACY" is for Win7 and Linux, and "UEFI" is for Win10 and Linux.)

(2) After settings, please press "F10" key to save the changes and exit.
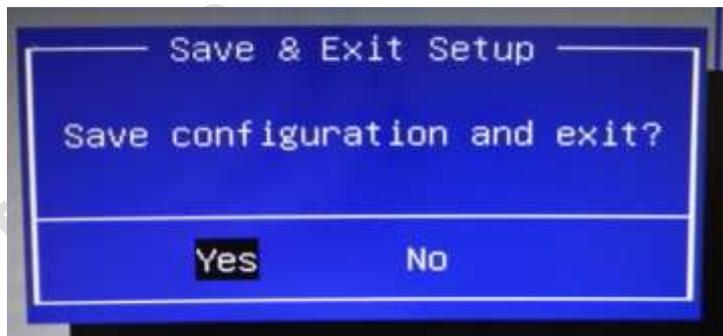
4.4 Intel Internal HSUART Setup in BIOS and Driver

Install in Windows

✧ HSUART port is from Intel internal SIO, and needs special driver to be operated. User might have the problem to use HSUART directly except modify the application software for using Intel SIO HSUART. Please contact the region sales if you want to have a standard RS232 port, and ICOP can offer an add-on RS232 module in PBSW-090T unit.

(1) Power on and press "Del" key in the BIOS Setup, please go to "Advanced" and "LPSS & SCC Configuration".
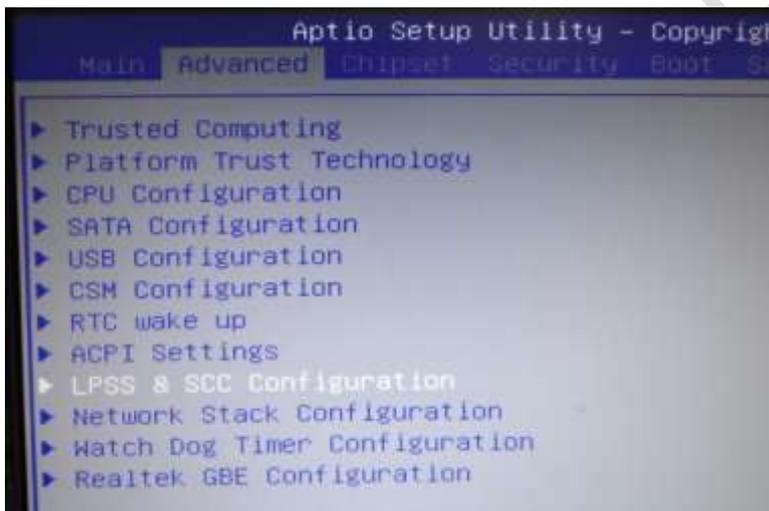
(2) Make sure that LPSS DMA #1 (D30:F0) and LPSS HSUART #1 (D30:F3) are set to be "ACPI Mode".
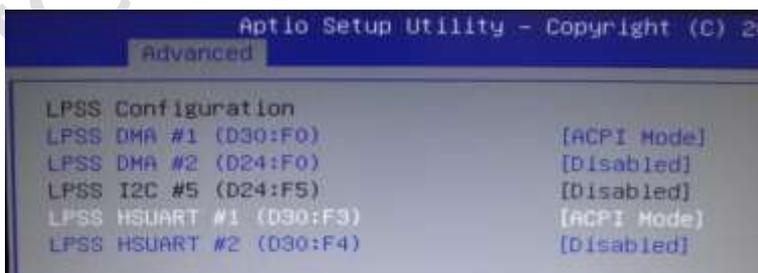
(3) Press "F10" to save configuration and exit.
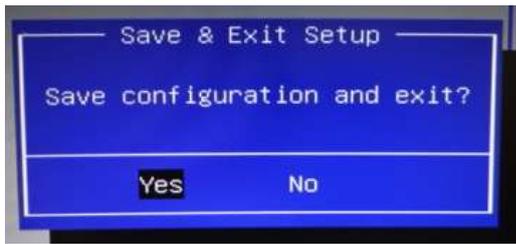
(4) **In Win10, disable driver signature enforcement permanently:**

    (A) Search "cmd" and right click mouse to choose "Run as administrator".
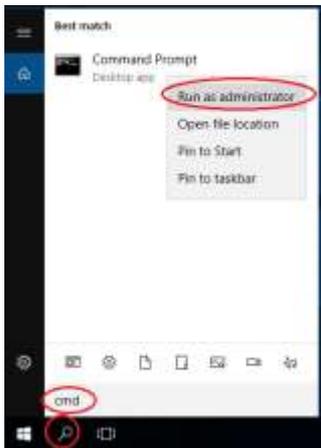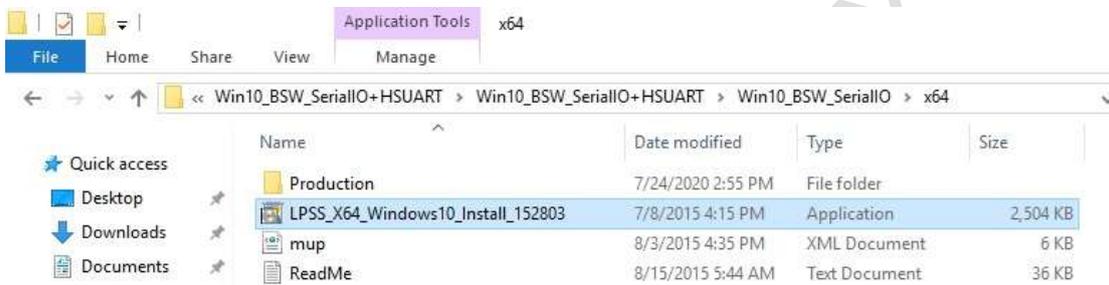

    (B) Type "bcdedit.exe /set testsigning on".
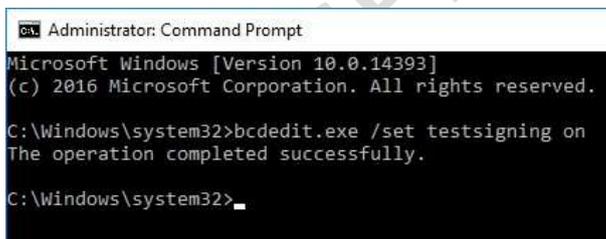
    (C) Reboot system.
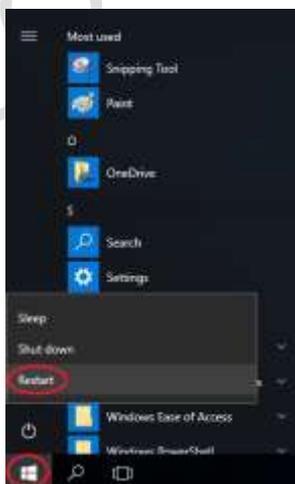
(5) Download and extract the driver of **Win10_BSW_SerialIO+HSUART.ZIP** by
https://www.icop.com.tw/download_resource/PBSW-090T?tags=18,81,34,35,38,39
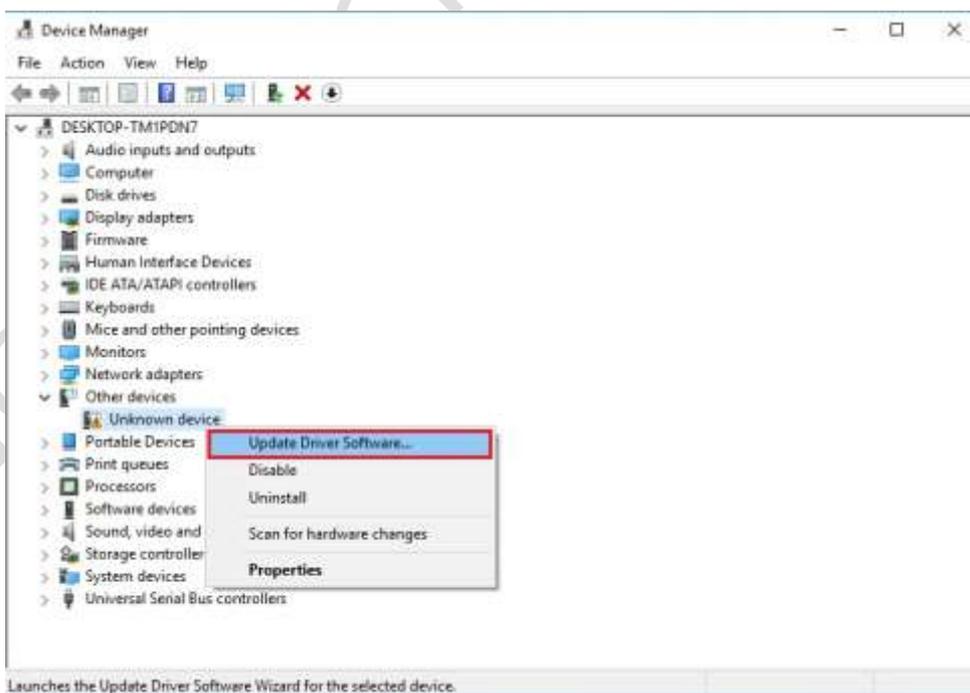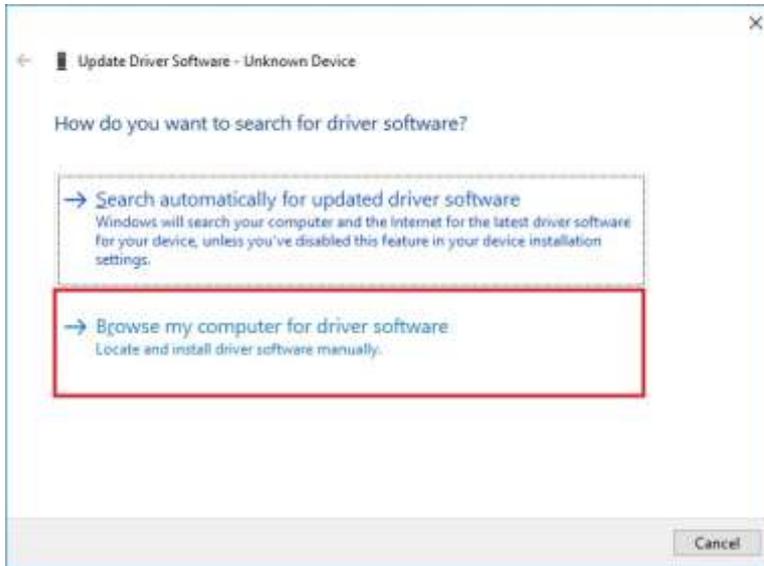,64,65&selected=35.
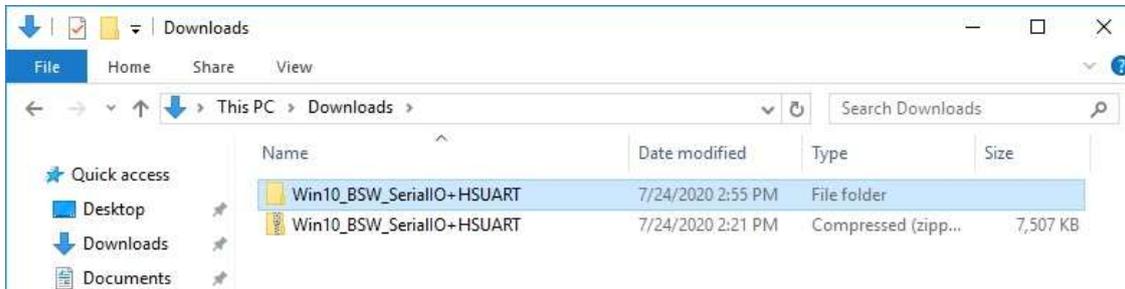
(6) Install the driver of Win10_BSW_SerialIO.

(7) Right-click windows icon on the bottom-left corner of desktop and select Device Manager.

(8) Right-click on the unknown devices, and select "Update Driver Software" to install the driver .

(9) Choose "Browse my computer for driver software".
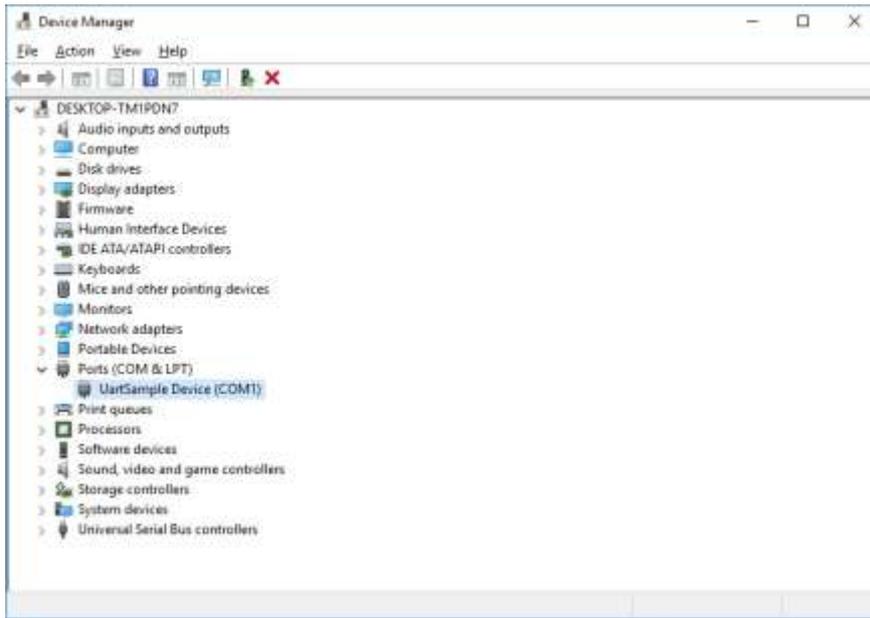

(10) Choose the driver and go "Next".

(11) Windows Security message will pop out; click "Install this driver software anyway.

(12)   After installed, RS-232 port TX/ RX can be used.

Additional information:

1. To use RS-232 port in Win 10 or Win 10 IoT, disable flow control for TX/ RX function is necessary.

2. Win 10 or Win 10 IoT users must follow steps to install the driver and use RS-232 ports on PBSW-090T. For users who need to resume default setting, follow Step 4 and change B. Type "bcdedit.exe /set testsigning off" to undo permanently setting. And the Device Manager will show UartSample Device with exclamation mark and unable to use.
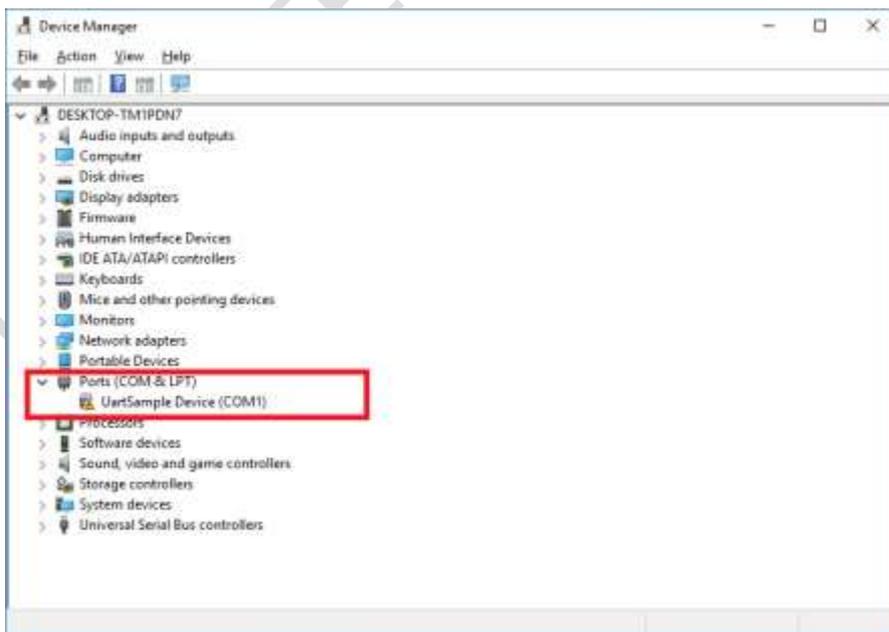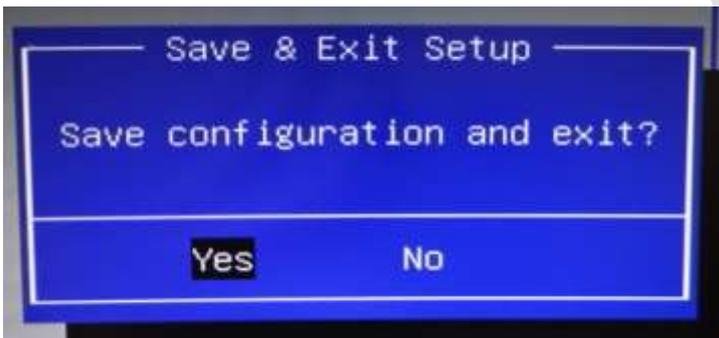
4.5 BIOS Load Default Setting

(1) Power on and press "Del" key in the BIOS setup, and then press "F9" key to load optimized defaults.
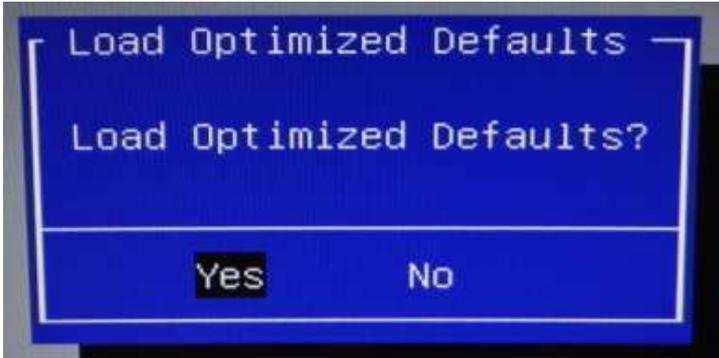
(2) After setting, please press "F10" key to save configuration and exit.

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster. Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, originality to use this product. Vendor will not be liable for any claim made by any other related party. Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.